
Integrated Local g2c-e-government and E-Business for Rural Areas: Can a German Public-Private Partnership Model be Exported to Namibia?

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Private Public Partnerships (PPP) have been proven as one solution to ensure that the public receive enhanced services delivery from government and other civic organizations. In countries such as Namibia where the effects of the digital divide are so pertinent, PPP can and should be used to narrow this divide and so bringing to the people the promises of e-government and its many benefits as outlined in Vision 2030 and National Development Plan 3 (NDP3). Furthermore, these Private Public Partnerships can help to contribute to economic growth in particular in the Small Medium Enterprises (SME) sector. This paper attempts to show that these effects can be well achieved in the Namibian context by using the experience of a research/prototype project conducted in Germany to establish a so-called Public Service Network (PSN).

Introduction

Namibia has set itself the challenging goal of being a knowledge driven economy by 2030 (Office of the President, 2004). As part of this transformation, Namibia faces many challenges that must be overcome before this vision can be realized (National Planning Commission Secretariat, 2007). Some of these challenges are to narrow the gap of the digital divide, the decentralization of government services, promoting the growth of small medium enterprises to stimulate economic growth and increase employment. There are numerous other challenges that have been identified and are addressed in the current National Development Plan 3 (NDP 3).

With only 2% of the rural Namibian population having access to computers and 22.3 % in urban areas (mean: 3,8%), the effectiveness of any e-government strategy or government to citizen services (G2C)(Wikipedia.org, 2007) role out seems to pivot fundamentally on access of the citizens to computers and to the internet. What also has become very clear to policy makers in Namibia is the fact that some of these challenges cannot be effectively overcome without the proper establishment of mutually beneficial joint ventures in the provision of infrastructure and services to its citizens. Here, Public Private Partnerships (PPP) play a central role.

In this paper the concept of a successful German PPP project called **Public Service Network** (PSN) is presented and it is investigated in as far this concept is applicable to the Namibian situation.

The Public Service Network (PSN)

Public Service Network (PSN) is a name for a concept developed at the Brandenburg University of Applied Science (Germany), linking and aggregating various citizen-oriented and commercial services offered over the Internet and providing them via a network of publicly accessible Kiosks ("Citizen Kiosks"). This concept is developed and rolled out in a common project of the named University and the company COMplus automation in the rural areas of North-east of Germany.

The main goal of this project is to offer easier access to online services (both administrative and commercial ones) to those citizens with no Internet access at home, in particular in rural areas. Therefore, in addition to the personal help available at the kiosk locations, the electronic offers ("services") are supported by service centres where users can receive professional help on demand.

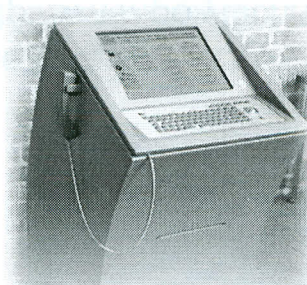
Having started in 2004 with the development of the idea and of the appropriate software at the FH Brandenburg, in the meantime over 20 citizen kiosks at 10 locations in 3 Lands of the Federal Republic were set up - predominantly in rural areas.

In the following, both the technical concept as well as the business model of the PSN will be presented in more detail.

Technical Concept

Physically, the PSN is a heterogeneous network of kiosks offering electronic service based on Internet technology. This network has a number of specific features and functions which to our knowledge have not been seen in this combination for kiosk systems resp. networks. The main features of this system are as follows:

Figure 1: A Typical CitizenKiosk (PSN terminal)



(Note: different models are used in the different locations)

1. Location-Oriented Service Integration and Presentation

A common result of different research efforts on user perception of Internet offers, in particular in e-government and e-commerce, is the finding that many users are "lost" due to the missing connection of Internet services to the location where these services are offered. As a result, different concepts of location-based services, in particular for mobile computing, were developed. In these cases, location-oriented websites are offered which show a different content of one website in dependence on the location of the mobile device.

In contrast, the key idea of location orientation in PSN is not a dedicated website, but an integration of existing websites which have a special relation to the location where the considered kiosk is placed. All available offers (services) are attached to a hierarchical structure that is on the touch screen presented in the form of three pillars. The reader can find this "live" snapshot (in German) on the page <http://www.bsn-kiosk.de>, which looks like the following:

Local	Regional	General
Brb Hospital	Departments	Job & Vacancy Search
Patient Service	Banks & Insurance	E-Mail, Letters & Messages
Questions from A-Z	Education, Leisure & Culture	Health & Medicine
Specialization	Health Institutes	Buying & Ordering
Research & Teaching	Märkische News Paper	Travel & Traffic
Location	Short & Long Distance Transport	Service & Search
Local Service Providers BSN-Conditions	Tourism	

The screen shot shows that the information is classified on the basis of three pillars into Local, Regional and General one. **The Local** pillar (normally labelled with the name of the location – in our case it should be "Hospital Brandenburg") is specific to a particular location. For example in a certain hospital the kiosk in the local pillar could display service offerings specific to this hospital and of interest to residents of the area. This information could include local clinic information, a localised area map and electronic business cards of local business.

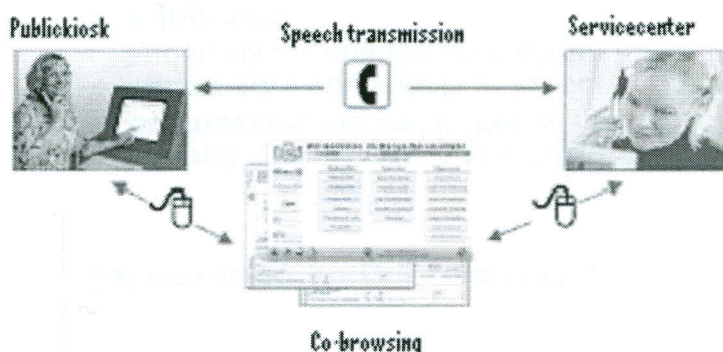
The second pillar under the heading **Regional** would represent service offerings available in the **region** where the particular kiosk is located. Hence in the case of the hospital Brandenburg, this would be service offers specific to this region such as regional news papers, tourism and services of the local administration.

The third pillar of for generalised information such as e-mail services, internet trade, jobs and vacancy search tools, usually relevant for the whole country and beyond (as far as the language of the location can be provided). The variety of services and locations will be explained in more detail in the next chapter.

2. Co-Browsing with VoIP as an Innovative Concept of Help Desks and Service Centres

The concept of Co-browsing supported by a context (i.e. website-) dependent service centre means that an agent of a service centre associated to the browsed site can be called (by pushing the help button) who can see the screen and the movements of the cursor of a user and can help him or her both by online-telephone help and by moving of his or her "mentor-cursor" in surfing a unknown website and e.g. processing of forms.

Figure 2: The Interaction between Public Kiosk Users and the Service Centre/s



Note that there are different kinds of service centres of the PSN: On one hand, there is a centralized service centre operated by the network operator. On the other hand, there will be

more and more dedicated service centres which are specialized on one website and will be usually owned by the owner of the site.

3. Electronic Security Functions and Future E-Health Applications

Some of the service offers on the PSN require high levels of security. This belongs on one hand to contemporary e-government functions like applications for social help, but also future applications like reading of personal data from the electronic health card. To this end digital signature, user authentication and authorization methods are part of the PSN implementation. To ensure security and accordance to German privacy and data protection laws, secure data transmission protocols are used. So, the kiosks are resp. will be soon equipped with the following security and service features:

- Digital signatures for legally binding transactions,
- Authentication, authorization and encoded transmission for secure communication;
- Integration of payment functions;
- Special printing functions for forms and documents.

Here, the digital signature plays a special role: Until now, it is rather seldom that potential users will own a digital signature card. But there are justified expectations towards the upcoming introduction of the eHealth card (elektronische Gesundheitskarte, eGK) in Germany. In this project which is now in its second test phase with regions of 10000 users, in the second half year of 2008 the stepwise introduction for finally 80 Million users will start. All these users will be potential holders of a digital signature card, because (by law) any citizen must be able to read the content saved on its eHealth card. Therefore, electronic kiosks are planned to be used for reading of card content. For the PSN there will be 2 ways to profit from this development: On one hand, existing kiosks with digital signature card readers could be used for reading eHealth card contents, but still more interesting, the newly to be established eHealth kiosks might be used as Citizens Kiosks.

4. Monitoring and Adaptation of Service Offers

An important aspect of the project and a long-lasting task of the Project initiator and coordinator is permanent monitoring of the users response to the electronic offers including the analysis on usage trends and statistics. The results of this monitoring are fed back to the service and location partners (see below) so that they can react with modification of existing and with creation of new services as well as with an adaptation of the interesting user interface. E.g., a less used service may be shifted to a lower layer in the menus hierarchy whereas a more often used or requested service can be shifted on an upper level of the hierarchy.

5. Security of Locations

An important, sometimes forgotten (even in the "secure" Germany is the physical security of locations of kiosks. So it has to be advised and secured that the location partners provide a secure location to host the public access kiosks of the PSN. In projects in and around Germany where attempts have been made to create public access kiosks, many have fallen fowl to vandalism. To avoid this problem a location partner, who also pays for the kiosk or leases it provides a secure location where the Kiosk can be located.

6. Services, Locations and Network Partners

As explained in the paragraph "location oriented service integration", useful services on one location may come from all over the Internet. A possible classification of these services is into of administration, health, employment, finance, postal, travel, trade and cultural areas.

Table 1: Examples of Corresponding Services are Given in the Following Table, PSN Flyer (2006)

Local administration & authorities
Information about competencies, contacts, opening times, essential documents, fees
Filling-in, printing and submitting forms and applications online
Online police office services
Health
Online services of health insurance companies
Online pharmacy, emergency services, online prescriptions for mail order pharmacies
Access to clinical register via health card
Employment
Job centre vacancies
Online community education programmes
Finance & insurance
Banking information
Online banking
Online insurance
Letters & parcels
Information about sending letters and parcels
Pick-up and tracking information
Ordering stamps
Travel
Timetable information and ticket purchase
Hotel, travel and flight reservations
Rent-a-car
Buying & ordering
Media (music, books, films), technical equipment, clothes, flowers, cosmetics, tea and coffee...
Leisure & cultural events
Information about sights and events
Listings, ticket reservations and purchase
Online library search, order and extension
Online lottery

As an interesting fact it turned out that in the (heterogeneous) German PSN all existing locations can be associated to one of the first four categories of offers, because they are located in community centres, hospitals, job centres and an insurance branch. It will be not surprising if the locations to come (or even those to be expected in Namibia) will gradually cover also the remaining categories. (Note that service offers of ALL categories are already now services of the PSN, but they arise, in dependence of the location, in the different 3 pillars).

Having a closer look on the partners in this network, It can be seen that all partners participating in the network can be associated with one of the following classes which will be shortly explained below.

- Service partners
- Location partners
- Network operator
- Network Coordinator

Service partners are those who offer services that are published in the PSN. Mostly, they will pay a small amount to the network operator for being listed at an appropriate place in the user interface. In case of SMEs, these partners had often had no website before, but it was created (as an additional paid service) by the network operator or by the network

coordinator, often as a so-called Web Business Card. Thus, service partners are comparable to entries in the Yellow Pages.

Location partners establish and run (usually already existing) buildings, buy or rent the kiosks and cover the running costs for maintenance and personal. In this sense, they are crucial for the functioning of the network. And they must see some benefit for themselves – otherwise they would not invest. These benefits may be different, but mostly the kiosk brings some additional attraction to the location which helps also to run the core business of the location partner. An important benefit may be also getting until now computer-illiterate people living in marginalized areas becoming computer-literate and thereby integrating them into the upcoming information society.

The network operator is in the German PSN implementation, the mentioned private firm COMplus automation who supplies the kiosks together with the ICT infrastructure and will host the central service centre.

The network coordinator is the basic founding, maintaining and innovation-initiating partner with only modest (short-term) business interest. It is stable by itself because of its hosting by a public teaching and research institution and its nature as a non-profit Association

The Public Service Network as PPP: The Business Model.

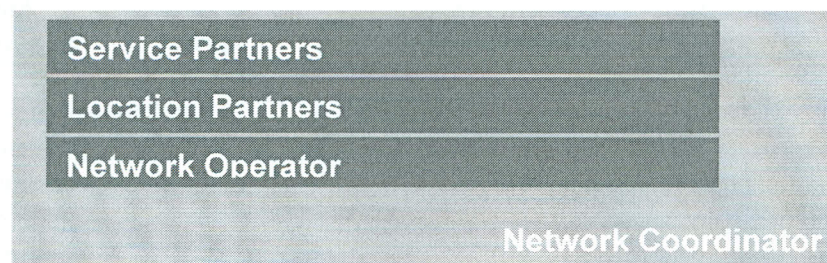
There have been many debates on the issue of public-private partnerships and whether public-private partnerships can help contribute to economic growth and public welfare, and thereby ensure cost effective service delivery. On the other hand, many success stories have shown that private-public partnerships such as the concept of the PSN, can indeed help grow the economy and in the same help to bring innovations to the hand of many people who otherwise would not have been benefited from new technological development.

A Public-Private partnership (PPP) is a system in which a government service or private business venture is funded and operated through a partnership of government and one or more private sector companies”.

The PSN brings together various players from various industries and public and civic organizations to create synergies in the delivery of citizen-oriented services, without which its ambitious goals cannot be reached: None of the local licensees would be able to operate a network of terminals economically alone: only few citizens would use the administrative offers, and without the connection with a service centre the Public Kiosks would fail to achieve the slated objectives for the targeted user group.

Having a look how the project is evolving now in North East Germany, we can observe the following: In addition to the Internet services of Public Administrations and the kiosk licensee, increasingly electronic offers of the other commercial partners are being used. By providing (usually small) donations to the **PSN Association** these service partners become sponsors of the PSN. They serve thereby both their own business and the long-term goal of the PSN association to provide a qualified (and if necessary remotely supported) Internet access for all citizens and thereby reducing the Digital Divide.

Figure 3: The Players in the PSN



Partners' Roles Explained

- **Service partners.** This category includes insurance companies, banks, warehouses, communities and government. They provide various forms of e-services aimed at the satisfaction of citizens. Service partners provide their offers on the PSN in exchange for a fee charged by the network operator or a fair contribution.

- The **location partners** take most of the costs of the PSN. As explained, location partners provide kiosk locations like shops, post offices, schools, and community centres. The kiosks are either bought or rented by him from the Network operator.
- **The network operator** represents the company or group of entrepreneurs who are responsible for the hardware software maintenance. In the German project, COMplus, a young start-up firm performs this role which requests stability and reliability.
- **The Network co-coordinator** (and initiator and innovator) of the PSN project is a non-profit organization called PSN association – its role is to find new service and location partner, keep the overview, initiate innovative developments (also in connection with teaching and research) and in certain times to provide support services for kiosk users. Form all partners this should be the most agile, sensing, controlling, and adaptive.

Basic Software providers are like 'silent' partners. Their role is not an active one, nor are they heavily involved in the whole PSN operation except to provide and support software products run on these kiosks as well as perform routine upgrades. This can be commercial software offering from commercial software companies such as Microsoft or open source alternatives. Since this is widely used software it is assumed that software upgrades won't lead to incompatibilities between different components.

PSN – A Unique Concept?

Although there is a big number of kiosk projects world-wide, the PSN concept with its characteristic properties of service-centre co-browsing and the creation of synergies between commercial and not-commercial offerers, seems to be unique so far. It is therefore quite natural that first steps have been done in Portugal (a predominantly agricultural country) to implement the concept: and now Namibia is a candidate for a successful adoption of the concept

A Public Service Network in Namibia?

What is similar & what is Different

How can we readapt the PSN to the Namibian context? Experience has shown that merely transplanting a particular concept that worked in another part of the world is not sufficient to insure its success elsewhere. There are various social-technical factors that must be critically analysed and assessed before the concept can be implemented.

This approach also applies to the creation of a Namibian PSN. Its not enough to merely copy the PSN model, we must make sure that we readapt and re-contextualise this model to suite Namibia. Here we first analysed the similarities and difference between Germany where a PSN exists and Namibia. We also analysed how some of the aspects of a PSN can be readapted to suite the Namibian context. However this is still not adequate to insure that a Namibian PSN can actually work, a pilot study project would still need to be carried out to fully readapt the PSN concept to Namibia.

1. Access to Communications Infrastructure and Electricity

In Germany the rural areas have access to electricity and telecommunication services while in Namibia in some of the targeted rural communities access to on-grid electricity and telecommunications is still a luxury to many. This creates an added challenge to the creation of a PSN in Namibia, how to connect the citizen kiosks to the internet and provide them with electrical power.

2. Demographics

In Germany, over 60% of the population has access to the internet. To compare and contrast, In Namibia only 3.8% of the population has access to the internet. This represents a figure of about 80,000 people out of a total population of nearly 2.1 million (Paul Budde

Communications, 2007). However besides this vast difference there are also some similarities. One such similarity is the fact that in Namibia the number of internet users is mainly centred in urban areas just like in Germany although in different orders of magnitude (Nonlinear-atlas-de, 2007).

Another issue in terms of demographics is that Germany is currently experiencing an interesting phenomenon, shrinking rural populations and dying villages. This is not the case in Namibia although a mass exodus has been noted as young Namibians have moved to urban and semi-urban areas in search of jobs, the vast majority of Namibia's population still reside in rural areas.

Another interesting factor to note is the structure of the population pyramids of Namibia and Germany. Germany is faced with declining birth rates and has a growing older population whereas Namibia has a small elderly population and far more young people.

The problems in the rural areas in Germany are very much similar to those found in Namibia though in another order of magnitude in terms of density as well as the mean literacy rates. By implication the tasks challenges then become similar in terms of trying to offer the rural populous access to the internet and include them in the information society.

3. Levels of Computer Literacy and General Literacy Rates

Germany has high levels of literacy through out the country both in terms of computer literacy and general literacy levels. In Namibia the challenge of basic literacy for all is still a challenge with many people in rural areas not being able to read and write let alone use a computer. However similarities between Namibia and Germany are still abound just at different orders of magnitude. The vast majority of the literate population is concentrated in urban areas just like in Germany while the vast majority of the illiterate members of the population are in rural areas.

4. Legal Issues

The Namibian Telecommunications act prohibits the use of voice over IP in Namibia. The PSN makes use of voice over IP technology through Skype to connect kiosks back to the service centre. Using voice over IP based communications software insures that the network operator, location partners and the other players in the PSN keep operational costs as low as possible since there are no per minute costs as associated with normal voice calls.

This regulation means that an alternative cost-effective solution will have to be found. It is hoped that Namibia will soon follow neighbouring South Africa in allowing the use of voice over IP technology to help cut the cost of communications in Namibia. In Germany like South Africa the use of voice over IP is legal.

The Namibian law does not make provision for the use of digital signatures. The communication and technology policy of the republic of Namibia however has placed emphasis on the provision of laws that allow for the use of technologies that insure trust through the provision of appropriate frameworks and security in internet based transactions and processes. It remains to be seen if this will be enacted in the upcoming privacy and communication bills.

5. Sponsors

Germany location partners are very heterogeneous in nature. In Namibia it remains to be seen who will be the exact location partners but one thing is certain that the selection of location partners will gravitate towards more socially acceptable locales such as schools, hospitals, post offices and even supermarkets rather than bars and clubs.

Due to the challenges mated out by the lack of adequate telecommunications infrastructure in some rural locations that are the primary target of this PSN, a wireless telecommunications service provider, Mobile Telecommunications Limited (MTC) or Cell One, would be the first line of possible sponsors. Leveraging their technologies for wireless internet services such as General Packet Radio Switched Services (GPRS) and High Speed Download Packet services (HSDPA), they would wirelessly connect the citizen kiosks to the internet.

Namibian mobile network operators have extensive knowledge in setting up remote base stations cost effectively while leveraging solar power to provide off grid electricity, an important asset in providing access to rural communities that might not be connected to the national electricity grid.

In the above scenario the mobile operator would play the role of a public partner in the PPP. In the PSN model their role would also be that of the network operator and co-ordinator and to a certain extent location and service partner as well. As a service partner they could offer prepaid airtime and bill payment services from these kiosks.

Yet another alternative form of sponsorship would be for government to solicit donor financing for the project. The only problem in this case would be that it would limit the role of the public partners to that of service and location partners only.

We have also cited the Government Institutions Pension Fund (GIPF) as yet another possible sponsor in the expected homogenous Namibian PSN. GIPF is the National pension fund for nearly 80,000 civil servants. A good synergetic relation can easily be established between the type of service offerings that GIPF might want to offer its members over the PSN in comparison the aims and goals of the PSN.

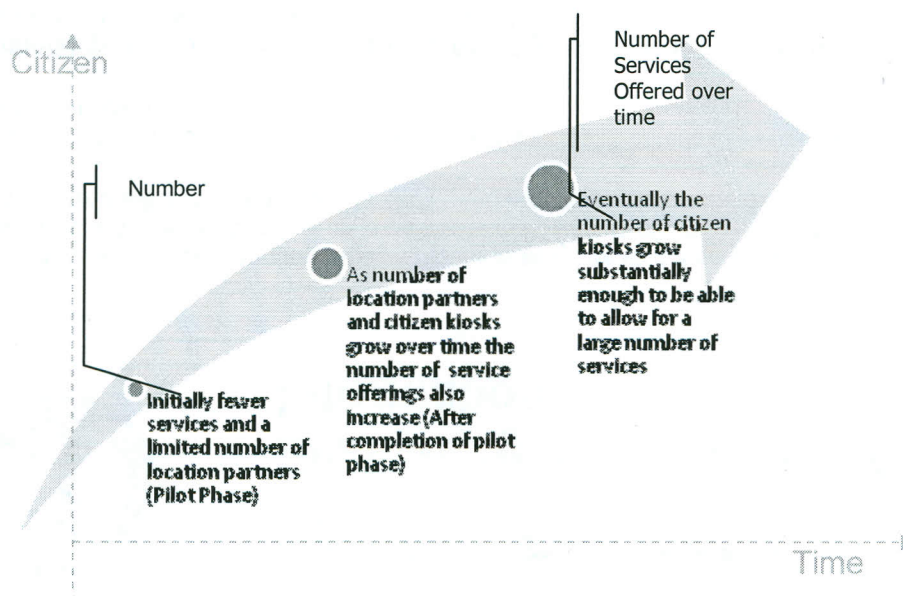
Nampost is yet another possible sponsor that could be approached on the basis of the synergies that could be established. Nampost is the national postal service company in Namibia and on top of its postal services also provides banking services targeted mainly at low income earners. Here we see a possible synergetic correlation between the target audience that Nampost aims for with its banking services and the targeted rural audience for the PSN.

The PSN would assist Nampost in creating a nation wide network of banking service terminals. At the same time Nampost with its large existing network of post offices can also act as a location partner by providing secure locations to host the citizen kiosks.

6. Kind and Number of Offered Services

Initially the number of services offered on the PSN would be limited, for example web browsing services would be blocked and only a basic set of services would be offered. This would be necessary as part of "crowd control" as is to expected based on experiences of the ministry of Gender Equality and Child Welfare (MGEWCW) when they rolled community information centres(CICs) in Tsumkwe and Tsisabis.

Figure 4: The Increase in the Number of Services and Kiosks made Available to the Public Over Time



A few numbers of kiosks will be expected to cater for many users unlike I rural Germany where a fair number of the population still posses other means to access the internet hence crowding at citizen kiosks is not such an issue.

Namibian network will be expected to be more homogenous in nature in terms of having initially only one large location partner while the German setup is more heterogeneous. The possibility still exists though for Namibia to set up a consortium for the PSN in which case it would most probably adopt the heterogeneous nature aspects of a typical PSN.

7. Aspects of Education

Many people in rural Namibia are not computer literate even at the elementary level. For many the citizen kiosk will be the first time that they will get to experience the internet and working with a computer. With the PSN in Germany this is not the case. Therefore in Namibia education as part of the system plays a bigger role. The Namibian PSN should also be included in the education network which could result in more locations could actually being in schools.

8. Similar Aspects of Monitoring

The need for constant and permanent monitoring of the users response to the electronic offers shall persist even in the Namibian PSN. This practice will insure that the PSN is responsive to user needs based on usage trends and other statistics.

Implementation Ideas and Plans Specific Development/ Deployment Dynamics

1. The Pilot Phase

The Namibian PSN is initially expected to be run as a six month pilot program to garner experience and further realign the PSN model to the Namibian context. We believe that a desk study is not adequate to full appreciate the challenges of setting up and running a PSN successfully in Namibia.

In this pilot phase the PSN would be rolled out to a maximum of three rural locations with between two and three citizen kiosks per location. The number of service offerings would be limited.

Based on the findings of this pilot a more concrete business case for the PSN would be developed as well as a more formal PPP structure that would pave the way for more private participation in the PSN.

This pilot phase would however require public or private funding in the region of close to N\$ 1 million or €100,000 to develop the first set of initial services, acquire kiosks and run them for a period of six months.

2. Locally Manufactured Kiosks

The possibility to develop a locally designed and manufactured kiosk also exists and would create an additional channel for private participation in the PSN. Currently the cost of a Kiosk as used in the Germany PSN ranges from N\$ 30,000 to N\$50,000. It would be interesting to see whether creating a locally developed citizen kiosk built to local needs could not help to cut these costs thus reducing the barriers to entry for many location partners. The development of a local kiosk also adds the added advantage of job creation and incurring that local support is available to run and maintain the kiosks. The German partners have indicated their readiness to provide support to this end.

3. Possible Services

In Germany various services targeted at citizens from both public and private companies are available on the PSN. In Namibia the selection of and provision of unique services on the PSN offers great opportunities for both entrepreneur and government alike to offer great services to citizens.

There are many possible types of services that can be offered on the PSN but the emphasis would have to be on localized services. Some possible services could include:

- Application for passport, Id card
- Subsistence local Information about notification of processing progress
- Search for job opportunities
- Application for tenders
- Recharging Mobile phones
- E-Billing and Bill Payment

However as described in point 6, the number of services would initially be restricted and it is expected that the key sponsor would have a big say in the type of services that would initially be offered on the PSN. Besides this plenty of scope exists for local entrepreneurs to still innovate on possible new services for the PSN.

Conclusion

Experience with an example of rolling out ICT's solutions to rural populations in Namibia such as FarmNet has shown why proper structures must be in place to support, insure the continuity and self sustenance of such initiatives. We have shown how this successful PPP seems to have the potential to be successfully exported and re-adapted to Namibia and how a Namibia PSN can be set up and rolled out with examples of service offerings that can be made available on the PSN.

Although there is demand from the side of one key service provider, primary the Namibian Government, to role out this solution as part of its drive to decentralise service delivery as well as offer other citizen oriented services, government does not have the funds to implement the PSN. It remains to be seen if sponsoring partners can be found for this project.

Also to be defined is the key question of what services will be provided and who will assist service partners to develop them considering that initially only a few number of services will be made available.

We conclude by quoting that "Nothing is more powerful then an idea whose time has come" and the concept of a PSN in Namibia is just such an idea.

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