JÖNKÖPING UNIVERSITY
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Knowledge Sharing in Public Organization

A study of three municipalities in the Jönköping Region

ACKNOWLEDGEMENT

Master Thesis in Informatics

Abstract

Background: Knowledge within organizations can play a vital role for organizational development. The role of sharing knowledge in public organizations by means of the use of information systems have not been studied to a larger extent. During 2016 the thirteen municipalities within Region Jönköping's län adhered to a so-called digital agenda to develop the municipal organizations and service delivery. One of the goals of the digital agenda was to increase knowledge sharing by digital means between municipalities.

Purpose: The purpose of the thesis was to investigate how knowledge sharing practices taking place between municipalities in region Jönköping's län. The authors performed a pilot case study in the educational department within three municipalities.

Method: This study based on qualitative research and data were gathered through semi-structured interviews and analyzed according to the conventional content analysis. Semi-structured interviews were performed based on the theoretical frameworks of Nonaka's Model of Knowledge Management, which resulted in an interview guide with open-ended questions. Conventional content was used for qualitative data analysis.

Conclusion: According to our analysis we have found that knowledge sharing in public organization is generally seen as one of the most important elements that should be wisely managed. Collaboration in public sector basically depend on the so many things and it starts with the government initiative but ends with public awareness. It is also very important that organizations can manage knowledge resources more successfully if employees are willingly to share their knowledge with colleagues. People of organizations are quite comfortable with collaborative technologies because the advance of the internet and related technologies. In the public sector worker or employees should motivated, get more encouragement and support by the leaders.

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1. Introduction

The purpose of this part is to introduce the reader about the background, the purpose and the problem of this project.

1.1 Introduction

Knowledge sharing (KS) is one of the most important and challenging characteristics of successful organizations (Vong & Ciganek, 2016). knowledge is an organizational asset to get competitive advantage that should be carefully managed during the time of decision-making process (Teece 1998). At the same time KS is a very core component of knowledge management (Liao et al., 2007; Ikujiro and Hirotaka, 1995) where KS has the ability to solve problems, generate new innovative ideas and procedures (Wang and Noe, 2010).

Knowledge in a project increase the value and play a vital role for the staff (Burstein and Linger, 2003) to take purposeful achievement and decisions to completed their assign task (Schindler and Eppler, 2003).It is very difficult to manage the knowledge flow within the organization and KS always depend by the organizational characteristic, structure and the context (Kim and Lee, 2006; Bartol and Srivastava, 2002).

Willem & Buelens (2007:581) mentioned that "Public sector organizations are mainly knowledge-intensive organizations, and to exploit their knowledge, effective knowledge sharing among the different departments is required." Knowledge sharing is to make an organization knowledgeable, leading for superior performance and provide motivational element to employees (Rampersad, 2001) at the same time KS is a combination of information, skills and values. Zack (1999:46) defines knowledge "as a practical matter, organization need to manage knowledge both as object and process".

Europe´s citizens and business to get the most out of the technologies the digital agenda for Europe launched in May 2010 for enhancing Europe's economy by delivering sustainable economic as well as social benefits from a digital single market (Digital Agenda for Europe, 2014) with this connection in October 2011, Ministry of Enterprise,

Energy and Communications in their publication of "**ICT for Everyone -A Digital Agenda for Sweden**" described as "Sweden will be the best in the world at exploiting the opportunities afforded by digitization." (M., 2011:15) Later In order to achieve the national goal the Regional Digital agenda (ReDA) launched in August 2015 based on national and regional strategies.

This study focuses on knowledge sharing in the public organizations at school within the different municipalities in Jönköping region. The main objective of this study is to investigate the present situation of knowledge sharing between the different municipalities and also examine the further development for knowledge sharing process among all the municipalities. As well as one of the goals of the digital agenda was to increase knowledge sharing by digital means between municipalities.

1.2   Problem

The word "digital" is presented differently by different authors. According to Boag (2014) the word digital is the convergence of society, media, mobile, and web technology, which have created a new kind of connected consumers and manufactures.

Knowledge has become an important asset for the organizations, knowledge provide support to organization to increase performance, provide support in organization in decision making and innovation, as well as understanding the goals and objective of the organizations (McKay, Burstein, & Zyngier, 2004).

In Jönköping region, the management and employees of the municipalities are trying to improve their services on a day-to-day basis but has identified a lack of sharing information and knowledge among the municipalities in Jönköping region (County Administrative Board, 2017). In order to develop their working procedure, a programmed labelled "Regional Digital Agenda (ReDA) Jönköping län" was launched to achieve national goals, of digitization in the public sector.

Based on "Regional Digital Agenda (ReDA)" identified five key areas for further improvement. They are as follows:

1) Digital Infrastructure,

2) Effective digital communication,

3) Cooperation between the county's digital actors,

4) Participation for all and

5) Safer everyday life.

knowledge between the municipalities was identified as the most vital element for further processing. It would be possible for the municipalities to share significant knowledge with each other to a larger degree than at present. The focus of the study of our thesis is a project aiming to investigate the current knowledge sharing process among all the municipalities and also examine to departmental knowledge which can be shared between the municipality's employees. We see "Effective digital communication" is one of the major problems for further development. For further description of the problem, see figure 1.1 Problem disposition. As a result, the thesis aims to provide recommendations based on the problem of sharing knowledge between organizations in the public sector, in this case municipalities.

1.3 Purpose

The purpose of the thesis is to investigate the understanding the importance of knowledge sharing of public organization's employees as well as to identify the process for better acknowledgment of knowledge sharing in public organization. We will perform a pilot study within one department: The school and its IT (Information Technology) department within three municipalities.

1.4 Research Questions

1) How is the current knowledge sharing practices taking place within public organization?

2) What type of link between departments can be shared between the municipality's employees?

1.5   Delimitation

This is a pilot study within three schools and its IT (Information Technology) Department. The study is performed in three out of thirteen municipalities in the Jonkoping region. The study is also performed within class IV to class VIII. The thesis only deals with the electronic communication performed by information system, not communication face-to-face.

Figure 1.1. **Problem disposition**

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┌─────────────────────────────────────────────────┐
│           Regional Digital Agenda               │
│  ReDA about how to work with digitization of    │
│                  Jönköping.                      │
└─────────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────────┐
│    ReDA is based on national and regional        │
│                 strategies.                      │
│  i)IT for everyone ii) strategy e-society iii)   │
│   citizen in the center iv) Regional development │
└─────────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────────┐
│  To Implement ReDA: Identified Problems are as   │
│   follows by the Administrative Board of ReDA    │
│                                                  │
│  i)Digital Infrastructure ii) Effective Digital  │
│  communication iii) Cooperation between the      │
│  county´s digital actors iv) Participation for   │
│          all v) safer everyday life.             │
└─────────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────────┐
│                 Pilot Project                    │
│          Effective Digital communication         │
└─────────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────────┐
│                   Where?                         │
│             Education Sector (IT                 │
│         Department) within Three                 │
│         municipalities (Class iv- Class          │
│                     viii)                        │
└─────────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────────┐
│                    What?                         │
│                  Knowledge                       │
│                   Sharing                        │
└─────────────────────────────────────────────────┘
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1.6 Definitions

Organization*:* Different research paradigms have different definitions of the concept of organizations. In general, it is defined as group of individuals who works together for the common objectives and visions which is the in common benefit of the company and people who works others (Ferlic, 2009).

Knowledge: *Management:* Knowledge Management can be defined as increased performance of individual and organizational performance by process of generating, getting, sharing, and managing knowledge (Andreeva & Sergeeva, 2016).

Knowledge Sharing*:* Knowledge sharing is defined as the inter-personal interaction which involves communication of receiving and sending the knowledge from one to another person (Andreeva & Sergeeva, 2016).

Transformation*:* Transformation is a process of modifying an organizational business process, they can be made modification in policies procedures, and processes to move the organization from an "as is" to a "to be" (Ferlic, 2009).

Digital Collaboration*:* the term digital collaboration means the communication and mutual sharing information among two parties (McCampbell, 2001).

Collaboration*:* Collaboration can be defined as the experience that integrate people, processes, and technology (Morabito, 2014).

Collaboration Technology*:* The goal of collaboration technology is to allow people to share information as naturally as possible, by empowering people to work and share without limits and by engaging them in the process of collaboration (Morabito, 2014).

2. Literature Review

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The purpose of this chapter is to provide the idea of the previous study.

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Information Technology is a vital part of our daily life where knowledge sharing is one of the most important tools for learning and development. Our thesis focuses on knowledge sharing in public organization.

To achieve their goals, organizations need to transform themselves with the passage of time as change is the only way to survive in the business world. Organizational life is forced to change, transformation, and evolution (Greenwood & Hinings, 1987). Many organizations are trying hard to make place for themselves with the help of technology, but it is difficult due to changing environment and business conditions. However, change is the only way to survive, and most organizations are working with change to progress and being able to survive in the marketplace (Forhez, 2013). Promptly growing in the information technology provide opportunities to businesses to improve capabilities for the survival of the firm on a long-term basis (Cha, Hwang, & Shiley, 2015) as information technology can help private and public organizations to change its processes and working manners to create added value to their customers. Organizations that do not succeed to adapt themselves in the changing conditions of the market could lose their business to competitors (Cha, Hwang, & Shiley, 2015).

Recently, knowledge management concepts are getting attention from scholars from different disciplines but also from professional services organizations and business organizations. Knowledge is defined as a process by which organizations can find, select, organize, and transfer important information and expertise for problem-solving, dynamic learning, designing strategic planning and create values in the decision making (Gupta, Lyer & Aronson, 2000). Knowledge can enable organizations to create sustainability, competitive advantage, and changes in financing. For any organization, knowledge can help organizations, individuals, and nations to successfully reach an advantage in learning, innovation, and decision-making (Al-Busaidi & Olfman, 2017).

Knowledge is an important resource for organizations, which can enable them to maintain competitive advantages and economy. It had proven to be inadequate to depend on providing training and choosing those employees who have the knowledge, skills, and providing help to employees who required them. Knowledge sharing is therefore fundamental by which the employees can provide knowledge for innovation and competitive advantages for the organization to each other (Wang & Noe, 2010).

After knowing the benefits of knowledge sharing many organizations are investing time and money for development of knowledge management by utilizing technology for collection and distribution of knowledge (Wang & Noe, 2010).

Inter-organizational collaboration for sharing information and knowledge can help the organization to increase knowledge-based innovation and competitiveness (Al-Busaidi & Olfman, 2017). For many organizations limited knowledge sharing is one of the reasons of their failure or lack in progress compared to their competitors. Within organization knowledge sharing among the individuals can be resisted because of employees' insecurities, comfortability, or resistance towards new information systems (Wang &Noe, 2010).

Public organizations are knowledge-intensive organizations (Willem & Buelens, 2007). Willem and Buelens (2007) studied the relationship between knowledge sharing and organizational characteristics in public organizations. According to the study, the public sector was divided into three types: a) government institutions (i.e., public administration and governments), b) public sector institutions, and c) state enterprises. The authors also mention three types of inter-unit coordination mechanisms based on the level of formalization and the programmed character of coordination identified during the reviewing organization theory literature. The three types are defined like this: *"first, there are formal systems that consist of any kind of coordination that is planned and formally established, such as formal procedures, rules, manuals, and formal processes. Second, there is lateral coordination that is also formal but not planned in advance. This coordination is used when needed during task execution. Examples are teamwork, liaison roles, task groups, and mutual adjustment. The third category includes all informal coordination"* (Willem & Buelens, 2007, p. 585).

Based on this study, organization theory and knowledge management literature helped them to identified that lateral coordination and informal networks are considered to be better fit for information and knowledge sharing for several reasons. For this study, data was collected through a questionnaire survey among Belgian public sector staff from more than 90 different public sector organizations with 358 respondents selected based on a nonrandom snowball selection method.

However, according to this empirical study they found that public sector organizations are more beneficial for knowledge sharing than governments institutions.

Amayad (2013) performed a quantitative survey study among more than 1,700 civil servants in a mid-sized public Midwest academic institution in the US. Three types of motivators were found to have a unique contribution to the variance in knowledge sharing: community-related considerations, normative considerations and personal benefits.

Moreover, social interaction, rewards and organizational support played an important role in knowledge sharing. There were also two obstacles found for knowledge sharing, which were the degree of courage and the degree of empathy. Finally, the author states: *"The interaction of normative consideration with social interaction, personal benefit with organizational support, and normative considerations with degree of courage, had a moderating effect on the relationship between motivating factors and knowledge sharing."* (Amaya, 2013, p. 454) A knowledge sharing culture is also needed to support knowledge sharing and knowledge management within public sector organizations.

The study performed by Amaya (2013) was conducted in a single public sector organization. There are many organizational forms operating within the public sector (Wettenhall, 2003; Willem & Buelens, 2007) and for this study data were mostly collected from lower-level employees. As a result, the findings cannot be generalized to other public sector employees.

Gorry (2008) performed a case study in social service and education focusing knowledge sharing in the public sector. The findings from the case study showed that: a) The desire

to share knowledge is generally strong, b) Technology can still make knowledge sharing difficult, c) Support for a core group is crucial, d) An electronic community means new ways of working, and e) Assessing the success of an electronic community remains an essential, but complex matter.

According to Gorry (2008), first, electronic communities which help us improving organizational coordination and performance in the public sector. Second, continues development of internet and related technologies, people are quite comfortable with these collaborative technologies. It is help people to motivate and sharing knowledge. Third, and most importantly *"the desire to serve their clients well gives many workers in the public sector ample motivation to work across organizational boundaries."* (Gorry, 2008p. 110). Moreover, institutional commitment actually facilitated such kind of knowledge sharing and leaders in the public sector should realize.

Willem and Buelens (2007), Amaya (2013), and Gorry (2008) all studied the conditions of knowledge sharing in public sector. Willem and Buelens (2007) found that public sector organizations are more beneficial for knowledge sharing than governments institutions. At the same time, a knowledge sharing culture is needed to support knowledge sharing and knowledge management within public sector organizations. Electronic communities can help in improving organizational coordination and performance in the public sector. Motivation and willingness to share knowledge in the public sector depends on the institutional commitment from management and leaders. With the continuous development of internet and related technologies, people are quite comfortable with these collaborative technologies, but they also need skills to use them.

3. Methodology

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The purpose of this chapter is to provide the methodology used in this topic.

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To describe the methods or our study, we use the so-called "research onion" by Saunders, Lewis, and Thornhill (2012), which describes methodological choices on a more and more detailed level, from research philosophy until the actual choice of methods for data collection. The research onion is presented in figure 3.1.
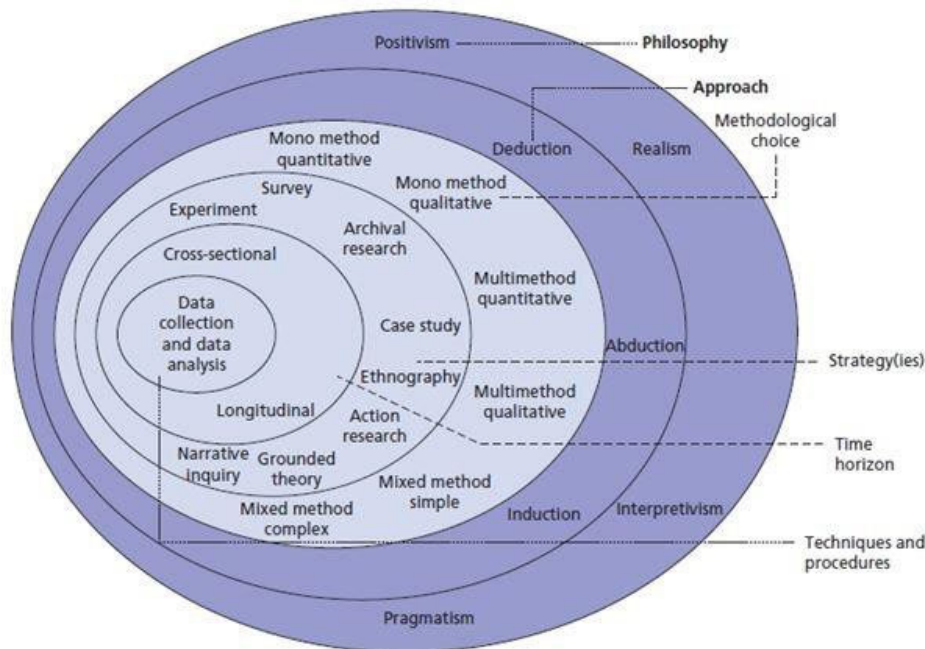
Figure 3.1 The research onion according to Saunders, Lewis and Thornhill (2012).

3.1 Research Philosophy

A research philosophy is framework which helps in how research should be conduct on the foundation of reality and knowledge (Collis and Hussey, 2014, p.43).

As recommended by the (Bryman,2008) research philosophy can be able to defines the believes and values that helped in design, data collection and analysis of the research.

Research philosophy plays a significant role in research methodology, by which researchers can determines the research approach can be useful in the research and why. (Saunders, Lweis, & Thornhill, 2009).

We believe that it is what researchers realized to be knowledge and truth. Research philosophies help researchers in identify the method, data collection and analysis should be selection (Bryman,2008).

In research, research quality and innovation can be adopting from researchers through research philosophy because in research researchers made the choice about the data, in what way researchers are able to collect and analysis the data and able to scope the data for generalizability of the research findings (Easterby-Smith et al 2012).

3.2 Research Approach

According to Saunders, Lewis, and Thornhill (2012) a research approach can be inductive, the inductive approach contains research for patterns from the observation and generate of the explanation from the theories and hypothesis.

In inductive research initial no theories and no hypothesis can be applied in the research due to which researchers are free to change the directions of the research, in inductive approach does not indicate ignoring theories and hypothesis when structuring the research questions and research objectives. (Goddard & Melille, 2004).

3.3 Research Design

The research deign is regarding research activates and data collection of the research with the goal in the mind to achieve the aim of the research for which is research has been conducted.

The research design is important phase because it is about planning and selecting, what things will be observed and how, but each design is not completed because in each design there are many selections have made of the feature to specified.

The research design should be written before data collection process because this statement should explain and verify what type of data should be collected, how, and from where that data can be collected. It also explains the analysis process and how this will generate the answer to the research question (Easterby Smith, Jackson, & Thorpe, 2015).

3.4 Strategy, Time Horizon and Method for Data Collections

The research strategy and time horizon chosen for the study of the thesis was a cross-sectional interview study, that is a qualitative data collection aiming to collect data from one point in time (Saunders et al., 2012). In the qualitative data collection, the researcher discovery and trying to make understanding of the individuals or group of people (participant) attitude regarding the society and human problem (Creswell, 2013).

The qualitative data collection consists of the non-statistical data and which can be useful in all the research themes which can be small list (sample) of the feedback participation from the society or it might open-endedly questions in surveys, questionnaires, and in-depth interviews for more complex such as transcript with other understandable documents. In the qualitative data can helps and able to develop theory for understanding of the researchers (Sauders, Lewis, & Thornhil, 2012).

3.5 Sampling

A sample is a group of people from the population which going to study to collect information about the entire population, sampling is the process to select a suitable people from the population or people who they represent the part of population for the information gathering purpose or data collection purpose for research. (Patron, 1990).

Snowball Sampling method employed in this research, because by this method of sampling researchers can collect information from the primary data sources. In other words, snowball sampling method based on referral from initial interviewee to nominating another interviewee for data collection.

3.6 Practice in Research

In this research, population is school´s IT (Information Technology) department of the three municipalities of Jönköping region. School departmen that is concerned with the education. More specifically, directly education service provided by the teachers to the

students and the employee of the organizations. IT Department: It refers for information processing by using electronic devices and computer networks and maintenance.

In this research sample should be group of people who are involved with technology and students. Researchers selected the sample group which includes teacher, administrative personal and IT personal according to the experience and involvement with the development of school department in municipalities. Research focus on three municipalities (Jonkoping, Habo, and Nassjo) for data collection.

3.7 Interview

The interview is the process of discussion two more among the people which can be for some purpose. By using the interview researchers can be possible to gather rightful and trustworthy data which might be helped to answer the questions and achieve the objectives of the research.

The idea of interview must be conducted to collect accurate data for answering the research question, to fulfil the objective and purpose of the research and research strategy assumed (Saunders, Lewis, & Thornhil, 2009).

The type of the interview is practice in this research is semi-structure interview which are be used in the form of questionnaire in the process of data collection (Saunders, Lewis, & Thornhil, 2009).

By interviews researchers have opportunity to collect detailed information about the research question, in the same process researchers had the control over the flow of information by which researchers can clarify more issue due the process.

3.8 Semi-Structured Interviews

In semi-structure interviews researchers are required to mention the theme and questions, as they are differed from interview to interview.

It is assumed as researcher can exclude questions in some especial interview, with respect to the organizational context, which suffer for the link to the research topic (Saunders, Lewis, & Thornhil, 2009).

In semi-structured interview researchers had prepared set of questions which are required to answered by the interviewees according, and questions were designed to accommodate the research questions.

3.9 Data Analysis

The empirical study of the thesis uses content analysis to analyze qualitative interview data. In, table 3.1, three approaches to content analysis of qualitative data are described.

Table 3.1 Three approaches to qualitative content analysis (Hsieh & Shannon, 2005,

Type of Content Analysis	Study starts with	Timing of defining codes or keywords	Source of codes or keywords
Conventional content analysis	Observation	Codes are defined during data analysis	Codes are derived from data
Directed content analysis	Theory	Codes are defined before and during data analysis	Codes are derived from theory or relevant research findings
Summative content analysis	Keywords	Keywords are identified before and during data analysis	Keywords are derived from interest of researchers or review of literature

Qualitative content analysis techniques could be used in an extensive range of studies and these techniques offers researchers a flexible, pragmatic method for developing and spreading knowledge and experience (Hsieh & Shannon, 2005). According to the Bryman (1988), there is a major distinction between qualitative and quantitative analysis. Also Saunders et al. (2012) define a distinction between qualitative and quantitative based on meaning, collection, and analysis of data moreover qualitative data are related to the specific ideas and also described by their richness and fullness based on the opportunity of the subject in an accurate way as much as possible (Robson, 2002), The results of the analysis depend on the nature of the qualitative of data and "*during analysis, the non-standardised and complex nature of the data that you have collected will probably need to be condensed (summarised), grouped (categorized) or restructured as a narrative to support meaningful analysis*". (Saunders et al., 2012, p. 482).

Content analysis is a method can be used for both qualitative and quantitative data with an inductive or deductive way (Elo & Kyngäs, 2008). Content analysis is a technique of analyzing data might be in written, verbal or visual communication messages (Cole, 1988) and in the 19th century, it was first used for analyzing the religious song, newspaper, magazine articles, advertisements and political speeches (Harwood & Garry, 2003). Content analysis is mainly concerned about meanings, intentions, consequences and context or situation (Downe-Wamboldt, 1992).

Content analysis is a method for analysis of empirical date for reproducing and create effective implications from data to the situation with the objective to provide knowledge, new or better understanding, proper representation of the circumstances as well as a practical guide to action (Krippendorff, 1980) and *"the aim is to attain a condensed and broad description of the phenomenon, and the outcome of the analysis is concepts or categories describing the phenomenon. Usually the purpose of those concepts or categories is to build up a model, conceptual system, conceptual map or categories."* (Elo & Kyngäs, 2008, p. 108)

4. Theoretical Framework

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The purpose of this chapter is to provide the theoretical framework used in this topic.

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4.1 Nonaka's Model for Knowledge Management

4.1.1 Knowledge Management

Nowadays knowledge play very important and vital role in organization for achieving the competitive advantage. Knowledge can also support an organization maintain the competitive advantage in the market (Clarke & Rollo,2001).

Knowledge able to generate value in organization by supporting organization's capability to generate innovation and transfer best knowledge across the organization. Knowledge also supports in the growth of country's economic, and organizations achieve organizational vision (Farnese, Barbieri & Patriotta, 2019).

4.1.2 Knowledge Management Model

Organizations assume that knowledge creation should have logical relation to the discussion of the ideas and opinions because knowledge is the combination of statement, ideas, and features which are opposed among individuals, the organization's environment (Amelia, 2018).

The knowledge creation process wherein continuous conversation between tacit and explicit information produces new knowledge and transit it across the level in organization (Hoe,2006).
The Nonaka and Takeuchi knowledge management model are one of the famous models among the existing model. Nonaka knowledge management model motivative the knowledge spiral explaining the transformation of tacit knowledge to explicit knowledge by which can be used by individual, group, and organization member for learning and in creation innovation process (Clarke & Rollo,2001).

The Nonaka and Takeuchi model can be used for the knowledge formation and adaptation, in this knowledge management model explain technique to manage knowledge from people and process of an organization, organizations generally contain the knowledge which can be tangible or intangible which can be see as tacit or explicit knowledge (Harsh 2009).

Tacit knowledge can be explained as type of knowledge which is never written down and only be used by the words of mouth. This can create difference in acceptance because there is nothing written knowledge available which people can used or read, people who have knowledge in the mind can be able to keep knowledge (Hoe,2006).

On the other hand, explicit knowledge is type of knowledge which is written and people are able to used and able to read over and over, but also not all the knowledge is transfer to written. For this Nonaka and Takeuchi model is the model which explained the conversion of knowledge even where it is tacit to explicit or may other way around (Clarke & Rollo,2001).

Mentioned by Harsh 2009 model there are four types of conversion of the tacit and explicit knowledge.

1. Socialization.
2. Externalization.
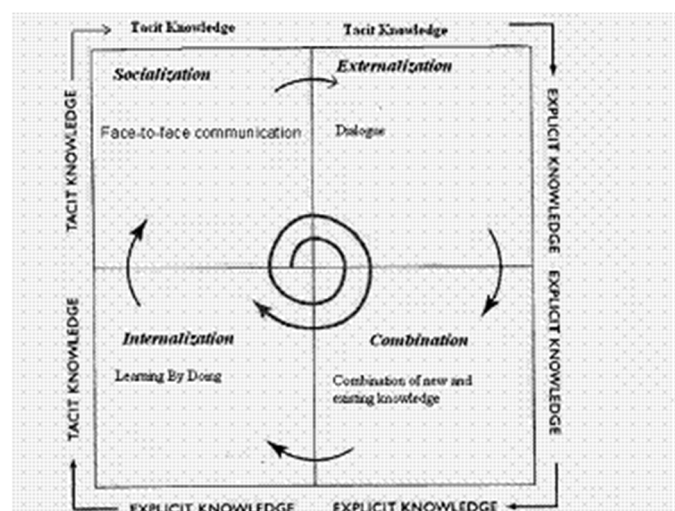3. Combination.
4. Internalization.

Figure 4.1: Nonaka And Takeuchi Model (Harsh, 2009)

4.1.2.1 Socialization

Socialization means that transit of tacit-to-tacit knowledge in this process of interaction between individuals by which result in the tacit knowledge sharing, it can be more lengthily and can be viewed more interactively in any organization because in this process employees are not only sharing their experiences, metal mode, ideas and perspectives in between they are sharing reusable experiences. In socialization assumed that knowledge reaching to the other people, will be increased by which it will be more reusability.

4.1.2.2 Externalization

This is the process of present knowledge in presentable from of knowledge, which can be take transmission from tacit to explicit knowledge, all this process of capturing knowledge will be transform with passage of time its increase due to involvement of reusable knowledge, which means that more knowledge is available in organization. As well organization will have more confidence in the knowledge because reappearance of the knowledge.

4.1.2.3 Combination

This is process people in the organization sense more connected with knowledge because of application of reusability by which combination will able to quality knowledge, under this process new and existed knowledge plays a vital role in the process of combination of knowledge. If conversion of knowledge from one to another connected faster because rate of rise knowledge is also increased. On the stage explicit knowledge change into more useful explicit knowledge, such explicit knowledge provides more quality and will be more useful to project.

4.1.2.4 Internalization

This is process of understanding the knowledge and trying to arrange it into recedingly in the content with own the current knowledge, of the transmission of knowledge from explicitly to tacit or from tacit to explicitly knowledge is increased with the time can also increase the reusability of the knowledge. By this organizations are able to store more information in the existing internal knowledge.

5. Findigs

The purpose of this chapter is to provide the information about the interviewees and their position and municipality used in the topic.

Name	Designation		Official Position	Municipality	e-mail	Date	Duration
	Swedish	English					
Gunnar Bergman (GB)	Verksamhetsutvecklare skola Jönköpings kommun Utbildningsförvaltningen Utveckling- och Kvalitetsenheten	School of Business Development Jönköpings Municipal Education Department Development and Quality Unit	Head of Department	Jönköping	gunnar.bergman@jonkoping.se	April 18 2017	1 hr, 36 min
Carl-Johan Frenning (CF)	Lärare i matematik och kemi IKT-pedagog Brinellgymnasiet	Teachers in mathematics and chemistry ICT teacher Brinell HIgymnasiet	Head of ICT	Nässjö	carl-johan.frennsing@nassjo.se	April 19 2017	50 min
Kenneth Hellman (KH)	CIO Kommunledningskontoret|	CIO City Management	CIO	Nässjö	kenneth.hellman@nassjo.se	April 28 2017	45 min
Gunilla Cedervall (GC)	Special/IT-pedagog, Särskolesamordnare Barn- och utbildningsförvaltningen	Special / IT Educator, Special Co-ordinator Children and Educational Administration -	Head of Department	Habo	Gunilla.Cedervall@habokommun.se	May 31 2017	50 min
Martin Andersson (MA)	Systemtekniker Kommunledningsförvaltningen	Systems Engineer municipal administration	Second in Charge	Habo	Martin.Andersson@habokommun.se	May 31 2017	34 min

Table 5.1 Interviewees List

5.2 Interview Summaries

5.2.1 Gunnar Bergman,

Head of Department of Education Jönköping Municipality

The head of the department is 68 years old and is going to be retired within a year. He is active in Facebook, Twitter, and on other social media in his private life. At work, only emails are used to spread important information and announce events. He has a very long experience and wants to share his knowledge with his colleagues, students and student's parents which might be helpful for future development. He has been working in IT since 1973 and he also learned administration. Therefore, he tried to share his knowledge and experiences, but here are difficulties to do this. Normally, he should be retired from his job at the age of 65 but due to his unique knowledge and experience he is still working. He has been working at Jönköping municipality the last 14 years. He worked 21 years as a consultant and have experiences from different field like healthcare and sports. In the end of 1979, he started to work with personal computers. Jönköping municipality started to use internet in 2000, then cabled networking in 2008 and started a widespread use of one-to-one personal computers in 2010.

He thinks that working together is a big opportunity for further development. The new system will bring an arena for new thinking. He has previous experience from implementing a system for developing school process, where the municipality assumed that it would take only one and a half year, but it took three and a half years. He was involved with this project from the very beginning. Time could always be extended if it is necessary to achieve a better implementation.

He says that still they are looking for a new system where they can share their information and knowledge. He mentioned that it is very important to get prompt service from the new system. The system should be monitored easily and be cost-effective. He does not have enough information regarding ReDA:" Still *in the bathtub but I think it's... the community has a different way"*. He thinks that Jönköping municipality are not ready for ReDA but Jönköping municipality can start the process and not share information and knowledge with other municipalities in the first stages.

They need a high level of communication and security for a common platform. He says that the present system needs to be developed as it does not update automatically. The system cannot be accessed during the holidays from outside and if there is anything important that must be done it will have to wait until a normal workday.

For a large development project like ReDA, a large budget is required and that is decided by the politicians. There are a lot of decisions that are needed from different departments and the process is complicated. It will take time, but to invest in time in the project will make the end result more useful for the next generations.

5.2.2 Kenneth Hellman

CIO City Management Nässjö Municipality

The CIO of Nässjö municipality has a long experience of working with manage related issues in a municipality context. He has in-depth knowledge of ReDA because project, as he is member of steering committee of the project.

From his experience in the project, he would like to extend it as the project its beneficial to the municipalities. To achieve the goals, the project needs human competencies and financial recourses. He wants to speed up the project of ReDA because it going to provide many benefits to the municipality and can also increase and improve the information and knowledge sharing within the region. According to the interviewee there is no time limit to this project because it takes a lot of efforts and time to develop. He also states that the main responsibility depends highly on the managers, for example approval of the equipment purchases. As a manager of a particular region, he hopes that also other regions communicate and develop a similar strategy which takes them in the same direction.

According to the steering committee, there is no expected time limit as the project is considered as a continuing process of upgrading of the current system. The project is regarded as a transformation process of development aiming towards the future of the region. The vision and planning of this project are also dependent on each municipality and the politicians of the region because every municipality have its own digital strategy. This project plans to move all municipalities in the same direction so that municipalities that have a digital strategy also can benefit from it. The project started in 2016 after summer, but the decision to perform the project was taken in 2015. The project required

people who have sufficient competences, but until this date there are no final allocation of financial resources.

The project is going forward but slower than expected because there are some improvement areas, for example staff training, and increasing competences, which need to be taken care of. The main reason behind the slow progress of the project is lack of resources. Resources which are required for this project is competence, manpower and funding.

The bearing idea of the project is the transformation of the organization. Here, competence is considered as skilled manpower who have to be knowledgeable in certain professional areas, like information technology, project management, financial management and general management. People with these skills are required to complete and achieve the vision and mission of the project to achieve the project goal.

The budget is essential for purchasing technological and networking equipment to go ahead in different direction to achieve our vision. Budget approval comes from the politicians in the municipality board as they are in charge of the allocation of the budget. The project has also got a high degree of appreciation and support from the politicians in the municipality.

This project also requires people who have certain skill sets, which is helpful for the project to be succeed. The ReDA project is unable to evaluate the progress towards achieving the overall goals, but instead weekly meetings are held, where the committee presents the progress and the development of the project.

Effective communication is important as there are many different groups or teams within who need the digital support to carry forward the process and building the digital strategy. Some people might feel comfortable in the old processes and are afraid of new processes because of lack of knowledge about technology and digitalization.

The areas that are focused in this project is education, and healthcare. Sharing knowledge in these services is important, as the organizational structure and capabilities can be changed through collaboration. Sharing information within the Department of education

can help teachers find new ways to teach. The administration staff is still perceived to have a lack of skills to overcome.

5.2.3 Gunilla Cedervall

Head of department (Expert in IT Pedagogy) & Systems Techician IT Department, Habo Municipality

The head of the IT department mostly work with education related activities as an IT educator. The head of department and the system technician have initial knowledge of the project, but do not have any experience of project work. The interviewees are not well acquainted with the ReDA project and thus do not have adequate knowledge about it. The interviewees are mainly associated with the education department, and their primary duties are to manage, plan and report to chief of education of the municipality with a focus on pre-schools.

The interviewees want to make the knowledge sharing system more specific and want to expand it to more regions so that everyone has easy access to different types of information, which is related to the educators. The reason why this is important is that education requires a continuous upgrading of knowledge. Educators could then continually educate themselves by means of the knowledge sharing system.

They work close to and are linked with other municipalities by means of teamwork or mouth to mouth communication between peers. If they want to apply or launch something new, they share ideas with each other and look for application programs and create specifications and purchase together, because in small regions having a similar system it is beneficial for all included municipalities.

They interviewees think that a knowledge sharing system can provide effective communication and knowledge sharing among the municipalities. They also state that small municipalities can take quicker decisions as compared to larger ones. They also express their concern of about too much information being available, which would need information to be filtered out.

SharePoint is the only medium which is used to share information and knowledge currently among pupils, teachers and other departments within the municipality. In the initial stage of the SharePoint implementation people were afraid to adopt the new technology because of technology-induced anxiety. But they still accepted it very well and every pupil now has their own electronic gadget, so it has had a positive impact and changed the way of working within the education.

At this point, staff do require training and for that purpose they have organized workshops and delivered some lectures to help staff to adopt the new technology and upgrade working routines. After those lectures and training, 60% of the teachers successfully used SharePoint.

5.2.4 Carl-Johan Frenning

Teacher in mathematics, Chemistry, and informatics, Nässjö Municipality

The interviewee work as teacher. His area of specialization is chemistry and mathematics, and he has a long experience as an instructor in junior high school. He does not have any kind of information about this project, but he is involved in other projects regarding digital communication.

He is currently involved in improving communication digitalization among in the municipality in developing competences of the teachers. Some teachers readily accept the change but some of them are slow in adapting new technology. He wants to provide a platform where different educators can easily share their experience, knowledge and information among themselves. Furthermore, through this digital system lectures, trainings and seminars can be performed across the region and expand the knowledge of the staff involved in education sector.

The interviewee is not aware of the overall ReDA project. He is only aware about a portion of the project. He has a very good knowledge of networking system.

For the educational sector, knowledge and information sharing is very crucial as it is a sector where development and knowledge sharing are essential. As a teacher, he wants to connect to the larger cities in Sweden like Stockholm and Gothenburg. As an educator it important to share knowledge with others through digital platforms.

Teachers need many competences, and teachers who use ICT have many effective ways of providing education. It is also good for learners, who can learn new and innovative ideas. Through workshops, lectures and seminars information can be share and multiple tasks can be performed.

When the interviewee is asked about common training programs in schools in different regions, he responds that there is internal training in the municipality, which they provide to their teaching staff using ICT classrooms.

The interviewee also shares his point of view about the system and platform provided by Jönköping region and its effectiveness. He points out that system single-handedly cannot provide any value if the people who are part of that system do not have competencies which that system and platform requires. As a result, teachers need to develop competencies themselves rather than depending on someone else to make you competent.

Many other countries like Norway, United Kingdom and Scotland have digital strategies for the school sector, but in this region, this is in starting phase. As a result, it is not the right time to compare ourselves with other countries. During the development of the project, many things will be changed, but not so quickly.

E-learning is appropriate to help teachers to teach according to level and topic, and with e-learning system it is easy to share documents and information across. It should be possible for all municipalities to maintain e-learning systems in their region because Finland has digital platforms for schools, and it should also be possible in Sweden.

6. Analysis

The purpose of this chapter is to provide the observation and analysis used in this topic.

6.1 Observation

6.1.1 Knowledge Sharing in Public Organization:

Knowledge sharing in public organization is generally seen as one of the most important elements in organizations that should be wisely managed. Organizational transformation is a continues process. Transformation in public sector basically depend on the so many things. It starts with the government initiative but ends with public awareness. However, it is a long journey from start to end and also planned maintaining and perfect monitoring of overall project.

The purpose of this study is to give an overview of the present situation of municipalities and their capabilities IT-enable knowledge sharing. A theoretical framework explained according to the present condition. This framework can give an idea how to work in future.

This study based on qualitative conventional content analysis where we found the followings:

Acknowledgement

Everyone is (Interviewee) appreciated the initiative by the government. Everyone is looking for a new way to share their knowledge. That´s why Willem and Marc (2007:581) mention that *"Public sector organizations are mainly knowledge-intensive organizations, and to exploit their knowledge, effective knowledge sharing among the different departments is required."* And where Organizations can develop appropriate structures to maintain this knowledge sharing between departments (Teece, 1998)

Gunner (Interviewee) mentioned that they need a high level of communication and security for a common platform. He says that the present system needs to be developed. Because the present system does not update automatically. Even they cannot access their

system during the holidays from the outside and if there is anything important, they have to wait until or unless opening days.

Kenneth (Interviewee) also mentioned that project plans to move to all municipalities in the same direction so all the municipalities that have one digital strategy can also benefit from it. At the same time *"Organizational success has always depended on the sharing of knowledge, but now in the face of the increased competition and the acceleration of business, companies are putting even greater emphasis on the dissemination of knowledge and best practice."* G Anthony Gorry (2008:105)

Gunilla (Interviewee) also mentioned that in small regions with having a similar system is beneficial. Knowledge sharing is defined as *''the process through which one unit is affected by the experience of another''* (Argote et al. 2000, 3)

Martin (Interviewee) mentioned that share Point is only medium which they use to share information and knowledge among the students, teachers and different entities who required that information, but Computer Medicated communication can also define as framework for communication through computer network. Computer medicated communication explain (Wright & Bell, 2003), this is earlier model by researchers who have the idea to use computers for communication process through computer network. A computer network system uses for the communication among the group people or with each other (Wright & Bell, 2003), (Greller & Barnes, 1994) computer Medicated Communication explain this conferencing with the different application on the computer network system by which people are sharing knowledge among each other or among the group of people.

Carl-John (Interviewee) was very specifically mentioned that for the education sector the knowledge sharing is very crucial but among the municipalities it is essential. Actually, the presence of internet and the fast adoption of the World Wide Web had changed the entire environment in which to explore knowledge sharing in the public sector (G Anthony Gorry, 2008) that´s why *"with the Internet and collaborative software, we can create an infrastructure for knowledge sharing"* (Brazelton & Gorry, 2003:25).

Collaboration: Each and every one interviewee was very much focus on collaboration. Regarding the concept of the collaboration, they do not have much more ideas. But they

assume that when they will work together in a single platform then everything will be easy for each other's.

Gunner (interviewee) says that community can work together and sharing information to develop new system. He also agreed that they are not ready for ReDA situation but want to start work now. Regarding the collaboration Goulet, L., Krentz, C., & Christiansen, H. (2003) also explained *"Collaboration is challenging because the human element of social interaction is a major part of every collaborative project. Conflict, then, is to be expected. The purpose of collaboration is not to avoid critique and conflict, but to deal with both respectfully and constructively. Collaborative partners identify strengths in one another's ideas and actions and build on them rather than tearing them down."*

Kenneth (interviewee) also expected that there should be a kind of platform where all are trying to support each other. Carl-Johan (interviewee) says that we need a platform for share of good ideas and experiences by using ICT in the classroom. He was put more concentration on ICT between the municipalities.

Gunilla (interviewee) has network with her colleagues where she can share her things. Specially, sharing ideas very much helpful to purchase any kind of digital equipment. It will be a great benefit for her municipalities. She also mentioned about the share point where they can communicate, collaborate, students can be shared their things.

Martin (interviewee) says that we do not have much information about any new implementation. He also mentioned that they have Incredibly short staff and a lot of rearranging work was quiet troubles

One thing we should care about *"Who should collaborate with whom, when, where, how, and why? What does collaboration entail? What are its requirements and contingencies? These basic questions introduce an intervention-oriented conceptualization of collaboration."* Hal A Lawson (2004:226)

Willingness to share

 There is a massive knowledge gap between municipalities. This ReDA project have

started at 2015 but still IT department of education sector have not much information about it. There is no meeting or lecture about this project within the municipalities.

According to the Gunner (Interviewee) as a head of IT department in school section does not have any knowledge about the ReDA at the same time other municipalities also have the same situation except Kenneth (Interviewee). Kenneth (Interviewee) is the one of major decision maker of ReDA that's why only his knowledge about ReDA in depth.

Gorry (2008) wonderfully explained that the main aim was to help share knowledge and experience – to help each other that´s why *"formed the Electronic Community of Teachers (ECOT), an 'Internet lounge' where teachers from schools across Houston could gather to exchange stories, ideas and practices regarding the use of technology in the classroom."* (G Anthony Gorry ,2008:107)

According to the study of Angela, T.A. (2013) very specific focus on the interdepartmental knowledge sharing where people can influence to share knowledge between departments. At the same time public organizations are mainly based on knowledge- intensive organizations where they want to exploit their effective knowledge among the different departments (Willem and Marc,2007).

In the public organization the willingness of sharing knowledge of people and their sacrifice can achieve the organization´s goal within the targeted time (Moch,1986), at the same time *"Leaders in the public sector should recognize that, with encouragement and support, workers can help one another do their jobs better and serve their clients more effectively."* (G Anthony Gorry ,2008:110)

 Lack of Motivation

 Every interviewee accepts that the lack of motivation within their organization. Motivation is essential in public organization and also prerequisite for knowledge sharing (e.g. Ardichvili, 2008; Zboralski et al., 2006) because "knowledge resides within individuals, knowledge cannot be shared effectively if individuals are not motivated to share it. Therefore, it is important to gain a better understanding of the factors that motivate knowledge sharing." (Angela, 2013:457)

Angela (2013) divided motivating factors into three categories which have an impact on individual's willingness to share knowledge with other employees: personal benefits, community-related considerations, and normative considerations. Here, personal benefits refer to: 1) status and career advancement, 2) a better professional reputation, 3) emotional benefits and 4) intellectual benefits. Three community-related considerations have fond according to the Ardichvili's (2008) framework are as follows: 1) sharing knowledge to establish ties with people one collaborates with, 2) sharing knowledge as a means to build a stronger community, and 3) sharing knowledge to strengthen one's position in a community. Normative considerations, which refer to organizational norms to which employees are expected to follow like values affect goals, attitudes and behaviors.

Motivation and commitment both of them are major concern for public sectors managers (Moon 2000) and highly motivated employees can work positively across the organizational boundaries (Gorry,2008).

Shortage of competence employee

Still, they have massive shortage of IT staff. To manage this kind of centralization system, need very efficient IT staff. Still they (all f the municipalities) depend on the third-party maintenance and monitoring. Even most of the cases they don't know how to solve the simple network problems. According to the present situation it is quite impossible to implement ReDA project without the efficient employees.

"The success of an organization depends on how capable and skilled their workforce is. The capability of your workforce can be measured if you have specified job competencies for different functions in your organization." https://engagedly.com/workplace-competencies/ (Access date January 12, 2020)

However, Ellström, P. & Kock (2008) describe that *all* through the world believe in the importance of devoting resources to education and other dorms of competence development as a key factor for productivity development, innovative capacity, and competitiveness where Kuijpers et al, (2006:168) explained briefly *"Career development is a field that is becoming increasingly relevant for both employees and employers. Economic and technological developments have resulted in working careers becoming*

more unpredictable due to changing work opportunities and shifts in labor."

Technological fear

"…… if I change, I can't complete my job and they think they are safe where are they now."- Carl-Johan Frennsing (Interviewee Nässjö Kommun). This is the present perception of most of the employees and teachers. Most of the employees and teachers have the technological fear that's why all interviewed personnel recommended training before implement any new technological arrangement.

Very important things Brazelton & Gorry (2003:23) mention that "*Technology may support a knowledge-sharing environment but getting users to participate in effective ways is key."* They also mention that about the concept of Electronic Community of Teachers (ECOT) where teachers can easily help out the entire community like teachers, students, employees and guardians.

However, *"fear of technology mainly emerges from a lack of meaning surrounding the technology revolution"* and *"fear is not the sole emotion that can enable integration of new concepts into mental schemes, two other powerful emotional forces should be considered: wonder and curiosity."* (Mordini, 2007:544)

Project Dependability

Most important fact is that this kind of project mostly depend on the politician. Because massive budget will be required to implement this kind of project. ReDA is not the aim of the central government because mostly decisions depend on the local government.

Even the project´s legacy is fully depending on the local government´s rules, regulations and also the pressure of public opinion (Blurrier, 2011) and in most of the cases "Knowledge sharing is marginalized by strong political interferences, the requirements of achieving government goals, performance indicators, and targets, as well as tight adherence to government protocols." (Zhou,2017:411).

According to the theoretical framework in this study showed that mostly knowledge creation, and transfer in the current situation is tacit to tacit (socialization). By the passage of time employees are maintaining (Externalization) tacit to explicit knowledge by which

few of the municipality's employees try to save or arrange knowledge in away which can be beneficial for organization. Where municipalities are mostly having an isolated system for the knowledge, which create limitation for the employees.

Municipalities aiming to create value from old knowledge and new knowledge which mention in the theoretical framework as a combination and Internalization. Because it handles the knowledge from explicit to explicit and explicit to tacit knowledge. It could be help for employees to combine new knowledge and old knowledge to create valuable services and reusability of the knowledge.

7. Conclusion

The purpose of this chapter is to provide the conclusion statements for this topic.

The purpose of the thesis is to investigate how knowledge currently sharing between thirteen (13) Swedish municipalities. We performed pilot study with the school within three (3) municipalities. These are as follows: Jönköping, Habo and Nässjö municipalities.
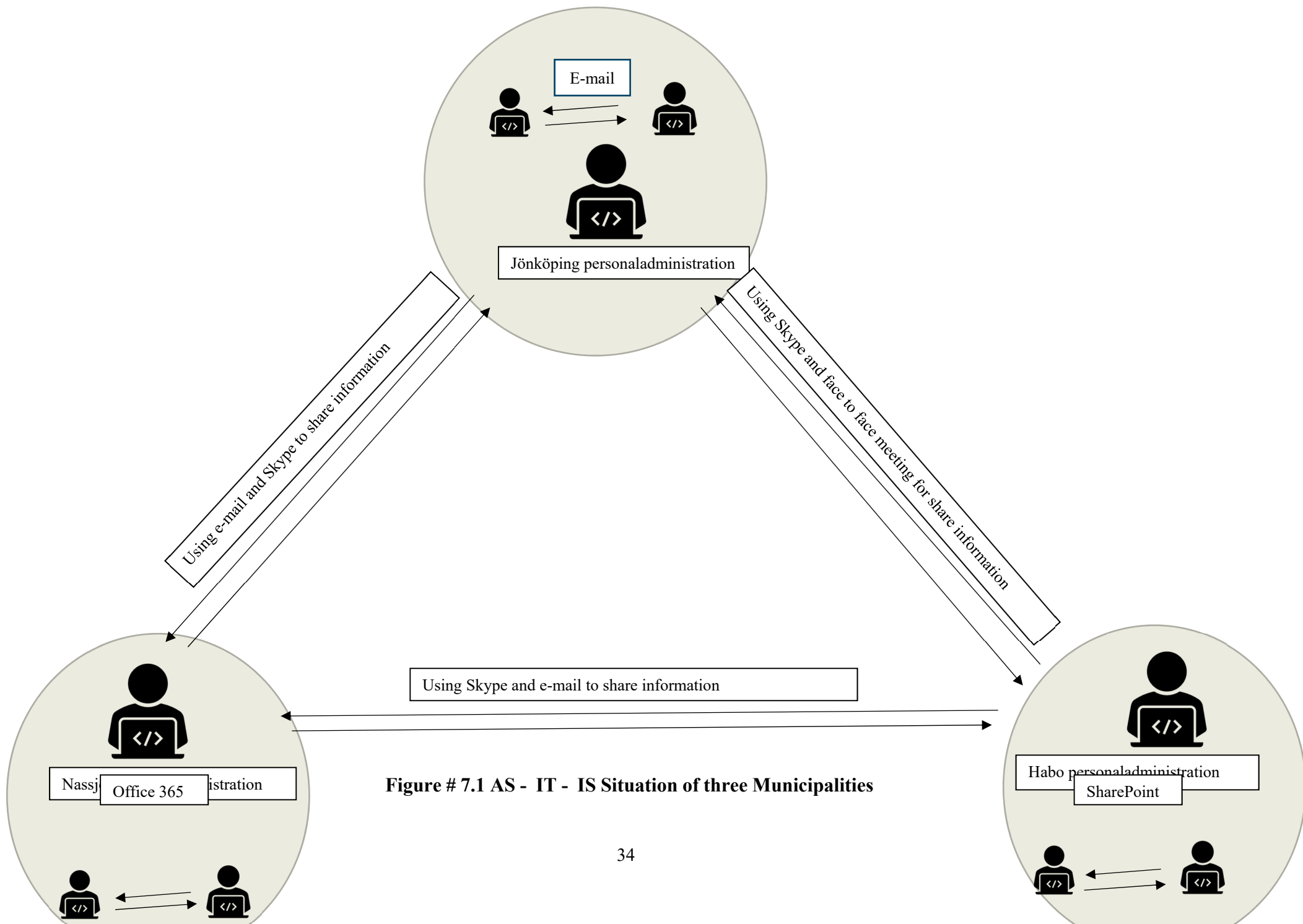
7.1 RQ.1

How is the current knowledge sharing practices taking place within public organization?

Knowledge sharing among the Jonkoping municipalities would be creating more opportunities for constructive and structured knowledge formation. Sharing knowledge is not all about the transformation but it is a massive initiative to enter the initial phase of transformation.

Interestingly, the project ReDA is not well known by the most of IT departments of municipalities. However, during our data collections we have found only one Interviewee gave us the clear picture of ReDA.

Currently, Jönköping country does not have any central data processing system where they can share knowledge between each other communities. To share information and knowledge between them currently they can arrange physical meetings or lectures and digitally e-mail and skype.

E-mail

Jönköping personaladministration

Using e-mail and Skype to share information

Using Skype and face to face meeting for share information

Using Skype and e-mail to share information

Nassj Office 365 istration

Habo personaladministration

SharePoint

Figure # 7.1 AS - IT - IS Situation of three Municipalities

7.2 RQ.2

What type of link between departments can be shared the municipalities employees?

Everyone wants to share information but what information should be share that is very important. Because in the central system right, valuable and necessity of information will create sustainable knowledge.

However, we received a new school platform for students, teachers, and employees during our data collection and all of them wants to share the information according to that new school platform.
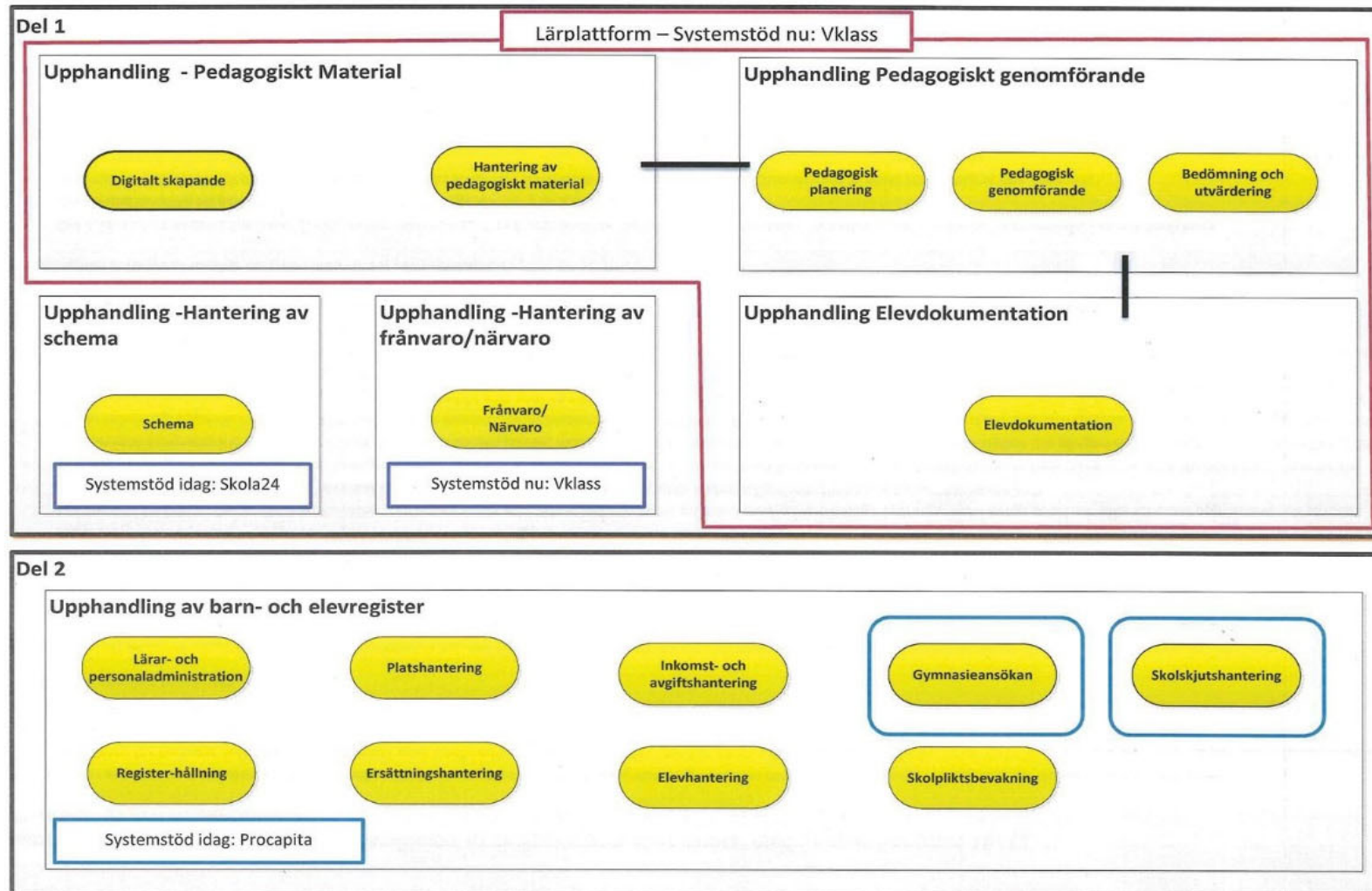
Figure # 7.2 Provided by Interviewee of Jönköping municipality

8. Discussion

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The purpose of this chapter is to provide the conclusion statements for this topic.

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This pilot study based on only three municipalities out of thirteen municipalities. Where we have found few points that could be help for better implication of ReDA. One thing, all of the Interviewee agreed the necessity of ReDA. We have not discussed about the solutions due to the scope of research.

We have a very limited time to complete our study as well as it was a very difficult to get access to the Interviewee. We interviewed only five persons, but it was taken more than six months. Another important barrier was language. As an international student it is a bit difficult to get information in depth because most of them used to express their views and ideas with their native language (Swedish).

However, the further study can also be conducted on the rest of municipalities to know about the more detail of present situation. Finally, this kind of public organization required centralization system to share knowledge with each other. In the presence of centralization system departments can be collaborate with each other effectively and can also increase the productivity.

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Appendix 1
 Coding
Inductive Content Analysis:
How is the current knowledge sharing practices taking place within public organization?

Interviewee (GB): **Gunnar Bergman**
Position: **Head of Department**
Munmunicipality: Jönköping Kommun Jönköpåing Län Designation: **Verksamhetsutvecklar Skola, Jönköpings kommun Utbildningsförvaltningen, Utveckling- och Kvalitetsenheten**

Meaning unit	Condensed meaning unit	Code	Category	Theme
No, Not for me.	Nothing for me	No Acknowledgement	Depression	Negative Feelings
Because I have to say.... we are community to work together and try to find out what we can provide information and other things going to develop new system.	Community can work together and sharing information to develop new system	Collaboration	Good expectations	Positive Feelings

We are looking for a system what they can give us service only, what I mean, take home the system ..... give us the service.	We are searching for a system which can provide service from anyplace	Accessibility		
we need a high level of communication and security and it is very important.	High level of communication with security is important	Reliability		
..... the community have different way and not ready to go this ReDA situation, that we shall work and so on.	We are not ready for ReDA situation but shall work and so on	Teamwork.	Hope	Positive Feelings
Absolute. I agree, I mean come together and work together developing each and every community.	I mean all community work together			

Interviewee (KH): Kenneth Hellman

Position: CIO City Management

Municipality: Nässjö Kommun Jönköpåing Län

Designation: CIO Kommunledningskontoret|

Meaning unit	Condensed meaning unit	Code	Category	Theme
Actually, I am deeply involved with ReDA all work.	I am deeply involved with ReDA	Acknowledgement	Recognition	Positive Feelings
Well you see we have no time limits it's kind of a process, so we have no deadline or something like that for the program because it's an ongoing development process	No time limits for this program because it is an ongoing development process.	Development Process	Hope	Positive Feelings
Yes, it should be kind of platform for the future and we are trying to	it should be kind of platform and all are trying to support this development.	Collaboration	Good expectations	Positive Feelings

support the development of the region				
I think this kind of vision depends on the willingness of the top politicians in the region.	This kind of vision depends on the willingness of the top politicians in the region.	Still belonging to the top politicians	Hope	Positive Feelings
we have the digital project meeting place, development training and face to face meeting, courses.	We have digital project meeting place, development training and face to face meeting, courses.	Acknowledgement	Good recognition	Positive Feelings

Interviewee (CJ): **Carl-Johan Frennsing**

Municipality: Nässjö Kommun Jönköpåing Län

Designation: Teachers in mathematics and chemistry ICT teacher Brinell HIgymnasiet

Meaning unit	Condensed meaning unit	Code	Category	Theme
No, actually I haven't heard about it since you contacted me.	I haven't heard about it	No Acknowledgement	Bad Recognition	Negative Feelings
Within the town is pretty good, I know there are some who started the work on this collaboration between the municipalities.	I know who started the work on this collaboration between the municipalities.	Acknowledgement	Good expectations	Positive Feelings
But they .... because they're just started and you know as a teacher we are connected with each other.	As a teacher we are connected with each other.	Acknowledgement	Good Recognition	Positive Feelings
I know other parts of Sweden have much better and effective digital platforms	Other parts of Sweden have much better and effective digital platforms	Lack of Collaboration	Lack	Negative Feelings

that's something which is really needed because of competence of teacher is widely spread I would say, from the teacher who uses ICT in an effective way to rather than who doesn't use ICT.	Competence of teacher is widely spread in an effective way rather than who doesn't use ICT.	Competency	Good Recognition	Positive Feelings
We need some sort of platform to a better share of good ideas and experiences of using ICT in the classroom.	We need a platform for share of good ideas and experiences by using ICT in the classroom.	Collaboration	Good expectations	Positive Feelings
The role ....it's different while using the ICT and it is quite a different.	It is different while using the ICT	Competency	Good expectations	Positive Feelings
Yes, we have a connected with 5 municipalities …….collaboration, ………., this autumn join-day which focus on ICT use in the classrooms with a lot of workshops and lecture and such.	We have collaboration with municipalities which focus on ICT	Collaboration	Good recognition	Positive Feelings

Interviewee (GC):   Gunilla Cedervall

Position: Head of Department

Designation: Special/IT-pedagog, Särskolesamordnare Barn- och utbildningsförvaltningen

         Special/IT Educator, Special Coordinator Children and Educational Administration

Municipality: Habo Kommun Jönköping Län

Meaning unit	Condensed meaning unit	Code	Category	Theme
no, I am not involved with that, so I have very little knowledge about that.	I am not involved and very little knowledge.	No Acknowledgement	Bad recognition	Negative Feelings
I have my network with my colleagues in education and we are from within the region, so meet and we share things with us.	I have my network with my colleagues where we share things within the region.	Collaboration	Good recognition	Positive Feelings
Maybe, because I mostly work with IT, device, programs, but we share mouth to mouth in the network.	I mostly work with IT but we share mouth to mouth in the network	Lack of Competency	Lack	Negative Feelings
mostly, we take ideas, share with Jonkoping municipality and helping to each other in buying new systems.	We share ideas and helping to each other in buying new systems	collaboration	Good Recognition	Positive Feelings
Municipalities sharing will greatly benefit all of us	Sharing will greatly benefit all of us	collaboration	Good expectations	Positive Feelings

Yes, knowledge should be shared with the other Municipalities, but now we have the only way is e-mail and phone.	knowledge should be shared but now we have the only way is e-mail and phone.	Depression	Depression	Negative Feelings
SharePoint, it's only us have it, here we can communicate, collaborate, students can be shared their things.	Share point where we can communicate, collaborate, students can be shared their things.	collaboration	Good Recognition	Positive Feelings

Interviewee (MA): Martin Andersson

Position: System Engineer Municipal Administration

Municipality: Habo Kommun Jönköpåing Län

Designation: Systemtekniker Kommunledningsförvaltningen

Meaning unit	Condensed meaning unit	Code	Category	Theme
I heard about it.	I know	Acknowledgement	Good recognition	Positive Feelings
But I really don't have much Information about it.	Don't have much Information about it	Lack of collaboration	Lack	Negative Feelings
I would say we don't have any standards so………	Don't have any standards	Depressions	Depressions	Negative Feelings
……. we were incredibly short staff before and we had a lot of rearranging work items and was quiet troubles	Incredibly short staff and a lot of rearranging work was quiet troubles	Lack of collaboration	Bad recognition	Negative Feelings

What type of link between departments can be shared the municipalities employees?

Interviewee (GB): **Gunnar Bergman**

Position: **Head of Department**

Munmunicipality: Jönköping **Kommun** Jönköpåing Län

Designation: **Verksamhetsutvecklar Skola, Jönköpingskommun**

        Utbildningsförvaltningen, Utveckling- och Kvalitetsenheten

eaning unit	Condensed meaning unit	Code	Category	Theme
It always interesting to me, I can present things for the person who is working with me.	I can present things for the person who is working with me	Still belonging to teamwork.	Hope	Positive Feelings
So far, one and half months ago I fill this and now they are putting new things……	Planning are not synchronizing	Lack of groundwork	Lack	Negative Feelings

Today is closed we cannot put new question at this moment.	We cannot put new question anytime	Depression		
I am 68 years, have begun to use Facebook, twitter and	I have Facebook, twitter but I usually send email	Depression	Depression	Negative Feelings

like this which perhaps I have but I usually send email.				
….this is the system where we are working together, **Vklass** the master system.	we are working together in **Vklass** system	Collaboration	Happiness	Positive Feelings

Interviewee (MA): Kenneth Hellman

Position: CIO City Management

Municipality: Nässjö Kommun Jönköpåing Län

Designation: CIO Kommunledningskontoret|

Meaning unit	Condensed meaning unit	Code	Category	Theme
Yes, it is very much important about digital communication because in order to cooperate dialog and share knowledge, only the effective way is digital communication….	According to the cooperate dialog and share knowledge the effective way is digital communication.	Effectiveness	Good expectations	Positive Feelings
…… we need to govern in the right way because we need a new structure.	Need to govern in the right way because of new structure	Rightness of the project	Hope	Positive Feelings
…… if I change I can't complete my job and they think they are safe where are they now.	If I change I can't complete my job and now they are safe.	Lack of confidence	Lack	Negative Feelings
Some changes like changing infrastructure platform, design digital strategy, governance model and the new way of making the financial allocation in developing new digital tools and support	changing infrastructure platform, design digital strategy and the new way of financial allocation.	Still belonging to the program	Hope	Positive Feelings

The main thing which I think is lack of confidence to make the decisions, they feel uncertain and they are in the zone of insecurity	Lack of confidence to make the decisions, they feel uncertain and insecurity	Lack of collaboration	Lack	Negative Feelings

Interviewee (CJ): **Carl-Johan Frennsing**

Position: Teachers in mathematics and chemistry

Municipality: Nässjö Kommun Jönköpåing Län

Designation: ICT teacher Brinell HIgymnasiet

Meaning unit	Condensed meaning unit	Code	Category	Theme
Yes, it is very much important about digital communication because in order to cooperate dialog and share knowledge, only the effective way is digital communication….	According to the cooperate dialog and share knowledge the effective way is digital communication.	Effectiveness	Good expectations	Positive Feelings
…… we need to govern in the right way because we need a new structure.	Need to govern in the right way because of new structure	Rightness of the project	Hope	Positive Feelings
…… if I change I can't complete my job and they think they are safe where are they now.	If I change I can't complete my job and now they are safe.	Lack of confidence	Lack	Negative Feelings
Some changes like changing infrastructure platform, design digital strategy, governance model and the new way of making the financial allocation in developing new digital tools and support	changing infrastructure platform, design digital strategy and the new way of financial allocation.	Still belonging to the program	Hope	Positive Feelings

The main thing which I think is lack of confidence to make the decisions, they feel uncertain and they are in the zone of insecurity	Lack of confidence to make the decisions, they feel uncertain and insecurity	Lack of collaboration	Lack	Negative Feelings

Interviewee (GC): Gunilla Cedervall

Position: Head of Department

Designation: Special/IT-pedagog, Särskolesamordnare Barn- och

        utbildningsförvaltningen Special/IT Educator, Special

        Coordinator Children and Educational Administration

Municipality: Habo Kommun Jönköping Län

Meaning unit	Condensed meaning unit	Code	Category	Theme
Yes. I think it could be good to have altogether but I also feel afraid.	it could be good to have altogether but also feel afraid.	Lack of confidence	Lack	Negative Feelings
it is going to be hard to sever and manage things because we have fast communication access to another department then big Municipality because of sets in the decision in making.	hard to sever and manage things because of fast communication access to another department then big Municipality for decision making.	Lack of collaboration	Lack	Negative Feelings
I think, …….. as the same SharePoint, because every school their own website it is hard to find what are you looking for.	Every school their own website it is hard to find what are you looking for.	Depression	Depression	Negative Feelings
Most of them because people who have a technical fear that stops and some of they are afraid to do wrong and does who think they can't.	Most of them have a technical fear also afraid to do wrong and who think they	Fear	Fear	Negative Feelings

	can't.			
I think, they accepted it very well because this with share, we started in autumn of 2015, every student has their own iPad and Most of them are positive and they change their way to educate.	they accepted it very well and Most of them are positive and they change their way to educate.	Collaboration	Hope	Positive Feelings
Yes, we had some workshop and we had some lecture to show them.	we had some workshop and some lectures to show them.		Good Recognition	Positive Feelings
Yes, I think it will help us in different conditions	It will help us in different conditions	collaboration	Good Recognition	Positive Feelings

Interviewee (MA): Martin Andersson

Municipality: Habo Kommun Jönköpåing Län

Designation: Systemtekniker Kommunledningsförvaltningen

Meaning unit	Condensed meaning unit	Code	Category	Theme
Yes, I think it would be helpful and all will be better than what we have now.	It would be helpful and will be better than now.	Acknowledgement	Good expectations	Positive Feelings
So it will be really better for us if we have some standard or idea	it will be really better for us and have some standard or idea	Acknowledgement	Good expectations	Positive Feelings
……..the one problem see with more regional that we have to confirm to say that a small price to pay to have an increasingly regional good standards	a small price to pay to have an increasingly regional good standard	Depressions	Depressions	Negative Feelings
…... we had a project with iPads for school and we need SharePoint.	a project with iPads for school and we need SharePoint.	Lack of collaboration	Lack	Negative Feelings
….we just paid for SharePoint licensing	paid for SharePoint licensing	Acknowledgement	Good recognition	Positive Feelings

we have already decided for office 365…………	already decided for office 365	Confidence	Good recognition	Positive Feelings
……if we can manage is good else we have to shift load to consultants for cannot manage but we try as much as possible to have in-house competence.	If we cannot manage have to shift load to consultants but try as much as possible to have in-house competence	Confidence	Good Expectations	Positive Feelings

Appendix 2

SURVEY QUESTIONNAIRE

Course	Master Thesis in Informatics	
Project	**Knowledge Sharing in Public Organizations** -A study of three municipalities in Jönköping Region	**Jönköping**
Department Name:		
Name :		
Designation		Date & Time:
Interviewed by		

Dear Sir/Madam,

Good day! A programme named "Regional Digital Agenda (ReDA) for Jönköping län" launched to achieve the national and regional strategic goals. Under this programme one of the major challenges is to find out the "Effective digital communication" to share knowledge among the Municipalities.

Please share your experience. Through this survey, your experience will be helpful in enhancing to fulfill our project requirements. Interview will be recorded (audio/video/picture) for our further studies. Your response will only be used for survey purpose. Thank you very much for your time and suggestions.

Moreover, Interview will be conducted in English. In case you have any question regarding this survey, please call Syed/Taha at 072 126 6505.

Thank you once again for your kind co-operation. Acknowledged by ………………..

Date……………………………

Questions

1. Please indicate your level of agreement or disagreement regarding ReDA.

2. Please state your view about "Effective Digital Communication". Is it required to achieve national and regional strategic goals?

3. you currently have to share your experience/knowledge among the employees and other Municipalities?

4. Do you think knowledge sharing on a common platform might increase efficiency among the municipalities?

5. What kind of knowledge sharing is currently taking place among municipalities?

6. How long have you been working in this sector? During your employment do you face any kind of technological or digital up gradation? if any, please state your experience in detail.

7. Do you think knowledge should be shared within municipalities? Will it create better opportunities in the future? If so, please explain how. What type of knowledge can be shared between the municipalities?

8. What requirements do employees have on the system?

Administrative Personnel only:

9. How much yearly budget is required to maintain a municipality (only the education sector)? Year to year difference (last five years)? Establishment cost for new system could be more than one to two years budget. In that case, what do you think (whether management will go for it or decline)?

IT Department Personnel only:

10. What do you think, can the present system be eligible to come up with the new process or system? How much cost (tentative) will be required to establish such a common platform? What is your recommendation regarding ReDA?

Comment(s) if any, ...

Appendix 3

Interviewer (SMA): Syed Mujtoba Ali

Interviewer (MTK): Muhammad Taha Khan

Interviewee (GB): Gunnar Bergman

Position: Head of Department, Municipality: Jönköpings Kommun, Jönköpings Län

Designation: Verksamhetsutvecklare Skola, Jönköpings kommun, Utbildningsförvaltningen, Utvecklings- och Kvalitetsenheten

Introduction: My name is Taha and I am studying in Information Technology Management and Innovation. Now we are writing our final papers "Thesis" which is some of what we studied in our course.

Interviewee (GB): What level you are studying?

Taha: We are doing Masters at Jonkoping University.

Interviewee (GB): Ok.

Taha: We want marge the information technology and business because there are more compatible theory and now we want to apply theories and so… We get the project from Kenneth. They are looking for the common platform to sharing the knowledge among the municipalities.

Interviewee (GB): absolute. I agree I mean come together and work together developing an each community and try to even if Ian Jönköping we could made by ourself but these small communities big problem what develop that way community like Jönköping so therefore I think important and that my vision this project working to now I can find the word we are searching for the new system working together and I mean my ambition like all together all together Department in Jönköping. I think it is very important we have some issues hard to develop I could say these starts three and half years ago I began with process description around the school all steps in the school and that for just and it will take 3 and 1/2 years before when we start I hope could be done 1 and 1/2 years but it will take 3 and 1/2 years.

Interviewer (MK): I will describe more about our thesis because this is our final semester. We are graduating this June. Accordingly, this is our big project when he gives it to us and after that we will narrow to six months to three months so we come across that which department share more knowledge in the municipality so come to like "Education Sector" have the more knowledge because there are teachers, employees and pupils. They need

to share more knowledge than the other departments. So, we choose this. We have thirteen municipalities, and we will analyse how education departments are sharing knowledge now and when analyse it compared to the future system and how they will share knowledge then. So its like current condition and the future condition. So, we are like analysing in between. Finding what is the feature can be, what's cannot be, what's the good for knowledge sharing and how they share the knowledge. So we are here for some data collection from you and we will send so many emails and you are first person who reply.

Gunnar: Ok.

Taha: Thank you. Thank you for your time.

Gunnar: Ok. But I can give you short time this afternoon.

Taha: And also, we are doing thesis together. I am from Pakistan and my partner form Bangladesh.

Gunnar: Ok.

Interviewer (MTK): So. We think this is our responsibility towards the Swedish society to give back something because they teach us a lot.

Gunnar: Ok. I would like to work together. Yeah, the work If you find solution.

Taha: Sure.

Syed: So, Sir, actually whatever he discusses and whatever he narrates you because of the project. So we can start now and the from Question No. 1. You told me just right now you are thinking about the three and half years you are discussing this thing but what do you think about the first question.

Interviewer (SMA): Please indicate your level of agreement or disagreement regarding ReDA.

Gunnar: Yeah......... This is the Regional Digital Agenda.

Interviewer (SMA): Did you heard about this before? From any other person about this?

Interviewee (GB): No. Not for me. Because I have to say.... we are community to work like together and try to find out what we can provide information and other things going to develop new system.

Interviewer (SMA): Again, did you know about the ReDA or anything discuss about ReDA?? is there anything discuss about these things?

Interviewee (GB): We are looking for a system what they can give us service only. What I mean we wouldn't buy our self, take home the system ..... give us the service. we need high level communication and security, and it is very important.

Taha: Actually, I want to explain you little bit about ReDA. ReDA is a digital project of Jönköping region. ReDA is a process for the digitalizing. Like they have different projects, but we have the one like which is Effective digital communication. Too have a common platform like every commune that share information easily and effectively. which can be fulfill the requirement each other.

Interviewee (GB): Yeah. I mean ReDA is bathtub.

Taha: Yes.

Interviewee (GB): Still in bathtub but I think it's... the community have different way. Not ready to go this ReDA situation, that we shall work and so on. Therefore, I mean every community here like Jönköping has nine departments and I think it is different they want to do and do together in a ReDA project.

Syed: My next question is under the ReDA . ReDA is a concern about the five things and second one is the "Effective Digital Communication". First one is the Infrastructure and second one is the effective communication. Please state your view about "Effective Digital Communication". Is it required to achieve national and regional strategic goals?

Interviewee (GB): Asolutely. I agree I mean come together and work together developing each and every community.

Syed: What possibilities do you currently have to share your experience/knowledge among the employees and other Municipalities?

Interviewee (GB): Yeah. It always interesting to me, I can present things for the person who is working with me. We have open discussion. I have no problem. I am very open for question and other things. I think it is very important. We could share these things but need to get approval from authorities.

Taha: how do you present like email or....

Interviewee (GB): What? … we have in this case we approved project manager and his experience not from the commune like industry and here he didn't understand how complicated to discuss things. Here we have lot of papers work and then community say ok now we can go. We need some time limit for this approval. But still we are putting new question on form. So far, one and half months ago I fill this and they are putting new things……

Syed: if I want to add something here like if you want to do share something then....

Interviewee (GB): Today is closed we cannot put new question at this moment.

Syed: Ok. Actually, if anything very much urgent or important then

Interviewee (GB): Absolutely, I mean we have reference group. At least 2 to 4 persons in each commune work together. I mean this for 2 to 4 persons have responsibility to inform that own community to come with questions and how this look like. Then after when we have meet.

Syed: Again, how do you share your experience/knowledge?

Interviewee (GB): Now, there is no option. Because my situation is the same that I didn't give anything. Because I mean the reference group shall do it. And we have out of people here in our department. Really working with the system, I am one the more vision overall and even sees all the integration problem.

Syed: Again, how do you share your experience/knowledge?

Interviewee (GB): No. we cannot do it.

Syed: Again, how do you share your experience/knowledge?

Interviewee (GB): I can say so that I am working to share under the community then I like to. I think we have lot of development for Jonkoping around this school department.

Syed: Again, how do you share your experience/knowledge?

Interviewee (GB): Always share. Via email.

Syed: Again, how do you share your experience/knowledge?

Taha: Again, how do you share your experience/knowledge?

Interviewee (GB): I am 68 years. I have begun to use Facebook, twitter and like this which perhaps I have. But I usually send email. we meet and we discuss and that's why they are asking for how can you bring your papers and so on.

Syed: Again, how do you share your experience/knowledge?

Interviewee(GB): This is for kindergarten up to high school. before university.

Syed: Again, how do you share your experience/knowledge?

Interviewee (GB): Before university, this is the system where we are working together, Vklass the master system. For Jonkoping, we are already connected, 65 schools and 90 kindergartens connected with this system. Poka cita is the system name. "Pro capita" abbreviation of PC (35:54:1)

Syed: Who is manage your IT department?

Gunnar: Yes. We have three different part what manage the system. l 0-9 we have one person, then high school one person, for the old education we have one person. We have three different person who manage the system.

Syed: These are the things you want to share.

Gunnar: Yeah. There is no problem. Now days what we are doing give it to company for solution. Thought process..............(38:22) The company manage everything regarding IT. They only give us services.

Taha: Continue about service provider.

Gunnar: Explain.

Syed: What things should be share? Everything within Jönköping municipality or Jönköping region?

Gunnar: I don't know. Everything depends on the contact.

Syed: Another thing I want to add anything academic or non-academic things should share?

Gunnar: Only academic purpose should be share.

Taha: Education department should share the education related things in the common platform? Not any other department?

Gunnar: Yes. .

Taha: Explain with example like law means education related law.

Gunnar: .....

Syed: What do you think? Like Jonkoping pre-school should share their system in the common platform so that all other municipalities can follow and modified/upgrade the present system?

Gunnar: Yeah. what io have done to try to give my experience around this to the other communities and try how to spread my knowledge? and I want to share. There are so many things can look in the future. I want to share my knowledge but perhaps it is different with the other people. So, I have my backgrounds in IT, i have been working with IT since 1973. But I have learned administration and Ibring it together. Therefore, I tried for try to give a way my knowledge about this.

Taha: So. we can translate in other word we can say you have the big picture that you are seeing the big picture sharing knowledge with help of IT get more effective way than the smart work than the hard work. Instead of hard work you are going to perform smart work and be more effective.

Gunnar: Yeah.

Syed: How long you have been working here?

Gunnar: Normaly I should have finished two and half years ago. I should finish at 65 and I will be 68 in the autumn.

Syed: You are voluntarily working?

Gunnar: There is no alternative because my knowledge is so uniqe and they can't. They need this ReDA project now.

Syed: When did you join Jönköping municipality?

Gunnar: 14 years ago. I worked for 21 years with a consulting company before joininghere. I worked with alot of different industries, hospital and then another things i engage with sports since I was 15 years old. So, therefore, I have lot of sports experience and sport experience and school sports experience is always a same. It so close. Therefore, I bring lot of experience from sports and try to develope.

Syed: Did you find any technological upgradation during your carrer?

Gunnar: End of 1979 I worked with personal computer. In the school department we have say about 2000 we start internet. but i began with 2003. I have lot of hard works and buliding.

Syed: Transformation.

Gunnar: In the beginning we have cable, then 2008 we began to wifi. From 2010 we had one to one personal computer for high school.

Interviewer (SMA): Syed Mujtoba Ali

Interviewer (MTK): Muhammad Taha Khan

Interviewee (MA): Kenneth Hellman

Position: CIO City Management, Nässjö municipality, Jönköping region

Designation: CIO Kommunledningskontoret|

Interviewer (SMA & MTK): So, sir question one number in front of you,

Interviewee (KH): Yes.

Interviewer (SMA): Please indicate your level of agreement or disagreement regarding reDA.

Interviewee: Actually, I am deeply involved with ReDA all work. I am part of program which is launching the ReDA in region, I am in the steering committee for the program so, I am part of the program, part of the role out ReDA and I member of steering committee of ReDA.

Interviewer (MTK): What is the expected time for ReDA to complete his goals

Interviewee (KH): Well, you see we have no time limits it's kind of a process, so we have no deadline or something like that for the program because it's an ongoing development process

Interviewer (MTK): Do you think, do you count on ReDA for transformation for new future.

Interviewee (KH): Yes, it should be kind of platform for the future and we are trying to support the development of the region.

Interviewer (MTK): Just one thing because from the last interview according to your planning and vision does can be reDA used to for self-assessment for the municipality.

Interviewee (KH): I think this kind of vision depends on the willingness of the top politicians in the region. I actually do not know how transparent it is in each of the municipality in the region but I know that each municipality have their own digital strategy. At least Nässjö, we will try to connect the digital strategy of Nässjö to the regional digital strategy of reDA because we have to move in the same direction so and I hope each municipality, which have not digital strategy doing the same thing connecting reDA with local digital strategy.

Interviewer (SMA): Regarding the first question you said the process, it already started, or it will start?

Interviewee (KH): It started last year, started after summer 2016, the decision of the reDA made in 2015 and we took some action in 2016 to start up the program and its quite difficult thing to do because we need people, competence, we need action plans, and we need resources, like financial resources, so and we do not have financial resources yet and we have few competence resources, so we are moving forward but slow, too slow i think.

Interviewer (SMA): Why do you think that you are moving slow?

Interviewee (KH): Because of the resources.

Interviewer (SMA): What kind of resources?

Interviewee (KH): Competence, and financial resources in order to start big projects and realize the ideas of initiative.

Interviewer (SMA): Sir, competence means skills or skilled people?

Interviewee (KH): Yeah, so we have some budget on the digital board I talk about trying to start up some different kind of project, digital projects but it's not enough we need a lot more in order really move forward in the direction of vision for example there are millions of Kroners need in order to develop the broadband, you have to dig it's kind of infrastructure you need and there is not enough money to do it at the speed we need actually so.

Interviewer (SMA): So, initiate the budget, or initiate the finance?

Interviewee (KH): It is politicians within this region, and then every municipality have made their own decisions, and it's about the willingness, and cooperate with region, commit for the reDA, some do some may be done not do because their own local politicians' decision, it is difficult and complex thing, in some countries they have center power which decides what everybody it not some structure in Sweden,

Interviewer (SMA): Do you follow any kind of project work from anywhere or any country, or do you have thing in front you that you can follow and implement this reDA?

Interviewee (KH): It is kind of a riskful thing I told you about we need componence that can have this what's going on around the world in this area, we don't have resources because all the resources are very local and we have another mission really, so in locally, like I have mission in Nässjö and I am doing this because of I am very interested in it and Nässjö municipality wants me to deliver. There are some sources like SQL, and website where we can find a lot of figures a lot of pre-studies or statistics, but you need time to

put in this area in order to make use of it and put everything together and make steps forward strong and heavy.

Interviewer (SMA): One thing actually you mention that they are no timeline so can you achieve the final goal.

Interviewee (KH): Actually it is a good question, actually we can't measure how we achieve the goal we had a meeting this week that we have to in some way describe the process in the progress sometimes it can't measure and put some figure on it for time being we have to just describe it what's happening in the area, what we are doing, what kind of initiates ongoing what initiates decided and plan for and what are in progress and so on, so we have picture of what's happening in the region but we do not have figures about measuring money and time or something like that. We can't.

Interviewer (MTK): The last question for my side is regarding the first number that in reDA there are five important things one of them is the infrastructure for which one you are assigned for.

Interviewee (KH): I am responsible for area of how actor should cooperate and use digital resources in the region.

Interviewer (SMA): Second part of reDA project is effective digital communication.

Interviewee (KH): Yes, it is very much important about digital communication because in order to cooperate dialog and share knowledge, only the effective way is digital communication because there are some many people, there are some many different target teams, groups clients, so really need to have some digital tools to use in order spread all the knowledge and experience as a building block you have to build like this.

Interviewer (MTK): Do you think adoption of the reDA can be a problem for employees in the municipality or employees in the municipality might have the negative thoughts?

Interviewee (KH): Yes, this is right, I think that we have it is challenging to adopt this in the region because of different things first all you already point out the communication of the reDA that's the challenges number one. challenge number two level of competence in the area or region. it a gap between those who really have knowledge about the digital world and those who don't have experience. somebody is moving very fast and somebody are not moving at all its difficult really to adopt at least at the same time it will take years in order to have everybody moving on.

Interviewer (MTK): I asked this question because the generation who is working now and the generation who will come and take their place (replace) both generations have gap

among each other, it can technological, thinking which might create the adoption process difficulty.

Interviewee (KH): It is a correct observation, it will have impact on the organization as well because organization structure is something we have since 100 of years and it's difficult to change as long as adult people are still in the organization because they are safe, they have power, and think it's good enough all the things so, you need young people with the right knowledge need to come in organization and make an exploration in order to really make it happen and change.

Interviewer (SMA): Sir you mentioned that if someone is moving, and someone is not moving during your working time or in your experience did you find anything, why it is happening?

Interviewee (KH): Yes, it is because people need some feel safe and some way many people are more or less afraid of new things of future and they think, they all have lack of knowledge and experience and what will happen with me or if I change maybe I can't really complete my job and they feel it safe to be just where they are today. they have to comfort zone and I think comfort zone is different between the generations that the main cause of the gap. I think it's a very human feeling more knowledge and experience have maybe you have a wider comfort zone in you really have the courage to do this thing, maybe it's not questions of generations but question individuals. there are some adult people who really like the IT things, and there are young people who are afraid of things that are different.

Interviewer (SMA): What possibilities do you currently have to share your experience or knowledge among the employees or employees in other municipalities?

Interviewee (KH): Yes, for example in Nässjö municipality, but most of the municipality we have kind of organization structure, we have the different business areas, we can call educational, services of care, healthcare, and all things. there are focusing on their own mission and try to delivery their product or service without looking what we can do together so, they are very focused on their own departments. politicians give them the budget and it for each department it's not a common budget it's their budget so their budget process it difficult to explain, so they just focusing and benefits, for achieving the goals which given by the politicians for just this department not for collaborate so, we need a structure which is more collaborating.

Interviewer (MTK): Sir, there is one question here, you mention this one is education, services, sir we like to refer education, in education department what you want to share? are you saying about the collaboration of educational departments or other also.

Interviewee (KH): See if you open the department of education you have the same structure within it and it's also a challenge to have the same structure to the bottom area each of those silos have their own experience professional, knowledge and so on. they are so specialized, and they are focusing on their own area because of they have an expert in their area. you must really change whole structure number one is the organizational structure other things is the attitude. have process how to work together how to provide motivation and budget process, the whole content need to change because of the history and structure is based on that.

Interviewer (SMA): According to your experience what type of knowledge there should share in the education department, what type of knowledge they should share not share.

Interviewee (KH): Its area to explore what knowledge do we need what do you have to share within the education department they should share there are national IT strategy, one knows to share within the department IT strategy of Sweden because IT strategy will have the impact on the way of work the processes how to teach, what kind of new tools you can use as a teacher or as a student there are more long-term IT strategy in school in education department that you should and must share with the school department but only that maybe department all department. all department should cooperate with each like there is a department for facilities, but we need to share vision, goals, and different things to change in order to behave in the right direction.

Interviewer (SMA): Sir you had said everyone municipality need services, like if you want to build a school you need different services from different companies or people?

Interviewee (KH): One of the possible we would look for it. it kind of digital service and digital communication, if you see the infrastructure today its building design for this structure we don't have infrastructure build for share a lot of information between the areas and we called in digital service, we need to automate the process digitalized process that the work we are, in the very beginning in order to design new future and develop process we need competence and there is lack of competence in the municipalities and I had question and issue communicated to the management we have big gap in this area how to develop the municipality in order to process competence and experience about

digital competence and experience, about business case, information technology security, project management, change management, and a lot.

Interviewer (SMA): You mentioned that someone moving fast and someone moving somebody slow during your time or experience did you find anything why it's happening?

Interviewee (KH): Because of people need to save, and in some way, many people are afraid of viewing future and they think they have lack of knowledge and experience. what will happen to me if I change, I can't complete my job and they think they are safe where are they now.

Interviewer (SMA): What knowledge are you sharing in the current situation?

Interviewee (KH): I think, it mainly two things first, about new law of security in Europe (GDPR: General Digital Personal Regulation) this is new security and safety rules in Europe that become a law which is going to start up 25 May next year so, we have a lot of work to do and need a lot of competence to do this work and the second things is the governance model, we need to govern in the right way because we need a new structure.

Interviewer (MTK): Do you have special technology to do that?

Interviewee (KH): We have the digital project meeting place, development training and face to face meeting, courses.

Interviewer (SMA): How long been you are working in this sector?

Interviewee (KH): I have been working in the municipality for three years.

Interviewer (SMA): During your employment did you saw any type of technological or digital upgrade?

Interviewee (KH): Some changes like changing infrastructure platform, I design digital strategy, governance model and the new way of making the financial allocation in developing new digital tools and support.

Interviewer (SMA): What challenges did you feel while carrying out the changes?

Interviewee (KH): The main thing which I think is lack of confidence to make the decisions, they feel uncertain and they are in the zone of insecurity. It is really difficult for them to take the step in the future.

Interviewer (SMA): What requirement do manager and employees have the system?

Interviewee (KH): Simplicity is one thing, access, and availability of the resources. I think also speed of getting information.

Interviewer (SMA): How much year budget required maintaining municipality? When you will be completed for the reDA how the budget will be approximately?

Interviewee (KH): The total budget of the digital area is 25 million SEK per year in IT of Nässjö municipality. Establishing the new system will increase the budget compared to the current system. The investment might be 5 to 10 million SEK.

Interviewer (SMA): Syed Mujtoba Ali

Interviewer (MTK): Muhammad Taha Khan

Interviewee (MA): Gunilla Cedervall

Position: Head of Department, Special/IT-pedagog, Särskolesamordnare Barn- och utbildningsförvaltningen, Special/IT Educator, Special Coordinator Children and Educational Administration

Municipality: Habo municipality, Jönköping region

Interviewer (SMA): My first question is please indicate your level of agreement or disagreement regarding ReDA. Do you know about ReDA?

Interviewee (GC): No.

Interviewer (SMA): The program its launch by the Jönköping region.

Interviewee(GC): No, I am not involved in that, so I have very little knowledge about that.

Interviewer (SMA): The ReDA is a big project but we are a part of that project and that is knowledge sharing, we like to know developments going on in present situation. do you like to share with other municipalities?

Interviewee (GC): I don't know, what we are into right now that we want to share with others I am not in that position. I have my network with my colleagues in education and we are from within the region, so meet and we share things with us.

Interviewer (SMA): You are currently working in the education sector?

Interviewee (GC): Yes, I am working.

Interviewer (SMA): Which schooling are you working with?

Interviewee (GC): I am here, so I am working in the managing and planning and I am reporting to chief of the education department in our Municipality, so I involved in planning and working with pre-school.

Interviewer (SMA): Do you think, what are you doing should be shared with someone (another municipality).

Interviewee (GC): Maybe, because I mostly work with IT, device, programs, but we share mouth to mouth in the network. chief of the department have bigger agenda and Martin is looking after IT.

Interviewer (SMA): So, I like you like launch some program so, you never share with the other Municipality because it's you're on only.

Interviewee (GC): Mostly, we take ideas, share with Jonkoping municipality and helping to each other in buying new systems (databases). they are checking out the programs. Municipalities set up the specification, to go and buy together but if someone knows the sharing they can learn because we have the same system in many schools for a small municipality. so, Municipalities sharing will greatly benefit all of us.

Interviewer (SMA): What do you think about the knowledge sharing?

Interviewee (GC): Yes, knowledge should be shared with the other Municipalities, but now we have the only way is e-mail and phone.

Interviewer (SMA): What kind of knowledge should be shared?

Interviewee (GC): I think that's is good. (Department picture).

Interviewer (SMA): How many stages do you have in the education department for a student like pre-school?

Interviewee (GC): We have pre-school, by the law school, it's from seven years.

Interviewer (SMA): Do you have admission process for the students?

Interviewee (GC): We have the admission, but different person handles different areas.

Interviewer (SMA): But you have your own IT department, education department does not have own IT. Everything is handled together in this small municipality?

Interviewer (MTK): What do you think, if knowledge from every Municipality gathered at a one-point special education department?

Interviewee (GC): Yes. I think it could be good to have altogether but I also feel afraid. it is going to be hard to sever and manage things because we have fast communication access to another department than large municipalities because of sets in the decision in making.

Interviewer (MTK): We are going to expect about the ReDA also, actually ReDA is a community developed by Jönköping region and every municipality have their representatives in that community. The vision is to digitalized Jönköping region. to get the idea of effective communication and collaboration among the Municipalities.

Interviewer (SMA): You mention that small municipalities can take the decision very fast then big Municipality but after single point documentation then you need to go through all documents do you think about this.

Interviewee (GC): I think, it's about the what documents you need, what are doing, and what are you going to do. the problem with together information at one place is to find it

as the same SharePoint, because every school their own website it is hard to find what are you looking for.

Interviewer (SMA): Do you think about the change in very short time?

Interviewee (GC): I think someday some things need to change, it's both way of like and dislikes.

Interviewer (SMA): How long you been here in Habo municipality?

Interviewee (GC): I have worked in municipality since 1990.

Interviewer (SMA): During your working time, you might see the digital changes, which is most noted by you.

Interviewee (GC): SharePoint, it's only us have it. here we can communicate, collaborate, students can be shared their things.

Interviewer (SMA): What is the difference when there is no SharePoint and when there is SharePoint?

Interviewee (GC): It's just sharing, and that you have an access to things.

Interviewer (SMA): Regarding the development of teachers and students…?

Interviewee (GC): Most of them because people who have a technical fear that stops and some of they are afraid to do wrong and does who think they can't.

Interviewer (SMA): When SharePoint started at those point teachers and students were willing to accept it?

Interviewee (GC): I think, they accepted it very well because this with share, we started in autumn of 2015, every student has their own iPad and Most of them are positive and they change their way to educate. I think it goes for everyone.

Interviewer (SMA): When the SharePoint started people were not worried?

Interviewee (GC): They are worried, and they don't find anything, don't get the information. We say, it's there you can read at the SharePoint. You have to have an active search. You need to go and open the SharePoint to see is there any information for me today before we get everything in e-mail or on paper.

Interviewer (SMA): At that point, they need any training?

Interviewee (GC): Yes, we had some workshops and we had some lecture to show them. I had just finished the document about Where I can find the information and where I can save the information. to make it clear to everyone because it is messy. You need much IT and digital skills. We are talking about it just another day we have to raise the level of the digital skills.

Interviewer (SMA): How long does it take to make the final shape?

Interviewee (GC): We are not there, but we've started. Many of them, maybe 60%. sometimes teachers are, I know everything, and I can do everything sometimes think less of themselves because they want everything so perfect, so it is quite hard to say but I think we just deploy it two years and teachers also have different things to do. most of the teacher are with us.

Interviewer (MTK): By sharing knowledge do you it can create good opportunities for each Municipality in problem-solving?

Interviewee (GC): Yes, I think it will help us in different conditions.

Interviewer (SMA): How much budget does allocate for SharePoint when you started the project?

Interviewee (GC): Honestly, I don't know, but things went very fast in Jan or Feb 2015. The politics planned every student from day one should I have their own iPad. this was not only on education department but also with IT budget also and then we started with office 365 then SharePoint but it increased because of hardware, employees, software, apps and we are purchasing the IT solution for the one company (Eventful) and they also provide solution to another municipality.

Interviewer (SMA): Syed Mujtoba Ali

Interviewer (MTK): Muhammad Taha Khan

Interviewee (MA): Martin Andersson, System Engineer Municipal Administration, Municipality: Habo Kommun Jönköpåing Län

Designation: Systemtekniker Kommunledningsförvaltningen

Interviewer (MTK): We are trying to explain you about the ReDA which is working for the transform Jönköping region actually to the technological way, so everybody can have their owned electronic devices and they can share information or gather information through or over the internet some application what they decide so, do you think of this idea ReDA is good or not?

Interviewee (MA): I like the idea and I think it's a good idea it's going to be hard to implement, I like the idea.

Interviewer (SMA): You are the chief of this IT sector or you are the second person?

Interviewee (MA): Second Person.

Interviewer (SMA): You are the second person.

Interviewee (MA): The Chief is on vacation now.

Interviewer (SMA): OK but now you are maintaining in Habo municipality IT related problems?

Interviewee (MA): Yes.

Interviewer (SMA): How much information and idea do you have about ReDA?

Interviewee (MA): I heard about it. But I really don't have much Information about it. I think, chief is kind of sharing information, so he might have more information about it.

Interviewer (MTK): Actually, we are working on effective digital communication or you can say effective digital knowledge sharing among the municipality especially in education sector or may be in any other sector so, do you think sharing knowledge, increase the collaboration among the municipality it can be effective or helpful for the municipalities who wants to develop themselves more or wants to go more feature.

Interviewee (MA): Yes, I think it would be helpful and all will be better than what we have now. Now we might some neighbouring municipalities best effect basis but don't communicate at all basically and can all be better.

Interviewer (MTK): It can increase the collaboration among the municipality?

Interviewee (MA): Yes.

Interviewer (MTK): And now we talk like we have two scenarios one is the current scenario and one after the implementation scenario. I have a question from the current scenario. In current scenario experience on knowledge among the employees between Habo or any municipality who do you share if they ask for some information like a media, what kind of media do you use?

Interviewee (MA): I would say workshop or meeting in person we have had some delegation here to look at some systems.

Interviewer: I like face to face is more to share the knowledge

Interviewee: Yes

Interviewer: But right now, at this currently what you did if you want to share anything what are doing actually?

Interviewee (MA): If I want to share something?

Interviewer: the Kommun or your department want share

Interviewer: IT Department of Jönköping need any document from you like IT department of Habo, so you will send print out or what you will like?

Interviewee (MA): I will say we don't have any standards so very widely from case to case if they want some digital documentation we just mail it I guess or otherwise a meeting in person or skype whatever look to face to face meeting.

Interviewer: How long you are working here?

Interviewee (MA): I have been here two years or a little bit more.

Interviewer: That means since 2015?

Interviewee (MA): Yeah.

Interviewer: 2015 which month?

Interviewee (MA): February.

Interviewer: It is a very critical month for the Habo municipality, was there any change when you joined?

Interviewee (MA): Yeah, I was an addon. I didn't replace anyone, I was we kind a short staff then we were incredibly short staff before, so we had a lot of rearranging with work items and was quiet troubles.

Interviewer: Actually, my point that is you join here in February 2015 and there is a SharePoint launch in August, so you see the changes.

Interviewee (MA): Yeah and even before me we had a quick a rapid growth from a small municipality with no or bad IT department to growing to a kinda forward IT municipality

very fast and it's been a hard ride and I've been here for last part or recent part of the ride. There has been turbulence time for five to six years I would say and that also a problem raise to a modern IT municipality without talking so much to other neighbouring municipalities so we have a… I don't actually know so much about other just a neighbouring municipality what they have for systems and who advance they are also. o it will be really better for us if we have some standard or idea.

Interviewer: So, from the last conversation, do you think the knowledge sharing on a common platform increase the effectiveness of Habo municipality and other municipalities?

Interviewee (MA): Yeah, I would say and I think Habo is well not last in advancing, we are kind of forward and that would be the one problem see with more regional that we have to confirm to say that a small price to pay to have an increasingly regional good standard.

Interviewer: One question that is you start SharePoint here in 2015 August. Which municipalities have the same SharePoint?

Interviewee (MA): None and we didn't really check either it was we had a project with iPads for school and we need SharePoint.

Interviewer: Why do you think you should start with SharePoint? Why are you not thinking about other things? What the reason behind SharePoint?

Interviewee (MA): In this instance, I would say the whole iPad project was kinda rushed and we didn't had a time to check for in other municipalities and we have sometime to a release SharePoint for rest of the staff to but there we have some more planning timing taken bit slow so quick moves.

Interviewer: What was the budget when you implement the SharePoint when you purchase 1,500 iPads and everything how much budget do you have?

Interviewee (MA): That I can't answer but the whole for the first part we just paid for SharePoint licensing and we put some very middle-level site ourself that was not very expensive, but we had that only for couple of months then we some we have some consultant redo proper SharePoint site that cost quick a bit maybe couple hundred thousand.

Interviewer: Hundred thousand?

Interviewee (MA): It was a Yeah! It's was important and it also includes support so all SharePoint related questions we send to their helpdesk but that's very little.

Interviewer: But who give pass the budget that means whatever budget you say example hundred thousand or one million you have to spend but from where you get the confirmation yes, this budget you can use?

Interviewee (MA): We have this might had gone some especial project otherwise we have pc as service here so we get some money from each department which is gone cover our cost for new pc and such all the iPad related staff also go to this agreement which is it quick enough with the iPads so most it comes from this project we might no special ground for this project but that I can't say for sure either.

Interviewer: I have a question about the SharePoint while planning of purchasing the SharePoint do you think another alterative if SharePoint fails to purchase or working like any other open source that you have one option, or you have serval option you just pick up SharePoint.

Interviewee (MA): We have already decided for office 365 and then came quick natural so I don't think we look so much at other options because we gone do all Microsoft thing we just want SharePoint this possible there are other good solution but we IT department has not really checked for other. I think our chief has possibly dig into some other options.

Interviewer: What do you think do you have any options other than SharePoint?

Interviewee (MA): No, this kind of work well with the office 365 not really.

Interviewer: Not good or best for the situation?

Interviewee (MA): No.

Interviewer: So what options you have say example if you are in charge and you want to implement, what option you have?

Interviewee (MA): Well you have SharePoint and if you gone have some other thats i would have to research right now is just SharePoint.

Interviewer: And do you think that SharePoint in currently is working good?

Interviewe e(MA): If it's a good design SharePoint site yeah but its doesn't come naturally, a bad SharePoint site is a bad solution.

Interviewer: And during your working time here you see the changes without SharePoint and with SharePoint when the SharePoint the launch here?

Interviewee (MA): Yes, and even when entering stead launching a bad SharePoint and launch a good SharePoint.

Interviewer: But what do you feel about the staff? Teachers and others, what do you think they will accept it or be afraid of it?

Interviewee (MA): Students and the teachers are there are kind equal we think younger students are technology adopt its very mixed those who embrace it find it quick good and are good at using it but those who refused or don't dare or don't want to they don't use it and they think whole solution is creep because they can't use it because they want not use it there are not so many of those people but enough to be to a problem but i would majority accepts and actually have some use of new solution.

Interviewer: Nobody is thinking about the why this is system is happening why it is coming to me and this are the problem you must solve it and you will be bought omg to much call coming from the

Interviewee (MA): Not with the SharePoint with iPad some teachers who are not really teacher's student aid they don't have computer just have iPad and many of them feel that's not quite enough and that's we feel that to as a IT department but that was the deal when we made a deal and that sucks! But they still like the SharePoint just like too have pc.

Interviewer: Just to conclude from my side: To have some platform like centralization or common platform from all the municipalities to ssare all the problems and solutions regarding IT, education, or social control, do you think it can create new opportunities for the Jönköping region?

Interviewee (MA): Yes, I think if you get municipalities around both in information and then get people to use it that's a very common problem, I think to people get use helpful stuff we have here a small system guides and how to do nobody reads that.

Interviewer: How do you feel that IT people work here?

Interviewee (MA): Quiet like and I think this municipality especially quiet small and I think quiet advance and we have we… are quiet flexible as we are small and I like that, I don't think necessary that would be a problem with information exchange either if you had a street guidelines whole region that would be more our problem would be i like it and our students are mostly a good people.

Interviewer: And if the all the municipalities go central point what your opinion as IT person? Do you think it should create huge work for you, will it be a problem for you or will be the new agenda for staff that to many questions?

Interviewee (MA): It will be some work as said we have be information in it and would almost have to be mandatory to write something and that work all documentation that works it's kinda boring work but it's awesome when it's done so I would suck it up and do that.

Interviewer: It means you are looking forward to the change?

Interviewee (MA): Yeah, opportunities seem worth a little work and sacrifice I can give interviewer: if anything, change will occur so from `your aspect what is the major what will be the major problem you will face if anything change will occur, change all through the municipality, that means the IT related there is a central point is a there is a central all the information should be in the central point and the system little bit change and everything what will be the your major concern that should be look into in the account

Interviewee (MA): It's hard to say how to keep both the information there and our information about here update I would is the most present concern because the stay in information worthless and downright negative

Interviewer: So right now, there are using SharePoint they update every day or not there are not updating everyday updated information are there or sitty not update

Interviewee (MA): Some part I can't really answer what the SharePoint because just had a SharePoint for education department we not actually, we have access to SharePoint but don't use it as it just for the education and if you want get any information out we ask Gunilla or some other so but our internet and other sites have same problem there is a bit stay data if you don't have any routine to check with for that it kind be one of those things you gonna do want you have time and you don't do it.

Interviewer: Why say if you want to remove the consultant part from here to look in to the SharePoint is it possible for the municipality to have the skill to manage SharePoint?

Interviewee (MA): Nope, no right now if we start the SharePoint for whole municipality. We possible gonna get some skill or educate ourself but that what's one the reason consultant we don't have skill right now, so we just let our consultant but if it gonna be a course for whole core system for one municipality the we possible gonna have skill inhouse here.

Interviewer: What do you think consultant will give you that 100% support or no sometimes they are talking about the no I have some boundary I don't want to come I have some problems are you satisfied with your consultant?

Interviewee (MA): Yeah, we as IT department are satisfied and we can ask them take questions but really had a that many and what I know about education department there are quite satisfied to but that's question for Gunilla, I think, but we as IT department quite happy our consultants.

Interviewer: So, what is your preference in future should you an in-house consultant or outsourcing?

Interviewee (MA): In the regional aspect I really don't know here in Habo municipality we are quiet. We like in house if we can manage is good else we have shift load to consultants for cannot manage but we try as much as possible to have in-house competence.

Interviewer: So how far you are from your in-house competence do you think what you feel actually?

Interviewee (MA): It would really depend on how the project is going the project is SharePoint for whole municipality is well, it's not prioritised right now and we don't really prioritise yet in the skill until we have some clear project path but within we hope within 1-2 years we decided not to do any big update to our current internet because it is about to replace we hope so say within a hopefully within a year.

Interviewer (SMA): As IT personal so what do you think what should be the major knowledge sharing issue for the education sector what kind of knowledge they should share among all the municipalities?

Interviewee (MA): I would say a lot of technical staff may be have silty work at the picture but a lot of municipalities use a very different set of technical staff for their educational department none of them seem quite happy mean 100% happy and the i would mix and share information will be awesome we for example have iPad and it's not perfect

interviewer: why are you using only the iPad why you are not using the android one.

Interviewee (MA): When we decide this whole project we as an IT just said you can have a pad its also works or computer we can effort both so one on the other and they go for pad and then they kinda of we let the education department decide most for themselves and we not like iPads either I am not sure we like android pads more hard and irritating all over but they choose iPad we bought iPads.

Interviewer: This is the question related to the IT department the budget of IT how pass this is one from where you get the budget or who initial the project?

Interviewee (MA): We only have one budget, so the only thing related to different departments is this PC as a service its suppose to cover all costs for the department like IT wise I don't know how the make a lot its some form of count per employee in this case. or maybe amount o computers some generic calculation how much money they would spend it quiet hard and usually don't have that much money left especially

education department pc as a service project just adjusted there I pads and result the have quick a lot of computers now which we can afford to replace and also work in progress iPads are there on last year of the instalment when it going to be another decision what to do next and hopefully another budget decision.

Interviewer (SMA): So, but you don't know about the regional digital agenda to much information you have.

Interviewee (MA): I heard about got some information for the last in jan so read a bit about it but can't say, heard about it before and i not a thing i heard on and i would say that bad really like the concept the only thing with regional share effect more regulatory is the it gets cold they haven't it regional roof for a bit smaller question.

Interviewee (MTK): I hope that maybe you can find more about the regional agenda because when we started the project, we also they also said we don't have much plan but whatever the information we have you can find out over the internet so try to find over the internet and try to understand.

Interviewer (SMA): Syed Mujtoba Ali

Interviewer (MTK): Muhammad Taha Khan

Interviewee (CF): Carl-Johan Frenning, Teachers in mathematics and chemistry ICT teacher, Brinellgymnasiet Nässjö municipality, Jönköping region

Interviewer (SMA): First question, please indicate your level agreement and disagreement regarding ReDA, do you have any idea about the ReDA program, no-one discussing anything about it here may be from Information Technology department. so now I am going to explain you about ReDA. ReDA is actually a program in which they are focusing on digitalization of Jonkoping Region and ReDA have classified five areas:

1. Digital Infrastructure

2. Effective digital communication

3. Cooperation between the county's digital actors

4. Participation for all

5. Safer everyday life

Interviewee (CF): No, I haven't heard about it since you contacted me. Mr. Hellman tells me about you are doing a thesis. I think Mr. Hellman is from this town, he is strategic, and I think he is the one who is in the group.

Interviewer (SMA): The second area for this project is Effective Digital Communication, what do you think about effective digital communication is it required.

Interviewer (MTK): Actually, we are doing the project on effective digital communication, which is about sharing information and knowledge, experiences because ReDA is all about the digitalization of Jönköping region, so choose knowledge to share in the education department.

Interviewee (CF): Within the town is pretty good, I know there are some who started the work on this collaboration between the municipalities but there are not there yet because they're on the start period and you know as a teacher, we are connected with each other. I know other parts of Sweden have much better and effective digital platforms.

Interviewer (SMA): Other parts, which one Sir, can you explain?

Interviewee (CF): Mainly the bigger cities, like Stockholm and Gothenburg. they have platforms where teachers can share good ideas and some methods in the class which need to be the share ineffective way that does not really case here.

Interviewer (SMA): What do you think it will be good or not if sharing starts here?

Interviewee (CF): That's something which is really needed because of competence of teachers is widely spread I would say, from the teacher who uses ICT in an effective way to teachers who doesn't use ICT. We need some sort of platform to a better share of good ideas and experiences of using IC in the classroom.

Interviewer (MTK): I think it's also good for students, so they can also come with innovative ideas because over internet developing education so much that teachers need to learn also.

Interviewee (CF): The role teacher is expanding now it's different while using the ICT. it is quite a different role take.

Interviewer (SMA): Sir what about the question number (3) three?

Interviewer (MTK): Through digital method Nässjö teachers are sharing information with other schools in the Jönköping region?

Interviewee (CF): Yes, we have a connection with 5 municipalities working together. those municipalities have some collaboration, for example, this autumn join-day which focus on ICT use in the classrooms with a lot of workshops and lecture and such.

Interviewer (SMA): It is on collaboration that means you can see what others are doing from here?

Interviewee (CF): Actually, no it just a joint planning of this event where teachers gather and take part in lectures. Mainly workshop and lectures arranged by teachers from this municipalities.

Interviewer (MTK): If I am right, to communicate with other teachers in other municipalities is done by email?

Interviewee (CF): Not only email we also use Skype, in some way Office 365. We are not yet there for sharing material with each other. lack of the technological competence to use it is there.

Interviewer (MTK): If you need to share anything between teachers from different school, will you use office 365, email, and Skype for sharing the information?

Interviewee (CF): Yes, because the different communities have different learning platforms or LMS system so that the common way to communicate with each other.

Interviewer (SMA): Sir, you had mentioned about the lack of technological competence?

Interviewee (CF): General teachers in school doesn't have the way to keep this.

Interviewer (SMA): Is there any training program in this municipality?

Interviewee (CF): There is training which I do in this school, it mainly training the staff in use of ICT in classrooms, how many towns have this is program is also different because it depends on the town to town.

Interviewer (MTK): Do you think that common platform among the Jonkoping Region can have a great effect on the quality and performance can help in increased.

Interviewee (CF): I don't think platform or system in itself has increased the effective it's all down to the competence of the who supposed to work with it, so the system is already there for us, but competence is not. Teacher need to see the benefits of using the system, so somebody has shown how could you use the system to benefit from it and time for showing to teachers it's not really there You should have some plans to develop competence among the staff.

Interviewer (MTK): Does the school in the Nässjö have any links or connection with schools in Jönköping?

Interviewee (CF): There are some links with the very high level but not with the teacher to teacher's level.

Interviewer (SMA): In your experience or in your thinking, what should they before going to develop phase?

Interviewee (CF): Those who are thinking decisions on how to use it have to be well-done research and have to know teaching because they would not be able to take right decisions. if they have not insight in the teachers work, I think it has to be the collaboration between decision makers and teacher, so there are understand between decision-makers and teachers.

Interviewer (SMA): What will be the percentage of teachers should understand the decisions?

Interviewee (CF): As many as possible, there should be communication between decision-maker and some who is ICT collaboration he/she have to spread the world. the decision should be based on the teachers otherwise, they won't use the system.

Interviewer (SMA): What percentage of the general teachers they don't want or haven't competence of using Information Technology in the classrooms in your observation?

Interviewee (CF): Its different percentage depending on which skill you are talking about information search, teachers, in general, are pretty good but in sharing documents and working digitally not so well.

Interviewer (SMA): In that case what the percentage if you can, who are using share documents and such?

Interviewee (CF): The percentage who are using documents and such its about 20% today.

Interviewer (MTK): How long you have been working in this school?

Interviewee (CF): I have been working as ICT teacher since 2012 (head teacher of ICT the last 3 years) ICT teachers help other teachers for developing the ICT skill.my mission in the school is to find the way to make the step by step development.

Interviewer (SMA): What kind of knowledge or experience according to t your observation should be available on the common platform.

Interviewee (CF): That is a good question, how to do things and also good examples of usage of ICT in the classrooms. if we do this example in the school it will take time which is not there if it was done digitally everyone can look when they have time, so it's don't base on the physical meeting to achieve the same thing I think this is the important part of what we should share on this platform. I think it's important to show when they are self-assessing their ability to use ICT often that tool is made up, they don't have something to refer to something that can explain digital competence for the teacher. will good to put on such platforms globally, they have the system from teachers, but the Swedish teacher does not have any system for this purpose.

Interviewer (SMA): Sir, you had mentioned you know some countries, example.

Interviewee (CF): I know Norway, British, Scotland, they have in the digital strategy for the school but in Sweden, we are just in the starting phase. As you that Government has started National Digital Agenda for the School this year or maybe it was 2016 but it quite late if you compare to the other countries.

Interviewer (SMA): During your services to do you feel any change in before and after step-by-step program

Interviewee (CF): I use the graph to tell our organization that first, it was high expectation then it went down and we are somewhere of moving up again, actually when this started one to one that we have in this school, that high expectation among the teachers and then after few year teachers saw I really can't use this because of lack competence to use it and a teacher you should always give student the best education not just use ICT because should use.

Interviewer (SMA): It was good when you had started, and what was the condition and when they are highly expected in the beginning but after that expectation is going down, in the present what are the conditions?

Interviewee (CF): Yes, it was many very good, there was a motivation among the teachers. I think we have been down here now because mainly first, and the second year the principle gave us a lot of time to develop ICT usage but after 2 years they shifted their focus from ICT to other things that have been developed by the teachers and then I think we went down because that work and time are given by the principal to teachers to develop their skills I see as very important in this implementation role.

Interviewer (SMA): What are the other things, assigned by the principal to teachers?

Interviewee (CF): This question is really difficult for me to answer, I think you should give this question to the principal, but I think in school you have culture, like the Swedish school you are developing something for a year then you shift yourself for something else for one year.

Interviewer (SMA): What do you think if you a principal then you will do the same thing its good or not.

Interviewee (CF): No, you have to same continuous work all the time because new teachers are coming to school perhaps, they were not on the right sort to say from the start so if we are here maybe there are there, so you have to have this continuous teaching is teachers using ICT.

Interviewer (MTK): Do you have any requirement, or do you think teachers need anything for the knowledge sharing system?

Interviewee (CF): I think e-learning is an important thing in this, so every teacher can teach his/her on the level. that is not depended on ICT personal should be there because the teachers don't have time to talk each other. about things. It would be better with e-learning system for sharing the document, things but also show a good example of using ICT in the classroom.

Interviewer (MTK): Do you think the system which is working now currently, and changed process affect the productivity of the teachers.

Interviewee (CF): Yes, but I think one important aspect else well is to reflect on things and your own teaching with other teachers. I think e-learning system will provide great learn on the way.

Interviewer (SMA): Do you all municipalities are able to maintain the e-learning system if Jonkoping region deployed.

Interviewee (CF): Yes, I think, it's possible because if you look at Finland they have a platform for all the schools in the country. so, I think it's also possible for (18) eighteen municipalities to have a joint platform and I think it's not all about the system because it should be implemented in the right otherwise it can't use.

Interviewer (SMA): Do you like to recommend anything to this kind of a platform for sharing knowledge and experiences.

Interviewee (CF): So, can have the platform but you also must also have some expectations on how to use the platform and that has to communicate in every level of the school system. How expectation principal to use this, how expectation teacher to use this. I think that communication is as important as the system their itself.

Appendix 4

THE EUROPEAN UNION EXPLAINED

Digital agenda for Europe

Rebooting Europe's economy

The digital agenda for Europe will help Europe's citizens and businesses to get the most out of digital technologies

THE EUROPEAN UNION EXPLAINED

This publication is a part of a series that explains what the EU does in different policy areas, why the EU is involved and what the results are.

You can find the publications online:

http://europa.eu/pol/index_en.htm

http://europa.eu/!bY34KD

How the EU works
Europe in 12 lessons
Europe 2020: Europe's growth strategy
The founding fathers of the EU

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Banking and finance
Borders and security
Budget
Climate action
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Consumers
Culture and audiovisual
Customs
Digital agenda ✖
Economic and monetary union and the euro
Education, training, youth and sport
Employment and social affairs
Energy
Enlargement
Enterprise
Environment
Fight against fraud
Food safety
Foreign affairs and security policy
Humanitarian aid and civil protection
Internal market
International cooperation and development
Justice, fundamental rights and equality
Maritime affairs and fisheries
Migration and asylum
Public health
Regional policy
Research and innovation
Taxation
Trade
Transport

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Why we need a digital agenda for Europe

The policy challenge

The digital economy is growing at seven times the rate of the rest of the economy, but this potential is currently held back by a patchy pan-European policy framework. Europe is lagging behind many other regions when it comes to the fast, reliable and connected digital networks which underpin economies and every part of our business and private lives. When communicating between countries in Europe, citizens currently face varying charges for use, incompatible systems and irregular connectivity across the continent. This is harmful for every citizen, business and innovator in Europe.

Launched in May 2010, the **digital agenda for Europe** is aimed at boosting Europe's economy by delivering sustainable economic and social benefits from a **digital single market**.

Even though 250 million Europeans use the Internet daily there are still millions of them that have never used the Internet at all! People living with disabilities face particular difficulties in enjoying the benefits of new electronic content and services. As ever more daily tasks are carried out online, everyone needs enhanced digital skills to participate fully in society.

The digital economy also presents opportunities — if citizens are ready to take them. The number of jobs that require information and communications technology (ICT) skills is expected to rise by 16 million by 2020. And 90 % of jobs will require basic information technology skills by 2015.

Some facts and figures

— *The Internet economy creates five jobs for every two 'offline' jobs lost.*
— *The EU digital economy is growing at 12 % each year and is now bigger than the Belgian national economy.*
— *There are more mobile phone subscriptions in the EU than people.*
— *There are 7 million jobs in the ICT sector in Europe*
— *It is estimated that half of productivity growth derives from investment in ICT.*

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Digital technology is part of everyday life for most Europeans — but not all ... yet!

How the EU goes about it

Meeting the targets

Every year the European Commission publishes the digital agenda scoreboard. Data for 2014 show that EU citizens and businesses are going online more, shopping more and have greater confidence and skills in ICT. The Commission has so far completed 72 of 101 actions under the digital agenda for Europe. A further 23 are scheduled for completion by their deadline. Six actions have been delayed or are at risk of being delayed. The data also show that people in the EU often lack the high-speed broadband — especially in rural areas — to satisfy their digital appetite, and the looming digital skills gap is still a big problem.

© European Union

Every home and business in Europe will enjoy high speed broadband access.

	EU average	
Broadband	**2014**	**Target**
Basic broadband coverage for all	100 %	100 % (2013)
Digital single market		
Population buying online	47 %	50 % (2015)
Cross-border e-commerce	12 %	20 % (2015)
Small to medium-sized enterprises (SMEs) selling online	14 %	33 % (2015)
Digital inclusion		
Regular Internet use	72 %	75 % (2015)
Regular Internet use by disadvantaged people	57 %	60 % (2015)
Population never having used the Internet	20 %	15 % (2015)
Public services		
Citizens interacting online with public authorities	42 %	50 % (2015)
Citizens returning filled-in forms to public authorities electronically by 2015	21 %	25 % (2015)

What the digital agenda for Europe consists of

Challenges

BROADBAND: DIGITAL OXYGEN FOR ALL

The digital economy is growing at seven times the rate of the rest of the economy and much of this growth has been fuelled by broadband Internet. The development of high-speed networks today is having the same impact as the development of electricity and transportation networks a century ago. Achieving the digital agenda targets would clear the way to innovative services such as e-health, 'smart' cities and data-driven manufacturing.

The European Commission is boosting the spread of high-speed broadband by bringing forward new rules on cost reduction, a recommendation on next generation access networks, revised state aid guidelines for broadband and a proposal to complete the telecoms single market and deliver a #ConnectedContinent.

A REDESIGNED EUROPEAN TELECOMS SECTOR

A single telecoms market will mean economies of scale in the telecoms sector, higher productivity in other economic sectors thanks to more efficient cross-border connectivity, affordable cross-border prices, more innovation and diversification in products and services. The main elements of the #ConnectedContinent proposal are: open Internet, reinforced consumer rights, no extra charges for roaming in the EU, coordinated spectrum assignment and certainty for investors.

A CONSUMER-FRIENDLY DIGITAL SINGLE MARKET

Tech start-ups are booming in Europe; the EU app economy provides €17.5 billion in revenues and 1.8 million jobs. The European Commission's StartUpEurope action plan strengthens the business environment for web and ICT entrepreneurs in Europe, helping them to get the resources they need and contributing to innovation, growth and jobs.

At this time, e-commerce remains insufficiently developed in the EU. Consumers have difficulties accessing online shops, and businesses find it hard to offer their services in other EU countries.

The digital agenda for Europe will modernise EU rules on the digital single market to make e-commerce easier. The Commission's 2012 e-commerce action plan aims to double the volume of e-commerce in Europe by 2015 with initiatives to streamline postal delivery, facilitate card, electronic and mobile payments, and increase trust in online shopping through a strategy to improve Internet security in Europe and better protect against cyberattacks.

Replacing paper invoices with e-invoices across the EU could lead to roughly €240 billion in savings over a 6-year period, according to studies. The intention is that e-invoicing will become the predominant method of invoicing in Europe by 2020. The public sector could save up to €1 billion per year if all invoices were submitted in electronic format.

Data released by the European Commission in May 2014 show that even though more people are going online, almost 50 % of the population have insufficient digital skills for today's work environment.

This skills gap persists at a time when more ICT specialists are needed than ever before, and ICT-related jobs are being created much more quickly than employment in other sectors. To tackle this issue, the European Commission has convened the Grand Coalition for Digital Jobs. Coalition partners pledge to take specific action to increase ICT training, attract young people to ICT education or help modernise ICT education. Depending on their area of expertise, partners pledge to create new training programmes or offer jobs and internships, to promote coding to youngsters and so on.

The digital agenda for Europe will make digital technology available for all.

Basic coding skills will also be needed for many jobs in the near future. More than 90 % of professional occupations nowadays require some ICT competence. Moreover, ICT practitioners are a key pillar of the modern workforce across all sectors of the European economy, with demand growing annually by 3 % and the number of graduates from computer science not keeping pace. As a result, many open vacancies for ICT practitioners cannot be filled, despite the high level of unemployment in Europe. If Member States do not act at a European and national level, they face a shortage of up to 900 000 ICT professionals by 2020.

How can a digital agenda help in our daily lives?

The digital agenda's aim is not only to get every European online, but also to help people find their way in the digital world. Computers, mobile phones and digital technologies are a central part of our daily lives, and can address many of the challenges we face, from safety on the roads to a healthier old age and from better public services to a sustainable environment.

A smart city is a place where the traditional networks and services are made more efficient through the use of digital and telecommunication technologies, for the benefit of its inhabitants and businesses. The EU is investing in research and innovation and developing policies to improve the quality of life of citizens and make cities more sustainable in view of Europe's 2020 targets. The Commission made available approximately €200 million for smart cities and communities in the 2014–15 budgets of the Horizon 2020 research and innovation programme, to accelerate progress and enlarge the scale of roll-out of smart cities solutions. There will also be possibilities to access the European Structural and Investment Funds.

Europeans live longer than ever, and because of new and expensive treatments, the costs of health and social care will rise substantially to about 9 % of the EU's gross domestic product in 2050. ICT can contribute by providing European citizens with better, cheaper and higher quality services for health, social care and ageing well. The introduction of information and communications technologies and telemedicine alone is estimated to improve the efficiency of healthcare by 20 %. Moreover, ICT empowers users of every age to better manage their health. The Commission is investing in e-health initiatives that will be critical to keep healthcare affordable and accessible to all in the ageing societies of Europe.

Some facts and figures

— *Home telemonitoring of heart patients can improve survival rates by 15 %, reduce hospital days by 26 % and save 10 % in nursing costs.*
— *E-prescriptions can reduce errors in drugs dosage by 15 %.*

Leading in European digital research, development and innovation

Digital research and innovation will drive Europe's future prosperity and quality of life. As a whole, the ICT sector represents nearly 5 % of the EU economy and generates 25 % of total business expenditure; investments in ICT account for 50 % of all European productivity growth. The EU's current ICT research programme focuses, among other areas, on:

- robotics: making the most of this growing market through a public–private partnership between public authorities, industry and academia, it will improve EU industrial competitiveness through robotic technologies, provide robots and robotic services to help solve some of the EU's societal challenges, such as ageing, address ethical and legal issues and develop strategic goals;

- components and systems: funding key technologies essential for tomorrow's products and services, including support for electronics, cyberphysical systems, advanced computing, smart manufacturing, future lightning, photonics and more.

Some facts and figures on robotics

— *The global robotics market is worth €15.5 billion a year, €3 billion of it in the EU.*
— *The EU has a 25 % share of the global industrial robotics market and 50 % of the professional service robotics sector.*
— *The number of people over 65 years old in the EU will rise to over 30 % by 2060. 'Eldercare social robots' can help perform daily tasks such as lifting or cooking or set off an alarm if an inbuilt camera registers that a person has fallen.*
— *A new robotics public–private partnership will receive €700 million of EU funding, leveraging €2 billion in private investment.*

Outlook

The global economy is changing fast. In the digital age, the race for innovation, skills and markets forces all our countries to anticipate and adapt in order to thrive. The European Council of June 2013 underlined the role of the digital agenda in the EU by:

- reiterating its call to complete the digital single market by 2015;

- pointing to the need to address overdue investment needs in telecoms infrastructure;

- calling for the promotion of the right skills for the modern economy;

- stressing the importance of working with our partners to fight cybercrime.

In addition, the Commission will come forward with proposals to complete the digital single market, notably by:

- adding more ambition to the ongoing reform of our telecoms rules, modernising copyright rules taking full account of Europe's rich cultural diversity;

- modernising and simplifying consumer rules for online and digital purchases;

- creating a harmonised approach to radio spectrum between Member States;

- supporting the deployment of a high-quality, digital network infrastructure, underpinning all sectors of the economy across borders, progressively on a continental scale;

- contributing to activities that turn digital research into successful European innovation stories, encouraging entrepreneurship and providing a framework that drives start-ups, the take-up of new businesses and job creation;

- developing and implementing measures to make Europe more trusted and secure online, so that citizens and business can fully reap the benefits of the digital economy.

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The digital agenda for Europe will contribute significantly to the EU's economic growth and spread the benefits of the digital era to all sections of society.

Further reading

▶ **Twitter**: @DigitalAgendaEU

▶ **Facebook**: DigitalAgenda

▶ **YouTube**: youtube.com/user/DigitalAgendaEU

▶ **Pinterest**: pinterest.com/eucommission/connectedcontinent

▶ **Digital Agenda for Europe**: http://ec.europa.eu/digital-agenda

▶ **Questions about the European Union?**
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Publications Office

ICT for Everyone
– A Digital Agenda for Sweden

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Sweden is, in many ways, a prominent ICT nation with good infrastructure and advanced services, and with a large proportion of the population regularly using ICT and the Internet. But if we think we are living in the best of all worlds, with nothing left to do, I fear that we will soon lose our lead. ICT is a field that spans many – indeed all – areas of policy. The Government's aspiration is for Sweden to lead the way in use of ICT in order to attain policy goals for growth in all parts of the country, social welfare, democracy and climate improvement.

The purpose of the Digital Agenda for Sweden is to collate all ongoing activities in a horizontal, cohesive strategy in order to make use of all the opportunities offered by digitisation to individuals and businesses.

We have probably seen only the start of all the benefits that the use of ICT can bring. If we use the technology correctly:

- those schoolchildren who find it most difficult to learn can instead, using their own computers, become the best in the class at searching, editing and presenting information
- severely ill patients admitted to hospital in an emergency will avoid having to give their case histories as the doctor will have received all the relevant information from the electronic patient records
- it will be possible for more service jobs to be done from home, raising quality of life, saving travel, time and money and reducing environmental impact
- ICT can make democracy more accessible, even from someone's kitchen table.

The Digital Agenda has been shaped in an open process, partly through various different round-table discussions and other meetings. But good ideas and inputs have also been received, for example, by letter and e-mail and on web-based forums, Twitter and Facebook.

To bring the whole of the Government and all the ministries together, state secretaries from all government departments have worked together in a group of state secretaries. The Agenda now presented consequently encompasses all affected parts of the Swedish Government Offices.

Dialogue, openness and transparency have been my bywords. Never before has any process in the work of the Swedish Government Offices been so open.

I would like to express my sincere gratitude to everyone who has so far contributed to the process in some way. The foundation has now been laid for continued work, and it is now that the really important work starts, when the objectives of the Digital Agenda have to be put into practice. From the study circle on computer use in Kisäng to research on next-generation mobile technology in Kista: every effort is important in ensuring that we attain the goal of Sweden becoming the best in the world at utilising the opportunities offered by digitisation.

Anna-Karin Hatt
Minister for Information Technology and Energy

Summary

To meet the challenges that exist both internationally and nationally, the Swedish Government wishes to make use of the opportunities offered by digitisation, and has therefore taken a decision on ICT for Everyone - A Digital Agenda for Sweden and proposed a new goal for ICT policy, that Sweden should become the best in the world exploiting the opportunities of digitisation.

The Government's principal task is to create good conditions through rules, to formulate policy goals and to eliminate obstacles to development. However, if Sweden is to become the best in the world at exploiting the opportunities offered by digitisation, everyone, beside the Government, has a role to play, both individuals, businesses and organisations and municipalities, county councils and regional co-operation bodies. It is important to work strategically on long-term ICT policy issues associated with the agenda, while also monitoring and analysing development. The Government therefore intends to set up a Digitisation Commission which will be tasked with doing so.

The Agenda identifies needs for efforts in four strategic areas based on the user's perspective: easy and safe to use, services that create benefit, the need for infrastructure and the role of ICT for societal development.

Easy and safe to use

At a time when society is becoming increasingly digitised, it is important that everyone can share the opportunities that are created. This entails, among other things, being able to use the Internet and other digital services in everyday life as a private individual, entrepreneur or employee.

To increase digital inclusion, it is important that *everyone who wants to should be able to make use of the opportunities offered by digitisation*. Many conditions need to be met for digital inclusion to be achieved. It may be a matter of actual access to a computer and fixed or mobile connections with sufficient capacity or the possibility of getting help if problems arise. The issue of how everyone, who wants to, should be able to take part in the information society on the basis of their own circumstances spans virtually all areas and requires an integrated approach, cooperation and dialogue.

Access to and usability of public e-services should increase. The eGovernment Delegation's guidance on web development should therefore be applied in developing e-services. The Government will set up a user forum to ensure that attention is paid to the user and accessibility perspective at a high strategic level.

The Government also intends to issue several remits in this area, for instance to the Swedish Agency for Disability Policy Coordination (Handisam) on a future structure for follow-up of e-accessibility. Statistics Sweden will be tasked with compiling statistics for the area. Many important initiatives to improve inclusion are being taken by various organisations, key players and enthusiasts around the country. The Government will therefore task the National Post and Telecom Agency (PTS) with investigating the need for reviewing the options for supporting such initiatives.

There is a need for a more open *and smarter administration that supports innovation and participation*. The Government's overarching objective for e-government is

that work on e-government should lead to it being as simple as possible for the greatest possible number of people to exercise their rights and fulfil their obligations and make use of administrative services. Public information and e-services are community-wide resources that can be used by others and in so doing contribute to the growth of society. By making databases more accessible, Sweden can boost growth in small and medium-sized ICT companies. The Government is monitoring how the authorities are complying with the Act (2010:566) on Re-use of Documents from Public Administration and how they are improving conditions for re-use.

Digital skills may be crucial to individuals' prospects of getting and retaining employment, starting and running businesses or strengthening the innovativeness and competitiveness of businesses. *Everyone of working age must have good digital skills to be employable or be able to start up and run businesses.*

Strengthening digital skills in schools and higher education is only sufficient up to a certain point; there is also a need to develop skills in the world of work and organisations in general. In international competition, Swedish companies must be able to recruit foreign experts and other key individuals. To improve simplicity and predictability when companies recruit foreign staff, the Government intends to implement a simplification of what is known as the expert tax. In July 2011, the Government decided to appoint a commission of inquiry on measures to increase the use of ICT by small businesses.

There continue to be many people who are able to use ICT and the Internet but do not dare to do so. *The use of ICT and the Internet must be characterized by security awareness and trust.* The National Post and Telecom Agency (PTS) contributes to the funding of the network organisation *Surfa Lugnt* ('Surf Calmly'), which has long been working on increased online security and safety on the web. The agency's efforts to support *Surfa Lugnt* should continue. The support on security issues provided by PTS, the Swedish Civil Contingencies Agency, the Swedish Consu-

mer Agency, the Swedish Data Inspection Board etc. should be strengthened. As a way of helping users to take responsibility for security, it needs to be ensured that there are Internet-based services for users at a reasonable price where they can have the contents of their terminal equipment checked. Only to the extent that tried-and-trusted and well used services of this kind do not exist on the private market or cannot be expected to be developed in the near future can there be a need for central government to develop these.

Services that create benefit

There is a need for attractive and easy-to-use digital services for different aspects of life. To meet these varying needs, there is a need for a large and varied supply of services that are developed by both the private and public sectors. The development of new and better services encourages the use of digital channels and contributes to making established sectors and organisations more efficient at the same time as new creative ideas, innovations and business models are emerging.

The Government is continuing with work aimed at creating *a simpler everyday existence for private individuals and businesses and more efficient public administration.* A number of important e-government projects will continue to be undertaken.

The potential of ICT must be utilised to boost growth, competitiveness and trade for businesses. It is important to improve the conditions for further utilisation of public information from government agencies for both commercial and non-profit purposes. The transition to electronic procurement should be sped up. Improved coordination of central government, municipal and county council procurement of ICT can promote this development. The Government therefore considers it important that the public sector encourages innovation and entrepreneurship through procurement and standardisation. The Government is working on eliminating obstacles to trade internationally in the ICT area, including expansion of the Information Technology Agreement (ITA). The Government intends to continue with its efforts to make life easier for

businesses, for example by using digital solutions that can simplify the disclosure of information so that businesses can avoid any kind of duplicate reporting. The Swedish Agency for Economic and Regional Growth has devised a solution that makes it possible to check the authenticity of various foreign e-signatures. It should be possible to use this solution when authorities deal with foreign administration, for example in digital public procurement. To further strengthen companies' development opportunities, the Government proposes expanding research and development tax credits. To clear away obstacles and create a single market for electronic commerce that works well, an action list containing specific initiatives will be presented as part of the work of the Ministry for Foreign Affairs. The eGovernment Delegation has been tasked by the Government with promoting and coordinating the work of the government agencies on improving the conditions for re-use of documents. This includes, for instance, paying special attention to the prospects of smaller companies and new business start-ups gaining access to the market for public information. The Government intends to closely monitor how the Act on Re-use of Documents from Public Administration is applied. A question to which special attention is being paid is whether any agency should be tasked with monitoring compliance with the Act and supporting the agencies in carrying out their work.

National efforts in eHealth are focused on creating visible and practical improvements to three main target groups: the individual, health care and social services personnel and decision-makers in the health and social services. Government action is being undertaken together with a broad group of national organisations through "National eHealth - the strategy for accessible and secure information in healthcare". A broad range of initiatives have been taken as part of these efforts. The work is now focused on delivering the beneficial effects of various e-health services, delivering more personal e-services for the whole population, increased coordination and development of eHealth in municipal

health care and social services and increased interaction with related national and international reform processes and initiatives.

Schoolchildren must, and teachers should, have access to modern learning tools that are required for up-to-date education. Every pupil, on completing primary and lower secondary school, must be able to use modern technology as a tool for knowledge-seeking, communication, creation and learning.

ICT is one of the school's teaching tools, needed to attain the school's aims.

One way of strengthening digital expertise among school system personnel is to utilise ICT as a platform, where suitable, in skills development.

In the area of democracy, ICT must provide support for citizen dialogue and contribute towards increasing citizens' knowledge, social engagement, insight and influence. Over the next few years it will be a joint challenge for central government, the municipalities and the county councils to develop the use of ICT for support in dialogue with citizens. The Government therefore continues, for instance, to support the Swedish Association of Local Authorities and Regions project Citizen Dialogue with the support of ICT, which is due to run until 2013.

In the area of culture, cultural activities, collections and archives must be preserved digitally and made available to the public electronically to a greater extent. The overarching goal is for *cultural activities, collections and archives to be preserved digitally and made available to the public electronically to a greater extent by 2015.* The Government intends to formulate a national strategy for digitisation of the cultural heritage, based on proposals that have emerged in the reporting of remits on digitisation, electronic access and digital conservation. An important type of development work is the project presented in the report on the remit of the cooperation council of the central museums on a standardised and common platform, sverige.museum, in which the collections of the state museums are digitised, structured and made accessible. A new labour market initiative – the 'Cul-

tural Heritage Lift' – will be implemented over the period 2012-2014. This initiative can give organisations in the field of the cultural heritage great opportunities to take action to digitise, digitally conserve and make digitally accessible collections, archives and libraries.

Need for infrastructure

To enable digital services to be used and offered, there is a need for a basic infrastructure with electronic communications that work well. The Internet as a carrier of services has to be accessible and robust, and the information transmitted online has to be processed in a secure manner.

Sweden must strive to ensure an accessible, open and robust Internet within the country and globally. To achieve more secure communication for authorities, there is a need for requirements for an Internet specification that can be used in the procurement of Internet connections by authorities. A joint Internet specification with different robustness and security requirements (model cases) is therefore due to be produced by 2013. In addition, all authorities should make use of DNSSEC and be reachable with IPv6 by 2013. The Government intends to issue remits concerning these issues to PTS, the Swedish Civil Contingencies Agency and other affected authorities. By 2013 there must be tools to enable both consumers and suppliers to measure and compare internet connections. The Government is considering further initiatives in this area. Sweden must be active internationally in order to gain a hearing for its views on a stable, open, robust and global Internet.

Private and public information systems must be secured with the aim of safeguarding values in society such as democracy, privacy, growth and economic and political stability. A national coordinating function for information security will be established. The Swedish Civil Contingencies Agency (MSB) should annually present an assessment of the situation in the area of information security with regard to threats, vulnerabilities and risks at the level of society.

A functioning soft infrastructure is needed to enable the potential offered by digitisa-tion to be fully exploited. The government sector holds responsibility for standardisation through the participation of government agencies in work on standardisation as part of the general responsibility of each agency. Membership of the EU means that central government is responsible for regulations being formulated in such a way that they make a free flow of goods and services between the Member States possible.

Under the activities of the eGovernment Delegation, an ICT standardisation council has been established to facilitate the preparatory discussion of ICT standardisation issues. In consultation with the Swedish Standards Council (SSR), the 'Standardisation Project' was set up in 2010. The project is aimed at assisting the ministries so that they can more effectively identify strategic areas for standardisation and consequently contribute to boosting Swedish competitiveness and economic growth in a global perspective.

The public sector in Sweden must use geographical information that is described in nationally determined reference systems and is based on international agreements. Lantmäteriet (the Swedish mapping, cadastral and land registration authority) must implement a transition to a nationwide digital register map following consultation with the Swedish Association of Local Authorities and Regions. The change-over is due to be implemented by 31 December 2017.

Robust electronic communication means that the communications must be constructed in a reliable manner. PTS must contribute through its efforts to a reduction in the number of disruptions to electronic communication. The efforts of PTS must also contribute to the players in the sector becoming capable of dealing with serious disruptions to operation in both urban and rural areas.

Other measures that are taken include redundancy in interurban fibre networks, maintenance of rock chambers where the operators locate their vital equipment, measures to raise skills, spreading of mobile communication networks, national cooperation projects for example on

status reports and information databases and information databases and repeated exercises as a basis for future efforts.

The goal of broadband policy is for *Sweden to have world-class broadband. All households and businesses should have good opportunities to make use of electronic community services and other services via broadband. This means that 90 per cent of all households and permanent places of business should have access to 100 Mbps by 2020. In 2015, 40 per cent of households and permanent places of business should have access to 100 Mbps.* Work in the Broadband Forum has been successful and has contributed to an increased dialogue between the various parties in the market and specific proposals for measures that can promote access to broadband. The Government therefore proposes to extend the forum's remit. In the budget bill for 2012, the Government proposes that support for duct should be extended by earmarking SEK 120 million over the period 2012–2014. In addition, the Government proposes that the rural development programme should receive SEK 300 million for broadband expansion and that SEK 75 million over the period 2012–2014 should be used for co-funding of broadband measures.

The role of ICT in societal development

Increased digitisation affects all societal processes and structures in Sweden and at the global level. Examples are the role of ICT for a more sustainable society, global development, how research and innovation can be pursued, how people can exercise their freedom on the web, and modernised forms of democracy, participation and insight through increased transparency in the implementation of development assistance etc.

Digital information and digital tools should be used to a greater extent in research activity and innovation processes. The Government has tasked the Swedish Agency for Innovation Systems (Vinnova) with constructing and strengthening test beds in health care and care of the elderly. The Government additionally intends to prepare a bill on research and innovation in 2012. The work on drawing up a national innovation strategy has begun. The issue of increased coordination of innovation policy with other policy areas will be discussed in this work.

ICT must contribute to an environmentally sound society. There is great potential to bring about environmental improvements in Swedish towns and cities with ICT support. The Delegation for Sustainable Cities was asked by the Government some time ago to highlight how sustainable development and efforts to counteract climate change can be combined with the promotion of ICT, among other things. This focus should be further prioritised. In the 2012 Budget Bill, the Government proposes that SEK 10 million should be earmarked in 2012-2014 to establish a knowledge platform with associated independent coordination councils and should both strengthen the collaboration between actors and boost knowledge on smart grids.

Gender equality in the area of ICT is to be greatly improved. There is a need for more women to be involved in making decisions and to take part in the development of digitisation and its capabilities. It is therefore important that more women choose to work in ICT-related professions and that more women study on university programmes focused on ICT. The ambition is for the proportion of women in ICT-related professions and women who study on programmes with an ICT focus to increase sharply by 2020. The Government decided in September 2011 to task the Swedish Agency for Growth Policy Analysis with conducting a follow-up of the proposals presented by the Royal Institute of Technology (KTH) in 2007 in the report Jämställd IT-utveckling för ökad tillväxt (Gender equality in ICT development for increased growth).

In order to strengthen freedom on the web, Sweden must endeavour to ensure that human rights are respected on the Internet. This means increased international support on key principles of protection and promotion of human rights, including freedom of expression, on the Internet. The principles include minimising various forms of surveillance and censorship of the Internet. In future sessions, Sweden

will continue to press for the UN Human Rights Council to address freedom of expression and other human rights on the Internet. The aim is to clarify the application of human rights on the Internet. In addition, Sweden will press for other international forums also to integrate the rights perspective in an effective manner. It is also important to increase coordination and collaboration nationally and internationally.

With the aim of promoting creativity and innovation, it must be simple to conclude contracts on copyright in the digital environment. The conditions for those who wish to obtain access to creative content should therefore be improved at the same time as safeguarding copyright. The Government should press for well balanced and appropriate regulations on the issue of licensing of copyright both nationally and at the EU level.

Use of ICT in development assistance must contribute to poverty reduction, democratisation and respect for human rights. Effective poverty reduction is promoted by openness in implementing development assistance. Sweden should support innovative approaches and new arenas, as well as national and international actors with respect to capacity and method development and encourage collaboration between new and more established actors in the area. Increased coordination and collaboration in Sweden, in the EU and globally should also be aimed for. The Government prioritises openness in the implementation of development assistance, and intends to continue to pursue the issue of transparency and effectiveness of development assistance in international contexts. Sweden will also seek to ensure greater transparency among cooperating partners and other development assistance actors, including multilateral organisations, private actors and the organisations of civil society.

Introduction

Let us, for a brief moment, turn the clock back twenty years. It was then, in the early nineties, that computers really started to enter Swedish homes. Before that time, people had to make do with an electric typewriter at best. The same situation applied at many workplaces. Several employees shared a computer or else there were secretaries who dealt with all the typing. More and more people then acquired a computer for their own use and were able to send one another digital messages. It was not until around 1995-1996 that the Internet really made a breakthrough and the number of Internet connections started to grow. Carl Bildt and Bill Clinton were the first heads of government to send one another e-mail. In the same way, Sweden was a pioneer in mobile telephony and gained an extensive GSM network earlier than many other countries. Those days now seem a long way away, and no one could have really anticipated the development that has taken place in the meantime.

Sweden today is a leading ICT nation and holds a strong position with regard to both ICT use and broadband. For example, 6.3 million Swedes, or 91 per cent of the population, had Internet access at home in 2010 and more than 99 per cent had access to broadband. Nine out of every ten people use the Internet regularly, and 85 per cent have a broadband connection. ICT is of great significance to the Swedish economy and makes a large contribution to the country's overall growth in productivity. It was estimated that between 2000 and 2005 as much as 33 percent of the rise in productivity in the private sector in Sweden could be attributed to ICT. However, ICT does not just contribute to economic growth but also to improving and simplifying everyday life for everyone – the public, businesses, organisations and the public sector, wherever one is in life or whatever one does.

The Government actively addresses ICT issues in several areas. It has, for instance adopted the National eHealth strategy, a new Schools Act, syllabuses and curricula that clarify the need for digital skills, an action plan for e-government and an eGovernment Delegation, a Broadband Strategy for Sweden and a strategy for greater innovation in services. The opportunities presented by digitisation are also of key significance in ongoing work towards developing a national innovation strategy. ICT issues are also prioritised at European level. In the spring of 2010 the European Commission presented a Digital Agenda for Europe, which is one of seven flagship initiatives in the EU's overarching growth strategy EU2020. The European eGovernment Action Plan 2011-2015, which is concerned with how ICT can be used to create smarter and more efficient public administration in Europe, was presented in December 2010. The Commission's communication The Single Market Act, which was presented in April 2011, also drew attention to the importance of establishing a digital single market. Freedom of expression on the Internet is a priority in Swedish policy, which has produced results for instance on the UN Human Rights Council.

Rapid development is taking place. People influence, and are influenced by, digitisation regardless of whether they wish to do so or not. Digitisation is changing all parts of society and sweeping away old truths. Just as no one could have pre-

dicted the present-day situation twenty years ago, it is impossible today to predict what the situation will be like in another twenty years. The challenge for Sweden, and for other countries, is to exploit the opportunities that development presents. There is a need to become even better at using ICT in order to boost Swedish competitiveness, growth and innovation, while respecting human rights and ensuring sustainable development.

Societal challenges

Sweden and other countries face several major societal challenges over the next few years, at both the global and national levels. Globally these include the issue of climate change and the need to reduce the impact of society on the environment, the financial crisis that is engulfing large parts of the world, the effects of globalisation and the importance of creating improved living conditions in developing countries. There is also a need to improve respect for human rights, including freedom of expression, and to address issues of democracy.

Sweden also faces challenges such as an ageing population, with one of five people in Sweden being over the age of 65 in 2020. This will put a severe strain on the welfare system and society at large. Further challenges include the issue of democracy, the fact that there are young people in Sweden who are sidelined and feel that they do not have any opportunity to influence their own situations in life. Many people also experience social exclusion. Another challenge is gender equality, as Sweden continues to have both visible and invisible discrimination, low representation and differing conditions for women and men to play a full part in society. A further challenge is to ensure that Swedish companies will be able to maintain and strengthen their competitiveness and contribute to increased employment and growth in the economy. A good climate for innovation and investment and access to a well educated and trained labour force are therefore important factors for Sweden. So too are an ability to encourage and create the right conditions for entrepreneurship and

utilise the capability to develop innovations based on the opportunities presented by digitisation.

ICT can contribute to meeting these challenges, such as creating new ways of designing solutions for an ageing society (e-health, digital aids), digital solutions for the environment (smart grids, intelligent transport systems), promoting cultural diversity (digital distribution of cultural content), democracy (transparent administration, systems for dialogue with decision-makers), improved competitiveness for businesses (digital skills, new products, services and business models and more efficient activity with the aid of ICT) and so on.

Opportunities and challenges of digitisation

ICT presents huge opportunities. As new technology, new applications, new digitised working practices and new standards are developed and become more widespread, the contribution ICT makes to economic growth and social welfare and a better improvement is increasing. ICT and the Internet are also a powerful global facilitator for ever more boundless innovation across the world. New offerings are emerging that combine products and services, new business models and processes to produce, consume and distribute in interaction between the customer and the user. This naturally presents opportunities for companies to grow and expand internationally. This trend is also clear in other areas. The Internet gives people throughout the world revolutionary opportunities to communicate – with one another, with authorities and with those in power. The Internet can also play a crucial role in development, democratisation and the liberation of people in many parts of the world. The improved freedom of expression and information that an open Internet brings with it is a positive feature. But an Internet characterised by freedom is not self-evident and is something that must be safeguarded.

ICT also makes it possible to store large quantities of information and knowledge that can be easily and quickly made avai-

lable globally. Citizens and organisations, especially businesses, can interact with one another in real time across the world in a completely different way than was previously possible. ICT-based solutions can additionally contribute to improving accessibility and efficiency both in businesses and in public administration. Efficient and service-oriented administration with clear ground rules reduces costs for both the citizens and businesses. Openness in public administration can be strengthened through changed attitudes, values and new technology and can consequently foster greater participation, democratic accountability and interaction with members of the public and other actors. Individually adapted service and e-services are developing to an ever greater extent, which may make it easier for entrepreneurs to operate and may mean that citizens can participate and exercise self-determination on the basis of their own circumstances. Nor should it be forgotten that ICT and the Internet are a source of both benefit and enjoyment for many people. The Internet makes new forms of social contacts, experiences and knowledge transfer possible in a way that changes people's everyday lives. Heavy dependence on ICT has made society vulnerable to disruptions and outages. An accessible, robust and secure infrastructure is therefore crucially important.

Although ICT and the Internet mainly have a favourable impact on society, there are also downsides to their development that need to be seriously addressed. These include, for example, the risk of non-permitted controls and surveillance of individuals in a completely different way than in the past. To preserve public trust in ICT and the Internet, it is important to safeguard personal privacy and to maintain the protection contained in current legislation. At the same time, the anonymous nature of the Internet means that there is an increased likelihood of violations and of violence-promoting and brutalising messages and materials being spread. It has also been shown that the Internet has become a further arena for certain criminal activities, such as information leaks, phishing and other forms

of fraud. This highlights the great significance of security issues for the Internet, both for individuals and for society, and the importance of also effectively fighting crime on the Internet. But ICT highlights the importance of positive setting of standards in the social media and of conducting a continuous dialogue on how to act and interact online. It is especially important to strengthen the resistance of children and adolescents to violence-promoting and antidemocratic currents.

The Internet is a new and powerful distribution channel for all types of digital media, which affects the book, gaming, music and film industries with regard to both business logic and opportunities to develop new products and services. It is important not to treat the Internet as a separate forum in which there is greater acceptance of infringements of ethics or the law. Fundamental values, established principles and legislation apply on the Internet as much as they do on the street, regardless of whether freedom of expression, trademark protection, copyright or the control of crime is concerned. Human rights apply both on-line and off-line.

The realisation that the world of today is to a great extent digitised also needs to be reflected in Sweden's international engagement. In international development cooperation, it is important that Sweden contributes to improving access to and utilisation of ICT with the aim of increasing knowledge, freedom, capacity, dissemination of information and participation irrespective of physical boundaries.

Digital agenda for Sweden

In order to meet the challenges that exist both internationally and nationally, the Government wishes to utilise the opportunities presented by digitisation. To succeed in this there is a need for everyone to help one another and have a common goal and direction to ensure that Sweden becomes the best in the world at utilising the opportunities presented by digitisation. There is therefore a need for a coherent strategy with clear goals and actions that brings together all the forces for good around the country and makes smarter use of existing resources. What is done can then have the greatest possible effect.

The digital agenda is a tool for coordinating the Government's efforts and actions in the area of ICT. It is a way of kicking off a process that will lead to Sweden becoming the best in the world at exploiting the opportunities offered by digitisation.

The digital agenda is also an agenda for Sweden's international involvement, and the Government must continue to include digital future issues as key aspects of its foreign, trade and development assistance policy. At the same time, the credibility Sweden gains through its international engagement must have an impact at the national level.

ICT policy objectives

In its budget bill for 2012 (Government Bill 2011/12:01), the Government has proposed that earlier ICT policy objectives and interim targets sub-targets on growth and quality should be cancelled and replaced by the following ICT policy objectives.

Sweden will be the best in the world at exploiting the opportunities afforded by digitisation

Provided the Riksdag (Swedish Parliament) votes in favour of the Bill, the Government's work will be focused on this objective. Regarding the goals for accessibility, it is proposed that the goals stated in the bill Accessible Electronic Communications (Government Bill 2009/10:193) should continue to apply. The objective is that Sweden shall have world-class broadband. All households and businesses should have good opportunities to use electronic public services with broadband access.

Sweden today is strongly placed in the field of ICT, which is also evident in international comparisons. According to the Network Readiness Index[1] compiled by the World Economic Forum, for example, Sweden has the best conditions and makes best use of ICT. This index measures national conditions for the development and spread of ICT, business climate, some regulatory aspects, human resources and access to hard infrastructure for ICT. In addition, readiness and interest is measured among three main groups of stakeholders: individuals, businesses and government. Finally, current use of ICT among the three main groups of stakeholders is also measured. Sweden is followed in the ranking by Singapore, Denmark, Switzerland and the United States. Sweden also comes out top in the Digital Economy Rankings for 2010[2], which compares the level of different countries in the information society, closely followed by Denmark, which had previously headed the rankings. In comparisons of the competiveness of different countries,

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[1] Networked Readiness Index 2010–11. World Economic Forum.
[2] Digital economy rankings 2010. Economist intelligence unit in colloboration with IBM Global Business services.

Sweden is in the top group. In the Global Competitiveness Report[3] for 2010–2011, for example, Sweden is ranked second after Switzerland, which means that it has overtaken both Singapore and the United States since the previous reporting period.

Sweden has a strong ICT and telecom sector and a solid tradition of research and innovation, which has resulted in new services and products and leading companies. It was, for example, in Sweden that modern mobile telephony was invented and developed. A large proportion of the Swedish workforce is employed in the ICT sector or in ICT-related professions in other sectors. ICT also strengthens other key sectors in Sweden such as the defence industry, the pharmaceutical industry and the engineering industry. What has contributed to this is that Sweden has a high level of education, high use of ICT and interest in new technology, as well as good access to ICT infrastructure. In addition, Sweden introduced competition-promoting regulation of the telecom market at an early stage.

Although Sweden has a top ranking in most international comparisons, there are areas where its position is weaker. These include conditions for companies and their use of ICT. Four indicators in the rankings referred to above in which Sweden is less well placed point in this direction. Companies' use of ICT is an important driver contributing to increased prosperity and economic growth. It is important that Sweden continues to strengthen its position in all areas.

The objective of the Digital Agenda for Sweden can be related to the rankings referred to above, in that according to these or other similar ratings, Sweden is to be among the best nations in the world. However, it is also important that Sweden achieves a top ranking in other areas such as gender equality in the ICT sector, democracy and human rights, not covered by the studies mentioned above. This may, for example, relate to measuring the ability of schoolchildren to use computers. To create motivation and harness resources, there is a need for an overarching goal that marks out a desired direction where all stakeholders,

individuals, businesses and organisations as well as municipalities, county councils, regional co-operation bodies and government agencies can contribute to Sweden's overall Digital Agenda.

ICT policy aims in relation to other goals

All government policy is covered to varying degrees by ICT policy, while the governing objectives for each area also encompass issues that lie outside ICT policy. This means that certain issues encompassed by ICT policy are also governed by objectives for other areas. An example is e-government, which is encompassed by ICT policy while the objective of administrative policy is what governs. Another example is the objectives for information security, where issues of everyday security come under ICT policy, while the whole area at the same time is governed by the objectives of information security for society.

Strategic areas

There is a need for action in several areas to attain the objective of the agenda and face up to the challenges that exist at both the global and national levels. Four strategic areas at an overarching level have been developed based on the perspective of the ICT user:

- easy and safe to use,
- services that create benefit,
- the need for infrastructure and
- the role of ICT in societal development.

There are several sub-areas in each strategic area that represent the substantive issues the Government is actively working on.

The introductions presented for each sub-area are not interim targets that have decided upon but express the Government's aspirations in ICT policy.

Easy and safe to use

At a time when more and more aspects of society are becoming digital, it is important that everyone can make use of the opportunities that are created. This entails, for instance, being able to use the Internet and other digital services in everyday life

[3] Global competitiveness report 2010–11. World Economic Forum (Schweiz).

Need for infrastructure

Services that create benefit

Easy and safe to use

The role of ICT in societal development

as a individual, entrepreneur or employee. The vast majority of Swedish people today use ICT and the Internet more or less regularly. But there are also those who are either unable or unwilling to make use of the opportunities offered by digitisation. These are mainly elderly people, but also include younger citizens, business owners and consumers, and the reasons include lack of trust in the Internet, lack of digital know-how or economic circumstances that prevent them from participating.

Services that create benefit

There is a need for attractive and easy-to-use digital services for different aspects of life. To meet these varying needs, there is a need for a large and varied supply of services that are developed by both private and public actors. The development of new and better services encourages the use of digital channels and contributes to making established sectors and organisations more efficient while at the same time new creative ideas, innovations and business models are emerging.

Need for infrastructure

To enable digital services to be used and offered, there is a need for a basic infrastructure with electronic communications that work well. The Internet as a carrier of services has to be accessible

and robust, and the information transmitted online has to be processed in a secure manner. Successful work on the administration of the Internet and Internet standards, both nationally and internationally, is of crucial significance here. An important condition that needs to be met is good access to telephony and broadband in all parts of the country. The basic principle is that this should be provided by the market, and continued investments are needed in all parts of the country. The physical infrastructure therefore has to be built in such a way that data traffic works even if disruptions or outages occur. Geographical information of good quality is important for services that are dependent on location-bound information.

The role of ICT in societal development

Increased digitisation affects all societal processes and structures in Sweden and at the global level. ICT developments leads, for example, to the rules intended to protect personal privacy, secrecy, copyright etc. often needing to be adapted in order to respond to the changed circumstances to which technological development gives rise. Several of the most important factors for ongoing changes in society at the national and global levels come from the development and use of IT. Examples are the role of ICT for a more sustainable society, for global development, how research and innovation can be pursued, how people can exercise their freedom on the web, and modernised forms of democracy, participation and insight through increased transparency in the implementation of development assistance etc.

A common challenge with different roles

If Sweden is to become the best in the world at exploiting the opportunities offered by digitisation, everyone has a role to play, individuals, businesses and organisations as well as municipalities, county councils and co-operation bodies. If everyone contributes, and if everyone works together, it is possible to really get things to happen. It is important to emphasise, at the same time, that everyone has different roles.

The Government's principal task is to create good conditions through rules, to formulate policy goals and to eliminate obstacles to development, but also to pursue the opportunities that digitisation presents at the global and national levels. Government has a significant role to play as purchaser of services, but it also has a responsibility to create good conditions for the development of new services and the establishment of infrastructure. Government is also responsible for developing its own administration, making it more efficient and makingit more accessible with the assistance of ICT. By developing purchasing skills in the public sector on the basis of identified needs in different areas, more services that create benefit and value can be developed. Government agencies and municipalities additionally have a special responsibility to provide models and drive efforts to ensure that everyone can use ICT. Disability, socioeconomic circumstances or geography must not pose obstacles.

It is the market players who are responsible for innovative services and business models and technical development and who make investments in infrastructure. The basic principle is that digital services and infrastructure are provided by the market. However, the public sector has a responsibility to ensure that rules decided upon are applied in a uniform manner. Primary and lower secondary schools, upper secondary schools and universities and other higher education institutions are responsible for pupils and students being given an opportunity to develop the digital skills needed in today's

society. At the same time, the research world has an important role to play in generating knowledge that can modernise, improve and support digital development. Civil society, individuals and organisations also have a significant role to play. At the same time, central government has a responsibility for ensuring transparency and free access to public information, making participation in political processes possible and creating good conditions, for example, for a vibrant civil society and free media. Digital services are developed interactively by market players and users. The involvement of organisations and individuals plays a great role in the use of ICT and access to broadband. This is particularly the case in sparsely populated and rural areas, where local initiatives are taken for example to build broadband.

New forms of cooperation with more and new actors are required to enable the opportunities offered by digitisation to be exploited. It is important in development cooperation, for example, to encourage collaboration between new and more established stakeholders in the area, such as local, national and international organisations. It is especially important to encourage innovative thinking and the development of new methods and working practices.

The Government is setting up a Digitisation Commission

The initiatives and measures presented below in the strategic areas are intended to contribute to attaining the objective of the Digital Agenda for Sweden. This necessitates continuously following up and analysing development in all areas. It is particularly important to work strategically on long-term ICT policy issues associated with the agenda. There is no government agency with sole responsibility for ICT policy issues. The Government therefore intends to set up a Digitisation Commission which will be tasked with promoting attainment of the objective of the digital agenda.

The work of the Digitisation Commission can be compared to the work undertaken by the eGovernment Delegation.

The Delegation's remit is to strengthen the development of e-government and coordination in the area. Work under this remit is regularly described in interim reports to the Government with data and proposals for various measures. Experience of the Delegation's work is favourable, partly due to its broad endorsement.

The Digitisation Commission will describe and analyse actual development towards the ICT policy objective and report this to the Government. In a similar way to the eGovernment Delegation, the Digitisation Commission should highlight and analyse problems and identify opportunities in the area.

The Commission will also present proposals for suitable measures that contribute to accomplishing the ICT policy objective. An important part of the work of the Digitisation Commission will be to collaborate with authorities, individuals and organisations in the area.

The Commission's primary task is to formulate a draft action plan for its efforts to promote fulfilment of the objective in the agenda. The underlying principle is that this should be done with existing resources. The Commission, after consulting relevant authorities, individuals and organisations, is also to come up with a proposal on how development towards the objective in the agenda can be followed up. This is to be based on the strategic areas formulated by the Government in the agenda. The Commission will therefore define, in its proposal for follow-up, necessary key indicators that can be regularly monitored and that are significant to fulfilment of the objective.

Easy and safe to use

At a time when more and more services in society are becoming digital, there is a need for everyone to be able to make use of the opportunities that are created. This relates, for example, to being able to use the Internet and other digital services in everyday life as a citizen, business owner or employee.

One of the most important societal resources that is being digitised is information. Public digital information is a national resource that can be made more or less accessible. Privacy-sensitive information should be ring-fenced by security procedures and be selectively available. Other information concerning weather, traffic, roads, maps, streets and vehicles can be made more generally available through digitisation.

The vast majority of Swedish people today use the Internet more or less regularly. But there are also those who for various reasons are either unable or unwilling to make use of the opportunities offered by digitisation. A third of people do not use the Internet to pay bills. These are mainly elderly people, but there are also some younger people who do not use the Internet.

To reduce social exclusion and increase participation and employment opportunities and enterprise, there is a need for action to be taken in several areas.

Digital inclusion

Everyone who wants to must be able to make use of the opportunities offered by digitisation.

Strategic challenges

Digital inclusion is increasingly essential in order to be able to take part in modern-day society and make use of education, community services, social participation and entertainment and amusement. The increasing trade in goods and services on the Internet also presents consumers and businesses with new opportunities and challenges. Digital inclusion is concerned with the possibility of taking part in all aspects of community life and being able to exercise one's rights and fulfil one's obligations as a citizen. It does not involve replacing other forms of social and physical participation with digital resources, but it is important that everyone who wishes to has an opportunity to make use of what digitisation offers, regardless of personal circumstances such as age, disability and level of knowledge or other circumstances that can be described as economic, cultural and ethnic. The conditions that need to be met to achieve digital inclusion are many and complex. It may be a matter of actual access to a computer and fixed or mobile connections with sufficient capacity or the possibility of getting help if problems arise.

An important issue of principle is whether products and services such as websites are accessible and usable so that everyone can actually use them. Basic digital skills are needed to be able to use ICT.

New technology and new solutions made available by digitisation can make everyday life and participation in society easier. The Government has a responsibility for creating the necessary conditions so that positive effects benefit the individual and society. If the objective of Sweden being the best in the world at exploiting the opportunities offered by digitisation is to be met, as large a proportion as possible of Sweden's population and

businesses needs to be digitally involved.

Ninety-one per cent of the Swedish population had Internet access at home in 2010. Of these, 85 per cent had broadband access at home. Nonetheless, nearly half a million Swedish people do not use computers and the Internet at all. Sixty-five per cent of these were over the age of 65[4].

The issue of how everyone who wants to should be able to take part in our information society on the basis of their own circumstances spans virtually all areas and requires an integrated approach, cooperation and dialogue.

Initiatives adopted

The eGovernment Delegation has developed Guidance on Web Development. This guidance contains requirements regarding how the needs of elderly people and people with disabilities should be met. A website that follows the guidelines can be used by more people and is easier and more effective and can create benefit for everyone from a user's perspective.

The Legal, Financial and Administrative Services Agency (Kammarkollegiet) has been working since 2008 to ensure usability and accessibility for people with disabilities in procurements for framework contracts on products and services in the area of ICT. The Legal, Financial and Administrative Services Agency, the National Post and Telecom Agency (PTS) and the Swedish Agency for Disability Policy Coordination (Handisam) and several organisations for the disabled are working together on standardisation in the area.

In June 2011 the Government adopted a new strategy for disability policy 2011-2016. The Government has formulated a strategy based on the perspective that disability policy is cross-sectoral, that implementation is part of the work on human rights, that the principle of responsibility and funding applies and that government agencies have a special responsibility in implementation.

In September 2010, the Government tasked Handisam with submitting proposals for a future structure for the follow-up of e-accessibility. The results of this remit were presented in the report Proposal for a Future Structure for Follow-up of e-Accessibility in December 2010. The report's principal message is that there is a great need to define e-accessibility, to devise indicators and in particular to synchronise statistics, follow-ups and activities.

Many people are working to increase digital participation through voluntary initiatives. An example of this is 'ICT Lift' (IKT-lyftet), a project that started in September 2009 on the initiative of the county libraries. Another example is a joint petition known as Digidel 2013, in favour of there being 500 000 more Internet users by 2013. This campaign is being run by people and organisations representing all parts society: libraries, folk high schools, non-profit associations such as disabled federations and Seniornet, the Swedish ICT & Telecom Industries, learning centres, government agencies, Municipalities for Joint Development of e-Services (Sambruk) and study associations. The Internet Infrastructure Foundation (.SE) is responsible for this work and certain office resources.

Actions

Access to and usability of public e-services should increase. The eGovernment Delegation's guidance on web development should therefore be used in the development of public e-services; knowledge and use of the guidance must be spread to the developers of private e-services. It is important that knowledge and purchasing skills on accessibility and usability are strengthened in relation to public procurements of e-services. Public information should also be available in such formats that as many people as possible can use the information.

The issue of usability emerges in several different areas and among many different actors, but there is no common platform for practical discussion and exchange of experience. The Government will set up a user forum to ensure that attention is paid to the user and accessibility perspective at a high strategic level. The principal task of the forum will be to ensure a continuous dialogue between the general public and user groups, the industry, the research community and

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[4] Statistics Sweden, Use of computers and the Internet by private persons in 2010.

representatives of end-user organisations, and together to identify specific conditions that need to be met for usability and accessibility that can then be implemented by those responsible.

The Government will task Handisam with putting the proposals in its report Proposals for a Future Structure for Follow-up of e-Accessibility into practical form in cooperation with those affected.

Many important initiatives to increase inclusion are being taken by various organisations, key players and enthusiasts around the country. The Government will therefore task PTS with investigating needs and reviewing the options for supporting such initiatives.

There are no statistics at present that shed light on access to and use of ICT for people with disabilities. It is important that the statistics presented depict the whole population. The Government will therefore task Statistics Sweden with compiling long-term sustainable statistics in the area in cooperation with Handisam and other stakeholders.

Consumers need to feel secure in what they do if e-commerce is to reach its full potential. In May 2011, the Government appointed an inquiry chair to analyse the legal position of the consumer when goods or services are bought and paid for via digital media (ToR 2011:38).

E-services and information as a basis for innovative services

Smarter and more open administration that supports innovation and participation.

Strategic challenges

The overarching objective of government administrative policy, as formulated in the Government Bill on administrative policy[5], is an innovative and collaborative public administration that adheres to the rule of law and is efficient, has well developed quality, service and accessibility and that consequently contributes to the development of Sweden and to efficient EU activity. E-government should contribute towards this objective. It is also evident from the Government Bill that the Government's overarching objective for e-government is that it should be as simple for as many as possible to exercise their rights and fulfil their obligations and make use of administrative services. E-government should aim to bring about lower costs and the greatest possible benefit for businesses and citizens, public administration and society as a whole. Transparency in public decision-making processes, case-handling and access to public information should increase.

It is important that protection of the individual's privacy is respected in the development of new e-services. This is particularly important when authorities' databases and other information are supplied for use and processing by other authorities or businesses.

Public information and e-services are community-wide resources that can be used by others and in so doing contribute to the growth of society. By improving circumstances so that businesses and non-profit organisations can easily use the information and services for the development of their own services, these services can supplement the range of services provided by the administrative authority and meet the various needs that exist in society.

Initiatives adopted

The eGovernment Delegation has been tasked with promoting and coordinating the work of the authorities on improving the conditions for re-use of documents. This work is to be based on the Act on the Re-use of Documents from Public Administration. As part of its remit, the Delegation has also been asked to develop guidance on the use of social media by government agencies.

Actions

The Government wishes to improve the prospects of new and innovative e-services being developed by actors other than government agencies. This improves the prospects of new and innovative e-services being developed and is an important platform for growth. There are large databases in the public sector that represent a unique resource for Sweden. By making them

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[5] Government Bill 2009/10:175 Offentlig förvaltning för demokrati, delaktighet och tillväxt
(Public administration for democracy, participation and growth).

more accessible, Sweden can boost growth in small and medium-sized ICT companies. Access to the information must, however, be made secure and privacy-protected, which necessitates developing new standardised information structures.

The Government is monitoring how the authorities are complying with the Act (2010:566) on Re-use of Documents from Public Administration and how they are improving conditions for re-use. An issue to which particular attention will be paid in the Government's continued work is whether any authority should be tasked with monitoring compliance with the Act and supporting the authorities in their task of providing information for re-use. Examples of such tasks that may be imposed on an authority are to give the authorities guidance on legal matters and matters concerning fees for information, drawing up and administering standard terms and coordinating the information that the authorities have to provide on terms, fees and data for re-use. An important issue for the Government to consider is what support and coordination is needed for the authorities to be able to consider the needs of re-users in an effective way.

Digitals skills

Everyone of working age must have good digital skills to be employable or be able to start up and run businesses.

Strategic challenges

Digital skills may be crucial to individuals' prospects of getting and retaining a job, starting and running businesses or strengthening the innovativeness and competitiveness of businesses. The requirement for skills applies both to each individual's knowledge, proficiency and attitudes and to the supply of trained specialists to businesses and organisations in the public sector and their ability to offer e-services that work well.

Schools provide the knowledge and skills for the labour force of tomorrow. Swedish 15-year-olds are already showing better understanding in digital reading than in traditional reading[6]. In view of the fact that almost all 15-year-old school-children, more than 97 per cent, have access to a computer at home[7], digital skills among the general public are expected to increase as time goes by. To increase the proportion of young people, especially girls and young women, who apply to study ICT-related subjects and programmes in higher education, the interest of pupils in mathematics, technology and science should be encouraged already at primary and lower secondary school. See also the sections on School and education and Gender equality.

Strengthening digital skills in schools and higher education is only sufficient up to a certain point, there is also a need to develop skills in the world of work and organisations in general. This applies to more fundamental digital skills, for example to work more intelligently with ICT support, but also top-level skills for example for ICT development. From the point of view of Swedish ICT companies it is important that access to top-level skills is safeguarded and developed. Adult education and universities have an important role to play here which necessitates teachers in the educational institutions themselves having the necessary digital skills. Voluntary initiatives are also of very great significance for the development of digital skills. Such initiatives are focused on the needs for fundamental knowledge and skills that exist in everyday contexts, for example when visiting libraries where services such as Seniornet operate.

The business and public sectors demand different forms of ICT expertise (for instance systems engineers, programmers, people who master multimedia, electronic engineers and interaction designers) and often top-level skills and supplementary practical experience (project management and experience of a specialist field). Success in attracting and retaining this labour is crucial to the competitiveness of industry and society. This entails both retaining the workforce that is trained and being able to attract top-level skills from abroad. The Swedish ICT & Telecom Industries federation is monitoring skills provision under the Scorecard.se project, run by the Royal Swedish Academy of Engineering Sciences.

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[6] OECD 2009. PISA 2009 Results: What Students Know and Can Do. Student performance in reading, mathematics and science.
[7] see source above.

The project has identified a shortage of skills in the area. An analysis conducted by the Swedish Government Offices (Ministry of Enterprise, Energy and Communications) and Swedish ICT & Telecom Industries in 2008 also showed that there was a shortage of the right ICT skills, but indicated that the shortage was expected to level out in the longer term and turn into a surplus of people trained in IT.

The need for top-level skills is governed by trends in various specialist fields that are difficult to assess. There ought to be little risk of a long-term surplus of specialists in a sector marked by global competition and rapid change, particularly for Sweden, which in several respects is at the forefront of ICT development. There should be readiness for top-level skills to avoid problems with bottlenecks in Sweden. In the context of the Digital Agenda for Europe, proposals are made that are aimed at the Member States. One of the proposals is made under the heading of long-term e-skills and digital literary policies and is aimed at the Member States introducing long-term strategies for e-skills and digital expertise and promoting relevant incentives for small and medium-sized businesses and disadvantaged groups.

Initiatives adopted

The EU's flagship initiative Agenda for New Skills for Jobs was adopted in the autumn of 2010 and contains descriptions of e-skills, which is the Commission's term for the concept of digital skills. The Commission notes that it is estimated that there will be a shortage of ICT specialists in 2015 equivalent to between 348 000 and 700 000 jobs due to a deficiency of digital skills in all areas of the economy, particularly among the elderly, those with a low level of education and employees in small and medium-sized businesses. These people, according to the Commission, should be given basic computer knowledge, while people who, for example, work in ICT should be given the opportunity to acquire specialist knowledge. The Commission will specifically, according to the communication, propose an EU-wide strategy and EU-wide tools by 2012 that will help the Member States to integrate ICT skills and computer knowledge (e-skills) in key measures for life-long learning.

Swedish ICT & Telecom Industries is monitoring skills provision in the framework of Scorecard.se, a project run by the Royal Swedish Academy of Engineering Sciences that compares five important factors of success.

Actions

Swedish companies must be able to recruit foreign experts and other key individuals in international competition. There are therefore special tax rules for people classified as experts. To improve simplicity and predictability when companies recruit foreign staff, the Government intends to implement a simplification of what is known as the expert tax.

In July 2011, the Government decided to appoint a commission of inquiry on measures to increase the use of ICT by small businesses (ToR 2011:54). See the section of Entrepreneurship and business development.

Everyday security

The use of ICT and the Internet must be informed characterized by security awareness and trust.

Strategic challenges

Modern-day society is heavily dependent on ICT and the Internet working. Responsibility for network and information security is shared by users, market players and thegovernment sector. All these parties need to do more to improve network and information security and to increase trust in ICT systems. Private-sector organisations in particular have an important role to play in providing secure networks, products and services, and a great deal can be done in dialogue with the private sector. Increased security promotes trust, which drives the use of services that in turn drive innovation, trade, growth, participation etc. Good everyday security is also fundamental to the emergency preparedness of society.

Well informed and aware ICT users who demand a high level of security are crucially important in increasing security

and confidence in electronic communication. Continuous efforts therefore need to be made to raise skills among users in routine and preventive security. The market players who have the best knowledge on these issues have great responsibility to contribute to this. There are a number of different types of intrusion in the computers of ordinary users, for example viruses, trojans, botnets, spy ware and other undesirable storage of malicious code that must be counteracted. A 'botnet', for example, gives the people who are behind its use control over computers. Botnets can be used to distribute spam mail or carry out denial-of-service attacks (by overloading servers). Users should therefore install firewalls to an even greater extent and update their antivirus systems.

The media landscape is becoming increasingly complex and offers great opportunities. At the same time, ICT is making new demands. One challenge is to provide knowledge so that members of the public can make full use of the digital media and understand their role in society. It is not uncommon for children's and adolescents' knowledge of the opportunities and risks associated with digital media to surpass that of parents. To enable them to provide support for children and adolescents in their everyday lives as media users, adults need greater knowledge of what these everyday lives are like.

Initiatives adopted

The National Post and Telecom Agency (PTS) has a special website, (www.pts.se/internetsakerhet), where the Agency's advice and services are collated, together with information for instance on how to set wireless networks and how to use Bluetooth securely. This website also contains the services Test Your Computer, which scans the computer for security weaknesses, and Test Your Password, which teaches tricks for the creation of strong passwords.

A new government agency, the Swedish Media Council, was formed on 1 January 2011, with the effect that work on digital media skills issues has been made more permanent. Several other agencies, such as the Swedish Data Inspection Board,

also undertake outreach work relating to information security focusing primarily on individual privacy.

The Riksdag has recently adopted resolutions prompted by the Government Bill Better Rules for Electronic Communications[8]. Clearer requirements on IT security are consequently being introduced, and a formal reporting duty is also proposed for operators in relation to incidents involving privacy.

Actions

The network organisation Surfa Lugnt ('Surf Calmly') has long been working on increased security and safety on the web, and is funded in part by PTS. The agency's efforts to support Surfa Lugnt should continue.

The support on security issues provided by PTS, the Swedish Civil Contingencies Agency, the Swedish Consumer Agency, the Swedish Data Inspection Board etc. should be strengthened. As a way of helping users to take responsibility for security, it needs to be ensured that there are Internet-based services at a reasonable price for users where they can have the contents of their terminal equipment checked with regard to perimeter protection or the presence of botnets and other malicious code and obtain advice on what actions and preventive efforts they should take as individuals. Only to the extent that tried-and-trusted and well used services of this kind do not exist on the private market or cannot be expected to be developed in the near future can there be a need for central government to develop these. PTS is working with the operators with the aim of producing sector-wide guidelines on botnets.

The activities of the Media Council have provided increased knowledge of the media situation among children and adolescents and are contributing in this way to reducing the harmful media impacts on them. It is favourable that this work is continuing and is being given greater depth at the new government agency the Swedish Media Council. The continued work of other government agencies on information security is also valuable. See the section on The information security of society.

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[8] Government Bill 2010/11:115, Report 2010/11:TU20, Parliamentary Communication 2010/11:256.

Services that create benefit

The emergence of a society with more and more digital services is largely based on there being attractive and easy-to-use services in all imaginable areas. There should be a large and varied range of services that have been developed by actors in both the private and public sectors: services that have been developed to handle different situations in life, from the cradle to the grave. A good range of digital services encourages the use of digital channels rather than more traditional ones, which contributes to transforming established sectors and making them more efficient, while new ideas, business models and companies emerge at the same time.

Public administration plays a significant role here as a provider of public services, but also as a large purchaser of services. The time has come to radically improve the efficiency of administration. More and better e-services make it possible to build administration that is both more efficient and simplifies everyday life for business owners ands.

Public administration

A simpler everyday life for individuals and businesses and more efficient public administration.

Strategic challenges

The Government is continuing with its work on creating a simpler everyday existence for individuals and businesses in which actors in the public and private sectors will be put in a better position to create services that, for instance through automation and self-service, meet the needs of people and businesses in different situations. Government will collabo-rate by sharing and re-using information to bring about reduced disclosure of data for businesses, local authorities and individuals.

Sweden became an early pioneer in the digitisation of public administration. Increasingly systematic work has been done since the end of the 1980s to use ICT to free up resources for more advanced tasks. When the Internet was introduced in the 1990s, the government agencies already had relatively high technological maturity, and e-services became a way of facilitating outward contact. Electronic information exchange was able to replace other methods of exchanging information between authorities. In 2000, the strategy for the 24-hour government agency was set forth in a Government Bill[9]. The aim was for the government agencies to be able to improve the accessibility of the services they offered. The strategy was based on an already successful tradition in which the government agencies themselves decided how ICT should best be used to develop their operations. Since 2007 the Government has speeded up development and strengthened the control of e-government as public administration as a whole had not been able to benefit from the network-oriented use of ICT to a sufficient degree. Continued development requires a higher degree of electronic collaboration in government administration.

The Government has been working on systematically building up comprehensive change management in the area of e-government since 2007. Since the adoption of the action plan[10] for e-government in 2008, the Government has been working on strengthening control in e-government.

[9] Ett informationssamhälle för alla (An information society for all) 1999/2000:86.
[10] Handlingsplan för eFörvaltning – Nya grunder för IT-baserad verksamhetsutveckling i offentlig förvaltning (Action plan for e-government – New principles for ICT-based development of activity in public administration).

The digitisation of society is creating an expectation that the public sector will be able to supply services in just as simple and effective a way as private service providers. This is crucial but resource-demanding work that necessitates information management and collaboration across organisational boundaries. The challenges faced include funding issues and differences in regulations and technical standards.

Initiatives adopted

The eGovernment Delegation has been working on implementing the action plan for e-government since 2009, and today involves around 200 people, principally from the public sector, in its various working groups and committees. The Delegation has succeeded in creating a great force for change in a short time, and the results are now visible in the form of strategic development projects and guidelines. The Delegation is due to present the final report on its remit by 31 December 2014.

The eIdentification Board was formed on 1 January 2011 with the task of supporting and coordinating the needs of the public sector for secure methods of electronic identification and signature (ToR 2010:69).

The Government has tasked an inquiry chair with preparing the establishment of a joint-agency service centre tasked with offering services primarily in financial and personnel administration to government agencies (ToR 2010:117). The aim is to increase efficiency and reduce administrative expenses in central government through increased concentration of administrative support activity. The inquiry chair presented the report 'A joint-agency service centre with proposals on how a service centre for services in administrative support should be formulated' on 15 April 2011[11]. The report proposes that a service centre should be established as a separate authority and funded by fee income with a requirement for full coverage of costs. In addition, it is proposed that the services offered by the service centre should initially cover financial and personnel administration and support for e-purchasing and that the financial

unit in the operational support of the Swedish Tax Agency and suitable parts of the operational support of the Swedish Social Insurance Agency should form the basis of the service centre. The Inquiry estimates the potential savings at SEK 55 million per year at a take-up of 26 government agencies, equivalent to 25 per cent of government employees. This would equate to a productivity gain of 33%. The Inquiry's proposals are currently being discussed at the Government Offices.

With the aim of raising efficiency and quality in public administration at national, regional and local level, the Government decided in May 2011 to appoint a committee in the form of a national council for innovation and quality in public administration (ToR 2011:42). The Council is to support and encourage work on innovation and change in public administration that can result in significant improvements for individuals and businesses and improved efficiency in existing processes. The Council has , among other things, to identify areas, services and case-handling processes which are considered particularly important to develop from the perspective of a citizen and a business owner.

Actions

A number of strategic e-government projects will continue to be undertaken. These projects are intended to simplify everyday life for individuals and businesses, while also leading to savings for central government as a whole. They relate in particular to government-wide services and services linked to the core operation. An example of a joint-agency information and guidance service aimed at future and existing entrepreneurs is verksamt.se.

More efficient public activity provides the right service at a lower cost and with increased accessibility. This is brought about through efficient utilisation, sharing and re-use of information, through smarter development of activity in which processes, rules and ICT solutions work together. Standardised services and interfaces in administration create opportunities for both the private and public sectors to develop new services.

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[11] Swedish Government Official Reports SOU 2011:38

Entrepreneurship and business development

The potential of ICT must be utilised to boost growth, competitiveness and trade for businesses.

Strategic challenges

ICT has a key role to play in the vast majority of companies, in simplifying activity and making it more efficient, open and accessible to customers and suppliers. ICT can also drive the development of new processes, products and services. Various digital services that provide information and guidance can make it easier to start and run companies. In addition, small and medium-sized companies can reach out internationally. It is very important that work that has been started in the government agencies to simplify and increase services to entrepreneurs, for example through verksamt.se, should continue to be developed.

The use of ICT among companies is generally high, but at the same time there are studies showing that small businesses in particular do not exploit the potential ICT offers and that the use of ICT varies depending on where the business is located and in what sector it operates. Many of these companies ought to be able to develop their operations and simplify their everyday activity with the aid of ICT and the Internet[12]. The innovative opportunities that ICT provides can encourage enterprise linked to, for instance, health and social services, the environment and administration.

The cultural and creative industries are an area where ICT can contribute to creating new markets for businesses and entrepreneurship. Artistic skill combined with technology and ICT create entirely new conditions for both art and culture in themselves, but also in order to develop cultural and creative industries. The Government's action plan for the cultural and creative industries is aimed among other things at strengthening entrepreneurship and enterprise in the cultural field and at promoting cultural and creative expertise in industry for increased competitiveness and innovative capacity.

It is important to improve the con-ditions for further utilisation of public information from government agencies for both commercial and non-profit purposes. The European Commission estimated in 2006 that the commercial value of public information amounted to four times the value of the EU market for mobile roaming services. The Swedish market was valued at between EUR 226 and 614 million. Sweden's position in the growing market is probably relatively strong, as Sweden has both a large quantity of public information of good quality and a high degree of digitisation. An increased degree of coordination can provide a more efficient supply of ICT services. Cloud computing[13] could also drive growth in the ICT industry, at the same time as lowering administrative costs.

A continued priority is simplification for businesses. Simplified and reduced submission of data, for example, can enable entrepreneurs to devote more time and resources to operating and developing their businesses. Digital solutions are an important tool in this work.

The transition to electronic procurement should be hastened. E-procurement contributes to increased efficiency in the public sector and provides time gains and simpler administration. E-procurement is also an important tool to facilitate and improve the efficiency of processes for companies submitting tenders. It may, for instance, lead to reduced bidding expenses, shorter lead times and a reduced risk of errors in tenders. e-Procurement is particularly significant in increasing cross-border procurement in the European single market.

With regard to cross-border trade, the Government is making active efforts to ensure that a number of measures are taken at EU level. Current legislation and the recommendation for qualified signatures in e-procurement should, for instance, be reviewed as there is a lack of solutions to facilitate mutual recognition of electronic signatures and identifications.

It is also important to continue the working currently in progress at EU level on developing simpler solutions with usernames and passwords, self-declarations and/or qualification solely of winning bidders. It is also important to follow

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[12] See for exmple: Barriers to information and communication technology adoption in small firms, Parida et al, 2010 (http://entreprenorskapsforum.se/swe/wp-content/uploads/2010/09/WP_Barriers_to_ICT_adoption.pdf).

[13] Cloud Computing has two important characteristics: perceived infinite resources and payment in terms of consumption of resources. The service offered by the cloud is called utility computing, which can be most closely compared to the consumption of resources such as electricity and water. (IASA – Sveriges IT-arkitekter).

the application of various directives at EU level to avoid inadequate harmonisation and adaptation to the new conditions that a digital services market brings with it.

The public sector in Sweden is a large purchaser of various types of ICT-related products and services. It can in certain circumstances point to opportunities and the use of new innovative technology that contribute, for instance, to improvements in public services. Improved coordination of central government, municipal and county council procurement of ICT can promote this development. The Government therefore considers it important that the public sector encourages innovation and entrepreneurship through procurement and standardisation.

Good, high-speed access to the Internet is required for small and medium-sized enterprises to be able to be established and develop in rural areas. Rural businesses are spread across the country, and access to high-speed broadband may be essential in enabling them to reach their customers.

Initiatives adopted

The Government adopted a national action plan for the cultural and creative industries in September 2009. The action plan is aimed among other things at strengthening entrepreneurship and enterprise in the cultural and creative industries and at promoting cultural and creative expertise in industry for increased competitiveness and innovative capacity.

In accordance with the Government Bill 'Public administration of democracy, participation and growth' (Government Bill 2009/10:175), the Riksdag has opted for an Act (2010:566) on re-use of documents from public administration. Under this law, public information has to be made accessible for re-use on terms that create the right conditions for healthy competition, for the development of new services and applications and for greater market access. The law is aimed at promoting the development of an information market by facilitating use by individuals of documents that are provided by authorities.

Actions

Access to a broad range of ICT product services at attractive cost is essential to increased use of ICT and electronic commerce. The Government is working on eliminating obstacles to trade internationally in the ICT area, including expansion of the Information Technology Agreement (ITA).

The Government intends to continue with its work on making life simpler for businesses. An ambition is to simplify the provision of information by using digital solutions so that businesses avoid any kind of duplicate reporting.

The Swedish Agency for Economic and Regional Growth has devised a solution that makes it possible to check the authenticity of various foreign e-signatures. It should be possible for the solution to be used when government agencies deal with foreign administration, for example in digital public procurement but also in other case management.

To strengthen the prospects for the cultural and creative industries in the long term, in June 2010 the Government appointed a Council for Cultural and Creative Industries. This is part of the Government's national commitment to such industries over the period 2009–2012.

ICT use in small and medium-sized enterprises should increase in order to boost growth potential and increase market opportunities both nationally and internationally. The Government has therefore appointed an inquiry to propose measures to increase the use of ICT by small businesses (ToR 2011:54). The Inquiry is due to present its proposals on 1 October 2012, with an interim report in March 2012.

A number of measures are needed to achieve a digital single market that works well. There are many reasons for various obstacles today, such as low trust in the Internet, cultural differences for example with regard to language and obstacles of a more legal nature. In the area of value-added tax, inadequate harmonisation with respect to VAT between the various Member States of the EU creates problems for companies that offer digital services. Harmonised regulations, non-discrimination and correct and uniform application of adopted legislation are therefore of key significance in ensuring that Swedish companies are not put at a disadvantage in international competition. It is also

important to have collective and readily accessible information on what rules and regulations apply in each EU Member State. Another important aspect is to promote and enable increased use of e-procurement, for instance through active efforts at EU level.

Established small and medium-sized enterprises account for a large proportion of Swedish trade and industry. These also have a need to modernise, become more competitive, be able to expand in more business areas and export. The Government has therefore appointed a committee to review corporate taxation. Among other things, the committee has been tasked with examining various options for reducing the taxation of venture capital in the corporate sector and making conditions equal for funding from equity and from loans. In addition, the committee's remit covers reviewing rules for tax incentives for research and development (ToR 2011:1).

To further strengthen companies' business opportunities, the Government proposes expanding deductibility for research and development. Current application of the rules is too strong, and in future it is to be sufficient for the research to be of reasonable interest to the company's operations for deductibility to be possible.

In efforts to promote Swedish exports, it is important that the Government works along a broad front to promote e-commerce. Sweden is uniquely placed to be a leader in electronic commerce, and there is great untapped potential, both nationally and internationally. To clear away obstacles and create a single market for electronic commerce that works well, an action list containing specific initiatives will be presented as part of the work of the Ministry for Foreign Affairs. The ambition in this work, which involves both companies and government agencies, is for Sweden to create the most attractive conditions for electronic commerce in Europe, so that cross-border electronic commerce can achieve its full potential.

The eGovernment Delegation has been tasked by the Government with promoting and coordinating the work of the government agencies on improving the conditions for re-use of documents. This includes, for instance, paying spe-cial attention to the prospects of smaller companies and new business start-ups gaining access to the market for public information.

The Government intends to closely monitor how the Act on Re-use of Documents from Public Administration is applied. A question to which special attention is paid is whether any agency should be tasked with monitoring compliance with the Act and supporting the agencies in carrying out their work. It may, for example, be a matter of providing guidance on legal issues, fees or devising standard terms.

Health care and social services

National efforts in eHealth are focused on creating visible and practical improvements to three main target groups: the individual, health care and social services personnel and decision-makers in the health and social services

Strategic challenges

Government efforts since 2006 have been pursued together with a broad group of national organisations through "National eHealth - the strategy for accessible and secure information in healthcare". A common consensus has been created and several initiatives have been taken. County councils and municipalities, in their capacity of being responsible for health care and social services, have a key role in the introduction of the strategy together with the national organisations. Several parts of the strategy today are at an introductory stage or in operation.

The population is ageing, which imposes great strains, especially on welfare systems. New technology and new and enhanced processes, structures and options for implementation change how health care and social services can be run. The possibility of providing information relevant to health and offering services to the individual is increasing, but a growing body of information may, at the same time, create risks with regard to security and privacy. The right information at the right time is an important part of the work on developing preventive health care and enabling the individual to control his or her own situation better.

Individuals, in their role as resident, patient, user and family member, have to have access to readily accessible and quality-assured information about their health and access to documentation from previous actions and treatments. They must be offered individually adapted service and interactive and informative services to enable them to be involved and make their own decisions based on their own circumstances.

Personnel in health care and social services have to have access to electronic decision-making support that works well in ensuring high quality and security, while making their daily work easier. Necessary and structured information must be available as a basis for decisions on interventions and treatments. There is also a great need for these systems, for instance in the form of decision-making and process support, to be more independent of the organisation and to be developed according to the user's needs.

A step towards attaining the objectives of the National eHealth strategy requires measures to increase knowledge among staff in health care and social services on the use of ICT. Personnel in health care and social services must have good knowledge of the use of ICT, both for their daily work and for development opportunities. This requires changes and greater efforts in basic training programmes.

Decision-makers in health care and social services need to receive appropriate support to enable them to follow up the quality and security of their activities and obtain a relevant and comprehensive basis on which to decide on operational control, planning and allocation of resources. Efforts are also required in relation to knowledge management, learning and innovation. Knowledge and commitment need to increase regionally and locally to drive the development of eHealth and health care, but in particular in social services. The implementation of ICT services and e-services that have great potential to contribute to efficiency and quality improvements will otherwise be delayed.

The use of ICT in health care and social services has increased since the year 2000.

As conditions have improved and digitisation has become increasingly common in society, use of ICT has also increased. Work in national eHealth has gone over the years from covering ICT and technological development to focusing on developing such processes and support in organisations as are required to safeguard the individual's health, well-being and quality of life. The degree of complexity and the need for structure in the organisations is consequently increasing.

Greater collaboration within and between municipalities and county councils is required to attain the benefits that technology and development bring. An important factor in this is greater Swedish innovativeness that can encourage joint solutions. Sweden's good international position and work in the area of eHealth create a sound basis for innovation and favourable conditions for enterprise. It is crucial to strengthen the incentives for collaboration in the development and introduction of ICT support and other forms of technology that improve the individual's welfare.

Structured and clear information about interventions in health care and social services needs to be ensured by using and continuing to develop information structures that have been developed, national specialist terminology and national and international standards. Technical and structural development must work together with the regulations and guidelines that govern the activities of health care and social services. The regulations must also, if necessary, be reviewed and revised to balance the needs for security, efficiency and flow of information in operation against data protection and the privacy and rights of the individual. Another issue linked to the individual's privacy is the need for research for data of high quality as part of the work on improvement and development.

Initiatives adopted

A national ICT strategy for health care and social services was established by the Riksdag in 2006 (Government Communication 2005/06:139, report SoU30, Parliamentary Communication 281). This strategy was revised in 2010 and has since

been known as "National eHealth – the strategy for accessible and secure information in health care". The strategy is jointly backed by the Government, the National Board of Health and Welfare, the Swedish Association of Local Authorities and Regions, the Association of Private Care Providers and the sector organisation Famna. The Government takes further steps in a number of areas in the updated strategy from 2010. A number of relevant initiatives are described here.

The Government has tasked the National Board of Health and Welfare with taking national coordinating responsibility for appropriate and structured documentation in Sweden health care and social services, as well as making it easier for health care providers and providers of social services to introduce and apply a national information structure and national specialist terminology, for instance through a commitment to training at the local level. The National Board of Health and Welfare will also establish and put into operation an organisation for long-term administration and ongoing continued development. There is an associated need to review existing rules on documentation.

A steering group directed by the Ministry of Social Affairs has been set up to establish a national prescription database and to speed up the introduction of electronic support to prescribers in the whole of health care and affected parts of the social services. The steering group is due to draw up an action plan for planned actions in 2011.

The Government has tasked the Swedish Agency for Innovation Systems (Vinnova) with making it easier, through test beds, for innovators to develop and demonstrate innovative solutions in health care and elsewhere.

The Government has decided on funds to implement support for management of authorisation and security in the exchange of information between municipalities, county councils, private providers and individuals. Funds are being paid in 2011 to regional development managers to contribute to an exchange of experience and cooperation between municipalities and county councils. In the area of information security, the Swedish Civil Contingencies Agency runs private/public forums in health care. The aim is to improve information security in the area.

A review of the national quality registries has been conducted, with the aim of increasing the benefit and usability of the data in the registries and to improve the reporting and quality of the data reported to the registries The Government has subsequently decided to appoint a national coordinator for development of the national quality registries.

The Government has established the eIdentification Board to support and coordinate electronic identification and control. An e-identification solution that works well is crucial to the security, usability and introduction of eHealth and its solutions.

The Welfare Development Council was appointed by the Government in 2010 and is due to continue working until December 2012. The Council, which consists of experts from both the public and private sectors, is intended to contribute knowledge, experience and specific problems on what can improve the prospects for freedom of choice, diversity and accessibility in health care and social services. The Council has the option of addressing issues that affect ICT, for example the development of quality registries.

Actions

The Government is supporting the development of new interactive services that can provide individuals with broad access to simple and secure e-services so that they can plan their own care and treatment. This may relate to individuals' access to their own medical records through a secure web solution, Mina vårdkontakter ('My Care Contacts') and 1177 for interaction with health care, information and advice or a Health Diary in which patients themselves can document and monitor their health development and obtain personal advice. These e-services depend on the prospects of the organisations of communicating the information to the individual in a clear and understandable way.

There is a lack of national support at present to monitor and prevent health care-related infections. In September 2011,

the Government decided to financially support the work of the Swedish Association of Local Authorities and Regions on developing electronic decision-making support in the form of an infection tool. The work entails development and pilot testing of ICT support for the monitoring of infections – a national infection tool.

Work over the next few years will focus on supplying the beneficial effects of various e-health services, supplying more personal e-services for all members of the public, greater coordination and development of eHealth in municipal health care and social services and increased interaction with adjacent national and international reform processes and initiatives.

The Government judges that there is a need to clarify what information may be exchanged across the boundaries of responsible authorities, organisations and professions on the basis of existing regulations. The National Board of Health and Welfare was therefore tasked in June 2011 with drawing up a handbook to clarify the legal situation regarding exchange of information in health care and social services on the elderly.

School and teaching

Schoolchildren must, and teachers should, have access to modern learning tools that are required for contemporary education.

Every pupil, on completing primary and lower secondary school, must be able to use modern technology as a tool for knowledge-seeking, communication, creation and learning.

Strategic challenges

According to the curriculum for primary and lower secondary school, the school is responsible for every pupil, on completing primary and lower secondary school, being able to use modern technology as a tool in searching for information, communication, creation and learning. There are also equivalent curriculum goals for upper secondary school. This means that the pupils have to acquire the digital expertise needed in present-day society.

Responsibility for issues concerned with ICT in the schools area rests on the municipal and independent authorities responsible for schools. The issue of digital learning tools and teaching materials is thus one for the authorities responsible for schools and the commercial market for teaching materials.

ICT is used in many schools and in the everyday lives of many schools, and Sweden is one of the countries with the highest proportion of schoolchildren who have access to a computer at home[14]. While Swedish schoolchildren perform well in digital reading, Sweden occupies a mid-table position among the OECD member states in the use of computers at school and the ability of schoolchildren to use computers. The report LearnIT[15] shows that the use of ICT in teacher training in the early 2000s was low.

ICT is used in schools as a teaching tool for pupils and teachers. A strategic challenge is the issue of pupils' access to computers and how computers are used in instruction. But it is also important to understand the importance of the teachers having expertise and understanding of the new opportunities offered to young people in the media reality of today as well as access to computers for their work and for communication with parents. A further strategic issue applies to the use of ICT as an aid to efficient school administration.

In 2010 and 2011 the documents governing schools, in the form of a new Schools Act (2010:800), new syllabuses and a new curriculum for Swedish primary and lower secondary schools have been reviewed and clarified. The upper secondary school has also acquired new syllabuses, and a new qualification descriptor has been introduced for teacher and preschool teacher training programmes. The new statutes are considered to provide what is necessary for digital skills among teachers, pupils and students. The way the knowledge requirements are formulated on the basis of established syllabuses and curricula has a crucial bearing on how these skills are provided, as well as for how the teachers put the instruction into practice.

There are proposals under the Commission Communication 'Digital Agenda for Europe' on e-learning aimed at the Member States. The proposal is that each Member State should: "Mainstream eLearning in national policies for the moderni-

[14] OECD PISA 2009.
[15] KKK-stiftelsen (The Knowledge Foundation) 2004.

sation of education and training, including in curricula, assessment of learning outcomes and the professional development of teachers and trainers". The term eLearning is not described more closely in the Commission Communication and does not have a generally accepted definition, which makes it difficult to respond to the Commission's recommendation. The curricula of primary and lower secondary school and upper secondary school in Sweden state what knowledge is to be conveyed but do not indicate how the instruction is to be carried out. Under the Schools Act, schools have to use the teaching tools needed for contemporary education, but teachers and bodies responsible for schools decide themselves how the instruction is to be given, including choice of teaching tools and how these are to be used in instruction.

Initiatives adopted

Between 2005 and 2010, the Government earmarked special funds for the development of ICT in teaching. The total sum involved is SEK 39 million, of which SEK 10 million for 2010. The funds were previously assigned to the then National Agency for School Improvement, and since 2008 have been assigned to the National Agency for Education, which has used them among other things for the programme PIM (Practical ICT and Media skills).

In the autumn of 2011 the first pupils enter the reformed upper secondary school. As part of the reform, new syllabuses have been devised for all subjects and courses in upper secondary school. The National Agency for Education decides on the syllabuses with the exception of the subjects that are common to all upper secondary school programmes, and on which the Government decides. On 2 December 2010, the Government decided on syllabuses for the subjects common to all upper secondary schools which are to be applied to programmes started after 1 July 2011 (Ordinance [SKOLFS 2010:261] on syllabuses for subjects common to all upper secondary schools). Under the aims of the subjects of history, social science, mathematics and natural science, mention is made of ICT, knowledge of how to use modern information technology, digital technology, digital media etc. so

that students can search for and achieve knowledge and search for and interpret source material. These statements are followed up in the central contents of courses concerned, where it is stated that the teaching has to give pupils the ability to use information technology, and then return in the knowledge requirements for the various grades, which indicate to rising degrees the requirements for pupils' ability to use various tools.

According to its remit in its appropriation directions, the National Agency for Education has to continuously monitor teachers' use of ICT and ICT skills in preschool, school and adult education. This follow-up has to take place in accordance with the authority's proposals in the report on the remit and a plan for improved follow-up of ICT use and ICT skills in preschool, school and adult education. The follow-up also has to relate to the schools' administrative ICT use, as well as their measures to communicate the work of the school and organisation with homes using ICT. The results of this remit are to be reported to the Swedish Government Offices (Ministry of Education) every three years, on the next occasion no later than 15 April 2013.

ICT is one of the school's teaching tools, needed to attain the school's aims.

Actions

The Government decided in February 2008 on a remit for the National Agency for Education on goals and final tests for each study path in Swedish For Immigrants (SFI). The remit has since been amended in appropriation directions so that the transition period during which tests that are not ICT-based may be used has been extended to 1 January 2011. The remit has since been further amended so that the National Agency for Education, in a limited study, has to develop all parts of the ICT-based tests in SFI. The National Agency for Education also has to review the issue of technical solutions linked to ICT-based tests, such as security solutions, and try out the tests in a selection of municipalities.

The authorities responsible for schools – municipalities and independent bodies – are responsible for curricula and syl-

labuses being followed, aimed at ensuring that pupils gain the digital skills needed in modern-day society. The Government therefore takes a positive view of the authorities responsible for the schools collaborating with other bodies concerned so that the objective is met at good quality throughout the country.

One way of strengthening digital expertise among school system personnel is to utilise ICT as a platform, where suitable, in skills development.

Democracy

ICT must provide support for citizen dialogue and contribute towards increasing citizens' knowledge, community involvement, insight and influence.

A living democracy in which individuals have an opportunity to influence decisions that concern their everyday lives is the goal of democracy policy. In the framework of work to strengthen democracy, priority issues are good opportunities for insight and influence, local and municipal democracy, greater opportunities for influence in the democratic process and expanded influence using e-tools. It is therefore beneficial if ICT supports citizen dialogue and contributes towards increasing citizens' knowledge, community involvement, insight and influence.

Strategic challenges

ICT and the Internet play an important role in the development of national, regional and local democracy. The Government also advocates broader participation by citizens between elections, and the Internet can fulfil an important function here, particularly in view of the large proportion of the Swedish population who today have access to the Internet. The Internet makes increased access to information and insight into public activity possible and also provides opportunities for participation in democratic processes, which if used correctly can strengthen democracy. Democracy and ICT in combination make it possible to also influence political decisions for those who do not attend traditional meetings.

All levels of society face the democratic challenge posed by digital development.

Strategies for information, communication and dialogue need to be supplemented and developed. It is also important to think about an approach to the new technology and the opportunities it affords.

Initiatives adopted

Several experiments in digital democracy have been initiated in recent years. As part of efforts to increase opportunities for insight and influence for citizens, since 2006 the Government has granted the Swedish Association of Local Authorities and Regions a total of SEK 6 100 000 to run the Citizen Dialogue project with ICT support.

The objective of the project is to make political decision-making processes more transparent and accessible and to increase the influence of citizens through the use of ICT solutions and citizen dialogues. The Government therefore supports the country's municipalities and county councils in their efforts to strengthen citizen endorsement through ICT tools and innovative methods for citizen dialogue. Individuals are consequently given a better opportunity to be informed, to participate and to influence the political process.

The emphasis in this work to date has been on supplementing the traditional channels with ICT-based tools for dialogue. The tools have been developed throughout with the citizen and usability at the centre, and are now being tried out in practice in the country's municipalities and county councils.

Experiences from the various sub-projects show that participation is increasing by involving individual citizens in the political decision-making processes. The project is therefore also aimed at increasing knowledge of new methods for political participation. Information from the Swedish Association of Local Authorities and Regions shows that there is increasing interest among municipalities and county councils in making use of dialogue tools.

Actions

Over the next few years it will be a common challenge for central government, the municipalities and the county councils to develop the use of ICT for support in dialogue with citizens. This should take

place in a way that strengthens democracy by developing a transparent democracy and giving citizens an increased opportunity to exert influence in the democratic decision-making processes. The Government therefore continues, for instance, to support the Swedish Association of Local Authorities and Regions project Citizen Dialogue with the support of ICT, which is due to run until 2013.

Access to culture

Cultural activities, collections and archives must be preserved digitally and made available to the public electronically to a greater extent. All central government institutions that collect and preserve cultural heritage material and cultural heritage information and make it available are to have a plan for digitisation and accessibility.

Strategic challenges

One of the national cultural policy goals is to promote a living cultural heritage that is preserved, used and developed. Digital development gives cultural authorities, institutions and public-service broadcasters completely new ways of providing citizens, the business community and researchers with access to culture and the cultural heritage. The new ways of producing, distributing and assimilating music, film and literature improve the prospects of reaching a larger and broader public.

Cultural content – all forms of artistic and creative expression – plays a large social and economic role in society. There is demand for digital versions both among citizens and in the business community and in the research community. Digitisation and digital preservation of, and electronic access, to the Swedish cultural heritage can promote creativity, innovation and entrepreneurship and support activity in other sectors, such as cultural tourism. Collaboration between actors and organisations in the area is needed to bring about good and innovative synergies and cost-effective solutions.

The production of cultural content faces new opportunities and challenges as a consequence of digitisation. In the culture bill 'Time for culture' (Government Bill 2009/2010:3), the Government

notes that there is a crucial need for a continued balanced relationship in which regulations on copyright ensure that the fundamental conditions are made for production of content and respect for the basic principles of copyright, while the opportunities for the development of new ideas, products and services in the information society are exploited. See also the section on copyright.

Initiatives adopted

In the Bill 'Time for culture', the Government emphasises the need to find common solutions to drive ahead work on digitisation, digital conservation and digital mediation.

Initiatives have been taken at European level to establish a European digital library – Europeana – for digital material from throughout Europe (books, newspapers, photographs, film, audiovisual work, archive papers, museum objects, monuments and archaeological cultural heritage).

It was established in the budget bill for 2011 that a coordination secretariat will be established for digitisation, digital conservation and digital availability of the cultural heritage at the National Archives to meet the need for continued work on development.

The Government estimated in the budget bill for 2011 that SEK 15 million annually would have to be earmarked for a commitment to digitisation of cinemas in 2012-2015. However, development in this field has been faster than expected. The Government has therefore given notice in the budget amendment for 2011 that the investment will be brought forward and implemented in 2011-2014. The investment in digitisation of cinemas favours sustainable growth throughout the country and innovation and entrepreneurship for many different groups in society.

On 23 June 2010, the Government tasked the Library of Talking Books and Braille Publications and the National Post and Telecom Agency with intensifying development and change work on government-funded talking newspaper activity. In a sub-report from March 2011, proposals were presented for a switch from read-in talking newspapers to what are known as speech synthesis newspapers. A second

sub-report was presented in September 2011 with updates regarding the development of new formats for digital talking newspapers. It is proposed that the switch will be implemented by 2015. The basic principle is to increase accessibility for users and improve the cost-effectiveness of the operation. A final report is due to be presented by 1 March 2013.

The Government has implemented changes in the grant provisions in literature and newspaper ordinances that mean that support in future has to be technology-neutral and not linked to a particular form of distribution. In addition, the Literature Inquiry currently in progress has been tasked with analysing how the Swedish book market has developed over time, among other things with regard to diversity in publication (ToR 2011:24). Particular attention is to be given to digital development and its significance for production, distribution and sale. The Inquiry is due to submit a report by September 2012.

Actions

The overarching aim is for cultural activities, collections and archives to be preserved digitally and made available to the public electronically to a greater extent by 2015. All central government institutions that collect and preserve cultural heritage material and cultural heritage information and make it available must have a plan for digitisation and accessibility. The Government is looking for new user-friendly solutions and a joint approach so that citizens can gain better access to the cultural heritage in the digital environment. The Government intends to formulate a national strategy for digitisation of the cultural heritage, based on proposals that have emerged in the reporting of remits on digitisation, electronic access and digital conservation.

An important type of development work is the project presented in the report on the remit of the co-operation council of the central museums on a standardised and common platform, sverige.museum, in which the collections of the state museums are digitised, structured and made accessible. The Government considers that the coordination secretariat for digitisation, digital conservation and making the cultural heritage accessible at the National Archives can be an important contributor to this development work.

A new labour market initiative – the 'Cultural Heritage Lift' – will be implemented over the period 2012–2014. This initiative may give government agencies, institutions, organisations and non-profit organisations in the field of the cultural heritage great opportunities to take necessary and long-needed action to digitise, digitally conserve and digitally make accessible collections, archives and libraries.

In April 2011, the Government tasked the Swedish Institute for Language and Folklore with developing forms of operation and coordination of a national language database in consultation with the parties concerned. The long-term establishment of a national language bank containing language databases promotes the development of technology, which benefits the languages in Sweden and improves access to information for everyone.

There is a rich cultural heritage at the public-sector broadcasters, Sveriges Radio AB, Sveriges Television AB and Sveriges Utbildningsradio AB, consisting of radio and television programmes from several decades which have principally been produced using funds from the radio and television licence fee. It is desirable for the material to be made available to the public to a greater extent. On 1 April 2011, amendments to the Copyright Act (1960:729) came into effect making it easier to clarify rights to copyright-protected material in the archives of the radio and television broadcasters. It is consequently easier for the broadcasters to make such material available to the public, for example on the Internet.

The national stages Operan and Dramaten have been tasked since 2008 with carrying out digital transmissions so that performances can reach a vastly larger audience.

The Government decided in August 2011 to present a consultation document to the Council on Legislation concerning an electronic duty to supply. Under this proposal, electronic legal deposits of digital publications would have to be submitted to the Royal Library.

Need for infrastructure

Several conditions need to be met to make it possible to use and offer digital services. This includes there having to be good access to physical infrastructure for telephony and broadband around the country and this being robust and capable of withstanding strains without serious outages, the Internet as a carrier of services being available and stable and the information transmitted on the Internet being handled securely and reliably.

It is primarily the market players who are responsible for and make investments in the communication networks. Other important actors for favourable development are municipalities, county councils, regional co-operation bodies and government authorities, for example county administrative boards. The role of central government is to ensure that the market works effectively and, together with public actors, to give the companies the conditions they need to pursue their activity. But central government also has a responsibility, together with private actors, to ensure that communication services and the Internet work reliably and dependably. These are issues that are becoming increasingly important as the dependence of society on communication services increases. Another key task for central government is to ensure access to geographical information of good quality, which is important for services that are dependent on spatial information.

The Internet in Sweden and globally

Sweden must strive to ensure an accessible, open and robust Internet within the country and globally.

Strategic challenges

Communication is a necessity in a modern democratic society, both to promote enterprise, innovation and competition but also so that the individual can obtain and disseminate information, utilise his or her freedom of expression and participate in the information society. Thanks to a number of Swedish pioneers and early public involvement, there is reason to be proud of the development of the Internet in Sweden. However, there is a need for continued efforts to ensure that the Internet in Sweden is open, robust, stable and accessible. The Internet is, however, a world-wide communication network with development driven by many different people and organisations. Sweden must also continue to be involved internationally and cooperate with the industry and with other countries to preserve the Internet as an open, decentralised platform for communication. The development of the Internet must be characterised by openness, freedom and security, to the benefit of individuals, businesses, organisations and the public sector. See also the sections on robust electronic communication and freedom on the Net.

The Internet in Sweden

One of the Internet's critical resources is access to IP addresses and the domain name system. To ensure access for all citizens to e-services on the Internet, especially in the development of public e-services, it is important to monitor the development of technology and security. Internet Protocol version 4 (Ipv4) is the version of the internet protocol (IP) on which the Internet today is mainly based.

One of the important issues that need to be addressed is the introduction of a new version of the internet protocol (IPv6).

All the remaining addresses for IPv4 have been used up at central level, and in the near future will have been shared out among the operators. New users will therefore for the most part only be able to communicate via IPv6. It is therefore important that both private and public operators start to use IPv6.

An important measure to lay a solid foundation for security is for the authorities to use the domain name system DNS-SEC[16], especially to ensure that their communication will be secure and reliable.

To strengthen transparency and increase mobility in the market, the consumers must be able to make conscious and well-informed choices. There is also a need for tools for consumers and suppliers to measure, compare and verify Internet connections. Today there is, for example, Bredbandskollen ('Broadband Check') which consumers can use to measure the bandwidth of different Internet connections, but there also need to be tools to allow other parameters to be measured and consequently allow Internet connections to be tested, verified and compared[17].

There is fundamental societal interest in establishing an open Internet and the principle of open networks and services, also known as net neutrality. The user must in principle be able to receive and send content and freely use content services that do not harm the network. If it turns out that consumers find it difficult to take out subscriptions without blocks, or that actual problems arise with down-prioritised traffic, the National Post and Telecom Agency (PTS), under the terms of the Electronic Communication Act, can issue a regulation on what is known as minimum service quality, which compels all operators in the market to offer subscriptions without blocks. To date, PTS has judged there to be no need to make use of this option.

The Internet globally

IP addresses and the domain name system are managed by five different Regional Internet Registries and at the global level by the organisation Internet Corporation for Assigned Names and Numbers (ICANN).

The Government's position is that ICANN should continue to be the organisation that is responsible for domain names and IP addresses. The Government considers it to be highly advantageous to retain and develop the model multi-party collaboration that is applied within ICANN.

The Government's intergovernmental advisory committee to the ICANN Board is the Governmental Advisory Committee (GAC), of which Sweden is an active member. The Government considers GAC's role as an adviser to ICANN to be a good model.

The Internet Governance Forum (IGF) is the only open global platform for discussions on the Internet and the development of the Internet that exists today. The IGF process has led to increased exchange of experience and dialogue between different stakeholders, especially with regard to human rights. One of the great advantages is that IGF is a non-binding and non-decision-making body. The exchange of experience and knowledge in IGF is an important basis for decisions on the Internet and its development among the various participants in IGF. IGF is therefore important in order to maintain a global and robust Internet characterised by freedom and openness.

Initiatives adopted

The eGovernment Delegation has been tasked with developing a strategy for how the development of e-services by the public sector should support the transition to new technology, for example the transition to IPv6.

In December 2010, the Government tasked PTS with describing how Ipv6 can be introduced at authority level with respect to accessibility, security and economics. The purpose of the description is to be able to serve as support for government agencies, municipalities and other organisations in the public sector when introducing IPv6.

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[16] DNSSEC secures use of the domain name system (DNS) through the use of electronic signatures. It means that the person asking knows the answer really comes from the right source and has not been modified, and it is the basis for minimising the risk of accessing the wrong website.

[17] Developed by the National Post and Telecom Agency but managed by .SE.

In September 2010 the Government asked PTS to take information measures for increased openness for broadband and Internet connections. The Government is considering further initiatives in this area.

The Government has appointed an inquiry chair with the remit to review the existing support for consumers in the form of information and guidance and propose how it should be organised and operated to be more appropriate, effective and equivalent for all consumers in the country (ToR 2011:38). The inquiry is due to report by 31 March 2012.

The Electronic Communications Act (2003:389) states that it must be clearly apparent what is applicable with regard to restrictions when consumers buy or procure an Internet connection. In addition, the rules have been amended so that a possibility is provided for PTS, if necessary, to issue regulations on minimum service quality.

Actions

To achieve more secure communication for authorities, there is a need for material for an Internet specification that can be used in the procurement of Internet connections by authorities. A joint Internet specification with different robustness and security requirements (model cases) is therefore due to be produced by 2013. In addition, all authorities should make use of DNSSEC and be reachable with IPv6 by 2013. The Government intends to issue remits concerning these issues to PTS, the Swedish Civil Contingencies Agency and other affected authorities.

In September 2010 the Government asked PTS to take information measures for increased openness for broadband and Internet connections. By 2013 there are to be tools to enable both consumers and suppliers to measure and compare internet connections. The Government is considering further initiatives in this area.

Sweden will be active internationally in order to gain a hearing for its views on a stable, open, robust and global Internet. Sweden will promote and strengthen multi-party collaboration nationally, regionally and globally. Sweden will continue to be involved, for instance through GAC (ICANN) and IGF. This involvement should take place in collaboration with other parties concerned and other countries. In these forums, Sweden should, among other things, continue to pursue issues concerning respect for human rights on the Internet.

The information security of society

Private and public information systems must be secured with the aim of safeguarding assets in society such as democracy, privacy, growth and economic and political stability.

The goals for the information security of society are to[18]

- ensure the functionality, efficiency and quality of society,
- contribute to the fight against crime in society,
- strengthen the ability of society to prevent and cope with serious disruptions and emergencies,
- promote the growth of the business sector,
- safeguard the freedoms and rights and personal privacy of citizens, and
- increase knowledge among citizens and organisations about, and trust in, information management and ICT systems.

Strategic challenges

Today most countries regard information security as a great national challenge, and information security is regarded as being of strategic, foreign-policy and security-policy significance. It is judged that a large-scale ICT incident can have serious consequences for vital public services and critical infrastructure.

In the government communication 'Emergency management of society – strengthened collaboration for increased security', the Government highlights the importance of collaboration and coordination in all sectors of society and at all levels of responsibility.

[18] Government Communication 2009/10:124 Samhällets krisberedskap – stärkt samverkan för ökad säkerhet (Emergency preparedness of society – strengthened collaboration for increased security).

The national action plan for information security drawn up by the Swedish Civil Contingencies Agency covers a number of areas of action: information security in organisations, skills provision, information sharing, collaboration and response, communication security and security in products and systems.

Examples of other important areas to continue working on include emergency exercises at all levels of society, security in control systems (supervisory control and data acquisition, SCADA) in vital public services, standardisation and the use of standards, for example management systems for information security, and the use of encryption.

It is important for the public to know how solutions for secure information management are procured and consequently how standards for information security are set. The work on information security must also be done in collaboration between the public and private sectors. It is therefore crucial that the private sector gives its backing to the goals the Government establishes and if necessary formulates its own.

Initiatives adopted

The Government has taken several initiatives in recent years for Sweden to become better at utilising modern technology to simplify, increase efficiency and practically benefit citizens, businesses and employees, especially for the Government's and the authorities' own work. The Swedish Civil Contingencies Agency, in cooperation with other responsible authorities, has devised a strategy for the information security of society on behalf of the Government. This strategy, which was presented in 2010, applies to the period 2010-2015 and is aimed at the whole of society – from government agencies, municipalities and county councils, businesses and organisations to individuals. The action plan for the information security of society administered and developed by the Swedish Civil Contingencies Agency together with those affected under the Government decision is another significant initiative. The Computer Emergency Response Team (CERT-SE), formerly the Swedish ICT Incident Centre (Sitic), which at the time was located at the National Post and Telecom Agency, has been transferred back to the Swedish Civil Contingencies Agency with effect from 1 January 2011.

The Government decided on five remits for the Swedish Civil Contingencies Agency in the area of information security on 14 April 2010. These remits are aimed at strengthening the information security of society and ability to prevent and deal with ICT incidents. They include investigating how a secure digital information and communication structure for the public sector can be created. In addition, the Agency was tasked with drawing up a national plan that clarifies how serious ICT incidents can be handled and how technical expert networks can be created to support society in the event of serious ICT incidents and create greater response capability. The Agency will investigate how a system for mandatory incident management for government agencies can be designed. In addition, as a contribution towards strengthening the situational picture and creating the possibility of early warning, the Government has tasked the National Defence Radio Establishment, in consultation with the authorities that make up the Cooperation group for information security (Samfi), to submit proposals on how a detection and warning system for vital public services and critical infrastructure can be designed and introduced. In addition, the Swedish Civil Contingencies Agency has been tasked, on the basis of analyses of capability assessments, risk and vulnerability analyses that have been performed and assessments of relationships of dependency, with proposing that individual authorities engage the services of the National Defence Radio Establishment for ICT security analyses. This will be done in consultation with the supervisory authorities under the Protection of Security Ordinance (1996:633).

In the EU Directives on electronic communications recently implemented through the amendments to the Electronic Communications Act (2003:389), the requirements for reliability were updated

and an obligation on operators to report disruptions to operation and incidents involving privacy to the National Post and Telecom Agency was introduced.

The eGovernment Delegation supports the authorities in their administrative development, including work on information security. The eGovernment Delegation is also working on electronic ID (e-ID).

MSB has the right to issue regulations concerning the information security work of government agencies. It has, for example, specified that government agencies must apply a standardised management system for information security (the ISO 27000 series).

Actions

According to the Government Communication 'The emergency preparedness of society – strengthened collaboration for increased security', a national collaborative function for information security should be set up. The Swedish Civil Contingencies Agency (MSB) should annually present an assessment of the situation in the area of information security with regard to threats, vulnerabilities and risks at the level of society. Sweden's involvement in international cooperation in the area of information security should additionally be supported and developed.

MSB and the Swedish Defence Radio Establishment have presented a number of proposals under various government remits (see above). These proposals are under discussion at the Swedish Government Offices.

See also the section on everyday security.

Soft infrastructure

A functioning soft infrastructure is needed to exploit the potential offered by digitisation.

Strategic challenges

Alongside the hard infrastructure, for example communication networks, there is a need for resources in the form of information made available, basic services and functions. The soft infrastructure re-

presents a foundation on which to achieve interoperability, i.e. to make systems, organisations or operational processes work together and capable of communicating with one another by following agreed rules. Schemes for independent assessments of characteristics or requirement levels also form part of the soft infrastructure, for example certification of management systems for ICT security.

Standards are voluntary common solutions devised by consensus for problems that often occur. Standardisation promotes cooperation between the public and private sectors and is an important horizontal instrument for competitiveness with regard to significance for example for product safety and information security. This has been confirmed, for instance, in the Europe 2020 strategy for smart, sustainable and inclusive growth and in the flagship initiative on a digital agenda for Europe. Participation and influence in the work on developing standards is necessary to enable the demands of society for security, efficiency and sustainable development to be met.

Central government has a special responsibility to assist in the preparation of ICT standards that affect the protection of vital public services and critical infrastructure. The special expertise of central government in the area should be applied to contribute to development in the field and make sure that national needs are met by such standards.

There are many standards in the area of ICT that cannot be easily categorised. An example is the work on standardisation in cloud computing, which affects security, data exchange and contracts. Around 98 per cent of the standards that exist in Sweden today are identical to equivalent standards at EU and global level.

A review of European standardisation policy is currently in progress in the Commission[19]. This review is justified, in part, by services needing to be covered by rules and standards developed by non-official global forums and consortia becoming increasingly common and having steadily gained in significance. The Commission proposes that such standards can

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[19] Proposal for a Regulation of the European Parliament and of the Council on European Standardisation, COM (2011) 315 and Communication from the Council to the European Parliament, the Council and the European Economic and Social Committee. A strategic vision for European standards: Moving forward to enhance and accelerate the sustainable growth of the European economy by 2020, COM (2011) 311.

also be used in legislation and procurement. Sweden plays an active part in this work so that the results can be transferred to Swedish conditions. This is particularly important in the area of e-government, to achieve increased interoperability and to support work on procurement.

Sector-specific standardisation work in the area of ICT is in progress in collaboration with the parties concerned, with the aim of creating common information, services and communication structures. Such collaboration takes place for example in the health service and in geographical information. This type of collaboration should also be initiated or deepened in a number of other sectors and together with the municipal sector. Under the remit of the eGovernment Delegation, standardisation efforts are in progress covering sector-wide structures, resources and functions in the area of ICT. This applies, for instance to government-wide information and common terms.

Many standardised functions cover both the public sector and the business sector. This applies, for example, to e-invoicing, e-archiving and e-identification. The public and private sectors collaborate with the business community on issues of this type under the work on standardisation. The PSI Directive[20], which makes it possible for private and non-profit organisations to re-use public information, also highlights the need for collaboration on standardisation issues between the public and private sectors. If users of the e-services referred to above are to feel confident in them, there is a need for the services to follow applicable security regulations. As central government supports these services, it is crucial that the expert resources of central government are utilised in work aimed at developing and operating such services.

One way for central government to influence the use of standards in the area of ICT is through its role as a major purchaser of ICT. This role in central, municipal and county government is a large one, in terms of both costs and complexity. The fact that procurement in these sectors is rarely coordinated and rarely takes place according to the usual regulations adds to the cost and entails risks to information

security in organisations.

Another way of influencing the use of standards is the EU's framework for regulating the characteristics of products. A method of legislation is used there that entails the legislation being general and standard-receptive, i.e. referring to standards with respect to detailed requirements for the characteristics of the product instead of the detailed requirements directly appearing in the legislation. Standard-receptive legislation can be used in a number of areas to make the legislation more flexible.

Actions adopted

The government sector holds responsibility for standardisation through the participation of government agencies in the work on standardisation under the general responsibility of each agency to pursue its activities in an efficient and secure manner. Membership of the EU means a national responsibility for regulations being formulated in such a way that they make a free flow of goods and services between the Member States possible.

Central government contributes to the operations of the Swedish Standards Council annually by making grants. In addition, government agencies, as well as the county council and municipal sector, provide resources to the technical committees that undertake the standardisation work.

Under the activities of the eGovernment Delegation, an ICT standardisation council has been established to facilitate the Delegation's preparatory process on ICT standardisation issues. The Delegation is also developing a national framework for interoperability and a strategy for its introduction. Based on the principles of the framework, guidelines are being developed for the public sector.

International standards are also of key significance to systematic work on information security. They state requirements and guidelines that can be used for all types of organisations. Organisations can consequently operate on the basis of proven experience and more easily create the necessary conditions for better security. Standards have many advantages,

[20] Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information

such as the fact that participation in standardisation work and the use of standards increase transparency between different organisations, which makes it easier to lay down requirements and assess levels of security in products, systems and complete organisations. The resources of central government with regard to assessment of security in ICT products can be found in particular in the Swedish Armed Forces, the Swedish Defence Radio Establishment and the Swedish Certification Body for ICT Security (CSEC), located within the Swedish Defence Materiel Administration. In the context of the Cooperation Group for Information Security (SAMFI), MSB develops protection profiles under the Common Criteria for prioritised product categories in cooperation with affected authorities.

In April 2008, the Government presented a communication to the Riksdag on the significance of standardisation in a globalised world, which discusses ICT standardisation (Government Communication 2007/08:140). This communication highlights the need for a more permanent structure for the coordination of standardisation that can provide support to an analysis of what strategic issues Sweden should address with regard to standardisation.

In consultation with the Swedish Standards Council (SSR), the 'Standardisation Project' was set up in 2010. The project is aimed at assisting the ministries so that they can more effectively identify strategic areas for standardisation and consequently contribute to strengthening Swedish competitiveness and economic growth in a global perspective.

Geographical information

The public sector in Sweden must use geographical information that is described in nationally determined reference systems and that is based on international agreements.

Strategic challenges

Geographical information is used in all parts of society. Geographical information describes phenomena that can be shown on a map using coordinates or some other indication of location, for example an address. Other similar concepts are spatial information and geodata. Geographical information is becoming increasingly significant in central and local government as a means of making planning, decisions and follow-up more efficient. The business community has a demand for information and services for use in business development, the transport sector, media, tourism and leisure. Geographical information is used, for example, as a basis for task management, management of emergency service actions, environmental monitoring, positioning, traffic management, planning and building and, in particular, as a basis for the development of services.

Infrastructure for geographical information can be described as a coherent whole of information together with different conditions required to make the information accessible and usable, for example rules, services for searching for, finding and using the information and systems for collaboration between different actors. Structured management of the information is an essential requirement in developing e-services in society. At the same time as geographical information is used by many different actors for widely differing applications, it is produced and managed by many different bodies. This necessitates there being a fundamental structure for the infrastructure that makes it clear to the parties how different issues of common interest should be addressed.

The great challenge is to be able to update and connect large quantities of existing information to modern reference systems.

Actions adopted

The Act (2010:1767) on Spatial Information and the Ordinance (2010:1770) on Spatial Information came into force on 1 January 2011. As a result, the INSPIRE Directive[22] has been transposed into Swedish law. The aim is to create an infrastructure for electronic geographical information so that changes in the environment can be predicted, prevented and managed and so that EU environmental policy can be for-

[21] See informationssakerhet.se.
[22] Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).

mulated and implemented effectively. The practical implementation of the Directive will proceed in various stages for a number of years to come. This takes place as part of the work on the national geodata strategy, in collaboration between Lantmäteriet (the Swedish mapping, cadastral and land registration authority), the Geodata Advisory Board, the municipalities and around 20 government agencies. The Swedish node for INSPIRE consists of the Internet portal geodata.se.

A new model to provide society with geodata has been devised as part of the work on the geodata strategy. It includes expanded partner cooperation, data sharing with other authorities and municipalities, new search and display services and direct delivery to end-users. Lantmäteriet has devised new collaboration models together with other parties in order to implement the national geodata strategy. The new form of geodata collaboration applies with effect from 1 January 2011.

Lantmäteriet is responsible for the national geodetic infrastructure, which is the basis of the fundamental information and is used to determine where something is on the land surface. This consists of the national reference systems sustainable over time in both 3D and position, height and gravity as well as the national network of permanent reference stations for positioning[23]. A uniform reference system simplifies production, processing and use of geodata by making it easier to compile data from different sources. This is a priority task under the national geodata strategy.

Actions

As part of the work on adaptation to climate change, Lantmäteriet is working on the construction of a national height model. The height model is being produced using laser scanning from aircraft. Good height information increases the options for indicating areas at risk, for instance, of flooding and landslides and therefore, for example, avoiding housing development in such areas. In the budget bill for 2012, the Government proposes continued investments in the area of adaptation to climate change for the period 2012-2015.

This strengthening means that further resources may be earmarked for the height model and that this can be completed during the period.

Following consultation with the Swedish Association of Local Authorities and Regions, Lantmäteriet is to implement a change-over from a nationwide digital register map in accordance with the Government's assessment in the bill 'A coherent system for spatial information' (2009/10:224). The change-over is due to be implemented by 31 December 2017.

See also the section on e-services and information as a basis for innovative services.

Robust electronic communication

Robust electronic communication means that the communications must be constructed in a reliable manner.

Strategic challenges

The objective of policy for the information society is secure, robust and readily accessible communications that are primarily provided through markets that work effectively. The greater part of all the investments to bring about robust electronic communication are made by the market itself, but as the parties involved are not responsible for the whole entity, there is a need for measures to raise robustness that are necessary from a societal point of view. It may, for example, relate to building links in a rural area that are particularly important to reduce outages due to cables being dug up or maintaining central nodes such as rock chambers that house vital equipment where no one takes responsibility for the totality. The National Post and Telecom Agency (PTS) therefore works continuously on robust electronic communication in cooperation with the market players, the Swedish Civil Contingencies Agency (MSB) and other government agencies, municipalities and county administrative boards. This work has been necessary to preserve the stability and security in the Internet and telecom traffic, which increasingly represent a very important community

[23] GNSS (GPS/GLONASS), Swepos®.

infrastructure. MSB is working on the development of fundamental levels of security to create the conditions necessary for adequate robustness in various vital public services. MSB should pursue this development and increase knowledge about how the authorities can work together with various crucial public services.

The Electronic Communications Act (2003:389) imposes certain basic requirements on the operators but does not cover all the robustness measures required to reduce vulnerability. This applies for example to the actions required for vital parts of the networks, for example rock chambers, for which individual operators are not solely responsible.

Acceptance of outages is diminishing as society becomes increasingly dependent on the Internet and telephony. Outages in Internet and telecom traffic can have increasingly serious consequences for society. Effective work on continuous measures to raise robustness that provide an optimum return requires continued cooperation between the public sector and the market, as well as stable funding of operation. It also contributes to future reduced costs to society as a result of fewer outages and more reliable networks for telecom and Internet traffic.

Initiatives adopted

PTS will devise a new strategy in 2011 for the area of robust electronic communication for the period 2012-2014. It will take other important action in 2011 such as a cooperation and emergency management exercise in the electronic communication sector (Telö11). The Agency will also introduce a system for the exchange of operational information between operators and conduct training courses in reliability for metropolitan area networks and in building robust rural networks.

PTS is also working on developing a system to create a common standardised way of presenting outage information in the electronic communication sector. The concept is known as Common Situational Awareness (GLU) and provides information about major disruptions and disruptions that affect the use of the 112

emergency number in an area. The system covers telecom operators and SOS alarm, and is due to enter service in 2011.

PTS, together with the Swedish National Grid and the Swedish Transport Administration, funds Ledningskollen. se, which is aimed at reducing the risk of excavation damage by providing information on where lines and cables are located. In September 2011, the Government tasked PTS with making Ledningskollen. se easier to use by developing a mobile phone app for this purpose.

Actions

To attain the goal of electronic communications being constructed in a reliable manner, PTS has to contribute through its actions to a decrease in the number of disruptions of operation in electronic communication. The efforts of PTS are also to have contributed to the players in the sector having become more capable of dealing with serious disruptions to operation in both urban and rural areas.

Other measures that are taken include redundancy[24] in interurban fibre networks, maintenance of rock chambers where the operators locate their vital equipment, measures to raise skills, dissemination of mobile communication networks, national cooperation projects for example on status reports and information databases and, finally, recurrent exercises as a basis for future efforts.

Broadband

The goal of broadband policy is for Sweden to have world-class broadband. All households and businesses should have good opportunities to make use of electronic community and other services via broadband.

This means that 90 per cent of all households and permanent places of business should have access to 100 Mbps by 2020. In 2015, 40 per cent of households and permanent places of business should have access to 100 Mbps.

Strategic challenges

Access to ICT infrastructure and broad-

[24] Physically separated network that ensures that electronic communication can take a different route in the event of cable breaks etc

band are crucially significant in determining whether companies can be operated and developed in all parts of the country. It is also essential in order to be able to live and have a functioning daily life, do the shopping, keep in contact with family and friends and enjoy entertainment. A well established ICT infrastructure contributes to greater regional and local competitiveness. A high level of use of electronic communications among households and businesses encourages the development of new and better services and other innovations that are made possible by digitisation.

There is a large selection of broadband operators to choose between in large cities and in many major conurbations, quite often with competing ICT infrastructures. However, in smaller towns and in rural areas the situation is often different, with a smaller selection of possible competing operators. There are also areas that, for example, lie outside the coverage of mobile networks, in a radio shadow or far away from a telecom station, where it may, in practice, be impossible to obtain functioning broadband. Certain sparsely populated parts of the country in addition have no access at all to a functioning ICT infrastructure. In an increasingly digitised society, digital services are constantly changing and new services are emerging, which means that there is heavy demand on transmission capacity. To meet the demand for high-quality broadband, there is a need for large investments in new infrastructure and more efficient technology.

An ICT policy objective adopted by the Riksdag is that Sweden should have world-class broadband and that all households and businesses should have good opportunities to make use of electronic community services via broadband. This objective is primarily to be achieved through markets that work well. This means that 40 per cent of all households and businesses should have access to broadband in 2015. The equivalent figure for 2020 is 90%. A survey of the market shows that the target for 2015 has already been met and that 44 per cent had access to 100 Mbps by the end of 2010. The expansion has largely been brought about by the

market, but the clear political objectives with a high level of ambition have contributed to driving development forward. Market investments together with work by the Government to establish a market that functions well have contributed to this positive trend. Government efforts to expand broadband have also made a positive contribution.

To achieve the objective (for 2020), it is important to create good conditions for investments so that the market players are willing to expand ICT infrastructure throughout the country. This entails there being stable ground rules and good competition prevailing in the market. The challenge is to have well balanced regulations that both promote investments in new infrastructure and at the same time ensure effective competition. Municipalities, county councils, regional co-operation bodies and county administrative boards also play an important role in promoting the expansion of ICT infrastructure. A challenge is to increase knowledge of what an expanded ICT infrastructure can contribute at the regional and local levels. At the same time, the prospects of expanding infrastructure are poorer in the sparsely populated parts of Sweden. There is a need for targeted action to ensure that households and businesses in these parts of the country have similar opportunities. In particular, there is a need to utilise the local forces to the good that exist, for example local residents' associations.

A challenge is to ensure that sufficient bandwidth is available to the market to cope with the use of and demand for wireless broadband.

Initiatives adopted

In November 2009, the Government presented a broadband strategy for Sweden. A timed target was presented in this strategy, namely that in 2020, 90 per cent of all households and businesses should have access to broadband at a speed of at least 100 Mbps. An interim target formulated was that 40 per cent of households and businesses should have access to broadband at that speed in 2015. The strategy also contained proposals for measures in

five different action areas that in the main have now already been implemented.

To provide the conditions necessary for good competition, the Riksdag, on a proposal from the Government, has passed amendments to the Electronic Communications Act based on the EU's telecom package[25]. An amended model has also been introduced for radio frequency administration[26].

The Government has also decided on various forms of support for investments in broadband. One of these is duct support, which can be used to lay duct at the same time as other infrastructure is being built. Duct support in 2010 totalled SEK 95 million. In addition, the Government has decided on broadband initiatives under the 2007-2013 rural development programme for Sweden, aimed at increasing access to broadband in areas where commercial players are not expected to expandit within a reasonable time. Broadband investments under the rural development programme totalled SEK 250 million. The Government therefore committed just over SEK 100 million to measures for reliable and robust electronic communications. In addition to this there are other public investments in broadband that are planned and carried out by municipalities, county councils and regional co-operation bodies.

In March 2010 the Government decided to set up a Broadband Forum, tasked with promoting the expansion of broadband throughout the country. The purpose of the Broadband Forum is to serve as a meeting place for dialogue and cooperation between the Government, authorities, organisations such as the Swedish Association of Local Authorities and Regions and companies active in the Swedish broadband market.

Another important element in attaining the goals of the Government's broadband strategy is the use of mobile or other wireless solutions. Bandwidth access is essential for wireless services. Because all the frequencies that were opened to the use of mobile services will soon have been allocated in a technology-neutral and service-neutral way, the market is now well placed to increase the coverage and speed of wireless communication.

It was stipulated in the allocation of licences for the 800 MHz band by the National Post and Telecom Agency that the winner has to undertake to ensure that those households and businesses that today lack broadband coverage at a speed of at least 1 Mbps will receive it. The licence-holder has undertaken to spend SEK 300 million on expansion so that the homes and permanent places of business that today lack broadband by this definition gain access to it before the end of 2014.

As a result of the previously mentioned amendment to the Electronic Communications Act, licences to use radio transmissions as a general rule have to be technology-neutral and service-neutral. This enables the licence holders to use their licences for the purpose their customers demand.

Following an inquiry, PTS has reduced the spectrum that the Swedish Armed Forces have at their disposal and has released a large amount of spectrum for civil users. Some of this spectrum can be used for wireless broadband.

Actions

Work in the Broadband Forum has been successful and has contributed to an increased dialogue between the various parties in the market and specific proposals for measures that can promote access to broadband. The Government therefore proposes to extend the forum's remit.

In the budget bill for 2012, the Government proposes that support for duct should be extended by earmarking SEK 120 million over the period 2012–2014. In addition, the Government proposes that the rural development programme should receive SEK 300 million for broadband expansion and that SEK 75 million over the period 2012-2014 should be used for co-funding of broadband measures.

[25] Government Bill 2010/11:115.
[26] Government Bill 2009/10:193.

The role of ICT
in societal development

ICT permeates the whole of society, affects the most widely differing societal processes and drives community development, both nationally and globally. The development and use of ICT are often crucial factors in ongoing social change, both positive and sometimes negative.

This section addresses a large number of different processes and areas in society in which strategic use of ICT has an important role to play in community development. If Sweden as an international player is to remain a strategically leading ICT nation that uses the opportunities presented by digitisation for positive societal development at both the national and global levels, there is a need for continued focus for instance on research and innovation, ICT for the environment and for global development, freedom on the Internet and increased openness in implementing development assistance etc.

Research and innovation

Digital information and digital tools must be used to a greater extent in research activity and innovation processes.

Strategic challenges

When ICT is used in the service of mankind, new opportunities are created for the use of information and knowledge as well as a need for knowledge. Interdisciplinary research, for example between behavioural science and medicine, can respond to the challenges that people face in their jobs and leisure as a result of increased digitisation.

The contribution ICT makes to growth and societal development is significant. Sweden's ICT-related sectors cope well in global competition, largely due to their strong innovative capability. Sweden is also one of the leading research nations in the world. But it is not possible to base the success of the future on the achievements of yesterday – the challenge is obviously to retain this position. An important issue for future competitiveness is that digital information and digital tools are accessible for research actors, the general public and the business community, for instance in research and innovation activities.

Swedish ICT research and a long technological tradition have given the country a strong position in ICT and the telecommunications field. Globalisation is changing the conditions for development and competitiveness in this area. Research and development of high quality are crucial in ensuring that new successful goods and services will be created. This applies both to research driven by inspiration and curiosity and to research with an approach to development motivated by benefit or need. Long-term efforts are needed to ensure knowledge, expertise and technological development.

Needs-oriented research must be based on the use of ICT and the needs and areas of use of the private and public sectors. ICT makes it possible to search for and process large quantities of data that can result in greater understanding of complex processes and be an important research tool.

ICT is both a driver and facilitator of innovation. The increasing demand for digital solutions – software, systems etc. – creates the conditions necessary for continued growth in ICT and telecom companies. The solutions that these companies supply in turn open up opportu-

nities for new and better offerings from companies or organisations in all parts of society. It may relate to the use of ICT as a new marketing channel or new ways of ordering and delivering welfare services. An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.

The Swedish public sector is a large purchaser and user of various forms of ICT-related goods and services, and in many contexts can act as a driver and highlight the opportunities offered by new technology and new digital services. It is particularly important in ICT to create opportunities and stability for new and medium-sized enterprises.

Procurement and standardisation should therefore be able to contribute towards encouraging innovation.

Work on innovation and development between different actors, sectors, experiences and industries can contribute both to long-term work and pilot projects and to long-term strategic work on the basis of various societal challenges such as climate change, the environment or an ageing population. This can have impacts on investments and initiatives. An important element is creating clusters and public-private partnerships focused on various challenges to society. It is important to utilise the knowledge and commitment of users, and the innovations must meet real needs.

Initiatives adopted

Research funding for universities was boosted by the Government Bill 'A lift for research and innovation' (Government Bill 2008/09:50). At the same time, initiatives were introduced in areas stated as being of strategic importance to Swedish society and the business community. Several of these are relevant to the Digital Agenda for Sweden.

The Government adopted a services innovation strategy in July 2010. Service innovations are innovations where the value arises in use of the service. The strategy highlights the significance of access to broadband, need for knowledge about digital service development companies and the significance of the Internet for digital service innovations. As a result of the service innovation strategy, the Swedish Agency for Innovation Systems (Vinnova) has been tasked with coordinating and convening a forum on the future of the Internet. The forum is to establish a broad dialogue and disseminate experience, promote collaboration and identify priority areas.

Actions

The Government has tasked Vinnova with constructing and strengthening test beds in health care and care of the elderly. Test bed means a common environment or structure to develop and demonstrate new concepts. This initiative is intended to make it easier for innovators to develop, test and demonstrate the potential of innovative solutions through close cooperation with users. ICT plays a key role for innovations in the health of the future together with common structures and processes.

The Government intends to prepare a Bill on research and innovation in 2012.

As notified in the 2010 Statement of Government Policy, work has begun on drawing up a national innovation strategy. The issue of increased coordination of innovation policy with other policy areas will be discussed in the work on the strategy. An innovation and business climate that boosts Swedish competitiveness and attractiveness necessitates initiatives in many different areas of policy, including the area of ICT.

ICT for the environment

ICT must contribute to an environmentally sound society.

Strategic challenges

Society faces great climate and environmental challenges. To meet these challenges, the EU has established climate and energy policy targets for 2020 that greenhouse gas emissions will be 20 per cent lower than in 1990, consumption of

primary energy will decrease by 20 per cent and the proportion of renewable energy will rise to 20 per cent. Sweden's target for 2020 is a 40 per cent reduction in greenhouse gas emissions, in the non-trading sector, a 20 per cent improvement in energy efficiency and a proportion of at least 50 per cent renewable energy out of total energy use[27]. The target with regard to energy efficiency in buildings is that the total use of energy per heated unit of area in residential and commercial premises should decrease by 20 per cent by 2020 in relation to use in 1995.

ICT is estimated to have potential to reduce carbon dioxide emissions in certain areas, principally the areas of construction, housing, energy and transport, by 15 per cent[28]. ICT is consequently an important tool in achieving our common climate and environmental targets.

ICT makes possible servicification, which means that certain products and services, such as online newspapers, e-books, e-commerce etc. become digital. It is particularly important to replace transport and travel with various ICT solutions, such as videoconferencing. Another area is ICT solutions for decision support and environmental monitoring. There is, for example, increased demand to create services that help in consumer choices - shopping in an environmentally correct way, controlling one's energy consumption or simulating alternatives and illustrating results. ICT solutions that could be developed further are information tools (via EAN codes or applications) for communicating information about the chemical contents of articles or ecolabelled products in various product categories. Some of this information is currently to be found on the websites, for example, of the Swedish Chemicals Agency, the Swedish Consumer Agency or various sector organisations.

Other interesting solutions in the energy area are 'smart grids', where ICT will make smart production, distribution and use of energy possible. The use of ICT is of particular interest in construction and housing in energy efficiency in properties. Control systems can help control energy flows and lighting in an environmentally efficient way. In the area of transport, it is mostly a matter of improving logistics and improving efficiency using intelligent transport systems (ITS), for example through more efficient use of traffic signals, regulation of slip roads or lanes, warnings of tailbacks, tunnel control or variable messages on digital signs. In industry, ICT solutions for control and monitoring of industrial processes can contribute to environmental savings, for instance through the checking of material and energy consumption and remote control.

Greater knowledge and dialogue between the private and public sectors is needed to fully exploit the potential of ICT for an environmentally sound society. It is important that ICT is used in as climate-effective and environmentally effective a way as possible. The adverse impact of ICT on the environment is to some extent addressed in the Government's agenda 'ICT for greener administration - agenda for ICT for the environment 2010-2015', which also contains a listing of the laws and regulations applicable to ICT and the environment. A strategic challenge for the future is to gather more knowledge on the environmental impact of the Internet, particularly in view of the equipment and energy expended and the fact that the Internet is being used by more and more people.

Initiatives adopted

The agenda ICT for a greener administration contains goals and recommendations in the areas of purchasing, operation and use, as well as meetings and travel. The target group is principally public administration, primarily the 180 or so government agencies that come under the Ordinance (2009:907) on environmental management in government agencies (the Environmental Management Ordinance), but other parts of the public sector are also encouraged to follow the recommendations in the agenda. Follow-up of the agenda will take place through the agencies' annual environmental reporting under the Environmental Management Ordinance. The environmental reporting is collated by the Swedish Environmental Protection Agency every spring.

In connection with the decision on

[27] Sweden has 16 environmental objectives, se www.miljomal.se
[28] SMART 2020: Enabling the low carbon economy in the information age, a report by the Climate Group on behalf of the Global eSustainability Initiative (GeSI).

the agenda, the Government tasked the Swedish Environmental Protection Agency with drawing up indicators in the area of ICT for the environment, with the aim of being able to follow up the agencies' implementation of the agenda better. The report on the remit was presented in May 2011.

The Government established a Council for Intelligent Transport Systems (ITS Council) in June 2010. The aim is to make better use of the opportunities to use information and communication technology in the transport system to attain transport and business policy objectives. The Council is to develop forms of cooperation between authorities and the business community, provide advice to and speed up the work of the Swedish Transport Administration and other parties on implementing the action plan for intelligent transport systems and promote greater Swedish action in the EU. A final report is due to be presented by 31 December 2012.

Actions

There is great potential to bring about environmental improvements in Swedish towns and cities with ICT support. The Delegation for Sustainable Cities was asked by the Government some time ago to highlight how sustainable development and efforts to counteract climate change can be combined with the promotion of ICT, among other things. This focus should be further prioritised.

ICT plays an important role in the area of energy in the development of 'smart grids'. In the Bill 'Strengthened consumer role for an enhanced electricity market and sustainable energy system' (Government Bill 2011/11:153), the Government judged that Sweden should benefit from the development of smart grids. In the 2012 Budget Bill, the Government proposed that SEK 10 million should be earmarked in 2012-2014 to establish a knowledge platform with associated independent coordination councils and should both strengthen the collaboration between actors and boost knowledge on smart grids.

Gender equality

Gender equality in the area of ICT must be greatly improved.

Strategic challenges

A great deal remains to be done in the area of ICT and gender equality. There is a skewed gender distribution both among professionals in the ICT sector and in ICT programmes at universities. There are still relatively few women among senior managers, project managers and in research and development. This means that the potential for women's participation and knowledge in the area of ICT is not fully utilised.

Statistics from the National Agency for Higher Education show that the trend is for ever fewer women to graduate from higher ICT training programmes. This is despite the fact that a number of projects have been implemented from the 1990s onwards to increase the willingness of women to train in ICT professions. It is therefore important that efforts are already made at primary and lower secondary school to encourage and support the interest of girls in natural science, mathematics and technical subjects in particular.

Statistics from Statistics Sweden relating to 2009 show that around 140 000 people in Sweden had what is referred to as an ICT profession[29], of whom 78 per cent were men and 22 per cent women. The men in the field of ICT had salaries that were 16 per cent higher than those of the women. The statistics for ICT training programmes[30] show that 79 per cent of those who had received post-secondary ICT training were men. 90 per cent of students with IT-related training at upper secondary level were men. Based on the society of today, however, the definition of ICT professions may be considered to be too narrow. In a broader perspective, there are other educational programmes and professions in which ICT is an important component, although they are not covered by the definition.

It is a great challenge to engage more women in ICT-related training programmes and professions. If this is to be possible, there is a need for both the education system and companies to succeed in

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[29] ICT professions are defined as ICT managers, systems analysts and programmes, other computer specialists, computer technicians and computer operators, according to the standard for Swedish classification of professions.

[30] ICT education programmes include the following specialisations: Data, general education, Systems science and software engineering, Computer science, Other education in computer science and systems knowledge, Computer use, Data, other/unspecified education, Engineering - electronics, computer engineering and automation, Electronics, telecommunications and computer technology, Automation / Control engineering, Other education in electronics, computer engineering and automation.

making ICT interesting and attractive, so that more women take it up. This means, for instance, that better career opportunities should be created for women in the ICT sector. It is also important for gender equality issues to be integrated into activity, not just in individual projects or in the hands of enthusiasts.

Initiatives adopted

On behalf of the Government, the Royal Institute of Technology (KTH) in the autumn of 2007 drew up a proposal for an action plan, 'Gender-equal ICT development for increased growth', containing measures to change people's views of the ICT professions, highlight good models and create better career opportunities for women in the ICT industry.

In March 2009 the then Swedish Business Development Agency was asked by the Government to conduct a survey of relevant national and regional initiatives taken with the aim of promoting participation by women in the ICT and telecom sector[31]. Some examples of best practice that were presented were the mentorship programme Womentor, Digigirlz, Teknikåttan and Resurscentra för kvinnor (Resource centres for women).

The Delegation for Gender Equality in Schools, the Delegation for Gender Equality in Higher Education and the Technology Delegation have recently completed inquiries that present a large number of proposals for improving gender equality in schools and higher education.

It is stated in the appropriation directions for the 2011 budget year regarding higher education, under the objective of gender equality, that the Government intends to return with targets to attain an even gender distribution among professors.

In 2010, the Government tasked the Swedish Agency for Economic and Regional Growth with arranging a national conference on gender equality in ICT for increased growth and with proposing how work for increased gender equality in the area of ICT can continue. The conference was held on 8 December 2010, with around seventy active participants. The Agency presented the report Jämställd it- för ökad tillväxt (Gender equality in ICT – for increased growth) on 28 February 2011.

Actions

There is a need for more women to be involved in making decisions and take part in the development of digitisation and its capabilities. It is therefore important that more women choose to work in ICT-related professions and that more women take university programmes focused on ICT. The ambition is for the proportion of women in ICT-related professions and women who study on programmes with an ICT focus to increase sharply by 2020.

The Government decided in September 2011 to task the Swedish Agency for Growth Policy Analysis with conducting a follow-up of the proposals presented by KTH in 2007 in the report Jämställd it-utveckling för ökad tillväxt (Gender equality in ICT development for increased growth). The proposals cover measures that can be implemented by the three target groups, the ICT industry (the business community), those involved in ICT training programmes at higher education institutions and the Government, through ministries and agencies.

Freedom on the net

In order to strengthen freedom online, Sweden must endeavour to ensure that human rights are respected on the Internet.

Strategic challenges

Online freedom is a distinct priority area in Swedish foreign policy. Various regimes daily engage in online censorship, for instance trying to stop opposition movements by limiting their options for communicating with the outside world. Mobile traffic and use of the Internet is disrupted or closed down. Attempts are also made to track down critics of regimes, and to spy on them online, with the aim of monitoring the exchange of thoughts, views and ideas. The outcome is that around a hundred 'cyber dissidents' are currently imprisoned in various countries. This makes online freedom and security one of the great global issues for the future. Fundamental issues of freedom, human rights, for example with

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[31] Kvinnors delaktighet på IT- och telekomområdet – övergripande kartläggning av initiativ som främjar kvinnors delaktighet på IT- och telekomområdet (Women's participation in the area of ICT and telecoms - overarching survey of initiatives that promote participation by women in the area of ICT and telecoms), March 2009.

respect to freedom of expression and opinion, and democratisation are concerned. Supported by several leading countries, Sweden has driven UN work on issues of human rights and the Internet. Sweden has, in addition, hosted and will again host international expert meetings with the UN's Special Rapporteur for Freedom of Opinion and Expression, Frank La Rue. The Government is spending SEK 150 million on special actions for democratisation and freedom of expression in 2011.

Freedom online is a foreign-policy initiative with the objective of demonstrating more clearly how human rights are applied on the Internet. It is an initiative that will also have a bearing on the development of policy in Sweden, as the fundamental principles to be established internationally are also expected to be implemented in Sweden. These principles are not expected to create new human rights but rather to make it clear how human rights are to be applied in the Internet environment. The aim is to contribute to strengthening the international framework for human rights and the Internet and for Swedish Internet policy to be in line with this international framework.

In recent years, human rights, in particular issues of freedom of expression and the right to privacy, have received considerable attention in discussions on administration of the Internet. It is therefore important to establish as a matter of principle that human rights also apply on the Internet. This means that only such restrictions of human rights as are usually permitted outside the Internet can be applied to the Internet. Restrictions, surveillance, monitoring and filtering in a way that contravenes human rights are unfortunately becoming increasingly common. In some countries it happens that dissidents and people who work to promote human rights are monitored and are also arrested. It is important in this context to emphasise the principle of freedom from liability for Internet suppliers with regard to content carried in the traffic that passes through the Internet, in accordance with the Electronic Commerce Directive.

There is a need to clarify what human rights mean in an Internet context. Under the Internet Governance Forum (IGF)[32] Sweden is pressing for issues concerned with human rights to be more visible and to permeate all the core areas of the IGF. In the same way, Sweden is active in the UN, the Council of Europe, UNESCO, the OECD and in other international contexts to ensure that human rights are respected on the Internet.

Freedom of expression is a fundamental human right that is protected by a number of international conventions. The protection includes freedom of expression being applicable irrespective of the medium through which the message is conveyed. Freedom of expression is nevertheless regarded by many governments, including many totalitarian and authoritarian regimes, as a threat to their hold on power. Various forms of monitoring and censorship of the Internet have therefore become a new and increasingly common way of attempting to stifle or limit freedom of expression. Such restrictions are often contraventions of human rights.

The new information technology is also utilised for cyber warfare and cyber espionage. Lack of security online is used to threaten the freedom of users. This shows that online freedom is closely linked to security with regard to the functioning of networks and privacy of users. At the same time, there is an important balancing of interests between, on the one side, the freedom of users and protection of personal privacy, and the requirement of security and monitoring to combat misuse on the other. Security and monitoring measures must, however, always be taken with full respect for human rights.

Initiatives adopted

Since 2009, Sweden has been working specifically to strengthen freedom of expression on the Internet. This work is done in various forums and in several different ways. An important part of this work is the cooperation with the UN's Special Rapporteur for Freedom of Opinion and Expression, which also covers the right to privacy and access to the Internet from a rights perspective.

32See also the section on the Internet in Sweden and globally.

The aim in this cooperation is to raise the profile of these issues in the UN Human Rights Council. In June 2011, the Special Rapporteur for Freedom of Opinion and Expression presented a report on freedom of expression and the Internet to the UN Human Rights Council.

The most important outcome of this work to date is the Swedish initiative for an inter-regional statement on freedom of expression and the Internet at the same session of the UN Human Rights Council. This statement addressed several of the key areas of the Special Rapporteur's report and received broad endorsement by 40 countries across the world, such as Brazil, India, Indonesia, South Africa and the United States.

Actions

In order to improve freedom online, Sweden should endeavour to ensure that human rights are respected on the Internet. This means increased international support on key principles of protection and promotion of human rights, including freedom of expression, on the Internet. The principles include minimising various forms of surveillance and censorship of the Internet.

In future sessions, Swedish will continue to press for the UN Human Rights Council to address freedom of expression and other human rights on the Internet. The aim is to clarify the application of human rights on the Internet.

In addition, Sweden will press for other international forums to integrate the rights perspective in an effective way, for example with regard to administration of the Internet under IGF. It is also important to increase coordination and collaboration nationally and internationally.

Copyright

With the aim of promoting creativity and innovation, it must be simple to enter into contracts on copyright in the digital environment. The conditions for those who wish to obtain access to creative content should therefore be improved at the same time as safeguarding copyright.

Strategic challenges

Digital technology and the use of the Internet are giving more people and businesses the opportunity to create and disseminate the results of their creations. Businesses also have greater opportunities to develop and distribute creative content. Users can obtain access for instance to books, music and film to a far greater extent than previously. The prospects of originators, suppliers of services and materials and end-uses being able to benefit from digitisation are therefore good.

In a knowledge-based society it is important, not least for financial reasons, to stimulate and promote innovation, creative activity and investments. As part of this work, copyright must be safeguarded in the digital environment. The development of digital technology is opening up new opportunities to use and distribute works. It is also crucial that the results of creative activity can easily be enjoyed by large numbers of people. All this necessitates copyright legislation that simplifies the conditions for gaining access to copyright-protected material at the same time as protecting the interests of the rights holders. Copyright is of fundamental significance to the possibility of culture creators making a living from their artistic creation.

An increased range and greater opportunities to reach a large number of users means greater demands for a functioning scheme for copyright clearance. This applies in particular in the digital environment, where mass use and situations that apply across national borders are common. Well balanced licensing solutions can, however, make it easier to use copyright-protected material while assuring the rights holders of compensation.

Initiatives adopted

At the EU level, the Commission has highlighted the significance of copyright for the development of a digital single market in its communication A Digital Agenda for Europe. As part of this work, which is partly aimed at facilitating access to creative content in the digital environment, a number of measures are proposed

to simplify the procedures for clearance, administration and cross-border licences for copyright. One such proposal is for instruments relating to collective administration of rights. The Commission additionally presented a proposal in May 2011 for a directive on orphan works (works where the holder of the rights is unknown or cannot be reached). In addition, in July 2011 the Commission presented a green paper on the online distribution of audiovisual works.

At the national level, an inquiry chair has conducted a review of certain copyright issues. The final report 'A new Copyright Act' (Swedish Government Official Reports 2011:32) was presented in April 2011. The interim report 'Contractual copyright' (Swedish Government Official Reports 2010:24) contains a number of proposals aimed at making it easier to enter into copyright contracts. The Inquiry proposes expanded and simplified provisions on 'contract licences'. Such provisions make it possible to enter into contracts on the use of works with an organisation that represents several originators in the field and consequently to gain the right to also use works of originators who are not represented by the organisation. The proposals in this section are aimed in part at creating the necessary conditions for large quantities of material to be made available more easily, while originators and other rights holders receive compensation for their creation. The proposals are currently under discussion at the Government Offices.

Actions

The Government should press for well balanced and appropriate regulations on the issue of licensing of copyright both nationally and at the EU level.

ICT for global development

Use of ICT in development assistance must contribute to poverty reduction, democratisation and respect for human rights. Effective poverty reduction is promoted by openness in implementing development assistance.

Strategic challenges

Information and Communication Technology for Development (ICT4D) is an issue given high priority by the Government in development cooperation. Development in ICT will not stop but will instead speed up. At the same time, the threats to freedom of expression that technical development has brought with it are increasing. There are great challenges, among other things in a lack of collaboration and a lack of common standards, both between authorities and internationally. Access to the new technology also varies between different countries, but also within countries and between different groups. Effective and strategic ICT4D work necessitates increased collaboration with more and new actors.

The Government is prioritising greater openness in carrying out development assistance. Information on development assistance should therefore to a greater extent be made available in a digital, comparable and open format for people in Sweden and cooperating countries. This improves the prospects for direct access, scrutiny and efficient use of resources. This applies both in Sweden and in countries with which Sweden undertakes development cooperation. Openness is additionally expected to lead to increased democratic accountability, dialogue on the results of development assistance and more effective poverty reduction, administration and management of resources. It is therefore crucially important to publish public information on development assistance in internationally comparable formats systematically and without undue delay.

To bring about this openness there is a need for increased collaboration and information management across authority, organisational and national borders. Sweden is therefore taking part in several international initiatives to improve global access to relevant and comparable information on development assistance.

Initiatives adopted

Development assistance should use ICT in a broad perspective in areas such as health and education but also through further

reinforcement of special efforts towards democratisation and freedom of expression. The Government has instructed Sida to earmark funds to make innovation, skills provision and development of methods and capacity in ICT4D possible. Attention should be consistently paid to ICT in development cooperation, but with a special focus on the areas of democratic development and human rights, as well as health and education, both through targeted initiatives and in the form of initiatives in which ICT is used as a method. Sweden supports a number of initiatives in these areas, for example aimed at strengthening actors for change, both individuals and groups, who promote democratisation and freedom of expression.

Development assistance should contribute to greater opportunities for development, democracy and human rights, accountability, participation, entrepreneurship, growth, freedom and knowledge. This may entail creating access to ICT by providing education, infrastructure, technical equipment and Internet connections. Special emphasis should be given to access to the use of new technology for women and girls. Another important perspective is the development of national, regional and international strategies in the area that strengthen freedom of expression and respect for human rights.

The Government has also asked the Swedish International Development Cooperation Agency (Sida) and other authorities in Expenditure Area 7, International Development Assistance, to make information on development assistance available as soon as possible with the aim of implementing a guarantee of transparency for Swedish development assistance. The intention with the guarantee is for general documents and other public information on development assistance to be made available on the Internet. As part of this remit, the information service www. openaid.se, which the Ministry of Foreign Affairs has developed together with Sida, should be enhanced. This service is to offer information on development assistance for free use in an open standard. The information is to be adapted and integrated with international standards for the publication of development assistance information.

Actions

It is important to continue to focus on implementing policies and strategies in the area and to use the lessons learnt from this work in a broader perspective. Sweden should support innovative approaches and new arenas, as well as national and international actors with respect to capacity and method development and encourage collaboration between new and more established actors in the area. Increased coordination and collaboration in Sweden, in the EU and globally should also be aimed for.

The Government prioritises openness in the implementation of development assistance, and intends to continue to pursue the issue of transparency and effectiveness of development assistance in international contexts. The Government and affected agencies will continue to work towards increasing insight into development assistance, for instance by implementing the guarantee of transparency in line with the remits that have been decided upon. In the longer term, information on development assistance should also be made available to people in the recipient countries. The intention is for other Swedish authorities and actors also to be covered by the guarantee of transparency in the longer term. Sweden will also seek to ensure greater transparency among cooperating partners and other development assistance actors, including multilateral organisations, private actors and the organisations of civil society.

**Ministry of Enterprise
Energy and Communications
Sweden**

www.sweden.gov.se

Regional digital agenda
för Jönköpings län
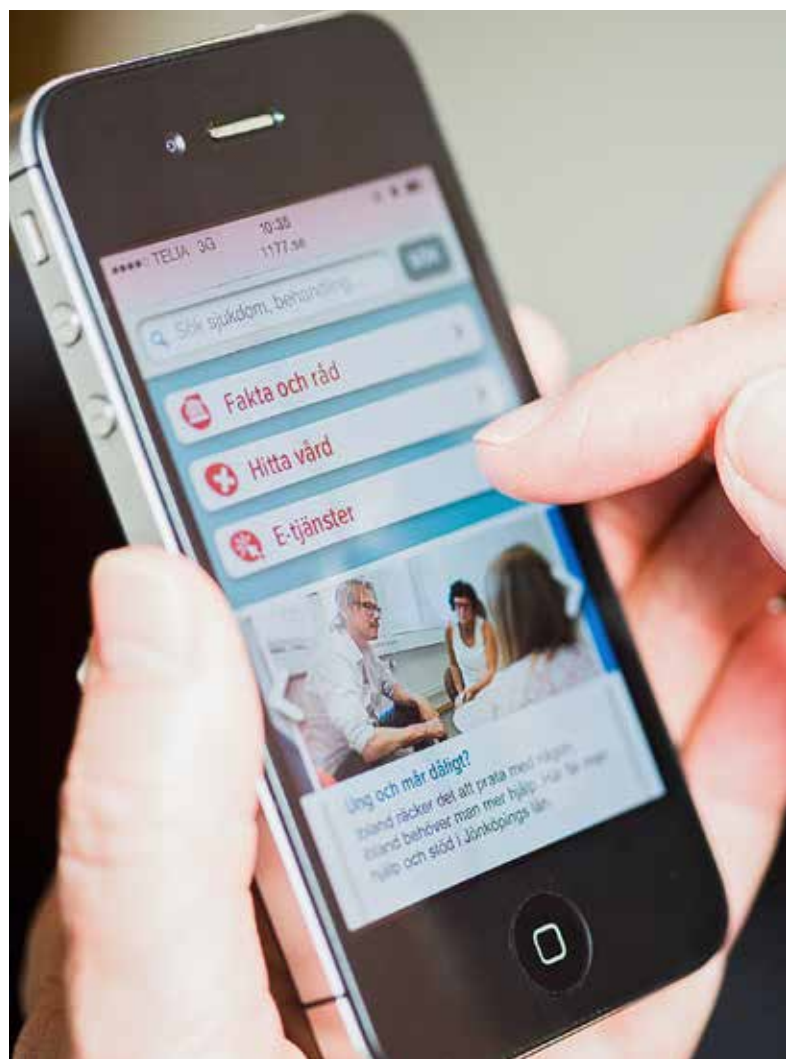
Region Jönköpings län, Länsstyrelsen och kommunerna i Jönköpings län har i samverkan
med aktörer i samhället tagit fram en regional digital agenda för Jönköpings län

Innehåll

Inledning

Bakgrund

2010 tog EU fram en långsiktig strategi för tillväxt, Europa 2020, där den digitala agendan är ett av sju huvudinitiativ för att möta Europas framtida utmaningar. Den digitala agendan har ambitionen att ta ett helhetsgrepp kring hur it kan vara ett verktyg för att effektivisera och stimulera tillväxt samtidigt som det kan ge ett rikare och bättre vardagsliv för invånarna.

I oktober 2011 presenterades It i människans tjänst – en digital agenda för Sverige. Alla län och regioner i Sverige har därefter signerat avsiktsförklaringen om att ta fram en regional digital agenda.
För Jönköpings län har landshövdingen Minoo Akhtarzand, regionstyrelsens ordförande Bengt Dahlqvist och landstingsstyrelsens ordförande, Håkan Jansson undertecknat avsiktsförklaringen. I avsiktsförklaringen framgår att Regionförbundet, Landstinget och Länsstyrelsen i samråd med relevanta aktörer i samhället har åtagit sig att formulera en regional digital agenda.

I november 2011 beslutade kommunerna i Jönköpings län och Landstinget i Jönköpings län att samverka inom e-utveckling och bilda e-utvecklingsrådet. E-utvecklingsrådet har tagit fram en grund till den regionala digitala agendan för Jönköpings län. Till och med september 2013 leddes e-utvecklingsrådet av Jönköpings kommun som därmed var huvudman och administrativt stöd för länets arbete med den regionala digital agenda. I oktober 2013 tog Regionförbundet successivt över den uppgiften.

Under våren 2013 arbetade Regionförbundet fram ett underlag, i samverkan med Länsstyrelsen och Landstinget. Hösten 2013 sattes ett antal arbetsgrupper igång för att forma den gemensamma regionala digitala agendan. Ambitionen är ett tydligt användar-, verksamhets- och medborgarperspektiv och att fler aktörer blir delaktiga i processen.

Sedan avsiktsförklaringen antogs har Region Jönköpings län bildats. Ansvaret för den regionala digitala agendan ligger sedan januari 2015 på Region Jönköpings län och Länsstyrelsen.

Vad är en agenda?

Agenda (av lat. agere, "handla, verka"), egentligen "vad som bör göras" är en långsiktig åtgärdsplan.

Den nationella digitala agendan

Informationsteknik är ett område som spänner över alla politikområden. Vi har troligtvis bara sett början av alla fördelar som användningen inom informations- och kommunikationstekniken (IKT) kan innebära, och då gäller det att vi är rustade inför framtiden. EU-kommissionen uppmanar alla intressenter i Europas digitala strategier att samverka för att säkerställa Europas plats i en globalt konkurrensutsatt digital framtid.

Den demografiska utvecklingen tyder på allt fler äldre, samtidigt som det är brist på omvårdnadsutbildad personal. Digital teknik kan bidra till att de som på grund av ålder eller funktionsnedsättning kan bo kvar hemma och känna sig trygga och delaktiga i samhället.

It i människans tjänst – en digital agenda för Sverige, är en sammanhållen strategi som syftar till att statens befintliga resurser ska användas bättre. Agendan är ett komplement till pågående insatser runt om i landet för att samordna åtgärder inom it-området, till exempel inom säkerhet, infrastruktur, kompetensförsörjning, tillit, tillgänglighet, användbarhet, standarder, entreprenörskap och innovation.

Den nationella digitala agendan är uppbyggd kring fyra strategiska områden:
1. Lätt och säkert att använda
2. Tjänster som skapar nytta
3. Det behövs infrastruktur
4. It:s roll i samhällsutvecklingen

Insatser i form av utvecklingsarbete, nya inspel och samverkan behövs för att öka tillgängligheten och utnyttja potentialen inom it.

Den regionala digitala agendan

Utöver den nationella agendan är en övergripande regional digital agenda viktig ur många aspekter – den handlar om att på ett strukturerat sätt ta sig an uppgiften genom samsyn och bred samverkan inom länet. När vi arbetar utifrån en gemensam agenda blir det enklare att prioritera och att se nya lösningar som effektiviserar arbetet både i offentlig och privat sektor. Det kan till exempel handla om att samverka kring upphandling och drift av it-system (e-förvaltning) eller att hitta lösningar som underlättar för vård och omsorg och ett aktivt hälsoarbete (e-hälsa).

Då fler och fler viktiga samhällstjänster- och funktioner erbjuds digitalt så måste infrastruktur och bredband vara robust och säkert. Tekniken används överallt hela tiden och nya tjänster tillkommer löpande. Vi behöver se till att länets invånare förstår och har möjlighet att använda tekniken, i arbetslivet och privat. Det handlar om demokrati och delaktighet. Vi har stora vinster att hämta hem rent samhällsekonomiskt genom effektivisering, rationalisering och via gemensamt upphandlade system.

Syfte

Syftet med den regionala digitala agendan är att bidra till utveckling och tillväxt i länet genom samverkan mellan Region Jönköpings län, Länsstyrelsen och kommunerna i Jönköpings län och andra aktörer. Den regionala digitala agendan utgår från målet att Sverige ska bli bäst i världen på att använda digitaliseringens möjligheter.

Mål

Jönköpings län ska bli en region som präglas av hög it-användning, vilket gynnar en hållbar regional utveckling. Det övergripande målet för regionen är att få en gemensam agenda med samsyn kring prioriteringar. Den regionala digitala agendan ska utformas i linje med den regionala

utvecklingsstrategin för Region Jönköping mot 2025 (RUS) och bearbetas parallellt med framtagandet av strategins handlingsplaner.

Det vi vill åstadkomma med en regional digital agenda är:
• En enklare vardag för privatpersoner och företag,
• Ett smartare och öppnare samhälle som stödjer innovation och delaktighet,
• Högre kvalitet och effektivitet i den verksamhet som bedrivs.

Förutsättningar för att genomföra den regionala digitala agendan

Genomförandet av den regionala digitala agendan förutsätter bred samverkan mellan alla aktörer i länet, kompetens, standardisering, utbyggnad av bredband och ett hållbart tänkande.

Samverkan

Samverkan är en förutsättning för att genomföra den regionala digitala agendan. De goda intentionerna kräver fortsatt nära samarbete mellan olika samhällsaktörer inom offentlig, privat och ideell sektor för att målen ska uppnås. Den regionala digitala agendan besvarar inte hur detta samarbete ska struktureras eller hur ansvar och roller ska fördelas. Det blir en viktig fråga för parterna att enas om.

Kompetens

I kunskapssamhället får kompetens och nätverk allt större betydelse. Digital kompetens kräver goda kunskaper om hur informationssamhällets teknik fungerar, vilken roll den spelar och vilka möjligheter den ger i vardagen både hemma och i arbetslivet. Det krävs kompetenssatsningar både för invånare och verksamma i länet. För att säkerställa att de investeringar som görs har rätt kvalité och hållbarhet krävs kompetens hos beslutsfattare.

Standardisering

Standardisering av teknik och arbetssätt är viktigt för att utveckling ska kunna genomföras på ett effektivt och ekonomiskt sätt. Utveckling ställer krav på standardiserad kommunikation mellan olika system och mellan utrustning och system. Genom standardisering överbryggas organisationsgränser och detta gör det möjligt att samla information till invånaren. Standardisering underlättar gemensamma utvecklingsprojekt. I första hand ska nationell standard användas.

Bredband

2009 antog Sverige en bredbandsstrategi med det övergripande målet att Sverige skulle ha bredband i världsklass. Bakgrunden var att genom hög användning av it och Internet skulle både tillväxten, konkurrenskraften och innovationsförmågan i Sverige öka. Bredbandsstrategins mål är att 90 procent av landets befolkning och arbetstillfällen ska ha tillgång till ett snabbt bredband med en hastighet på 100 Mbit/s år 2020.

I den digitala agendan för Sverige konstateras att en positiv utveckling på it-området ger effekter på den ekonomiska tillväxten, den sociala välfärden och miljön. Det växer fram nya erbjudanden som kombinerar produkter och tjänster, nya affärsmodeller och processer för att producera, konsumera och distribuera i samspel mellan kund och användare. Det konstateras också att det krävs en grundläggande infrastruktur med väl fungerande elektroniska kommunikationer, det vill säga en bredbandsinfrastruktur, för att det ska vara möjligt att erbjuda digitala tjänster. Det innebär att en väl fungerade bredbandsinfrastruktur är en förutsättning för att Jönköpings län ska vara konkurrenskraftigt med ökande tillväxt. Tillgången till ett snabbt bredband är också grundläggande för att kunna nå målen med en regional digital agenda.

Driftsäkert och robust nät

Samtidigt som intresset för bredband är stort och växer, finns det risk för tilliten till de tekniska lösningarna. Nätet måste vara både driftsäkert och robust. Det ställer krav på nätägare, som har ansvar för avtal och helheten för ansvarsfördelningen. Exempelvis behöver nätägare veta hur långt deras ansvar sträcker sig vid ett avbrott och följderna av avbrottet. Medvetenheten behöver öka om att byanätsägare och kunder bör ställa krav på god driftsäkerhet, innan utbyggnad kan göras.

Det krävs ett robust nät för att garantera driftsäkerhet och tillgänglighet. Det kan ske genom att ställa höga krav på säkerhet, när tjänster för bredbandsutbyggnad upphandlas. Säkerhetskraven bör hanteras separat i upphandlingsunderlag, test och överlämnandehantering. Missade säkerhetskrav vid upphandling kan innebära att system är onödigt sårbara under hela sin livscykel.

Roller, ansvarsfördelning och riskanalys måste genomföras för varje nät. Det innebär bland annat kartläggning av kontrollsystemen och förståelse för nätets informationsflöden och systemberoenden. Riskanalys inkluderar kontinuitetsplanering med roller och ansvar vid haveri eller krissituationer och bortfall av kompetens eller ansvariga. Driftsäkert och robust nät är ett krav för ökad användning av digitala tjänster, idag och i framtiden. Fler och fler tjänster tillhandhålls även inom samhällsviktiga funktioner och offentlig service, vilket bidrar till höga krav på driftssäkerhet.

Samsyn för bredbandsutbyggnad, drift och underhåll

Utbyggnad av bredband pågår i länet. Bredband till alla är ett sätt att minska skillnaden mellan stad och land. Det är också viktigt att invånarna ska kunna verka, bo och leva i hela länet. Bredband skapar förutsättningar för detta. Genom ökad utbyggnad kan fler företag verka på landsbygden.

Länets arbete för bredbandsutbyggnad inom landsbygdsprogrammet och det statliga kanalisationsstödet har lett till ett allt större lokalt engagemang. Flera byalag har tagit initiativ till utbyggnad på landsbygden och på marknadsmässiga grunder pågår både utbyggnad och uppgradering i alla kommuner i länet. Förutsättningar är goda för ett fortsatt arbete med bredbandsutbyggnad i eftersatta områden. Efterfrågan på stöd till prioriterade områden har dock överträffat tillgången på pengar. Det kan tolkas som att utbyggnaden och stöden är väl förankrade i länet, men att ytterligare medel behövs för att nå målen i den svenska bredbandsstrategin.

Hur den pågående utbyggnaden sker och under vilka förutsättningar, varierar mellan kommunerna. Utöver bristen på medel, är detta en av de största utmaningarna för att öka utbyggnaden av bredband. De olika modellerna för såväl utbyggnad som drift försvårar förutsättningarna för samsyn och gemensamma lösningar. En samsyn kring roller och ansvarsfördelning samt utbyggnad, drift och underhåll skulle underlätta samverkan mellan länets digitala aktörer. Genom samverkan kan tillförlitligheten till bredbandsinfrastrukturen öka, vilket i sin tur är en förutsättning för ökad digitalisering.

Hållbar utveckling

Inom alla insatsområden ska hållbarhetsperspektiven beaktas. Hållbar utveckling innehåller ömsesidigt beroende dimensioner – den sociala och kulturella dimensionen, den ekologiska och den ekonomiska dimensionen.

Den sociala och kulturella dimensionen

Denna aspekt av hållbarhet handlar om människors möjligheter att engagera sig, kunna ta initiativ och vara delaktiga så att inflytande och makt fördelas rättvist, jämlikt och jämställt. Möjligheterna till social service, trygghet och delaktighet i samhället stärks med hjälp av fungerande digital infrastruktur och utvecklingen av digitala tjänster. Det kan till exempel handla om att kunna delta i en medborgardialog utan att behöva lämna sitt hem, ta del av offentlig information och information från vård och omsorg som handlar om den egna hälsan och det kan handla om att få ta del av kulturella arrangemang via webbsändningar med mera.

Den ekologiska dimensionen

Ekosystemen ska skyddas och god livsmiljö tryggas både för denna och kommande generationer. Genom effektiv digital kommunikation kan information spridas och fler tjänster, service och möten ske digitalt. Dessutom innebär digitaliseringen fler möjligheter att sälja varor och tjänster på landsbygden utan att de som handlar behöver resa till tätorterna. Digitaliseringen kan därför innebära minskad klimatpåverkan genom färre resor.

Den ekonomiska dimensionen

Stabila och sunda ekonomiska förhållanden är en förutsättning för ett framtida hållbart välfärdssamhälle. Produktivitet och förmågan att utveckla och sälja både befintliga och nya varor och tjänster, är avgörande för ett starkt och konkurrenskraftigt näringsliv. Hållbar tillväxt innebär att varken miljön eller människors hälsa äventyras. Det är här den digitala agendan kommer in. Välfungerande och robust digital infrastruktur främjar ett breddat näringsliv. Digitaliseringens möjligheter innebär att många behov och efterfrågan kan tillgodoses med nyskapande digitala produkter och tjänster. Digitaliseringen innebär även att företag kan drivas var som helst i länet, vilket i sin tur främjar utvecklingen av glesbygden.

Samverkansaktörer

Förverkligandet av denna regionala digitala agenda förutsätter samverkan mellan många olika aktörer. De viktigaste aktörerna för att insatserna inom agendans fem insatsområden ska kunna genomföras med framgång:
* Region Jönköpings län
* Länsstyrelsen
* Kommunerna
* Statliga myndigheter
* Ideella organisationer
* Utbildningsleverantörer, folkhögskolor och bildningsförbund
* Nätägare exempelvis operatörer, byalag eller ekonomiska föreningar
* Utvecklare av digitala lösningar
* Företagsfrämjande organisationer

Fem strategiska insatsområden
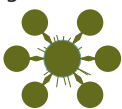
Den regionala digitala agendan för Jönköpings län har fem strategiska insatsområden. Dessa har identifierats som de viktigaste områdena att arbeta med i Jönköpings län för att nå de övergripande målen. Kopplingarna mellan de fem insatsområdena och **It i människans tjänst**, **Strategi för eSamhället**, och **Regional utvecklingsstrategi (RUS)**, illustreras i den här tabellen:

Digital infrastruktur	Effektiv digital kommunikation	Samverkan mellan länets digitala aktörer	Delaktighet för alla	Tryggare vardag

Övergripande mål — IT i människans tjänst, Näringsdepartementet

Regionala insatsområden	Lätt och säkert att använda	Tjänster som skapar nytta	Det behövs infrastruktur	IT´s roll för samhällsutvecklingen
Digital infrastruktur	✓		✓	✓
Effektiv digital kommunikation	✓	✓		✓
Samverkan mellan länets digitala aktörer	✓	✓	✓	✓
Delaktighet för alla		✓		✓
Tryggare vardag	✓	✓		✓

Övergripande mål — Strategi för eSamhället, Sveriges kommuner och landsting / Medborgaren i centrum, Regeringskansliet

Regionala insatsområden	Enklare vardag för privatpersoner och företag	Smartare och öppnare förvaltning stödjer innovation och delaktighet	Högre kvalitet och effektivitet i verksamheten
Digital infrastruktur	✓	✓	✓
Effektiv digital kommunikation	✓	✓	✓
Samverkan mellan länets digitala aktörer	✓	✓	✓
Delaktighet för alla	✓	✓	✓
Tryggare vardag	✓	✓	✓

Övergripande mål	Regional utvecklingsstrategi (RUS), Regionförbundet Jönköpings län	
Regionala insatsområden	År 2025 är Region Jönköping en konkurrenskraftig industriregion och har ett breddat näringsliv med betoning på kunskapsintensiva företag	År 2025 är region Jönköping en global livsmiljö som präglas av ekologiskt, socialt och kulturellt ansvarstagande
Digital infrastruktur		
Effektiv digital kommunikation		
Samverkan mellan länets digitala aktörer		
Delaktighet för alla		
Tryggare vardag		

Insatser

Inom varje enskilt insatsområde måste flera insatser göras för att nå önskade effekter. Många insatser berör olika insatsområden. Dessa beskrivs under det insatsområde där insatsen har sin starkaste koppling. Insatserna kan komma att justeras och kompletteras beroende på samhällets och aktörernas behov och utveckling.

Digital infrastruktur

Det övergripande målet med den nationella digitala strategin är att Sverige ska ha bredband i världsklass. Hög användning av it och Internet är bra för Sveriges tillväxt, konkurrenskraft och innovationsförmåga. Det bidrar till utvecklingen av ett hållbart samhälle. Det hjälper också till att möta utmaningar i form av ökad globalisering, klimatförändringar och en åldrande befolkning i glesbyggd. En förutsättning för att möta dessa utmaningar och nå det övergripande målet, är tillgång till bredband med hög överföringshastighet i hela regionen.

Insatser

1. Regional bredbandsstrategi

Gemensam regional strategi för samverkansaktörerna leder till ökad samordning, bättre ansvarsfördelning samt effektivare utbyggnad.

Förväntat resultat

Regional bredbandstrategi bidrar till måluppfyllelse i den nationella bredbandsstrategin. Förutsättningar för utbyggnaden förväntas framgå mer detaljerat i den regionala bredbandsstrategin.

2. Regional bredbandssamordnare

Genom att tillsätta en regional bredbandssamordnare med uppgift att kartlägga behov, öka samverkan och initiera forum för samverkan mellan de olika aktörerna, stärks möjligheterna till uppföljning och en god helhetssyn över behov, utmaningar, insatser och måluppfyllelse.

Förväntat resultat

En regional samordnare medverkar till regional samsyn och resurseffektivitet genom att samordna kommunöverskridande samverkan.

3. Initiera satsning på robusta nät

Satsning på robusta nät bör genomföras och ska omfatta rekommendationer för hur en robust infrastruktur för bredband ska anläggas.

Förväntat resultat

Välfungerande digital infrastruktur genom robusta nät.

4. Tydlig ansvarsfördelning för driftsäkerhet

Säkra en tydlig fördelning av ansvar för drift och underhåll av nya, planerade och befintliga nät och sprida information om ansvarsfördelningen.

Förväntat resultat

Förtydliga vilka krav och ansvar som åligger nätägare.

5. Tydlig information till invånarna om kommunens planerade bredbandsutbyggnad

Alla samverkansaktörer behöver arbeta för god planering och samordning av bredbandsutbyggnaden på kommunal och regional nivå i översiktsplaneringen.

Förväntat resultat

Alla kommuner i länet ska ha tydlig information om bredbandsutbyggnad.

6. Kartläggning av teknik i skolan

Tillgängligheten till teknik inom länets grundskolor varierar både mellan klasserna och mellan skolorna. Insatsen syftar till att kartlägga skolans behov av resurser för att eleverna tidigt ska fågrundläggande digital kompetens.

Förväntat resultat

Kartlagda behov som tydligt redovisar vilka insatser som krävs för att öka tillgängligheten till it-verktyg.

7. Tillgång till teknik och Internet på offentliga platser

Samverkansaktörer i regionen måste arbeta för att det finns digital teknik och Internet på fler platser, till exempel bibliotek, vårdcentraler, sjukhus, kulturhus och särskilda boenden. De ska även arbeta att det finns digital teknik och Internet i samverkan med kommersiell service, till exempel genom att införa samhällsservice i butiker på landet.

Förväntat resultat

Tillgänglighet till Internet och samhällsservice för fler invånare.

Utmaningar

- Kompetensbrist inom säkerhet och risker samt sårbarhet med bredband.
- Kartläggning av olika målgruppers behov.
- Ökad tillgänglighet till informationsteknik (till exempel i särskilda boenden eller för personer som på grund av ålder eller funktionsnedsättning har svårt att lämna hemmet) ställer krav på kunskaper hos personalgrupper samt att man lyckats ge relevant kompetensutveckling som kan komma dessa personer till godo.

Effektiv digital kommunikation

kontakten mellan myndigheter, länsinvånare och näringsliv. Syftet med att utveckla digitala kommunikationslösningar är ökad kvalitet och effektivitet i de tjänster som erbjuds till invånare och näringsliv samt att stärka regionens attraktionskraft. Tjänsterna ska kunna var tillgängliga mobilt. Ökad tillgång till öppen data främjar entreprenörskap och innovation. Genom effektiv digital kommunikation kan vi använda våra resurser bättre.

Insatser

1. Införa regional långtidslagring av digital information

Genom samverkan kan våra gemensamma resurser användas kostnadseffektivt och kommuner och landsting får ett effektivt verktyg för att uppnå öppenhet, demokrati, rättssäkerhet, ökad effektivitet och utveckling.

Förväntat resultat

Den digitala informationen bevaras och lagras på ett säkert och kostnadseffektivt sätt enligt gällande lagstiftning. Invånare, näringsliv, akademi och offentlig förvaltning ska ha enkel tillgång till offentlig information i e-arkivet som tidigare inte varit tillgänglig på detta sätt. En gemensam organisation som stödjer organisationer och myndigheter i e-arkivfrågor.

2. Sammanhållen offentlig information

Invånare och näringsliv ska kunna hitta det de söker hos offentlig förvaltning, utan att på förhand behöva veta vilken som är den berörda myndigheten eller kommunen.

Förväntat resultat

Enklare dialog med offentlig förvaltning. Ökad tillgänglighet till digitala tjänster.

3. Gemensam standard för informationsutbyte

Utvecklingen ställer krav på integrationslösningar mellan verksamhetssystemen. För att kunna samverka genom tekniska lösningar krävs att aktörerna har gemensam standard för sin information och teknik. I första hand ska nationell standard användas.

Förväntat resultat

Gemensam standard möjliggör och används i gemensamma utvecklingsprojekt för att till exempel överbrygga huvudmannagränser samt tillgängliggöra information för invånaren.

4. Öka antalet relevanta e-tjänster

Med fullvärdiga e-tjänster kan tillgänglighet erbjudas dygnet runt. Enkla och smarta lösningar för behov inom näringsliv, vård och omsorg främjas. Rätt information på rätt plats i rätt tid.

Förväntat resultat
Fler relevanta e-tjänster för digital självservice.

5. Bred satsning på kunskapsspridning om e-legitimation

Kunskapsspridning behövs för att öka förståelsen för vad e-legitimation är och hur e-legitimation kan användas.

Förväntat resultat
Fler invånare och näringsliv använder e-legitimation.

6. Göra e-legitimation till standard i de tjänster som utvecklas

Att göra e-legitimation till standard förenklar säker inloggning för invånarna vid kontakter med exempelvis statliga myndigheter och banker.

Förväntat resultat
Det blir enklare med samma säkra inloggningsmetod för de tjänster som kräver detta. Det skapar möjlighet till digital signering och därmed ett bättre digitalt flöde. Det blir även lättare att genomföra utvecklingsinsatser när denna metod är standard inom länet.

7. Öppna bredbandsnät för tjänsteleverantörer

Samverkansaktörerna behöver tillsammans arbeta för att kommande bredbandsnät är öppna för alla tjänsteleverantörer. Öppenheten ger invånarna möjlighet att välja tjänsteleverantör och ökar konkurrensen på marknaden.

Förväntat resultat
Effektiv användning av digital infrastruktur.

Utmaningar

- Aktörer kan underskatta den egna arbetsinsatsen, vilket i sin tur negativt påverkar uppfyllelsen av de förväntade resultaten.
- Eventuell brist på förändringsvilja.
- Hitta den naturliga ägaren till projekt och produkt.

Samverkan mellan länets digitala aktörer

Målsättningen med insatsområdet är att stärka samverkan mellan digitala aktörer (offentliga organisationer, myndigheter och näringsliv) för att främja en gränsöverskridande utveckling av till exempel digitala tjänster, infrastruktur och gemensamma it-lösningar.

Insatser

1. Utveckla samverkan och skapa samverkansforum

Genom att kartlägga den samverkan som finns idag kring frågor som berör digital utveckling, är det möjligt med en nystart för samverkan i länet. Några grupper kan vinna på att slås samman, medan det kan finnas behov av att skapa nya forum för effektiv samverkan.

Förväntat resultat
Flera välfungerande samverkansforum anpassade för respektive områden och med mandat och handlingsutrymme att driva utveckling.

2. Underlätta för gemensamma upphandlingar

Ett rådgivande upphandlingsforum får till uppgift att ta fram underlag för krav inom exempelvis it, infrastruktur, arkiv och informationssäkerhet för alla kommuner inom Jönköpings län. Kraven kan sammanställas och anpassas för att passa alla. En standard för fördelningsnyckel bör tas fram.

Förväntat resultat:

Standardiserad, förenklad, förkortad och kvalitetssäkrad upphandlingsprocess. Samlad kompetens för upphandling och kostnadseffektivitet.

3. Gemensamma åtgärder för kompetensutveckling

När vi utvecklar nya arbetssätt krävs nya kompetenser. Genom att kompetensutveckla personal tillsammans, kan vi minska kostnaderna samtidigt som vi når samma kompetens hos berörda medarbetare. Främjar också gränsöverskridande nätverkande, då representanter från olika aktörer sammanstrålar för kompetensutveckling.

Förväntat resultat

Gemensam kompetensutveckling skapar samsyn kring e-utveckling och arbetssätt och blir kostnads- och resurseffektiv.

4. Öka samarbetet mellan kontaktcentren i regionen

Kontaktcentren i länet utvecklas i samverkan. Kommunikationen ska kunna ske via tydliga kanaler. Detta möjliggör att kommunerna exempelvis kan hjälpa varandra vid sjukdom eller ledighet.

Förväntat resultat

Kommunikationen med invånare, före-ningsliv och näringsliv sker på ett modernt och effektiv sätt. Gemensamma system för kontaktcenterärenden ger kostnadseffektiv förvaltning. Gemensamt metodstöd för införande och uppföljning.

Utmaningar

- De olika aktörerna går i olika takt och ser till sina egna behov
- Förväntan på gemensamma lösningar leder till passivitet hos de enskilda aktörerna
- Införandefrågor och förvaltningsfrågor i kombination med juridiska, administrativa och regleringsmässiga frågor.

Delaktighet för alla

Många använder sällan eller aldrig digital teknik, de befinner sig i ett digitalt utanförskap. Det kan bero på ointresse, att tekniken upplevs krånglig eller att det kostar för mycket. Det är också många som, även om de har tillgång till dator och Internet, inte har tillräckliga kunskaper för att kunna tillgodogöra sig utbudet. Den digitala agendan strävar efter att göra det så enkelt som möjligt för så många som möjligt. Det handlar såväl om fysisk tillgänglighet av teknik och Internet i offentliga miljöer, som att se till att den digitala offentliga miljön är tillgänglig för personer med till exempel funktionsnedsättningar eller språkliga hinder. Hög tillgänglighet i de digitala lösningarna ökar dessutom möjligheten för länets offentliga aktörer att skapa och tillvarata invånardialog.

Insatser

1. Tillgång till öppen data

Digitala aktörer och invånare ska ha tillgång till öppen data för att enkelt kunna tillgodogöra sig information för olika syften. För att den uppdaterade öppna datan ska kunna användas, bör information om den spridas. Det främjar utveckling av exempelvis målgruppsanpassade tjänster.

Förväntat resultat

Antalet öppna och kvalitetssäkrade datakällor från offentliga organisationer ökar och kunskapen om den sprids. Fler tjänsteutvecklare bygger tjänster som bygger på öppen data.

2. Kompetenshöjning kring tillgänglighet

Med rätt kompetens kring tillgänglighet och användarvänlighet kan e-tjänster med god funktionalitet utvecklas eller upphandlas.

Förväntat resultat

De som utveckar och upphandlar system och e-tjänster inom offentlig verksamhet har hög kompetens inom tillgänglighet och användbarhet.

3. Plan för kompetensutveckling av medarbetare inom offentlig verksamhet

Idag riskerar tillgången till teknik och möjligheten att lära sig och att använda digitala verktyg och kanaler bero på enskilda medarbetares kunskap och intresse. Därför behövs en långsiktig plan för fortbildning om it som verktyg.

Förväntat resultat:
Höjd digital kompetens hos medarbetare inom offentlig verksamhet.

4. Vägledning och support i offentliga miljöer

Målet med insatsen är att öka möjligheterna till vägledning och support som gäller digital teknik och Internet på grundläggande nivå i alla kommuner i länet.

Förväntat resultat
Minskat digitalt utanförskap. Ett mer demokratiskt samhälle när vägledning och support i offentliga miljöer ger fler invånare möjlighet till delaktighet på Internet.

5. Kompetenshöjning klarspråk

Alla har rätt att förstå information från myndigheter. Målet med insatsen är att medarbetare inom offentlig sektor stärker sina kunskaper i att skriva begriplig text på offentliga webbplatser. Det kan ske genom webbaserad utbildning i klarspråk.

Förväntat resultat
Invånarnas förståelse av information från offentlig verksamhet ökar.

6. Revision av tillgänglighet

För att den digitala kommunikationen ska innebära ökad delaktighet och tillgänglighet bör en tillgänglighetsrevision göras av företag eller intresseorganisationer.

Förväntat resultat
Tjänster och webbplatser för alla och med hög tillgänglighet som främjar hög användning.

7. Digitala forum

Syftet med insatsen är att skapa digitala forum som stärker invånardialogen i frågor där kommunerna eller regionen efterfrågar invånarnas synpunkter. Det kan exempelvis handla om att samla information i aktuella frågor eller inför beslut genom en e-panel webbenkät eller sms.

Förväntat resultat
Transparens i offentlig verksamhet och levande invånardialog som främjar delaktighet i det demokratiska samhället.

8. Webbsändning av arrangemang och offentliga möten

Fler webbsändningar från offentliga arrangemang och möten med allmänintresse.

Förväntat resultat
Ökad tillgänglighet till kulturutbud och arrangemang. Större insyn i myndigheters verksamheter.

Utmaningar

- Flera insatser inom området delaktighet bygger på samverkan mellan exempelvis kommuner, studieförbund och frivillig-organisationer. Det ställer frågor kring vem som äger frågan, ansvarsfördelning och givetvis även kring finansiering.
- Insatser som syftar till att ge tillgänglighet till ny teknik, nätverk och vägledning i offentliga miljöer är komplexa frågor för alla kommuner. Utmaningen är större för små kommuner. Utmaningen består bland annat av att bygga ut nödvändig infrastruktur och att få fler kommunala förvaltningar och verksamheter att arbeta mot gemensamma mål. Tydliga uppdrag till respektive förvaltning eller verksamhet är oftast nödvändiga.

- För att möjliggöra likvärdiga satsningar i de olika kommunerna kan det även finnas behov av ett gemensamt stöd till kommunerna i utvecklandet av olika tjänster och insatser för ökad digital invånardialog.

Tryggare vardag

Digital teknik erbjuder många möjligheter till ökad trygghet i vardagen. Det kan handla om ökad trygghet i det egna hemmet genom till exempel trygghetslarm, möten och vårdplanering på distans och information om den egna hälsan och läkemedel. Det kan också handla om möjlighet till digital kundanpassad övervakning av det egna hemmet. Den digitala tekniken innebär också potential för individanpassad information.

Insatser

1. Gemensam satsning på informationssäkerhet

Alla offentliga verksamheter i regionen ska arbeta aktivt med systematiskt säkerhetsarbete för att säkerställa att rätt information är tillgänglig för rätt person på rätt plats vid rätt tid med rätt utrustning och på ett rättssäkert sätt.

Förväntat resultat

Informationen som lagras i våra system är skyddad, men ändå lättillgänglig för de som har rätt att ta del av den.

2. Prenumerationstjänst för individanpassad information

En tryggare vardag kan stärkas med prenumeration av digital information som individanpassas utifrån behov och önskemål. Det kan handla om att utifrån en personlig profil prenumerera på specifikt utvald information såsom övervakning av det egna hemmet, omfattande information om till exempel elproblem, vattenflöde och inbrott. Den kan också handla om individanpassad information om kollektivtrafiken, väglag från exempelvis hemadressen till jobbet samt upplysningar om olyckor, vägbyggen och alternativa vägar. Dessutom skulle varje invånare kunna prenumerera på offentlig information till exempel inför

beslut eller kommande utredningar inom något särskilt område.

Förväntat resultat

Ökad trygghet och service till individen.

3. Samlad, begriplig och kvalitetssäkrad information om hälsa, vård och omsorg

Ett arbete genomförs som leder till att information om hälsa, vård, tandvård och omsorg är samlad och lättillgänglig på ett sätt som innebär att invånare vet var information finns att tillgå utan att i förväg behöva veta vilken organisation som ansvarar för vården och omsorgen, exempelvis via 1177 Vårdguiden.

Förväntat resultat

Invånaren har tillgång till samlad, begriplig och kvalitetssäkrad information.

4. Invånarna ska ha tillgång till sin egen samlade journalinformation för all vård och omsorg

Tillgång till den egna journalen ger patient och brukare möjlighet att förbereda sig, fördjupa sig och därmed bli mer motiverade och ta större eget ansvar, bättre möjligheter att fatta bra beslut och i större utsträckning leva det liv man vill. Ett arbete måste genomföras för att tillgängliggöra all journalinformation för invånaren på en samlad plats så att denne inte behöver veta från vilken organisation journalinformationen kommer.

Förväntat resultat

Invånaren har ökad delaktighet i den egna vården och omsorgen.

5. Övergång från analoga till digitala trygghetslarm

Den analoga telefonin har börjat stängas och är helt borta inom några år. Det kan bli problem med de analoga trygghetslarmens funktion när analog och digital teknik i larmkedjan blandas. Larmsignaler riskerar att

inte nå fram eller förvanskas. Övervakning av trygghetslarmens funktion förbättras och gör nya tjänster möjliga.

Förväntat resultat
Alla analoga trygghetslarm har ersatts med digitala. Säkerheten ökar genom trygghets-kedjan är digital.

6. Trygghetsskapande tjänster och distansoberoende vård och omsorg

Med den digitala tekniken på plats i hemmet erbjuds en mängd nya möjligheter till olika sorters teknikstöd, som komplement till traditionell vård och omsorg. Genom att ta tillvara digitaliseringens möjligheter kan vi erbjuda distansoberoende vård och omsorg. Utveckling av nya trygghetsskapande tjänster innebär att äldre och personer med funk-tionsnedsättning får bättre möjligheter att bo kvar i sitt hem, kan få stöd till egenvård, bättre hälsa och stöd till fortsatt aktivt socialt liv.

Förväntat resultat
Invånaren har tillgång till fler trygghetsska-pande tjänster och verksamheten kan jobba på ett bättre och effektivare sätt.

7. Utbildning av personal och brukare kring möjligheterna med ny teknik

Genom utbildning kring möjligheterna med ny teknik och nya digitala tjänster kan en diskussion hållas om hur verksamheten kan utvecklas och förbättras. Genom ökade kun-skaper och delaktighet kan den nya tekniken anpassas efter brukarens behov, och förenkla vardagen för många invånare.

Förväntat resultat
God kompetens kring möjligheterna med ny teknik. Personal inom vård och omsorg stöttar brukare och patienter i användning av den nya tekniken.

Utmaningar

- De initiala kostnaderna för det nödvändiga teknikskiftet inom trygghetslarmen och nya trygghetsskapande tjänster är stora och nyt-toeffekterna hämtas hem först på sikt.
- Teknikutvecklingen och möjligheten att köpa exempelvis mobila trygghetslarm på den pri-vata marknaden gör att kommunens ansvar behöver klargöras.
- Individanpassad prenumerationstjänst kräver konkret och fortlöpande samarbete mellan en rad olika aktörer som ska uppda-tera relevant information som i sin tur ska sammanställas utifrån individens behov och önskemål.

Uppföljning och utvärdering

Den regionala digitala agendan ska vara ett levande dokument som kan uppdateras och löpande kompletteras. Länets invånare ska kunna se, följa och själva lämna synpunkter och förslag på det som planeras och genomförs. För att säkerställa att agendan förverkligas ska uppföljning och utvärdering ske två gånger per år. Utifrån resultatet kan olika åtgärder utformas efter behoven i Jönköpings län.

Ansvaret för uppföljning ligger hos Region Jönköpings län och sker i samverkan mellan de offentliga aktörerna i länet. Resultaten av dessa uppföljningar sprids till länets aktörer och görs tillgängliga via olika informationskanaler.

Tillsammans når vi målen

Tillsammans har vi skapat en regional digital agenda. Tillsammans gör vi Jönköpings län till en region som präglas av högt it-användande som gynnar en hållbar regional utveckling och tillväxt.

Region Jönköpings län, Länsstyrelsen och kommunerna i Jönköpings län