Mobile government in Africa: Progress made and challenges ahead

SJ Batchelor Gamos 02/09 on behalf UNDESA and UNECA.

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Introduction

The challenge of e-government in all its forms was discussed at the recent emGKR Africa workshop. As part of its effort to further support the e/m-government efforts of the Member States, the Knowledge Management Branch of DPADM is working towards the establishment of a UN Global Knowledge Repository on Electronic and Mobile Government (UN emGKR) which will address major shortcomings in electronic and mobile government research and knowledge transfer. The UN emGKR is initiated by UNDESA in response to member countries’ interest in enhancing knowledge management on e-government issues. The UN em-GKR in Africa will support ongoing e/m-government development in Africa by providing information and resources in support of e/m government policies and programs in the region. UNDESA/DPADM in partnership with UNECA/ISTD held a three day Capacity Development Workshop entitled “e/m-Government in Africa, Progress Made and Challenges Ahead” in Ethiopia in February 17-19, 2009.

This is a summary learning paper from the workshop on “Mobile government in Africa: Progress made and challenges ahead”

The challenges of a complex system

Government by its nature is a complex system. The interaction of its different components is subject to the constraints of human capacity, political will, partnerships, transparency and networks, among other factors.

“...in order for the institution of governance to perform their functions efficiently and effectively they must be endowed with the appropriate capacities. Good governance is a development issue with capacity building ramifications”


This even before one adds the complexity of technical infrastructure. For e-governance, “One stop shop” portals that seek to inform citizens of their rights, and involve them in the processes of government are a great idea. But they are often less than they could be - human technical capacity (people not knowing how to upload documents), human social capacity (the busyness of daily life preventing a conscious), among other factors. The emGKR programme of work seeks to support such e and m governance. The workshop acknowledged that there is a need to support developing countries to build national capacities in electronic and mobile government by
providing information and tools for the development of comprehensive e/m-government policies and programmes in support of public sector development. e/m-Government Knowledge Repository (emGKR) is an innovative attempt to gather cross sectoral national and international stakeholders and the agencies of the United Nations in an effective partnership for knowledge sharing to further the capacities of national governments in e/m government development.

At a national level the movement towards e and m governance may take different forms and paths. For instance Ghana and South Africa have prioritised Government-to-Government e-governance (G2G). Developing robust G2G ICT infrastructure and processes may improve the chances of both countries’ developing successful G2C services in the future. (In contrast the Government of India is taking a two-pronged approach. Its National e-Governance Plan (NeGP) has lead it to simultaneously implement effective G2G processes and ICT infrastructure and attempt to roll out services on a wide scale.)

Examples were given at the workshop of good practice in back office tracking and transparency of information, presenting key information to citizens, efficiencies and reduction of access times to key documents, and improvements in business processes.

Broadband not so Broad (yet)

The internet and particularly broadband has the potential to enable local e-content delivery in a range of formats (text, audio and video). As an interactive system it enables users to specify the local e-content they want. A broadband internet experience has the potential to be the most effective.

However the realities of Broadband in Africa at the moment raise difficulties for both government and citizens. There are a small number of users and slow growth in usage. This means Broadband will not be effective for stimulating the demand and supply of public services (G2C) in the short to medium term, although it may satisfy G2G and G2B.

<table>
<thead>
<tr>
<th></th>
<th>Ghana</th>
<th>Kenya</th>
<th>Senegal</th>
<th>South Africa</th>
<th>Uganda</th>
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<tbody>
<tr>
<td>Internet Users (2007)</td>
<td>3.70%</td>
<td>8.00%</td>
<td>6.60%</td>
<td>8.10%</td>
<td>2.50%</td>
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<tr>
<td>Broadband Users (2007)</td>
<td>0.07%</td>
<td>0.05%</td>
<td>0.30%</td>
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Overall the workshop participants accepted that infrastructure remains weak in many African countries. In most Poverty Reduction Strategies, ICT is highlighted as a key for unlocking the
economy, increasing the general strength of the economy and in particular strengthening pro-
poor propositions. Nevertheless there are currently two main expressions of weak
infrastructure.

1) Lack of international bandwidth. While fibre optics within capital and main cities has been
laid, and in most cases the private sector is offering viable business models of always on
connectivity, the general cost of such connectivity remains high, and the day to day use of the
Internet is constrained by poor international bandwidth. Several East Africa optical fibre
submarine cables are planned for the coming two years which may address the international
bandwidth constraint.

2) The reach of infrastructure to the rural and remote areas are weak. Again in brief, while
mobile phone companies have made extraordinary progress over the last few years in delivering
services to remote areas, there is generally a weakness in “always on” connectivity.

Also this paper draws on the data from a number of comparative studies, referenced at the end.
In those studies stakeholders confirm that Broadband is hampered by:

- The high cost of broadband - Examples of relatively low prices for entry-level broadband
  packages in South Africa are emerging
- High cost of international bandwidth - Various East Africa international cables will soon
  be in place and may strongly affect prices
- Failure to unbundle local loops - The continued failure to unbundle copper local loops
  controlled by incumbent operators has prevented competition, service roll-out and price
  reductions.
- Low PC penetration - The PC has been seen as the “key terminal device” for accessing
  broadband services.

At the workshop, Prof. Meoli Kashorda, USIU/KENET reported that Network Information Systems
administered a survey to 395 Respondents in Kenya on Knowledge and Access of E-Government
services. He reported that 57% knew what e-government is, but only 22% had ever sent an email
to a government office. Just under half at 48% had accessed a government website - which
seemed relatively high given the low access overall to the internet. However details as to the
sample profile were not available.

Strengthening Broadband

Considerable efforts are being made to ensure the outreach of infrastructure into rural and
remote areas of Africa. Each country is implementing strategies that it hopes will enable rural government to operate more effectively and efficiently.

One approach is to create shared access. Most governments and many NGOs have programmes to create shared access points, which provide users with access to broadband through PCs and PC like terminals. The Government of Ghana is in the process of introducing 220 Community Information Centres (CICs) as part of its efforts to achieve universal access. However, commercial Internet cafes, fell from 2,000 to 1,200 between 2003 and 2006. The Government of South Africa has introduced around 500 Multipurpose Community Centres, 98 Tusong Centres, and 700 Public Information Terminals (PITs) to provide citizens with access to the Internet, emails and other services, which are regarded as capable of e-enabled delivery in future. However previous studies suggest that telecentres and cyberlabs implemented by the Universal Services Agency were considered expensive, dysfunctional, and are under utilised.

The workshop was told of an alternative approach in Ethiopia where Woredanet is an ambitious programme to install fibre optics and connectivity between government offices at the “Woreda” level (implementing G2G). A government network connecting 611 Woredas and regional and federal government offices ranges across the country. They use both terrestrial and VSAT connections with a primary objective to provide ICT services such as video conferencing, directory, messaging, and voice and Internet connectivity at the federal, regional and lowest level of government throughout the country. This programme seeks to ensure Government Conferences and meetings between federal and region, region to woredas, woredas to zone etc…, to help to make effective and frequent communication, increase collaboration between government institutions, Improved use of executive time, speed up decision making, provide timely information to the lowest government institution, reduce travel and administrative costs for sharing information.

For instance, Ethiopia Courts are arranged hierarchically from the lower structure, Woredas to the federal government. Based on the types of the issue these courts give services to citizens. Providing Court services using VC has helped citizens by avoiding travel from Woredas to zonal and regional centers and Addis Ababa, and get faster responses. In 1999 Ethiopian Calender (2008), 1404 Court cases were seen using the VC.

Included in this strategy is a commitment by the government to laying of 10,000 kilometers of an optical fiber network throughout the country (and to link up this with the submarine cables), of which over 4,000 kilometers has already been completed, and to universal access which for them means access to telecom facilities at a walk of no more than five kilometers. Over 15,000 rural villages are in the Rural Connectivity Program (RCP). So far >7,000 rural centers have been
Mobile Phones

But this last example brings to the foreground the mobile phone. While Ethiopia seeks to bring public phone access to its rural areas, many other African countries that have liberated the telecom sector have enabled rural people to have access to telecoms through private mobile phones. While progress on “infrastructure” is being made, when considering the way forward, the workshop was agreed that mobile phones are likely to play a key element of Government to Citizen (G2C), and Government to Business (G2B) dialogue, but also may have a role for Government to Government (G2G).

Mobile phones will come into play potentially in two ways.

Already there is a “always on” connectivity through mobile phones. Some people call this Mobile Broadband, but the word Broadband is very subjective and changes year on year. What was considered “Broad” a couple of years ago is now passe, and considered “always on narrow”. Mobile phones first introduced GPRS as a means of accessing internet based data - and yet GPRS is now considered by the world as “old technology”. What we can say is that Broadband is becoming mobile. The converging licensing regimes in many countries are enabling new forms of licensing. For instance the Electronic Communication Act in South Africa 2005 introduced a single, platform-neutral licensing regime.

So Mobile phones as an instrument that is the hands of the people, look attractive for m-government, whether that be by text messaging or through an “always on” connection.

Indeed we should also not forget “voice”. Phoning a friend in immigration to assist with an application, or to see if the paperwork is finished, has long been a spontaneous and informal form of “m-government”. In the UNECA (2009) document, regarding definitions it notes: “that definition (which defined M-Commerce in terms of text based data) hides the subtleties of “M-commerce”. The large number of mobile phones cited above (135 Million in Africa) predominantly work on a GSM network. When people discuss “M-commerce” they currently assume this involves using the GSM network through Short Message Services (SMS) “for financial transactions….and/or commercial transactions”. However, the majority of the data that flows over this network is actually in voice calls. “M-commerce” as currently used in discussions tends to exclude the enhanced business practices that are available through being able to make phone calls up and down the supply chain! Yet the impact of these calls on the economy is not
So what about mobile phones and m-government?

Mobile is a potential mechanism for m-government. In the studies referenced, stakeholders suggest that Mobile as a channel is enhanced by:

- Number of users and increasing penetration
- Mobiles offer increasing interactivity - demand commercial content, and influence the creation and supply of content.
- Mobiles connecting people to the Internet - In Ghana, urban users are using mobiles to receive an “Internet experience” through WAP services provided over GPRS
- Mobility - enables people to access content wherever they are.
- Inclusiveness - increasing inclusion of the most marginalised people in society

The workshop noted the need to be gender sensitive in e and m governance. Data suggests that access to the mobile phone equals that for men. (Note access is not be the same as frequency of use)

There are of course realities. In a series of interviews in 5 countries, stakeholders suggest that Mobile had its challenges:

- Bandwidth and download speeds
- High cost of Internet over mobile - In Ghana, for example, it can cost a user $532.48 to download one gigabyte of data over one operator’s GPRS network.
- Limited functionality in entry-level handsets

However, projections of mobile phone ownership in South Africa suggests the structure of phone ownership changes as mobile markets move towards maturity in terms of penetration and network capacity. Once again we are led back to the idea that convergence, of digital devices, data networks and policy regulation will lead towards an “always on” experience for the mobile phone user within another 5 to 10 years.
“Mobile devices have the potential to be the most effective ICT. The large and increasing number of users, the growing amount of content / value added services provided by the private sector, and the fact that the mobile devices are being used to give people an Internet experience justify why more must be done to realise their potential. Furthermore, there are pertinent benefits to be offered by mobile device “convergence” - the development of mobile devices to become more than complimentary ICTs to radio and the PC, but in fact provide access to these technologies. Increasingly, the mobile phone is equipped with a radio, camera, music and video player, and PC functionality. Even many entry-level handsets available today are equipped with features that make other ICTs unnecessary.”

NSN/CTO “Towards effective e-governance: The delivery of public services through local e-content” 2008

Who is using what at the moment?

Coming back to the here and now, what do we know of how African citizens are using ICT? The belief that a range of ICTs should be considered when attempting to stimulate the demand and supply of services is supported by the fact that respondents use a wide range of ICTs. The following graph is about USING ICT in the last year.
We see from the table that the majority of people continue to use radio and television. In terms of accessing information in a one way flow, Radio and TV are the most commonly used ICT for accessing information in all research countries. Radio is currently the most important channel, but TV is not far behind. It is likely that the impact of TV is restricted simply by signal coverage.

Indeed in the focus groups of the key studies participants tend to suggest that radio remains the most effective ICT for stimulating the demand and supply of public services. Primary reasons tend to be:

- it has widest reach of any ICT and therefore largest number of potential users
- it delivers content in local languages
- it provides content that illiterate users can use
- it requires small amounts of electricity
- it is the traditional ICT for supply and demand of public information so governments and users have the capacity to use it.

However, while radio is the “top of the mind” ICT for general focus groups, there is considerable debate about its interactivity. Phone in discussions can unlock debate and give voice to citizens. However, in general, radio does not offer the following which seem key to e-governance:-

- Provide interactive services and two-way communication.
- Support delivery of public services through local e-content to large user bases.
• Meet local e-content needs in a wide range of formats, to overcome issues such as such as illiteracy, blindness or deafness.

So returning to the next highest used ICT, the phone, it is interesting to note that despite the high levels of mobile device ownership, respondents access phones in number of ways. The data indicates that people use public phone far more in South Africa than Ghana, where there are not as many public telephones. The implication for e-content provision is that services should be accessible via mobile devices and public access points.

Can we trust m-government?

The research assessed users’ attitudes to things such as trust in the information received through the ICT, quality of service and the amount of content it provides in local languages.
Surprisingly for this exercise attitudes towards the mobile phone are most negative and can largely be attributed to poor quality of service and expense. However testing this negativity the studies confirm that trust is tightly associated with quality of service and cost. Consumers do indeed recognise that the phone can save significant cost in terms of travel expenses and time for completing a transaction. However for those considering m-governance, the graph also brings out the importance of local language resources, and of building human capacity to use the more unusual phone services.

![Mobile Phone - Attitude Scores Graph](image)

Figure 5- Attitudes to Mobile Phones, NSN/CTO (2008)

A word about SMS

SMS is potentially the main way of demanding content with the current crop of handsets and bandwidth......however

- Taxes on mobile services are generally considered too high and make SMS relatively expensive. The high price acts as a disincentive to usage.
- There is currently a culture of Voice (except in Senegal). Users in the studies have a preference for voice-based services over SMS and other technologies.
- Large sections of the population are not literate and cannot engage with text-based content (which might also be a challenge for Broadband multi media content)
- Many users will require m-content in local languages, moreover, they may have a preference for local content. At present, little content is created in local languages and few handsets support the content that is.

Understanding the consumer

“Despite negative attitudes toward mobile devices overall, users in all three each countries are
positive about their ability to provide the specific information people want and save costs. The consistently negative attitudes across the countries concerning ease of use, quality of service and expense highlight some key issue stakeholders must tackle when trying to stimulate demand for services through mobile devices.”

NSN/CTO “Towards effective e-governance: The delivery of public services through local e-content” 2008

Citizen needs

Understanding what types of information are most important to people is critical if sustainable services are to be developed. The research indicated the most important types of information to users are:

- News (local and international).
- Health - how to prevent and treat illness and diseases.
- Education - education and training opportunities.

Income generation - job opportunities; market information; availability and price of resources; information on new products and services.

This indicates generic areas in which e-content services should be developed.

So are people getting this information from their mobile phone? In each country in the studies, mobile devices are less commonly used and m-content has not yet really been developed. In Ghana, mobile devices are most used for accessing information on remittances and job opportunities. In South Africa they are used most for emergency support and remittances.

However at the workshop Prof. Meoli Kashorda, reporting on the Network Information Systems administered survey in Kenya on Knowledge and Access of E-Government services, presented the figure below:

![Government Services accessed through mobile phones in Kenya, Meoli (2009)](image-url)

Figure 6 - Government Services accessed through mobile phones in Kenya, Meoli (2009)
This indicates that there are services and people are beginning to use them. In a very similar listing of services, Lydia Sebokedi, Centre for Public Service Innovation, South Africa, reported that e-government in South Africa is evolving into M-government, and the new trends in m-government include:

- Voters’ roll
- Track and trace ID applications
- Matric results
- Check your marital status
- Patient reminders
- E-recruitment
- Crime prevention

It was also reported at the workshop that mobile phones have been used for paying utility bills in Rwanda. “Short Messaging Service (SMS) Media, a Rwandan Information Technology (IT) Company, has developed a solution that allows you to purchase prepaid electricity (cash power) using your mobile phone and recently won an award for excellence at the East African Power Industry Convention (EAPIC), the leading power event in East Africa.” Ndahiro Moses, of RDB/RITA Rwanda also reported on e/m-health. “TRACnet is an Antiretroviral Therapy Management Information System in the public sector. TRACnet is an IT solution designed to collect, store, retrieve, display, and disseminate critical program information, drug distribution, and patient information related to the care and treatment of HIV and AIDS. With a bilingual English and French telephone with Interactive Voice Response (IVR) technology and web interface, TRACnet employs a practical and sustainable approach to using information technology.”

Poverty needs

At present, radio and TV are of greatest value for most aspects of livelihoods - civic duties, entertainment, education, health (TV is valued more than radio in India). When it comes to social and business matters, mobile devices are of greatest value. To an extent, mobile devices’ relatively poor scores in health, education and civic matters support key stakeholder arguments about the current lack of socially orientated content on mobile devices.

The livelihoods issues that are most important (Uganda and India) are as follows:

- Reducing vulnerability (or responding to shocks) e.g. contacting people in emergencies, finding medical experts, prevention of illness
• Human capital - health, education and training
• Wellbeing - although not obviously an economic benefit, people place high importance on entertainment and news

Unfortunately, many of the livelihoods issues that users consider most important are not fulfilled by the current range of m-content services available in either country.

Willing to pay?

User priorities in terms of e-content services received through the mobile phone and Internet were similar across the research countries and were closely related to the priority types of information. They are:

• Income generation - seeking and offering job opportunities; banking transactions.
• Education - applying to schools.
• Health - diagnosing and prescribing health treatments.

Importantly, willingness to pay either for services matches the importance attributed to services, confirming the level of interest in these priority types of e-content services.

Citizen M-Governance - who needs to do what?

So if there is a general need for citizens to obtain information through phones, and a general willingness to use phones, can we ask why dont they use e/m-services?

The answer seems to lie in :-

• Resolving problems of low Internet usage with mobile networks
• Policy environment is not focused on m-content (Taxes on mobile services are considered too high and make SMS relatively expensive.)
• Increasing and strengthening the PPPs needed for the development and delivery of public services through ICTs
• Lack of consultation and collaboration between industry players
• Developing strong business models for the sustainable provision of services (Regulators do not have employees that have worked in the content industry and therefore do not fully understand how it works.)

Continuing to develop and supply higher functionality and affordable mobile devices

This opens up opportunities for M-governance:-

• Raising awareness of mobile devices as tools for delivering socially-orientated content and not just commercial services (High levels of bureaucracy have stifled the
development of government-related mobile services)
• Continue to improve access to mobile communications to eradicate urban / rural digital divides
• Incentivise mobile content producers with improved revenue share for the content they produce
• Scale up examples of successful education e-content initiatives to improve socio-economic development and increase demand for services
• Literacy and local language

The document NSN/CTO 2008 suggests that there are various roles for stakeholders in enabling m-governance:-

**Government**
- Provide an enabling policy environment
- Political commitment to deliver public services through ICTs, and wireless channels in particular
- Establish consultative processes
- Establish Public Private Partnerships
- Legisl ate for the production of digital content

**Regulator**
- Provide an enabling regulatory environment for increasing access to ICTs

**Private Sector**
- Increase access to ICTs
- Enhance the capacity of mobile networks
- Provide platforms for public service to be delivered through local e-content
- Identify markets for services
- Create / Convert content for dissemination as public services
- Assist government in PPPs

Produce higher specification handset at lower cost

**Civil Society**
- Identify stakeholders’ needs
- Raising user awareness and demand for public services through ICTs
- Providing services as government infomediaries

“**Government must take the lead in stimulating the demand and supply of public service through local e-content through the development of policy, but policy development must be**
done in a consultative process so that the demands of stakeholders are taken into account.”
Mr Issah Yahaya, Director of Policy and Planning, MOC, Ghana

“To date, the policy makers and regulators in both countries have justifiably focused on increasing the use of voice services. Policy and regulatory tools have proved successful and both countries have witnessed strong growth in mobile penetration. There is, however, merit in paying some attention to m-content, especially because it has the potential to contribute to achieving socio-economic development.”
“Policy makers and regulators could appoint an m-content champion in their respective institution who would be responsible for ensuring that policy and regulatory measures recognise the need to increase the use of m-content.”
Ericsson/CTO “Assessment of M-Content Requirements India and Uganda

The workshop discussed both formally and informally the role of mobile phones in public service delivery, and agreed that public bodies should explore this more fully. In the shorter term the government needs to assess and rationalise current decision making processes for creation of enabling environment. This will need the cooperation of the private sector to improve revenue share for content producers and to make platforms available for public service delivery. It would be good if private sector entrepreneurs were encouraged to approach government with innovative ideas for public service delivery. There may be a need for regulators to create policies on stimulating the demand and supply of m-services and perhaps even consider introducing quotas for local e-content.

In the longer term Governments can establish strong frameworks for PPPs in which role of the private sector is well defined, Legislate and incentivise for the production of digital content and perhaps increase resource for training of content producers. If this is done then the private sector would enter into effective PPPs with government, identify markets and develop services that can be sustainably supplied and upgrade networks in urban and rural areas for additional data demands

In each scenario, Civil Society has a role for raising awareness and demand for e-content services amongst users, and possibly even provide services as on behalf of government.
A final observation - Financial Services

Whenever there is talk about services and e/m-governance, there is often a need to pay for such services. In e and m-government outside Africa, the presence of credit cards makes internet charging possible. (eg Land registry in Europe requires a small fee). Mobiles have the potential ability to charge “built in”. For instance, downloaded ring tones can be charged by taking money directly off the phone.

Also, from a poverty angle, people would greatly benefit from financial services - opportunities to save, access credit, manage their finances.

The new crop of innovations, such as MPesa (now 5 Million users), offers new opportunities for integration with m-governance. Financial transactions over mobile phones will require new regulations and legislation (cyber laws), which are now in the main being implemented - however one of the key challenges is the convergence of Financial regulation and Telecommunication regulation. UNECA (2009) summarise the challenges for for provision of financial services through mobiles in the figure above.

Figure 7 - The challenge of regulation to enable financial services, UNECA (2009)
References and Definitions

Definition

E-governance can be described as the way in which the public sector uses ICTs to improve accountability, transparency, effectiveness, public service delivery, and citizen participation in decision-making. M-Governance explores the use of Mobile Phones for such improvements and participation.

References - Comparative studies

This paper draws on the presentations made at the Workshop “e/m-Government in Africa, Progress Made and Challenges Ahead” Ethiopia in February 17-19, 2009

This paper also draws on the data from a number of comparative studies:-

- Ericsson, in partnership with CTO and Gamos, “Assessment of M-Content Requirements in India and Uganda”, 2008

And basic data from

- International Telecommunications Union (ITU)
- World Bank, 2008, Information Technology Statistics
- Link Centre - South African Telecommunications Sector Performance Review 2006
- Balancing Act, 2007, African Telecoms and Internet Markets
- BMI-TechKnowledge Group

Acronyms

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<th>Acronym</th>
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<tr>
<td>G2G</td>
<td>Government-to-Government - the use of ICTs to improve or facilitate internal processes between government departments, ministries or authorities.</td>
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<td>CICs</td>
<td>Community Information Centres</td>
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<td>EmGKR</td>
<td>UN Global Knowledge Repository on Electronic and Mobile Government</td>
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<tr>
<td>G2B</td>
<td>Government to Business - the use of ICTs to deliver government services to the private sector.</td>
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<td>G2C</td>
<td>Government to Citizen - the delivery of public services from government to citizens.</td>
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<td>GPRS</td>
<td>General Packet Radio Service</td>
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<td>GSM</td>
<td>Global System for Mobile</td>
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<td>Acronym</td>
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<td>ICT</td>
<td>Information and Communication Technology</td>
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