

5<sup>th</sup> Framework Programme

“Information Society Technologies Programme”

IST Action Line CPA1 – Integrated applications platforms and services

## Deliverable 3.3 – Evaluation Report



Project Number      IST-1999-10191

Project Acronym      CENTURi<sup>21</sup>

Project title      **Community Empowerment Network Through Universal Regional**  
integration for the <sup>21<sup>st</sup></sup> Century

## **CENTURi<sup>21</sup> Deliverable 3.3:**

### **Evaluation Report**

<b>Project Number:</b>	IST-1999-10191
<b>Project Title:</b>	CENTURi <sup>21</sup> : Community Empowerment Network Through Universal Regional integration for the <sup>21st</sup> Century
<b>Deliverable Type:</b>	RP (5FP)

<b>Deliverable Number:</b>	D3.3
<b>Contractual Date of Delivery:</b>	30 June 2002
<b>Actual Date of Delivery:</b>	17 August 2002
<b>Title of Deliverable:</b>	Evaluation Report
<b>Work-Package contributing to the Deliverable:</b>	WP 3: Assessment and Evaluation Co-ordination
<b>Nature of the Deliverable:</b>	RE
<b>Authors:</b>	Frank Wefering, Siegfried Rupprecht, Gabi Wegeler and Andrea Grimm

#### **Keyword List:**

CENTURi<sup>21</sup>, evaluation, validation, Community Empowerment Forum, regional portal, Internet, e-government, Evaluation Report, Information Society Technologies, European Union, indicator, impact, assessment objective, reference case, success criterion, data gathering tool, appraisal group, themes, application

**\*Type: PU-public, LI-limited, RP-restricted**

**\*\*Nature: PR-Prototype, RE-Report, SP-Specification, TO -Tool, OT-Other**

## Executive Summary

CENTURi<sup>21</sup> (Community Empowerment Network Through Universal Regional Integration for the 21<sup>st</sup> Century) was a research project co-funded by the Information Society Technologies Programme of the European Union (EU). Regional authorities and industrial partners from six European countries came together to jointly develop a Community Empowerment Forum to promote the widespread use of electronic services by citizens.

In the thirty-month duration of the project, such a Community Empowerment Forum or, as it was known throughout the project, regional CENTURi<sup>21</sup> portals were developed.

Five project objectives had been developed and nine impacts defined for evaluation purposes. In order to achieve these objectives, six regional CENTURi<sup>21</sup> portals were developed, each providing a common application-serving environment as well as implementing and integrating them with real-life services in six interconnected European regions.

The regional portals were rolled-out (demonstrated) in each of the six project regions as trial versions and evaluated during a short core evaluation period of thirteen weeks at the end of the project.

## Summary of Key Results

The CENTURi<sup>21</sup> evaluation in the period of 1 February to 17 May 2002 was based on data automatically logged by the respective systems, task observations, as well as 68 interviews (of different professional groups) and 261 end-user questionnaires from the six regions.

The evaluation revealed that CENTURi<sup>21</sup> has the potential to become an e-government portal that fulfils the high demands of citizens, community groups, commerce, and councils. At the current stage, i.e. at a stage where CENTURi<sup>21</sup> was not yet fully developed, evaluation results exposed needs of improvement and refinement.

Most importantly, the need for more relevant and up-to-date content and more interactive services was detected. The palette of services needed to include commercial services, in addition to public services, which already were of good quality in the trial versions. In order to fulfil these needs, CENTURi<sup>21</sup> needed to conduct a more thorough user needs analysis, ensure community participation, including the involvement of Small- and Medium Size Enterprises (SMEs), in the content development process, and ensure that a well-functioning content delivery structure was in place.

### Overall Evaluation Framework

Project workpackage 3 (WP3) provided the evaluation within CENTURi<sup>21</sup>. The key role of WP3 was the establishment of the benefits that all users, content providers, and service operators gained from the CENTURi<sup>21</sup> regional portals. Despite the fact that the portals were demonstrated in six different European regions, its evaluation was based on commonality. The main aspects considered in establishing a common evaluation basis were:

- impacts and indicators common to all regions and
- indicators selected for measurement in all regions needed to be measured in the same way, or at least yielded comparable results, across the regions.

### Impacts, Indicators, and Assessment Methods

In five evaluation workshops and various other consultations, the Evaluation Team, consisting of six Regional Evaluation Managers and an independent Evaluation Manager, defined impacts, indicators (see annex 1), and data gathering tools as the key elements of the evaluation process. The CENTURi<sup>21</sup> impacts were:

Impact 1:	Scope of public and commercial services
Impact 2:	Secure access to public and private services
Impact 3:	Co-operation between content and service providers
Impact 4:	Interaction between citizens and local/ regional governments
Impact 5:	Level of community involvement
Impact 6:	Contribution to regional development and innovation
Impact 7:	Competitiveness of Small- and Medium Size Enterprises
Impact 8:	Adaptability to technological progress
Impact 9:	Exploitation of existing networks and other infrastructure

The following categories of tools were jointly developed by the CENTURi<sup>21</sup> Evaluation Team and applied during the course of the demonstration/ roll out process:

- Automatic counts
- Survey (i.e. end-user questionnaire)

- Task observations
- Collection of factual information (i.e. interviews)
- Monetatisation of data

A CENTURi<sup>21</sup> user profile was established on the basis of information provided in the end-user questionnaires regarding gender, age, education level, employment status, as well as the derived user categories for “frequency of Internet use”, “CENTURi<sup>21</sup> satisfaction”, and “intention of future CENTURi<sup>21</sup> use”.

### **Recommendations**

The present Evaluation Report describes evaluation results for each of the identified CENTURi<sup>21</sup> impacts and culminates in the formulation of recommendations and conclusions.

Derived from evaluation results, 69 recommendations are provided and structured according to four anticipated reader types as well as three key thematic issues.

The key thematic issues are:

- Designing tools and services;
- Delivering content-rich services; and
- Creating a sustainable business case.

The recommendation are tailored to four reader types:

- CENTURi<sup>21</sup> partners for further roll-out activities they may envisage;
- Potential take-up partners for their planned new implementations;
- The European Commission for setting up future programmes; and
- Readers interested in methodological issues for future assessments.

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## 1 Guide to the Reader

This Evaluation Report will be read by different types of readers. It covers and describes, in a comprehensive manner, what the CENTURi<sup>21</sup> project was about, the underlying evaluation framework, the categorisation of CENTURi<sup>21</sup> users for the purpose of data analysis, the actual evaluation results, recommendations and conclusions.

...four different  
reader types

It is anticipated that, in addition to other readers interested in the evaluation results, this report will primarily be of interest to:

- a. CENTURi<sup>21</sup> partners;
- b. Potential take-up partners;
- c. Evaluation professionals interested in methodological issues; and
- d. The European Commission

Each reader type will be interested in different aspects of the Evaluation Report. Therefore, “customised” recommendations for navigating through the document are provided.

The Evaluation Report culminates in recommendations (and the final conclusion) structured according to three thematic issues and tailored to the four reader types listed above. A table of recommendations is provided as a separate annex 4 to this document. The reader may choose to print out this table and use it as a parallel document when going through the Evaluation Report.

Recommendations  
are tailored to  
four reader types.

### Who should read what?

**CENTURi<sup>21</sup> partners** will be most interested in the actual evaluation results provided for each of the identified CENTURi<sup>21</sup> impacts in chapter 5. They may also want to have a look at chapter 4 in which CENTURi<sup>21</sup> users are categorised for the purpose of data analysis. Chapter 6 recommendations are specifically given for each reader type, including, CENTURi<sup>21</sup> partners.

**Potential take-up partners** (not involved as partners in CENTURi<sup>21</sup>) should more or less be interested in the entire Evaluation Report. They may want to inform themselves about the CENTURi<sup>21</sup> project, in particular about how it was set up (objectives, work programme, management structure, etc.) and can do so in chapter 2. For the set up of a take-up project, the evaluation approach and methodology described in chapter 3.1 and 3.2 should be of interest. Chapter 5 covers all nine CENTURi<sup>21</sup> impacts. Depending on the focus of the take-up project in question, the reader can concentrate on the appropriate impact chapters. S/he may also use the recommendation table in which twenty recommendations are specifically tailored

to potential take-up partners and go back to the respective sections in chapter 5 to see what these recommendations are based upon.

**Evaluation professionals interested in methodological issues** should focus on chapters 3 and 4. Chapter 3 describes the evaluation approach in detail (structure, agreement process, proceedings, etc.) as well as the underlying methodology used in terms of data gathering tools, conduction of the data gathering process and the data analysis, etc. The categorisation of CENTURi<sup>21</sup> users according to gender, age, employment, education, frequency of Internet use, satisfaction with CENTURi<sup>21</sup>, and intention for future use as a preparatory means for the data analysis are described in chapter 4. Finally, chapter 6 provides thirteen methodological recommendations for future assessments (of IST-projects).

**The European Commission** will be most interested in the comprehensive results of the CENTURi<sup>21</sup> evaluation. Therefore, in addition to the executive summary and the conclusions, the European Commission should, in chapter 6, read the recommendations it may want to consider in setting up future programmes (and projects). In this sense, also the recommendation primarily targeted at take-up partners for new implementations as well as the methodological recommendations for future assessments should be read carefully.

## 2 The CENTURi<sup>21</sup> Project

### 2.1 Project Objectives

The overall goal of CENTURi<sup>21</sup> was the development of a Community Empowerment Forum that promotes the widespread use of electronic services by citizens. This was intended to empower citizens to deal directly with their regional authorities and local commercial organisations, and to assist and empower regional authorities in delivering their services digitally and interactively to the citizens. CENTURi<sup>21</sup> aimed to achieve a real impact on the local economy in these regions and to contribute to regeneration and future sustainability.

The high level objectives of CENTURi<sup>21</sup> were to develop an interactive Community Empowerment Forum which integrates existing applications, to develop and validate new services for citizens on the basis of Information Society Technologies (IST) tools and thereby to stimulate:

1. Citizen-led development of community applications and services to contribute significantly to an improved and sustainable society.
2. Collaboration between user communities and service providers to increase participation and communication between all community actors.
3. An integrated range of accessible services for communities to facilitate and add value to the use of IST by
  - increasing connectivity and access (focussing on low-cost and polymorphic access),
  - integrating technologies and services in a seamless manner,
  - supplying enabling tools and lifeblood services for citizens.
4. More efficient service delivery of community applications to create a virtual electronic space for commerce, local government service delivery and secure personal interaction and to connect real people both on a regional and inter-regional or pan-European level; i.e. to help establish and support the mobile European citizen.
5. Commercially viable, self-sustaining community networks to promote sustainable commercial development incorporating e-commerce and adaptive marketing and awareness raising.

**five high-level  
project objectives**

In order to achieve these objectives, the emphasis in the project was on jointly developing a single integrative Community

Empowerment Forum, which provided a common application-serving environment, and then implemented and integrated it with real-life services in six interconnected European regions.

**Table 1: European Community Empowerment Forum**

In summary CENTURi <sup>21</sup> intended to deliver a European Community Empowerment Forum ...			
to empower and benefit ...	in order to ...	on a common and integrated platform ...	and integrating sectorial services ...
citizens and community groups	interact with each other access a range of facilities receive support participate and share information create their own facilities co-operate across boundaries have fun and be involved	<i>which is</i> available to ordinary people accessible in many ways low cost secure and dependable intelligent and user-friendly personalised transactional trans-European commercially self-sustainable <i>and which is based on open system integration technologies</i>	<i>concentrating on</i> social services education and library services transport and tourism leisure and recreation local commerce <i>in a seamless manner for best value service delivery in partnership between private, public and voluntary sectors</i>
commerce	to market products deliver commercial services to increase cost efficiency do business be closer to the market		
councils	provide information and personalised support increase transparency of local decision making deliver value added services introduce new efficient working processes be closer to the citizen		
... utilising advanced Information Society Technologies.			

## **2.2 Project Structure**

### **2.2.1 The Consortium**

A consortium of regional/ local authorities and industrial partners from all across Europe carried out the CENTURi<sup>21</sup> research project.

The regional/local authorities from six European countries included:

- the Hajdú-Bihar Region of Eastern Hungary with Debrecen, its largest city,
- the Hämeenlinna Region of Southern Finland,
- Limerick County Council in Western Ireland,
- Regione del Veneto in Northern Italy,
- West Sussex and Devon County Councils of Southern England, and
- West Sweden.

The industrial partners in the CENTURi<sup>21</sup> consortium consisted of MATÁV Hungarian Telecommunications Company, HTK – Hämeen Tietotekniikkakeskus Oy and SKOY - Seutukeskus Oy both from Finland, MAC - National Microelectronics Application Centre Ltd. from Ireland, TI Labs S.p.A., Oracle UK, British Telecommunications plc, Jade Communications Ltd. and Marconi Communications Ltd. from the UK, as well as Bosam and Telia AB, both from Sweden.

**Table 2: CENTURi<sup>21</sup> Private-Public Partnership**

Region	The CENTURi <sup>21</sup> Private-Public Partnership of ...			
	regional/ local authorities	telecommunications service providers	software providers/ system integrators	
United Kingdom	West Sussex & Devon County Councils	British Telecom	Marconi Communications & Jade Communications	British Telecom plc, UK  ORACLE Marconi Communications, UK
Ireland	Limerick County Council	National Microelectronics Applications Centre Ltd. and Eircom (the National PNO)	National Microelectronics Applications Centre Ltd.	
Sweden	West Sweden & Bosam	Telia AB	Telia AB	
Finland	Hämeenlinna Region (represented by HTK)	Hämeen tietotekniikkakeskus Oy; HTK	Seutukeskus Oy; SKOY	
Hungary	City of Debrecen/ Hajdú-Bihar County	MATÁV Hungarian Telecommunications Company		
Italy	Regione del Veneto	TI Labs		

The industrial partners represented the leading actors in Europe for supplying key IST tools through their advanced telecommunications, software and system integration services. A very clear and complementary sharing of tasks was agreed upon between the industrial partners:

- on the European level, Marconi Communications, British Telecom and ORACLE as the anchor technical partner developed the CENTURi<sup>21</sup> regional portals in close co-operation with the service providing regional authorities and user groups;
- in each site, a local telecommunications or software provider was the key technical partner for local implementation support and application/ service integration in close co-operation with the common software provider ORACLE.



### 2.2.2 Work Programme

The industrial partners and regional authorities of the consortium jointly developed the CENTURi<sup>21</sup> regional portals and defined six vertical workpackages (WPs) following a life cycle model:

- WP4: User Needs Analysis
- WP5: Functional Specifications
- WP6: Build Integrated Platform & Applications
- WP7: System Verification
- WP8: Roll-Out Validation
- WP9: Marketing and Exploitation

In addition, these vertical WPs were supported by three horizontal WPs:

- WP1: Project Management
- WP2: Dissemination and User Interaction
- WP3: Evaluation

**Evaluation was one of three horizontal workpackages in the project.**

The technical development of the CENTURi<sup>21</sup> regional portals and their integration paradigms followed a classic product development cycle covering the first twenty months of the project. The regional portals were defined and developed in WPs 4 to 7. A core development team of industrial partners jointly carried out the technical development tasks on the basis of identified user requirements.

WPs 8 and 9 were very active in the last twelve months of the project as the community roll-out gained momentum and exploitation and marketing opportunities became apparent. Following system verification, system roll-out took place across all regional and local authorities represented in the consortium. Furthermore, additional services were integrated at each site.

The intention was to validate the regional portals by demonstrating that CENTURi<sup>21</sup> empowers more efficient and user-friendly delivery of the core information and transactional services already being provided in all regions.

There was a need to integrate applications into the common community, business and private user access points which provide a common and personalised look-and-feel to the end user, and to balance commercial services with more socially-useful applications, such as social welfare, planning, and democratic interaction. To achieve this, each of the regional

authorities aimed to validate a coherent regional portal by demonstrating synergetic bundles of information and transactional on-line services.

The common ground between all regions represented in the project was to:

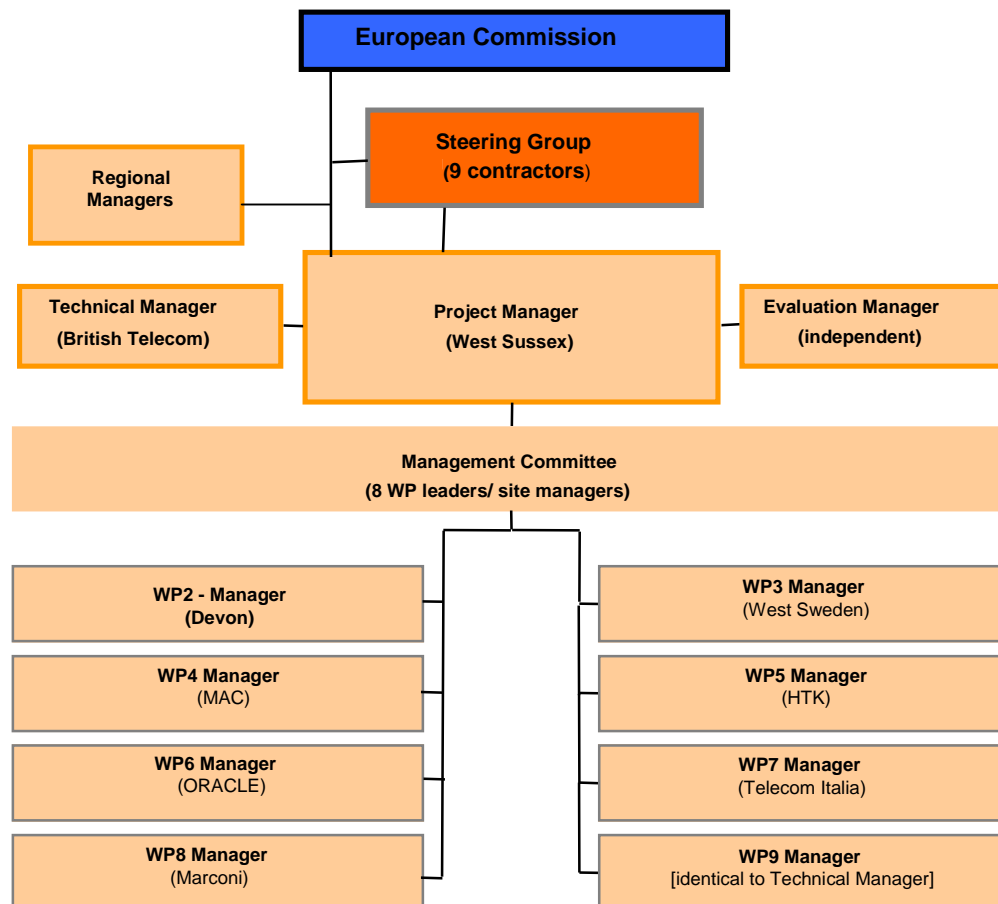
- integrate existing services and technologies in the jointly developed portals in all regions,
- provide integrated services of a new quality to an increased number of users,
- ensure the commercial sustainability of these services and make considerable progress towards electronic service delivery as the norm, and
- prove the benefits of IST technologies as the key tool for increased citizen participation, regional regeneration and local government modernisation.

The regional private and public consortium members carried out these tasks jointly during roll-out. Supplementary to the core technological development work, tasks were contained in the horizontal WPs 1, 2 and 3. Due to their supportive nature, these WPs were active during the full project duration and linked the RTD and roll-out phases of CENTURi<sup>21</sup>.

### 2.2.3 Management Structure

CENTURi<sup>21</sup> represented a group of organisations and individuals well experienced in the management of large European technology projects. The project, therefore, agreed upon an unambiguous management structure which was simple but took account of the complexity and ambition of a project of this size.

**Figure 1: Project Management Structure**



## 2.3 The Regions

Six regions from across Europe participated in the CENTURi<sup>21</sup> project, five of them from the EU-member countries of Finland, Sweden, Ireland, the UK, and Italy and one additional region, namely Debrecen, Hajdú-Bihar County from the Accession Country Hungary.

...six regions  
participated from  
all across Europe

The participating regions were:

- Debrecen/ Hajdú-Bihar County, Hungary
- Hämeenlinna, Finland
- Limerick, Ireland
- West Sussex and Devon representing the UK Region in the project
- Veneto, Italy
- West Sweden

These regions are rather diverse, not only in terms of their geographical location within Europe, their cultural background, their size (population and space), etc., but also in terms of their experience with the Internet and IST.

All regions were keen to provide electronic access to all public services in pursuit of their national governments' e-citizen strategy.

The common features that bound these regions together in CENTURi<sup>21</sup> did not stem from a common agenda, culture, or socio-economic background. What joined them was the "enterprise CENTURi<sup>21</sup>".

While each CENTURi<sup>21</sup> region is described in detail in the Regional Implementation Frameworks annexed in this report (see annex 2), some regional background information is provided for each region below.

### **Debrecen/ Hajdú-Bihar, Hungary**

Debrecen is the second largest city in Hungary, situated in the north-eastern part of Hungary. Presently, Hungary is divided into 19 counties, and Debrecen is the centre of the Hajdú-Bihar County.

The population of Debrecen is approximately 220,000, while the population of Hajdú-Bihar is 550,000.

Debrecen is a city with a long tradition of market and trading. It is also a cultural centre with an old university. Being a centre of an agricultural area, the industry in Debrecen is rather agriculturally-focused.

According to the recent plans for restructuring public administration in Hungary, there will be five regions in the country, with Debrecen becoming the centre of one of them in the northern parts of the Great Hungarian Plain. Certain public administration functions are planned to be delegated to this regional centre. The city is purposefully preparing to fulfil the role of such a regional centre. To reach this aim, it presses construction of motorways and has taken steps to establish an international airport. Elaboration of an overall plan of renewing the city is underway, in which rehabilitation of buildings and blocks of historical significance has received high priority. With the block-rehabilitation, a business centre with all the necessary contemporary infrastructure is going to be established which makes room and can provide for the functions of a regional centre.

The city has decided to create the infrastructure, economic and human conditions for functioning of this regional centre. To do this, a development strategy is going to be worked out. The planning and establishment of the informatics background make up one of its important elements.

### **Hämeenlinna, Finland**

The Hämeenlinna Region of Finland has about 87,000 citizens. Geographically the region is located in southern Finland between Tampere, the largest inland city in Finland, and Helsinki, the capital of Finland, one hour's drive along the motorway to the south. The nearest airport is Helsinki–Vantaa which lies about 80 km south of the region. Helsinki – Tampere motorway and railway goes through the region enabling fast and flexible traffic connections.

Some of the earliest signs of human habitation in inland Finland have been found in Hämeenlinna Region. When the Häme Castle was built in the 13th century, the region was under the Swedish crown and Christianity was taking over. Hämeenlinna, the first inland town in Finland, was founded in 1639. Scandinavian cultural history and heritage are still an essential part of the environment in the region. Besides the Häme Castle, there are several medieval stone churches and beautiful mansions from the 19th century in the region. The old factory sites and villages are also a part of the history and heritage. The world famous composer Jean Sibelius was born in Hämeenlinna. Music is also an important part of the cultural life in Hämeenlinna today. Every year the town hosts high-level concerts such as "Music in the Castle" and "Music in the hometown of Sibelius".

The Hämeenlinna Region is a network of eight local authorities (municipalities). Each of them has its own municipality council and its own organisation to provide public services. The municipalities have a large autonomy and each of them fund service production by levying local taxes. Besides that some services have been arranged through joint municipal authorities which are funded by the municipalities together, but which in many ways are as independent as the municipalities are.

**Debrecen is  
Hungary's second  
largest city.**

**eight municipalities  
make up the  
Hämeenlinna Region**

### **Limerick, Ireland**

Limerick County is situated in the Mid-West of Ireland, fifteen miles from Shannon Airport and 120 miles from Ireland's capital Dublin. It is bordered on the north by County Clare, to the east by County Tipperary, to the south by County Kerry and to the west by County Cork.

The county dates back to the year 1210 when King John of England set up the first twelve Irish counties that year, of which Limerick was one. The county itself comprises an area of 658,948 acres and is slightly more than 1,000 square miles in extent. About 90% of the land is suitable for crops and pasture. The population of the county is 113,003 (1996 figures), an increase of 2.8% of 1991 figures. While Limerick County remains predominantly rural with 52% of County Limerick's population living in rural areas or centres of less than 200 people; 27% of the population are now concentrated in the rapidly expanding environs of Limerick city. This has led to a decline in rural population of the county. This decline has placed under threat the viability of small shops, banks and post offices, etc., in the villages and small towns throughout the county. Limerick County continues to have a high dependency on manufacturing industry with 36 multi-national based operations in County Limerick, employing over 10,400 people. Three quarters of these companies are based in the City Environs. Buoyancy in the national economy has resulted in higher levels of employment, smaller family units, and an ever changing culture which has impacted positively on the quality of life in County Limerick. Unemployment in general is showing a downward trend. In 1996 there were 5,163 unemployed; by February 2001 this figure had fallen to 3,006.

... rapidly changing city environs have led to a decline in rural population in Limerick County

### **The UK Region (West Sussex and Devon)**

Within CENTURi<sup>21</sup>, the UK Region comprises of West Sussex County and Devon County.

#### **West Sussex**

West Sussex is essentially a rural county with 50 percent of its 750,000 population living and working in areas remote from urban centres, resulting in a lack of access to services and information enjoyed by those who live in towns. Although the level of car ownership is higher than the UK average, 36 percent of those living in the county are either too young or too old to drive, and, therefore have to rely upon a public transport service that has a low level of penetration into rural areas.

West Sussex is a rural county with 750,000 citizens

The county of West Sussex is in the South of England and is bordered by four counties: Hampshire, Surrey, East Sussex and Kent, as well as the sea to the South. It is a very rural county, where agriculture is widespread, but it also has an economy through tourism and light industry.

750,000 people live mostly along the coast and in a North-South corridor to the East of the County where many of the large towns are: Crawley, Haywards Heath, Burgess Hill, Horsham and East Grinstead.

Crawley also houses Gatwick Airport, the second busiest airport in the UK, specialising in charter flights. Transport is mainly concentrated to these towns and also along the coast, where the other major towns are located: Worthing, Littlehampton, Bognor Regis and Chichester. Main arteries are M23, A24, A29 (which run North to South) and A27 and A272, which run East to West. Accessibility in other areas is not good without a car. Whilst there are many yachting berths along the coast, there are no passenger ports in the County.

The South Downs are an area of outstanding natural beauty and government plans want to turn them into a National Park. West Sussex is culturally-rich in literary history. The most famous sons of West Sussex are the man of letters, Hilaire Belloc, and the poet Shelley was born here. Worthing is the international home of the sport, Bowls.

### **Devon County**

Devon is a predominately rural county set in the far south west region of Great Britain. The administrative area served by Devon County Council is 656,385 hectares with an estimated 1999 population of around 690,000. The County Town is the city of Exeter (105,000 inhabitants). Transport links are good with the M5, A38, A30 main trunk roads, the main railway line from London to Penzance, regional airports at Exeter and Plymouth and ports at Plymouth and Teignmouth. There are two national parks and miles of unspoiled coastline.

The county has a maritime tradition with naval links at Plymouth and, for years, defence formed the traditional industrial base, although this is now in decline. Agriculture remains the mainstay industry alongside an expanding tourist trade and service industries including printing, insurance and banking. In the last twenty years, the high quality of life offered by Devon's natural environment, together with a good transport infrastructure, has attracted many high-tech companies, many in the electronics and health care sectors, to base themselves in the County.

Devon has within its boundaries areas of urban and rural deprivation as well as areas of considerable affluence. The widening gap between rich and poor and the persistently high levels of unemployment in parts of the county mean that services must be targeted to meet diverse needs. The population of Devon is not homogenous, and there is a shift towards an increasingly elderly population - a trend likely to continue as retired people move into the area. This, coupled with a transient tourist population, can put increasing pressure on healthcare and supporting services.

**Over the last  
twenty years,  
many high-tech  
companies moved  
to Devon County**

Overall population in Devon is expected to rise from 682,000 in 1996 to 732,000 over the next ten years - an increase of around 50,000.

### **Regione del Veneto, Italy**

Veneto is one of the twenty regions of Italy. It is located in the north-east of Italy, bordered by:

- the Adriatic Sea to the east;
- Friuli-Venezia-Giulia to the north-east;
- Austria to the north;
- Trentino Alto-Adige to the north-west;
- Lombardy to the West, and
- Emilia Romagna to the south.

The Veneto surface area is 18,365 square kilometres, with 57 percent plains; 29 percent mountains; 14 percent hills and a coastline of about 150 km. Veneto has a population of 4.5 million inhabitants. In 1991 (latest data available), the average population density was 283 people per square kilometre.

Venice is the regional capital. For administrative purposes, Veneto is subdivided into seven Provinces: Belluno, Padova, Rovigo, Treviso, Venezia, Verona and Vicenza.

Veneto's history has always been influenced by two major geopolitical elements. The first is trading and the position that Venice reached (due to its trading activity) as the leading commercial power in the Mediterranean and in the Near East. The second is its geographical position joining Italy to Central Europe. This has determined the development of good infrastructures that link these European areas and the parallel growth of a very strong group of SMEs that continue to be active on Eastern markets.

Although since the beginning of the 1980s, the number of inhabitants has remained stable due to the positive migratory balance. This is due mainly to the return of Veneto migrants from abroad and to the decrease in the number of Veneti migrating abroad as a consequence of reduced demand on the international labour market. In particular, towns show the largest negative balance, while municipalities in the outer areas of major towns are on the increase. As for the mountain zone, only the villages with a tourism-based economy show an increase in their population while, on the contrary, villages with a more agriculturally-oriented economy are experiencing a dramatic population decrease.

**Regione del Veneto  
has seven provinces;  
Its capital is Venice.**



## West Sweden

Where the borders of Sweden, Norway and Denmark meet lies the region of West Sweden. A dynamic centre for the whole of Scandinavia, West Sweden is made up of three County Councils: Västra Götalands Län, Hallands Län, and Värmlands Län. Of recent creation, such councils have been the response from the public administration to the European integrating process. Moreover, West Sweden is formed by sixty-nine municipalities, which are very independent from each other in the decision-making process.

West Sweden comprises an area of 47,513 square kilometres, which makes roughly about 12% of total area of Sweden's territory. It has a population of 2,048,000 inhabitants, 23% of Sweden's population, which translates into a density of 43 inhabitants per square kilometres. The total amount of households equals to 878,000.

The region has always been a melting pot for different cultures, traditions and languages. West Sweden has always been a centre for international trade. Ever since the Vikings chose the valley of the river Göta as the starting point for their own voyages of discovery, the people of West Sweden have been travellers and explorers. This has taught them to have an open attitude to new impulses from outside, helping to turn the area into a truly multicultural region with an expansive commercial climate. West Sweden is characterised by the ingenuity of its inhabitants, their entrepreneurial talents and their willingness to take the necessary risks.

**69 largely independent municipalities make up the Region of West Sweden.**

**Almost one-quarter of the Swedish population lives in the Region of West Sweden**

## **2.4 CENTURi<sup>21</sup> in Perspective**

CENTURi<sup>21</sup> was conceived in 1997 at a time when national governments and local authorities were only beginning to develop an understanding of the benefits that technology could provide in terms of improved service delivery to citizens across a wide range of public services.

The project finally started in January 2000 and concluded after 30 months in June 2002. The long timescale of the project on the one hand and the rapid pace of development in the IST world on the other hand were reasons for some of its original objectives having been overtaken by technology advances during the life of the project.

Furthermore, it has to be emphasised that the regional portals evaluated were developed within the frame of a project, i.e. they were trial versions and not fully developed and “market-ready” portals. In addition, (at least some) of the local authorities in the project were not able to commit resources to put up a massive amount of content (and commit taxpayers money in that way) for a project that had no guarantee of reaching commercial or operational maturity. These issues may have affected comments, feedback from users, perception of the system mentioned in this document.

In the analysis of (regional) evaluation results, regional variations and differences in the operating environment (see chapter 3.4) were taken into account.

## 3 Evaluation Framework

### 3.1 Evaluation Approach

CENTURi<sup>21</sup> was a research project that included a roll-out validation phase. WP3's key role in the project was to establish the benefits all users, content providers and service operators could gain from the Community Empowerment Forum concept and the regional portals developed within CENTURi<sup>21</sup>.

**strong emphasis  
on commonality in  
the evaluation  
process**

Despite the fact that regional portals were implemented and applied in six different European regions, their evaluation was based on commonality. One of the major challenges within WP3 was therefore to reach full agreement among the Evaluation Team on the concept, common impacts and indicators, operational methods, and other specifics of evaluation (see chapter 3.1.2). The common evaluation basis of CENTURi<sup>21</sup> is described in further detail in chapter 3.1.4 of this document.

The results from the evaluation process provided important input to the definition of the business case, exploitation and marketing plans and are therefore instrumental for decisions on the direction of any future investments in the final product.

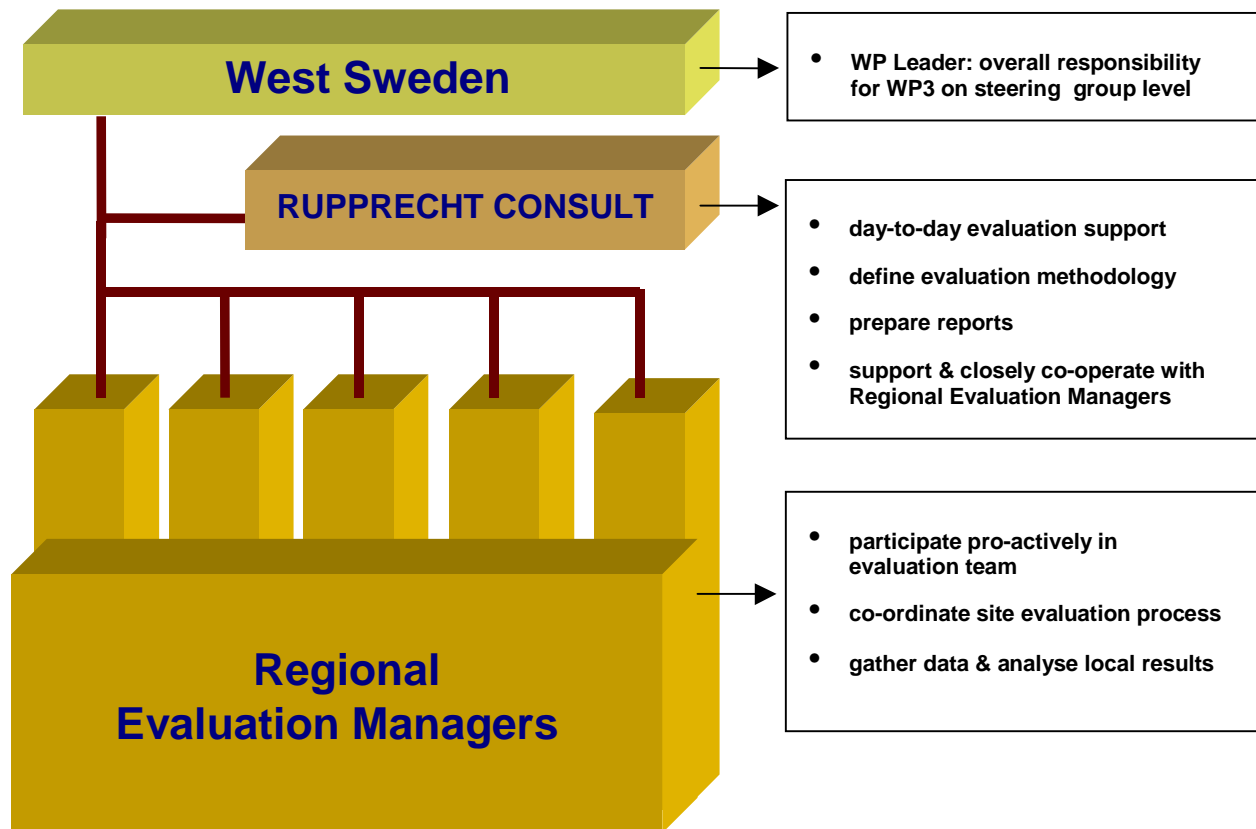
Extensive desk research on evaluation guidelines (ANIMATE, CONVERGE, and VATAM) was conducted, and actual project evaluation plans in previous European RTD Programmes were analysed in order to draft a generic model for assessment tasks in CENTURi<sup>21</sup> as input for forming agreement within WP3. The overall evaluation process is summarised in figure 3.

#### 3.1.1 WP3 Management Structure

The CENTURi<sup>21</sup> Evaluation Team consisted of a WP Leader (West Sweden), an independent Evaluation Manager (Rupprecht Consult), and Regional Evaluation Managers from the participating CENTURi<sup>21</sup> regions.

West Sweden and Rupprecht Consult agreed upon the practical responsibilities for the co-ordination of WP3. Accordingly, West Sweden was responsible for the overall co-ordination of the WP and, in co-ordination with the Project Manager, for establishing and maintaining strategically important contacts outside CENTURi<sup>21</sup>. Rupprecht Consult were responsible for the scientific co-ordination of evaluation activities, in particular, for the preparation and organisation of evaluation workshops and the preparation of WP3 deliverables.

**Figure 2: Management Structure of WP3 – Evaluation**



### 3.1.2 Agreement Process

Throughout the thirty-month project duration of CENTURi<sup>21</sup>, five evaluation workshops were scheduled where Regional Evaluation Managers, the independent Evaluation Manager, as well as other CENTURi<sup>21</sup> participants, directly or indirectly involved in evaluation processes, got together.

#### **Evaluation Workshop 1: Chichester, West Sussex, 30 March 2000**

Contents:

- Introduction of Regional Evaluation Managers
- Presentation of desk research
- Discussion of evaluation framework

**The Evaluation  
Team met in five  
workshops.**

#### **Evaluation Workshop 2: Brussels, 23 May 2000**

Contents:

- Agreement on evaluation framework
- Presentation by Regional Evaluation Managers on site-specific applications and objectives of applications, major appraisal groups, key expected impacts of applications, and suggested indicators
- Discussion on common elements in CENTURi<sup>21</sup> evaluation, including
  - the definition of evaluation candidates and their distinction from applications,
  - appraisal groups,
  - expected impacts and indicators

#### **Evaluation Workshop 3: Hämeenlinna, 15 June 2000**

Contents:

- Presentation of WP3 status
- Presentation of a revised list of impacts and indicators
- Discussion about impacts and indicators
- Development of a short list of common indicators
- Discussion about methodologies for the common indicators selected

#### **Evaluation Workshop 4: Brussels, 5 December 2000**

Contents:

- Review of Draft Evaluation Plan
- Co-ordination of input and activities for the Final Evaluation Plan
- Discussion about common indicators
- Agreement on concept of operational evaluation
- Co-operation between WP3 Evaluation and WP7 Verification

#### **Evaluation Workshop 5: Brussels, 22 October 2001**

Contents:

- Discussion of Evaluation Guideline Document
- Discussion and co-ordination of tool development work

In addition to the five evaluation workshops, WP3 held four audio-conferences (11 January 2001, 23 November 2001, 11 April 2002, and 29 April 2002) within the life-time of the project.

Evaluation workshops offered the opportunity for effective discussions in face-to-face situations. Additionally, the independent Evaluation Manager and the Regional Evaluation Managers also maintained frequent contact via e-mail and phone.

The described means of communication allowed the CENTURI<sup>21</sup> Evaluation Team to keep up a productive cycle of proposals, comments, and revisions that ultimately resulted in mutual agreement. This successful agreement process was particularly important in finding commonalities across the regions, such as common impacts and indicators which were crucial tools in evaluating a major European RTD project such as CENTURI<sup>21</sup>.

In addition, WP3 maintained close contact with WP7 and WP8 throughout the project. The co-operation worked well by means of frequent information exchange between the respective WP Leaders as well as the participation in workshops and audio-conferences of each other's WPs.

**successful  
comment-revision  
process**

### 3.1.3 Steps in the Evaluation Process

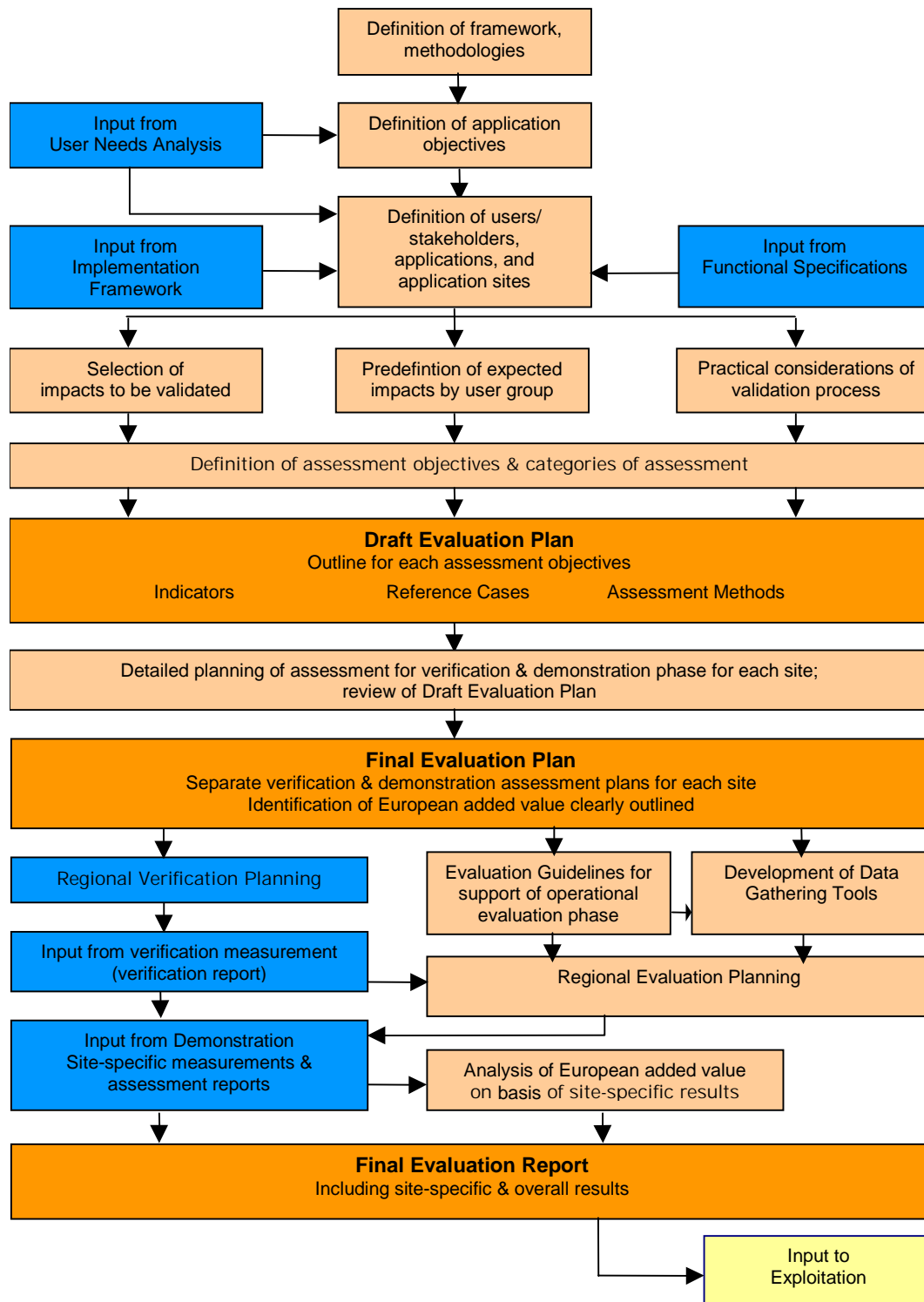
During the life-time of the CENTURi<sup>21</sup> project, the following steps were undertaken to facilitate the consensus-formation process within WP3 in a systematic and comprehensive manner summarised in table 3 below. The steps in the evaluation process are also provided in graphical form in figure 3.

**Table 3: Steps in the Evaluation Process – Description and Explanations**

Step	Description	Explanations
1	Definition of specific and detailed objectives for each CENTURi <sup>21</sup> evaluation candidate	Input was used from WP4 and WP5 as well as individually from the regional sites (Regional Implementation Frameworks) and technology providers, where necessary..
2	Precise description of the key development goals of the project	For each evaluation candidate, descriptions were provided on: <ul style="list-style-type: none"> <li>- technologies and functions (some top-level key words only),</li> <li>- related users/ other stakeholders, and</li> <li>- validation (i.e. verification and roll-out validation).</li> </ul>
3	Impact definition	
3.1	Definition of expected impacts (general) and impacts by groups of users/ non-users	Each impact was described and an expectation given of the strength of the impact for each appraisal group
3.2	Selection of impacts to be validated and justification of this selection	
3.3	Practical considerations of validation	For example, could impacts be validated, extent and "configuration" of validation activities, methodological restrictions, analysing impacts
4	Definition of assessment objectives	On the basis of step 3, it was necessary to concretely define the operational objectives of the assessment process. Agreement on the basic categories of assessment was reached.
5	Outline of validation methods for each assessment objective	This step provided input to the key elements of the validation plan and was covered for each assessment objective: <ul style="list-style-type: none"> <li>- what indicators were used,</li> <li>- the reference case against which success was measured (or "project baseline"),</li> <li>- how "success" was defined, and</li> <li>- what methods were used (e.g. quantitative surveys, technical measurements, qualitative interviews).</li> </ul>
6	Tool Development	Following the agreement on the methods (tools) to be used for evaluation purposes, automatic count tools, questionnaires, interviews and task observations were developed. Each of the tools was linked to specific indicators identified and defined previously.

Step	Description	Explanations
7	Regional Evaluation Planning	<p>Documents were circulated by the Evaluation Manager in order to support regional evaluation planning in terms of:</p> <ul style="list-style-type: none"> <li>- tool development,</li> <li>- appraisal group and evaluator selection,</li> <li>- sampling methods,</li> <li>- preparation of regional evaluation plans,</li> <li>- data analyses, etc.</li> </ul> <p>All regions agreed upon a common core evaluation period of 13 weeks beginning on 1 February 2002.</p>
8	Data Gathering	<p>After completion of tool development, data were gathered using these tools in all regions. A validity check of the data was performed initially by the Regional Evaluation Managers. The independent Project Evaluation Manager further checked data for consistency.</p>
9	Data Analysis	<p>Input from the system verification and system roll-out (documentation) was used as input to the Evaluation Report.</p> <p>Following validity and consistency checks in step 8, all data (quantitative and qualitative) was analysed by the independent Evaluation Manager.</p> <p>Site-specific as well as overall results were derived and reported in the Evaluation Report.</p>



**Figure 3: Steps in the Evaluation Process**

### 3.1.4 Strategic Evaluation Outline

#### Success Criteria

Success criteria define the expectation about the performance and impacts of the application. The success or failure of validation results was tested against these criteria. Thus, they played a vital role in the validation methodology.

A definition of success was provided, as appropriate, for individual indicators, groups of related indicators, individual assessment objectives or groups of assessment objectives.

The following strategic high-level success criteria were identified in the CENTURi<sup>21</sup> technical annex:

- increase in the proportion of **citizens successfully using** community online service delivery (e.g. from less than 5% in 1999 to up to 25% in 2002)
- increase in the **range of public services** available electronically (e.g. from less than 1% in 1999 to up to 10% in 2002)
- **reduction of expenditure** on traditional service delivery by targeting specific public services (e.g. a saving of up to 25%)
- creation of several **new commercial organisations** which are geared to exploit CENTURi<sup>21</sup> service, product & business opportunities

**four strategic  
high-level  
success criteria**

#### Appraisal Groups

Appraisal groups are those users (or non-users) potentially affected by CENTURi<sup>21</sup>. The project has agreed on the following definitions (listed in table 4) according to different institutions'/ individuals' roles.

It needs to be taken into account that the below defined appraisal groups overlapped in some regions, i.e. content providers and service providers may have been in reality one organisation. For each region full information is available on which institutions represent these appraisal groups.

**Table 4: Appraisal Groups and Their Role/Function**

Appraisal Group	Role/ Function
<b>Content Providers</b>	Institutions providing raw data (primary content providers)
	Institutions aggregating and/or processing data (intermediate or value-added content providers)
	Institutions providing applications (e.g. hotel booking agencies)

Appraisal Group	Role/ Function
Service Providers	Private or public organisations making the Community Empowerment Forum available to end-users
End-users	Individuals or groups accessing information or using an interactive service
Operators	Agencies technologically running the Community Empowerment Forum
Other Stakeholders	Local press Chambers of commerce Organisations not using the system themselves Neighbouring authorities

### Evaluation Candidates

Evaluation candidates are defined based on the appraisal groups' views of the Community Empowerment Forum. They are evaluated in the project, not the technical applications developed within CENTURi<sup>21</sup>.

The CENTURi<sup>21</sup> Community Empowerment Forum is the core element of evaluation. However, in its entirety, it is too complex to allow for an operational evaluation. Therefore, four evaluation candidates were identified, each offering different perspectives on the Community Empowerment Forum. The key criterion for the definition of the CENTURi<sup>21</sup> evaluation candidates was the main user groups' view of the Community Empowerment Forum.

CENTURi<sup>21</sup> evaluation candidates were:

- **Public Interaction Space** – defined according to the end users' view of community and public information provision,
- **Virtual Marketplace** - defined according to the end users' view of the commercial/ interactive service provision of the Community Empowerment Forum,
- **Technical CENTURi<sup>21</sup> Platform** – defined according to the operators' and providers' view of the Community Empowerment Forum, and
- **Service Integration Process** as the dynamic element of integrating existing or new services/ applications on Community Empowerment Forum – defined according to the operators' and providers' view.

### 3.1.5 Operational Impact Assessment

#### Common Evaluation Basis

CENTURi<sup>21</sup> was a truly European project. Regions from five EU countries (Finland, Ireland, Italy, UK and Sweden) and Hungary as an accession country participated. Only by undertaking the project at the European level, sufficient resources were devoted to ensure that a common CENTURi<sup>21</sup> architecture was implemented in each region. After completion of the project, the intention is to implement CENTURi<sup>21</sup> in further European regions.

Therefore, commonalities were the centrepiece of the CENTURi<sup>21</sup> evaluation process. Two main aspects were considered in establishing a common evaluation basis:

1. Impacts and indicators common to all regions needed to be defined.

Since the regions, for example, focused on different applications and appraisal groups (see chapter 3.1.4), it was not always possible to use an indicator in all six CENTURi<sup>21</sup> regions. Only indicators applied in all six regions were considered “common indicators.” Comparably, only those impacts analysed by at least one common indicator were considered “common impacts.”

2. Indicators selected for measurement in all regions needed to be measured in the same way, or at least yield comparable results across the regions (see chapter 3.2.1 for a detailed description of data gathering tools).

The challenge to reach commonality was in the different technical prerequisites to measure the indicators, different statistical circumstances, as well as the formulation of different references cases and success criteria across the regions.

#### Impacts

Common impacts, indicators, and assessment methods are the key elements of evaluation. Without them, no evaluation would be possible. The CENTURi<sup>21</sup> Evaluation Team spent a considerable amount of time selecting, defining, and discussing these key elements.

With the centrepiece of CENTURi<sup>21</sup> evaluation – the common evaluation basis - in mind, agreement was reached on impacts, indicators, and assessment methods as described below.

Impacts were defined as changes or effects brought about by an application resulting from its implementation in an experimental or real application, whether intended or unintended. The following nine expected impacts were identified by the CENTURi<sup>21</sup> Evaluation Team:

**Only indicators applied in all six CENTURi<sup>21</sup> regions were considered “common indicators”.**

Impact 1:	Scope of public and commercial services
Impact 2:	Secure access to public and private services
Impact 3:	Co-operation between content and service providers
Impact 4:	Interaction between citizens and local/ regional governments
Impact 5:	Level of community involvement
Impact 6:	Contribution to regional development and innovation
Impact 7:	Competitiveness of Small- and Medium Size Enterprises
Impact 8:	Adaptability to technological progress
Impact 9:	Exploitation of existing networks and other infrastructure

A detailed description of each impact and the accompanying assessment objectives is provided in chapter 4 of the Final Evaluation Plan (annex 1).

In the following table 5, identified impacts were associated the project objectives.

**Table 5: CENTURi<sup>21</sup> Objectives and Associated Impacts**

Objective		Impact
1	Citizen-led development of community applications and services to contribute significantly to an improved and sustainable society.	Impact 5: Level of community involvement Impact 6: Contribution to regional development and innovation Impact 9: Exploitation of existing networks and other infrastructure
2	Collaboration between user communities and service providers to increase participation and communication between all community actors.	Impact 4: Interaction between citizens and local/ regional governments Impact 5: Level of community involvement Impact 9: Exploitation of existing networks and other infrastructure
3	An integrated range of accessible services for communities to facilitate and add value to the use of IST by <ul style="list-style-type: none"> <li>- increasing connectivity and access (focusing on low-cost and polymorphic access),</li> <li>- integrating technologies and services in a seamless manner,</li> <li>- supplying enabling tools and lifeblood services for citizens.</li> </ul>	Impact 1: Scope of public and commercial services Impact 2: Secure access to public and private services Impact 3: Co-operation between content and service providers Impact 6: Contribution to regional development and innovation
4	More efficient service delivery of community applications to create a virtual electronic space for commerce, local government service delivery and secure personal interaction and to connect real people both on a regional and interregional or pan-European level; i.e. to help establish and support the mobile European citizen.	Impact 1: Scope of public and commercial services Impact 3: Co-operation between content and service providers Impact 6: Contribution to regional development and innovation Impact 8: Adaptability to technological progress Impact 9: Exploitation of existing networks and other infrastructure
5	Commercially viable self-sustaining community networks to promote sustainable commercial development incorporating e-commerce and adaptive marketing and awareness raising.	Impact 1: Scope of public and commercial services Impact 2: Secure access to public and private services Impact 6: Contribution to regional development and innovation Impact 7: Increased competitiveness of SMEs

## Indicators

The CENTURi<sup>21</sup> Evaluation Team identified 29 indicators. During the core evaluation period between February and May of 2002, data was gathered for these indicators<sup>1</sup>. The vast majority of these indicators were applicable to all regions and were, therefore, considered common indicators. All indicators were thoroughly described in fact sheets (see Final Evaluation Plan, 2001) based on the nine-point structure seen in the indicator fact sheet template (table 6) below:

**Table 6: Indicator Fact Sheet Template**

Impact:	Name (impact #)
Indicator category:	##: Name
Number:	##
<b>Indicator:</b>	<b>Name</b>
Relevance:	In this fact sheet section are included, for example, relevance for project goals, expectations and direction of indicator, contribution to measuring the impact, other background info.
Definition of key terms:	Fact sheet section two defines precisely any concepts and terminology the indicator is based on, for example, what is equivalent to 100%, what is "efficiency" etc.
Involved appraisal groups:	The affected users or non-users are described here.
Methods:	In fact sheet section four, it is explained how measurements will be made, what tools will be used, etc.
Reference case:	It is explained to which situation the measurement is compared to.
Operational issues:	Under this fact sheet section, any other points regarding measurement are described.
Success criterion:	It is precisely and in operational terms defined what is viewed as a success.
References to other indicators:	Fact sheet section eight lists similar indicators and/ or briefly explains differences to similar indicators.
Site-specific issues:	In this section of the fact sheet, it is explained, for example, why an indicator cannot be measured in a certain region, why certain site-specific measurement conditions apply, etc.

A complete overview of impacts and related indicators is provided in table 7 below.

<sup>1</sup> It was planned to apply indicator 4.3 "percentage of online voters in local referenda, elections, etc." in Limerick only. However, during the course of the project it became evident that this would not be possible due to both policy and technical reasons. A few indicators did not produce the results anticipated when they were defined. If that was the case, it was mentioned in the respective sections of chapter 5.

**Table 7: CENTURi<sup>21</sup> Impacts and Indicators**

Impact	Indicator Category	Indicator
1 Scope of public and commercial services	1.1 Variety of service provision	1.1.1 Number of CENTURi <sup>21</sup> -registered companies
		1.1.2 Number of public services provided online
		1.1.3 Number of commercial services provided online
	1.2 Actual use	1.2.1 Actual use
		1.2.2 Percentage of online transactions
		1.2.3 Percentage of online unilateral processes
	1.3 Quality of service	1.3.1 Usability
		1.3.2 Perceived change in service quality
		1.3.3 Number of complaints about service quality ("online complaint box")
		1.3.4 Usefulness
2 Secure access to public and private services	2.1 Access	2.1.1 Percentage of target users who use CENTURi <sup>21</sup>
	2.2 Security	2.2.1 Percentage of security incidents
		2.2.2 Trustworthiness stated by the user
	2.3 Time	2.3.1 Time gained by various appraisal groups to complete task
3 Co-operation between content and service providers		3.1 Changes in co-operation between content and service providers
		3.2 Number of joint theme-based URLs
4 Interaction between citizens and local/ regional governments		4.1 Percentage of online government service requests
		4.2 Percentage of local/ regional government councillors and officers directly available via e-mail
		4.3 Percentage of online voters in local referenda, elections, etc.



### D3.3 - Evaluation Report

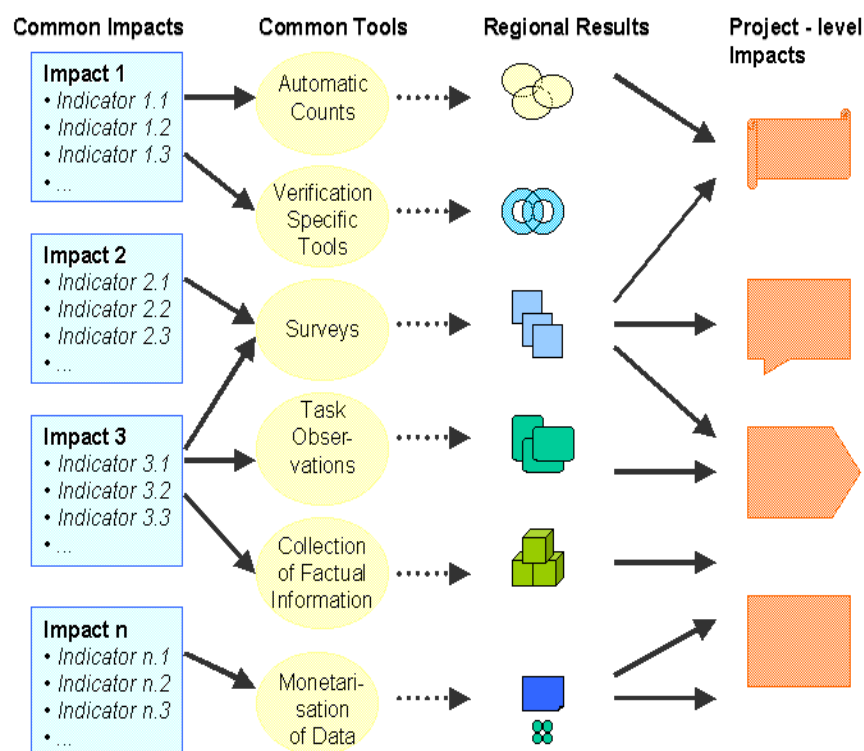
Impact	Indicator Category	Indicator
5 Level of community involvement		Number of community applications developed by citizens 5.1 5.1a: Focussing on the community applications that were put up (developed) by citizens and 5.1b: Focussing on what kind of applications they would like to put up (develop) in the future.
		5.2 Percentage of citizens participating in CENTURi <sup>21</sup> development
		5.3 Percentage of online suggestions
		5.4 Satisfaction with community involvement in CENTURi <sup>21</sup> development process
6 Contribution to regional development and innovation		6.1 Perceived change in regional attractiveness
7 Competitiveness of SMEs		7.1 Perceived change in using e-commerce
8 Adaptability to technological progress		8.1 Percentage of new access media use
		8.2 Perceived IT-strategic impact of CENTURi <sup>21</sup>
		8.3 Suitability of CENTURi <sup>21</sup> platform for turning manual services into online services
9 Exploitation of existing networks and other infrastructure		9.1 Increase in the amount of data transferred through CENTURi <sup>21</sup>

## 3.2 Evaluation Methodology

### 3.2.1 Common Measurement Tools

While indicators were described in a systematic way within the context of the impacts they aim to measure, it was important during the practical exercise to achieve an efficient and co-ordinated approach towards actual measurement of related indicators in all CENTURi<sup>21</sup> regions. Therefore, common operational evaluation tools were designed which enabled Regional Evaluation Managers to approach their target groups in a co-ordinated manner and to save resources. The integration of these common tools in the process of operational evaluation is illustrated in figure 4.

**Figure 4: Integration of Measurement Tools in the Evaluation Process**



One tool could appropriately measure more than one indicator (e.g. a questionnaire could address a couple of diverse issues). At the same time, one indicator may have to be measured by more than one tool (e.g. specific aspects of an indicator may require an in-depth interview with key decision makers, but may have to consider responses to a more simply designed questionnaire among a larger group of technical personnel).

The process in developing tools in CENTURi<sup>21</sup> was:

1. For each indicator, the suitable method of measurement was identified (see Final Evaluation Plan, pp. 75-77), including a characterisation of targeted appraisal groups.
2. An effort was made to combine tools as far as possible, i.e. with the aim to reduce the number of distinct tools to a minimum and as limited by the specific requirements of concerned appraisal groups or methodological restrictions (see Final Evaluation Plan, pp.78-79).

### **Categories of common tools**

The following categories of tools were jointly developed by the CENTURi<sup>21</sup> Evaluation Team and applied during the course of the demonstration/ roll out process<sup>2</sup>:

- Automatic Counts (AC)
- Surveys (SUR)
- Task Observations (TOB)
- Collection of Factual Information (FACT)
- Monetarisation of Data (MON)

### **Automatic Counts (AC):**

As input to the system-building process, WP3 defined a specific set of requirements for automatic measurement of data related to the extent of the services offered under CENTURi<sup>21</sup> (e.g. the number of registered companies and provided services), as well as their actual use (e.g. in terms of number of transactions and processes or access media used, service requests), but also more classical automatic counts like amount of data transferred through CENTURi<sup>21</sup>.

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<sup>2</sup> In addition to automatic counts, surveys, task observation, the collection of factual information, and the monetarisation of data, it was also foreseen (and documented in the Final Evaluation Plan) to apply so-called verification-specific tools (VER). VER tools were planned as a collection of state-of-the-art methodologies to research the usability of the system to be developed by WP7 and to simply be adopted by WP3. The Evaluation Team decided instead to gather usability data by means of task observations (tool TOB1) and the end-user questionnaire (tool SUR1).

These data were made available in a crude form automatically by the system in regular time intervals (e.g. daily). During evaluation, these data were compared to a meaningful base in order to achieve for example percentages. However, it was also useful to derive "stand alone" time series, for example of actual service or system use.

### **Surveys (SUR):**

Questionnaires are one of the standard tools of empirical social research and are commonly summarised under the category "survey." However, in the context of CENTURi<sup>21</sup> evaluation, the more specific understanding was that questionnaires were mainly concerned with the collection of opinions, stated preferences or judgements on quality by a significantly large appraisal group.

Over the course of the project, the Evaluation Team decided to gather data with only one questionnaire, namely a comprehensive end-user questionnaire (data gathering tool SUR1). This questionnaire was pre-tested in the regions, approved by the Evaluation Team, and translated into the national languages of the regions.

### **Task Observations (TOB):**

The execution of routine tasks (for example completing a service request or providing a local government service) was expected to change significantly through CENTURi<sup>21</sup>.

Members of appraisal groups were asked to record themselves or alternatively allow observation during task completion. The focus of task observations was on the time needed to complete a given task (e.g. with/ without CENTURi<sup>21</sup>).

### **Collection of Factual Information (FACT):**

Two categories of "factual" information were collected:

- simple facts which could only be collected manually - usually without involving an appraisal group directly (e.g. the number of complaints about service quality, number of joint theme-based URLs) and
- in-depth interviews with key actors.

Interviews were undertaken in a semi-structured manner, i.e. an interview guideline outlined a briefing to the interviewee, kick-off and prompting questions and key issues for which statements were collected, as well as a common format for recording and analysing responses.

**Interview guidelines  
and questionnaires  
were translated into  
the five project  
languages –  
Hungarian, Finnish,  
Swedish,  
English & Italian**

The following interviews were conducted in each of the CENTURi<sup>21</sup> regions:

- Interview of Content and Service Providers (FACT2)
- Interview of Regional Decision Makers (FACT6)
- Interview of Technical decision Makers and IT-strategists (FACT8)
- Interview Software Developers and other Technical Personnel (FACT9)

### **Monetarisisation of Data (MON):**

Monetarisisation is a classical process of socio-economic research of assigning monetary values to, for example, time gains due to a more efficient process of delivering a regional government service. The primary objective of monetarisisation was to determine costs and benefits of the CENTURi<sup>21</sup> system introduction. The main input data were observed time gains from observation and system introduction/ maintenance costs.

### **3.2.2 Core Evaluation Period**

In the six CENTURi<sup>21</sup> regions, data was gathered throughout the so-called core evaluation period. This period covered thirteen weeks, i.e. one quarter of a year, between February and May of 2002.

**13-week long core  
evaluation period**

The rationale behind a core valuation period of thirteen weeks was that as much time as possible should have elapsed between the actual roll-out of the system and the point-in-time where end-users and professionals provided their opinion about the portal (i.e. towards the end of the core evaluation period).

In an optimal case, technical flaws, weaknesses in the design, etc. should have been diminished during the roll-out period and content and functionality should have been added. Thirteen weeks is an extremely short period of time to realise this. Obviously, a longer core evaluation period would have been preferred for evaluation purposes. However, the tight timeframe of a thirty-month IST-project caused the compromise of a short core evaluation period to which the Project Steering Group agreed upon.

While most regions started their core evaluation period on schedule, i.e. on 31 January 2002, Veneto started later due to problems with the single sign-on to the portal.<sup>3</sup> This was one

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<sup>3</sup> The single-sign on problem in Veneto was solved in May 2002. The core evaluation period in this region was extended into June 2002 (i.e. beyond 17 May 2002 which constituted the end of the core evaluation period in the other regions). However, the portal was online before May 2002 (albeit without an option to register as a user) and logged data for evaluation purposes.

reason for significant delays in the data gathering process and, consequently, delayed the start of the data analysis. Additional reasons included the late roll-out, realisation of interviews, data validation and submission from the regions.

### **3.2.3 Data Gathering and Analysis**

An immense amount of data was produced in the regions by means of fifteen data gathering tools, i.e. nine automatic count tools, one task observation, one survey (end-user questionnaire), and four interview guidelines.

Each region provided so-called “diary of events” These diaries listed in chronological order throughout the core evaluation period of the project, any events or circumstances that may have had an effect on evaluation results. Examples include holiday periods, portal downtimes, publicity events, seminars, etc. In addition to being documentation tools, the diaries were used to explain certain outcomes of the evaluation process, for example peaks and lows in terms of actual use.

An important consideration for the data analysis was the fact that evaluation within CENTURi<sup>21</sup> was based on commonality (since also one common Community Empowerment Forum was envisaged at the onset of the project). During the project, however, it became evident that each region, based on a common idea, would develop its own regional portal, with its own distinct “look and feel”. While what the user saw online was different in terms of the look and design of the portals, the idea, software, and system behind it was the same or at least very similar between the regions.

The quality of the data gathered was low compared to the expectations of the Evaluation Team and led to an unanticipated amount of work in re-formatting the data and in conducting even more thorough validity and consistency checks prior to the data analysis.

#### **Automatic Counts**

The application of automatic count tools proved to be more difficult than anticipated. Some automatic count data could not be gathered by the common Oracle software automatically (as their name suggests) and thereby did not meet the expectations of the Evaluation Team. The Evaluation Team, therefore, decided to apply other software, such as “Analog Freeware”, “Webtrends”, BlackIce firewall software to log raw data (and write files) to the CENTURi<sup>21</sup> hard disks. Automatic count data gathering was further hindered by the fact that some automatic count tools required a significant amount of additional “manual” labour in order to report data in the envisaged common format.

Regional Evaluation Managers as well as the Evaluation Co-ordinator had to spend a significant amount of time in terms of:

- adjusting and updating the automatic count data requirements,
- providing additional (manual) data,
- collecting factual information to make sense of the automatic count data,
- creating a format for data entry that would suit all regions, and
- fixing the input from the regions so it would comply with a common format for data analysis.

### **Task Observations**

It was planned to conduct one common task, namely “finding an event” in all regions. Five users were supposed to complete the task by using their regional CENTURi<sup>21</sup> portal, five additional users by either using another Internet portal or traditional means, such as making a phone call or finding information in a newspaper, as a reference. Each task was timed by an observer (usually the Regional Evaluation Managers) and any observations/remarks were noted in a task observation sheet prepared by the independent Evaluation Manager.

In practice, only one region (Hämeenlinna) followed the described format precisely. The other regions provided between four and eight task observations, and it turned out that not all regions observed valid reference tasks, since for example the same users who were asked to find the event via CENTURi<sup>21</sup> were also asked to find it by other means.

In Debrecen, “finding an event” was just one of five tasks observed (one completed by using CENTURi<sup>21</sup> and one by using other means of information retrieval). While this made the analysis more difficult, the Debrecen task observations demonstrated the spectrum of possible tasks that could be completed within CENTURi<sup>21</sup> (and faster than by means of other Internet portals or traditional means of information gathering). The additional tasks observed in Debrecen were: a search for a certain type of lawnmower in the so-called “peasant shop”, collecting information as a preparation to buy a car, finding a movie theatre to see a specific movie and finding information about the movie, and a search for the latest directive on keeping a dog in a flat.

### **Monetisation of Data**

It was the intention to derive monetary values for time savings achieved through CENTURi<sup>21</sup> compared to using other Internet

media or traditional means of information retrieval, such as newspapers, phone calls, etc.

The quantity, quality, and consistency of the task observation data obtained, however, did not allow for a meaningful monetisation of data.

While an in-depth analysis of the economic perspective of CENTURi<sup>21</sup> was not possible, this Evaluation Report outlines the basic ingredients and criteria for a thorough business plan for a local/regional authority intending to offer e-government services online (see chapter 5.2.3).

## Questionnaires

It was recommended by the independent Evaluation Manager to send out (at least) 500 questionnaires to the citizens of the respective target communities in the regions. Census data (for example) was to be used to mail hard-copies of the end-user questionnaires to a balanced allocation across selected age and gender groups. In conjunction with reminders (in case a citizen had not sent back a questionnaire) and non-monetary incentives, a return rate of at least 20% was anticipated from members of the usually small and motivated target communities. In this way, a minimum of about 100 questionnaires, as a minimum number for statistical purposes, was hoped for from each region.

In practice, none of the regions were able to provide 100 end-user questionnaires. A total of 261 end-user questionnaires were returned among them 94 from Hämeenlinna, 58 from West Sweden, 41 from Debrecen, 35 from Veneto, 19 from the UK Region, and 14 from Limerick.

The distribution methods for the end-user questionnaires in the regions are explained in table 8 below.

Partly due to the questionnaire distribution methods, there were possible biases among the respondent groups (see user profile chapter 4).

**261 end-user  
questionnaires were  
completed in the six  
CENTURi21 regions.**



**Table 8: Methods to Distribute End-User Questionnaire in the CENTURi<sup>21</sup> Regions**

Region	Distribution Method	Return Rate
Debrecen	Manual distribution in the Mayor's Office and the local authorities, and the Mathematical Institute and the Arts Institute of the University of Debrecen	Not known
Hämeenlinna	The questionnaire was made available in electronic form on the Internet. Its URL address was sent to a selected group of active regional Internet users who were asked to get familiar with the regional portal and to complete the questionnaire. 1067 e-mails were sent out, and 94 completed questionnaires were sent back. <sup>4</sup>	8.8%
Limerick	The questionnaire was sent to the Kilmallock target group of 50 citizens.	28%
UK Region	<p>The questionnaire was advertised in the local newsletter, posters round the village (of Hassocks), help points and given out in the library. Over 100 were distributed to the public.</p> <p>In the third quarter of 2001, the UK evaluation team already distributed another questionnaire to all households of the target community of Hassocks (7,000 inhabitants) and also put an electronic copy of that questionnaire on the regional portal. In both cases, good returns were achieved. The UK evaluation team points out that the low number of actual WP3 questionnaires is partly due to "questionnaire fatigue" of the citizens having received their third questionnaire within less than a year's time.</p>	19 out of "over 100"
Veneto	<p>The questionnaire was sent to two communities of the Veneto Region with two different characteristics:</p> <ul style="list-style-type: none"> <li>- the first was the Belluno area, a mountain area in the north of the Veneto Region with an older than average population, less knowledge of technological devices, low Internet use (also in view of the lower performance of telecommunication links in this mountain area);</li> <li>- the second was the Province of Padua and the city of Padua in particular where the resident population is supplemented by a strong university student group (Padua is the site of a prestigious university).</li> </ul>	about 10% in Belluno and about 50% in Padua
West Sweden	The questionnaire was made available as an electronic version on the West Swedish portal. The twenty persons, randomly selected in each of the nine West Swedish municipalities, were registered with name, age and e-mail address. These were later contacted by the local evaluation managers, and they also received close instructions on how to use the portal and how to fill in the questionnaire. Out of 160 registered users, 57 sent in a completed questionnaire.	35.6%

<sup>4</sup> In the Hämeenlinna region, the focus group was selected amongst HTKNet and VIRPI users who have been the most active Internet users in the region. HTKNet connects the local authorities and offices. VIRPI is the name of the local subscriber connection into the Internet and is sponsored by the region's municipalities. Citizens who live in the Hämeenlinna region have free connection into the Internet. When the focus group was set up, a group of people who use regularly either HTKNet or VIRPI was taken at random. It was anticipated that a good intersection of regions population structure would be obtained.

## Interviews

Interviews were usually conducted in face-to-face situations<sup>5</sup> allowing the person who conducted the interview to follow the interview guidelines, but to lead the interview partner through the interview (for example, by skipping certain questions that were not applicable after a certain answer was given previously).

It was envisaged to obtain from each region a minimum of five interview data sets for each of the four interviews, i.e. a total of twenty interviews per region. The actual turn-out fell short of this expectation with 21 interview data sets from West Sweden, 14 from Hämeenlinna, 10 from Veneto, 9 each from the UK Region and Debrecen, and 5 from Limerick.

## Data Analysis Software Tools

In order to facilitate the data analysis, the Evaluation Coordinator prepared a data input mask for the end-user questionnaire (tool SUR1) and the four interviews (tools FACT2, FACT6, FACT8, and FACT9) in MS ACCESS.

In each region, the respective Regional Evaluation Managers entered the answers provided in the questionnaires and interviews into the data input mask. The Evaluation Coordinator gathered the following amount of questionnaire and interview data sets:

- 261 end-user questionnaires,
- 15 interviews of content and service providers,
- 15 interviews of regional decision makers,
- 18 interviews of technical decision makers and IT-strategists, and
- 20 interviews of software developers and other technical personnel.

For the data analysis, data from the MS ACCESS files was exported to SPSS – a statistical analysis software.

The 261 end-user questionnaires were unevenly distributed across the regions (see above). The option to weigh the responses from the region (in order to have all regions evenly represented for data analysis purposes) was dismissed, because the difference between the regions with regard to the number of end-user questionnaires was viewed as too large. Weighting had implied that, for example, each response from Limerick had an amplitude of seven and each response from

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<sup>5</sup> It was not possible to arrange face-to-face interviews for interview partners in Devon because of the distance to Chichester in West Sussex where most of the UK Region's interviews were conducted.

the UK region an amplitude of about five compared to a response from Hämeenlinna. It was not justifiable to put such an extraordinary emphasis on the responses from those regions that had a particularly low return of questionnaires. An additional reason for dismissing weighting was the fact that the average age of the people who responded in the UK Region was 60.5 years old and therefore biased towards the elderly part of the population even if considered that the target community of Hassocks had an age profile that averaged above 45 years of age.

In chapter 5 (Detailed Evaluation Results), results derived from questionnaire data was expressed, wherever possible, in percentage terms. However, it was opted to report questionnaire results from the UK Region and Limerick as well as interview results in absolute numbers. The number of responses in these cases were simply too low to derive results in percentage terms and a comparison between the regions would not have been adequate (or even fair).

**Weighting as option  
for data analysis  
dismissed ...**

### 3.3 Categorising CENTURi<sup>21</sup> Users

This chapter describes, in methodological terms, how user categories were derived which will be further used in the detailed analysis.

The regional CENTURi<sup>21</sup> portals in the six regions were online during the final stages of the project: Many (regional) users accessed these portals. A sample of all citizens in the six respective project regions was approached by the partner organisations to complete the so called “end-user questionnaire”. 261 users provided valuable information which was analysed and interpreted in this Evaluation Report.

What kind of users did CENTURi<sup>21</sup> attract? What was the CENTURi<sup>21</sup> user profile? The question arose who these users were? In other words, how old was a CENTURi<sup>21</sup> user on average, or how many of the users under 30 years of age intended to use CENTURi<sup>21</sup> in the future, or what was the percentage of female users, and were they more satisfied with CENTURi<sup>21</sup> than male users, etc.

The CENTURi<sup>21</sup> user profile was established on the basis of information provided in the end-user questionnaires:<sup>6</sup>

- Gender
- Age
- Education
- Employment
- Frequency of Internet use
- CENTURi<sup>21</sup> satisfaction
- Intention of future CENTURi<sup>21</sup> use

In this chapter, definition criteria for the building of user categories are explained. Whether or not the CENTURi<sup>21</sup> users were representative for the users in the respective project regions, the six project countries, and/or the European users in general, is elaborated upon.

Throughout the entire CENTURi<sup>21</sup> data analysis, the user categories described in this chapter were applied. More specific actual use data were analysed and interpreted in chapter 5, “Detailed Evaluation Results” and, in particular, in chapter 5.1.1.

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<sup>6</sup> Another category is those of the regions. Wherever suitable, regional analyses of the data were reported in this document.

### **Gender, Age, Education, Employment Categories**

All users were asked to provide some basic statistical information regarding their gender, age, education level, and employment status. Based on the responses of the users, three more user categories were derived which are further elaborated on below.

### **Frequency of Internet Use Category**

The “Frequency of Internet Use” category was built according to responses to questions from the end-user questionnaire as to how often users used the Internet for the following:

Question 7a: Looking up information on public services

Question 7b: Looking up information on private services

Question 7c: Paying for goods and services from private companies

Question 7d: Paying for services from public organisations

Question 7e: Using online-banking

Question 7f: Participating in newsgroups and/or chats

Each user could answer either “regularly”, “sometimes” or “never” to these Internet use options.

Three types of users were envisaged for this user category, namely frequent, occasional, and so-called reluctant Internet users.

A first categorisation attempt failed. It was based on the following criteria:

Frequent: Everyone who answered two or more times “regularly”.

Occasional: Everyone who did not fall in either of the two other groups.

Reluctant: Everyone who answered three or more times “never”, or two times “never” **and** zero times “regularly”.

This user category consisted of 114 (45%) frequent, 57 (22%) occasional and 87 (33%) reluctant Internet users. However, the comparison between regions revealed surprising results. “Frequent Internet Users” were only found in the two Scandinavian regions. In fact, all 94 users in Hämeenlinna and every third user in West Sweden (35%) fell into this group. On the other side of the extreme, were the users of the UK Region. All 19 of these users were “Reluctant Internet Users”. Therefore, a “Frequency of Internet Use” category based on the above-

described criteria would have been biased towards the regions. It was decided to use a different criteria set (see below).

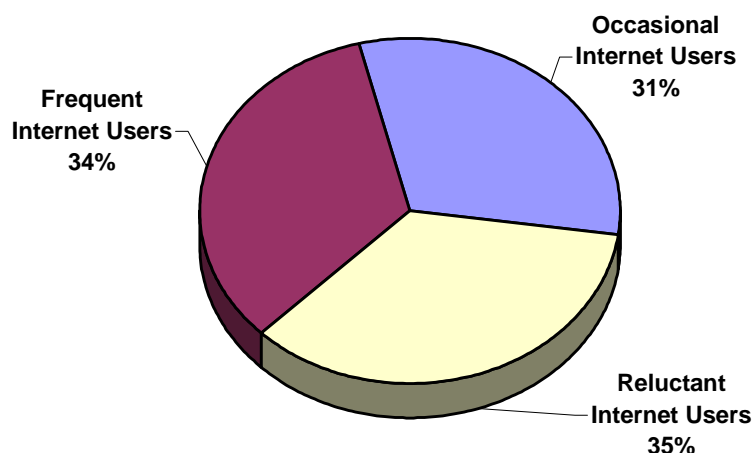
However, even this failed grouping attempt revealed some interesting results. Every user in the UK region answered at least two times “never” when asked about the six options of Internet use. The UK Region’s user sample, therefore, clearly showed a high degree of reluctance with regard to the use of the Internet. In the interpretation of evaluation results (see chapter 5), this observation had to be taken into account. The same was true for user sample in Hämeenlinna. However, these users apparently used the Internet rather frequently considering that all 94 users answered at least two times “regularly” when asked how often they used the Internet for the options described above.

A new categorisation was based on the criteria listed in table 9. The categories derived were, finally, used for the data analysis and the interpretation of results (see chapters 4 and 5 for details).

**Table 9: Criteria for Defining “Frequency of Internet Use” Category**

Frequency of Internet Use Category	Definition Criteria
Frequent Internet Users	Everyone who answered: - three or more times "regularly" or - two times "regularly" AND zero times "never" or - “regularly” to 7a and 7b irregardless of answers to 7c-7f (thereby putting particular emphasis on information retrieval via the Internet)
Occasional Internet Users	Everyone who did not fall in either of the other two groups.
Reluctant Internet Users	Everyone who answered: - three or more times "never" or - two times "never" AND zero times "regularly" or

The group consisted of 87 (34%) frequent, 80 (31%) occasional and 91 (35%) reluctant Internet users (see figure 5) which were more evenly distributed across the regions. Specific results in the context of these categories are reported in chapters 4 and 5.

**Figure 5: Pie Chart – “Frequency of Internet Use” Category**

Source: End-User Questionnaire 2002, n=258

Unfortunately, any attempts to find comparable data (reference data) for the CENTURi<sup>21</sup> regions on the frequency of Internet use were unsuccessful, because these either do not exist (i.e. only data on national or for specific sub-sections of the population is available) or because the data is based on other criteria or incompatible measurement approaches.

The analysis of the “frequency of Internet use” category revealed the least precise and meaningful results of all the categories built. However, it was still used wherever suitable to support the data analysis.

The category was not homogeneous across the regions. More than half (53%) of the frequent users were from Hämeenlinna. This region also had most of the occasional users (58%), but only 2% of the reluctant users.

A specific reluctance in Internet use was revealed in Debrecen where 70% of the users are reluctant users.<sup>7</sup>

Out of all male users, 38% were frequent users, while 28% of all female users were frequent users. However, it needs to be considered that the percentage of male users in Hämmenlinna, who made up most of the frequent users, were male (73%).

Male users tended to use the Internet more frequently than female users (see table 10).

<sup>7</sup> Reluctant users represented more than half of all regional users also in the UK Region (11 out of 17), Limerick (8 out of 14) and Veneto (57%).

**Table 10: Gender Share – “Frequency of Internet Use” Category**

	Female Users	Male Users
<b>Frequent Internet User</b>	28.0%	37.7%
<b>Occasional Internet User</b>	24.0%	35.7%
<b>Reluctant Internet User</b>	48.0%	26.7%
<b>All Users</b>	100%	100%

The most prominent education level among frequent Internet users was a university degree. Occasional and reluctant Internet users mostly had a university qualifying degree. This observation supported the hypothesis that the frequency of Internet use increase with the education level.

77% of frequent, but only 62% of occasional and 64% of reluctant Internet users were full-time employed.

The analysis concerning the age of the users did not reveal any meaningful results.

An interesting observation was that 61% of all frequent and 58% of all occasional Internet users were organised in a community group or organisation, while this was the case for only for 30% of the reluctant Internet users.

Therefore, the user category may be more precisely described in terms of activity (and engagement) level within the community.

### **“CENTURi<sup>21</sup> Satisfaction” User Category**

The so-called “CENTURi<sup>21</sup> Satisfaction” user category was built according to end-user questionnaire responses to:

- question 11, “Do you intend to use CENTURi<sup>21</sup> in the future?”, and
- statement 9b, “CENTURi<sup>21</sup> provides useful information”.

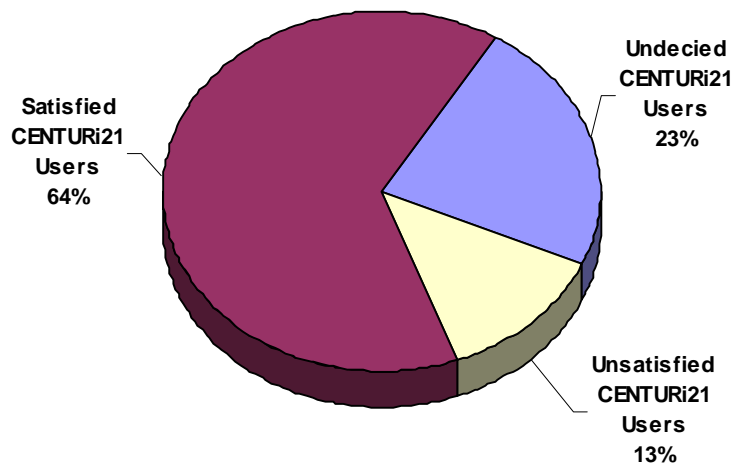
Definition criteria for the category are described in table 11 below.

The user category comprises of 162 (64%) satisfied users, 58 (23%) undecided users, and 32 (13%) unsatisfied users (see figure 6). Results in the context of this category are reported in chapter 5.



**Table 11: Criteria for Defining “CENTURi<sup>21</sup> Satisfaction” User Category**

<b>CENTURi<sup>21</sup> Satisfaction Category</b>	<b>Definition Criteria</b>
Satisfied CENTURi <sup>21</sup> Users	<p>Everyone who answered:</p> <ul style="list-style-type: none"> <li>- “absolutely agree” to statement 9b regardless of his/ her answer to question 11 or</li> <li>- “partly agree” to statement 9b, and “yes” or “not sure yet” to question 11.</li> </ul>
Undecided CENTURi <sup>21</sup> Users	<p>Everyone who answered:</p> <ul style="list-style-type: none"> <li>- “partly agree” to statement 9b, and “no” to question 11 or</li> <li>- “neither agree nor disagree” to statement 9b, and “yes” or “not sure yet” to question 11.</li> </ul>
Unsatisfied CENTURi <sup>21</sup> Users	<p>Comprised of the remaining valid responses, i.e. those users who answered:</p> <ul style="list-style-type: none"> <li>- “partly disagree” or “absolutely disagree” to statement 9b or</li> <li>- “neither agree nor disagree” to statement 9b, and “no” to question 11.</li> </ul>

**Figure 6: Pie Chart – “CENTURi<sup>21</sup> Satisfaction” User Category**

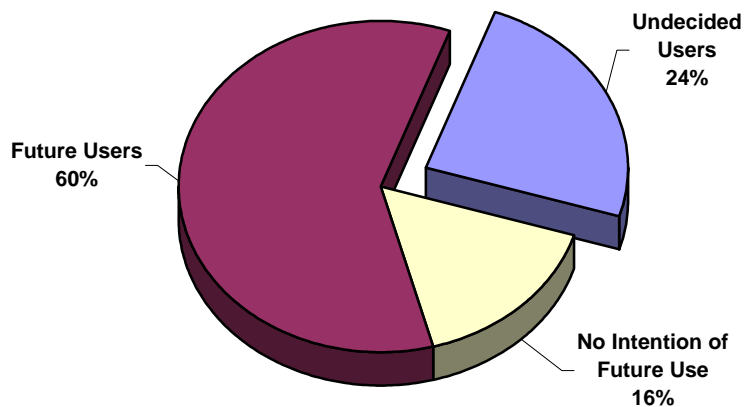
Source: End-User Questionnaire 2002, n=252

### “Intention of Future CENTURi<sup>21</sup> Use” Category

One of the key questions in the end-user questionnaire was about the users’ intention to use CENTURi<sup>21</sup> in the future (question 11). The so-called “Intention of Future CENTURi<sup>21</sup> Use” category comprised 151 (60%) future users, 61 (24%) undecided users and 41 (16%) users who have no intention of using CENTURi<sup>21</sup> in the future.

**Three out of five users intended to use CENTURi<sup>21</sup> in the future.**

**Figure 7: Pie Chart – “Intention of Future CENTURi<sup>21</sup> Use” Category**



Source: End-User Questionnaire 2002, n=253

Roughly one out of four users was undecided if he/she wanted to use CENTURi<sup>21</sup> in the future. These users should have the highest potential to be “won over” to CENTURi<sup>21</sup>, and their opinions and attitudes, in particular, are analysed in detail in chapter 5.

### 3.4 Evaluation Context in the Regions

For each region, the focus of their regional portal, in particular a brief description of the applied themes is provided in this chapter. Figures 8-13 are snapshots of the six regional portals taken on 7 and 8 May 2002.

#### Debrecen

The development of “City State Model” application, the key regional application, was started in 2000. At the end of the year, existing or planned applications were selected that would be made available to the citizens of the regions in the future. These were:

- the City State Model
- an Event Calendar
- Local News ( as part of the portal digitalcity.hu )

**Figure 8: Debrecen Regional CENTURi<sup>21</sup> Portal**



The “end-user questionnaire” mentioned on the Debrecen Regional Portal is an internal questionnaire by the Debrecen partners and not the end-user questionnaire used for evaluation purposes within WP3.

In early 2001, the procurement of the servers and the software took place. The City State Model, the key application, started its operation in March of 2001. Since the technological software tools necessary to build the local CENTURi<sup>21</sup> portal were not available at that time, the early representation of this application took place on the system “www.digitalcity.hu”, a local portal already developed. The content available on the “www.digitalcity.hu” and the “City State Model” application constituted an integrated system, in which the two applications could not be separated because of the existence of many local organisations and the need to display the events on the map. Accordingly this unified form of the City State Model was eventually integrated on the local CENTURi<sup>21</sup> portal.

It was agreed within the project that where possible each region would receive and use applications developed in other regions. The Debrecen partners had envisaged integrating as a local CENTURi<sup>21</sup> application the Event Calendar application planned and developed in the Finnish region. However, by the end of 2001 it became evident, that this application would be available only in Finnish language, and that its English translation could be expected only during the next year. Since translating the system into Hungarian language would have increased this delay, a decision was made to replace the planned Finnish Event Calendar application on the local portal with the existing Event Calendar application of the “www.digitalcity.hu” system.

By the end of 2001, two applications offered by other web sites (developed by DEVIK Ltd.) were successfully integrated. One of these applications is the system of the local taxes, which provides information on taxes to be paid according to valid tax regulations. The other application provides information on local directives.

During 2001, first demonstrations of the regional portal were addressed to the local authorities, to the departments of the Debrecen University, and to various companies in the region.

The operation of the CENTURi<sup>21</sup> portal for the Debrecen Region was in one respect significantly different from the applications developed in the other regions. Namely, the user did not need to identify her/himself when using the portal, because the user interaction was not implemented using the tools provided by Oracle. Instead it was implemented before and during the start of the portal, by the portal development tools of the “www.digitalcity.hu”, the local portal developed independently from the project. In this way the local CENTURi<sup>21</sup> portal is used primarily to display and download content, so it may seem at first sight that the opportunities for users are relatively narrow. Notwithstanding the appearance, this is not the case, since the user interaction is actually accomplished by a different means.

**The Debrecen  
CENTURi<sup>21</sup> portal is  
used primarily to  
display and  
download content.**

## Hämeenlinna

At the same time as the CENTURi<sup>21</sup> project there was another regional portal project, called SEPPO2002, in progress in the Hämeenlinna region. It was decided at the regional level that these project should benefit from each other and as a result of this co-operation there would be one advanced regional portal in the Hämeenlinna region, where interests of commercial companies, local authorities and citizens could meet. This idea was presented to the CENTURi<sup>21</sup> project, but the project did not see it as an acceptable procedure. After this decision, the co-operation between these regional projects was cancelled and the projects continued independently. The result from this was that there were now two regional portals under development.

Much more detailed planning was then undertaken for the CENTURi<sup>21</sup> trial portal, including, for example server sizing and costing, analysing installation and organisational requirements. It was also decided, when the Oracle components of the portal were published, that the Hämeenlinna regional platform's operating system would be based on Microsoft NT technology. For security reasons, new firewall software was also needed. It was also decided that the regional portal would provide access methods for all types of terminals used in the region; like PC, WAP and PDA.

Efforts were made early to improve knowledge of Oracle components and to identify web-enabled applications available either from municipalities, HTK or subcontractors. The basic services to be included in the regional portal were decided. These services were:

- Information about events in the Hämeenlinna Region
- Public services
- Generic applications (email, newsgroup, calendar)
- Local news and weather
- Map services

It was agreed within the project that wherever possible, each region would demonstrate localisation of another regions applications. However, it transpired that either there were technical incompatibilities or significant design work to achieve this and the resource requirement would have seriously jeopardised completion of the existing planned content. The outcome was that other regions portals and services were made available via the Hämeenlinna Regional Portal, but no specific applications were transported.

In addition, a further review was undertaken to identify other web-enabled applications that would fit in with service demands determined earlier. These applications were:

**Two regional portals  
were developed in  
parallel in the  
Hämeenlinna Region:**

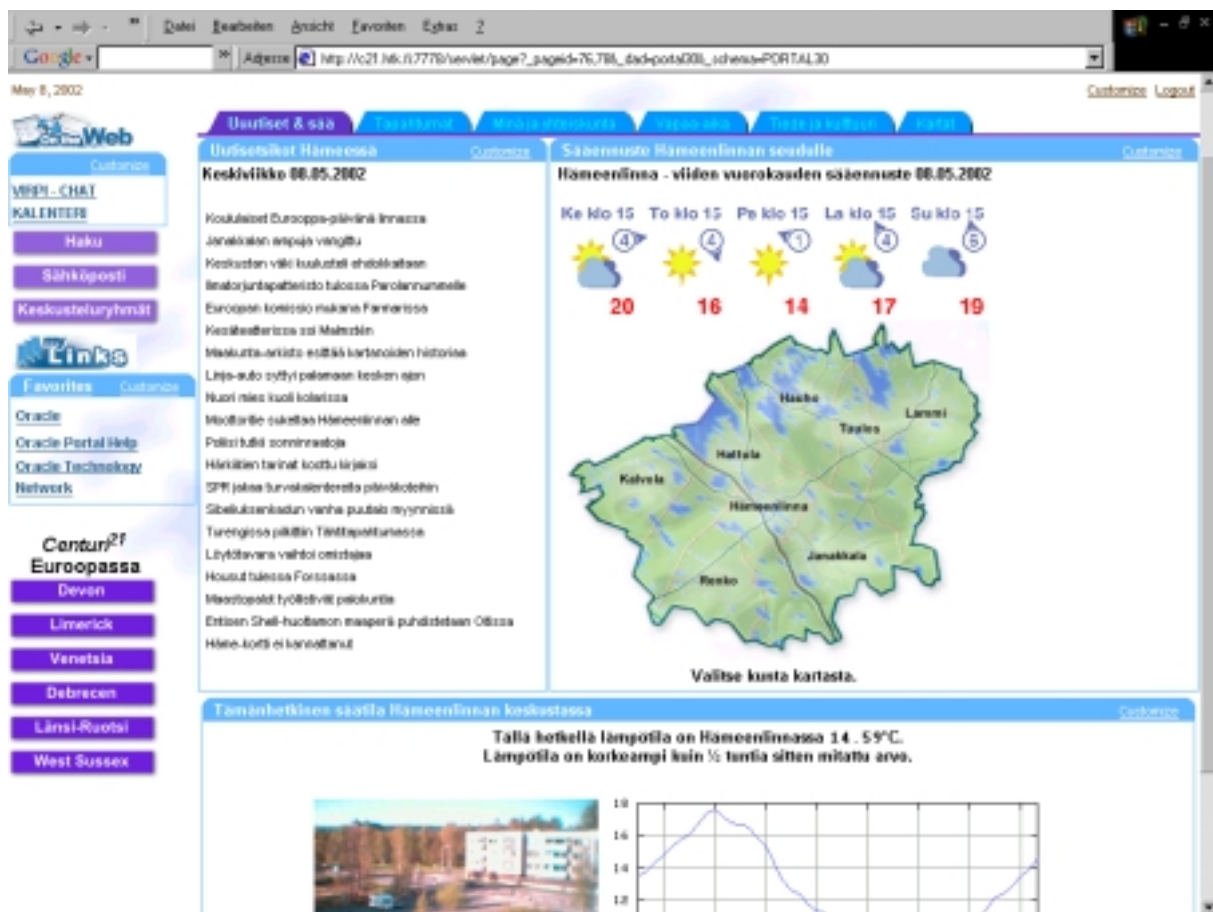
**CENTURi<sup>21</sup> and  
SEPPO2002**

- Information about events in Hämeenlinna region – Event Calendar application
- Public services – e-Consult application, e-Democracy application
- Generic applications (email, newsgroup, calendar) – CWMail, Discus Pro, WebCal
- Local news and weather – Newsfeed from local newspaper
- Map services – Maporama

It was also decided that the portal would use parts from the “Look and Feel” work done by Sonoptics for West Sussex.

Content was released in stages and constant maintenance of the site content (fault analysis, bug fixing, upgrading, updating, patches, etc.) was undertaken.

**Figure 9: Hämeenlinna Regional CENTURi<sup>21</sup> Portal**



Logging usage statistics automatically required the use of an application called “Analog”, rather than any in-built Portal reports (although these themselves provide lots of valuable data). Configuration of Analog reports was completed before the start of the evaluation period and data was logged from the time at which the system first went live.

In conclusion, it was possible to prove the functionality of the system with a variety of end user equipment including PC's, WAP Phones and PDA, using a number of working applications.

The CENTURi<sup>21</sup> system will be online until the end of September 2002. After that CENTURi<sup>21</sup> will be shut down and the regional portal project SEPPO2002 will continue and use those parts of CENTURi<sup>21</sup> system that are valuable to complete the building of Hämeenlinna's regional portal which is the final goal.

### **Limerick**

During the first half of the second year MAC concentrated on the build of its first “flagship” application for the platform in the form of the e-democracy application. This application was designed to offer:

- a publishable and searchable register of electors (done on database copy),
- the ability for legitimate voter to request modification, deletion or addition to the register of electors (done on database copy), and
- a system to enable ballot preparation and provision of contextual information (to be implemented in utilising CENTURi<sup>21</sup> e-forms, and themes).

Eventually, being an early adopter of the platform worked against MAC as insurmountable difficulties were found in integrating the e-democracy application with the later version of Oracle portal. MAC did receive assistance from Oracle but was unable to convert it into a working solution (portlet).

By the end of 2001, the server was installed according to the Oracle specification and MAC had successfully integrated its county model application.

The county model concept was one of integrating multiple-applications. This allowed the population of geographical objects from multiple data sources to a GIS based multi-layered map. In the context of CENTURi<sup>21</sup>, proof of the concept was achieved through the use of the planning application and the “moving to Kilmallock” theme added at the beginning of 2002. In the Limerick planning application system, the county council's live database of planning information was uploaded and integrated in order to be presented on a map based application. This application allowed citizens in the county to view the planning applications made in their areas, to be able to make a submission on an existing planning application and allowed a



prospective site buyer to view the existing infrastructures surrounding the site he/she is interested in.

However, the county model did not, in the event make use of the planning live database of Limerick County Council. Instead, it was uploaded on a once off basis. It was the lack of security within Limerick County Council that delayed the live exposure to MAC (an internal security investigation was later conducted to overcome security problems).

During the later part of 2001, MAC included, with the help of West Sussex, both the e-Consult application and the I-consult application. This helped to demonstrate the potential for transferability of service applications between regions.

At the beginning of 2002, as well as rectifying issues arising from the verification, much of the technical effort went to improving the content of the portal. The “moving to Kilmallock” theme was added which showed how the population of the map by public and private geo-referenced objects (through the integration of both public and private database) would benefit the citizen in making crucial decisions such as moving house.

**Figure 10: Limerick Regional CENTURi<sup>21</sup> Portal**





Since January 2002, much of the effort of Limerick County Council concentrated on overcoming their security difficulties. Consultancy from Marconi was sought and received and Limerick County Council was working towards securing its network.

Besides the maintenance and content addition MAC has also concentrated its efforts in hardening the server and providing site statistics. Since May 2002, much of the effort by MAC and LCC has been with making the planning application a county-wide and updated application. The stand alone application has now been made available under [www.limerickplanning.com](http://www.limerickplanning.com).

## UK Region

At the end of 2000, as technical details emerged, it became apparent that Devon County Council (DCC) were not in a position to build and operate a CENTURi<sup>21</sup> platform, since the organisation was committed to Microsoft and available skill sets did not match Oracle products and Solaris Operating system. Because of this situation, a decision was taken to build a single UK regional portal, hosted at West Sussex County Council (WSCC) premises in Chichester incorporating content provided by DCC.

**Figure 11: West Sussex and Devon Regional CENTURi<sup>21</sup> Portal**



In the first part of 2001, more detailed planning was undertaken, for example server sizing and costing, analysing installation and organisational requirements and preparing the groundwork in the community for deployment of equipment to end-users. It was at this stage that both the skill shortages and the need for rapid acquisition of content became apparent.

Throughout this period, efforts were made to identify existing web-enabled applications available either from county council, District or Parish Council (different tiers of local authorities). This revealed the fact that the majority of content at that time was purely information with very few transactions or "back-end" systems integration. Therefore a number of service applications had to be constructed or adapted to provide content for the trial of the portal. These included:

- e-Consult
- i-Consult
- Events Calendar
- Transport Planning
- Carers (WSCC)
- Carers (DCC)

It is worth highlighting that WSCC integrated an independent third party application that provides full countywide library catalogue services and also deployed this application in a "Theme".

It was agreed within the project that, where possible, each region would demonstrate localisation of another regions applications. However it transpired that either there were technical incompatibilities or significant design work was necessary to achieve this and the resource requirement would have seriously jeopardised completion of the existing planned content. The UK region decided, therefore, not to undertake localisation but to make other regions portals available via their home page.

It was emphasised by the UK Region that the organisations involved had never undertaken this sort of development before. In these circumstances the learning curve was steep and with a fixed duration contract and limited technical resources the pressures brought to bear were untypical of the normal working environment. IT was not considered to be a primary function within local authorities but a tool for running the business and delivering services. Indeed in order to complete the technical development tasks WSCC had to bring in contractors (at their own expense) to supplement the full-time development staff. This had the effect of putting the project in a negative light and is a direct result of failing to identify the specific skills and technical resources required at the outset. This situation was

**IT was not considered to be a primary function within local authorities but a tool for running the business and delivering services.**

probably not exceptional for a research and development project.

By the end of 2001, the project programme had slipped significantly as a result of delays in WP5 (Functional Specifications) compounded in WP6 (Build Integrated Platform and Applications). The UK region needed to procure an additional Server later than anticipated (expecting to take advantage of the development machine used by Oracle) and problems with late delivery followed by the installation process meant that the final release of software had to be installed and tested rather later than planned. Much time was spent trying to resolve a technical problem with the firewall.

A further review was undertaken to identify additional web-enable applications, but none were forthcoming. However, in parallel to CENTURi<sup>21</sup>, WSCC had undertaken to work with Mid Sussex District Council on an UK Nationally funded project called CNET<sup>+</sup>. One element of CNET<sup>+</sup> was "Land Use Planning" using GIS interfaces and MAC, one of the CENTURi<sup>21</sup> Partners (Ireland), had become involved as a supplier. At one time it seemed feasible to integrate CNET<sup>+</sup> applications into CENTURi<sup>21</sup> themes, but delays in the CNET<sup>+</sup> project meant that this opportunity was eventually missed albeit only by a few weeks.<sup>8</sup>

"Content" building was hindered by the lack of clear understanding of the processes behind e-Service delivery. Research into this area revealed that an UK nationally funded project "LEAP" (Life Events Access Project) had developed some processes and accompanying diagramming tools. Here again, the weak point was availability of Service Applications for content building and it was therefore necessary to construct some sample processes of a more general nature (Leisure Event, Caring) rather than specific processes (obtaining a licence for a refuse skip, renewing a disabled person's car parking permit). In summary, the project portal was ready for content but the UK partners, as a whole, had little available in the form required for integration.

Almost all technical efforts were diverted to completing the content in the portal and this meant ensuring that the process maps were complete, applications, portal, themes etc., tested in time for a "go-live" date of 31 January 2002. Simultaneously, the UK region decided to undertake a redesign of the "Look and Feel", using the work previously done by subcontractor Sonoptics.

Over the period from January until April 2002 (i.e. during most of the core evaluation period which lasted from February until Mid-May 2002) content was released in stages and constant

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<sup>8</sup> A notable spin-off from CENTURi21 is the continued relationship with MAC on a county-wide uptake of the planning application trialed through CENTURi21. This represents a real tangible benefit of close working relationships developed in the project.

maintenance of the site content (fault analysis, bug fixing, upgrading, updating, patches, etc.) was undertaken.

Logging usage statistics automatically required the use of a package called, "Webtrends", rather than any built-in Portal reports (although these themselves provide lots of valuable data). Configuration of "Webtrends" reports was completed after the start of the evaluation but, fortunately, the data had been logged from the time at which the system had first gone live.

Notwithstanding all the above difficulties, a number of working applications and a functioning portal were delivered on time and it was possible to prove the functionality of the system with end user equipment including PC's and an Internet TV.

In the UK, two regions were initially selected for evaluation of CENTURi<sup>21</sup>; Devon and West Sussex. This was essentially because the County Councils of each region were partners in the CENTURi<sup>21</sup> project.

Each region identified target communities; Lynton (North Devon), South Hams (South Devon) and Hassocks (West Sussex). These communities are typical of rural and semi-rural environments within these counties.

The consultation and engagement process started in early 2000 with the expectation of full participation mid-way through 2001. As events unfolded the dates for evaluation were delayed and this made it difficult to maintain enthusiasm and commitment in these communities.

The extent to which this proved a problem is clearly demonstrated in Devon whereby the Totnes group effectively disbanded and the Lynton Group were supplemented by an interest group from Carers (people who care for others) and the wider Devon Community (where the geographical distribution made maintaining personal contacts difficult for the Regional Evaluators). The lack of Devon specific content also exacerbated the problem of citizen retention in that area. The final number of evaluators in Devon was 50.

Hassocks fared somewhat better as the community centred around one town. Local political representation by a particularly enthusiastic Parish Councillor helped to cement relationships through the formation of a Hassocks CENTURi<sup>21</sup> Steering Group that met every month or so. This Steering Group had a wide representation of local interest and community groups. Even then it was very difficult to work around the delays in system launch.

Recruiting users was by no means easy. The project asked for volunteers from all walks of life to take part in a project that:

- could not re-imburse them directly for their time (not an eligible cost in the EC contract- and any payment would have been subject to national taxation).

- could not guarantee any tangible returns for their community after the end of project.
- was trialing a technology that many were unfamiliar with if not downright sceptical.

One aspect that has caused concern was the ability to engage a wide cross spectrum of users. The truth is that many citizens for many reasons simply do not wish to take part in evaluation processes. The UK region invested heavily in mail-shots, newspaper and magazine advertising, radio advertising, direct leaflet drop, posters, personal presentations at local venues, raffle prizes, equipment loan, equipment sited in local community premises, etc. Notwithstanding all these efforts, only some 100 frequent users participated in the UK trials. It is difficult to say whether this is related to the national trend in the UK for relatively low voter turnout and participation in democratic processes

**Many citizens in the UK simply do not wish to take part in evaluation processes**

The users that did take part did so regularly and with enthusiasm throughout the project. The roll-out was hindered by technical problems (affecting availability of system) and a lack of "rich" content.

One issue with the UK data from Hassocks is the age profile of the Users. It can clearly be seen from the Census data and the respondents to a local Village Appraisal Plan that Hassocks has a demographic profile that is distinctly over 45 years of age.

**The average age in the target community of Hassocks is distinctly over 45 years of age**

In recognition of this issue, WSCC invited members of the youth clubs to presentations, put up posters in local venues used by youths and young people but to no avail. The fact is that the youths in the community have little or no interest in taking part in such an evaluation process. The conclusion is that if a project wishes to attract a wide range of users it must target specific groups and provide relevant incentives - the general "broad-brush" recruit-a-volunteer approach had limited success. (Recommendation).

In West Sussex, the Focus Groups were recruited from the CENTURi<sup>21</sup> Frequent Users (some 40 in Hassocks) and members of the Hassocks CENTURi<sup>21</sup> Steering Group (the latter representing virtually every interest group in the community). The group composition ranged from IT professionals in their early thirties through to retired business people in their 60's. The gender split was approximately 60/40 male female.

The focus groups were run three times - each time in the evening for at least a one-hour session. Invitations and an agenda were sent out well in advance and each meeting was chaired or led by the Regional Evaluation Manager.

The quality of debate was high and the qualitative feedback very informative in terms of citizen's perspective on the use of Internet Technology and e-Government in general.

In detail:

- In West Sussex there were three focus groups. The participants were self selected from the frequent users and each of the three focus groups concentrated on a particular aspect of CENTURi<sup>21</sup>.
  - The first on 19 March 2002 did a SWOT analysis on the project. This is a formal business appraisal process examining strengths, weaknesses, opportunities and threats.
  - The second on 17 April 2002 took a closer look at the weaknesses and opportunities, so some solutions from the citizen's perspective could be obtained.
  - The third and final session took place on 13 May 2002 and concentrated on e-democracy, security, privacy, authentication and environmental impacts - and next steps as far as the e-government needs and wants of the community were concerned
- An average of sixteen people came to the sessions on a regular basis, were extremely informed and vocal and made an excellent contribution to our understanding of the strength and weaknesses of the portal.
- These sessions were the most fruitful and helpful means of customer consultation and were hugely enjoyable both for the users and the organisers.
- Devon started its focus groups early the time gap between these and evaluation (due to delayed system launch) was so great that people lost interest and drifted away.

## Veneto

For the Veneto Region, CENTURi<sup>21</sup> became an integral part of a system that had been working for four years. When CENTURi<sup>21</sup> started, this system was already operational and bearing positive results.

Participation in the project inevitably led to integration of existing activities with those of CENTURi<sup>21</sup>. This meant that CENTURi<sup>21</sup> could rely on a consistent "endowment" since day one. The sector in which CENTURi<sup>21</sup> was integrated was tourism given its importance for Veneto.<sup>9</sup>

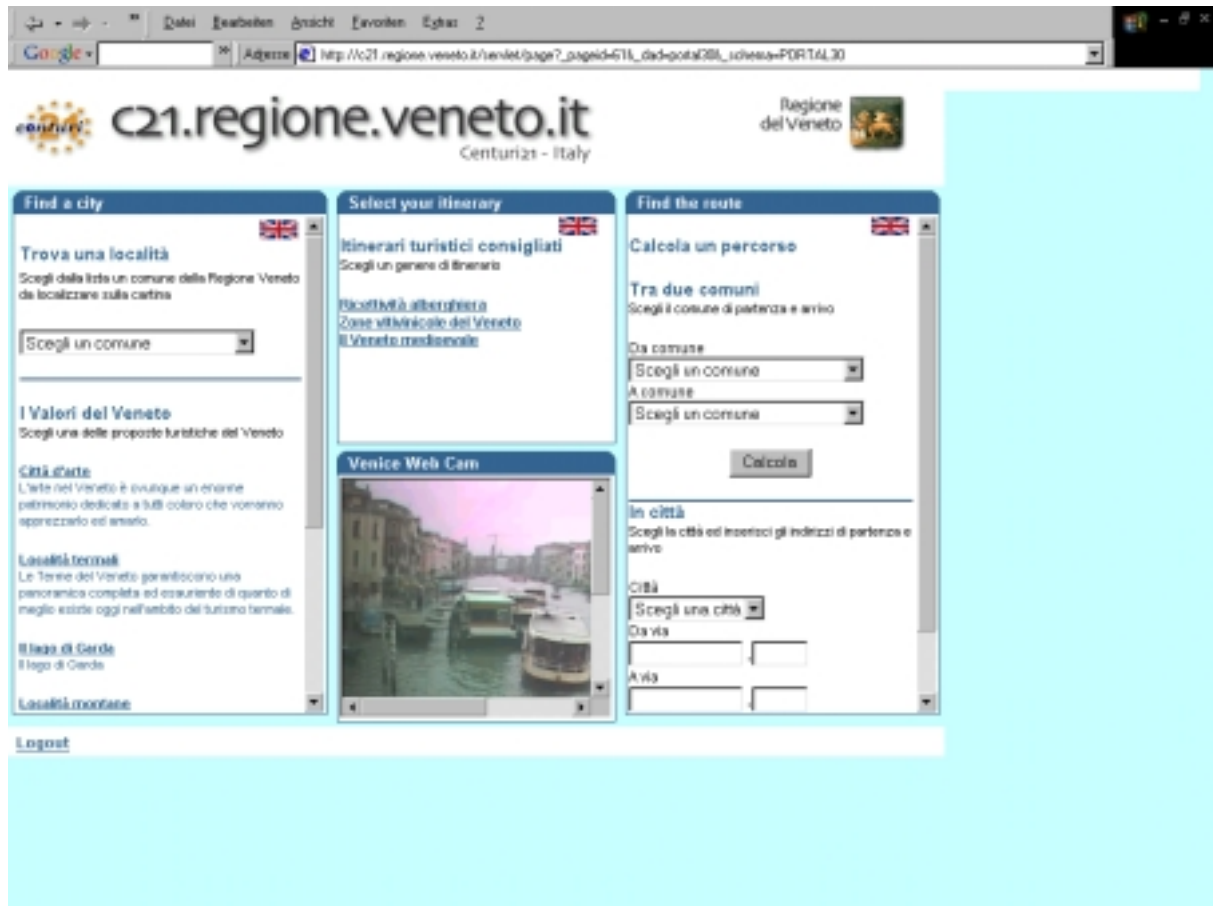
**The Veneto  
CENTURi<sup>21</sup> Portal  
focussed on  
tourism.**

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<sup>9</sup> Tourism is the number one Veneto economic sector. 58 million overnight stays were reported in 2001 alone.

In the first stages of the project the Veneto Region had thought of testing the platform on two major sectors: Tourism and Culture.

**Figure 12: Veneto Regional CENTURi<sup>21</sup> Portal**



However, the latter sector was not developed (at least for the time being) partly for lack of sufficient staff (assigned to the project by the Culture Department) partly because budget available proved insufficient (as an example of insufficient funding the Veneto Region states that they had to pay with own resources the work by Oracle Italy to install the Single Sign On procedure).

The development of the Veneto CENTURi<sup>21</sup> site (with the Tourist Accommodation multiple application) was delayed for a number of reasons, the most notable being:

- late delivery of the platform software by Oracle,
- training courses for technical personnel proved insufficient to make such staff fully able to deal autonomously with released software, and
- late (and slow) involvement of Oracle Italy.



The site was a combination of new and pre-existing applications. Integration of old and new applications was accomplished through the platform based on Oracle Portal.

The CENTURi<sup>21</sup> Veneto portal was complementary to the information of the Tourism Regional portal which had a database with all accommodation establishments and information on daily tourist flows. The latter information was then sent to the Italian Institute of Statistics - a process which has been running for a number of years - and in the near future will also be automatically transmitted to the Police Authorities (a process which at present is still carried out in a traditional way).

Changing this last process from an offline to an online mode is also the subject of a project recently presented by the Veneto Region to the (Italian) Ministry of Innovation and the New Technologies in the framework of a bidding process to obtain co-financing by central authorities.

### **West Sweden**

The "West Sweden region" is represented by nine independent local authorities. The region is not a homogeneous region with a common administration. Each one of these authorities offers information and services to the public in the areas where the authorities are engaged.

During the progress in CENTURi<sup>21</sup>, the local authorities decided to develop the areas of "e-democracy", "booking of premises" and interactive electronic forms ("e-forms"). Telia, the technical partner, supplied the technical solutions, while the local authorities had to find content and logistics for the above areas to present an improved and attractive service to the public.

The CENTURi<sup>21</sup> portal evaluated was a created town called "Westcity" representing all nine local authorities in the region.

Each of the nine local authorities contacted twenty citizens, together 180 for evaluation of the portal. Each of the nine municipalities in West Sweden randomly picked out twenty people to answer the questionnaires. Not all municipalities managed to find twenty persons so the final number was approximately 160 persons.

At a regional meeting in Falköping, the group agreed on having the questionnaires made into an electronic version which could be reached through the Swedish CENTURi<sup>21</sup> portal. It was the Uddevalla municipality which took responsibility for converting the questionnaire into an electronic version. Twenty citizens were randomly selected in each municipality and then registered with name, age and e-mail address. These were later contacted by the local evaluation managers and they also received close instructions on how to use the portal and how to fill in the questionnaire. Out of 160 only 57 (35.6%) answers were registered, unfortunately. With the electronic question-

**The West Swedish  
portal evaluated  
was a created  
virtual town called  
"Westcity".**



naire, it is impossible to see from which municipality the answers came from.

**Figure 13: West Sweden Regional CENTURi<sup>21</sup> Portal**



When it came to the interviews, each local evaluation manager was responsible to find persons matching the categories that were set out in the Evaluation Guidelines. That is, four persons were supposed to be interviewed in each municipality. Because of short notice and an overlap with Swedish holidays only twenty interviews were held in the municipalities.

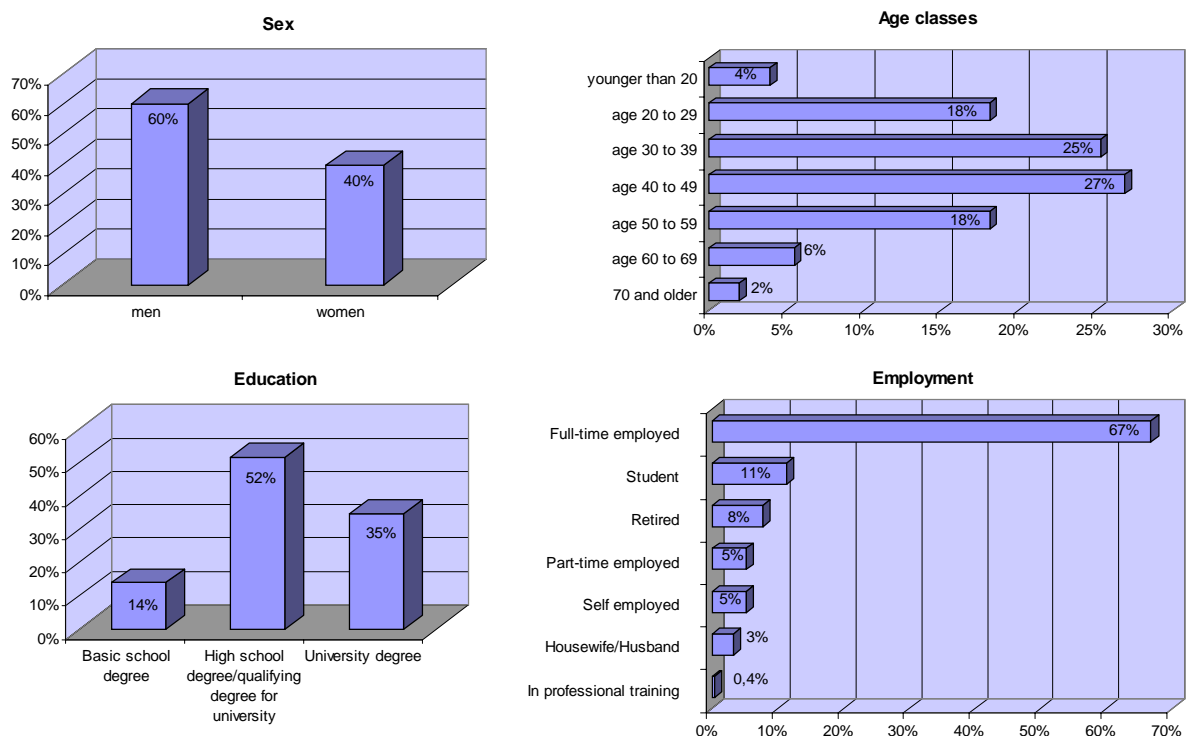
The interviews were held in an office or in a room where the interviewer had access to a computer and to the CENTURi<sup>21</sup> portal. Not all municipalities were able to conduct interviews which resulted in six municipalities sending in their interview material. As mentioned before, twenty interviews were held in total in the nine municipalities.

## 4 CENTURi<sup>21</sup> Users

The categories built for the purpose of data analysis were “gender”, “age”, “education”, “employment”, “frequency of Internet use”, “CENTURi<sup>21</sup> satisfaction”, and “intention of future CENTURi<sup>21</sup> use”. The first four groups are shown in figure 14 below.

In interpreting questionnaire data, it was interesting to see whether or not the parts (for example female versus male users) of the user categories responded differently or not. The detailed analysis of the data, based on the groups, is described in chapter 5. In this chapter, the different groups are described and it was explored, wherever possible, whether the users were representative of their region and country and whether they fit the profile of the European user in general.

**Figure 14: Users Grouped According to Gender, Age, Education, and Employment**



Source: End-User Questionnaire 2002; n=261

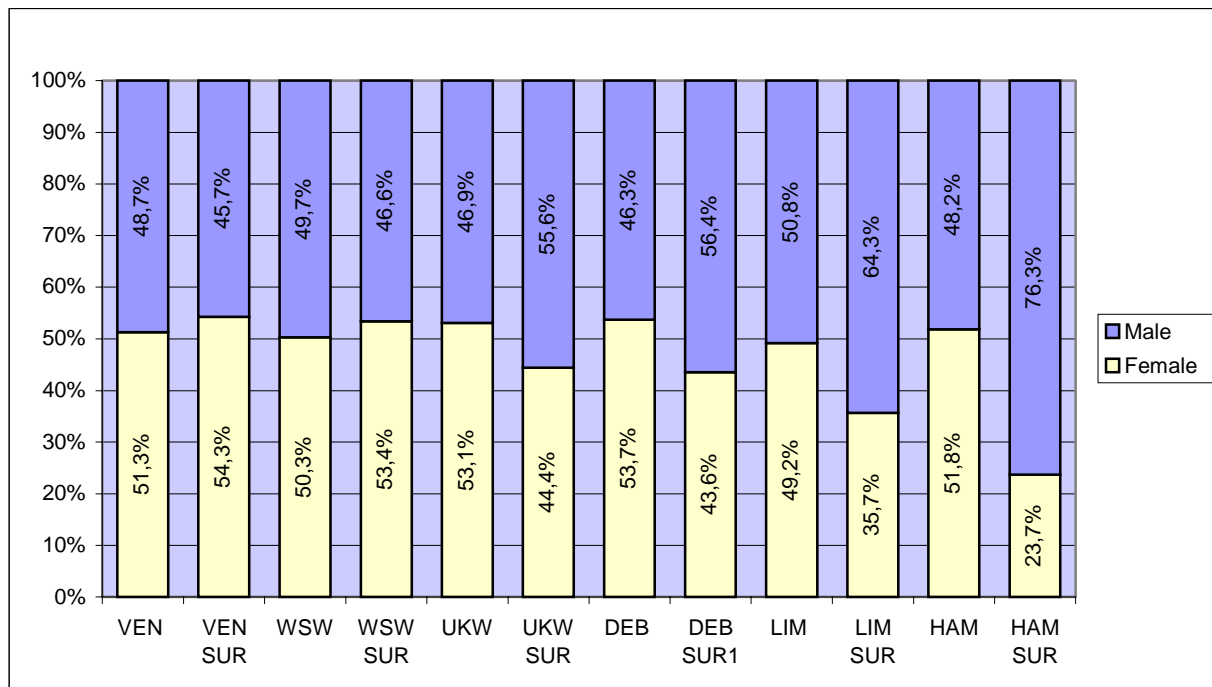
## Gender

60% of the respondents to the end-user questionnaire were male. The gender share of the regional CENTURi<sup>21</sup> users is depicted and set in relation to the overall regional gender share in figure 15 below.

**...in Europe, three out of five Internet users are male.**

The only significant deviation became apparent in Hämeenlinna, where 76% of the CENTURi<sup>21</sup> users were men. One reason for this could have been that regional evaluators in Hämeenlinna sent questionnaires to a sample of active, i.e. also predominantly male, Internet users in their region. There are, however, usually more male than female Internet users. In Europe, about 58% of the Internet users are male.

**Figure 15: Comparison End-User Questionnaire Data and Regional Population Data**



Source: End-User Questionnaire 2002, n=261

Therefore, for the purpose of evaluation, it made more sense to compare the gender share with that of the typical European Internet user. In terms of gender, the CENTURi<sup>21</sup> user sample was representative of the European Internet user. There were no significant deviations between gender distributions in the regions and the gender profile of CENTURi<sup>21</sup>, except in Hämeenlinna where 76% of the user sample were male.

## Age

The average age of respondents was 40.7 years, while users in Debrecen (33.4 years), Veneto (36.9 years), Limerick (39.6 years), and Hämeenlinna (39.8 years) remained below the average.

A possible explanation for the particularly low average age in Debrecen could have been the involvement of local university students in the questionnaire campaign.

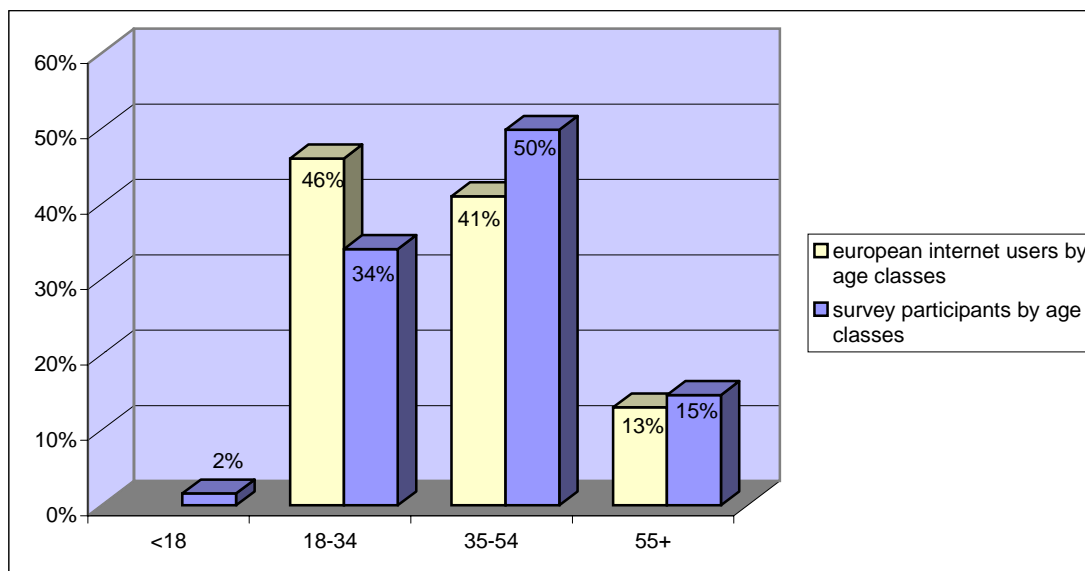
Users in West Sweden (43.3 years), on average, were slightly older than the average of all end-user questionnaire respondents.

A notable deviation represented the average age of the nineteen users in the UK region. The average age in the UK region was 60.5 years. Therefore, it was almost twenty years older than the average age of users across all regions and about fifteen years older than the average age in the trial community, "Hassocks", in West Sussex. An explanation is the apparent reluctance in the UK to participate in evaluation trials, which has been particularly evident among younger citizens.

For a comparison with European Internet users, the CENTURi<sup>21</sup> users were categorised into four age classes, i.e. users:

- under 18 years of age
- between the ages of 18 and 34
- between the ages of 35 and 54, and
- 55 years of age and older.

**Figure 16: Comparison of Age Distribution Between CENTURi<sup>21</sup> Users and European Internet Users**



Source: End-User Questionnaire 2002, n=261

In figure 16, citizens under the age of 18 were not considered in the European figures. Only 2% of all users belonged to this age classes in the CENTURi<sup>21</sup> questionnaire campaign. The other

three age classes were similar to the European figures. It was notable that CENTURi<sup>21</sup> had a higher share of older users compared to the European figures (every second user belonged to the age class “35 to 54 years of age”), but a smaller share of young adults.

In terms of age, CENTURi<sup>21</sup> attracted a much more balanced user group than generally to be found among Internet users.

For the actual CENTURi<sup>21</sup> data analysis, a different age categorisation was chosen. The user sample was categorised into:

- (22%) users younger than 30 years of age (i.e. the “Internet generation”)
- (63%) users between the ages of 30 and 54 (“middle age users”), and
- (15%) so-called “silver surfers” - 55 years of age or older.

There were 37 CENTURi<sup>21</sup> “silver surfers”. This relatively small group was a heterogeneous group, comprised of 23 citizens between the ages of 55 and 60 who were mostly full-time employed, as well as 14 mostly retired citizens of age 61 and older.

The analysis of the actual CENTURi<sup>21</sup> use based on age provided some interesting results (see chapter 5.1.1).

## **Education**

It is very likely that the different education levels provided as answer options in the questionnaire were interpreted differently in the six regions, since education levels were not directly comparable between European countries.

However, one-third (35%) of all respondents had a university degree. The CENTURi<sup>21</sup> user sample possessed, therefore, a much higher education level in comparison to the European citizen (12%).

The responses of users with a university degree were compared to those without an academic degree, i.e. users who possess a basic school degree (14%) or a qualifying degree for universities (52%).

## Employment

247 of the 261 respondents to the end-user questionnaire revealed their employment status. Only one answer was allowed to indicate:

- the full-time employed 66%
- part-time employed 5%
- self employed 5%
- in professional training 0.4% (one user)
- housewife/husband 3%
- student 11%
- retired 8%
- unemployed 0%
- other 0.4% (one user)<sup>10</sup>

Two out of three respondents were full-time employed (66%)

Notable deviations from the overall employment status distribution were:

- In Debrecen, 24% of all respondents were students (overall only 11%)
- In the UK Region, eight out of nineteen respondents were retired (overall only 8%)
- In West Sweden, 86% of all respondents were full-time employees (overall only 66%).

Some user profile snapshots are provided in table 12 below.

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<sup>10</sup> Temporary full-time employment.

**Table 12: User Profile Snapshots**

User Categories	Gender	Age	Education	Employment	Frequency of Internet Use
<b>Gender</b>	<b>Female: 40%</b> <b>Male: 60%</b>	No significant differences; Average age: 40	No significant differences	No significant differences	A higher percentage of male (38%) than female users (28%) are frequent Internet users. More female (48%) than male users (27%) are reluctant Internet users.
<b>Age</b>		<b>0-29: 22%</b> <b>30-54: 63%</b> <b>55+ 15%</b>	Education level reflected age classes (young with higher percentage of basic school degree, etc.)	76% of all users between the age of 30 and 54 are full-time employed.	No significant differences
<b>Education</b>			<b>Basic: 14%</b> <b>Qualifying: 52%</b> <b>University: 35%</b>	83% of users with a university degree were full-time employed.	45% of frequent, but only 31% of occasional and 28% of reluctant Internet users had a university degree.
<b>Employment</b>				<b>Full-Time: 66%</b>	77% of frequent, but only 62% of occasional and 64% of reluctant Internet users were full-time employed.
<b>Frequency of Internet Use</b>					<b>Frequent: 34%</b> <b>Occasional: 31%</b> <b>Reluctant: 35%</b>

## 5 Detailed Evaluation Results

Evaluation results are presented in the order of the nine identified impacts of CENTURi<sup>21</sup>. Each impact has between one and ten different indicators for which data was gathered and analysed.<sup>11</sup> At the end of the impact chapters, brief summaries are provided.

While the evaluation of CENTURi<sup>21</sup>, as a whole, stands in the forefront of data analysis, evaluation results for the individual regions are presented as appropriate.

A complete overview of impacts and related indicators as well as data gathering tools is provided in chapter 3.

In the analysis and interpretation of data and the subsequent derivation of evaluation results, consideration was given to the fact that the CENTURi<sup>21</sup> portals in the six regions were demonstrated test versions and not fully developed and established regional portals.

### 5.1 Scope of Public and Commercial Services

At inception, CENTURi<sup>21</sup> was expected to change the quantity as well as the quality of both public and commercial services offered via various access channels. Companies were expected to be interested in the various opportunities offered in CENTURi<sup>21</sup>. The amount of services offered by these companies was then anticipated to increase significantly. Similarly, the quantity of services provided by public entities was expected to increase. In addition, qualitative improvements in terms of ease and timely provision of services were foreseen.

#### Assessment Objectives – Impact 1:

- Measurement of the quantitative changes in public and commercial service provision
- Measurement of the ease of service provision (covered in the quality of service chapter 5.1.3)
- Measurement of efficiency changes (in terms of time savings) of service provision

For this particular impact, indicators were analysed based on three indicator categories defined by the Evaluation Team, i.e. actual use (chapter 5.1.1), variety of service provision (chapter 5.1.2), and quality of service (chapter 5.1.3).

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<sup>11</sup> Throughout chapter 5, there are no references made to impact or indicator numbers, in order not to disrupt the reading flow. The association of indicators (and indicator categories) to the identified impacts of CENTURi<sup>21</sup> can be seen in chapter 3.1.5, table 7.

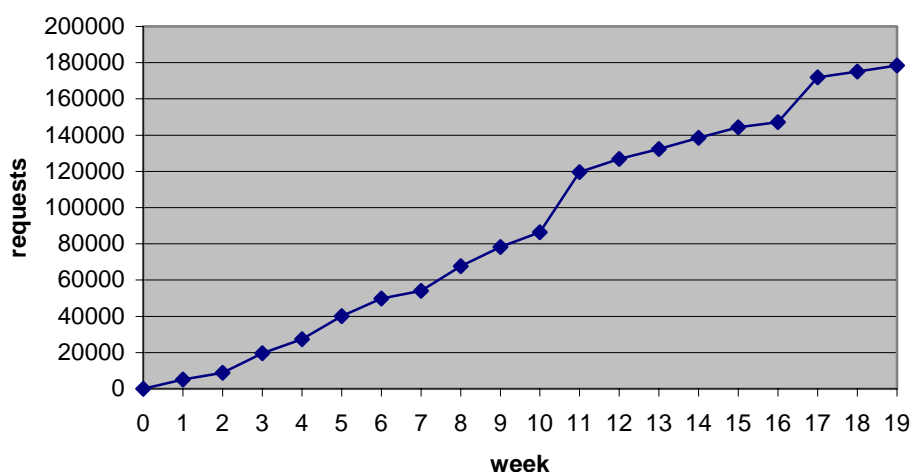


### 5.1.1 Actual Use

The Indicator on “actual use” served as a background indicator. It provided a snapshot of the amount of users, the level of system usage, as well as the amount and types of services.

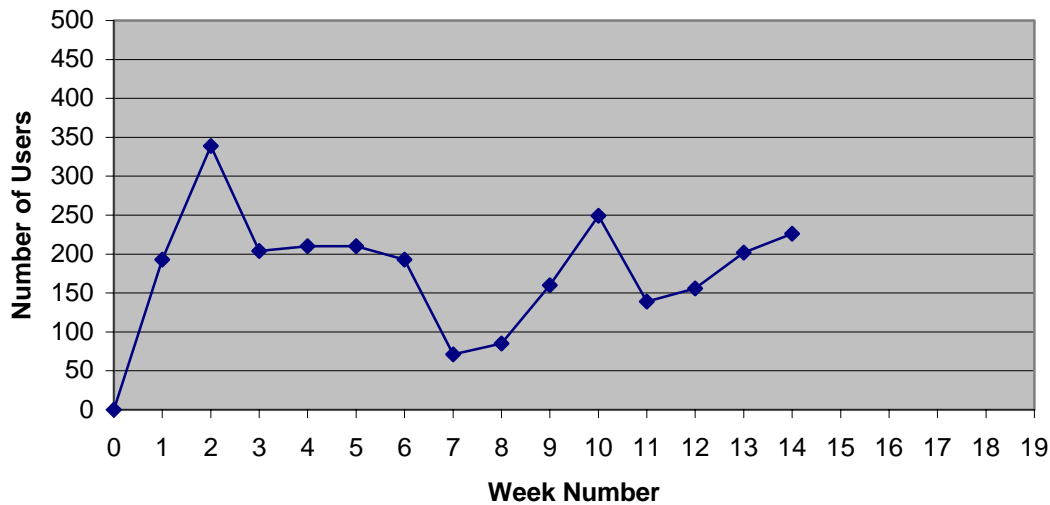
All regions logged detailed data regarding, for example, pages requested, number of registered users who accessed the respective portals, number of accesses by unique IP address, requests by language, total data transferred (see chapter 5.9), etc. Since the data was too complex (and diverse in its presentation format) to be presented in a comprehensive manner, only some examples in graphical and tabular form are provided below.

**Figure 17: Total Page Requests – CENTURi<sup>21</sup> Portal in Hämeenlinna**



Source: Hämeenlinna WP3 Data, 01.01.2002 – 17.05.2002

The regional portal in Hämeenlinna logged page requests until the end of the core evaluation period (see figure 17). A steady upward trend could be observed. While publicity events, seminars, holiday, etc. and their anticipated consequences for evaluation results were documented in the diary of events, the peak in the number of page requests in week 11 could not be explained. The second notable peak in week 17 coincides with the questionnaire campaign conducted in Hämeenlinna which explained (at least in part) the relatively high number of page requests in that particular week.

**Figure 18: Users in the UK Region During the Core Evaluation Period**

Source: UK Region WP3 Data, Core Evaluation Period

In the UK Region, the number of users remained between 150 and 250 users per week during eleven of the fourteen weeks for which data was logged. In the very early stages of the system roll-out, the UK Region observed their highest number of users reflecting the high interest (and curiosity) of users to view “their” regional portal. The number of users dropped below 100 during two weeks in mid-March (weeks seven and eight). During this time essential work on power supplies to County Hall was undertaken. Consequently, the server had to be taken down and the regional portal was temporarily unavailable to the users. Once the problem was fixed, users returned in the following weeks confirming their interest (and loyalty) to the portal.

Regional evaluators from West Sweden provided an abundance of actual use data. One of the statistics from this region demonstrated that their regional portal was actually visited from all across the world. In table 13, 54 countries are ranked according to the number of visitors. It needs to be taken into account however, that several countries did not have any page views. Both, visitors and page views were logged for eighteen countries.

**Table 13: West Sweden Regional Portal – Most Active Countries**

Rank#	Countries	Visitors	Page Views	File Downloads	Total Data Transferred
1	Sweden	1626	56336 (96.61%)	35048 (98.62%)	746.30 MB (95.22%)
2	United States of America	442	834 (1.43%)	70 (0.20%)	9.37 MB (1.20%)
3	United Kingdom	106	196 (0.34%)	30 (0.08%)	2.73 MB (0.35%)
4	Netherlands	79	122 (0.21%)	240 (0.68%)	334.22 KB (0.04%)
5	Belgium	68	420 (0.72%)	47 (0.13%)	18.30 MB (2.34%)
6	Finland	62	218 (0.37%)	24 (0.07%)	3.12 MB (0.40%)
7	China	60	1 (0.00%)	0 (0.00%)	262.36 KB (0.03%)
8	Germany	48	74 (0.13%)	68 (0.19%)	1.21 MB (0.15%)
9	Korea, Republic of	39	2 (0.00%)	0 (0.00%)	167.31 KB (0.02%)
10	France	31	7 (0.01%)	0 (0.00%)	151.78 KB (0.02%)
11	Australia	23	2 (0.00%)	0 (0.00%)	95.34 KB (0.01%)
12	Algeria	16	0 (0.00%)	0 (0.00%)	40.56 KB (0.01%)
13	Canada	14	2 (0.00%)	0 (0.00%)	38.16 KB (0.00%)
14	Taiwan, Province of China	13	0 (0.00%)	0 (0.00%)	42.94 KB (0.01%)
15	Italy	13	10 (0.02%)	0 (0.00%)	163.67 KB (0.02%)
16	Hungary	10	21 (0.04%)	0 (0.00%)	312.18 KB (0.04%)
17	Norway	9	13 (0.02%)	3 (0.01%)	22.55 KB (0.00%)
18	Ireland	8	44 (0.08%)	7 (0.02%)	633.91 KB (0.08%)
19	Austria	8	7 (0.01%)	0 (0.00%)	124.48 KB (0.02%)
20	Turkey	8	0 (0.00%)	0 (0.00%)	38.24 KB (0.00%)
21	Israel	7	0 (0.00%)	0 (0.00%)	4.71 KB (0.00%)
22	Venezuela	7	0 (0.00%)	0 (0.00%)	15.97 KB (0.00%)
23	Spain	7	0 (0.00%)	0 (0.00%)	46.01 KB (0.01%)
24	Egypt	6	0 (0.00%)	0 (0.00%)	26.94 KB (0.00%)
25	India	6	0 (0.00%)	0 (0.00%)	24.01 KB (0.00%)
26	Lebanon	5	0 (0.00%)	0 (0.00%)	14.07 KB (0.00%)
27	Romania	5	0 (0.00%)	0 (0.00%)	21.18 KB (0.00%)
28	Portugal	4	1 (0.00%)	0 (0.00%)	4.06 KB (0.00%)
29	Mexico	4	0 (0.00%)	0 (0.00%)	15.78 KB (0.00%)
30	Poland	4	0 (0.00%)	0 (0.00%)	15.43 KB (0.00%)
31	Brazil	4	0 (0.00%)	0 (0.00%)	9.96 KB (0.00%)
32	Czech Republic	3	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)
33	Thailand	3	0 (0.00%)	0 (0.00%)	10.93 KB (0.00%)
34	Hong Kong	3	0 (0.00%)	0 (0.00%)	8.70 KB (0.00%)
35	Russian Federation	3	0 (0.00%)	0 (0.00%)	15.43 KB (0.00%)
36	Singapore	3	0 (0.00%)	0 (0.00%)	15.43 KB (0.00%)
37	Iran (Islamic Republic of)	3	0 (0.00%)	0 (0.00%)	20.57 KB (0.00%)
38	Slovenia	2	0 (0.00%)	0 (0.00%)	10.29 KB (0.00%)
39	Tunisia	2	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)
40	Lithuania	2	0 (0.00%)	0 (0.00%)	10.29 KB (0.00%)
41	Switzerland	2	0 (0.00%)	0 (0.00%)	10.29 KB (0.00%)
42	Greece	2	0 (0.00%)	0 (0.00%)	10.29 KB (0.00%)
43	Denmark	2	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)
44	Jordan	1	0 (0.00%)	0 (0.00%)	0.00 KB (0.00%)
45	Cote D'ivoire	1	0 (0.00%)	0 (0.00%)	1.22 KB (0.00%)

Rank#	Countries	Visitors	Page Views	File Downloads	Total Data Transferred
46	Japan	1	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)
47	Argentina	1	0 (0.00%)	0 (0.00%)	0.67 KB (0.00%)
48	Philippines	1	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)
49	Indonesia	1	0 (0.00%)	0 (0.00%)	0.00 KB (0.00%)
50	Morocco	1	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)
51	Nigeria	1	0 (0.00%)	0 (0.00%)	0.00 KB (0.00%)
52	Kazakhstan	1	0 (0.00%)	0 (0.00%)	0.91 KB (0.00%)
53	Colombia	1	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)
54	Kuwait	1	0 (0.00%)	0 (0.00%)	5.14 KB (0.00%)

Source: West Sweden WP3 data gathered between 10.01.2002 and 17.05.2002

### “CENTURi<sup>21</sup> Satisfaction” User Category

One of the criteria for building this category was the intention to use CENTURi<sup>21</sup> in the future.<sup>12</sup> Therefore, this category was closely linked to the “Intention of Future CENTURi<sup>21</sup> Use” category.

Out of nine users, six are satisfied with CENTURi<sup>21</sup>, two undecided and one unsatisfied.

<b>Satisfied with CENTURi<sup>21</sup></b> <b>(64%)</b>	<b>Undecided</b> <b>(23%)</b>	<b>Unsatisfied</b> <b>(13%)</b>
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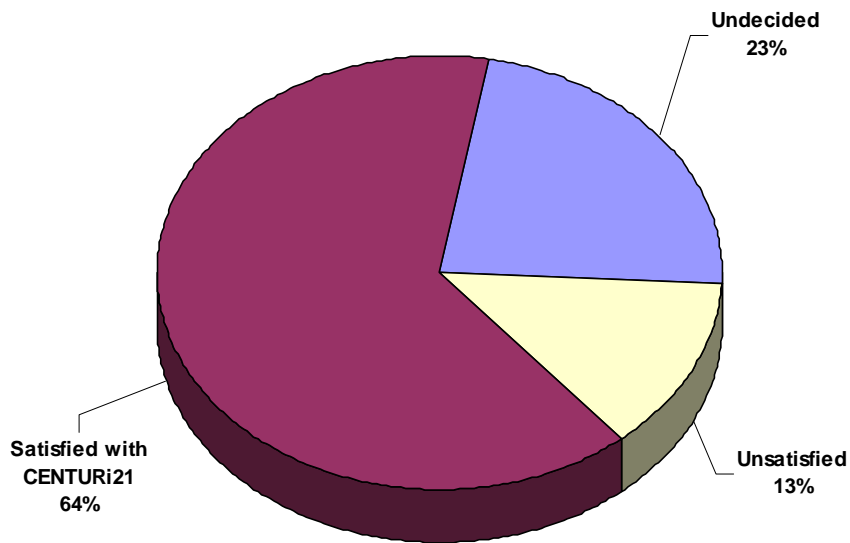
A comparison of the regions revealed a high (higher than across all six regions) percentage of satisfied users in Limerick (twelve out of fourteen users), Debrecen (81%) and Veneto (74%). The other three regions showed satisfaction rates just below the average over all regions: Hämeenlinna (57%), West Sweden (56%) and UK Region (ten out of eighteen users).

An above-average share of dissatisfied users was observed in only two regions, namely the UK Region (five out of eighteen users) and West Sweden (18%), while in Hämeenlinna 30% of the users are in the group of the “undecided”.

There were no significant differences across gender. In other words, similar shares of female and male users were satisfied, undecided, or unsatisfied with CENTURi<sup>21</sup>. Also, the analysis of the education level for this category did not reveal any significant differences.

Self-employed users were most satisfied with CENTURi<sup>21</sup> followed by students.

<sup>12</sup> The second criterion was responses provided to the statement “CENTURi<sup>21</sup> provides useful information”.

**Figure 19: Satisfaction with CENTURi<sup>21</sup>**

Source: End-User Questionnaire 2002, n=252

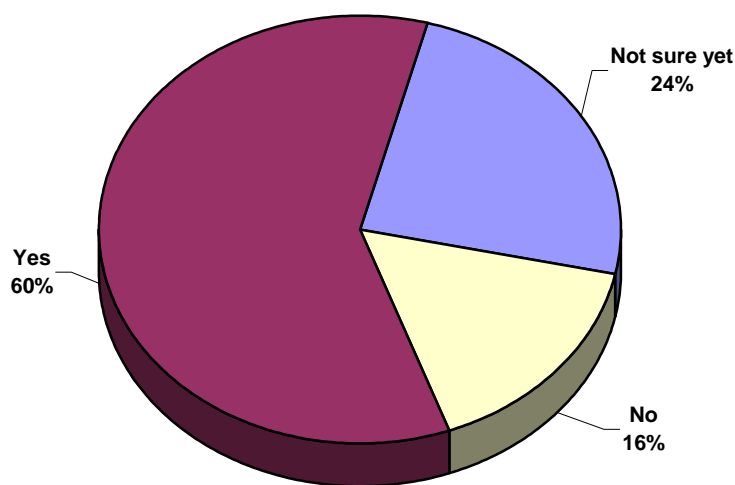
Dissatisfaction with CENTURi<sup>21</sup> increased with age. In other words, younger users were more satisfied with CENTURi<sup>21</sup> than older users. One of the probable reasons for this was the hesitation (or resistance) of older citizens to make themselves familiar with new technologies. Younger users, in particular the "Internet generation" (younger than 30 years of age), are used to these technologies and also are in a better position to compare with other Internet portals.

### “Intention of Future CENTURi<sup>21</sup> Use” Category

“Do you intend to use CENTURi<sup>21</sup> in the future?” This “key” question revealed a good result for CENTURi<sup>21</sup> (see figure 20). Only one out of six users would not “return” to CENTURi<sup>21</sup> in the future. One in four were undecided while three out of five users intended to use it again.

There was a relatively high percentage of undecided users (24%) that still need to be “won over” by CENTURi<sup>21</sup>.

**Figure 20: Do you intend to use CENTURi<sup>21</sup> in the future?**

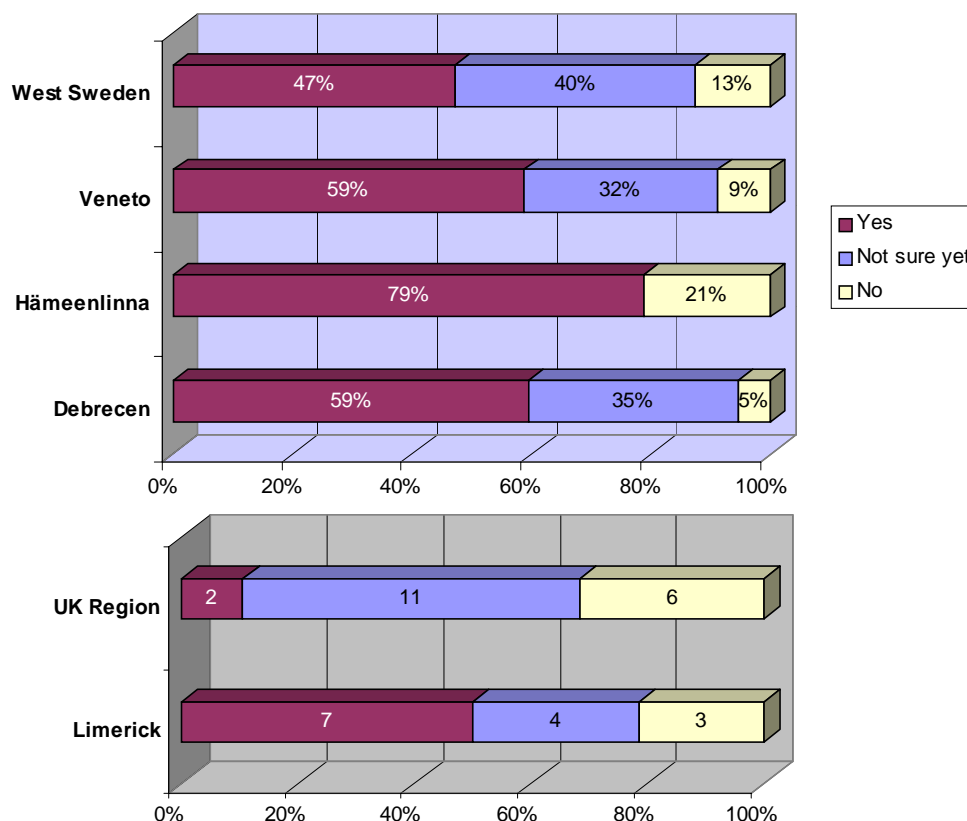


Source: End-User Questionnaire 2002; n=253

There were some differences between the regions (see figure 21).

The intention to use CENTURi<sup>21</sup> in the future was highest in Hämeenlinna (79%) and lowest in the UK (two out of nineteen users) where, however, a very low number of responses had to be considered.

In the UK (eleven out of nineteen users) and West Sweden (40%), the pool of undecided users was the largest. However, probably due to a translation mistake in the Finnish Questionnaire translation, none of the 94 users in Hämeenlinna were undecided regarding their intention to use CENTURi<sup>21</sup> in the future.

**Figure 21: Do you intend to use CENTURi<sup>21</sup> in the future – Regional Breakdown**

Source: End-User Questionnaire 2002; n=253

The group of frequent users was most positive with regard to their future use of CENTURi<sup>21</sup> compared to the other groups. 68% of the frequent users intended to use CENTURi<sup>21</sup> in the future, 12% were undecided and 21% said “no”.

Out of the group of occasional users, 59% intended to use CENTURi<sup>21</sup> in the future, 23% were undecided and 18% did not intend to use CENTURi<sup>21</sup> in the future.

Reluctant users were the least negative group concerning the future use of CENTURi<sup>21</sup>. Only 9% of the reluctant users did not intend to use CENTURi<sup>21</sup> in the future. 37% of all reluctant users were undecided whether to use CENTURi<sup>21</sup> in the future or not. 54% intended to do so.

There was no significant difference between female and male users when it came to the future use of CENTURi<sup>21</sup>. Female users were slightly more undecided (29% versus 21% of all men) but less negative (11% versus 19% of all men did not intend to use CENTURi<sup>21</sup> in the future).

There were no significant differences to the overall CENTURi<sup>21</sup> population regarding age, education or employment.

A brief summary highlighting some interesting results for the two user categories “CENTURi<sup>21</sup> Satisfaction” and “Intention of Future Use” in relation to gender, age, education, employment and frequency of Internet use are provided in table 14 below.

**Table 14: Snapshot Results for CENTURi<sup>21</sup> Satisfaction and Future Use Categories**

	<b>“CENTURi<sup>21</sup> Satisfaction User” Category</b>	<b>“Intention of Future Use” Category</b>
	<b>Satisfied: 64%</b> <b>Undecided: 23%</b> <b>Unsatisfied: 13%</b>	<b>Yes: 60%</b> <b>Not Sure: 24%</b> <b>No: 16%</b>
<b><u>Gender</u></b>  <b>Female: 40%</b> <b>Male: 60%</b>	No significant differences; There were slightly more female users (69%) among those satisfied with CENTURi <sup>21</sup> than male users (61%).	Female users were slightly more undecided (29%) than male users (21%), but less negative: 11% of the female users versus 19% of male users.
<b><u>Age</u></b>  <b>0-29: 22%</b> <b>30-54: 63%</b> <b>55+: 15%</b>	Dissatisfaction increased with the age of the users. On average, satisfied users were 39.6 years old, undecided 41.4 and unsatisfied users 44.0 years old.	No significant differences between age classes; 30-54 slightly more positive (62%) than <30 (56%) and 55+ (54%); 30% of silver surfers (55+) are undecided.
<b><u>Education</u></b>  <b>Basic: 14%</b> <b>Qualifying: 52%</b> <b>University: 35%</b>	No significant differences. Dissatisfaction increases slightly with education level.	No significant differences
<b><u>Employment</u></b>  <b>Full-time: 66%</b>	No significant differences. All 11 self-employed users were satisfied with CENTURi <sup>21</sup> .	No significant differences
<b><u>Frequency of Internet Use</u></b>  <b>Frequent: 34%</b> <b>Occasional: 31%</b> <b>Reluctant: 35%</b>	Dissatisfaction increased with the age of the users. On average, satisfied users are 39.6 years old, undecided 41.4 and unsatisfied users 44.0 years old.	No significant differences between age classes; 30-54 slightly more positive (62%) than <30 (56%) and 55+ (54%); 30% of silver surfers (55+) are undecided.

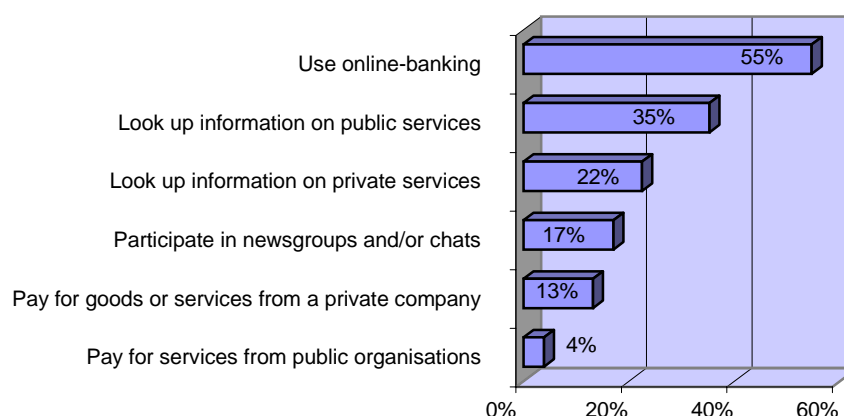
### Purposes and Frequency of Internet Use

CENTURi<sup>21</sup> users were asked for what purposes and how often they used the Internet. Six answer options were provided to which the users could respond either “regularly”, “sometimes” or “never”.

The overall results across all regions are presented in figure 22 below. Since users from the regions responded significantly different depending on the regions they belonged to, the regional breakdown of responses (see table 15) was analysed.



**Figure 22: How often do you use the Internet to do the following?  
Persons answering “regularly”**



Source: End-User Questionnaire 2002; n=258

**Table 15: How often do you use the Internet to do the following?  
Persons answering “regularly” – Regional Breakdown**

	Debrecen	Hämeen- linna	Limerick	UK Region	Veneto	West Sweden	Total
Use online-banking	20%	89%	1 (7%)	5 (29%)	17%	64%	55%
Look up information on public services	50%	34%	2 (14%)	3 (18%)	49%	29%	35%
Look up information on private services	23%	19%	3 (21%)	5 (29%)	29%	22%	22%
Participate in newsgroups and/or chats	13%	35%	4 (29%)	1 (6%)		2%	17%
Pay for goods or services from a private company	3%	9%	1 (7%)	3 (18%)		36%	13%
Pay for services from public organisations	3%	1%				14%	4%
<i>n</i>	40	94	14	17	35	58	258

Source: End-User Questionnaire 2002; n=258

Online banking was used regularly by more than half of all CENTURI<sup>21</sup> users (55%). However, the regional analysis revealed that only in the two Scandinavian regions (89% in Hämeenlinna and 64% in West Sweden) online banking was used regularly by the majority of users.<sup>13</sup> On the other hand, online-banking was used regularly by less than 30% of all users in Debrecen, Limerick, the UK Region, and Veneto.

**Online banking was  
used regularly by  
the majority of  
Scandinavian users**

Furthermore, it stood out that a relatively large share of West Swedish users, unlike users from the other five regions, used the Internet regularly to pay for goods or services from private companies (36%) or service from public organisations (14%).

It was also analysed how many users responded “never” to the pre-defined Internet use options. Thus, 49% would never pay for services from public organisations on the Internet, 38% would never pay for goods or services from private companies,

<sup>13</sup> In addition, users from these two regions alone made up 59% of all responses to this question. Over all regions, 58% of the users came from Hämeenlinna or West Sweden.

and 31% would never use online banking. Generally, the lowest reluctance to use the Internet for the purposes provided was observed in the Scandinavian regions. More than 70% of the CENTURi<sup>21</sup> users in Debrecen and Veneto were reluctant to use the Internet to pay for goods or services.

There was generally, i.e. across all regions, a low reluctance to look up information on public services (9%) or private services (12%).

The analysis of the defined user categories (see chapter 4) revealed the following results concerning the use of the Internet:

- **Gender:**  
Female CENTURi<sup>21</sup> users used the Internet significantly less frequent to pay for goods or services and for the purpose of online banking than male CENTURi<sup>21</sup> users. There were no significant differences in the frequency of information retrieval (looking up information on public and private services)
- **Age:**  
Searching for information was comparably less interesting for the so called “silver surfers” (ages 55+) among the CENTURi<sup>21</sup> users. There were no significant differences in terms of paying for goods or services between the age classes, however only 30% of those CENTURi<sup>21</sup> users younger than 30 years of age used online banking regularly compared to 30-54 year old users (62%) and “silver surfers” (57%). The youngest age class instead used the Internet to participate in news groups and/or chats more regularly.
- **Education:**  
CENTURi<sup>21</sup> users possessing a university degree used the Internet more regularly for the purpose of online banking than users without an academic degree.
- **Employment:**  
There were no significant differences in Internet use between the CENTURi<sup>21</sup> users of different employment statuses.

The analysis of Internet use purposes and frequencies served primarily as a reference for the analysis of the actual use of CENTURi<sup>21</sup>.<sup>14</sup>

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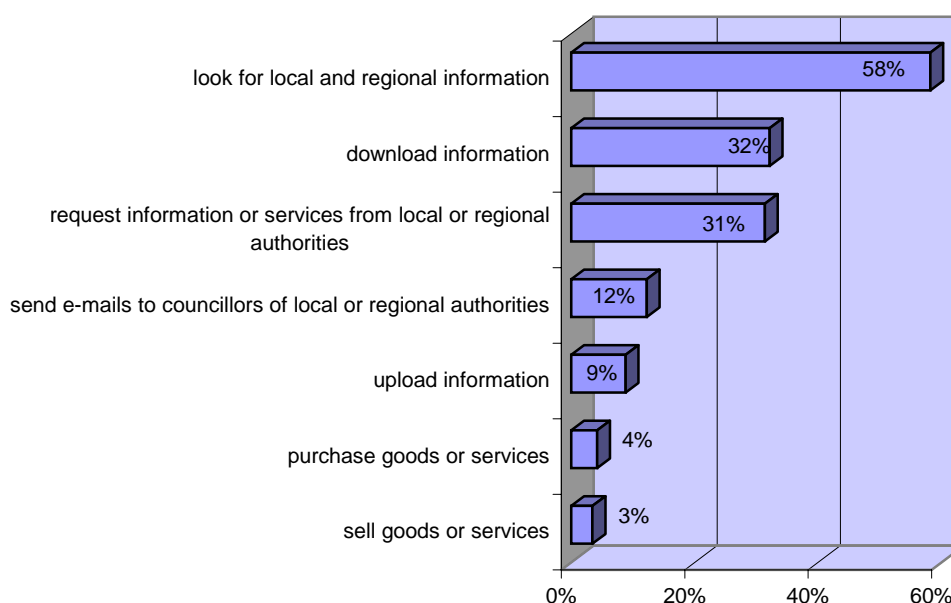
<sup>14</sup> The Evaluation Team decided to provide answer options for the use of CENTURi<sup>21</sup> that were slightly different to answer option for general Internet use. It also opted not to inquire about the frequency of use, since the CENTURi<sup>21</sup> portals were test versions that were only online and available to users for a limited amount of time, namely the thirteen weeks of the core evaluation period.

### Purposes of CENTURi<sup>21</sup> Use

Users were asked for what purposes they have used CENTURi<sup>21</sup>. Eight answer options were provided as displayed in figure 23 below.<sup>15</sup>

58% of all users looked for local and regional information on the regional portals, followed by 32% who downloaded information and 31% who requested information or services from local and regional authorities.

**Figure 23: For what purposes have you used CENTURi<sup>21</sup> since it was launched in February 2002?**



Source: End-User Questionnaire 2002; n=261

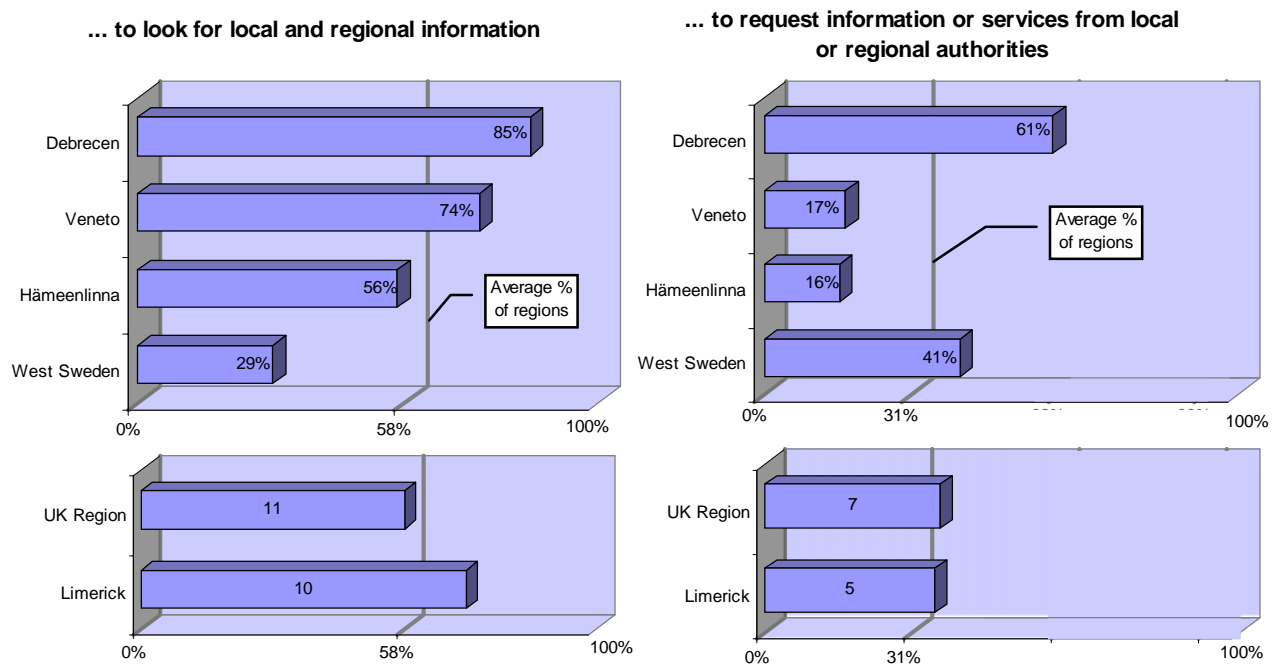
Looking up local or regional information was most often stated as a purpose of CENTURi<sup>21</sup> use in Debrecen (85%), Veneto (74%) and Limerick (ten of fourteen users) while only 29% of the West Swedish users looked for local and regional information.

Users in Debrecen used their regional portal more than users of other regions (see figure 24 below). This is particularly evident for the purposes of looking up local and regional information (85% versus 58% on average), requesting information or services from local and regional authorities (61% versus 31% on average) and downloading of information (61% versus 32% on average).

<sup>15</sup> Multiple responses were allowed. 19% used CENTURi<sup>21</sup> for "other purposes". However, a "new" and additional purpose of CENTURi<sup>21</sup> use was not revealed.

Only very few users purchased (4%) or sold (3%) goods or services on a CENTURi<sup>21</sup> portal. Eight of the eleven CENTURi<sup>21</sup> users who purchased and six of eight who sold goods or services on a CENTURi<sup>21</sup> portal did so on the Hämeenlinna portal.

**Figure 24: For what purposes have you used CENTURi<sup>21</sup> since it was launched in February 2002? – Regional Breakdown**



Source: End-User Questionnaire 2002; n=261; Note: In case of the UK Region and Limerick, the actual number of respondents, in the bar chart, is included and set into (a percentage) relation to the total number of responses from these regions.

The analysis of the defined user categories (see chapter 4) revealed the following results concerning the use of CENTURi<sup>21</sup>:

- **Gender:**  
CENTURi<sup>21</sup> was used by both genders for the same purposes. Male users were slightly more “active” in using e-mails and downloads.
- **Age:**  
Compared to the two other age classes, fewer “silver surfers” used CENTURi<sup>21</sup> for information retrieval. This was the case for requesting information on services from local and regional authorities (19% versus 39% of the users under 30 years of age and versus 32% of ages 30-54) as well as for looking up local and regional information (49% versus 63% of the users under 30 years of age and versus 59% of ages 30-54).

- Education:  
There were no significant differences in CENTURi<sup>21</sup> use between users with different educational degrees.
- Employment:  
66% of all CENTURi<sup>21</sup> users were full-time employed. In general, this group used CENTURi<sup>21</sup> for the same purposes as the remaining 34% of the users.<sup>16</sup>
- Frequency of Internet use category:  
Frequent, occasional and reluctant Internet users used CENTURi<sup>21</sup> about the same for the purpose of purchasing or selling goods or services as well as for uploading information. The anticipated allocation of frequency was only observed for the purpose of sending e-mails to councillors of local and regional authorities. In the cases of information retrieval<sup>17</sup>, occasional users used CENTURi<sup>21</sup> less than frequent or reluctant Internet users. This latter observation was somehow surprising. An explanation could be that occasional users who use the Internet only sometimes were not willing to engage in the time consuming exercise of information retrieval. Reluctant users who do not use the Internet often, on the other hand, may have wanted to “try” CENTURi<sup>21</sup> thoroughly even if it meant to spend time online. In this sense these users may be reluctant to use the Internet often, but want to use it efficiently when they are online.
- CENTURi<sup>21</sup> satisfaction user category:  
It turned out that users unsatisfied with CENTURi<sup>21</sup> did not use it. Nobody out of this group of (32) unsatisfied CENTURi<sup>21</sup> users sent an e-mail to a councillor, up- or downloaded information, sold or purchased goods or services on one of the CENTURi<sup>21</sup> regional portals. Only 9% looked for local and regional information or requested information or services from authorities.
- CENTURi<sup>21</sup> Intention of Future Use Category:  
Those users who did not intend to use CENTURi<sup>21</sup> in the future used CENTURi<sup>21</sup> much less (34%) for local and regional information retrieval than undecided (56%) or satisfied CENTURi<sup>21</sup> users (68%).

**Users unsatisfied  
with CENTURi<sup>21</sup>  
did not use it.**

The most striking result was the observation that unsatisfied users did not use the regional CENTURi<sup>21</sup> portals for the purposes of information retrieval, transactions or communication. The dissatisfaction, therefore, could not have resulted from using the portal (since this did not happen). It is possible that

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<sup>16</sup> Absolute numbers of users for the other employment categories were simply too small to allow the analysis of any deviation from the average of all users.

<sup>17</sup> Information retrieval comprises looking for local and regional information, requesting information or services from local or regional authorities, and downloading of information.

the cause of dissatisfaction was not CENTURi<sup>21</sup> or the services it offered, but dissatisfaction and/or frustration with the Internet itself.

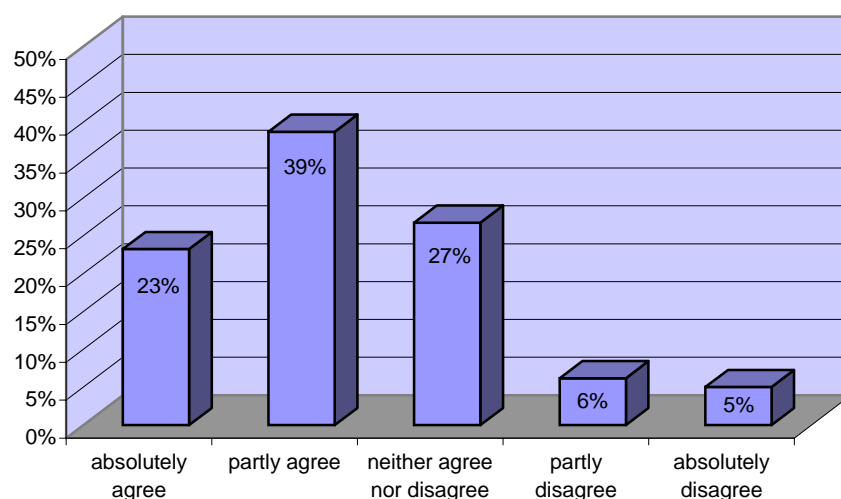
### Online transactions and online unilateral processes

CENTURi<sup>21</sup> was expected to have a positive impact on the amount of online transactions and unilateral services. However, the CENTURi<sup>21</sup> portals were, in general, not used for e-commerce purposes or other purposes involving a large amount of transaction. The available data did not allow for a meaningful analysis.

### Success in retrieving information through CENTURi<sup>21</sup>

The majority of CENTURi<sup>21</sup> users (62%) were successful in retrieving the information they were looking for (see figure 25 below). While one out of four users neither agreed nor disagreed, only 11% of all users were unsuccessful in finding the desired information.

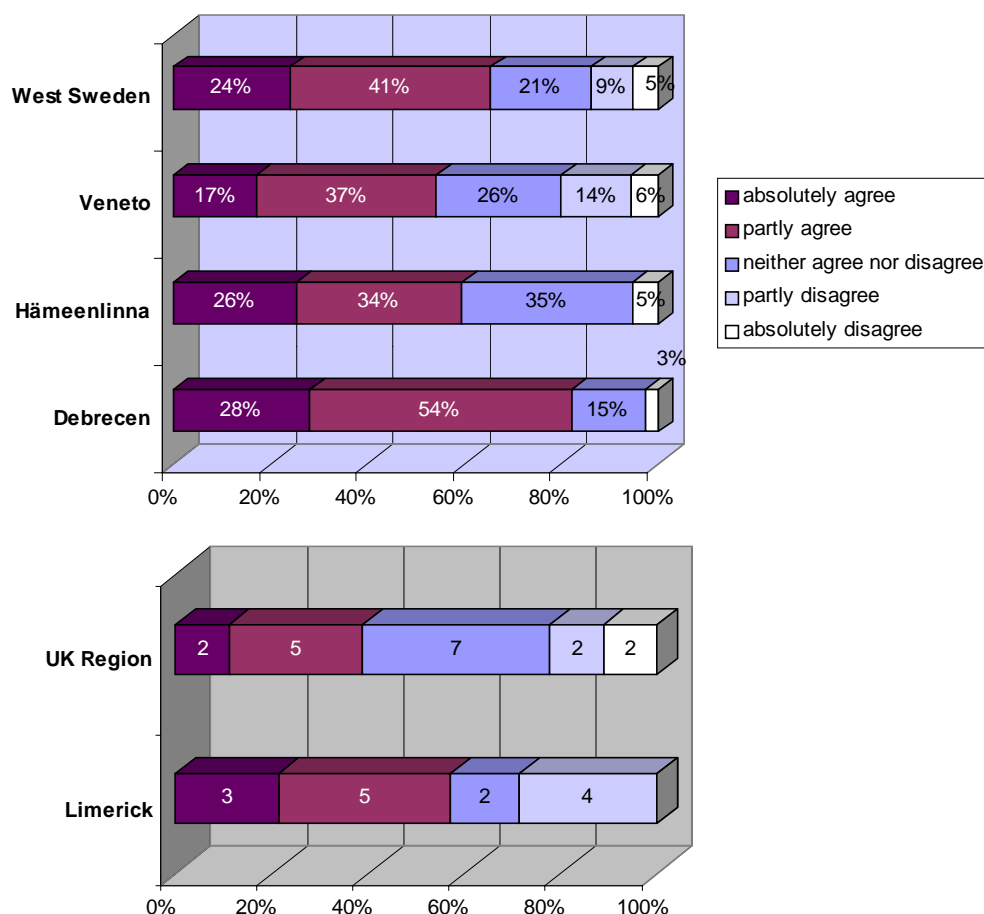
**Figure 25: To what extent do you agree with the following statement?  
"I was successful retrieving the information I was looking for"**



Source: End-User Questionnaire 2002; n=261

The analysis of the regions revealed that Debrecen had the highest percentage of users successful in retrieving the desired information. This was the case for fewer than average users in the UK Region and Veneto (see figure 26).

**Figure 26: To what extent do you agree with the following statement?  
"I was successful in retrieving the information I was looking for" –  
Regional Breakdown**



Source: End-User Questionnaire 2002; n=258

Three out of four users who looked for local or regional information on the respective regional CENTURi<sup>21</sup> portals agreed (to the statement) that they were partly (47%) or absolutely (30%) successful in retrieving the information they were looking for.

Out of the thirteen users who absolutely disagreed that they were successful in retrieving the information they were looking for, only one user was looking for local and regional information.

The analysis of the various user categories did not reveal any significant differences concerning the retrieval of desired information.

As a result of this analysis, it can be stated that the overall satisfaction in particular with public services is confirmed. A summary of the actual use chapter is provided in chapter 5.1.4.

### 5.1.2 Variety of Service Provision

#### **CENTURi<sup>21</sup>-registered companies**

Companies were expected to use CENTURi<sup>21</sup> to provide product and other corporate information to potential customers. The anticipated increase in the number of CENTURi<sup>21</sup>-registered companies would then reflect the enhanced scope of (public and) commercial services.

During the project, the priority was to provide public services (rather than commercial services) and to emphasise technical functionality. Therefore, product or commercial service provision from companies did not take place in the regional portals. The notable exception was Veneto which had a specific emphasis on e-commerce/ tourism (see below).

While the CENTURi<sup>21</sup> portals were able to include e-commerce features from a technical point of view, commercial service involvement was not actively pursued by the project (even though this was envisaged at the start of the project).

Data for the indicator “Number of CENTURi<sup>21</sup>-registered companies” was gathered by all regions. However, the intention to demonstrate a trend of registrations throughout the core evaluation period had to be given up, with the focus of CENTURi<sup>21</sup> shifting from including commercial services to concentrating almost entirely on provision of public services.

For completeness, the number of companies registered in the respective CENTURi<sup>21</sup> portals are:

- 0 in Hämeenlinna and the UK Region
- 1 in Limerick
- 12 in West Sweden
- 47 in Debrecen
- 384 in Veneto

The focus of the Veneto regional portal was entirely on tourism. Therefore, the high number of companies registered on the portal came as no surprise. These companies were almost entirely hotels or other tourism service providers. Only 41 of the 384 registered during the core evaluation period, i.e. after 1 February 2002. The remaining 343 companies had previously registered on the Veneto tourism site, but were also using the regional portal during the evaluation phase.

Results from Veneto and Debrecen showed considerable interest from commercial companies, however, only if this group was specifically targeted during the roll-out phase.

**Commercial service involvement was not actively pursued by the project.**



### **Commercial services provided online**

CENTURi<sup>21</sup> was expected to increase the quantity of commercial services that was available online.

The only regions that actually provided commercial services on their regional portals were Limerick and Veneto. In Limerick, DJ Haynes Associated, a real estate agency, offered information about a real estate object. The company offered a map-view of the object and also used the regional portal to arrange visits by means of e-mail request. In Veneto, many actors in the tourism sector (mostly hotels) offered information leading, as a next step, to actual commercial transactions (reservations, bookings, etc.).

The regional evaluators in West Sussex emphasised their County Council did not support any specific commercial sites, but links from various applications to commercial sites existed on their portal, including the search engine Google. In addition, the County Council maintained an e-shop, available through their website, where members of the public were able to purchase West Sussex County Council endorsed/related merchandise through a secure netbank facility.

Due to the decision to (almost) entirely focus on public service provision during the project, the goal of CENTURi<sup>21</sup> to provide a large number of (relevant) public services was achieved.

**The goal to provide a large number of relevant commercial services was not achieved.**

### **Public services provided online**

CENTURi<sup>21</sup> was expected to increase the quantity and to improve the quality of public services available online. In this chapter, the focus is entirely on the quantitative effects,<sup>18</sup> while qualitative analyses are the emphasis of chapter 5.1.3.

A public service was defined as the provision/ supply of an activity, which is regarded as essential to the welfare of the community (Final Evaluation Plan, 2001). Public services are managed or controlled by different tiers of public institutions and/ or organisations.

In addition, a number of citizen-led community applications in the form of public services were scheduled to go online during the lifetime of the project.

E-government services were anticipated to be the backbone of CENTURi<sup>21</sup>. In the longer-term, it was expected that the number of public services offered online would increase as citizens felt that there was an increasing involvement from their side due to the fact that CENTURi<sup>21</sup> satisfied their demands.

The goal of CENTURi<sup>21</sup> to provide a large number of (relevant) public services was achieved. Individual public services and their description are listed in table 16 below.

**The goal to provide a large number of relevant public services was achieved.**

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<sup>18</sup> In the sense of indicator 1.1.2.

**Table 16: Public Services Provided in the CENTURi<sup>21</sup> Regions**

Region	Services/ Provider	Scope/ Description
Debrecen	City State Model	The content available on the “www.digitalcity.hu” and the “City State Model” application constituted an integrated system.
Debrecen	Event Calendar	Information about events in the Debrecen Region
Debrecen	Local News	As part of the portal digitalcity.hu
Debrecen	Local Taxes	The service on local taxes provides information on taxes to be paid according to valid tax regulations.
Debrecen	Local Directives	
Hämeenlinna	Event Calendar application	Information about events in the Hämeenlinna Region
Hämeenlinna	E-Consult application	
Hämeenlinna	E-Democracy application	
Hämeenlinna	CWMail, Discus Pro, WebCal	Generic applications (email, newsgroup, calendar)
Hämeenlinna	Local news and weather	Newsfeed from local newspaper
Hämeenlinna	Maporama	Map services
Limerick	Franchise Department Cork County Council	Download of online registration form; Download postal voters forms. Link to online Franchise (REACH GOV. initiative)
Limerick	Planning Department Galway County Council	Download affordable housing scheme and planning information
Limerick	MAC	Limerick planning application
Limerick	Department of transport	Download motoring and taxation form
Limerick	Planning Service	<p>Scope: The Planning Service has a one main-page with two links (these links provide the necessary tools to view the maps). Also from this main-page, one can go to the map to view Planning Applications.</p> <p>Description: Search for a Planning Application, navigate the map of Kilmallock for recent Planning Applications, view details of these applications, submit comments/queries/objections to applications, create own planning application</p>
Limerick	Aquanet	<p>Scope: Aquanet is a service located in the Environment Tab. It allows the user to get involved in environmental issues. It consists of 34 webpages, with numerous links.</p> <p>Description: AQUANET is a project aimed at keeping streams and rivers in County Limerick healthy for people and for wildlife. It also allows the user to check the following,</p> <ul style="list-style-type: none"> <li>- how healthy your local river is</li> <li>- find out about the wildlife of County Limerick's waterways</li> <li>- learn about water pollution in County Limerick</li> <li>- see what you can do to help keep rivers wild and clean</li> </ul>

Region	Services/ Provider	Scope/ Description
Limerick	E-democracy	<p>Scope: E-Democracy is a service located in the Voting tab. It informs the user of helpful guides to voting in Ireland. It has three links to <a href="http://www.environ.ie">www.environ.ie</a>.</p> <p>Description: E-Democracy aims to facilitate users interactions with the register of electors and gives you information on upcoming referenda and elections.</p>
Limerick	E-consult	<p>Scope: E-Consult allows the Administrator to create questionnaires to gather opinions on general topics, e.g. council decisions</p> <p>Description: E-Consult can create, modify and complete questionnaires on-line.</p>
UK Region	e-consult (WSCC)	Application enables service provider to easily produce an electronic questionnaire which can then be published and completed online. The results can then be analysed and used to formulate solutions/policies.
UK Region	I-consult (WSCC)	Application enables citizen to log an enquiry through a series of Help-point facilities and receive a response back from the appropriate authority
UK Region	Transport (WSCC)	Integrated Transport application, particularly providing bus timetable information for Sussex, together with links to all other transport providers in the area within one application
UK Region	Devon Carers (DCC)	Social Services application to enable an individual to find necessary information on specific aspects of Social Services within one application
UK Region	Carers (WSCC)	Social Services application to enable an individual to find necessary information on specific aspects of Social Services within one application
UK Region	Library catalogue (Doompalm)	Application to locate specific books within the large County Library network and reserve/obtain copies to be sent to individual local library
UK Region	Events Calendar (WSCC)	Application which enables any individual to publicise their own event by registering with the system, and also enables anyone to find out about events in the area by date/category etc.
Veneto	Tourism Itinerary	
West Sweden	Childcare Service	Childcare Service - Provides a range of services including childcare opportunities in the vicinity, pre-school choices in the area, estimate of the costs of such service, register yourself to have this service.
West Sweden	E-democracy	E-democracy - Allows people to be involved in a consultative democratic process by providing an opinion on different issues, finding information of political nature, and background information on the issues raised.
West Sweden	Booking Services	Booking Services - Provides you a range of services including location of the services, reaching the responsible people to have a direct service, and booking or cancelling a service.
West Sweden	Event Calendar	Event Calendar - Provides the user with a tool to find information on events and what is going on.

In addition to the primary applications listed above, the UK CENTURi<sup>21</sup> portal contained many other direct links to public services under its Service heading related to: Health, Education, Housing, Emergency Services, Planning, Law, Transport, Environment, Leisure and Entertainment, Tourism, Employment, Libraries. It also contained direct links from its front page to the websites of the three different levels of local government available to its trial users. Each of these sites contained links to many different services available to them including those listed above.

In West Sweden, services targeting child & youth, elderly, education, health & nursing, individual & society, as well as labour market & housing are planned.

A brief summary of the variety of service provision chapter is provided in chapter 5.1.4.

### 5.1.3 Quality of Services

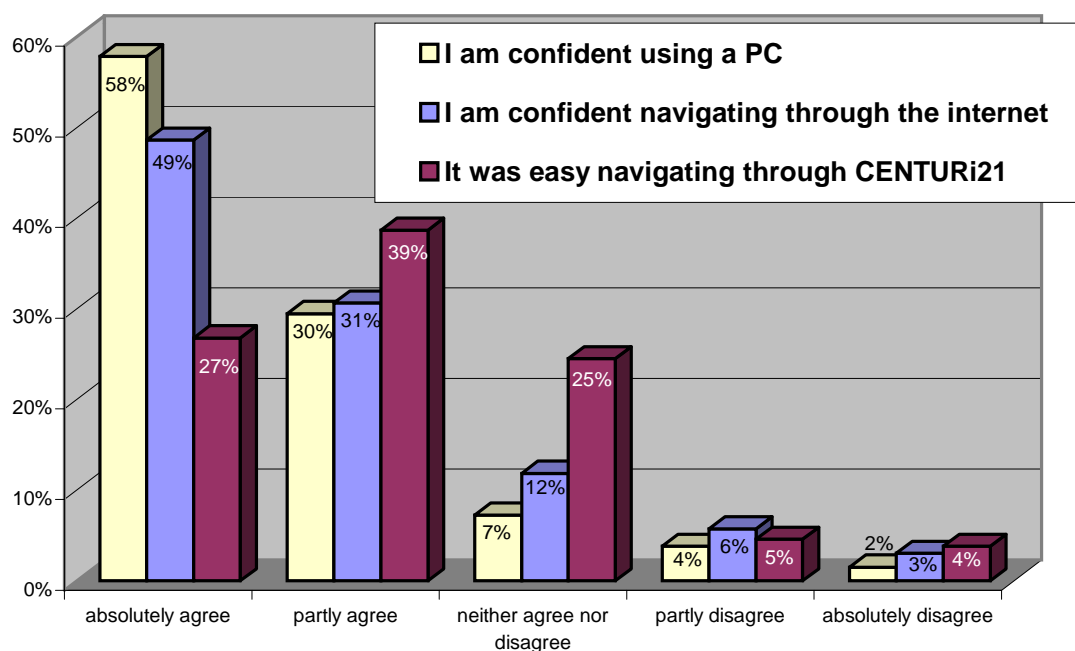
#### Usability

The quality of public and commercial services provided through CENTURi<sup>21</sup> depended to a large extent on the usability of the system, i.e. on the system's capability to be used easily and effectively.

CENTURi<sup>21</sup> users were asked to what extent they perceived being confident using a PC, navigating through the Internet and how easy it was to navigate through the CENTURi<sup>21</sup> regional portals (see figure 27 below). While there were similar low levels of disagreement for the three options, there was a considerably higher reservation to navigate through CENTURi<sup>21</sup>. One in every four users neither agreed nor disagreed to the statement whether it was easy to navigate through CENTURi<sup>21</sup>. 66% of all CENTURi<sup>21</sup> users agreed to the statement. In comparison 80% were confident navigating through the Internet.

The result can be explained by the facts that CENTURi<sup>21</sup> portals were new to the users and had a higher complexity (e.g. themes). In addition, users had to log on to the portals which is not necessarily the case on other Internet sites. Finally, the CENTURi<sup>21</sup> portals, as trial versions, had some deficiencies in navigation and usability which need to be levelled out.

**Figure 27: Confidence in PC Use, Internet Navigation, and Ease of Navigation Through CENTURi<sup>21</sup>**



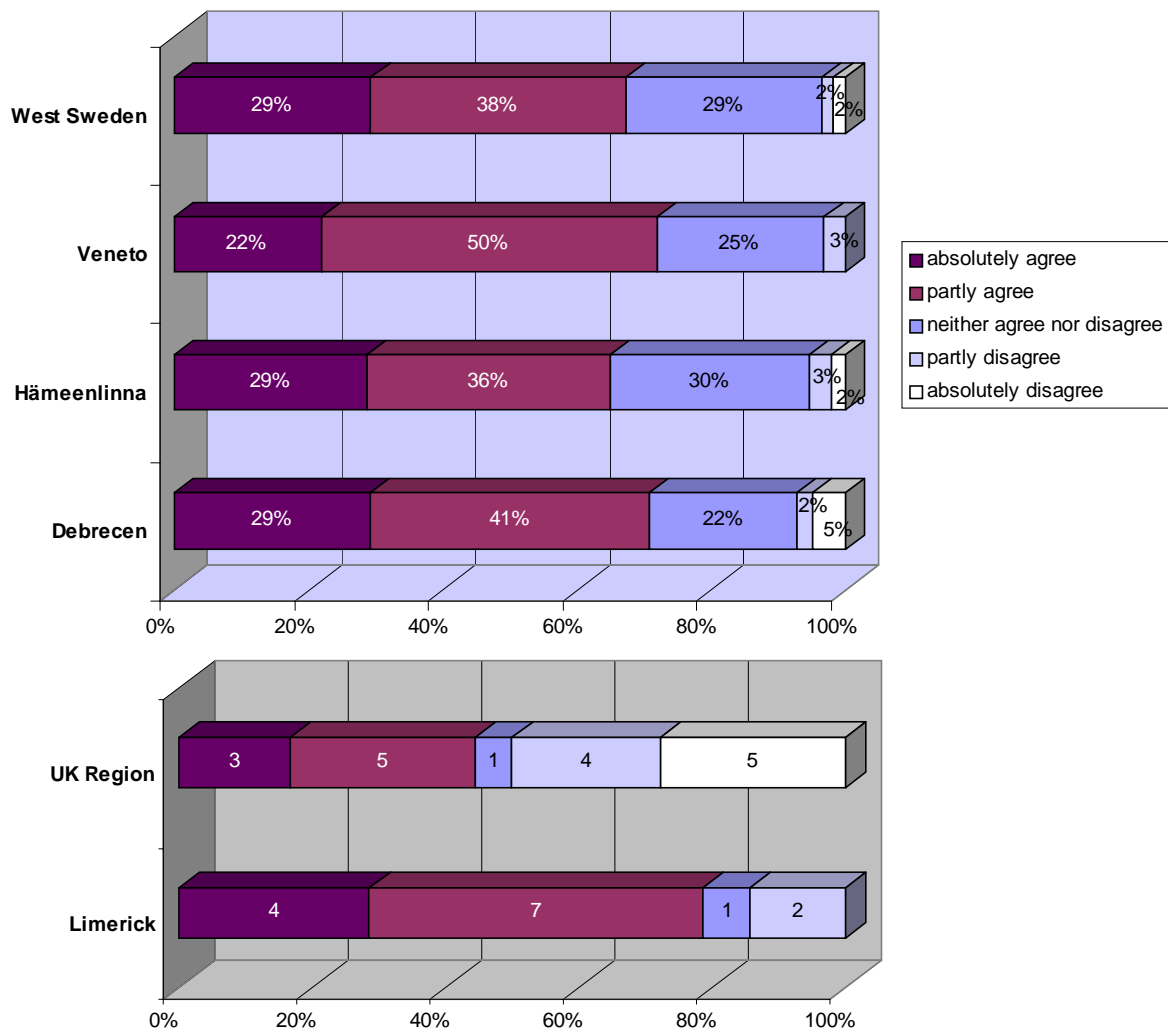
Source: CENTURi<sup>21</sup> End-User Questionnaire 2002, Questions 5a and 5b: n=261 ; Question 5c: n=257

A closer look into the regions in order to detect differences between the regions (see figure 28) revealed the following:

Most regions' users have high confidence in PC use and Internet navigation (well above 80% of the users). The exceptions are the UK region where thirteen of the nineteen respondents are confident in PC use and Internet navigation and West Sweden where 76% of the users are confident in using a PC, but only 52% confident in navigating through the Internet.

Only in West Sweden, a higher percentage of users found it easy to navigate through CENTURi<sup>21</sup> (67%) than were confident in using the Internet (52%).

**Figure 28: To what extent do you agree with the following statement?  
"It was easy navigating through CENTURi<sup>21</sup>" – Regional Breakdown**



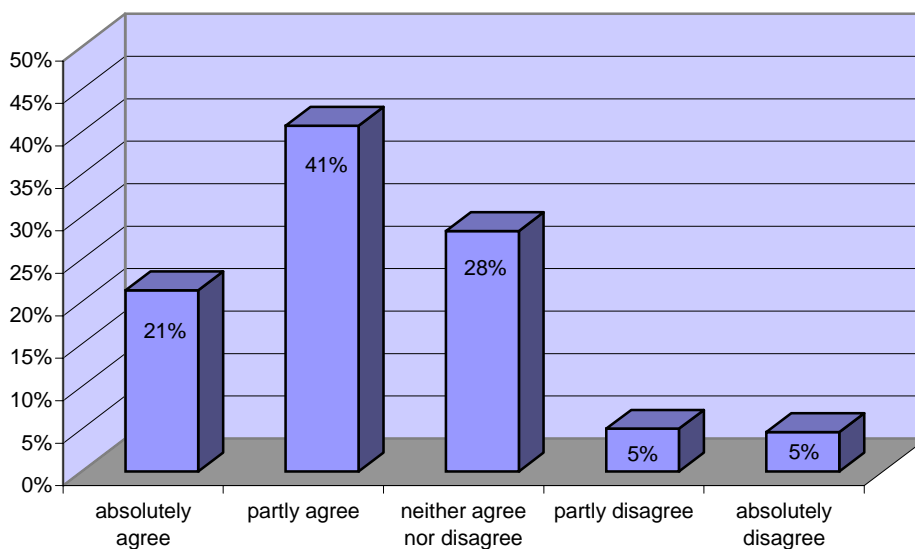
Source: End-User Questionnaire 2002; n=257

The interviews of technical decision makers and IT-Strategists brought about two specific usability problems: pop-up windows/navigation and re-login. Some interviewees were concerned about “too many popup windows (services open in separate windows)”, since “external sites should be integrated into CENTURi<sup>21</sup> and not be brought up as separate pages as the user had to close the other site to return to the theme”. They also lamented that “single sign on was clunky – why do I have to re-login for i-consult, carers, etc.”, “it would be better if a user did not have to re-login for the different applications”.

### The “Fun Factor”

Is CENTURi<sup>21</sup> enjoyable? This question was asked in the end-user questionnaires to provide, though indirectly, an indication of the quality of services. Only 10% apparently had no fun with CENTURi<sup>21</sup> and did not find it enjoyable. 62% found CENTURi<sup>21</sup> enjoyable, and, once again, a rather high percentage, namely 28%, neither agreed nor disagreed (see figure 29 below).

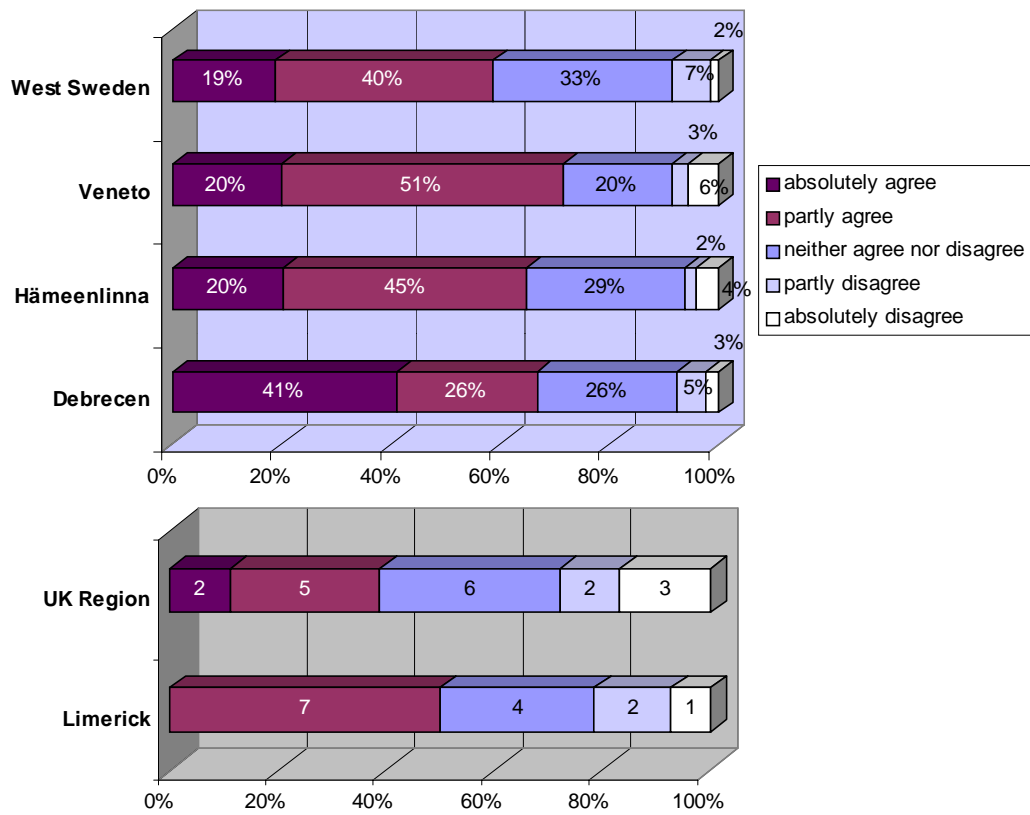
**Figure 29: To what extent do you agree with the following statement? “CENTURi<sup>21</sup> is enjoyable”**



Source: End-User Questionnaire 2002; n=261

The regional breakdown seen in figure 30 below confirmed the overall result in the regions, namely that CENTURi<sup>21</sup> was fairly enjoyable, but that a large pool of users (28%) was not convinced of this. Again, improvements in navigation and usability will have an impact on what is here called the “fun factor”.

**Figure 30: To what extent do you agree with the following statement?  
"CENTURi<sup>21</sup> is enjoyable" – Regional Breakdown**



Source: End-User Questionnaire 2002; n=258

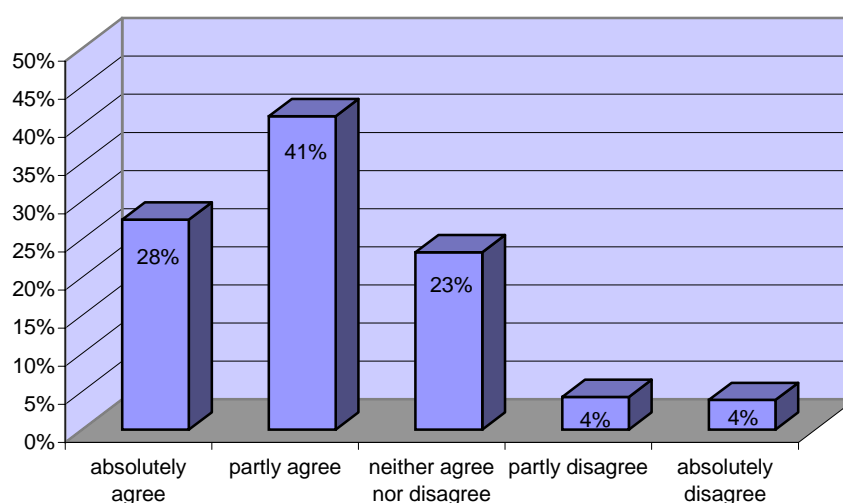


## Usefulness

Usefulness, together with usability, cost, image, etc. was an important component of the overall service acceptability.

69% of the users stated that CENTURi<sup>21</sup> provided useful information, 23% neither agreed nor disagreed, and 8% disagreed (see figure 31). Thereby, users clearly provided a positive feed-back. Only one out of ten users was negative regarding the provision of public services. 23% were undecided and represent significant group of users that CENTURi<sup>21</sup> still needs to “win over” and convince of its usefulness.

**Figure 31: To what extent do you agree with the following statement?  
“CENTURi<sup>21</sup> provides useful information”**



Source: End-User Questionnaire 2002; n=261

The content quality was perceived to be high in all CENTURi<sup>21</sup> regions. The regional breakdown, seen in figure 32 below, revealed that users in Debrecen, Veneto and Limerick (above 75%) were particularly positive about the usefulness of information provided on their respective portals. It stood out that few users rated the usefulness of information low (maximum 15% in the regions).

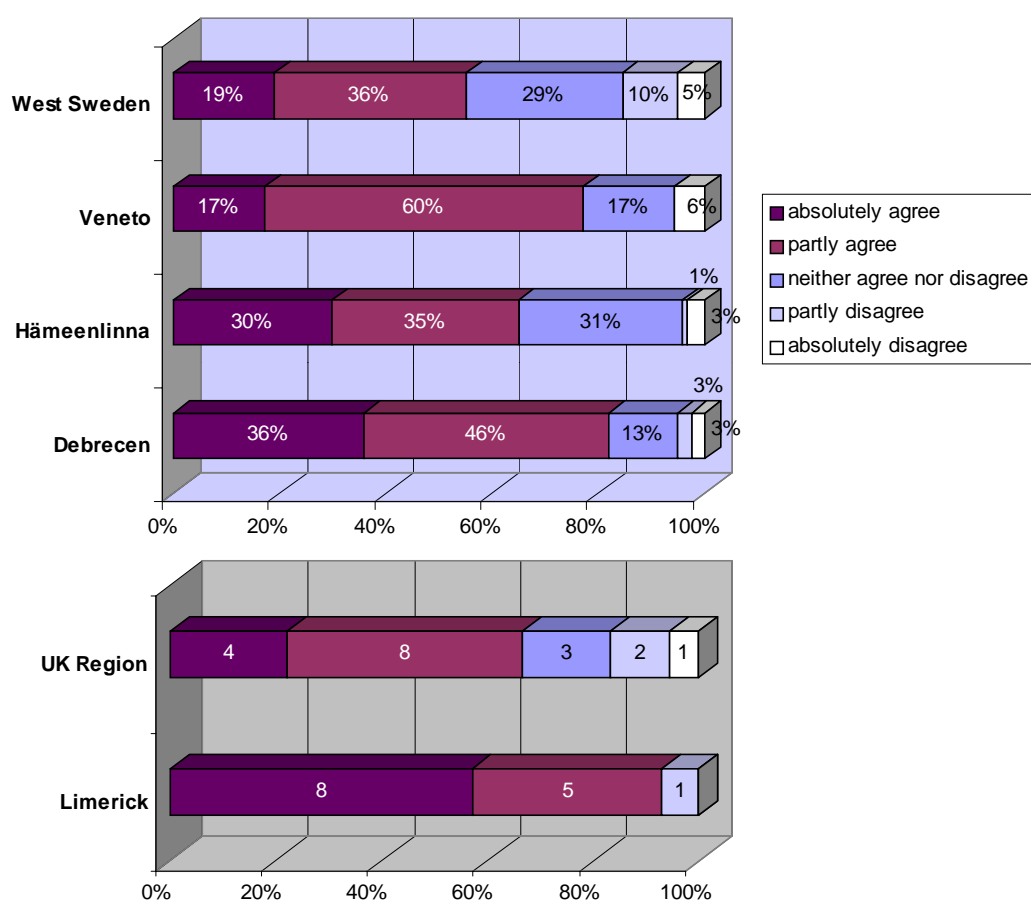
There was no difference between female and male users in the perception of usefulness. The analysis of age classes showed that there was also no significant difference between the “Internet generation” (<30 years of age), “middle-age users” between 30 and 54 years of age and the “silver surfers” (55+). “Middle-age users” were the most reserved age class (28% undecided), but also the least negative concerning the usefulness of information.

Finally, the category “frequency of Internet use” was analysed. In terms of usefulness of information on CENTURi<sup>21</sup>, there was no significant difference between frequent and reluctant Internet users. All three groups showed the same low disapproval (8%).

The only significant difference among the groups accounted for occasional users who were less positive (55%), but far more reserved (38%), i.e. neither agreed nor disagreed that CENTURi<sup>21</sup> provided useful information, than frequent (14%) or reluctant users (20%).

The assumption that older users, female users, non-frequent users were more critical than their counterparts was, therefore, not confirmed by the CENTURi<sup>21</sup> data analysis.<sup>19</sup>

**Figure 32: To what extent do you agree with the following statement?  
"CENTURi<sup>21</sup> provides useful information" – Regional Breakdown**



Source: End-User Questionnaire 2002; n=258

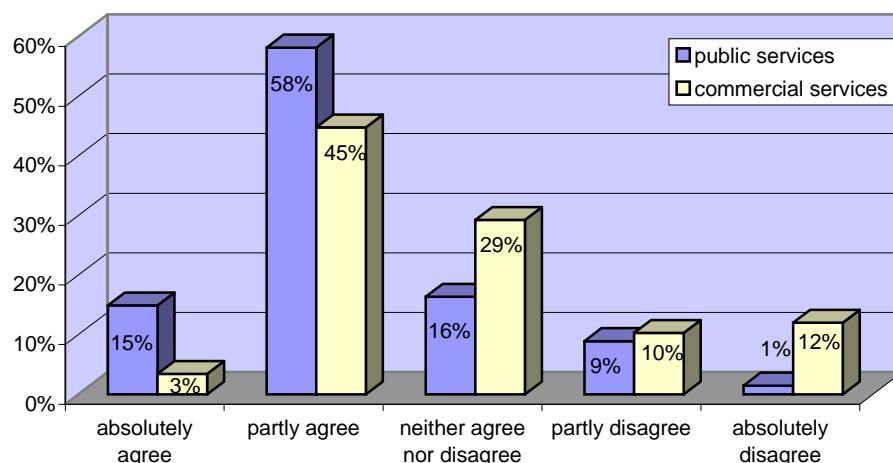
### Perceived Quality of Public and Commercial Services

Directly asked in the end-user questionnaire, three out of four users (73%) perceive the quality of public services in the regional portals as good (see figure 33).

<sup>19</sup> An analysis of confident versus non-confident users did not appear feasible due to the low absolute number of users non-confident (in using a PC).

Respondents may not have fully understood or taken into account the difference between public and commercial services. Despite the fact that few commercial services were available during the core evaluation period in most regions, the (positive) statements regarding their quality can be interpreted as an indication of users' expectations to have commercial services available.

**Figure 33: To what extent do you agree with the following statement? "The quality of public/commercial services provided in the regional portal is good"**



Source: End-User Questionnaire 2002; n public services=67, n commercial services=58

Interviews documented the responses from all 68 interviewees regarding their overall impression about CENTURi<sup>21</sup> public and commercial services, their positive features as well as services/features that need to be improved.<sup>20</sup>

When asked what their opinion was about the public and commercial services provided within CENTURi<sup>21</sup>, positive statements prevailed (57%, 39 of 68). There were only twelve outright negative statements, mostly criticising the limited scope of the services offered. ("Poor in relation to what is on offer from existing service providers." "The number of built-in local information and services is too small.")

Typical positive assessments ("good and clear", "useful", "very good initiative") usually referred to user friendliness, ease of use, the overall quality of service provision and well-structured information.

However, some respondents explicitly mentioned that services rendered were quite good considering still being at a trial stage, but they definitely needed to be improved in the future ("good

<sup>20</sup> While there were four different interviews outlines for the respective groups of professionals (see chapter 3.2.1), all interviews began with identical questions regarding the perceived quality of public and commercial services provided within CENTURi<sup>21</sup>.

theme engine but with limited scope at the moment”, “very good initiative open to further improvement”).

One major aspect here was a need for more commercial services to be integrated into the portals. 15 interviewees explicitly mentioned the need to have a mix of public and commercial services. However, as one respondent from Veneto stated, “commercial services are still not within the responsibilities of an (Italian) public administration”.

**Mix of public and commercial services needed.**

The answers to the very first question did not vary much by region or appraisal group. There was just a slight tendency of software developers to have shown an even more positive attitude than the other groups and of the respondents from the UK region to have been more negative.

#### Positive features:

After having given their overall impression of the CENTURi<sup>21</sup> services, the interviewees were asked to specifically mention positive features.

The answers once more reflected the general assessment documented above. Once again, clear organisation, good access and user friendliness were mentioned and general as well as specific future requirements were listed: “Within our future plans are to provide timetables (bus, tram, point-to-point services, train) and route planning services”.

The added value of the CENTURi<sup>21</sup> portal was summarised in the statement of a content/ service provider from Veneto: “There is no opportunity like this one” and made more specific by other content/ service providers: CENTURi<sup>21</sup> represents “a new way to enter markets not yet explored”, “geographic approach to information is certainly a trump card”, “the transport system gives real added value as it provides information that currently cannot be acquired from a single source – this is particularly true of the bus timetable information.”

**CENTURi<sup>21</sup>:  
“A new way to enter markets not yet explored”.**

The theme engine as an approach to integrate various sources of information was mentioned several times as being the most important positive aspect of the CENTURi<sup>21</sup> services since it “embraces all the regional area”.

Two regional and two technical decision makers commented on the limited scope: “themes good but not developed enough”, “the concept is sound but unfortunately the quality and consistency of services/features available on the system fall short of expectations”, “the examples that you can find under child care, booking of facilities and e-democracy are very good but they need to be improved”.

There were no obvious regional differences in the answers concerning the positive aspects of the CENTURi<sup>21</sup> services.

Services/features to be improved:

Finally, the interviewees were asked which services/ features of the CENTURi<sup>21</sup> portal still needed to be improved. The scope of information and services was mentioned once again here, partly as a general problem (“more online services would be necessary”), partly as specific request (“not enough consultations in e-Consult”, “enlarge the function booking of facilities”).

**“more online  
services would be  
necessary”**

Content and service providers in general were rather critical of CENTURi<sup>21</sup>, whereas regional decision makers mostly asked for an extension of the scope, and software developers mostly referred to very specific features that needed improvement.

Further issues mentioned by individuals included security, speed, different languages to be made available and flaws.

Overall Interview Assessment:

A wide range of answers from very positive (“very good initiative”) to very negative (“the supply of services is poor”) was offered. The majority of the answers were positive, acknowledging that CENTURi<sup>21</sup> was on the right track, although the scope of the services and specific features still needed improvement.

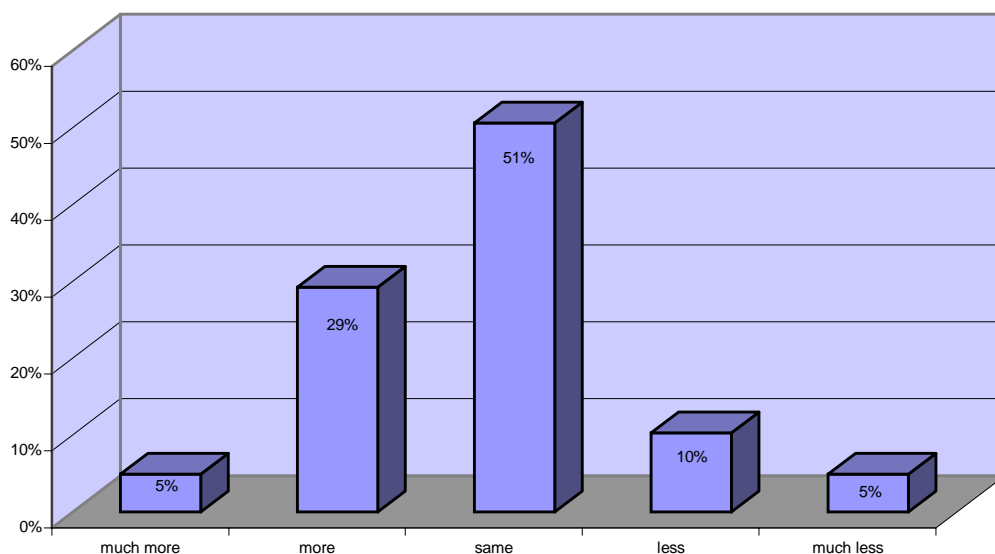
One respondent remarked that the quality of the services was not necessarily something CENTURi<sup>21</sup> could control: “In practice most services are delivered through links with other service providers where there is no direct control over the way in which the service is built and delivered.” CENTURi<sup>21</sup> can do its best to integrate various services but cannot be made responsible for content/ user friendliness of other sites.

**CENTURi<sup>21</sup> in Comparison to Other Internet Sites**

Every third interviewee (34%) likes the CENTURi<sup>21</sup> site better or much better than other Internet sites. Only 15% like it less or much less.

On a scale from 1, being much more liked than other Internet sites, to 5, being much less liked, CENTURi<sup>21</sup> achieves an average grade of 2.81 overall (see also figures 34 and 35 below) and thus is classified slightly above comparable Internet sites.

**Figure 34: To what extent do you agree with the following statement?  
"In comparison to other Internet sites, I like CENTURi<sup>21</sup> ..."**



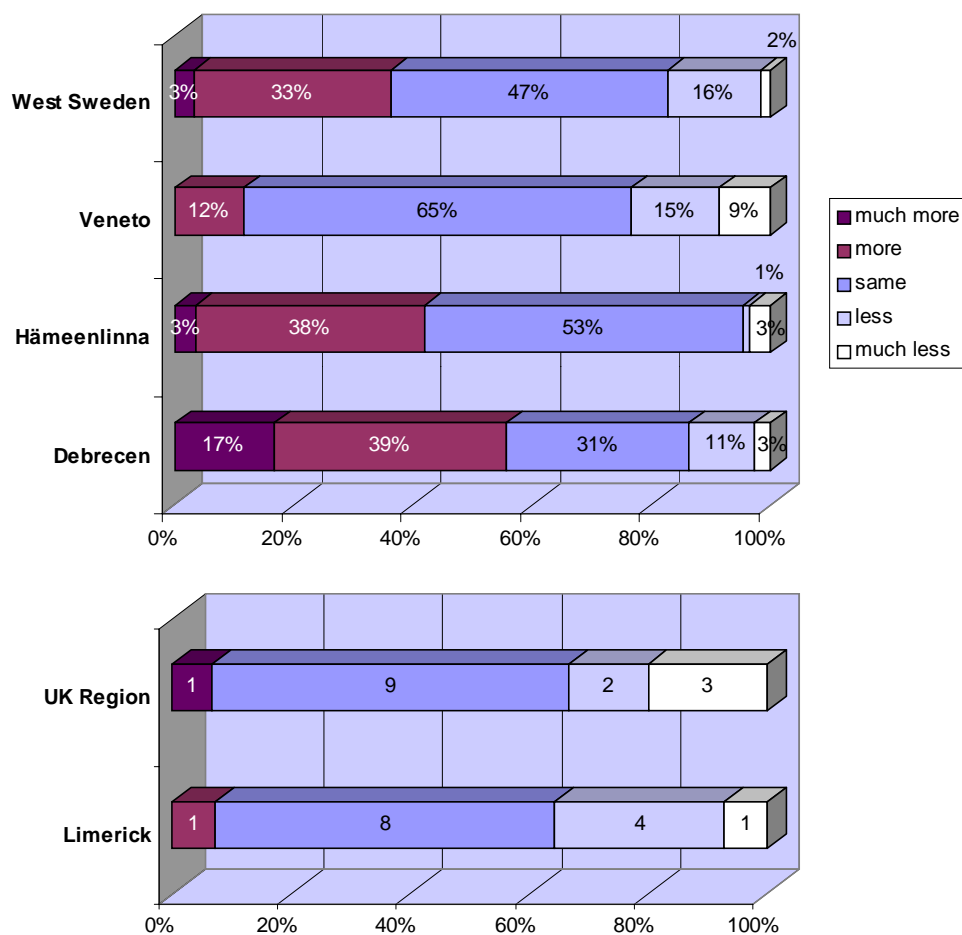
Source: End-User Questionnaire 2002; n=243

Regional notations differ from "slightly more" (Debrecen) to "slightly less" (UK Region)

Debrecen:	2.44	(36 users provided statement)
Hämeenlinna:	2.63	(86 users)
West Sweden:	2.79	(58 users)
Veneto:	3.21	(34 users)
Limerick:	3.36	(14 users)
UK Region:	3.40	(15 users)

These "grades" have to be used with care, since regional portals were not directly comparable (for example different services offered, different operational environments, etc.). In addition, users in the regions had to set their regional CENTURi<sup>21</sup> portal in relation to other Internet sites, for example other available portals in the region. Several good competitor sites in, for example, the UK or Ireland, could have been the reasons for rating the respective CENTURi<sup>21</sup> portal relatively low.

**Figure 35: To what extent do you agree with the following statement? "In comparison to other Internet sites, I like CENTURi<sup>21</sup> ..." – Regional Breakdown**



Source: End-User Questionnaire 2002; n=243

### Online Complaints and Suggestions

Online complaints and suggestions provided direct feed-back on the quality of services offered through CENTURi<sup>21</sup>.

On each regional portal, users could provide feed-back about the respective regional portals. These entries were categorised in complaints and suggestions.

#### Complaints

There were few (24) complaints.<sup>21</sup> The low number of complaints was a positive result ("not much to complain about"), only to a (presumably) lesser extent it could also be an indica-

<sup>21</sup> There were eleven complaints from the UK Region, four from Veneto and West Sweden, three from Limerick as well as two from Debrecen and Hämeenlinna.

tion of the limited interest in being involved in CENTURi<sup>21</sup> (“not my CENTURi<sup>21</sup>”).

The qualitative analysis allowed deriving the following categories of complaints and suggestions:

- general usability
- content
- lack of online help

“not much to  
complain about” or  
“not my CENTURi<sup>21</sup>”?

The main reason for usability **complaints** were error messages users received when navigating through a regional portal. One user did not like the fact that s/he had to register again when moving from one portal to the next.<sup>22</sup>

Several complaints were content-related. Some users criticised that information on the portal seemed irrelevant to the region or was not kept up-to-date. Others complained about the lack of specific services, such as a list of all services or adult education courses (in computing) or an online help service on the portal.

#### Suggestions

53 suggestions<sup>23</sup> were provided on the portals (and categorised into the same groups as the complaints, see above).

Under the usability (and design) category, suggestions focused mainly on proper navigation within the portal and specific, and, of course, rather subjective remarks regarding colour, site set-up, etc.

One user from the UK Region pointed out the importance to avoid jargon. In other words, it is important to “speak the same language” as the users in order to not let them guess and, ultimately, leave the portal frustrated.

A Debrecen user suggested the use of interactive pages in order to respond immediately to news or events. This could mean, for example, any entry or response from the user is highlighted as new (perhaps in a different colour) on the portal.

Finally, a user from Hämeenlinna expressed her/his appreciation about the clear layout of the regional portal, and that it was possible to view the portal even as a visually-impaired person.

In terms of content, the palette of suggestions was large (information requests concerning theatre, jobs, flights, accommodations, local enterprises, etc.). It included specific links to sites and events, and also the suggestion to not use the public transport routes as default on the Debrecen portal and to

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<sup>22</sup> All six regional CENTURi<sup>21</sup> portals offered links to the, respective, other five regional portals.

<sup>23</sup> Out of the 53 suggestions, twenty came from users in the UK Region, thirteen from Debrecen, nine from Limerick, six from Hämeenlinna, four from Veneto, and one from West Sweden.



include practical information on burial grounds (and their location on the map) in Limerick.

Other suggestions focused on online help options. Three users in Debrecen expressed that online help would be useful for them ("more assistance for the inexperienced user to find orientation").

It needs to be considered, once again, that the regional portals were not complete service platforms, but demonstration sites with a three-month operational window and no guarantee of future development. It was for this reason that a user from Hämeenlinna commented "it was difficult to provide an assessment of the items offered on the portal."

While this is true, it still became evident that users did not appreciate obstacles in getting to the information they were looking for. Considering the many competing means of information retrieval and service provision, a regional e-government portal, once fully implemented and operational, needs to put particular emphasis on good ease of use, online support as well as relevant and up-to-date information.

A summary of the quality of service chapter is provided in the following chapter 5.1.4.

#### 5.1.4 Summary

##### **Indicator category: Actual Use**

As a result of the analysis, CENTURi<sup>21</sup> showed a clear public service profile and a high demand for local and regional information. On the other hand, there was a relatively low level of interaction and transaction on CENTURi<sup>21</sup>.

Compared to the Internet, CENTURi<sup>21</sup> has a much higher interactive profile. The traditional, public sector electronic service profile is characterised by passive services, and the active promotion of interactive services is highly recommendable for CENTURi<sup>21</sup>.

Satisfaction with CENTURi<sup>21</sup> among users was high. Younger users were more satisfied than older users, the possible reason being the general resistance of older citizens to make themselves familiar with new and complex “technologies” such as CENTURi<sup>21</sup>.

The intention to use CENTURi<sup>21</sup> in the future was high (60%). However, there was a relatively high percentage of undecided users (24%) that still need CENTURi<sup>21</sup> needs to “win over”.

##### **Indicator category: Variety of Service Provision**

The variety of service provision concerned the balance between public services and commercial services provided through CENTURi<sup>21</sup>. Clearly, there was no such variety demonstrated during the core evaluation period, since the focus on the regional portals was on public service provision. Any inclusion of commercial services was indirect. No transactions were directly handled in any of the six regional portals. However, a considerable number of public services was developed.

Considering the apparent general interest and participation of citizens in the regions in CENTURi<sup>21</sup>, the community involvement in terms of the amount of applications that have been put on the CENTURi<sup>21</sup> portals was low. Citizens demonstrated a large amount of ideas for application. However, the obstacle to actually put an application online may have been too high in technical terms. Furthermore, strategic policies of local or regional authorities as well as legal issues over ownership, maintenance, risk of litigation and amount of human resources required may have hindered progress.

##### **Indicator category: Quality of Service**

The overall satisfaction, in particular with the quality of public services on CENTURi<sup>21</sup>, was confirmed.

CENTURi<sup>21</sup> portals subject to evaluation were not fully developed trial versions. They were characterised by a relatively high level of complexity (for example themes) and users needed to log on (register) before being able to use the portals. Despite these circumstances, it was generally perceived as easy to navigate through CENTURi<sup>21</sup>. Nevertheless, some specific

deficiencies in navigation and usability were detected that need to be fixed.

The quality of the content (not the quantity!) was perceived high in all regions. Information provided on CENTURi<sup>21</sup> was generally perceived as being useful. Online help features could improve the overall perception of service quality as well as the confidence of the users.

The scope of services needs to be extended, in particular more content and services was demanded by the users, emphasising also the need to have a good mixture of public and commercial services available.

The theme-based approach was a success and real innovation. This promising concept was, however, not the specific target of evaluation.

It became obvious that the potential of themes and generic services such as e-consult and i-consult was given, but that it was not fully exploited. More content as well as more interactive and real-life services are needed.

## 5.2 Secure Access to Public and Private Services

Security issues are a major concern of users and providers with respect to service provision, especially through the Internet. CENTURi<sup>21</sup> was expected to offer improvements in terms of access security and thereby to increase the level of trust in the Internet medium. In addition to security improvements, reduced access costs to public and private services were anticipated to increase access rates. The Internet as a secure medium to obtain services was also foreseen to be used by citizens who are traditionally less interested in computing.

### Assessment Objectives – Impact 2:

- Documentation of (changes in) Internet security
- Measurement of access rates and use patterns of CENTURi<sup>21</sup> services

For this particular impact, indicators are analysed based on three indicator categories defined by the Evaluation Team, i.e. access (chapter 5.2.1), security (chapter 5.2.2), and time saving (chapter 5.2.3).

#### 5.2.1 Access

##### Target users who use CENTURi<sup>21</sup>

It was expected that CENTURi<sup>21</sup> would lead to higher Internet access rates among the target groups defined below.

There were two types of target users:

1. Users who belong to a target group that typically uses the Internet less frequently than the average user. Depending on the respective region, these groups included, for example, women and elderly.
2. Users who belong to a target group that could gain above-average benefits from using the Internet (for example, citizens with limits to their physical actions which could be overcome by obtaining services through the Internet, or citizens who live in remote or isolated parts of the region, and others).

Users belonging to target group 1 were analysed in the framework of the user categorisation analysis. However, the roll-out phase of CENTURi<sup>21</sup> was too short to lead to higher access rates among, for example, women or elderly.

It was not possible to evaluate target group 2 within the project.

Both target groups could be specifically targeted during the evaluation of take-up (or other) projects, for example, by means of a specific survey addressed at these target groups, especially under social inclusion and regional cohesion aspects.

## 5.2.2 Security

### Security incidents

Security issues are a major concern of users and providers with respect to service provision through the Internet. It was expected that CENTURi<sup>21</sup> allowed for a more secure access to public and private services by reducing the percentage of security incidents. Improvements in access security were then foreseen to contribute to the overall CENTURi<sup>21</sup> goal of promoting the widespread use of electronic services by citizens.

The software used to document security incidents in some sites was Blacklce. Blacklce automatically logged security incidents and grouped them in four categories:

**Fatal**, e.g. an intruder has succeeded to break into the CENTURi<sup>21</sup>-server. These events should never appear on a CENTURi<sup>21</sup>-server. These events often cause severe damage to the system and make it necessary to block availability for a considerable amount of time while the system recovers.

**Critical**, e.g. an intruder is trying to overload/crash or infect the CENTURi<sup>21</sup>-server by using worms, viruses etc. These events are very critical and there might be some interruptions on the server usage if the firewall protection and OS protection is not up-to-date. These incidents are quite occasional but not rare events.

**Serious**, e.g. an intruder is trying to “ping sweep” (or something like that). The operator should keep track of the frequency of these events. Normally, these incidents do not cause any interruptions on server usage. These are second most common incidents.

**Suspicious**, e.g. an intruder is probing CENTURi<sup>21</sup>-servers ports etc. These are harmful events not causing any interruptions on server usage. These incidents are most common and part of everyday life in Internet community.

The regions of Debrecen and Hämeenlinna used Blacklce software to log any security events. In both regions there were no serious, critical or even fatal security incidents according to the definition provided above. Only suspicious incidents occurred (4,008 in Debrecen within the final four weeks of the core evaluation period and 2,395 in Hämeenlinna over a period of twenty weeks). Limerick used “Microsoft Internet Security and Acceleration Server, Service Pack 1” and logged also only suspicious incidents, namely 401 within ten weeks beginning on 1 March 2002.

In West Sweden, there were 510 blocked and 7,481 passed attempts. Telia's (technical partner of West Sweden) conclusion is that the West Swedish CENTURi<sup>21</sup> portal is secure. All attacks or security incidents were blocked in the firewall and never passed to the CENTURi<sup>21</sup> webserver.

**no noteworthy  
security threats  
to any of the  
regional portals**

The UK Region reported no security incidents.

No data on security incidents were submitted by the Veneto Region.

The automatic count data revealed that there were no noteworthy security threats to any of the regional portals during the core evaluation period. It can, therefore, be concluded that the CENTURi<sup>21</sup> regional portals were indeed secure.

The regions were asked to provide a brief statement regarding the security on their portal. In support of the conclusion from above, these statements (edited) are listed in table 17 below.

**Table 17: Regional Security Statements**

Regional Security Statements
<p><b>Debrecen:</b></p> <p>The firewall is on a common single network with the other computers of the Mayor's Office, this means that the rules of the firewall should have been prepared to meet the following requirement: no network packages should go through to the server behind the firewall. Since the two servers are on a single network with the other computers, there are many so called broadcast messages attempting to reach the servers, and these messages are blocked by the firewall. Nevertheless the system stores these packages just the same way as in case of the other not enabled packages, and they can be retrieved later by the exact date and time, if the administrator wants to know about what had happened. The most part of the broadcast messages arrives through tcp or udp protocols into the port range between the ports no 137 and 139. These messages arrive from the other computers of the Mayor's Office, and they are not taken into consideration when preparing the statistics. The communications between the server of the transmitter section and the server behind the firewall, and the packages of the administration machine are in a similar way not taken into consideration in the statistics.</p> <p>Typical break-in attempts can be detected on the web, ftp, smtp, pop3, telnet and ssh protocols. These ports are closed on the server by default, but the firewall also refuses all the request of this kind.</p> <p>According to the weekly summarized data the firewall has given a common average value on the break-in trials.</p> <p><b>Hämeenlinna:</b></p> <p>Security is one of the most important issues in CENTURi<sup>21</sup>. The basic idea of CENTURi<sup>21</sup> was to build a platform that can handle different kind of transactions, e.g. money payments and confidential information securely. To build a system that has a waterproof security policy wasn't an easy task to plan but it was what we needed when we started to build our system.</p> <p>Hämeenlinna region's CENTURi<sup>21</sup> system is placed on one server machine that has Windows 2000 server operating system running. To guarantee the highest security level, the operating system has been updated every time when Microsoft has published a new service pack or other security update. Also we allow only http/https - TCP/IP connections to the server.</p> <p>To physically protect the system, we have placed the CENTURi<sup>21</sup> machine on our server room where only authorised persons are allowed to enter. The server's administrator's password will be changed in regular intervals and every time when administrative personnel changes. On every night we take backups on tape. Those tapes will be stored in a different fire department in case of fire. Also we sent one tape per week to local bank's safe. So for example if the whole building where our servers and backups are located has serve massive damage and the servers are destroyed we are able to restore our CENTURi<sup>21</sup> system quickly to a new server machine and continue operating the system.</p> <p>To protect our CENTURi<sup>21</sup> server from attacks coming from network, we use firewall software called BlackIce. The firewall software has proven to be very safe to protect different kind of systems and in Hämeenlinna region it is widely in use. The software offers several security levels for different systems.</p> <p>In our CENTURi<sup>21</sup> machine we use the most strict security levels the BlackIce can offer. Also we have limited the protocols that end user are allowed to use and their port numbers. Also in that firewall software we have automatic intruder detection in use that will block automatically those connections that are used to attack into our</p>

### Regional Security Statements

system. Every attempt to break in our system is logged on firewalls log file. So we are able to hunt down the intruder and if necessary to start legal actions against him/her.

#### Limerick:

Limerick County Council underwent a thorough security investigation. Results are restricted to authorised staff of Limerick County Council.

#### UK Region:

With regards to security incidents, I can confirm that there have been no breaches of security of any description whatsoever throughout the CENTURI<sup>21</sup> evaluation activity.

The only possible security incident that we could have encountered would be where someone tried to hack a password. However, it is not possible in the system that we have at present to differentiate between when someone genuinely mistypes "FWdfer" rather than "FWefer" as opposed to a hacker typing in "FWdfer" in an attempt to guess a password.

#### Veneto:

No security report or data provided.

#### West Sweden:

Telia, the main technical partner of the West Swedish Region provided the following comments about the BlackIce categorisation of security incidents and the security of the West Swedish portal, in particular:

The four different levels (fatal, critical, serious and suspicious) are ambiguous and indistinct defined. Some problems have occurred to decide what category some security incidents belong to.

More or less all blocked rows can be categorised in the **suspicious** level, since many of them can not be innocent enters on the keyboard. Some are searching for things or services, which they can use of their own or to master the server machine.

The attempts where somebody tries to find shared folders or make couplings to the disks in Windows are in the category **serious** or **highly suspicious**. These attempts are made to secure the disks on the server (port 139, port 137 can be harmless). A great number of the attacks (e.g. port 12345) are scans for Trojans. Those are also **serious**.

According to definition, the **critical** level is when somebody tries to crash or infect the server by e.g. using worms. Probably have worm attacks occurred and especially the worm SqlSnake, which presumably caused a lot of rows in the log-file, since the 21 May 2002. But fortunately the firewall blocked the worm so no incident happened.

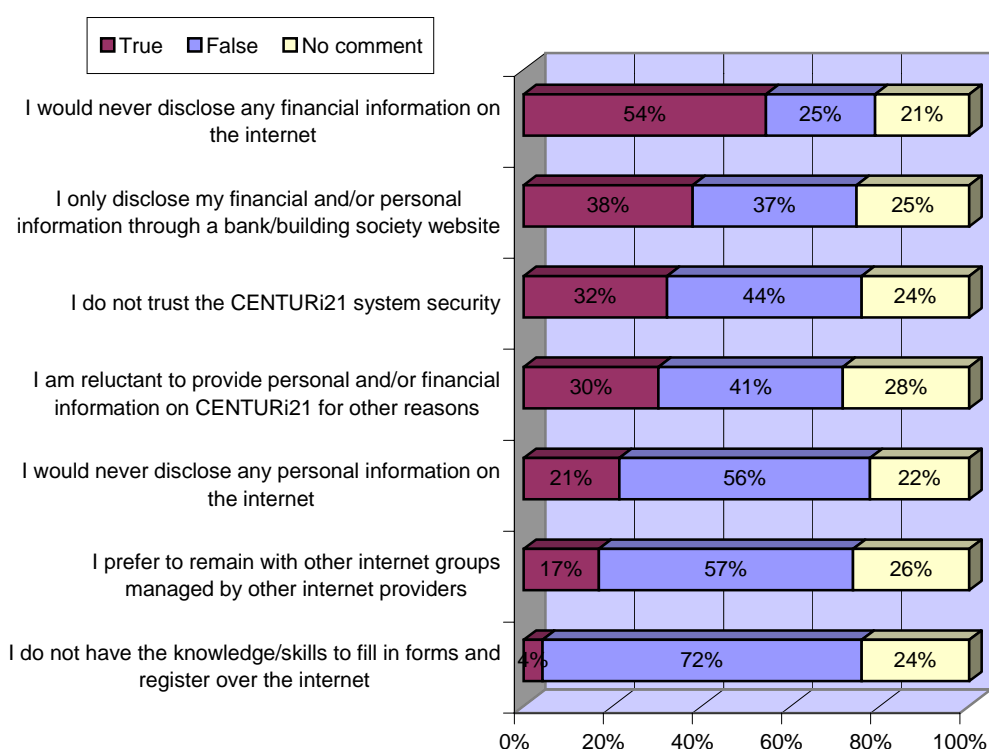
## Trustworthiness

It was expected that users developed a high level of trust in CENTURi<sup>21</sup>, since it was operated and promoted by local/regional governments. Such trustworthiness was anticipated to then contribute to an increased use of public and private services. Once the reliability and the security of CENTURi<sup>21</sup> was widely known even previously reluctant users were expected to access the platform.

Trustworthiness was considered as a key factor in achieving the overall CENTURi<sup>21</sup> goal of promoting the widespread use of electronic services by citizens.

In the end-user questionnaire, users provided statement regarding their trust in CENTURi<sup>21</sup>.

**Figure 36: Do you feel that the following statements are true or false?**



Source: End-User Questionnaire 2002; n=261

The questions seen in figure 36 above were generally answered by only three out of four respondents. It is remarkable that more than half of all CENTURi<sup>21</sup> users would never disclose any financial information<sup>24</sup> on the Internet and one out of five users would not provide personal information.

<sup>24</sup> 77% of all users possess a credit/debit card – one of the prerequisites to conduct any financial transaction (involving purchasing) online.



32% of all users stated they did not trust the CENTURi<sup>21</sup> security system.

### Trust to Provide Financial Information Online

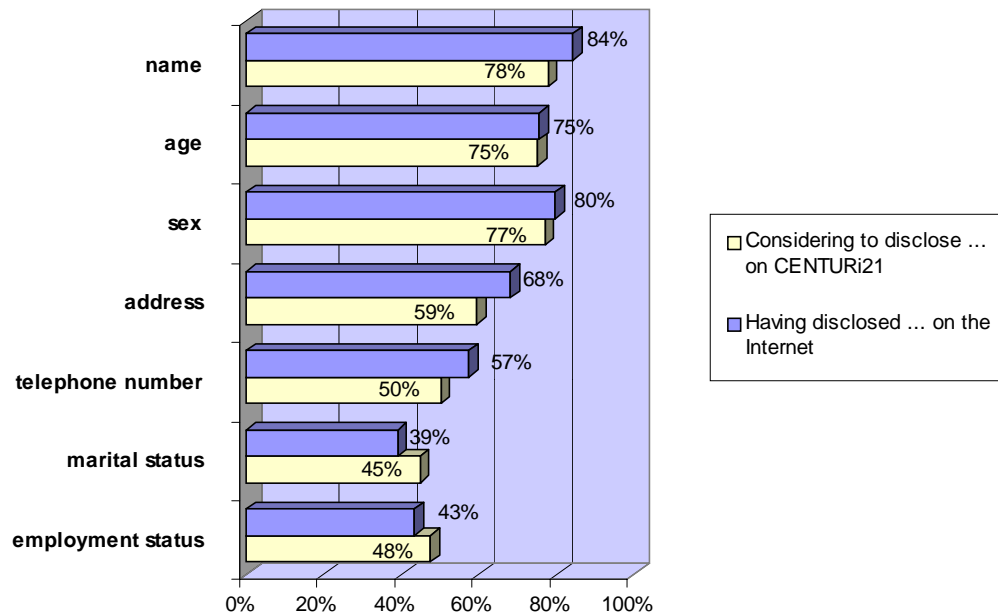
The analysis of the end-user questionnaires showed that 76% of all users never disclosed any financial information on the Internet. 78% of all users said “no” when asked whether they would consider disclosing financial information on CENTURi<sup>21</sup>. Therefore, the vast majority of users could be considered “reluctant” in terms of providing financial information online. CENTURi<sup>21</sup> did not appear more, but also not less trustworthy than the Internet itself. Only 32% of all users stated flat-out that they did not trust the security system of CENTURi<sup>21</sup>.

One in three users (32% or 84 out of 261), while trusting the security system (of CENTURi<sup>21</sup>) have not provided financial information on the Internet and would not provide it on CENTURi<sup>21</sup> either.

Therefore, regardless of their perception of the system security, there was a large amount of users (minimum one out of three users) who would not provide financial information on the Internet.

A further indication of similar trust in the Internet and CENTURi<sup>21</sup> provides figure 37 below.

**Figure 37: Information disclosed on the Internet or considered to disclose on CENTURi<sup>21</sup>, respectively?**



Source: End-User Questionnaire 2002; n=261

About three out of four respondents considered disclosing their name (78%), sex (77%) and age (75%) on CENTURi<sup>21</sup>. The approval rate decreased to about 50% when asked to provide address (59%), telephone number (50%), marital status (49%) or employment status (48%) on CENTURi<sup>21</sup>.

- Debrecen, in general, had lower approval rates (15-21% lower depending on kind of information).
- Hämeenlinna, in general, had higher approval rates (2-10% higher depending on kind of information).
- The analysis of Limerick was difficult due to the low number of responses. However, only two out of fourteen respondents each would have considered disclosing telephone number, marital status, or employment status on CENTURi<sup>21</sup>.
- UK Region low numbers made it impossible to derive deviations.
- Veneto showed a range from minus 16% to plus 10% deviation from the average over all regions.
- West Sweden, in general, had higher approval rates (12-19% higher depending on kind of information)

Scandinavian users, i.e. those from Hämeenlinna and West Sweden were the least reluctant to provide personal information on CENTURi<sup>21</sup>.<sup>25</sup>

In conclusion, CENTURi<sup>21</sup> was perceived to be just as trustworthy as the Internet.

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<sup>25</sup> End-user questionnaire data revealed that West Swedish users had high approval rates (significantly above the average over all regions) when asked if they would consider disclosing personal information on the Internet. This was true for the categories name, age, sex, address, telephone number, and employment status, but not for the marital status. Here, the approval rate was only 7% and therefore about 32% lower than the average. It turned out that, due to a translation error, users in West Sweden were asked if they would disclose their military status rather than their marital status. The low approval rate for disclosing the military status allows the conclusion that military and marital status are perceived as two significantly different things in West Sweden!

For the data analysis, the West Swedish sample was excluded from the total number of responses to this question. The average was derived from the 203 responses from the other five regions.

### 5.2.3 Time Saving

It was expected that, in comparison with other Internet platforms, end-users, content providers, and service providers would be able to gain time when completing given tasks by using CENTURi<sup>21</sup>.

Task observations were conducted by all six regions. The independent Evaluation Manager viewed the gathered time saving data as not suitable for a quantitative analysis of time savings (see chapter 3.2.3 for more detail).

Hence, the available data did also not allow for a monetarisation of the (observed) time savings.

In order to provide an economic perspective within this report, a “business plan outline for e-government deployment” is provided (see table 18 below).

Some Internet links regarding business planning are:

[www.tentelecom-bps.net](http://www.tentelecom-bps.net)

[www.gate2growth.com](http://www.gate2growth.com)

**Table 18: Business Plan Outline for E-Government Deployment**

Steps in Business Planning	Description/ Specific Requirements
Defining the goal(s)	At the start of business planning, a local/ regional authority should define its regional scope for e-government deployment and clearly state its long-term goals, for example, what percentage of public services should be online by year 20XX, which services are these; to what extent should commercial services be incorporated in the palette of services, etc.
Determining the marketing strategy	Local/ regional authorities should determine their marketing or deployment strategy (within a regional scope) in order to establish the market demand.
Identifying the “product”	It should be stated what the “product” (or mix of services) of the local/ regional authority is. This includes the constituting elements of an attractive mix of products (information, interaction – full transaction; public – private, free – paid services, etc.).
Identifying the human resource base	It should be known who the key employees will be to conduct the e-government endeavour, in particular, what kind of profile the employees should have in terms of experience, knowledge, skills, etc.
Defining the regional market	Past, present and future (regional) markets need to be defined. Of particular interest are: <ul style="list-style-type: none"> <li>- what are the potentials of e-government services</li> <li>- what kind of e-government services are already online,</li> <li>- who are the competitors, i.e. who is offering e-government services</li> <li>- what are external factors that could influence potential success</li> </ul>
Outlining the chances	The specific problems and chances should be explained, in particular, what does the customer expect and what can the business offer to satisfy these expectations.

Steps in Business Planning	Description/ Specific Requirements
Formulating the business concept	Concept and strategy that are the basis for the endeavour need to be formulated carefully. In terms of offering e-government services, the key technologies should be defined.
Recognising the multi-actor environment	The complexity of the delivery chain (including back-office functions) needs to be considered in technical and probably even more important in institutional terms. In addition, IPRs in the value chain should be considered.
Identifying competitors	Competitors need to be analysed in detail (and more specifically than in the market definition), i.e. who are they, what do they offer, what are the advantages of (your) business compared to the competitors, etc.
Defining tangible goals	Specific tangible goals within the next five years, i.e. market share, aspired market share (profit), etc. should be defined.
Setting-up the finance plan	Financial planning plays a crucial role in business planning. A detailed finance plan, including price calculations, expected savings in traditional service provision, expected profit should be envisaged. It is important to formulate goals in an operational manner in order to allow for an annual check of (intermediate) goals.
Identifying required resources and managing the business	All required resources need to be identified. This includes human, financial, and technical resources. It should be clearly stated which resources will need to be provided externally (for example in terms of technology, services, products, etc.). Business managing also includes a well-functioning delivery chain and good service levels. Specific emphasis needs to be placed on the provision of content from external service providers.
Assess risks and profit	A careful assessment of risks should be conducted, i.e. what are the risks and how big are they. Accordingly, chances for profits need to be assessed.
Identify main tasks	Finally, tasks need to be identified both in the short-term as well as in the long-term. Short-term tasks will need to be solved or decided right away, while long-term tasks involve problems that need to be solved in the long run. Contingency plans should be set up, i.e. the consequences of putting of problem solutions/decisions should be part of business planning.

## 5.2.4 Summary

### Indicator category 2.1: Access

It was expected that CENTURi<sup>21</sup> would lead to higher Internet access rates among the specifically defined target groups. However, the roll-out phase of CENTURi<sup>21</sup> was too short to lead to higher access rates among, for example, women or elderly.

In addition to recommending a longer roll-out and evaluation period, the target groups defined for evaluation purposes within CENTURi<sup>21</sup> could be addressed by means of a specific survey, in particular, under social inclusion and regional cohesion aspects in future projects or programmes.

The evaluation exercise concentrated on access security (rather than access rates).

### Indicator category 2.2: Security

Access security of the CENTURi<sup>21</sup> regional portals was confirmed. Only security incidents not causing any interruptions on server usage were reported. Such incidents are most common and part of everyday life in Internet community.

Trustworthiness was considered as a key factor in achieving the overall CENTURi<sup>21</sup> goal of promoting the widespread use of electronic services by citizens. The evaluation revealed that CENTURi<sup>21</sup> needs to promote (and explain) its high security level to the users, also in order to distinguish it from “the Internet’s” security level.

It is remarkable that more than half of all CENTURi<sup>21</sup> users would never disclose any financial information and one out of five users would not provide personal information on the Internet.

32% of all users stated they did not trust the CENTURi<sup>21</sup> security system, 44% trusted it and 24% were undecided. CENTURi<sup>21</sup> is secure, but its security system is not yet trusted widely.

### Indicator category 2.3: Time

A quantitative analysis of time savings was not possible with the data available.<sup>26</sup> Consequently, the monetarisation of time savings was also not feasible. An outline for an e-government business plan was provided in order to include the economic perspective of e-government planning.

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<sup>26</sup> Task observations comparing how and in what time users completed tasks through CENTURi<sup>21</sup> in comparison to traditional means of information retrieval (phone calls, newspaper, etc.) or other Internet portals revealed time could be actually be saved by using CENTURi<sup>21</sup>. However, data quality and quantity did not allow deriving any results of statistical significance.

### 5.3 Co-operation Between Content and Service Providers

CENTURi<sup>21</sup> was expected to lead to positive changes on co-operation levels (in terms of quality and quantity) between municipalities and other tiers of regional and local governments, within one organisation, between the private and public sector, and between private sector operators. Changes in co-operation were expressed in terms of increased contact via electronic media and joint initiatives.

#### Assessment Objectives – Impact 3:

- Documentation of qualitative improvements between providers
- Comparative measurement of joint service offers

#### Interview of Content and Service Providers

In the CENTURi<sup>21</sup> regions 15 content and service providers were interviewed answering questions prepared specifically for this group. Six came from Veneto, five from West Sweden, three from the UK Region and one from Debrecen. The content and service providers were represented by staff from local authorities (nine), commercial service providers (five) and one “other” provider the role of whom was not identified further.

Unfortunately, many questions remained unanswered by the content and service providers.<sup>27</sup> In addition, there were, in general, more interviewees who did not provide their approval or disapproval to statements than those who did.

Asked what kind of data or information they provided to the CENTURi<sup>21</sup> portals, content and service providers mentioned information on community groups, e-democracy, childcare, tourist information (e.g. availability of hotel rooms), “information to be registered in the portal”, service provision for an events database, and an on-line questionnaire using the e-consult application.

Concerning the data/information provision process, it was observed by a content provider from the UK Region that “the data collection process is more or less independent of the CENTURi<sup>21</sup> system”. The applications that require data in general had to have some security and “ownership”. Therefore,

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<sup>27</sup> There may have been several reasons for not entirely completing interviews during CENTURi<sup>21</sup> evaluation. The particular interview of content and service providers included 32 questions and demanded at least 30-40 minutes of time in order to answer every question thoroughly. In addition to being rather time-consuming, interviewees may not have understood all questions. In an interview, it was then up to the person conducting the interview to offer clarifications, give examples, slightly rephrase the question, skip question that became obsolete after a response to another question, etc. Most likely, some of the interviewers lacked the ability to do that possibly because they were not involved throughout the entire project duration.

most service applications had a registration process and data was only published when authorised by the system.”

“The ‘average user’ experienced difficulty in using some of the service applications” – according to one interviewee this was due to the fact that CENTURi<sup>21</sup> could not provide the (full time) resources normally needed for data management.

#### Changes in co-operation:

Content and service providers were asked what their key expectations<sup>28</sup> of working with other professional partners were when joining CENTURi<sup>21</sup> and whether these expectations were met.

14 of 15 content and service providers commented. Expectations ranged from “I had no expectation” via “transfer of knowledge and expertise” to very concrete expectations, such as “to implement a portal that facilitates the provision of information to the citizens in a compact, well-edited and, at the same time, filtered and grouped way”. Networking and learning from each other were mentioned several times, “gain in understanding of technologies, processes, methodologies, etc.” seemed to be about equally important, and “greater publicity” was another topic mentioned more than once. “Less cost, fewer problems, use of state-of-the-art technology” were expectations more difficult to be met and “improving the quality of life” was just as ambitious, but supposedly to be achieved by increasing “the level of supplying information to the citizens”.

**Expectations included the implementation of a portal that facilitates the provision of information to the citizens in a compact, well-edited and at the same time filtered and grouped way.**

Only one respondent stated downright that her/his expectations were not met and another commented that “the CENTURi<sup>21</sup> process was so long winded that other means have been found to test the e-government process”. 10 out of 15 interviewees answered in favour of CENTURi<sup>21</sup> and included, for example, positive experiences with e-democracy.

Asked whether their expectations regarding the co-operation with other professional partners had been met entirely, five interviewees agreed, four disagreed, while the remaining six interviewees were undecided. It is likely that the phrasing of the question, i.e. the inclusion “entirely”, prevented at least some content and service providers from responding in a more positive way.

Content and service providers were asked to explain how they co-operated with other professional partners within CENTURi<sup>21</sup>. Only four interviewees commented. Asked what worked well “working towards a common goal kept partners focused” and opened a “new door for information channels” were mentioned as well as “shared learning” and “certainly transferred knowledge”.

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<sup>28</sup> All respondents could indicate at least three expectations they had when joining CENTURi<sup>21</sup>.

Half of the respondents (seven) answered “yes”, the other half (eight) said “no” when asked whether the co-operation through CENTURi<sup>21</sup> resulted in any new collaborations, new projects beyond CENTURi<sup>21</sup>, or whether it proved any new strategic visions.

Those answering “yes” were asked to specify their reply. Answers mostly reflected “new strategic visions” also in the sense of restructuring one’s own company or working processes. Only one respondent mentioned a new collaboration in another project that originated in CENTURi<sup>21</sup>, for another co-operation in CENTURi<sup>21</sup> led to “integration with other providers of tourist services”.

When asked whether they would recommend that an organisation/ institution comparable to theirs uses CENTURi<sup>21</sup>, again, seven respondents answered “yes”, and eight “no”. Both groups were asked to specify why they did or did not recommend the future use of CENTURi<sup>21</sup>.

“Online data and information transfer in both directions” was a reason for recommending the use of CENTURi<sup>21</sup>, the innovative approach was mentioned, too, as was greater publicity and more service at less costs. Finally, CENTURi<sup>21</sup> was seen as “an opportunity to reach new citizens who are visiting CENTURi<sup>21</sup> for other purposes.

Respondents not endorsing recommending the use of CENTURi<sup>21</sup> argued that developments in e-government happened at a fast pace and it did not offer anything that was not offered elsewhere. Other reasons included “poor content” as well as the opinion that many commercial products offered the same, and municipalities wanted to design their websites in line with their overall profile rather than following the CENTURi<sup>21</sup> design.

Only 11 of 15 content and service providers gave an opinion whether they expected a commercially attractive co-operation through CENTURi<sup>21</sup> in the future.<sup>29</sup> Six of them chose “don’t know – too difficult to say”, four said “no” and one answered “yes, in the mid- to long-term”.

Content and service providers were asked about e-commerce in the context of CENTURi<sup>21</sup>. One respondent from a local authority commented that “the private sector is well ahead of us” and another one would prefer to have an e-commerce mechanism managed by his own company rather than by CENTURi<sup>21</sup>. Security issues were also addressed as having to be solved before e-commerce was integrated.

**“the private sector  
is well ahead of us”**

Asked about the major obstacles for e-commerce through CENTURi<sup>21</sup> both legal problems as well as problems in getting the local commercial partners to participate were mentioned. Local authorities do not have much to sell according to one

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<sup>29</sup> Answer options were: yes – short-term (next 12 months), yes – mid- to long-term, don’t know – too difficult to say, no.



respondent, and a provider from Veneto explained that “e-commerce for us is just having the possibility through CENTURi<sup>21</sup> of making a link to our e-commerce mechanism.”

Only two success factors for e-commerce through CENTURi<sup>21</sup> were mentioned: “the vastness of the market it can reach” and the “availability of desirable products”.

Three interviewees took the chance to give final comments. One of them communicated her/his hope that CENTURi<sup>21</sup> would be “a real aid to the tourist businesses”. Another respondent concluded that the site was sufficient for the time being but that both professional users and tourists would have “to ‘grow’, that is become familiar with the new site”. The interviewee who provided the most detailed assessment throughout the interview concluded the interview by saying “the site had huge potential for development had the content issue been resolved at the beginning of the programme. Not enough resources were put aside by all partners to develop content, which is the main criterion for the users to go to the site. The technical platform cannot be tested properly if the content is not detailed or flexible enough.”

### **Joint Theme-based URLs**

One means of documenting the co-operation between content and service providers was to quantify the number of joint theme-based URLs. The number of joint theme-based URLs in the CENTURi<sup>21</sup> regions was, generally, low and the expected increase over the project life-time was not observed.

### **Summary**

In conclusion, it seems that the content and service providers interviewed had not been deeply involved in CENTURi<sup>21</sup>, consequently they were quite positive when asked for their general assessment, but answers became less positive as the questions required a more detailed analysis. CENTURi<sup>21</sup> was seen as “a step in the right direction” that would still need to be improved in terms of content and services, especially commercial services and handling (usability).

Unfortunately, many questions remained unanswered by the content and service providers, in particular, concerning the co-operation between content and service providers within CENTURi<sup>21</sup>. The few answers given only hinted towards improved working relationships and co-operation between content and service providers improved. In addition, (quantitative) data concerning joint theme-based URLs in the CENTURi<sup>21</sup> regions could confirm an improvement in terms of co-operation.

In order to assess co-operation and working relationships between key actors, evaluation in future e-government and IST projects, in general, needs to specifically focus on these issues.

## **5.4 Interaction Between Citizens and Local/ Regional Governments**

Citizens frequently interact with local and regional governments. Traditionally, such interactions were handled in face-to-face situation that required citizens to physically appear at the respective institution. CENTURi<sup>21</sup> was expected to improve such interactions in terms of, for example, less resistance to the administration or higher utilisation of online services. The number of citizens using services online via CENTURi<sup>21</sup>, participation in e-democracy, and the satisfaction with service provision in general was anticipated to increase.

### **Assessment Objectives – Impact 4:**

- Measurement of citizen/ government interaction levels
- Documentation of perceived qualitative improvements

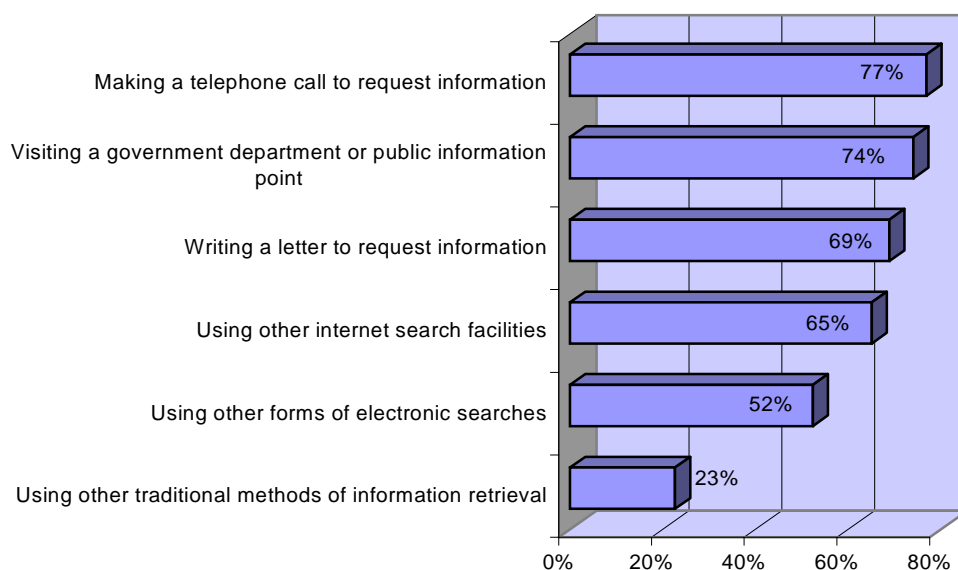
#### **5.4.1 Online Government Service Requests**

It was expected that CENTURi<sup>21</sup> would contribute to a shift in the way government service requests are placed. Government service requests were expected to increase through CENTURi<sup>21</sup> while of offline requests were expected to decrease. Consequently, it was envisaged that the interaction between citizens and local/ regional governments would be more direct and, as such, regarded as an improvement.

The overall size of online CENTURi<sup>21</sup> requests was too small to establish percentages. Therefore, only absolute numbers are reported. Among the six CENTURi<sup>21</sup> regions, most government service requests were placed in West Sweden. Here, 894 government service requests within a period of fifteen weeks were separated into requests concerning childcare (449), booking (257), e-democracy (131), and events (57). In the other regions, no information regarding the focus of the requests was provided. Veneto recorded 314 government service requests within twelve weeks, the UK Region 69 within fourteen weeks, and Hämeenlinna eleven within twenty weeks. No data from Debrecen and Limerick was available.

End-users were asked in the questionnaire whether they would you use CENTURi<sup>21</sup>, in the future, instead of traditional methods of information retrieval (see figure 38 below).

**Figure 38: In the future, would you use CENTURi<sup>21</sup> instead of the following methods for obtaining information?**



Source: End-User Questionnaire 2002;  
n=212 (persons intending, or not yet sure, to use CENTURi<sup>21</sup> in the future )

Out of all users who stated “yes” or “not sure yet” when asked about their intention to use CENTURi<sup>21</sup> in the future<sup>30</sup>, about three out of four users would rather use CENTURi<sup>21</sup> than making a telephone call to request information (77%) or than writing a letter to request information. For two out of three users (69%) CENTURi<sup>21</sup> could even replace visits to government departments of public information points. These are clear statements that CENTURi<sup>21</sup> has the potential to have a significant impact on the way citizens and governments interact.

In addition, 65% of all (possible) future CENTURi<sup>21</sup> users would rather use CENTURi<sup>21</sup> than other Internet search facilities.

A further analysis of user responses revealed that 12% of all users took the opportunity to send e-mails to councillors of local or regional authorities through CENTURi<sup>21</sup>. Considering that not every citizen will frequently feel the need to communicate by e-mail with their councillors, 12% who did this within a three-month core evaluation period is a reasonably high number.

In the regions, the percentages were as follows:

<sup>30</sup> In total, 76% of all users (60% future and 16% undecided users).

Debrecen:	24%
Hämeenlinna:	15%
Limerick:	2 out of 14
West Sweden:	7%
UK Region:	1 out of 19
Veneto:	3%

The high amount of responses from Debrecen may be explainable due to their online tax application which directly connected citizens with their local/regional authorities and may have caused information requests or wishes to communicate with councillors.

### 5.4.2 Local/ Regional Government Councillors and Officers Directly Available Via E-mail

Electronic accessibility of government officials by citizens is one prerequisite for online interaction between citizens and their local/ regional governments. It was expected that CENTURi<sup>21</sup> contributed to an increase in the percentage of government officials who were available via e-mail.

**Table 19: Local and Regional Government Councillors and Officers Available Via E-mail**

	DEB	HAM	LIM	UK	VEN
<b>Councillors</b>					
Total number of councillors in local/ regional government	51	226	28**	71	60
Out of the total number of councillors, ...					
how many could be contacted via their personal e-mail account by the citizens of the region prior to the implementation of CENTURi <sup>21</sup> ?	20 39%	226 100%	16 57%	65 92%	60 100%
how many could be contacted via their personal e-mail account by the citizens of the region through CENTURi <sup>21</sup> ?	20 39%	226* 100%	16 57%	65 92%	0 0%
<b>Officers</b>					
Total number of officers in the local/ regional government	463	3600		12379	239
Out of the total number of officers, ...					
how many were in regular contact with the citizens of the region?	463 100%	3000 100%			****
Out of the total number of officers with regular citizen-contact, ...					
how many could be contacted via their personal e-mail account by the citizens of the region prior to the implementation of CENTURi <sup>21</sup> ?	145 31%	3000 100%		***	239
how many could be contacted via their personal e-mail account by the citizens of the region through CENTURi <sup>21</sup> ?	145 31%	3000* 100%		***	0
Notes:					
* The regional portal in Hämeenlinna had links to the homepages of the eight municipalities in the region.					
** Members of Limerick County Council.					
*** Potentially there were 3363 such officers in the UK Region, but no list was published.					
**** The Veneto Region is primarily a planning body. Most of the day-to-day services to citizens were provided by municipalities. All officers had an e-mail account but it was difficult to say how many were in close contact to citizens.					

Source: Regional WP3 Data

Comment by the West Swedish regional evaluators (edited):

The Swedish version of CENTURi<sup>21</sup> was a virtual municipality that allowed carrying out a number of services from a test-bed point of view. CENTURi<sup>21</sup> was a model that could be copied in the future. Therefore, the platform came as an added value to the actual local sites, which belonged to the municipalities. Local authorities needed to consider whether they would have liked to proceed with this model. Therefore, the site was a mixture of a virtual and real municipality. In this sense, not a single councillor nor civil servant could be contacted through CENTURi<sup>21</sup>. On the other hand, they could be contacted by accessing the local sites from the main frame in CENTURi<sup>21</sup>. (These actual figures can be seen in table 20).

**Table 20: Local and Regional Councillors and Officers Directly Available Via E-mail in the West Sweden Region**

Municipality	Total	Available	Not Available
Falkenberg	2795	949 (34%)	1846 (66%)
Falköping	2698	1703 (63%)	995 (37%)
Lerum	2198	551 (25%)	1647 (75%)
Munkedal	821	270 (33%)	551 (67%)
Sotenäs	856	73 (9%)	783 (91%)
Strömstad	934	114 (12%)	820 (88%)
Tanum	1998	503 (25%)	1495 (75%)
Uddevalla	3802	47 (1%)	3755 (99%)
Vågård	706	272 (39%)	434 (61%)
<b>TOTAL</b>	<b>16808</b>	<b>4482 (27%)</b>	<b>12326 (73%)</b>

Source: West Sweden

CENTURi<sup>21</sup> did not lead to an increase in the percentage of government officials who were available via e-mail. All councillors and officers that could be contacted via e-mail prior to CENTURi<sup>21</sup>, could also be contacted through CENTURi<sup>21</sup>.<sup>31</sup>

A local or region authority committed to e-government should ensure that all councillors or officers (or at least those who are in direct contact with the citizens of the region) are available via e-mail. Among the CENTURi<sup>21</sup> regions, only Hämeenlinna already fulfilled this requirement. Considering that already 12% of all CENTURi<sup>21</sup> users contacted their councillors during the brief (13 weeks) core evaluation period, other regions should follow this positive example the Hämeenlinna Region set.

<sup>31</sup> The exception is Veneto. The regional CENTURi<sup>21</sup> portal in Veneto is focussed entirely on tourism and offered no opportunities to e-mail regional government councillors or officials.

### 5.4.3 Online Voters in Local Referenda, Elections, etc.

More and more frequently it is the case that participation in elections and comparable political events does not reach levels that are (generally) viewed as satisfactory. One means of making the participation in elections more attractive and convenient is to offer the opportunity of online voting. CENTURI<sup>21</sup> was expected to increase the participation in e-democracy or, at least, to stop the often observed downward trend. This would reflect an improved interaction between citizens and their local/ regional governments.

**One means of making the participation in elections more attractive and convenient is to offer the opportunity of online voting.**

It was planned to apply indicator 4.3 “percentage of online voters in local referenda, elections, etc.” in Limerick only. However, during the course of the project it became evident that this would not be possible due to both policy and technical reasons.

The following report on e-voting in Ireland was provided by Martine Ruzza, CENTURI<sup>21</sup> representative of MAC, Limerick:

The Limerick region's interest and decision to develop an e-democracy application was prompted by the decision made by the Department of the Environment and Local Government to examine the possibility of introducing a system of electronic voting and counting for polls in Ireland.

Indeed, the Government agreed on 11 February 2000 to the introduction of electronic voting and counting at statutory elections and to the drafting of enabling legislation. The use of electronic voting according to the government would:

- make it easier for the public to vote;
- provide election results within a few hours from close of poll, depending on size of constituency;
- improve efficiency of electoral administration; and
- support a positive image of the country in the use of information technology.

The target was to have e-voting introduced nationwide at the European Parliament/Local Elections in 2004.

However, it became clear soon afterwards that e-voting would be restricted to the introduction of electronic booths in the existing polling centres and would not extend to the introduction of online voting, thus, aborting any hope of any type of implementation for the application in the Irish context.

In the general election of May 2002 election three constituencies, with twelve Dáil (parliament) seats in total, used electronic voting.

Mr. Martin Cullen, Minister for the Environment and Local Government, on the 6th of August 2002, announced the extension to the use of electronic voting and electronic vote counting to a further four constituencies at the forthcoming referendum on the Nice Treaty. In addition to the three constituencies (Dublin North, Dublin West and Meath) in which the system was used at the general election, the use of the electronic voting and counting will now embrace over half million people or 18% of all electors. However, there is still no talk of any online voting. The main issues with e-voting remain the intricate security required for such a development as well as the authentication mode required.

Also from a political point of view, the system does not appeal to everyone, however. Critics have labelled it undemocratic and unsafe, arguing that the electronic systems used leave no tangible record of how they have calculated the results.

#### 5.4.4 Summary

CENTURi<sup>21</sup> confirmed its potential to improve interactions between citizens and (local/ regional) governments. This was particularly emphasised by the stated intentions of the majority of users to use CENTURi<sup>21</sup> instead of other traditional means of information retrieval.

Due to the limited scope of the regional portals demonstrated as well as the short duration of the roll-out period, such improved interactions could only be observed to a limited extent (for example, 12% of all CENTURi<sup>21</sup> users contacted their councillors during the brief core evaluation period of thirteen weeks).

E-mail availability of councillors and officers did not improve (CENTURi<sup>21</sup> had neither a positive nor a negative effect yet), but the importance of continuous availability was recognised by the regional partners.

Electronic voting could not be realised for technical and policy reasons. However, its importance for bringing citizens closer to government was recognised.

The amount of interactive services was low for the reasons stated above. There need to be more interactive services, considering that, in general terms, only interactive services make people interact with governments.



## 5.5 Level of Community Involvement

CENTURi<sup>21</sup> was expected to increase the ability of individual citizens and community groups to make own information “services” available through the CENTURi<sup>21</sup> regional portals, to interact more easily and to generally enhance the level of involvement in setting up new (public) services.

### Assessment Objectives – Impact 5:

- Measurement of citizen-led “services”
- Measurement of levels of citizen involvement in new services

#### 5.5.1 Community Applications Developed by Citizens

The participation of citizens in developing community applications was aspired in CENTURi<sup>21,32</sup>

The only region where citizens developed community applications (based on gathered automatic count data) was Limerick. Here, the so-called VEC group 100 developed AQUANET a community action project on the environment through which community groups are trained in water monitoring and wildlife monitoring. A second application In Limerick was developed by a local citizen group that developed a specific Kilmallock event calendar.

15% of all users would like to see additional source of information added to the CENTURi<sup>21</sup> regional portals. 29 users provided specific information as to what they would like to see added. Most often mentioned were different services offered within the region (or county or municipality, etc. respectively). Users specifically mentioned links and information about the police, healthcare, emergency services, schools, or postal services. It became also evident that users wished for general information, location, contact information, opening hours, etc. of their local or regional authorities.

If it was possible to use all services offered by local/ regional authority via the Internet or more particularly via CENTURi<sup>21</sup>, for some users, the mere information online about opening hours, the services offered, etc. would save them valuable time in preparing for a trip to a local/ regional authority.

Other information that users wished to see added to CENTURi<sup>21</sup> included:

- Links to specific websites, events, and other regions

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<sup>32</sup> At the WP3 Evaluation Workshop in Brussels (22 October 2001), it was decided to split indicator 5.1 “number of community applications developed by citizens” into 5.1a and 5.1b with 5.1a focussing on the community applications that were put up (developed) by citizens and 5.1b focussing on what kind of applications they would like to put up (develop) in the future.

- Local information about news, weather, cultural issues, sport events, as well as a list of charitable institutions
- Planning, in particular, bus routes and timetables (also in conjunction with the use of maps), information on school holidays, etc.
- E-commerce, in particular, involvement of SMEs, support for SMEs in building a website, the opportunity to link SME website to the regional portal, purchasing and selling of items as well as ticket reservations, payment and delivery

The data analysis revealed that a more in-depth user needs analysis would be required for any e-government portal as well as for future (take-up) projects. A pro-active approach is required for:

- content development,
- service chain management, including back-office integration,
- professional management of content delivery,
- regional e-content strategies (plan and goals),
- process & marketing campaigns for content delivery by companies, community groups, and
- basic, but easy-to-use functionality to enable users to develop own content.

### **5.5.2 Citizen Participation in CENTURi<sup>21</sup> Development**

With one of the high level objectives having been the stimulation of citizen-led development of community applications and services, CENTURi<sup>21</sup> aspired to reach a high percentage of citizens participating in its development.

#### **Community involvement in the development process**

22% (58) out of all users have developed (either themselves or their group/ organisation) a community application that is accessible on the Internet. Only seven (out of 58) users answered that their application is accessible on CENTURi<sup>21</sup> (two each from Debrecen, the UK Region, and Hämeenlinna, one from West Sweden).

In the end-user questionnaire it was further asked whether the user or her/his group or organisation had developed any new community applications that s/he wanted to include on CENTURi<sup>21</sup>. 14 users (5%) answered “yes”, five each in Veneto and West Sweden, two in Hämeenlinna, one each in Debrecen and Limerick, and nobody in the UK Region.

Users had the opportunity to describe their community application that they intended to place on the respective CENTURi<sup>21</sup> portals. Eleven out of the fourteen users offered information about their application. A wide range of possible community applications that users intend to place on CENTURi<sup>21</sup> portals became evident and included the following:

Service and Information Provision:

- Homepage of an association engaged in environmental protection (a user from Debrecen).
- Rugby club websites (and all local authority payments) (a user from Limerick).
- Information about training courses of voluntary emergency personnel of the Italian Croce Verde (a user from Veneto).
- Services for disabled and the care for elderly and ill people and their rights (a user from Veneto).
- News/ information on employment or partnership opportunities on CENTURi<sup>21</sup> (a user from Veneto).
- Archive of applications on the regional CENTURi<sup>21</sup> portal (a user from West Sweden).
- Errands and minutes of local organisation meeting, for example parents organisations (a user from West Sweden).
- Information about where to leave clothes and shoes for charitable organisations (a user from West Sweden).
- Information about activities in organisations, for example weekly programs, special activities, etc. (a user from West Sweden).

E-Commerce:

- Selling Hämeenlinna landscape postcards (a user from Hämeenlinna who published more than 40 postcards).
- Museum bookings on CENTURi<sup>21</sup>. The tickets would then be delivered to the home of the person who requested them (a user from Veneto).

**Focus Groups**

Focus group meetings were not directly an object of evaluation. However, according to the Regional Evaluation Teams, they

were well attended and proved the interest and enthusiasm of users in the target communities.<sup>33</sup>

### 5.5.3 Summary

Evaluation results could not confirm an increase in the ability of individual citizens and community groups to make own information “services” available through the CENTURi<sup>21</sup> regional portals to interact more easily and to generally enhance the level of involvement in setting up new (public) services.

The community involvement in terms of the amount of applications that have been put on the CENTURi<sup>21</sup> portals was disappointing. There were in fact many ideas for application as the above-described ideas of citizens showed. While the variety of ideas showed high potential, the obstacle to actually put an application online may have been too high in technical terms. Furthermore, strategic policies of local or regional authorities as well as legal issues over ownership, maintenance, risk of litigation and amount of human resources required may have hindered progress.

A wide range of community applications that users intend to place on (future) CENTURi<sup>21</sup> portals became evident during the evaluation exercises. It became clear that more in-depth user needs analyses, direct community involvement, as well as a pro-active approach focusing primarily on content development and delivery are required for any e-government portal.

**Disappointing  
community involve-  
ment in terms of  
amount of applica-  
tions put online**

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<sup>33</sup> Not directly related to the regional portals, CENTURi<sup>21</sup> offered a so-called “CENTURi<sup>21</sup> Electronic Twinning Network Discussion Board” on the project website ([www.centuri21.org](http://www.centuri21.org)). While accessible by users from all regions, the discussion board was only used by UK users. Comments and discussions could not be considered representative of the opinions in the region, since they were extremely few (only five different users), but very critical towards the achievements of the project. The discussion board went online only during the last two months of the project and was neither widely promoted nor actively moderated.

## 5.6 Contribution to Regional Development and Innovation

CENTURi<sup>21</sup> was expected to have a profound impact on the local economies of the participating regions. Regional development and innovation were expressed in a higher level of participation and involvement in CENTURi<sup>21</sup> opportunities, better-secured employment, as well as an increased readiness for innovation. For the participating regions, advantages in terms of their region's attractiveness for new investment were foreseen.

### Assessment Objectives . Impact 6:

- Measurement of CENTURi<sup>21</sup> exploitation initiatives and new services
- Identification of potential employment impacts
- Description of changes in regional development prospects

### Change in Regional Attractiveness

With one of the project goals having been to achieve a real impact on the local economy in the CENTURi<sup>21</sup> regions (and to contribute to regeneration and future sustainability), it was important to analyse the anticipated positive effect CENTURi<sup>21</sup> had on the attractiveness of the respective regions.

#### Interview of Regional Decision Makers

15 regional decision makers answered the interviews prepared specifically for their group. Out of the 15 regional decision makers interviewed, four came from West Sweden, three each from Limerick and West Sussex, two each from Hämeenlinna and Debrecen, and one from Veneto.

Asked what the most important measures to improve regional attractiveness and development in their region were, transport infrastructure, business services and communications were mentioned most frequently. One respondent summed it up by requesting "a well developed infrastructure where IT is as important as roads, railways, education, etc."

**"... a well developed infrastructure where IT is as important as roads, railways, education, etc."**

IT is supposed to further expand once strong business relations have been built up to ensure "an integrated approach to provision of services" which will not only serve to attract (more) tourists, but also "to address social exclusion" by enabling for example "young people, deprived people in rural areas and people with disabilities" to participate in the region's activities. "Accessibility" was the key word here, be it by means of transport or via the Internet or other special user-centred services.

Bearing in mind, that transport infrastructure was mentioned often as a criterion for regional attractiveness, it was not surprising that only eight of fifteen regional decision makers confirmed CENTURi<sup>21</sup> had played an important role in improving regional attractiveness, whereas seven respondents denied this point.

Ask to explain why s/he answered in this way for each of the criteria provided by the person interviewed

As suspected before, those respondents who had referred to transport infrastructure stated here that “none of these issues could be solved by a technology product but that they were instead the responsibility of both local and national government”.

However, the interviewees who were most concerned about communications and publicity thought that CENTURi<sup>21</sup> was “a step on the way” – “on a long timescale”. In addition, when referring to social inclusion or integrated business services, positive effects of CENTURi<sup>21</sup> were perceived: “It ... helped to demonstrate how accessibility can be improved in relatively rural areas”, and “CENTURi<sup>21</sup> might become the reference (public-private) interchange structure”.

#### Potential to impact regional employment in the mid-term

Asked whether CENTURi<sup>21</sup> had the potential to impact regional employment within the next three years, i.e. the mid-term, thirteen regional decision makers answered this question, three of them saying “yes”, another three saying “no”, and seven saying “possibly”.

A reason for not believing in the positive impact in the mid-term was that “employment can only be generated by business friendly government policies at a local and national level and improvements in the infrastructure and services in the region none of which CENTURi<sup>21</sup> will impact upon”. A respondent from the same region (Limerick) contradicted this view and was less concerned with governmental regulations, but believed that CENTURi<sup>21</sup> could have a positive impact on employment “if it was expanded to be more business friendly and allowed entrepreneurs to set up firms easily by simplifying the administrative procedures”. Respondents saying “yes” or “possibly” also shared the belief that increased publicity and a synergy of regional forces joining the portal could bring about changes in employment.

**CENTURi<sup>21</sup> could have a positive impact on employment “if it was expanded to be more business friendly and allowed entrepreneurs to set up firms easily by simplifying the administrative procedures”.**

#### Readiness for innovation

Thirteen out of fifteen regional decision makers believed the CENTURi<sup>21</sup> portal to be a sign of readiness of innovation, whereas only two did not.

Ask to explain why she or he answered in this way, most of them explained that working in an international partnership, with “very serious work and commitment” with new technologies had

improved their knowledge and shown that their regions were willing to go ahead and “utilise IST to modernise service delivery”, thus proving that “the region is progressive and ready to experiment with both new ideas and new technologies.

Regional decision makers were specifically asked whether they agreed to the statement regarding the potential of CENTURi<sup>21</sup> (see table 21).

**Table 21: Regional Decision Makers’ Statement Responses**

<b>Statement: Do you think that CENTURi<sup>21</sup> has the potential to contributing towards...</b>	<b>Yes</b>	<b>No</b>
attracting new investment to your region?	12	3
attracting new citizens to your region?	8	7
attracting new visitors to your region?	11	4
social inclusion?	11	4

Regional decision makers were once again asked to explain why they answered either “yes” or “no”.

#### Attracting new investment

Regarding the contribution towards attracting new investment to the region, the only negative answer focussed on the belief that framework conditions were responsible for attracting investment, which could not be changed by CENTURi<sup>21</sup> (“availability of government grants”, “a pool of skilled workers in the region”, “fully developed ... infrastructure”). However, the (contrary) opinion that CENTURi<sup>21</sup> could in fact have an influence on framework conditions to attract new investment was indicated by the other regional decision makers. It was highlighted that CENTURi<sup>21</sup> could make rural locations “more attractive for SMEs” and “help to retain people in rural communities”. Showing the region’s “can do attitude” could also help to attract investment as could publicising “the enormous potential”.

**CENTURi<sup>21</sup> could make rural locations “more attractive for SMEs”.**

#### Attracting new citizens

Eight out of fifteen regional decision makers believed that CENTURi<sup>21</sup> could contribute towards attracting new citizens to the respective regions.

Four of the respondents who thought that CENTURi<sup>21</sup> would not attract new citizens to their region explained their views, some listing what they believed to be the prerequisites for attracting new citizens: “the availability of employment, affordable housing, quality infrastructure and good leisure facilities”, “secure employment, good childcare facilities and a quality health service”. The respondents from West Sussex (UK Region) mentioned that the region already had “above average

levels of inward migration” and that CENTURi<sup>21</sup> was “unlikely to make a significant difference”.

A regional decision maker from Debrecen said it had to be considered that young people from Debrecen usually “moved into the Western regions of the country or into Budapest” and that the best to be hoped for would be that they stayed in the region instead after having finished school. Another respondent from Debrecen, was confident, that “after the arrival of the investors, new citizens would probably move into this region”.

In general, interviews confirmed that CENTURi<sup>21</sup> indeed has the potential to contribute towards attracting new citizens to a region, and that such a contribution is, of course, indirect in nature. As one respondent from Limerick supposed that mobile citizens could be attracted by the “can do attitude” of a region.

**Mobile citizens could be attracted by the “can do attitude” of a region.**

#### Attracting new visitors

Regional decision makers believe in the potential of CENTURi<sup>21</sup> to attract new visitors to the region (eleven said “yes”, four “no”).

Ask to explain why he/she answered in this way, there were only positive answers to this question (if “indirectly” which was said twice, is also considered to be positive). One respondent from Veneto even stated “of course, this is the first objective together with the quality of service provision.” CENTURi<sup>21</sup> being the public portal to the region would “carry credibility” and thus have a potential to be more attractive than other portals, especially it offered “easily accessible and gathered information”. Apparently, attracting new visitors should be the underlying aim of any portal focussed on tourism, such as the CENTURi<sup>21</sup> regional portal in Veneto.

#### Social Inclusion

Asked about social inclusion, eleven out of fifteen regional decision makers confirmed CENTURi<sup>21</sup>’s contribution potential.

Ask to explain why he/she answered in this way, one respondent thought that CENTURi<sup>21</sup> could contribute to social inclusion in the future, but not today, while another pointed out that socially excluded people in Limerick “do not have the money to afford the computer they need to access to CENTURi<sup>21</sup>”. The “digital divide” was a real concern here, since “accessibility” was the main keyword.

**“Accessibility” was the main keyword in light of social inclusion aspects.**

However, social inclusion does not only refer to the poor, and the overall belief was that CENTURi<sup>21</sup> could contribute to integrating for example the disabled, or those not having easy access to certain services so far due to poor transport infrastructure.

#### Regional regeneration and sustainability

Slightly more than half (eight) of the regional decision makers answered “yes”, slightly less than half (seven) “no” when asked



whether CENTURi<sup>21</sup> contributes to regional regeneration and sustainability.

Mostly arguments came up, such as CENTURi<sup>21</sup> not being able to influence government policies necessary to bring about regional regeneration and sustainability. On the other hand, social inclusion was on the list of possible positive effects brought about by CENTURi<sup>21</sup>, as were improved accessibility, economic activity and citizen-centred services.

#### Attractiveness and development of the region

Asked whether they expected CENTURi<sup>21</sup> to improve the attractiveness and development of their your region, eight regional decision makers had not expected CENTURi<sup>21</sup> to improve the attractiveness and development of their region, while seven had.

Respondents did not really explain their previous expectations, only one regional decision maker stated that he/she had not known about CENTURi<sup>21</sup> before so he/she had not had any expectations but was now hoping for the respective positive effects. Others referred to their previous answers (“a website cannot address these issues”, government policies bring about these effects), but “if populated with a wide range of public and commercial services CENTURi<sup>21</sup> has the potential to improve the quality of life in the region”.

**“If populated with a wide range of public and commercial services CENTURi<sup>21</sup> has the potential to improve the quality of life in the region”.**

#### Needs for improvement

Concerning the need for improvement (in order to improve regional attractiveness), almost all respondents mentioned that the quantity and quality of the services (as well as the number of searches offered on the theme engine) would have to be extended, more publicity was also needed together with more contact and synergies in the region. Two respondents thought that CENTURi<sup>21</sup> should not be limited to the original six regions and that there should be “uniformity in the region’s digital information and common IT development along with other municipalities”.

#### Conclusion

At the end of the interview, regional decision makers were asked to what extent they agreed to the statement: “CENTURi<sup>21</sup> has the potential to contribute towards the regional attractiveness and development of your region”. Out of the fifteen regional decision makers interviewed, nine agreed, three neither agreed nor disagreed and two disagreed.

In general, regional decision makers shared a very positive attitude towards CENTURi<sup>21</sup> except for the belief of two of them that CENTURi<sup>21</sup> could not influence certain aspects of regional life since these would have to be changed by governmental policies. The largest expected impact of CENTURi<sup>21</sup> was that it could attract additional visitors to the region. Accessibility and social inclusion were also mentioned frequently.

Focussing on future development and what had been accomplished so far, one regional decision maker concluded “This is only the first step and we intend to continue to develop the CENTURi<sup>21</sup> system. We hope that the other regions will do the same and that the Consortium will continue in its development activity.”

The potential of CENTURi<sup>21</sup> to have an impact, even if partly and necessarily small, on the local economies was confirmed. However, the potential can only be exploited once fully developed CENTURi<sup>21</sup> portals are implemented.

## 5.7 Competitiveness of Small- and Medium Size Enterprises

An important driving force of a local economy are SMEs. They were expected to gain substantial benefits from CENTURi<sup>21</sup>. These benefits were expressed in direct financial terms as well as in an increased competitiveness over those enterprises that were not using CENTURi<sup>21</sup> to improve and secure their market position.

### Assessment Objectives – Impact 7:

- Measurement of SMEs use of e-commerce
- Description of perceived market positions

### Change in Using E-commerce

CENTURi<sup>21</sup> intended to support e-commerce which is expected to gain further importance in the near future. E-commerce, in general, is expected to have positive effects on citizens and their every-day life as well as on SMEs and the businesses sector in general.

Over the course of the project, it became evident that commercial services and the use of e-commerce, in general, would not be pursued in a manner originally envisaged at the outset of the project. Almost all regional CENTURi<sup>21</sup> portals concentrated on the provision of public services. Only Veneto's portal integrated commercial services indirectly by offering information about places of interest, accommodations, etc in their region.

It needs to be considered that involving SMEs is not merely a matter of integrating applications, content etc. There are many legal issues that need to be addressed if a local authority provides a gateway for advertising, promotion of financial transactions. For example, is there a liability on a local authority if a citizen purchases something as a result of obtaining information or making a transaction through a portal owned and operated by a local authority?

### Conclusion

The evaluation exercise revealed that public and commercial services on a regional portal are complementary. The optimal mixture of these services has to be determined in a thorough user needs analysis. The inclusion of (regional) SMEs and their services is not only absolutely mandatory, but also mutually beneficial for the success of a regional portal and SMEs as well.

**Public and commercial services on a regional portal are complementary.**

## 5.8 Adaptability to Technological Progress

CENTURi<sup>21</sup> started during a time of rapid technological change. The project itself was an example of progress made in the Internet sector. CENTURi<sup>21</sup> was expected to provide the ability to adapt more quickly to technological progress in the future.

### Assessment Objectives – Impact 8:

- Measurement of CENTURi<sup>21</sup> take-up by companies (non-IT SMEs)
- Measurement of access channels
- Description of strategic impacts for providers

#### 5.8.1 New Access Media Use

CENTURi<sup>21</sup> was accessible via various access media. New access media such as WAP, PDA, and interactive TV have gained in importance within the last few years, and it is expected they will gain even more importance in the future.

It was anticipated that the use of new access media in CENTURi<sup>21</sup> allowed deriving conclusions about the system's adaptability to technological progress. Throughout the core evaluation period, only West Sweden maintained good documentation of new access media use.

Here, the total number of visitors to access the West Swedish CENTURi<sup>21</sup> portal was 992. The number of accesses via new access media was 151, constituting 15% of all accesses.

PDA and WAP were the two new access media uses recorded in West Sweden. 98 users accessed by means of PDA, the remaining 53 via WAP (among these 53 users, 9 took advantage of a mobile terminal to access the portal).

In the end-user questionnaire, users were asked whether they ever accessed the Internet and, in a follow-up question, CENTURi<sup>21</sup> through "new" access media such as WAP, PDA or interactive TV.

While 24% of all respondents accessed the Internet through new access media, only 3% did so to access CENTURi<sup>21</sup>. It should be taken into account, however, that a user may only have visited a regional CENTURi<sup>21</sup> portal once or a few times during the brief core evaluation period, while the Internet may have been accessed by the same person numerous times, since new access media have been available.

In addition to the limited amount of time available to access CENTURi<sup>21</sup> portals by means of new access media, the use of these media may also not have been sufficiently promoted in the regions.

### 5.8.2 IT-Strategic Impact of CENTURi<sup>21</sup>

CENTURi<sup>21</sup> intended to provide a new generation of integrated software products for general use (beyond the scope of CENTURi<sup>21</sup>) feasible to integrate all regional government services.

#### Interview of Technical Developers and IT-Strategists

Eighteen technical decision makers and IT-strategists answered the questionnaire prepared specifically for this group. Six came from West Sussex, five from Hämeenlinna, two each from Veneto, Limerick and West Sussex, and one from Debrecen.

#### New generation of integrated software products for general use

Thirteen out of eighteen technical decision makers and IT-strategists agreed CENTURi<sup>21</sup> succeeded in providing a new generation of integrated software products for general use, while five disagreed. Therefore, an overall positive attitude was displayed.

When asked in detail, however, it became apparent that, in the eyes of technical developers and IT-strategists, CENTURi<sup>21</sup> did not distinguish itself from other Internet portals providing similar services.

Positive answers, on the other hand, did not refer to any specific features/software products, but just to CENTURi<sup>21</sup> being “an absolutely interesting perspective” and to its “proper potentials” that would need to be marketed.

**“Proper potentials”  
of CENTURi<sup>21</sup> would  
need to be marketed.**

#### Criteria for efficient and state-of-the-art IT-planning and service provision

The interviewees revealed their opinion about criteria for efficient and state-of-the-art IT-planning and service provision. Keywords mentioned several times were:

- development according to user/ market requirements,
- accessibility,
- availability, (improved) integrated interactive services rather than “just information provision”, and
- ease of use.

Some respondents were more concerned with specific technical and legal requirements such as e-GIF compliance (at least in the UK), a multi-tier system architecture, identified standards, such as for data exchange, metadata standards, etc. In addition, having “a well-organised database” was seen as criteria for efficient and state-of-the-art IT-planning and service provision. On the whole, the following advice provided by one interviewee should be followed: “Do not develop a system that nobody needs”. Formulated differently, a thorough user needs

analysis is essential for electronic service provision (via an e-government portal).

Eleven out of eighteen technical decision makers and IT-strategists believed that CENTURi<sup>21</sup> did not fulfil their criteria, while seven did.

One explanation was that “the CENTURi<sup>21</sup> project was conceived in late 1998, early 1999. Since then, many of the solutions that were originally identified as unique are now available in ‘off-the-shelf’ products.”

#### Innovative aspect of CENTURi<sup>21</sup>

Respondents also referred to the innovative aspect of CENTURi<sup>21</sup>: “Although the service is not really innovative, it still answers for requirements from users and provides electronic services that can be seen improving the quality of services”. Some respondents stated that CENTURi<sup>21</sup> “lacks refinement and is not ergonomic”, that it “lacks coherence” while its functionality “doesn’t meet all the criteria”. Others referred to the fact that CENTURi<sup>21</sup> was just a step on a long path to be taken, “just a starting point” and that it had potential, but a lot of work still had to be carried out to make it fulfil the criteria mentioned earlier.

Technical developers and IT-strategists were split in their opinion whether CENTURi<sup>21</sup> offered efficient and state-of-the-art IT-planning and service provision. Seven respondents agreed, three were indecisive, and six disagreed. Two interviewees did not provide an answer.

#### Integration of regional government services

Asked whether CENTURi<sup>21</sup> proved to be a tool to integrate regional government services, eleven out of eighteen technical decision makers and IT strategists said that CENTURi<sup>21</sup> had not met this objective, whereas seven believed it had.

Positive answers highlighted that such services were indeed available from CENTURi<sup>21</sup>, whereas other respondents concluded that “CENTURi<sup>21</sup> has not integrated regional government service. It has developed the beginnings of a signposting service to different service providers, however this is not complete” and “signposting and linking are not integration”. Answers varied in this respect, partly because different regions offered different types of services.

Respondents from Debrecen and Hämeenlinna were very positive, interviewees from Limerick and West Sussex were negative concerning this point.

Apparently, CENTURi<sup>21</sup> had once again demonstrated “a direction to go”. “For the time being integration is only partial”. However, the potential to offer integrated regional government services is there and needs to be further developed.

**“Do not develop  
a system that  
nobody needs”.**

Twelve out of eighteen technical decision makers and IT-strategists confirmed this by agreeing (six partly and six absolutely) to the statement that “CENTURi<sup>21</sup> has the potential to be the key tool for integrating regional government services.

This positive assessment of CENTURi<sup>21</sup> apparently did not apply to its ability to web-enable existing systems (e.g. legacy databases, legacy systems, etc.). Eleven out of eighteen technical decision makers and IT-strategists said that CENTURi<sup>21</sup> did not succeed in this regard.

The explanatory answers varied a lot – depending partly on the region the respondent came from. The interviewee from Debrecen mentioned problems with safety, but continuous progress in dealing with them, one respondent from Hämeenlinna also referred to safety, otherwise the situation on the Finnish site was that “some solutions are web-enabled wholly or partially or not at all”. In Limerick, there were no web-enabled systems of the type mentioned above, whereas respondents from West Sussex mentioned I-consult and the web-enabled U.K. transport system as success stories – due to the fact that these had had a business case and “a strong business driver to provide the impetus”.

Respondents from Veneto and West Sweden gave contradicting answers, one respondent from Veneto mentioning that “CENTURi<sup>21</sup> was not integrated to the Regional website”, the other stating that there was no problem with web-enabling existing systems, since the Veneto platform, “prior to CENTURi<sup>21</sup>, was already based on Oracle”, the transition had therefore not been “traumatic”. In West Sweden, “there are no integrated databases today”, this view was contradicted by the other respondents who referred to the test objects (booking of facilities and childcare) where apparently some achievements had been made in the respect that “CENTURi<sup>21</sup> has partly succeeded”.

#### IT-strategic impact

Asked to describe their view of the impact of CENTURi<sup>21</sup> in their region in IT-strategic terms (e.g. integrated tools usable beyond CENTURi<sup>21</sup>), nine positive outlooks overruled the three negative answers.

Positive assessments referred to impacts already achieved (“has proven to be very useful for different kinds of services providing”) as well as to the future potential of CENTURi<sup>21</sup> (“the integrated tools could be used for building the service entity where citizens and authorities meet ... the electronic service flow could be real”). Some particular features were mentioned: i-consult, e-consult, transport application, events calendar, carers (all mentioned by respondents from West Sussex who would probably make further use of them in the future) as well as e-government, childcare, voting, building permit, services designed for elderly people, etc.

**The potential to offer integrated regional government services is there and needs to be further developed.**

One interviewee from Veneto even claimed: “CENTURi<sup>21</sup> certainly represents the mechanism to integrate and manage at best communication with citizens.”

At the end of this interview, ten out of eighteen technical decision makers and IT-strategists agreed with this statement, five were neutral, only three partly disagreed to the statement “CENTURi<sup>21</sup> provides a positive impact in IT-strategic terms”.

#### Suggestions

There were additional comments, two of them referring to the long timescale of the project which led to some of its original objectives having been “overtaken by technology advances during the life of the project”. IT projects have to work on a shorter timescale, the number of regions involved was seen as an additional problem here (prolonging the project even more). Concrete suggestions included improvement in management and origination development issues, in local government service flow, information provision, clarity of ownership of CENTURi<sup>21</sup> between the municipalities, and security issues. The general potential of CENTURi<sup>21</sup> was once again referred to, and the steps taken so far were “a good test-bed for the following (operational) stage of CENTURi<sup>21</sup>”.

#### Conclusion of the Interview

In general, the technical decision makers and IT-strategists shared a very critical attitude towards CENTURi<sup>21</sup>, which became softened as various aspects had to be thought over in more detail. Probably IT strategists tend to expect the utmost and have difficulties to be content with what is the result of a trial application. The potential of CENTURi<sup>21</sup>, however, was recognised and approved of.

**Technical decision makers and IT-strategists shared a very critical attitude towards CENTURi<sup>21</sup>.**



### 5.8.3 Suitability of CENTURi<sup>21</sup> Platform for Turning Manual Services into Online Services

Many services currently provided offline (or manual) could be provided as online services. One feature of CENTURi<sup>21</sup> was the provision of online services. The analysis focused on the technical aspects of turning manual services into online services. The suitability of the CENTURi<sup>21</sup> platform to do this was expected to be high.

#### Interview of Software Developers and other Technical Personnel

Twenty software developers and other technical personnel answered the questionnaire prepared specifically for this group. Seven came from Hämeenlinna, six from West Sweden, five from Debrecen, and one each from Veneto and West Sussex (none from Limerick).

#### Turning manual services into online services

It was the prevailing opinion of this group of interviewees that CENTURi<sup>21</sup> was well-suited for turning manual services into online services. Fourteen respondents absolutely or partly agreed (four/ten), whereas four neither agreed nor disagreed and none disagreed. Two did not answer the question.

Some of the eighteen commentators admitted that CENTURi<sup>21</sup> did not fulfil these requirements yet, but they believed in its potential, nevertheless ("I think the way the databases are organised could make the portal suitable to turn the manual services into online ones, still it does not fulfil this demand.") Those believing in CENTURi<sup>21</sup>'s suitability simply affirmed by saying "yes, absolutely" etc., but one respondent stated that CENTURi<sup>21</sup> was "suitable to turn the manual services into online ones, but it needs time for the people to get used to it".

Asked what worked well, commentators referred to specific features such as the tax acknowledgement application in Debrecen mentioned by two respondents, the job application form in West Sussex, "links, news, weather and calendar sources" and the fact that CENTURi<sup>21</sup> supported the use of Java and XML in Hämeenlinna.

Software developers, just like the other appraisal groups interviewed, also mentioned that the amount of content and services would have to be increased.

**CENTURi<sup>21</sup> was well-suited for turning manual services into online services.**

### Comparison to other Internet sites

Interviewers were asked how they perceived CENTURi<sup>21</sup> in comparison to other Internet portals.<sup>34</sup> One software developer critically responded “there are other local portals which are at least as good as the CENTURi<sup>21</sup>”. Other respondents once again referred to the potential of CENTURi<sup>21</sup> and that it would overrate other portals if it were fully developed. “The system is suitable to integrate many more online services into the portal than now are available”. CENTURi<sup>21</sup> is “clearer than others”, it has an advantage “because the approach to CENTURi<sup>21</sup> is different from other Internet portals”, but a problem is that “still most manual services” use older software, making it more difficult to turn them into up-to-date online services. In general, most respondents believed that CENTURi<sup>21</sup> could be really good if more content, services, resources were available.

**“The system is suitable to integrate many more online services into the portal than now are available”.**

### Conclusion of the interview

Software developers and other technical personnel generally shared a positive attitude towards CENTURi<sup>21</sup>, only when asked whether CENTURi<sup>21</sup> was better suited for turning manual into online services than other portals, half of them thought that other portals were just as good or even better. Probably software developers as well as IT strategists tend to expect the utmost and have difficulties to be content with what is the result of a trial application. On the whole, however, the potential of CENTURi<sup>21</sup> was recognised and approved of.

### **Questionnaire analysis:**

#### **Transition from offline to online services**

Many services that are currently provided by not involving the use of a computer (offline services) could be provided through the use of the Internet (as online services). CENTURi<sup>21</sup> offered the provision of such online services.

The period of real-life experience was too short to necessarily provide an indication for low use.<sup>35</sup>

In the questionnaire, those users who held the opinion that the change from offline to online services worked better in CENTURi<sup>21</sup> than in other Internet sites were asked to explain why they held this opinion:

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<sup>34</sup> Internet portals the interviewees were referring to were Origo (national) and Startlap (regional) and “Digitalcity” were mentioned by respondents from Debrecen. Finnish respondents referred to Aina, MSN, BBC news and “regional portals with less restricted subjects for wider target group” without further comment. The respondent from West Sussex mentioned “Oracle Technology Network”, and “My Yahoo”. Two interviewees from West Sweden added “communications in West Sweden”, RVS Riskskatteverket, Forsakringskassan and “other municipalities” to the list.

<sup>35</sup> Only 9% (24 out of 261) of all users have ever used CENTURi<sup>21</sup> to switch from offline to online services. Out of these twenty-four users, eleven stated that this change worked worse than in other Internet sites, while nine users responded that it worked better, and four users did not provide an answer.

- A user in West Sweden liked the explanations on how to proceed.
- A user from Veneto stated that CENTURi<sup>21</sup> was more intuitive and precise.
- Two users from Debrecen and one from Hämeenlinna stated that “fast” (faster than other Internet sites) was the reason.

More comments from Debrecen users included:

- the process of task acknowledgement operated correctly
- precise, fast, detailed, one can use it with pleasure
- has a good searching system
- that is no amendments were necessary for tax authorities

#### **5.8.4 Summary**

Evaluation results confirmed CENTURi<sup>21</sup>'s ability to adapt to technological progress.

CENTURi<sup>21</sup> was, however, not widely accessed by new access media during the brief core evaluation period. A statement as to which access medium is preferred could, therefore, not be derived.

The number of Europeans having a mobile phone increased rapidly over the last few years, and it would be advisable for CENTURi<sup>21</sup> to offer and promote content that includes the full range of access terminals, including, in addition to computers, TV sets, and mobile devices. Therefore, investments in alternatives to PCs as access media are justified.

Evaluation results confirmed, based on analysis of interviews, that CENTURi<sup>21</sup> succeeded in providing a new generation of integrated software products for general use (beyond the scope of CENTURi<sup>21</sup>) feasible to integrate all regional government services.

It was the prevailing opinion among software developers and other technical personnel that CENTURi<sup>21</sup> was well-suited for turning manual services into online services. Hence, CENTURi<sup>21</sup> possesses the ability to satisfy the needs of the majority of users (see chapter 5.4) who stated they would use CENTURi<sup>21</sup> instead of other traditional means of information retrieval in the future.

## 5.9 Exploitation of Existing Networks and Other Infrastructure

CENTURi<sup>21</sup> was expected to allow for the use of existing networks and infrastructure in a more efficient way. While the amount of data transferred follows an ever-increasing positive trend, the data amount transferred through CENTURi<sup>21</sup> was expected to exceed this trend.

### Assessment Objectives – Impact 9:

- Measurement of data transfer rates

In the regional CENTURi<sup>21</sup> portals, the following amounts of data were transferred during the core evaluation period:

Debrecen:	407 MB (01.02.2002 to 06.06.2002)
Hämeenlinna:	932 MB (01.01.2002 to 17.05.2002)
Limerick:	Planning application was resident on the MAC server because of security problem, so that no data were transferred.
UK Region:	619 MB (01.02.2002 to 17.05.2002)
Veneto:	26 MB (within 10 weeks)
West Sweden:	908 MB (01.01.2002 to 17.05.2002) <sup>36</sup>

This information, per se, did not provide a meaningful picture of the exploitation level of existing networks and was included for purposes of completion only (the data presented above was gathered in the context of indicator 9.1).

In conclusion, it was not possible to derive an assessment of impact 9 regarding the exploitation of existing networks and other infrastructure due to the lack of suitable data.

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<sup>36</sup> For technical reasons, the amount of data transferred through the West Swedish portal could not be logged between 22.03.2002 and 15.04.2002.

## 6 Recommendations

The following 69 recommendations were derived from the evaluation results documented in the previous chapter.

Table 22 below provides an overview of all recommendations structured according to four anticipated reader types and three key thematic issues.

The key thematic issues are:

- A: Designing tools and services (chapter 6.1);
- B: Delivering content-rich services (chapter 6.2); and
- C: Creating a sustainable business case (chapter 6.3).

Each of the three key thematic issues is further detailed into individual sub-sections, for example A1 to A5. Recommendations are explained and described in a comprehensive manner by sub-sections.

The recommendations are tailored to four reader types:

- CENTURi<sup>21</sup> partners for further roll-out activities they may envisage;
- Potential take-up partners for their planned new implementations;
- The European Commission for setting up future programmes; and
- Readers interested in methodological issues for future assessments.

**Table 22: Recommendations by Stakeholder (or Interest) Group**

Thematic Issues		Recommendations			
		CENTURi <sup>21</sup> Partners: Further Roll-Out	Take-Up Partners: New Implementation	European Commission: Future Programmes	Methodological: Future Assessments
A Designing tools and services	A1 Customer/ citizen-centric development process	A1.1 Improve involvement of community groups and commercial service providers, especially SMEs	A1.2 Establish citizens' needs and expectations in a pro-active process	A1.3 Emphasise the need of user involvement in all project phases	A1.4 Consider a focus group-based evaluation approach throughout all project phases
	A2 Basic tools and standards for technical integration	A2.1 Further develop the innovative themes approach -based on "life events"	A2.2 Use CENTURi <sup>21</sup> technology to promote standards internally	A2.3 Facilitate take-up of successful technologies through specific programmes	
	A3 Security and privacy	A3.1 Identify concerns of users yet "to be won over" and address their concerns	A3.2 Be aware that users' trust is a pre-requisite of successful service delivery	A3.3 Provide for a special focus on e-government in FP6 IST theme on trust & security	A3.4 Address evaluation of security/ privacy concerns more specifically
		A3.5 Promote CENTURi <sup>21</sup> as a secure and trustworthy portal, emphasising that it is not yet another Internet site	A3.6 Adopt a differentiated security policy	A3.7 Address privacy and security concerns through awareness raising and benchmarking activities; consider promotional schemes	
		A3.8 Explain CENTURi <sup>21</sup> privacy policy to users			
	A4 Multi-channel service delivery	A4.1 Provide specific services for new access channels and promote their use	A4.2 Avoid exclusion of potential users through a purely Internet-based approach	A4.3 Promote 24/ 7 mobile services	A4.4 Non-Internet based access is hard to measure, and requires targeted evaluation

Thematic Issues		Recommendations			
		CENTURi <sup>21</sup> Partners: Further Roll-Out	Take-Up Partners: New Implementation	European Commission: Future Programmes	Methodological: Future Assessments
B Delivering content-rich services	B1 Up-to-date, relevant and attractive content	B1.1 Define a clear strategy and concrete processes for content delivery and content management	B1.2 Arrange for content delivery from "day one"	B1.3 Initiate benchmarking and best practice definition in value chain management, service & business model development	B1.4 Include content analysis in evaluation
		B1.5 Focus on "core business services" highly relevant for users needs	B1.6 Structure services around customer	B1.7 Put more emphasis on non-technical issues in RTD programmes	
	B2 Involvement of citizens and businesses	B2.1 Develop more participatory services for citizens	B2.2 Arrange for lively participation of citizens in moderated fora and provide the opportunity to influence decision making	B2.3 Emphasise citizen participation and e-democracy as essential elements in (integrated) e-government concepts	B2.4 More participatory and continuous evaluation techniques and group assessments should be considered
		B2.5 Businesses need to be targeted more specifically	B2.6 Priorities for service development should follow users well established needs	B2.7 Ensure that SMEs participate more actively in European programmes	
		B2.8 Resolve remaining usability problems	B2.9 Involve user groups to test ease of use especially of themes and transactional services		B2.10 Conduct intermediate usability analysis
	B3 Interactive and transactional services	B3.1 Concentrate more on transaction-rich and transaction-deep services	B3.2 Try to create a good mix of simple, but content-rich and well-planned transactional services		B3.3 Analyse amount of interactivity and seamlessness of integration (interactive) services

Thematic Issues		Recommendations			
		CENTURi <sup>21</sup> Partners: Further Roll-Out	Take-Up Partners: New Implementation	European Commission: Future Programmes	Methodological: Future Assessments
	B4 Create awareness and encourage use	B4.1 Promote the "CENTURi <sup>21</sup> Portal" among target groups and provide incentives for its use	B4.2 Involve promoters and multipliers from the start; design a professional market	B4.3 Help promoting e-government to stakeholders and the public	
	B5 Sustainable service delivery and business models	B5.1 Elaborate a business plan with clear and realistic goals that are being monitored	B5.2 Define a long-term funding model with realistic goals	B5.3 Establish good practice and promote business case development	B5.4 Assess institutional issues in the service delivery/ value chain
C Creating a sustainable business case	C1 Business process re-engineering and back-office integration	C1.1 Assess remaining back-office integration tasks	C1.2 Prioritise re-organisation of those services which are to go online first	C1.3 Accept that RTD in e-government requires non-technical (institutional) "engineering"	C1.4 Better include (back-office) service and data delivery processes in evaluation of effectiveness and efficiency
	C2 Integration across departments and across different government agencies	C2.1 Co-operate more widely with a view to establish cross-agency portals	C2.2 Conclude data sharing agreements with other providers		
	C3 Impact assessment and benchmarking	C3.1 Continue progress monitoring, especially regarding use, user satisfaction and efficiency	C3.2 Involve personnel with good experience in evaluation	C3.3 Consider a two-stage project plan with a clearly separated core evaluation period of sufficient length	C3.4 Efficiency gains cannot be measured in a short roll-out period; a long-term approach is necessary
			C3.5 Measure progress regularly concentrating on key goals and using suitable tools	C3.6 Emphasise a common evaluation approach including a "layer" of programme-wide indicators	C3.7 Could consortium agreements contain sanctions for delays in meeting evaluation-related milestones???



## D3.3 - Evaluation Report

Thematic Issues		Recommendations			
		CENTURi <sup>21</sup> Partners: Further Roll-Out	Take-Up Partners: New Implementation	European Commission: Future Programmes	Methodological: Future Assessments
		C3.8 Clarify whether (and how) progress towards achieving high-level goals can be assessed	C3.9 Be realistic in defining expectations on timing and impacts	C3.10 Consider an ex-post evaluation of projects	
	C4 Education and training of personnel	C4.1 Establish remaining training needs of personnel	C4.2 Check whether all required qualifications are available		C4.3 Provide support for introducing a continuous "self-evaluation" process
	C5 Change management	C5.1 Identify lessons learned for introducing and managing regional innovation processes	C5.2 Establish high-level commitment to key goals and ensure consistency with other strategic initiatives	C5.3 Promote regional integration of RTD and operationally support cross-programme cooperation, i.e. not focus on e-government alone	C5.4 Ensure that ongoing evaluation is part of the change management process

## 6.1 Designing Tools and Services (A)

<b>A1: Customer/ citizen-centric development process</b>
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***A1.1: Improve involvement of community groups and commercial service providers, especially SMEs.***

***A1.2: Establish citizens' needs and expectations in a pro-active process.***

***A1.3 Emphasise the need of user involvement in all project phases.***

***A1.4 Consider a focus group-based evaluation approach throughout all project phases.***

E-government is not so much about government as it is about customers/ citizens. The mindset needs to change from being government-centric to being customer-/ citizen-centric.

The involvement of community groups is an important part of a citizen-centric development process. Citizens' needs and expectations will need to be integrated in the service palette of an e-government portal. Users provide the required information as to what needs to be developed, and their feed-back on existing products or systems is the basis for changes and improvements. It is, therefore, important that the European Commission emphasises the involvement of users in all project phases, in particular including in-depth user needs analyses and evaluation processes.

Community service providers should be actively targeted in order to improve the overall attractiveness of a portal and to make it a "real regional" portal.

Experience in CENTURi<sup>21</sup> showed that the primary focus of an e-government project is, as expected, on the provision of public services. However, commercial services are perceived as necessary and complementary to complete the palette of services offered to citizens in a region. It will, therefore, be important to specifically promote and actively support SMEs (by possibly running an awareness campaign or establishing needs in a local focus group process). Commercial services offered by businesses and, more particularly SMEs, should complement the provision of public services.

A project that develops a product of any kind that it wants to exploit (sell, market, etc.) needs to conduct a thorough evaluation process which feeds into and provides valuable results to the marketing and exploitation process.

**Change of mindset  
from government-  
centric to  
citizen-centric.**

A recommendation for take-up projects as well as for new implementations would, therefore, be a specific survey addressed at target groups, especially under social inclusion and regional cohesion aspects.

<b>A2: Basic tools and standards for technical integration</b>
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***A2.1 Further develop the innovative themes approach based on "life events".***

***A2.2: Use CENTURi<sup>21</sup> technology to promote standards internally.***

***A2.3: Facilitate take-up of successful technologies through specific programmes.***

A considerable number of public services was developed within CENTURi<sup>21</sup>. The theme-based approach of the project was successful and perceived as a sign for "real innovation". It should be further pursued by the CENTURi<sup>21</sup> partners.

In CENTURi<sup>21</sup> take-up projects, the use of common electronic forms as well as proven interfaces, design standards and themes should be promoted internally, i.e. within the institutional structures of a local or regional authority, in order to facilitate technical integration.

The technical ability to implement should be a prerequisite of a well-developed e-government portal rather than an obstacle for practical implementation.

It will be important to limit the gap between technical development and practical implementation. Therefore, and similar to "take-up" projects under FP5, the adoption of technologies proven to be successful should be an integral part of specific programmes in FP6.

**... limit the gap  
between technical  
development and  
practical  
implementation**

<b>A3    Security and privacy</b>
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- A3.1: Identify concerns of users yet "to be won over" and address their concerns.***
- A3.2: Be aware that users' trust is a pre-requisite of successful service delivery.***
- A3.3: Provide for a special focus on e-government in FP6 IST theme on trust & security.***
- A3.4: Address evaluation of security/ privacy concerns more specifically.***
- A3.5: Promote CENTURi<sup>21</sup> as a secure and trustworthy portal, emphasising that it is not yet another Internet site.***
- A3.6: Adopt a differentiated security policy.***
- A3.7: Address privacy and security concerns through awareness raising and benchmarking activities; consider promotional schemes.***
- A3.8: Explain CENTURi<sup>21</sup> privacy policy to users.***

Security issues need to be solved to push the integration of services that involve the release of any kind of personal or financial information to the Internet.

CENTURi<sup>21</sup> has proven to be a secure and trustworthy system. Interviews and end-user questionnaires further revealed that the potentials the trial portals offered need to be promoted. Differences that exist in comparison to other Internet sites, in particular in terms of the theme-based approach and the concentration on life-events, need to be specifically emphasised.

The CENTURi<sup>21</sup> evaluation exercises revealed that there are many undecided users (24%) in the sense that they are unsure whether to use CENTURi<sup>21</sup> in the future or not. These users are the ones CENTURi<sup>21</sup> still needs to convince of its advantages, i.e. those who still need to be "won over". An important focus in this sense is to ensure trust and confidence in the system as a pre-requisite of its use. This can only be achieved if, in a first step, the specific concerns of the users regarding security and privacy are identified and, in a second step, considered in practical terms in the design and implementation<sup>37</sup> of a (regional) e-government portal.

**CENTURi<sup>21</sup> has  
proven to be a  
secure and  
trustworthy system.**

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<sup>37</sup> However, it also needs to be considered that this second step is a massive and expensive task as most processes are still manual or at best semi-automatic.

Some CENTURi<sup>21</sup> users did not appreciate having to register (or log-in) again when moving, for example, from one theme to the next or from one regional portal to the next. The reason for this was that CENTURi<sup>21</sup> put specific emphasis on data security and did not want to risk the (unauthorised) release of private data on its demonstration portals.

The inherent privacy policy was, however, not well explained on the respective portals. This needs to be changed on fully developed and implemented CENTURi<sup>21</sup> portals which will be online.

It is important to bring the message across that e-government portals are no tools to "spy on" citizens. Instead, e-government portals should be areas of cyberspace where citizens feel that, opposite to many private Internet sites, the data they enter is handled in a secure manner and with respect of their privacy. In this sense, it is imperative that different authority departments (organisations, institutions of government) do not use data provided in other departments unless the citizen provides her/his approval to do so. Citizens need to be in control of their data and this message should be emphasised and explained.

Depending on the types of services (and tasks), different levels of security should be defined and explained to the users in CENTURi<sup>21</sup> take-up projects. Not all services require the same high level of security (data protection).

In future IST-programmes, the European Commission should clearly state that "trust and security" are key components for success. In addition, the Commission should put specific emphasis on raising awareness about privacy and security issues. While privacy relates to controlling the access to data, security is being concerned with protecting this data and the transaction in which it is used (Jupp, 2001).

Benchmarking activities need to include positioning in relation to identified and agreed privacy and security benchmarks. In addition, promotional schemes could be considered in form of, for example, running marketing campaigns to increase publicity for the issue or by offering fora for best practices in order to provide strategic incentives.

It should be borne in mind that security and privacy concerns could be a substantial obstacle for the success of an e-government portal and, therefore, should be specifically addressed during evaluation exercises.

**Trust & security are  
key components of  
success.**

<b>A4: Multi-channel service delivery</b>
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***A4.1: Provide specific services for new access channels and promote their use.***

***A4.2: Avoid exclusion of potential users through a purely Internet-based approach.***

***A4.3: Promote 24/7 mobile services.***

***A4.4: Non-Internet based access is hard to measure, and requires targeted evaluation.***

Services may need to be tailored to new access channels, such as WAP, PDA, etc. Once developed, citizens need to be made aware of such specific services offered and their respective advantages.

Access to services is not limited to the use of the Internet. Citizens are ever more frequently using new access channels. The service delivery (structure) needs to pay tribute to this development by, for example, providing specific services tailored to different access channels in order to not exclude potential users.

Furthermore, availability in time should be well considered. Responsive public services include development of services available 24 hours a day, 7 days a week.

As the CENTURi<sup>21</sup> evaluation exercise has shown, non-Internet based access is rather difficult to measure. In future IST-projects, new access media need to be specifically emphasised considering their increased importance and, consequently, also need to be specifically targeted in evaluation.

**In future IST-projects,  
new access media  
need to be specifically  
emphasised.**

## 6.2 Delivering Content-Rich Services (B)

<b>B1: Up-to-date, relevant and attractive content</b>
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**B1.1: Define a clear strategy and concrete processes for content delivery and content management.**

**B1.2: Arrange for content delivery from "day one".**

**B1.3: Initiate benchmarking and best practice definition in value chain management, service & business model development.**

**B1.4: Include content analysis in evaluation.**

**B1.5: Focus on "core business services" highly relevant for users needs.**

**B1.6: Structure services around customer needs.**

**B1.7: Put more emphasis on non-technical issues in RTD programmes.**

Users do not easily forgive any shortcomings in terms of content. If the palette of services is not appealing, or services are irrelevant to the user or if information is wrong or simply outdated, users may very quickly lose interest in the portal and search for other options.

**...shortcomings in terms of content are not easily forgiven.**

Local and regional authorities need to define a clear strategy for content quality and reliability management for their e-government portals. All actors involved in the service provision process, including operators, content providers and service providers<sup>38</sup>, need to then define and agree upon the specific processes involved in the delivery and management of content.

In order to ensure content delivery as well as (a minimum level) service quality, actors of the value chain should conclude service level agreements (in written form). These agreements should set targets right across (public) services for modernisation and reform. Furthermore, service guarantees and specific "duties"<sup>39</sup> of the value chain actors as well as possible sanctions for non-performance should be agreed upon in service level agreements. Finally, since all actors of the value chain intend to, at least, cover their costs, commercial considerations (revenue share) should be considered and detailed.

<sup>38</sup> See chapter 3.1.4 for a detailed description of these appraisal groups involved in CENTURi<sup>21</sup>.

<sup>39</sup> For example, a document that shows up on a portal will be downloadable as a pdf file within 24 hours.

The content delivery structure should be as easy as possible. Technical know-how to deliver and implement should not be the primary skill of a person who wants to deliver a service (or put a service online). Such a person needs to concern her/himself primarily with the content of the service and reduce the actual service delivery to a click on the mouse.

Internal structures and processes, however, only set the frame for service delivery and implementation. Decisions which services to actually include on an e-government portal should be derived from the needs of the customers (by means of a thorough user needs analysis).

“Core business services” are understood as those services central to an authority's tasks. A thorough user needs analysis should, therefore, also allow for the determination of those business services that offer relevant and attractive content to the users.

It is essential for the success of e-government services to arrange for content delivery from “day one”. Take-up projects should add more content and interactive and real-life services than (were possible to integrate) in CENTURi<sup>21</sup>. In addition, the potential of themes and generic services (e-consult/ i-consult) needs to be fully exploited and a good mixture of public and commercial services to be found.<sup>40</sup>

**Content delivery  
from “day one”.**

A project that develops a product it wants to exploit (sell, market, etc.) needs to conduct a thorough evaluation process which feeds into and provides valuable results to the market & exploitation process. Such an evaluation process includes an evaluation of content and its relevance to the user.

On the EU level, the review as well as the structured and open exchange of know how and best practices should be organised. Furthermore, future RTD programmes should not only focus on technical, but also on institutional and commercial issues.

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<sup>40</sup> While the variety of ideas showed high potential, the obstacle to actually put an application online may have been too high in technical terms. In addition, strategic policies of local and regional authorities and legal issues over ownership, maintenance, risk of litigation and amount of human resources required hindered progress of content delivery in CENTURi<sup>21</sup>.



<b>B2: Involvement of citizens and businesses</b>
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- B2.1: Develop more participatory services for citizens.***
- B2.2: Arrange for lively participation of citizens in moderated fora and provide also the opportunity to influence decision making.***
- B2.3: Emphasise citizen participation and e-democracy as essential elements in (integrated) e-government concepts.***
- B2.4: More participatory and continuous evaluation techniques and group assessments should be considered.***
- B2.5: Businesses need to be targeted more specifically.***
- B2.6: Priorities for service development should follow users well established needs.***
- B2.7: Ensure that SMEs participate more actively in European programmes.***
- B2.8: Resolve remaining usability problems.***
- B2.9: Involve user groups to test ease of use especially of themes and transactional services.***
- B2.10: Conduct intermediate usability analysis.***

It is absolutely necessary to develop and implement services that are relevant and interesting to the user and not those that possibly look nice or are fairly easy to implement, but nobody needs.

Local or regional authorities need to not only know who their customers (users) are, but also what their wishes are in terms of electronic services that make life easier for them. The ability to attract repeat visitors to an e-government portal requires that they find the services that they need.

For these reasons, specific emphasis should be placed on a thorough and in-depth user needs analysis in possible CEN-TURi<sup>21</sup> take-up projects or any new implementations.

Users may very quickly lose interest in a (regional e-government) portal and search for other options, if there are time-consuming obstacles in navigating through a portal.

Therefore, usability and an error-free navigation should be ensured before a regional e-government portal goes online (and while it is online).

**...need to know  
the customers  
and their wishes.**

In addition to a more in-depth user needs analysis in possible take-up projects, users should also be involved to test the ease of use of a (regional e-government) portal.

A mechanism should be in place to adjust the composition of services provided if the test reveals any shortcomings in the ease of use. For a CENTURi<sup>21</sup> take-up, it will be particularly important to check for the ease of use of themes and transactional services as these could only be tested to a limited extent during the final stages of the CENTURi<sup>21</sup> project.

During the course of a project, routine monitoring of customers' views on public services should be conducted in order to ensure proper usability of the system being developed. Such an intermediate usability analysis, however, only makes sense if a mechanism is in place to then adjust the service provision where necessary.

E-government could potentially stop the decline in confidence and enhance participation by ensuring citizens are informed, involved, and influential. E-participation should be included in any e-government concept in order to attempt bringing citizens closer to government.

Participation should also be an evaluation theme. Participatory and continuous evaluation techniques include the involvement of key actors in evaluation exercises in which an independent evaluation expert could, for example, moderate and systematically analyse user groups.

Businesses could provide attractive services, but need to be targeted more specifically. In particular, SMEs carry a high potential in terms of content delivery (and are generally economically important).

**SMEs carry a high potential in terms of content delivery.**

For SMEs, it is necessary to run specific promotion and provide active support. If possibly, CENTURi<sup>21</sup> partners should run awareness campaigns and establish their needs in local focus group process.

As two of the interviewed regional decision makers stated:

- CENTURi<sup>21</sup> could have a positive impact on employment "if it was expanded to be more business friendly and allowed entrepreneurs to set up firms easily by simplifying administrative processes" and
- CENTURi<sup>21</sup> could make rural locations "more attractive for SMEs".

The involvement of SMEs requires the creation of a structure to do so. There could be a service and content filtering association (for example, an additional service offered by chambers of commerce or professional associations) in place that is responsible for (or offering) putting services or content for SMEs on the regional portal or more general on the Internet.

SMEs are a major driving force of the European economy. Their participation in European programmes, however, appears rather limited. It is advisable to ensure SME participation more actively, in particular with respect to the soon-to-be-launched Sixth Framework Programme (6FP).

In order to achieve a higher involvement of SMEs in European programmes, specific promotions and active support for SMEs are necessary for example by running awareness campaigns or by establishing needs of SMEs in local focus group processes.

The eEurope Action Plan (European Commission, 2002) has proposed actions for SME support.<sup>41</sup> It is now up to the Commission to live up to their own aspirations and to meet the goals they set.

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<sup>41</sup> European Commission (2002): e Europe Action Plan 2002. Proposed Action - SMEs: "By end 2003, the Commission intends to establish an European e-business support network, federating existing European, national and regional players in this field with a view to strengthening and co-ordinating actions in support of SMEs in the field of e-business. The Commission will foster geographical and sectoral clusters of SMEs working online to encourage innovation in e-business, sharing of good practice and promotion of guidelines and standards.

<b>B3: Interactive and transactional services</b>
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**B3.1: Concentrate more on transaction-rich and transaction-deep services.**

**B3.2: Try to create a good mix of simple, but content-rich and well-planned transactional services.**

**B3.3: Analyse amount of interactivity and seamlessness of integration (interactive) services.**

According to the eEurope 2002 Action Plan (European Commission, 2002), EU-Member States should, by the end of 2004, “have ensured that basic public services are interactive, where relevant accessible to all, and exploit both the potential of broadband networks and multi-platform access. This will require back-office re-organisation<sup>42</sup> which will be addressed in the good practice exercise. It also implies addressing access for people with special needs, such as persons with disabilities or the elderly. Commission and Member States will agree on a list of public services for which interactivity and interoperability are desirable”.

**By the end of 2004, the Commission and Member States will have agreed on a list of public services for which interactivity and interoperability are desirable”.**

A portal needs to be transaction-rich and transaction-deep, but it must also be connected to the back-office in order to provide the transactional capability which will allow it to offer the rich mix of services customers want and governments have promised (Jupp, 2001).

A process can be considered “transaction-deep” if it can be completed entirely (and not just parts of the process) on the portal. This requires that other departments, institutions, or organisations are able to use data a user has provided previously, i.e. during an earlier step of the process. Of course, no data should be forwarded if a user has not agreed to do so. The user needs to decide what happens to the data s/he enters and thereby remains in control of her/his data.

CENTURi<sup>21</sup> showed the primary focus of an e-government project was, as expected, on the provision of public services. However, commercial services were perceived (in particular by interviewees) as necessary and complementary to complete the palette of services offered to citizens in a region. As one of the interviewees even stated “If populated with a wide range of public and commercial services CENTURi<sup>21</sup> has the potential to improve the quality of life in the region”.

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<sup>42</sup> Re-engineering of internal administrative processes that relate, for example, to data collection and data management, electronic information exchange, interagency co-ordination.

Seamlessness of service provision to customers online requires the integration within a government department and a cross-agency, cross-department, and cross-boundary approach – in short what the UK has labelled “joined-up government”. (Jupp, 2001). Seamlessness, together with interactivity, of services should be analysed in future assessments.

<b>B4: Create awareness and encourage use</b>
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***B4.1: Promote the "CENTURi<sup>21</sup> Portal" among target groups and provide incentives for its use.***

***B4.2: Involve promoters and multipliers from the start; design a professional market launch.***

***B4.3: Help promoting e-government to stakeholders and the public.***

E-government is not yet a concept requested widely because it is not known and users will not come automatically. It is, therefore, necessary to create awareness and encourage its use by involving promoters and multipliers and to promote it among stakeholders and citizens.

The "CENTURi<sup>21</sup> Portal" promotion should be primarily citizen-targeted, but also include community service providers, SMEs, and other authorities. Defining specific target groups (among citizens) is a task that varies from one region to another. Easily being forgotten, but also important is the active promotion internally, i.e. among the members (or work force) of an authority or organisation.

**E-government is  
not yet a concept  
requested widely  
because  
it is not known.**

<b>B5: Sustainable service delivery and business models</b>
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***B5.1: Elaborate a business plan with clear and realistic goals that are being monitored.***

***B5.2: Define a long-term funding model with realistic goals.***

***B5.3: Establish good practice and promote business case development.***

***B5.4: Assess institutional issues in the service delivery/ value chain.***

A business plan (see chapter 5.2.3 for an outline) with clear and realistic goals requires top-level commitment and leadership. This involves the formulation of a clear funding model (or financial plan) with realistic goals. The following should be ensured:

- a step-by-step implementation should be envisaged (“start small, scale fast”);
- feasibility and quality in each development step; and
- development of a clear long-term perspective for business development.

A local or regional authority needs to define and pursue a clear vision of what it wants to achieve. In addition, goals need to be set that can be monitored and methods of measuring progress need to be decided upon.

The European Commission should make the task of establishing good practice and business case development an integrative aspect of future programmes.

The assessment of institutional issues in the service delivery and value chain includes:

- analysing the influence of the institutional context on the service delivery (legal framework; competencies, orientations and goals of key actors; funding and subsidy; common practices and standards used);
- recognising the conditions for the creation and safeguarding of value added for each task in the delivery chain;
- identifying the major driving forces and obstacles; and
- involving the actors concerned in the preparation of suggestions for change and the promotion of concrete measures.

**A local or regional authority needs to define and pursue a clear vision of what it wants to achieve.**

### 6.3 Creating a Sustainable Business Case (C)

<b>C1: Business process re-engineering and back-office integration</b>
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- C1.1: Assess remaining back-office integration tasks.***
- C1.2: Prioritise re-organisation of those services which are to go online first.***
- C1.3: Accept that RTD in e-government requires non-technical (institutional) "engineering".***
- C1.4: Better include (back-office) service and data delivery processes in evaluation of effectiveness and efficiency.***

The integration of the back-office requires connection within a department between the front- and back-office functions. It needs to be ensured that requirements of online services in terms of information processing, institutional organisation, staff training, technical equipment, resources, etc. are defined. The parallel operation of online and offline (public) services should be synchronised.

Resources for re-organisations of services are (usually) limited. They will need to be allocated to those services that are to go online first to ensure a high degree of efficiency.

E-government implementation is not an add-on, but may require fundamental institutional change. Therefore, considerable resistances and difficulties may be encountered, which in turn could have negative impacts on the service quality. It is crucial to recognise the importance of awareness, knowledge, cognition, and commitment of individuals and institutions. The understanding of the required changes should go hand in hand with the analysis of current practice which demands close co-operation with the actors involved.

The single components of the service delivery process have to be acknowledged in their own right as conditions for the quality of services. Since the weakest element in the data delivery chain limits the quality of the final result, each step (and agency) involved in the process should be assessed, i.e. both, at the technical level (data exchange, formats, etc.) and the institutional level (finance, sanctions, etc.). For instance, connections within a department between front and back-office functions should be one an important focus of evaluation in future IST-projects.

**E-government implementation may require fundamental institutional change.**

<b>C2: Integration across departments and across different government agencies</b>
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***C2.1: Co-operate more widely with a view to establish cross-agency portals.***

***C2.2: Conclude data sharing agreements with other providers.***

Co-operation across departments and different government agencies should be promoted and the consistency of different approaches and strategies should be ensured with a view to the processes and services they should support.

In CENTURi<sup>21</sup>, applications and themes developed have not been widely used by other partners in the project. For future implementations, it is recommendable to set up data (and content) sharing agreements with other providers in order to ensure a wide range of services and content.

<b>C3: Impact assessment and benchmarking</b>
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***C3.1: Continue progress monitoring, especially regarding use, user satisfaction and efficiency.***

***C3.2: Involve personnel with good experience in evaluation.***

***C3.3: Consider a two-stage project plan with a clearly separated core evaluation period of sufficient length.***

***C3.4: Efficiency gains cannot be measured in a short roll-out period; a long-term approach is necessary.***

***C3.5: Measure progress regularly concentrating on key goals and using suitable tools.***

***C3.6: Emphasise a common evaluation approach including a "layer" of programme-wide indicators.***

***C3.7: Could consortium agreements contain sanctions for delays in meeting evaluation-related milestones ???***

***C3.8: Clarify whether (and how) progress towards achieving high-level goals can be assessed.***

***C3.9: Be realistic in defining expectations on timing and impacts.***

***C3.10: Consider an ex-post evaluation of projects.***



Progress monitoring needs to be a horizontal project activity, i.e. being conducted throughout the lifetime of a project. While the focus of such monitoring activities needs to be on pre-defined (key) goals, suitable tools to measure progress need to be agreed upon and used. Progress monitoring should particularly focus on efficiency gains. In the sense of a citizen-centric (or user-centric) approach, this task should continue to include monitoring of the actual use of the system as well as the user's satisfaction.

It is advisable to outsource evaluation tasks (in a region) and to run interviews and evaluation tasks, in general, by an independent expert with knowledge of the project<sup>43</sup> (but not involved in the development phase) and good experience in evaluation activities.

**It is advisable to outsource evaluation tasks.**

Evaluation as a project activity needs to involve personnel that has at least some experience with the topic gained in previous projects or other areas where evaluation activities were conducted.

EU-funded projects are necessarily limited in their duration. CENTURi<sup>21</sup> was a thirty-month project in which a considerable amount of time was allocated to the technical development of the system. Operation evaluation activities are necessarily placed at the end of the project. However, if delays occur over the course of a project, the demonstration phase and core evaluation period (as happened in CENTURi<sup>21</sup>) may very well be shortened to a sub-optimal length.

For future IST-projects, the European Commission should, therefore, consider a two-stage project plan. The first stage should include the technical development of the system while the second stage should focus on its roll-out (demonstration) and evaluation. The core evaluation period should then encompass at least six months, preferably longer. The start of such a second evaluation-focussed stage, however, required the availability of significant content and the completion of all verification work (in order to fix all the technical problems) and promotional campaigns (in order to ensure a wider validation by end-users).

**... consider a two-stage project plan, completely separating technical development and evaluation.**

The evaluation of real-life applications demonstrated in various regions involved in IST projects could even be the objective of another individual project. It could be considered to completely separate the evaluation from the actual technical development of a project. This could be done by running a project entirely focussed on the evaluation of one or several projects within a programme.

In the case of CENTURi<sup>21</sup>, the core evaluation period was extremely short (thirteen weeks) and the objects of evaluation

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<sup>43</sup> And/or local/ regional circumstances (for example local university departments).

were, in fact, trial versions of regional e-government portals. Since the development of a portal (scaling up in terms of content and services), however, will continue after the end of a project, it would be useful and interesting to conduct an ex-post evaluation, for example three years after completion of a project. Sufficient funding to ensure high quality evaluation would need to be ensured.

Evaluation of CENTURi<sup>21</sup> was based on commonality in terms of defining impacts and indicators as well as in defining and applying data gathering tools (questionnaires, interviews, automatic counts, etc.). Commonality proved to be important to allow for a meaningful evaluation in a project involving six very diverse European regions.

“Commonality” should also not be limited to the evaluation within one individual project. It should also be the basis for evaluation across projects, i.e. within entire programmes. The European Commission should, therefore, consider defining and including a “layer” of programme-wide indicators .

Projects need to be ambitious, though realistic. In particular, in defining expectations regarding impacts, it should be considered that a project will be assessed based on these impacts. Projects are also limited in time. While high ambitions of a project demand a strict timeframe, it is advisable to allow for some leeway in time planning to cope with delays that will inevitably happen in (technical) projects.

However, operational evaluation activities necessarily need to take place during the final phase of a project, and these activities (just like any other project activities) cannot be conducted after the end of a project. It is, therefore, imperative to meet requirements and to deliver agreed milestones without delays. It is recommendable to include sanctions for delays in meeting (evaluation-related) milestones in consortium agreements.

<b>C4: Education and training of personnel</b>
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***C4.1: Establish remaining training needs of personnel.***

***C4.2: Check whether all required qualifications are available.***

***C4.3: Provide support for introducing a continuous "self-evaluation" process.***

In addition to back office re-organisations, the provision of electronic services should be accompanied by investment in human capital in order to achieve real efficiency gains.

During the course of CENTURi<sup>21</sup>, high-level qualifications of personnel became apparent. At the same time, some partners will have detected deficiencies in terms of qualifications of their work force. It is important to establish needs for training and improvement of qualifications, and, if necessary, to invest in these needs.

Despite all technical innovations and developments, it is easy to forget that human capital is their primary driving force. Therefore, partners of take-up projects and new implementations need to carefully check whether all required qualifications are in place and, if necessary, invest in human capital to meet these qualification demands.

Future assessments of IST-projects would benefit from a continuous "self-evaluation" process. Evaluation experts need to set up the methodology and framework in order to support project partners in this task.

**Investment in  
human capital in  
order to realise  
real efficiency gains.**

**C5: Change management**

- C5.1: Identify lessons learned for introducing and managing regional innovation processes.***
- C5.2: Establish high-level commitment to key goals and ensure consistency with other strategic initiatives.***
- C5.3: Promote regional integration of RTD and operationally support cross-programme co-operation, i.e. not focus on e-government alone.***
- C5.4: Ensure that ongoing evaluation is part of the change management process.***

Change management concerns public authorities and how they manage the change to become an e-service provider. CEN-TURi<sup>21</sup> partners need to use the experience and lessons learned from the project in order to introduce and manage regional innovation processes.

Information age government demands the development of a “corporate” IT strategy for government. Commitment needs to be ensured on the highest levels (of decision-making and management). Such IT strategies need to be consistent with other strategic initiatives and should, for example, elaborate how and to what extent comparisons with other e-government portals and programmes will be conducted.

Future European programmes should consider the promotion of regional integration of RTD. Cross-programme co-operation and its proper support by the European Commission are imperative for a balanced provision of electronic services.

E-government is a concept that will continuously develop and advance. In this context, it is important that evaluation is continuously conducted to offer feed-back and results on past developments and to influence future advances.

**E-government is a concept that will continuously develop and advance.**

## 7 Conclusion

CENTURi<sup>21</sup> has the potential to become an e-government portal that fulfils the high demands of citizens, community groups, commerce, and councils.

According to Jupp (2001), the primary lesson that e-government (portals) have to learn is “think big, start small, scale fast”. From conception of the project, CENTURi<sup>21</sup> indeed thought big. During the project a system was then developed that culminated in the demonstration of six regional portals which offered a limited amount of content and services. In this sense, CENTURi<sup>21</sup> started small. Due primarily to the late (and delayed) roll-out, CENTURi<sup>21</sup> had only a very small time window to scale fast in the final stages of the project. The opportunity to realise the potentials of CENTURi<sup>21</sup> by scaling up and adding more needed content and services could come after the end of the project, in either further developments of CENTURi<sup>21</sup> itself, take-up projects, or new e-government implementations utilising the CENTURi<sup>21</sup> system.

**“think big,  
start small,  
scale fast”**

CENTURi<sup>21</sup> could only be a small but important contribution towards the achievement of the strategic high-level success criteria, i.e. to:

- increase the proportion of citizens successfully using community online service delivery;
- increase the range of public services available electronically;
- reduce expenditures on traditional service delivery by targeting specific public services; and
- create several new commercial organisations geared to exploit CENTURi<sup>21</sup> service, product and business opportunities.

Therefore, CENTURi<sup>21</sup> was evaluated according to its achievements with respect to identified impacts (see table 23). The actual achievements were constrained by the fact that CENTURi<sup>21</sup> regional portals rolled-out at the end of the project were trial versions rather than fully developed and “market-ready” e-government portals.

**Table 23: Impact Achievement**

Impact	Achievement
Impact 1: Scope of public and commercial services	<b>+</b>
Indicator category "actual use"	<b>++</b>
Indicator category "variety of service provision"	<b>0</b>
Indicator category "quality of service"	<b>++</b>
Impact 2: Secure access to public and private services	<b>+</b>
Indicator category "access"	<b>+</b>
Indicator category "security"	<b>++</b>
Indicator category "time saving"	<b>?</b>
Impact 3: Co-operation between content and service providers	<b>+</b>
Impact 4: Interaction between citizens and local/ regional governments	<b>+</b>
Impact 5: Level of community involvement	<b>0</b>
Impact 6: Contribution to regional development and innovation	<b>++</b>
Impact 7: Competitiveness of SMEs	<b>0</b>
Impact 8: Adaptability to technological progress	<b>++</b>
Impact 9: Exploitation of existing networks and other infrastructure	<b>?</b>
<b>Legend:</b> <b>++</b> Expected impact achieved <b>+</b> Expected impact partly achieved <b>0</b> Expected impact not achieved <b>?</b> Insufficient data to allow assessment of impact achievement	

### Scope of public and commercial services

CENTURi<sup>21</sup> showed a clear public service profile and a high demand for local and regional information. On the other hand, there was a relatively low level of interaction and transaction on CENTURi<sup>21</sup>.

The overall satisfaction, in particular with public services on CENTURi<sup>21</sup>, was confirmed. Users were positive with respect to the satisfaction with CENTURi<sup>21</sup> and their intention to use it in the future.

The quality of public services provided was confirmed. However, more services and more relevant and up-to-date content are required to bind users in the long-run. In particular, com-

**Overall satisfaction with public services on CENTURi<sup>21</sup> confirmed.**

mercial services were missing and need to be included to ensure the desired variety of services.

### **Secure access to public and private services**

CENTURi<sup>21</sup> has proven to be secure and trustworthy. However, its security system had not yet developed a wide level of trust among all users. It needs to better promote and explain its high security level, in order to distinguish it from the low security of “the Internet”.

**CENTURi<sup>21</sup> was  
secure and  
trustworthy**

### **Co-operation between content and service providers**

Co-operation between content and service providers improved in part. However, this statement was derived only from a very limited amount of interview responses. Therefore, in order to better assess co-operation and working relationships between key actors in e-government, evaluation in future e-government and IST-projects needs to specifically focus on these issues.

### **Interaction between citizens and local/ regional governments**

CENTURi<sup>21</sup> confirmed its high potential to improve interactions between citizens and (local/ regional) governments. This was particularly emphasised by the stated intentions of the majority of users to use CENTURi<sup>21</sup> instead of other traditional means of information retrieval. However, actual opportunities for interaction (interactive services) on the trial versions of the CENTURi<sup>21</sup> regional portals were still limited.

**Only interactive  
services make  
people interact  
with government.**

### **Level of community involvement**

Evaluation results could not confirm an increase in the ability of individual citizens and community groups to make own information “services” available through the CENTURi<sup>21</sup> regional portals to interact more easily and to generally enhance the level of involvement in setting up new (public) services. The community involvement, in terms of the amount of applications that have been put on the CENTURi<sup>21</sup> portals, was disappointing, in particular considering the many ideas from citizens for community applications that became apparent in the analysis of the end-user questionnaires.

This assessment of the level of community involvement is not to be confused with the apparent enthusiasm and interest of the community.

### Contribution to regional development and innovation

The potential of CENTURi<sup>21</sup> to have an impact on the local economies was confirmed. However, the potential can only be exploited once fully developed and “market-ready” CENTURi<sup>21</sup> portals are implemented.

CENTURi<sup>21</sup> could necessarily only have a small but important impact on the wide range of aspects that make up the attractiveness of a region (including, for example, impacts on regional employment, new investment, new citizens and visitors, social inclusion, regional regeneration and sustainability).

**“If populated with a wide range of public and commercial services CENTURi<sup>21</sup> has the potential to improve the quality of life in the region”.**

### Competitiveness of SMEs

SMEs were not involved in a sufficient manner in CENTURi<sup>21</sup>, because the emphasis in the project was on public rather than commercial service provision.

Public and commercial services on a regional portal are complementary. The optimal mixture of these services has to be determined in a thorough user needs analysis. SMEs carry a high potential in terms of content delivery. Therefore, the inclusion of (regional) SMEs and their services is not only absolutely mandatory, but also mutually beneficial for the success of a regional portal and SMEs as well.

### Adaptability to technological progress

Evaluation results confirmed CENTURi<sup>21</sup>'s ability to adapt to technological progress. Evaluation results confirmed that CENTURi<sup>21</sup> succeeded in providing a new generation of integrated software products for general use (beyond the scope of CENTURi<sup>21</sup>) feasible to integrate all regional government services. CENTURi<sup>21</sup> was well-suited for turning manual services into online services. Hence, it possesses the ability to satisfy the needs of the majority of users who stated they would use CENTURi<sup>21</sup> instead of other traditional means of information retrieval in the future.

### Exploitation of existing networks and other infrastructure

It was not possible to derive an assessment regarding the exploitation of existing networks and other infrastructure due to the lack of suitable data.

### Evaluation Lessons Learned

CENTURi<sup>21</sup> evaluation suffered in part from the low quantity and quality of data that could be made available. Due to the necessary focus in an IST-project on the technical development of the system as well as (inevitable) delays in this process, the



focus on evaluation was easily lost. In CENTURi<sup>21</sup>, the core evaluation period had to be shortened to a sub-optimal length of thirteen weeks. Therefore, a two-stage project plan, completely separating technical development and evaluation, should be considered in future (IST-) projects.

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## 9 Abbreviations and Acronyms

5FP	Fifth Framework Programme, also abbreviated FP5
6FP	Sixth Framework Programme, also abbreviated FP6
AC	Automatic Counts – CENTURi <sup>21</sup> data gathering tool
CENTURi <sup>21</sup>	Community Empowerment Network Through Universal Regional integration for the 21 <sup>st</sup> Century, IST Project IST-1999-10919
DEB	Debrecen – Second largest city in Hungary; Together with the Hajdú-Bihar County constituting the Hungarian CENTURi <sup>21</sup> region
EU	European Union
FACT	Collection of Factual Information - CENTURi <sup>21</sup> data gathering tool
HAM	Hämeenlinna - City in Finland and Finnish CENTURi <sup>21</sup> region
ICTs	Information and Communication Technologies
IST	Information Society Technologies
IT	Information Technologies
LIM	Limerick - City in Ireland and Irish region participating in CENTURi <sup>21</sup>
MON	Monetarisisation of Data - CENTURi <sup>21</sup> data gathering tool
PDA	Personal Digital Assistant
RTD	Research and Technology Development
SMEs	Small- and Medium-Size Enterprises
SUR	Survey - CENTURi <sup>21</sup> data gathering tool
TOB	Task Observations - CENTURi <sup>21</sup> data gathering tool
UKW	UK Region – West Sussex; Together with Devon constituting the UK Region participating in CENTURi <sup>21</sup>
URL	Universal (or Uniform) Resource Locator; Electronic address for an information source on the Internet
VEN	Regione Veneto; Italian CENTURi <sup>21</sup> region
VER	Verification-Specific Tools - CENTURi <sup>21</sup> data gathering tool
WAP	Wireless Application Protocol
WP	Workpackage
WSW	West Sweden; Region participating in CENTURi <sup>21</sup>