

Smart communities initiatives

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Abstract

Information Communication Technology (ICT) is literally changing every aspect of our life as citizens, employees, employers, parents, friends and as members of any type of community. We are changing the patterns of our professional and social lives. It is not surprising that a great emphasis is put on the possibilities that this new technological development can offer for local communities, governments and their citizens in order to increase quality of life, education, job opportunities and general prosperity.

The concept Smart Community was first used in 1993 in Silicon Valley, California, when the area experienced a recession that was deeper than the national economic downturn, and predicted to last longer. Silicon Valley business leaders, community members, government officials and educators decided together to help jump-start the region.

Today the concept of Smart Community is widely used. The Smart Communities phenomenon is global in the sense that it exists all over the world as well as local since it is often based on local initiatives.

In the Smart Communities Guidebook, developed by the State University of San Diego (1997), Smart community is described as *a geographical area ranging in size from neighborhood to a multi-county region whose residents, organizations, and governing institutions are using information technology to transform their region in significant ways. Co-operation among government, industry, educators, and the citizenry, instead of individual groups acting in isolation, is preferred. The technological enhancements undertaken as part of this effort should result in fundamental, rather than incremental, changes.*

This article compares different approaches towards the phenomenon of Smart Communities, similarities and differences, how the co-operation between countries, regions and Smart Communities function and if there are any lessons learned.

Keywords: *Smart Communities, ICT, government and business co-operation*

1. Background

Information and Communication Technology influences all aspects of life, relationships and development. The 1980's and 90's were the transition decades. Now it is obvious and clear for everybody that ICT has fundamentally changed and still is changing the

conditions of living, communicating and working as well as for producing and distributing knowledge.

Communities around the world are responding to the needs of their citizens by discovering new ways of using information and communication technologies for economic, social and cultural development. Companies and governments that take advantage of these new technologies will create jobs and economic growth as well as improve the overall quality of life within the communities in which they take part.

At the Innovation Festival in Perth (May, 2003) Hon. Dr. Mal Bryce pointed out that *our primary economic and social challenge for this first decade of the new millennium is to harness the new economy and create the new community...one that is an exciting place in which to live and work. The new economy is the Global Knowledge Economy and the new community is the Smart Community.*

The process of innovation is about creating this new future. Bryce M (2003)

2. Definitions

The term Smart Community is generic and gives direct associations towards optimal, positive and sustainable development of a town, city or region.

There are several ways to define what the Smart Community concept means. Some examples follow here:

In Smart Communities Guidebook, developed by California Institute for Smart Communities (1997) at San Diego State University the concept of Smart Community is presented as:

A “smart community” is simply that: a community in which government, business, and residents understand the potential of information technology, and make a conscious decision to use that technology to transform life and work in their region in significant and positive ways.

And in the Implementation Guide (1997), developed by the same Institute:

A “smart community” is a community in which members of local government, business, education, healthcare institutions and the general public understand the potential of information technology, and form successful alliances to work together to use technology to transform their community in significant and positive ways.

Because of these unified efforts, the community is able to leverage resources and projects to develop and benefit from telecommunications infrastructure and services much earlier than it otherwise would. Instead of incremental change, a transformation occurs which increases choice, convenience and control for people in the community as they live, work, travel, govern, shop, educate and entertain themselves.

Smart communities or regions are also economically competitive in the new global economy, and attract and promote commerce as a result of an advanced telecommunications infrastructure.

The Panel on Smart Communities, Industry Canada (1998), suggests the following definitions:

A "community" should be defined as a group of people sharing a similar interest, which includes some or all of the common elements: geography, history, interests, goals, culture, economic and social fabric.

A "Smart Community" should be defined as a community ranging from a neighborhood to a nation-wide community of common or shared interest, whose members, organizations and governing institutions are working in partnership to use information and communication technologies to transform their circumstances in significant ways.

Smart Community International Network (SCIN)'s (2003) definition is:

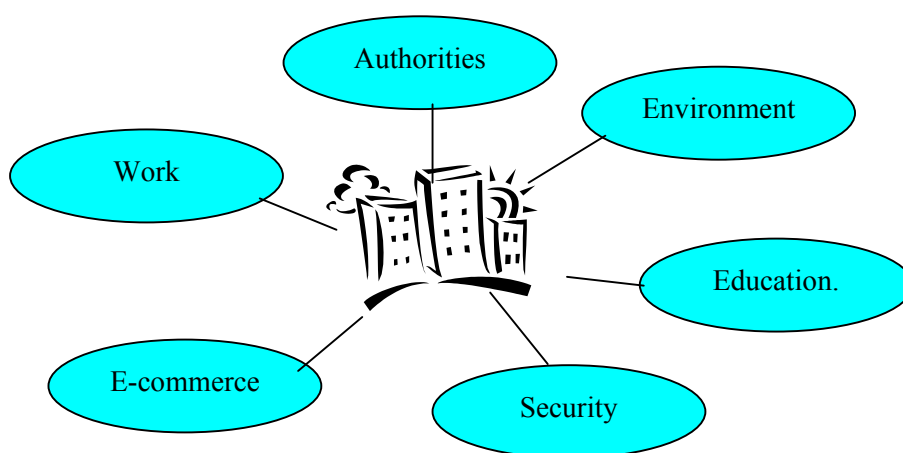
A Smart Community is a community with a vision of the future that involves the application of information and communication technologies in a new and innovative way to empower its residents, institutions and regions as a whole. As such, they make the most of the opportunities that new applications afford and broadband-based services can deliver – such as better health care delivery, better education and training, and new business opportunities.

In a similar way Australian Smart Community is defined as:

Smart Communities are communities with a vision of the future that involve harnessing the power of the Internet and other ICT technologies in new and innovative ways to empower their residents, institutions, community groups and businesses.

In summary the Smart Community concept has a holistic view and tries to incorporate all the possible aspects and parts involved outgoing from a geographically limited area such as a town, city or region and their citizens. This concept sets the community and citizens' needs in focus.

The figure below shows schematically a model for the holistic view on Smart Communities:



It is not enough for a community to offer jobs, space for enterprises or beautiful surroundings in order to be attractive and sustainable for the citizens and enterprises. A Smart Community also has the understanding of all the parties involved and combine the efforts to achieve the best results. The Smart Community concept stresses the importance of collaboration, cooperation and partnership between all parties involved including public institutions, private sector, voluntary organizations, schools and citizens.

ICT is used as a tool. A well functioning infrastructure such as optical fiber broadband and Internet is absolutely necessary but not enough to become a Smart Community. In addition it is necessary to concentrate on ICT applications such as e-voting, e-learning or e-commerce for all the important aspects of the community's activities.

ICT and its applications are there to facilitate involvement of all parties in the development of the community. ICT infrastructure and applications are prerequisites but without real engagement and willingness to collaborate and cooperate between public institutions, private sector, voluntary organizations, schools and citizens there is no smart community.

3. Development

Today, the Smart Community concept is known and used all over the world under different names and in different circumstances. There are local and regional initiatives like in California in the US or national programs like in Canada. Above the national level, there are projects and programs of the European Union and lately there are visible global worldwide co-operations such as Smart Community International Network (SCIN). Below follows some examples of these different approaches.

3.1 USA

US regions and cities decide themselves to start a Smart Communities movement with a clear understanding of the importance of local initiatives and a bottom-up approach. This movement started 1993 with California.

California

California with the Institute for smart Communities at the San Diego State University and CALTRANS (California State Department of Transportation) has been one of the first states and places to investigate how to put the Smart Communities concept in practical solutions. One of the first and successful examples of the usage of Smart Communities ideas was the five years Smart Valley project (1993-1998).

Smart Valley was a non-profit organization dedicated to facilitate the deployment of technologies in order to make Silicon Valley and California a better place to live and a stronger competitor in the world economy. The collaboration between the private and public sectors was an important prerequisite of the success of the Smart Valley project.

Smart Valley achievements included:

- SmartSchools NetDay and PCDay projects, which wired 82% of Silicon Valley's public schools and placed 3,000 networked Pentium processor-based computers with leading-edge teachers. Before the event, fewer than 19% of valley schools were wired.
- Smart Voter 96, the world's first interactive non-partisan election web site providing information about candidates, polling places, and precinct information.
- Smart Valley Telecommuting Guide, which has received worldwide recognition and since 1994 has served as the foundation document for companies implementing telecommuting programs.
- Smart Permitting Project, which makes the municipal permitting process less time and paper-intensive and facilitates companies' plans to build or expand.

Speaking on behalf of the Smart Valley Board of Directors, President and CEO Pete Sinclair in 1998 declared: *Smart Valley was never intended to be an organization that spent most of its time justifying its existence and raising money. Rather, in the Silicon Valley tradition, the organization focused on delivering measurable results.*

In 1997, The Institute for Smart Communities, under the leadership of Lionel Van Deerlin Endowed Professor of Communications and Public Policy at San Diego State University and President of the World Foundation for Smart communities, prof John Eger, produced two important guidebooks: Smart Communities Guidebook (1997) and Smart Communities Implementation Guide. (1997)

In the introduction to the Smart Communities Guidebook (1997) Pete Wilson, Governor of California states:

We all know how vital information and communications technology will be to the economy of the 21st century. Fortunately, no State, nor any nation, is as well-positioned to lead the new global information economy as is California. Our State is already the world's largest supplier of "information software," such as books, movies, music, CD-ROMs, and computer programs, as well as one of the world's top producers of computer and telecommunications hardware.

Ironically, because the pervasive spread of telecommunications and computer technology has so compressed time and space, it is now virtually impossible to govern in the old, hierarchical, top-down style. Rather, just as the Internet and the World Wide Web have evolved as networks of individually designed and maintained computer systems, so too must the coming information economy evolve as a network of "smart communities" and "smart institutions" responding to their own local needs, opportunities, and technological capacity.

The "smart community" concept says that local leaders know far better than State or national officials how next-generation technologies can best be marshalled to a community's benefit. It says that only local political, civic, business, and education leaders, working in cooperation, can bring people and technology together in time to capture the competitive and civic advantages that the telecommunications revolution makes possible.

Smart Communities Guidebook stresses the necessity of collaboration between all parts involved and interested in the development of their own community as well as the importance of the human aspects in the implementation of new technologies. Knowing that technological changes are coming is one thing; knowing how best to put them to use is another.

Market forces may generate new technologies, but they do not give rise to smart communities; only people do - people with a vision, with a commitment to change, and with a willingness to work together with others in their community to achieve a common purpose. Likewise, while technological advances may open up significant new opportunities in a region, communities will not be able to take advantage of these opportunities unless they first transform their social and economic institutions in ways that explicitly foster change, collaboration, and competitiveness. (International Center for Communications, 1997)

Sometimes results can be surprising. In Silicon Valley, the world's leading high-technology center, when businesses sought to expand their technical work force, they discovered the most skilled and best prepared new workers were coming from India, Israel, Ireland, and Singapore and not from the near by schools.

3.2 Canada

In contrast to the bottom-up American approach Canada and the Canadian government have in the most consequent way adopted the top down approach and implemented the concept of Smart communities as a governmental program. Smart Communities was one of six pillars of the Government of Canada's national Connectedness Agenda, which aimed to make Canada the most connected nation in the world by the year 2000 as a complement to the other five pillars (Canada On-line, Canadian Content On-line, Electronic Commerce, Canadian Governments On-line, Connecting Canada to the World).

The Smart Communities Program was a three-year federal program created and administered by Industry Canada to help Canada become a world leader in the development and use of information and communication technologies for economic, social and cultural development.

The program's goal was to help establish world-class Smart Communities (1999) across the country so that Canadians can fully realize the benefits that information and communication technologies have to offer and the objectives were:

- assist communities in developing and implementing sustainable Smart Communities strategies;
- create opportunities for learning through the sharing among communities of Smart activities, experiences and lessons learned;
- provide new business opportunities, domestically and internationally, for Canadian companies developing and delivering information and communication technology applications and services.

The approach adopted by the Canadian government was based on an overall national policy. The Smart Communities program was also initiated in order to achieve the exchange of experiences and better collaboration between different regions of the country aiming for increased prosperity, improvement of quality of life as well as better opportunities for job, education and recreation for all citizens and all parts of the country and the country as whole.

The applications that were important to develop according to the Smart Communities program were:

- | | |
|------------------------------|-------------------------|
| - Health/Medicine | - Social Services |
| - Environmental Management | - Law and Public Safety |
| - Telework and Telecommuting | - Housing |
| - Education and Learning | - Tourism |
| - Transportation | - Access to Government |
| - Information | - Community Networks |

3.3 Australia

Australia's first smart communities emerged 1994-98 and reflected the gradual pace and limitations of "dial up access" to narrow band Internet services. Since 1998, there has been a substantial increase in Smart Community development, which is a result of great awareness and increased network connectivity.

As the key components of Smart Communities were considered:

- Cost effective access to reliable telecommunications services;
- A modern community portal;
- Learning linkages, which foster a continuous learning environment for all citizens;
- Smart Community services initiated by Local, State and federal Government agencies;
- Development of an eCommerce marketplace providing new choices and opportunities for local business;
- Personal safety/security linkages to community support and policing services;
- A new higher order of community engagement.

In essence for Australia, Smart Communities are, Internet enabled, about the development of social capital and encouragement of a new higher order of community engagement.

In the Australian approach the role and the roll-out of broadband infrastructure is stressed as an enabler for a much more sophisticated generation of Smart Community initiatives.

For Western Australia to embrace this phenomenon the real imperative is the not insignificant matter of our international competitiveness. Other very sound reasons for doing so include, stronger communities (community engagement/local interaction) reduced cost of Government service delivery, more effective security and job creation.

Bryce M (2003)

3.4 Europe

There were and are several programs within the European Union that could be defined as a type of Smart Communities programs even if the Smart Community terminology as such is not always used. Organizations such as Telecities, European Digital Cities and Eurocities all within the European Commission could be classified as variations on the Smart Community theme.

What characterize Europe is a collaboration and exchange of experiences on a European level. There are also in most of the European countries similar national and regional projects but it is on the European level that the European Union has taken the lead for coordination and collaboration between different towns, cities and regions above the national level.

Eurocities

In the beginning of the 1990es EuroCities, an association of European metropolitan cities was established. It currently represents 97 cities from 26 European countries and, through its thematic subnetworks, many more large, medium-sized and small cities in Europe. The network aims to improve the quality of life of the 80% of Europeans living in cities and urban areas by influencing the European agenda, and promoting the exchange of experience and best practice between city governments.

EuroCities is the key lobby to promote an integrated European urban policy and the involvement of cities in the European policy process by steering political actions towards all the European institutions: The European Commission, the European Parliament, the Committee of the Regions and the Council. The network encourages and facilitates the planning and implementation of transnational projects between cities.

Alongside its lobbying activities with the EU institutions, Eurocities promotes the exchange of experience and best practice and the transfer of know-how between local governments across Europe, facilitating the development and implementation of transnational cooperation projects. The main areas of EuroCities activities are:

- Cultural
- East West
- Economic development and urban regeneration
- Environment
- Social welfare
- New mobile culture
- Medicine

and TeleCities.

Telecities

TeleCities is the major European network of cities committed to leadership in the Information and Knowledge Society. Established in 1993 in the framework of

Eurocities, TeleCities is open to democratically elected city governments as well as to business and scientific partners. www.telecities.org (2003)

TeleCities has over 100 members from 20 different European countries that share experience and develop practical solutions in order to achieve an Inclusive Information and Knowledge Society. By promoting eCitizenship at local level TeleCities aim to ensure that all citizens can equally gain from the benefits of the Information and Knowledge Society both at European and local level.

TeleCities actively works for its members to:

- ***Influence** the European Agenda to ensure that the interests of cities are taken into account in policy making*
- ***Foster** exchange of experience and knowledge transfer amongst cities. Co-operation and networking with South European and CEE cities is also pursued to contribute to the enlargement goals of the European Union*
- ***Inform** members on policies, programmes and initiatives at EU and local level*
- ***Facilitate and support** the development of EU funded projects relevant to the members and the network*

The main actual TeleCities issues and projects are:

- *Implementing local public online services integrated into **re-engineered processes***
- *Promoting the right to **eSecurity** for all European citizens*
- *Implementing **eDemocracy** through new forms of citizens' participation and community empowerment*
- *Ensuring that all European citizens are **digitally literate and able to profit** from the benefits of the knowledge society*
- ***Benchmarking and learning** from the eStrategies of cities and their practical implementation*

Some of the European initiatives are aiming for a global reach:

Global Cities Dialogue

The Global Cities Dialogue in cooperation with TeleCities is a strategic initiative which proposes an open framework for action for all Cities interested in working together to realise the potential of an Information Society free from social exclusion and based on sustainable development. It builds on the premise that Cities have a key role to play in the Information Society as the geographical, political, socio-economic and cultural entities where millions live, work and directly exercise their rights as citizens and consumers.

Stockholm Challenge Award

The Stockholm Challenge is based on a real global need for sharing and learning among entrepreneurs and champions of the digital revolution. The Stockholm Challenge Award is a non-profit initiative of the City of Stockholm in partnership with the European Commission. It offers IT pioneers from around the world a unique opportunity to showcase projects of excellence, which can be private, public, academic or non-profit.

Global Junior Challenge

Information and Communication Technologies are offering younger generations across the world unprecedented opportunities. The City of Rome has launched the Global Junior Challenge, to help all young people all over the world play a leading role in the emerging Information Society

4. Smart Community International Network

The Smart Community International Network (SCIN) was formally launched on March, 2003 in Malaysia. The Launch Program was only the first of several missions organized by SCIN. Comparable programs focused on exchange & business development will take place in the other SCIN Communities in the not so distant future, whereas new partner communities are expected to join the Smart Community International Network itself.

Responding to the rapid proliferation of Smart Community projects around the world, the Dutch Government has undertaken the first steps toward the foundation of the Smart Community International Network (SCIN). SCIN is a multilateral organization founded by four communities: The City of Stockholm, Sweden; Kenniswijk, the Netherlands; City of Ottawa, Canada; and the Multimedia Super Corridor, Malaysia. The aim of SCIN is to promote, facilitate and institutionalize cooperation by means of exchange, best practice programs, business development, missions, benchmarking tools, and joint project implementation. The SCIN partners have the ambition to excel as leaders in smart community development.

A unique bench marking tool developed and endorsed by the SCIN partners is the Community e-Development Index, which serves as a comprehensive (self)assessment tool for municipalities and regions to analyze their smart community development in a variety of areas such as infrastructure, governance, knowledge capital and services.

Business development is facilitated by means of permanent matchmaking facilities and missions. Active support is offered to private sector parties directly involved in smart community development and the creation of innovative services. For 2003, the founding partners of SCIN selected three areas that serve as focus areas of business development and best practice exchange:

- Mobile Services
- Security
- Video Communication

SCIN founding organizations are:

Stockholm (Sweden)

Stockholm has invested \$ 100 mln in broadband infrastructure and founded the company Stokab for the development of a fibre-optic infrastructure (i.e. dark fibre) in order to stimulate investments in new telecommunications services in the Stockholm region. This has led to several providers of broadband services such as Bredbandsbolaget which connects apartment buildings with 10 Gb/s. This development has had significant effects for the private sector and it will also serve as a new standard

for years to come. Today there are connection points in all municipalities throughout the country.

For more information: www.itsweden.com and www.stokab.se

Multimedia Super Corridor (Malaysia)

The MSC is strategically located south of Kuala Lumpur and north of Kuala Lumpur International Airport. Within this zone, two new cities have been constructed as part of the MSC: Cyberjaya and Putrajaya. A Fibre-Optic Backbone provides the infrastructure required within the MSC. Over 830 companies (national and international), mostly service oriented, are located within the MSC, operating under MSC status. Although the MSC is mainly focused on the private sector, much experience has been obtained through the implementation of Smart Cards, Smart Schools, Telemedicine and E-Government, all of which are among MSC's designated Flagship Applications. An example of this is the adoption of the Smart Card as a passport, driver's licence, means of payment and tool of personal data storage to citizens in Malaysia, with over 2 million cards issued to date.

For more information: www.mdc.com.my

Sm@rtCapital (Canada)

SmartCapital is an initiative to accelerate the development of online services for all sectors of the City of Ottawa. Working in collaboration with numerous partners, SmartCapital is launching services that are transforming the way in which citizens interact with one another, with public and private institutions, and with the world.

SmartCapital is a multi-million dollar initiative boasting 20 online service projects, the engagement of over 50 development partners, and the ability to define, develop and deliver multiple services to online users. SmartCapital was selected by Industry Canada as Ontario's Smart Communities Demonstration Project. The demonstration project involves 12 major initiatives and runs from the year 2001 to 2003.

For more information: www.smartcapital.ca

Kenniswijk BV Eindhoven

Kenniswijk is an initiative of the Dutch ministry of Transport, Public Works and Water Management – since May 2002: ministry of Economic Affairs – to stimulate the development of ICT services and facilities for the consumer. The aim is to become an open consumer market of the future. Kenniswijk is to encompass 40.000 households and 84.000 inhabitants with access to the fibre optic network (Fibre-to-the Home). Full broadband capacity will be offered to the Kenniswijk end-user, including broadband services which are stimulated and subsidized under the Kenniswijk project. Since its start in 2001, 80 service development proposals have been received under the Kenniswijk broadband service (subsidy) program. For more information: www.kenniswijk.nl

5. Local initiatives – example of Tranås, Sweden

The town of Tranås in Sweden is a good illustration of a typical development towards becoming a Smart Community. Sweden is one of the most advanced countries in the usage of ICT and broadband services. Swedish government's ambition is to have provided all households with a minimum of 2 Mb/s per user in 2005. The national government has invested in a national backbone. Regional and local government are stimulated to upgrade their own infrastructure. Already in March 2002 more than 12% of the population had direct access to broadband, and a usage of the Internet is approx.

70% for ages 16-75 y. One of the important initiatives that accelerated the usage of the Internet and investments in the broadband infrastructure was the 24/7 authority program. This program gives the citizens possibility to contact authorities on any levels and to provide services and information to the inhabitants over the Internet 24 hours seven days a week.

Tranås, a municipality of approximately 18 000 inhabitants some 300 kilometers south of Stockholm, is an example of an early adapter of the Smart Community concept. This concept was introduced already in 1998 and in the year 2000 a decision was made to adopt a strategy based on the “Smart Community” concept for the usage of broadband infrastructure for applications and services for the best of the community inhabitants and businesses in all their activities including contacts with authorities, other businesses, schools or any other activity.

Tranås made early efforts to build a municipal area network in order to enhance and make the local administration more efficient as well as to include the local industry in a co-operative project. The vision was that broadband was a means to support Tranås to become a Smart community, a better place to live for citizens and more competitive for future developments.

As in the case of Silicon Valley in California, Tranås experienced an economic decline as the most important business – in this case the fur industry – disappeared. There emerged a clear understanding of the necessity to act, which pushed Tranås in an early stage to look for new ideas and ways to transform a negative trend into a prosperous development for the community. The leading politicians decided to look for new industries that could be established. The conditions necessary to attract new market players were analyzed and Tranås community leadership decided:

- to convert the old industrial part of the town into a hyper-modern building complex for companies with all facilities, including a lot of fiber and broadband connections.
- to facilitate for students to participate in higher education in co-operation with Jönköping University.
- to build a municipality-owned infrastructure based on broadband technology, and in a first phase connect public authorities, larger businesses and schools, then gradually to connect all SME:s and inhabitants. In order to achieve this goal the Tranås Municipal Area Network (abbr. TRAMAN) project was started. TRAMAN was specified, procured and installed in-house by the local authority. The local authority controls TRAMAN fully. All the same, TRAMAN is an open IP based network that offers broadband up to 100 Mbps to the local administration, health care services, schools, enterprises, corporations and households.

Tranås has agreed upon the strategy to become a Smart Community with a motto of the good life for everybody. This strategy is based on collaboration and its main pillars are:

- Security
- Democracy
- Solidarity
- Belief in the Future

To take the full advantage of the broadband investment and the infrastructure on place (TRAMAN) Tranås is well positioned to develop into a Smart Community.

The main applications and projects within the Smart Communities program for Tranås should be pointed out such as:

- Meeting places – to use places natural for human meetings such as tourists offices, libraries, gas stations, restaurants, sport arenas, to citizen information's places with trained personal and computers.
- New forms of co operation – within the community through sports, educational associations, churches, retired people organizations or collaboration between neighbors in order have voluntary actions to e.g. prevent crimes or and in collaboration with adjacent outside of community around tourist information, to share investments in common services or make together procurements.
- Tranås Optimal Portal (TOP) is a portal project with a special focus on secure transmission of data. Today all local politicians, staff of the local authority, a teacher with students and their parents can log into separate areas of the portal in order to share information, documents and communicate. A local industry with worldwide production and marketing of office furniture also uses a specific section of TOP for their customer transactions. The goal is to let all inhabitants and businesses use defined parts of TOP logging on with secure methods, in order to take advantage of the services offered.
- Community emergency center based on co-operation between different public safety representatives such as police, fire brigade and ambulances, as well as security companies and others.

Tranås is an example that shows that it is possible to change a negative trend into success. Tranås wants to share its experiences, both successes and failures, and has decided to establish a Smart Communities Center in order to further develop Smart Communities ideas in a cooperative way.

Tranås is not only emerging from a severe economic decline and depopulation but also becoming a well-known point on the map in Sweden and internationally. Among other things it is a member of EU's organization of Telecities and co operates with Jönköping and Linköping in high education programs. In 2001 Tranås was awarded a first prize as the best community in the country in introducing computer driving permits to its inhabitants. Already Tranås has been presented in many radio and TV programs as well as daily press and magazines. Recently, it was a special program on BBC about Tranås and its development.

6. Further research questions

To use ICT as a tool for development of a community was a novelty ten years ago. Today, every community is striving for getting as good as possible infrastructure in order to exist on the global map. Introduction and usage of ICT in any kind of community are seen as remedies for getting closer different parts of the world and even closing the digital gap. A relevant question would be to investigate the difference between communities that:

- recently introduced the necessary infrastructure and Internet connections
- also provide possibilities of using ICT applications
- include the conditions above plus collaboration and cooperation between all relevant parties?

One of the important prerequisites of being called a Smart Community is collaboration and cooperation especially between the private and public sectors. This raises the following research areas:

- Does the private and public sector cooperation limit open competition?
- Comparison between communities that build, run and provide ICT infrastructure and communities that partly or completely buy a provision and administration of ICT infrastructure, and taking into account long and short terms economic consequences as well as competitive aspects.

7. Conclusions

Every smart community is unique, because its characteristics are based on the community itself. One common denominator is that successful smart communities are the result of a coalition of business, education, government and individual citizens. A successful smart community can be built from the top down, or bottom up, but active involvement from every sector of the community is essential. This united effort creates synergy, which allows individual projects to build upon each other for faster progress, resulting in the involved, informed and trained critical mass necessary for transformation of how the entire community carries out its work.

Most of the Smart Communities or similar initiatives on the local level started from a crisis situation and deep necessity for change. Smart Valley, LatinoNet in San Jose or Tranås in Sweden are examples of such local initiatives.

Some countries such as Canada saw the power of the Smart Communities concept early and in order to fully use its potential and avoid mistakes as well as to learn quickly from successes, the country developed a national program for the practical implementation and to facilitate exchange of experiences.

European Union projects are on the European level with less holistic approach. EU programs stress cooperation and have several projects on different subjects such as tourism, health or environment with representatives from the cities from all European Union nations.

The moment of competition and benchmarking is clearly shown in Canada's Smart Communities Demonstration projects that are the central focus of the program as well as such European initiatives as Stockholm Challenge Award or Global Junior Challenge.

Recently Smart Communities became really international through SCIN. It is still difficult to judge the efficiency and survival of this new organization as well as its future importance and practical value. But already the fact that such an organization exists makes this phenomenon truly global.

Independently of bottom up or top down approaches, local, regional national or above national initiatives, dealing with cities, regions nations or the whole world the phenomenon of Smart Communities exists and thrives.

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