Guideline on e-services for rural areas

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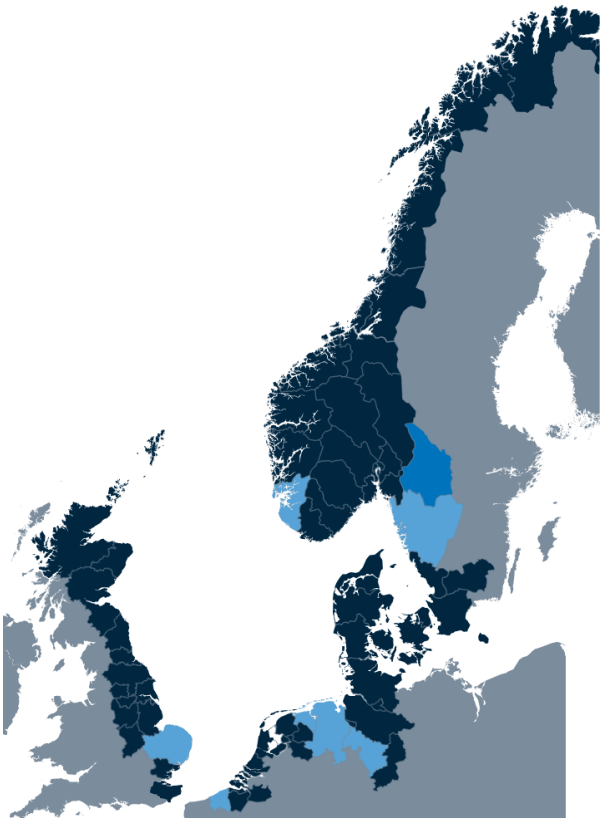
Author: Jörn Henrich-Matejka



Content

1. Introduction

Living, acting or running business in remote or sparsely populated areas (SPA) is quite different from other more densely populated parts of a nation. These global differences have both positive and negative impacts on everyday life and business, and are challenges to overcome. These conditions raise demands upon the municipality as well as county and governmental authorities, while societal functions like schools, social services, and communications are supposed to be upholding to equal levels even in the SPAs. Access to health care, public transport, labour market, education, and broadband, to mention a few, are restricted outside the cities and municipality centres. On the other hand SPAs offer cheaper housing, nearness to nature, less stress, and other human values.

The rapid spreading of the Internet and mobile communication has dramatically offered new possibilities to work and live, in remote regions. Sweden, the other Scandinavian countries, the UK, Canada and Australia, are all examples of early adopters of technology in the public sector which have led to a highly developed technical infrastructure, a broad range of e-services, and a high penetration of IT among the population, but have not been able to achieve the desired levels of transformation of public administration. One bottleneck is that the services still often are developed from the perspective of the public administration and not so much from the citizen's perspective. It is also notable that high-capacity communication infrastructure and bandwidth in sparsely populated areas is far away from the penetration in the cities and the municipal centres.

The development and introduction of different e-solutions is often a complicated puzzle while the users are a group full of nuances and the solutions often have an impact on peoples' every-day life. Therefore it has attracted attention from policy makers, the private sector, and the research community.

In general this guideline can be used for the development of e-services used in remote or sparsely populated areas and reflects different papers from the E-CLIC partners – it might even be able to raise success of a service. But the special conditions in rural or sparsely populated areas necessitate having a careful look on influencing factors.

2. Developing e-services?

The instrument of an e-service as a possible way to reach an individual target group could be understood as a single prominent application of utilizing the use of ICTs (Information and Communication Technologies) in different fields of work. The most usable definition for e-service is of Rowley (2006), who explains e-services as "…deeds, efforts or performances whose delivery is mediated by information technology. Such e-service includes the service element of e-tailing, customer support, and service delivery". This clarifies that an e-service consists of three main components: service provider, service receiver and the different channels of service. The primary channel of e-service delivery is the internet, but also other "classic communication channels" (for example telephone, call centre, mobile phone or the television).

E-services are often confused with e-business, while this is only the generic term for all targeted tasks in the electronic field. As it can be seen, figure 1 shows a short overview of the different e-terms (Wirtz, Electronic Business, 2000).

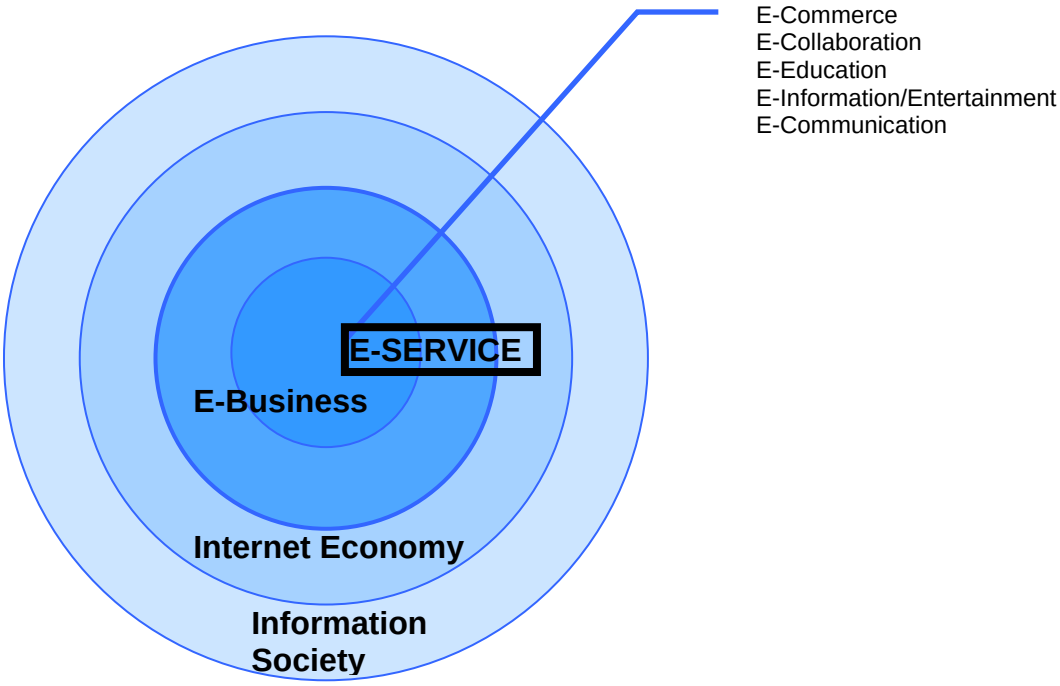


Figure 1 Demarcation of e-terms

But what are e-services? Generally an e-service might be every service used by internet and mobile communication. The easiest example could be a website containing information you need. You can continue listing examples like an e-mail form, online maps, apps for endless much fields of operation, up to interactive car designing tools or complex virtual realities.

In the past years, there has been a lot of development and implementation of new e-services via internet for citizens and other customer. But many of these e-services can also be criticized for usability defences'. They have a low level of usage and user-friendliness. This shows that some points by the development must be followed.

No matter how simple or how clever an e-service is – it cannot be successful without fulfilling some basic conditions.

It has to be:

- well engineered
- offered to the right target group
- offered at the right time
- offered by using the right media
- offered by using the right infrastructural conditions

If these conditions are fulfilled, there are a lot of benefits to use e-services.

- Accessing a greater customer base
- Broadening market reach
- Lowering of entry barriers to new markets and costs of acquiring new customers
- Alternative communication channels to customers
- Increasing services to customers
- Enhancing a perceived company image
- Gaining competitive advantages
- Potential for increasing customer knowledge

3. What are the target groups for new services?

The customer / citizen have an important role to play creating and improving e-services. It is therefore important to identify the customer exactly. During the E-CLIC project the German Initiative D21 developed a study around six user types in comparison. This study explained the different user types with a comparison from the years 2009 to 2011and gives conclusions to the digital potential, which is composed of infrastructure, capacity and knowledge.

The digital society can be divided into six types of users. These user types will be described below[1]:

- **Digital outsiders:** Digital Outsiders are characterized by low knowledge about digital media. The computer is most frequently used for text processing, editing photos and checking e-mails. The number of the digital outsider is shrinking constantly.

- **Occasional user:** The digital potential of the occasional user is much higher than the digital outsider. Nearly everyone has a PC/Notebook and a printer. Similar to digital outsider the majority master text processing and internet research. E-mail, password protection and security update are well known terms.

[1] Initiative D21, Study: Digital Society – Six user types in comparison, 2011

- **Professional user:** This small group of the digital society is well equipped. Approximately half of the professional users have business internet access. The capacity and knowledge show similar characteristics as referred to the occasional users. But in contrast to them the professional user extended his knowledge. The digital media belong to their every day's work routine.

- **Trend user:** The transition from professional user to trend user shows a distinctive change. The first three categories can be labelled as beginner. The trend user is much more professional than the first three groups and is claiming more and more a larger space in the digital society. The mobile internet access in general is getting much better. Very conspicuous is the growth of the mobile internet access. But due to the development in technologies (smartphones, tablets) this trend is not unexpected. Compared to the previous groups the trend user has more capacity and much better knowledge. Nearly every term the user can assign.

- **Digital professional:** The proportion of the digital professional within the digital society over the years has remained constant (12%). In addition to the good infrastructure the percentage of notebooks, webcams and HiFi-devices increased. In the category internet access every possibility has grown but especially the mobile internet access (from 32% in 2009 to 65% in 2011). This is due to the technology, similar to the trend user. A difference to them has to be seen in the capacity of macro programming. An increase of about 20% may be listed here. For the digital professional nearly every ICT term is well known, except of tracking cookies with a value of about 60% and blogs with about 65%.

- **Digital avant-garde:** The members of this very small group are digital specialists and are very well equipped. The comparison of the internet access over the years shows a distinctive increase especially in the mobile availability. The picture of the knowledge is similar to the user type digital professional.

The described types of digital user groups differ in terms of access, equipment, digital competencies and the motivations digital or technical media is used for. In addition to these user groups, other groups can be described and categorized. These involved citizens have a special relation and characteristics to the area and their daily life situations.

- Persons / companies operating in the village / community and living in the village / community. For these people / companies it is important to find the necessary external expertise, competence, partners and resources for limited interventions and collaborations in different contexts

- People who work outside the village / community but live in the village / community. For these people is access to transport vital

- Individuals who no longer lives in the village / community with personal roots, relationships or interests in the village / community. For these people, it can be of great interest to maintain contact, with the village and follow their friends' development and vice versa. A village-blog or any type of "Gossip-site" where mutual information can be shared is of great interest

- Individuals who are not working / retired but living in the village / community. Senior citizens and the chronically ill / disabled need systems and e-services that give them continuous access to medical centres, relatives, transports and in some cases, tele-medical supervision

- People who are neither working in the village nor living in the village. This is a guest or a tourist. To make them come to the village, it´s important to be able to offer mobile information services that can give them the information they need and the ability to pay fees for example for fishing licenses, guides, homesteads, museums, stadiums, etc., via their mobile phones

4. How to develop new e-services

The underlying assumption in this guideline is that web 2.0 and the development of e-services is not just a new buzzword but represent a direction of development in the ICT-field with both impact and potential. The main idea is that theoretical explanations may help us to see the potentials of web 2.0 at the same time as they open new views indicating future possibilities.

One of the strongest trends in the ICT-field of today is e-empowerment of different kinds of clients, such as citizens, consumers and companies. This means that more emphasis is put upon the possibility for clients to manage and contribute to the information galaxy – both in terms of the use and supply of content as well as services. An often mentioned concept in relation to this trend is Web 2.0. O'Reilley, as one of the people who coined term, claim that "Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences."

Web 2.0 is a concept that put emphasis on participation and co-production of data and services. Some key characteristics of Web 2.0 are especially Rich Internet Applications, User-generated content, Semantic Web, Recommendations, Social Networking, Syndication/mash ups, Open Standards, Software as a service, Personalization, User-generated Services, and Device Independence.

Co-design as a Science 2.0 approach

With inspiration from the American pragmatist philosophical tradition as it developed by Churchman in his late post-modern writings (Churchman, 1979) a raw model for performing co-design has developed.

This model can be described consisting of four key activities often performed as workshops involving key stakeholders. The potential developer of e-services should think about these key activities and has to use these key activities at the current state phase of developing e-services.

- Co-design of problem situation and ideal scenarios including a first idea of useful views possible to implement in integrated solutions
- Co-design of one or a few specified useful views with implementation integrated solutions and related measure of performance systems
- Co-Implementation of selected integrated solution and related measure of performance systems
- Co-evaluation and feedback based on key stakeholder views

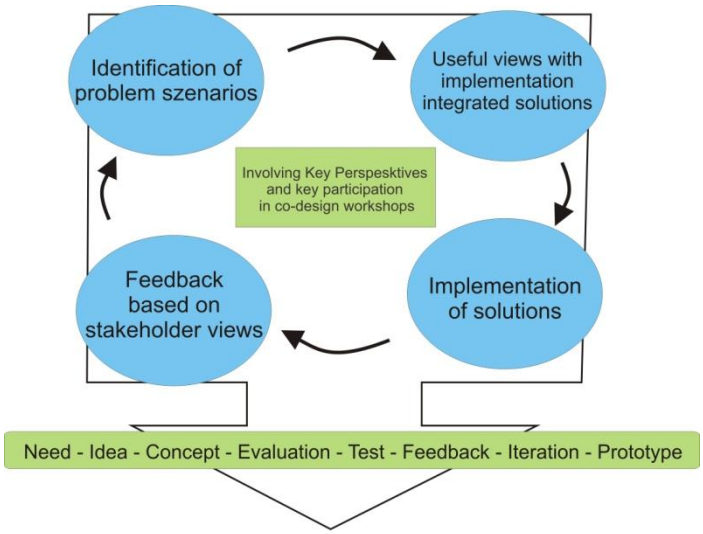


Figure 2 Performing Co-Design

In all these four type of workshop activities the involvement of key stakeholders are an important resource.

5. Checklist for the development of new e-services

E-services are used to communicate and imply a change in the communication between different parties with or without different requirements.

When developing e-services often the provider of e-services has to start the process by studying and evaluating the prerequisites for the future e-service. The provider of e-services should know the complete structure and future utilization of the e-service, which are planned. So the provider of e-services has to start by inquiring the current situation of their own services.

After the phase of the evaluation, the provider of e-services should begin with the design of future solutions regarding the aspect of a right use of an e-service and the demand from its target groups. The design of future solutions should be done as a co-design of business processes and IT-systems. The future e-services should be designed contextually and integrated in all surrounding activities. For example it is not purposeful to replace only former

paper forms with a digital form. The current state-phase and the design phase have to deal with all five aspects mentioned below. This method should be designed as a tool box and the different components should be utilized when relevant. All components should be utilized in a more flexible and alternating manner.[2]

Current state phase

Generally e-services are often used by external users (citizens, companies and visitors), so the developer of an e-service has small control over these users and there is no real possibility to educate them. Because of that, the usability to design an e-service is extremely important (aspect of easy-of-use). The whole investigation of current process should be problem- and goal-driven, and it is indispensable to understand the needs of all (external) users.

Various problems and goals of the activity should be identified and clarified to govern the area of application, depth and focus of the process analysis. For this reason the provider of e-services has to start a large-scaled evaluation of his own services and the complete administration or of the demand of the individual service. In the first step, the preconditions should diagnosed.

Future state phase

After the phase of evaluation the provider should begin with the design of future solutions regarding the aspects of a right use of an e-service and the demand from its target groups. The design of future solutions should be done as a co-design of business processing and IT-systems. The design of an e-service is both a structured and creative task. It is important to utilize the established knowledge base on existing communication, work process, regulation and IT-systems in the design process.

But it is also significant to think about new ways of using the advanced IT-possibilities as a communication and action medium to reach the requirements of the users. The e-service design comprises both issues of functionality and usability. For example a (public) e-service should be a two-way communication between a local authority and external clients.

It needs thus to be designed as two-way communication instrument. This implies many design issues as e.g.:

- How to communicate the overall purpose of the e-service and what tasks the client-user may perform (exposure of action potential)
- How to structure the e-service into different pages and what sequences there should be between these pages
- How to structure the client's process of submitting information
- How to organize the feedback to the client-user
- How the e-service should be adapted to and integrated into the work processes of the local authority and the client

[2] Goldkuhl, G., Röstlinger, A. (2010) Development of public e-services – a method outline. Linköbing University (Sweden)

- How to differentiate between and structure informative and performative e-services
- How to communicate information from the client-users to possible internal users (public administrators)
- How the internal users should up-date the public e-service with new information

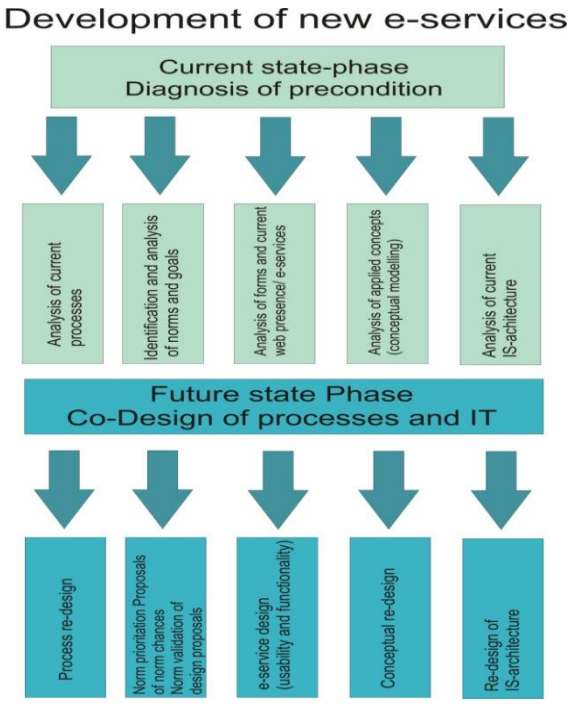


Figure 3 Development of new services

The process re-design and the process of developing e-services will support you to identify why, what, who and how and intensify communication in and between organisations and other stakeholders.

Furthermore the identification and analysis of norms includes studies of laws, regulations and other work practice goals which are relevant for the future e-services. The study of regulation for example includes statutes on different levels - like ministry regulations, and also policy documents and authority guidelines. And the analysis of statutes includes also the domain-specific statutes, and moreover statutes and policy documents of general / cross-sectional character.[3] The design of e-services and work processes should be based on existing legislation and other regulations. However, this can hardly be a simple and uncomplicated design process, where solution properties are derived from clear and non-conflicting norms.

Different norms express different values and there is a need to examine and balance such different norms / values in an explicit valuation process. Different regulations might be in conflict with each other and this implies a need for prioritization and synthesizing of norms / values (Norm prioritization).

[3] Goldkuhl, G., Röstlinger, A. (2010) Development of public e-services – a method outline. Linköbing University (Sweden)

6. Lessons learned from E-CLIC

The project partners from the E-CLIC project learned that the development and usage of e-services could be easy, but it is absolutely necessary to develop e-services after different stages of evaluation.

On the one hand within the E-CLIC-project the project partners developed different e-services with different forms. These e-services are described as case studies or prototypes (download under: www.e-clic.eu).

For example the case study “Findyourdreamhorse” (Vindjedroompaard.nl) that explained why the purchase and sale of horses is a very individual and trustful business. Here you could overcome the barriers of remote or sparsely populated areas (SPA), because with this page users have got the possibility to sell and buy horses within a trustful environment independent of a spatial area. This case study was written with all aspects of the understanding of the business and the identification of why, what, who and how. The writers explained the key partners (veterinarians, horse insurance, and sponsors); the ideas of core activities and customer relations and channels, the cost structure and possible income streams. So the writers are aware of the business practices and the knowledge about their clients.

Another example is the case study “The Wegwiezer” (using video conferencing in rural area) that is a helpdesk concept at a sparsely populated area in the province of Drenthe / The Netherlands intended to help people with services like providing people with information concerning issues of well-being or redirecting them to the appropriate organisations that can help them. There are four helpdesk locations in different villages and at each helpdesk a virtual office is set up, where videoconferencing with related organisations can be used. The services provided by the Wegwiezer are answers to questions on issues of health care, living, relationship & child raising, financial problems and transportation as well as referring to appropriate organisations. This case study is innovative, but acquiring and implementing the Wegwiezer Information System as defined is considered the status of the Wegwiezer concept too ambitious. Yet elements of it might be implemented. For example using free facilities like sharing documents (Google docs) and Wikis to exchange information and building a knowledge base. The writer could make a contribution by developing prototypes and examples. If the Wegwiezer project develops this, experiments could be changed into more structured information systems.

Furthermore the E-CLIC-partner Jade University of Applied Sciences investigated in the case study “Feasibility study of an open source e-government application” not only the possible advantages to use this kind of instrument in remote or sparsely populated areas, the partner also explained the different national requirements and the implementation of the relevant EU directives, that make the development of one common European e-government system difficult. This case study explain a clear overview of the part “identification and analysis of norms includes studies of laws, regulations and other work practice goals which are relevant for the future e-services”, which should be investigated at the future state phase of every e-service.

On the other hand all E-CLIC-project partners learned after transnational discussions or with the review of other documents, that e-services are absolutely important to overcome barriers of remote or sparsely populated areas. Provider of e-services should put their customer /

citizen in the centre of all their actions. They have to understand who the customer / citizen are and what they need.

Only then provider of e-services offers the customer the right product at the right time and could indicate future possibilities. Use of barriers must be dismantled, the structure to operate should be simple and data security must be ensured. Furthermore the infrastructure must also be considered. This applies especially for sparsely populated areas.

The work at the E-CLIC-project explained very solid examples of e-services (developed under different aspects of views) and showed within the transnational cooperation that the suggestions and best practices from different partners where observed and implemented. The work at different e-services is on-going and the E-CLIC-partners will coordinate further actions via the E-CLIC-centres.