



International Telecommunication Union
World Summit on the Information Society
WSIS Stocktaking Process

WSIS STOCKTAKING: SUCCESS STORIES 2015



WSIS SUCCESS STORIES 2015

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For the fourth year in a row, the World Summit on the Information Society (WSIS) recognizes 18 winners from around the world for their part in building an inclusive Information Society. It is a pleasure to have the opportunity to recognize the WSIS Prize 2015 winners' dedication and commitment in the implementation of the WSIS Outcomes, honouring and awarding outstanding projects from the international WSIS community.

Facilitated by ITU in coordination with all WSIS stakeholders, the WSIS Prizes 2015 competition provided a platform to identify and showcase success stories across the 11 WSIS Action Lines as defined in the Geneva Plan of Action.

WSIS Prizes is an international contest developed in response to requests from WSIS stakeholders to create an effective mechanism to evaluate and recognize individuals, governments, civil society, local, regional and international agencies, research institutions and private sector companies for outstanding success in implementing development-oriented strategies that leverage the power of information and communication technologies (ICTs). The WSIS Prizes contest is an integral part of the WSIS Stocktaking Process.

The WSIS Stocktaking Process established its mandate demonstrating links between the use of ICTs and development processes, carrying out a series of activities in the context of the WSIS Action Lines advancing the Millennium Development Goals (MDGs). The WSIS Stocktaking Process continues to give us real stories of on-the-ground implementation and case studies of how ICTs impact the lives of people worldwide.

This year's WSIS Prize winners include government ministries, international organizations, private sector companies, NGOs and academia. More than 300 projects were nominated for the 2015 contest, over double the number in 2014, reflecting the prestigious nature of the award and the growing importance of ICTs in national development strategies. The awards were conferred through online voting involving more than 100,000 stakeholders from around the world.

Let me thank you for your continuous commitment towards sharing best practices, and invite you to continue contributing to the WSIS Stocktaking Process by submitting your projects and initiatives that help inspire and advance development– including the future Sustainable Development Goals (SDGs) – through the effective use of ICTs.



Houlin Zhao

ITU Secretary-General

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Introduction

Each year, on the occasion of the WSIS Forum, 18 WSIS stakeholders are awarded **WSIS Prizes**, as a unique mark of global recognition for excellence in the implementation of WSIS outcomes. To this end, 18 projects are selected as the most successful stories worldwide under each category, to serve as best practice models to be replicated by other stakeholders interested in ICT for development.

The 18 categories are the following:

- 1) The role of governments and all stakeholders in the promotion of ICTs for development
- 2) Information and communication infrastructure
- 3) Access to knowledge and information
- 4) Capacity building
- 5) Building confidence and security in the use of ICTs
- 6) Enabling environment
- 7) E-government
- 8) E-business
- 9) E-learning
- 10) E-health
- 11) E-employment
- 12) E-environment
- 13) E-agriculture
- 14) E-science
- 15) Cultural diversity and identity, linguistic diversity and local content
- 16) Media
- 17) Ethical dimension of the information society
- 18) International and regional cooperation

The WSIS Prizes contest, first held in 2012, rapidly gained the attention and appreciation of the ICT4D community and was reflected in United Nations Economic and Social Council (ECOSOC) resolution 2012/5, which refers to “Assessment of the progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society”. The resolution reiterates the importance of sharing best practices at the global level, recognizes excellence in the implementation of the projects and initiatives which further the WSIS goals, encourages all stakeholders to nominate their projects for the annual WSIS Prizes as an integral part of the WSIS Stocktaking process, and notes the report on the WSIS Success Stories.

The WSIS Prizes 2015 contest once again represents an ideal platform for identifying and showcasing success stories and models that can be easily replicated, empowering communities at the local level, giving an opportunity to WSIS stakeholders to participate in the contest, and, in particular, recognizing the efforts of stakeholders in terms of the value they add to society and of their commitment to achieving the WSIS goals.

To conclude this brief introduction with a few figures, more than 300 projects were nominated for the WSIS Prize 2015 contest and posted online for public appreciation. This figure represents an increase of 73.6 per cent over the period 2012 to 2015, and a 114.1 per cent increase from 2014 to 2015. We at ITU are very proud of this achievement, and would like once again to highlight the importance of the multi-stakeholder and bottom-up approach that is the essential philosophy of the WSIS Forum.

C1 - The role of governments and all stakeholders in the promotion of ICTs for development

Project name: Fight Violence against Women (FightVAW) – <http://fightvaw.org>

Organization: YoungInnovations Pvt. Ltd, Nepal

I. Background information

As the 2015 deadline nears, the world is eyeing the targets met and challenges faced in achieving the Millennium Development Goals (MDGs). MDG 3 – to promote gender equality and empower women – calls for activities to end gender disparity. That goal remains out of reach in many countries, however, where violence against women remains a challenge. In South Asia, 40 to 70 per cent of women and girls report experiencing some form of physical, sexual or emotional abuse, and half of all women face violence in the home. The situation in Nepal has been aggravated by a prolonged political crisis resulting in unstable government authorities and lack of opportunity for development activities. Society continues to be infested by gender-based violence, with most cases of violence against women going unreported because of cultural norms and lack of opportunity and support for survivors. According to the World Bank 2014 regional report, *Violence Against Women and Girls: Lessons from South Asia*, gender-based violence is an acute problem in Nepal, with women being subjected to different forms of violence, namely, physical intimate partner violence, sexual exploitation, rape and forced labor. Despite the multiple efforts of stakeholders to address the issue, lack of knowledge about current laws against gender-based violence and services for survivors, plus distrust between institutions, contribute to underreporting of incidents of violence. Information and communication technologies (ICTs) uses technology to address socio-economic development, international development and human rights. Access to technology has increased considerably in Nepal. The Nepal Telecommunication Authority reported a penetration rate of 96.40 per cent as at November 2014, 86.25 per cent of which are mobile users. In Nepal, 35.70 per cent of the total population are Internet users. The numbers are increasing considerably every year. The prevalence of violence against women and the impressive penetration of technology in Nepal prompted the organization, on 16 July 2013, of a one-day Hackathon on Violence Against Women (VAWHack) intended to generate applications that could address the issue of gender-based violence in Nepal. The VAWHack, the first such event in Nepal, was organized jointly by the World Bank, the International Finance Corporation, YoungInnovations and the Computer Association of Nepal. It brought together private sector representatives, gender experts and young techies to create ICT tools able to help survivors of violence against women and civil society organizations working to reduce its effect on society. After the event, all the partners encouraged follow-up of the winning apps, which were later integrated into a comprehensive platform, FightVAW. FightVAW is an ICT-based initiative that provides survivors of violence against women with an alternative means of reporting their cases, via phone call, SMS and online. It enhances coordination among civil society organizations that provide care and services. With an organized case-management system that records complaints and forwards cases to different institutions providing related rehabilitation and legal services, FightVAW uses technology to address a social issue. It has the additional benefit of reducing survivors' trauma by sparing them the need to repeat their negative experiences in every organization they reach out to. It also serves as a one-stop site for information on organizations working to prevent violence against women. FightVAW provides a platform for sharing the inspirational stories of women who have moved on in life after such unfortunate incidents.

The VAWHack and follow-up activities resulted in the following:

- An android application, Self Help, that allows users in unsafe situations to trigger the mechanism of sending emergency messages to immediate family and friends, along with the users' GPS position, if they press the Power Button three to four times;
- Capacity building for civil society focal points on using apps and Internet-based applications;
- Improved institutional relationships between government stakeholders, including the National Women's Commission, the Nepal Police, the Ministry of Home Affairs, the Department of Women and Children at the Ministry of Women, Children and Social Welfare, the Office of the Prime Minister, development partners, and civil society organizations, as well as increased awareness about the nature and scope of gender-based violence and the apps and Internet-based applications developed to combat it;
- Compilation and maintenance of a database of organizations that work to address gender-based violence;
- Development of a customized case-management system for partner civil society organizations so that they can manage their cases and coordinate work on cases via FightVAW;
- A collection of stories of women and girls who had experienced gender-based violence.



II. Goals and timeframe

Through a coordinated public-private partnership, FightVAW aims to do the following:

- Engage in ICT-based integrated reporting, case management and coordination to address issues of violence against women;
- Develop, pilot and institutionalize technological and social solutions to the problem of violence against women;
- Promote coordination and collaboration among stakeholders, primarily civil society organizations, the National Women's Commission, donor agencies, organizations working on violence against women and the media.

V. Relevance of the project to the corresponding Action Line

FightVAW connects strongly to Action Line C11 in the Geneva Plan of Action, engaging multiple national and international stakeholders promoting public-private partnerships in seeking to attain the Millennium Development Goal of ending gender disparity and promoting equality among genders. FightVAW uses ICTs to address issues of national importance through community participation and the collaboration of organizations directly involved in reducing violence against women in the country. Through sustainable plans for mainstreaming the project and stimulating replicable projects at the national and international levels, FightVAW seeks to tackle issues of violence against women at all levels in Nepal.

VI. Conclusion

FightVAW is the first project of its kind to use ICTs in providing end-to-end solutions to problems involving violence against women in Nepal. It is a collaborative effort by different stakeholders to come up with a sustainable project aimed at addressing a crucial national issue. The project has already shown promise during the initial implementation phase, sparking enthusiasm in all those involved at the national and international levels. Through government involvement and the inclusion of private and public organizations working in this field, FightVAW aims to work competitively towards successfully putting an end to violence against women in Nepal.

C2 - Information and communication infrastructure

Project name: México Conectado: Internet access in schools, hospitals, government offices and other public places

Organization: Ministry of Communications and Transportation, Mexico

I. Background information

The National Digital Strategy is an action plan being implemented by the Mexican Government to encourage the adoption and development of information and communication technologies (ICTs) and usher Mexico into the information and knowledge society.

Presented in November 2013, the Strategy sets out the challenges Mexico faces in the digital context and its approach to addressing them through five objectives, aligned with the major goals of the National Development Plan 2013-2018:



1. **Government transformation:** today we are building the government of the future – it will be innovative, transparent, efficient, open and focused on the needs of society, and will use technology to get closer to people.
2. **Digital economy:** we are creating innovative and entrepreneurial environments to foster a digital economy that encourages increased productivity and the development of new digital businesses, products and services.
3. **Transformation of education:** we are incorporating ICTs into the educational process to improve the quality of education, develop digital skills in our students and usher the country into the information and knowledge society.
4. **Universal, effective health:** we are using technology to guarantee universal access to health services and increase their quality for the benefit of users.
5. **Civic innovation and citizen participation:** we are developing new mechanisms to help society resolve issues of public interest by promoting citizen participation in public policy development.

To achieve these objectives, the National Digital Strategy establishes the following five key enablers:

1. **Connectivity:** we are encouraging connectivity as the basis for all the National Digital Strategy projects. This involves the development of networks, use of better infrastructure within the country, expansion of the capacity of existing networks and development of competition in the ICT sector to ensure lower prices.
2. **Inclusion and digital skills:** we are promoting inclusion and the development of digital skills to enable all social sectors to harness and use ICTs on a daily basis, in addition to accessing telecommunication services.
3. **Interoperability and digital identity:** we are building the foundations for interoperability within government to provide better public services, and are developing digital identity as the key to the population's access to these services.
4. **Legal framework:** we are harmonizing the legal framework in order to foster an atmosphere of certainty and confidence that is conducive to the adoption and promotion of ICTs both inside and outside government.
5. **Open data:** we are promoting the publication of open data to create an environment of co-creation of public services and to trigger innovation and entrepreneurship by turning the information held by the government into a socially valuable asset.

II. Goals and time-frame

In pursuit of the enabler of connectivity, the Ministry of Communications and Transportation developed México Conectado, a federal government programme derived from the constitutional amendment on telecommunications promulgated in June 2013, which mandates that, by the end of 2018, all schools, hospitals, national public offices and open spaces in which government services are provided to the general population, shall have access to the Internet.



III. Description

In order to fulfil this constitutional and statutory obligation, the Ministry of Communications and Transportation, through its Information Society Office, created México Conectado. As mentioned, it is a federal government programme, implemented with state and municipal government involvement, for identifying and proposing public spaces and buildings to be included in the programme so that, through public tenders carried out by the Ministry, they can be provided with Internet access.

México Conectado encompasses three main objectives: i) improving the quality of public services provided to the population through the use of ICTs that are unavailable without Internet access; ii) helping to narrow the digital divide in Mexico by providing free Internet access to the general population in such buildings and public open spaces through outdoor WiFi access points; and iii) achieving better economies of scale by aggregating, in the public tenders, the demand for Internet services of the three levels of government involved in the programme.

IV. Added value and importance

The programme has been designed to be technology agnostic, such that telecommunication operators who are awarded contracts through the tenders are free to choose the connectivity technology to deploy, provided they comply with strict service-level specifications. As at the time of writing, 12 different operators have been awarded contracts involving technologies ranging from terrestrial (ADSL, DOCSIS and wireless) to satellite.

The programme currently provides free Internet access to over 65 000 public places throughout the country, of which 43 per cent are also equipped with an outdoor WiFi access point so that the general population can enjoy free Internet access.

The steady growth in connectivity among the population at large through outdoor WiFi access points has had a very positive impact in many communities, by turning previously unfrequented public spaces into places of social coexistence and transforming our society through new ways of accessing services and information.

The full programme is financed through a public trust managed and supervised by the Ministry of Communications and Transportation through its Information Society Office. Its assets are provided from the yearly federal budget contributions.

V. Challenges

There is an estimated total of 250 000 public places nationwide, including government offices, schools, academic institutions, libraries, health centres, parks, public squares and landmarks, which will require Internet access provided through the programme. The challenge, already a huge one, is made even greater by the fact that some 50 per cent of the places in question are in locations with 500 or fewer inhabitants, accounting for 9 per cent of the country's total population.



The number of Internet users in Mexico's states currently varies considerably, ranging from 60 per cent in Mexico City (above the national average of 43.5 per cent), through Yucatán, with just under 40 per cent, to Chiapas, where the number of Internet users is estimated at fewer than 25 per cent. These differences illustrate the nation's inequalities, and paint a clear picture of the tasks that lay ahead.

The programme as a whole is managed by the Information Society Office at the Ministry, and for the purposes of national deployment and coordination, a contract was signed with the University of Guadalajara. The programme comprises five phases:

1. **State coordination board.** A coordination board, responsible for coordinating all participating entities, is opened in every state as a kickoff event. To the board are appointed public officials of the three government levels. The Ministry of Communications and Transportation serves as chairman, and the members include the State Governor, the President of the Federal Telecommunications Institute, State Ministries, federal agency representatives, the Information Society Office, the Executive Secretary for the National Law Enforcement System and the Underministry of Communications. To ensure the proper functioning of the subsequent phases and processes, two committees are created, namely the Technical Connectivity Committee (TCC) and the Social Connectivity Usage Committee (SCUC), both of which are set up with designated officials for each government agency participating in the programme and are led by the Information Society Office.
2. **Planning.** It is during this phase that the public-places database is populated, using the information the state governments provide and with field-validation of each registry. It is also strongly recommended that agencies provide information about other available infrastructure, active equipment, rights of way and interconnection points which could be used for the deployment of connectivity services. Information has to be gathered about which places need to be connected, required bandwidth and the applications to be used, these last two being input data that are provided and validated by the committees described in phase 1 above. SCUC shares information with TCC about application usage within each agency and the initial bandwidth request. TCC then uses this data and its ICT knowledge and experience to determine the bandwidth that best fits the needs of each location.

As the programme coordination task (including verifying geo-referencing data, building specifications and system data capture) grows in complexity in each state, it also heightens the need for a local entity to assist with the in-field validation process and a number of other intricate tasks. This need is met by adding local public academic institutions with state-wide coverage that support the programme by providing regional social and economic knowledge and expertise.

3. **Public tender.** Once the public-places database is fully integrated, the Ministry issues a public tender through which telecommunication operators are awarded contracts for providing Internet services. Places not awarded in this process are kept in a database for future tenders, until Internet services are provided in 100 per cent of them.
4. **Deployment.** Awarded places enter this phase, in which the data provided by state governments is used to ensure the installation of Internet services in the right places at the right times. It includes the service acceptance process by the official responsible for public-place management.
5. **Operations.** This is the control and monitoring phase, involving the definition of, among other things, user profiles and usage indexes, best practices identification and feedback to ensure ongoing improvement. Service-level agreements, content filtering policies and bandwidth management are control features of this phase.

VI. Relevance of the project to the respective Action Line

México Conectado helps to achieve the objectives of WSIS Action Line C2 – Information and communication infrastructure: an essential foundation for the information society. Specifically, México Conectado provides and improves ICT connectivity in all schools, universities, health institutions, libraries, post offices, community centres, museums and other institutions accessible to the public.

VII. Conclusion

México Conectado's first outcomes are already visible among the populations of the villages in which it has been implemented, especially those where Internet access was previously not available. México Conectado is currently benefiting some 18 million people nationwide.

C3 - Access to knowledge and information

Project name: National Portal (NP) (Reaching the information have-nots through the National Portal)

Organization: Prime Minister's Office, Bangladesh

I. Background information

The Government of Bangladesh has made substantial strides towards achieving its long-term Perspective Plan (2010-2021) by introducing the National Portal, or NP (www.bangladesh.gov.bd), which is primarily intended to serve as an information dissemination mechanism for the population, especially the underserved. Until recently, the majority of service users, other than a select few from the upper echelons of society, had to struggle in order to obtain service-related information from the various public offices. Almost invariably, people had to spend time and money travelling all the way to urban or semi-urban areas from their respective localities to meet their information needs. Moreover, they had to visit the government offices in question an unreasonable number of times to collect any service-related information owing to the widespread inefficiency of the traditional systems of information dissemination. Before the advent of National Portal, very few government offices had a web presence and the handful of available websites varied immensely in terms of structure, content and navigational architecture, making information access a cumbersome process for users. On top of that, the information available on the websites was for the most part outdated and inconsistent owing to the modest level of ICT knowledge among public officials and their resulting dependency on technical personnel for even very minor adjustments. Moreover, the use of non-vernacular language tended to exclude most of the population from understanding the available content, and there was a glaring absence of demand-driven information.

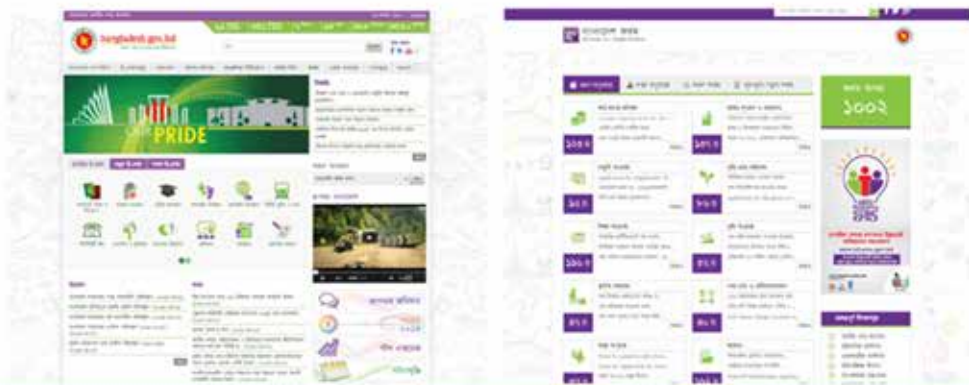
Acknowledging both the supply-side and demand-side challenges associated with improving public-service delivery, the Access to Information (a2i) programme of the Prime Minister's Office (<http://www.pmo.gov.bd>) spearheaded a whole-of-government initiative that provisioned every government office to develop standardized web portals that could be seamlessly brought under a common and harmonized umbrella framework. This opportune decision that brought the National Portal into being was the first step towards ushering in a new era of transparent and responsive electronic public information and service-delivery mechanisms in Bangladesh.

www.bangladesh.gov.bd

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II. Goals and time-frame

The National Portal was launched with the objective of creating a coherent web presence for the government while at the same time instilling transparency in public institutions. To achieve these goals, the a2i programme made a concerted three-pronged effort: (1) establishment of the National Portal; (2) expanding and strengthening the functions of Union Digital Centres (UDCs), Pourashava (Municipality) Digital Centres (PDCs) and City Corporation Digital Centres (CDCs); and (3) formulating enabling policies and reforming existing policies.

The National Portal's journey started in 2007 when the government introduced a central portal by way of a preliminary endeavour. In 2010, a countrywide initiative was undertaken to introduce portals for all of the country's 64 districts. Based on the lessons learned from these experiences, the 'Guidelines on Content Preparation' and 'Training Guidelines' on the same subject were prepared to widen the portals' scope and reach. Subsequently, some 22 000 government officials were trained on developing and maintaining the Portal, which created an enabling environment to further advance the effort. Finally, in 2013 and 2014, some 25 000+ websites, adhering to a common architecture, design, and structure in terms of their contents, were integrated within the National Portal and introduced in all tiers of public offices (Union Parishad, the lowest tier of local government, Upazila or Sub-district, district, division, directorate and ministries).

In the new National Portal, citizens are finding a convenient channel for obtaining information from public offices at lower cost and with less hassle. The Portal is also mobile-friendly, thereby ensuring greater access to information since the country enjoys over 70 per cent mobile penetration, with over 80 per cent of Internet access happening over mobile phones. Citizens who are unable to access the websites directly can go to the nearest digital centre, of which there are some 5000+ countrywide.

In order to achieve the goals set out under this initiative, the enactment of supporting policies was of great importance. Hence, policies relating to the Right to Information (Disclosure and Dissemination) Regulations, 2010; Gazette on Web Portal Management by Cabinet Division (December, 2013); Proactive Information Disclosure Guidelines, 2014; and Provisions on Secretariat Instructions, 2014 were methodically implemented to ensure the sustainability of this mammoth effort. Section V of this document, moreover, refers to a number of highly significant sequels to this initiative.

It is worth noting here that there are complementary initiatives in progress to upgrade the Portal further so that it can host all electronic versions of government services. Mobile applications are also being developed to make it easily accessible to persons with disabilities. At present, some 100+ services (selected on the basis of importance and public demand), including online passport applications (<http://www.dip.gov.bd/site/page/f2d015a9-1132-4426-8eef-147f1c4bac8a>) and electricity bill payments (<https://www.desco.org.bd/ebill/login.php>), have already been incorporated, and more services will soon be fully automated and provided via the Portal further to a mandatory government directive that will shortly be coming into effect.



III. Added value and importance

Before the National Portal, citizens had to bear a great deal of pain in order to obtain information regarding public services. The availability of general and service-specific information on the websites has resulted in savings of time and cost, and has all but obviated the need for physical journeys to the offices in question. Any government office is now one click away.

The National Portal has earned critical acclaim on a wider scale by providing comprehensive and reliable information of public interest. The information provided on each individual website includes updated circulars, current events, structural charts of the entity in question, list of services, contact points, and so on. Apart from service-focused information, the Portal is a reliable repository of information on local educational institutions, non-governmental organizations, clubs, religious and financial institutions, and so forth. It is a key source of information on agriculture, health, human resources, social security, etc. Thanks to its crowdsourcing approach, it was possible to incorporate large volumes of data within a short period of time. One can get an idea of the value and significance of the Portal in terms of both rural and urban livelihoods and human development from the hit-count, which at present stands at a daily average of over one million hits.

This vast National Portal, which has enabled all government offices to follow a common framework for the digital dissemination of their information and services, is now serving as an information entry point for service seekers. Dynamic data aggregation and data flow from the lowest tier (Union Parishad) of administration to the highest decision-making bodies (ministries) of the government has also accelerated public-service delivery processes to the potential beneficiaries.

The National Portal has, moreover, succeeded in imparting ICT skills to over 70 000 government officials. Capacity-building initiatives are being implemented on a regular basis to boost the confidence level of government officials when it comes to using ICTs for the preparation, editing and uploading of web content. The overall process is gradually eliminating the long-standing apprehension and fear of computer and ICT use among public officials.

The fact that the websites and their contents have been developed using crowdsourcing techniques has resulted in unforeseen and previously unimaginable mass ownership among government offices, thereby greatly mitigating any concerns as to the Portal's sustainability.

Thus, the introduction of the Portal and its subsequent maintenance and upgrading is bridging information gaps across multidimensional levels and is playing a part in instilling transparency in governance.

IV. Challenges

Owing to the frequent transfer and promotion of government officials and to the absence of proper incentives, instilling ownership within the public sphere was a challenge during the initial stage of implementation. However, the generation of a large pool of online officials through training campaigns, coupled with the recognition of officials through public awards, has considerably reduced that challenge.

To ensure the dissemination of accurate information, another challenge is to keep the websites updated. Some 132+ Master Trainers and 70 000+ trained individuals from different public offices are tirelessly working on the portal to keep it updated. Public recognition of the most dedicated officials also served as an incentive in this regard.

Although some 100+ services are now being provided via the websites covered by the National Portal, the provision of an increasing number of hassle-free e-services poses a significant challenge. However, the enactment of mandatory provisions on process simplification and automation for at least two services in each directorate is currently under way. This policy is expected to expedite the process of bringing the electronic versions of all 400+ public services under one overarching portal.



V. Relevance of the project to the respective Action Line

The particulars of 30 000+ Designated Officers (who are assigned to disseminate information in accordance with the Right to Information (RTI) Act, 2009) are provided in the National Portal so that any citizen, irrespective of social profile or residence, can contact the relevant official for any item of information. The National Portal has effectively facilitated implementation of the RTI Act by offering information in a proactive manner, thereby playing an important role in establishing e-governance in Bangladesh. In a similar vein, a 'Citizens Charter' for all public offices is published on each individual website under the National Portal, thereby once again affirming the government's commitment to bringing information to people's fingertips.

The National Portal also enables individuals from all over the country to get a taste of local heritage and locations of historical significance in Bangladesh. The site contains 40 000 photos of historical, cultural and archaeological locations around the country, which in turn is helping to promote the country's tourism sector.

By ensuring equitable access to quality information for people in remote and underserved areas, the Portal is paving the way to achieving the Millennium Development Goals (MDGs) by contributing to the government's efforts to eradicate poverty by saving citizens both time and money while bringing vital livelihood-related information to their doorsteps.

Moreover, the National Portal is also supporting gender equity as encoded in the MDGs, providing women with access to over 100 public e-services and to information on 400+ government services. This access is extremely significant when viewed against the cultural context of a conservative, developing country like Bangladesh. Women in Bangladesh often face numerous cultural and societal restrictions on their mobility, and as such are often denied employment and livelihood-related opportunities that would require them to travel to distant towns and stay overnight at unfamiliar locations. By bringing services and information to their doorstep, the Portal is also making a significant contribution to women's empowerment.

The National Portal is also an ideal example of how partnerships, both local and global, can be leveraged for development (MDG 8). Developed on a public-private partnership (PPP) model, the National Portal is the result of the most extensive organizational partnership within the government. While the content was provided by government offices, the technical support for this major piece of e-architecture was provided by BASIS, the largest private association of software-development organizations in Bangladesh. Moreover, a technical team from UNDP New York also provided support in maturing the architecture and ensuring cyber-security for the Portal. Thus, the National Portal operates by forming and leveraging partnerships on three important levels: public, private and global.

VI. Conclusion

The National Portal is the first step towards streamlining the free flow of information to the public from the Union Parishad to the Ministry level. It has shown significant promise in fulfilling the needs of citizens with limited resources and has had a positive effect in terms of instilling transparency in the public sphere. All in all, the National Portal's success as an information dissemination mechanism has engendered a sense of new beginning that is helping Bangladesh to leapfrog to a higher governance trajectory.

C4 - Capacity building

Project name: Centre of Digital Innovation

Organization: Telecommunications Regulatory Authority, United Arab Emirates

I. Background information

The Centre of Digital Innovation

Track three of the mGovernment RoadMap, entitled Enable Shared Resources at the National Level, contains a specific milestone: Set up Mobile Innovation Centres. The Centre of Digital Innovation (CoDI), located at the Telecommunications Regulatory Authority in Dubai is one such centre.

Conceived in 2013, CoDI is intended to serve as the pivotal point of digital innovation and a means of achieving a smarter digital future. Its specific mission is to promote innovation through collaboration by striving to be the crossroads at which students, industry experts, government and entrepreneurs meet to shape the future and foster flourishing commerce through energetic collaboration, launching the next generation of innovative products and services.

CoDI's services are available to all UAE federal and local government entities, members of the UAE university community and job-seekers. CoDI is a national- and regional-level shared resource, funded and supported as an mGovernment Mobile Innovation Centre. It maintains connections and relationships with leading world enterprises and technologists, and connects them to UAE entities pursuing the goals of mobile and smart government.

To realize this vision and perform its mission, CoDI provides services and functions in four key areas:

- mLab
- Innovation
- Training
- Consulting



mLAB, or the Mobile Application Laboratory, provides unsurpassed, world-class testing of mobile applications developed by CoDI for UAE government entities in support of the mGovernment initiative. mLAB staff use commercial best-of-breed and in-house custom-developed tools to perform a variety of tests, including evaluating security- and privacy-related issues, hardware and operating system version-specific compatibility testing on a wide array of handsets, and real-time application performance and power consumption metrics. The CoDI mLAB also facilitates consultation and provides best practice advice for mobile application development.

CoDI mobile application testing services delivered through the mLAB have had a measurable impact on mobile application projects at the federal and local levels. Government agencies creating mobile applications to support the mGovernment initiative have brought their applications to CoDI for testing as part of the process of submission to the UAE app store. CoDI experts consulted with these agencies to provide design guidance, and subsequent tests frequently revealed compatibility, privacy and security issues in the tested applications. Comprehensive reports on the findings delivered by CoDI to the agencies provide actionable information to help the agencies and their developers address these issues prior to deployment.

Innovation is supported in several ways through provisioning, display and demonstration of emerging tools, techniques and technologies. Specific initiatives include the use of next-generation displays, immersive 3D visualization technologies, Anywhere Video & Data technologies and interactivity to inspire and foster interaction between federal and local government entities, university students and technologists. CoDI aims to procure and demonstrate the use of leading-edge technologies and their capabilities in the hope of inspiring other government agencies to move forward with their adoption. Remote collaboration tools and techniques extend the reach of CoDI across the breadth of the UAE government, the nation and abroad, allowing CoDI staff to provide and support training and consultation for and with UAE entities without requiring individuals to travel.

CoDI provides **Training** for government employees, the university community (students, faculty and staff) and job seekers with the goal of enabling them to realize the goals of mobile and smart government. The CoDI training programme builds on the highly successful mGovernment Mobile Training Programme. It provides instruction on relevant technical, management and leadership topics through residential classes, online instructor-led seminars and Internet-based self-paced learning. A key focus of the training is on increasing awareness of the services that are available through CoDI.



Since its inception, the impact of CoDI has been felt across government and the UAE. Distance training methods supported by dedicated equipment and software made available through CoDI enable CoDI instructors and outside guest instructors to reach and connect with students within government agencies and universities without requiring the students to travel. The feedback from students has been overwhelmingly positive:

It's a great idea to get knowledge without personal attendance.

and:

CoDI helped me understand more about software development and the techniques that need to be used for specific requirements. I even learned logging and how to benefit from logging details that are presented to me. I would definitely recommend this course to my colleagues, for them to understand more about these critical topics.

CoDI **Consulting** services hinge on connecting government and industry experts with project managers and developers who are working to support the UAE's mobile and smart government initiatives.

The ultimate realization of the vision and mission of CoDI is through its role as an incubator. Starting with inspiration, CoDI strives to help entities in the UAE, through collaboration and mentoring, to secure funding, to implement, deploy and support projects and applications, and to achieve the mGovernment goals and ultimately the Smart Government vision of the UAE leadership.

CoDI has facilitated meetings, for example between university faculties seeking meaningful capstone projects for their senior students and municipal government agencies seeking assistance in creating and deploying mobile applications for use by their citizens. After the introductions and kickoff meeting, CoDI stands ready to support these efforts through consulting, mentoring, facilitation of meetings, developer and management training, and testing of the resulting mobile application and its supporting back end to help guarantee project success and, ultimately, citizen satisfaction.



C5 - Building confidence and security in the use of ICTs

Project name: Security of Energy Systems (SoES)

Organization: Ricerca sul Sistema Energetico – RSE SpA, Italy

I. Background information

The **SoES (Security of Energy Systems)** project is part of the Prevention, Preparedness and Consequence Management of Terrorism and other Security-related Risks (CIPS) programme set up by the European Commission Directorate-General of Home Affairs. Under the overall objective of risk prevention and preparedness, it aims to stimulate, promote and support risk assessment of critical infrastructure, in order to upgrade security.

The SoES project is designed to meet the pressing demand for knowledge and best practices on cybersecurity aspects of smart energy grids. It is intended to enhance government and operator know-how by providing a comprehensive analysis of ICT architectures, vulnerabilities, interdependencies, standards and best practices related to smart grids. Figure 1 presents the project consortium, the members of which provide interdisciplinary expertise in energy, security, control and ICT for the development of energy system security: a research company carrying out applied research in the electro-energy sector; a foundation dealing with cybersecurity research and development; a vendor of SCADA/EMS/DMS (supervisory control and data acquisition/ energy management and distribution management) systems, also active in the areas of substation automation, transmission and distribution grid protection and smart metering; and global service company in charge of managing ICT activities at ENEL Group level.

Figure 1: SoES Consortium



The project works on the basis of the background knowledge made available by the European Committee for Standardization- European Committee for Electrotechnical Standardization- European Telecommunications Standards Institute (CEN-CENELEC-ETSI) Smart Grid Coordination Group, by security standards developed by the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC), the United States National Institute of Standards and Technology, the Institute of Electrical and Electronics Engineers and the Internet Engineering Task

Force, and by the policy-related documents published by the European Network of Transmission System Operators for Electricity, Expert Group 2 of the European Commission Directorate-General for Energy, and the European Union Agency for Network and Information Security.

II. Goals and timeframe

The SoES project is intended to meet the ICT security demands of smart grids on three levels: technical, policy and international/interorganizational. It has the following specific objectives:

- a) identify vulnerabilities, threats and countermeasures relevant to smart grid architecture;
- b) create a comprehensive knowledge base grouping smart grid reference architectures, international standards, vulnerabilities and countermeasures (Figure 2);
- c) define ICT security best practices for smart grids;
- d) establish an information-sharing platform, the Hub for Smart Grid Cyber Security (H4SGCS), to improve the security know-how of smart grid stakeholders.

In order to achieve those objectives, the following activities have been implemented over the project's two-year timeframe.

1. Activity A.1 (M1-M12) aimed to build a knowledge base identifying a set of ICT reference architectures in the smart grid field. This knowledge base has been used as the "floor" on which to map the results of the other activities.
2. Activity A.2 (M7-M18) focused on identifying international security standards and policies for the smart grid ICT sector and the topics not yet adequately covered by existing standards and regulations.
3. Activity A.3 (M10-M21) aimed to identify and enumerate vulnerabilities and threats for smart grid ICT, and to select from among existing countermeasures those meeting the requirements of smart grid applications. The analysis also considered the ICT risks of smart grid upper layers, i.e. the operational and decision-making layers.
4. Activity A.4 (M19-M24) aimed to define a suitable and usable set of best practices for smart grid ICT security. The best practices looked at different levels of energy infrastructure: architectural/technical, policy, operational, intercommunication, coordination.
5. Activity A.5 (M1-M24) was orthogonal to the rest of the project. The project members engaged energy operators, policy-makers, energy regulators, telecommunication service providers, device (SCADA) producers, ICT security companies, standardization communities and research institutes to create an information-sharing community willing to exchange information on vulnerabilities and threats and to improve the standards and procedures for smart grid security. The expected outcome of this activity was an information-sharing platform for the target groups working on smart grid security. The platform was built organizing workshops, meetings, mailing lists and a forum for discussing smart grid security aspects.
6. Activity A.6 (M1-M24) consisted in disseminating the project results through (a) implementation of A.5, (b) web meetings, (c) project website, (d) conference publications, (e) workshops, (f) deliverables and (g) a final report.
7. Activity A.7 (M1-M24) consisted in management.

Figure 2 SoES approach and Project website



III. Added value and importance

The added value of the SoES project is to build up a comprehensive guide to analyse cybersecurity in emerging smart grid applications. The target groups in Figure 3 directly benefited from the project results.

Figure 3 Target group categories



Representatives of the above target groups are members of the H4SGCS Working Group and participated in SoES workshops, Smart Grid Information Security (SGIS) meetings, the 2014 Session of the International Council on Large Electronic Systems (CIGRÉ) and the CIPS IV Workshop, at which the SoES presented the progress made and its results.

IV. Challenges

In the last decade, with the widespread deployment of standard computer and telecommunication technologies, energy systems have started to be connected through private/public networks. Thanks to this development, Europe has seen the interconnection of national/regional power systems. The benefits are considerable and include the possibility to generate power in the most economically attractive areas and to divide the responsibility for frequency and voltage regulation between distributed generators, distributed generators, thus providing a good basis for a convenient energy trade. The use of ICT extended the concept of interconnected energy system to smart grids.

Integration based on large-scale, and potentially open, data networks has serious security implications for the use of ICTs in smart grids. A cyberattack from a remote part of the grid can have huge implications for citizens of the entire European Union. Being the full potentiality of Energy Smart Grids in course of development, there is still a lack of harmonization in term of system knowledge and understanding. The cyber security topic is still embryonic and poorly implemented by regulators and energy operators.

V. Relevance of the project to the respective Action Line

The project focus on the security requirements of and solutions for smart grid applications, and their application to representative cases, serves to bolster confidence in ICT use and security and is therefore highly relevant to Action Line 5.

VI. Conclusion

Project activities follow a bottom-up approach, deriving global architectures, general policies and best practices from detailed consideration of representative cases of smart grid use.

The main results of A.1 to A.4 are as follows: knowledge was systematically collected about four cases of smart grid use in terms of ICT architecture, security standards, policies and best practices; gaps were identified in this corpus with respect to the security analysis of those cases. These results contribute to the CIPS objective of increasing the protection capacity of energy systems in the follows ways:

- a) by identifying a set of reference ICT architectures used in smart grids, the project helps create a common knowledge base and a common understanding of the dependencies between ICT systems and energy infrastructure;
- b) by mapping existing international standards on the identified architecture, it helps energy stakeholders (operators, producers, regulatory bodies, end users) evaluate compliance and lacks in their infrastructure with respect to the standards;
- c) by identifying the vulnerabilities and risks of the ICT architecture used in smart grids, it helps raise awareness of the exposure of infrastructure to cyberattacks;
- d) the identification of suitable countermeasures, mapped together with vulnerabilities and threats, and the release of ICT security best practices help energy operators make their existing infrastructure more secure, mitigating the risk of exposure to, and improving their preparedness for, cyberattacks;
- e) by analysing the status of related policy documents, the project provides a methodology that, when applied to the cases of use, will be useful for the development of a European smart grid operation handbook and cybersecurity-aware grid codes by the Member States.

Figure 5 provides an overall view of the SoES analysis process.

The project outputs were reported in four project deliverables that are available for downloading on registration at the project website, www.soes-project.eu:

D.1: Reference Architectures for Energy Control Systems and Smart Grids

D.2: International Standards and Policies- Map and Analysis

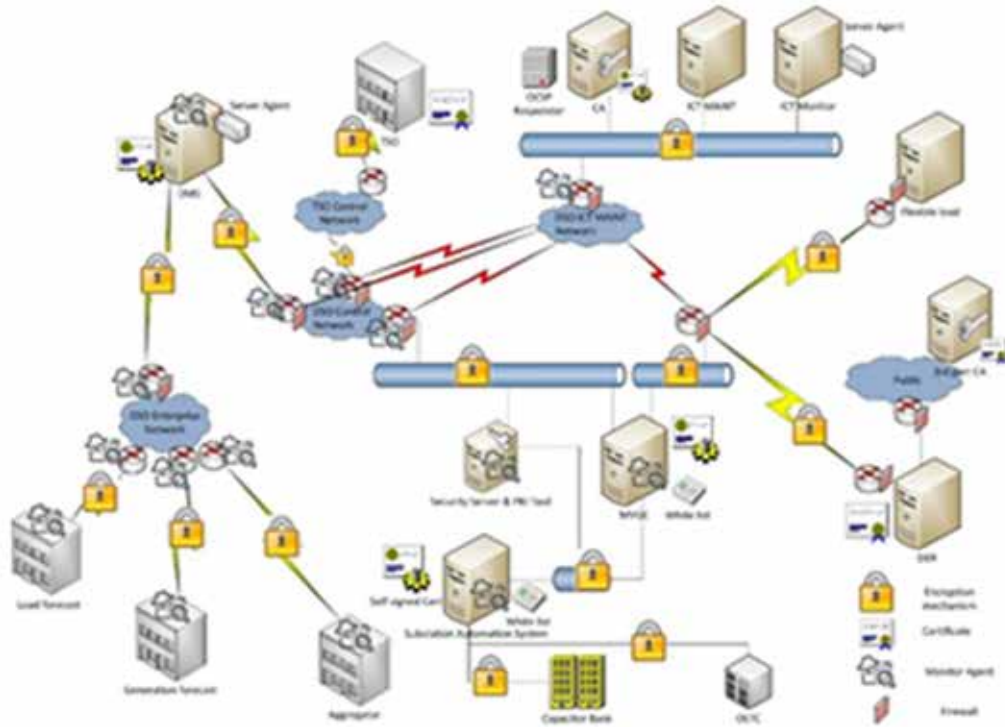
D.3: ICT Vulnerabilities, Threats and Countermeasures in Energy Smart Grids

D.4: ICT Security in Energy Smart Grids Best Practices.

Activities A.5 to A.7, especially the open workshops, saw an intense exchange of interests, experiences, competencies and contacts with target representatives in a collaborative and friendly environment. This may well be a tangible impact of the project, also confirmed by the positive feedback received after the workshops and SoES website access and downloading.

The project outcomes contributed to the SGIS report of the CEN-CENELEC-ETSI Smart Grid Coordination Group, have been presented at internal seminars, have been published in a paper at the 2014 CIGRÉ Session in Paris in August 2014, and in a book printed by Springer-Verlag in January 2015. The overall project results were presented at the CIPS IV Workshop organized by European Commission in Brussels in late November 2014.

Photovoltaic field installation and SoES process view



C6 - Enabling environment

Project name: Electronic auction for property sale

Organization: The Committee of State Property and Privatization of the Ministry of Finance of the Republic of Kazakhstan

I. Background information

“We need to improve the computer literacy of the population, including through various incentive programs. I urge all Kazakhs actively explore information technology. This is necessary.”
N.A. Nazarbayev

“Modern development of human civilization is characterized by the next stage of the technological revolution - the introduction in all aspects of information and communication technologies that are changing the way people’s lives and are the foundation and material basis for transition to an information society, a society with a high socio-economic, political and cultural development “

The President of Kazakhstan has repeatedly spoke about the importance of information technology in government. Thus, in a letter from 2012, he noted the importance of modernization as the simplification of administrative procedures. He has also tasked to transfer 60 percent of socially important public services in electronic form by the end of 2012.

This information resource “Electronic auction for sale of property” (hereinafter- Trading platform), implemented on the web portal of the State Property Registry www.gosreestr.kz. It is designed for electronic bidding for the sale of state property (republican and municipal regional / district) quasi-public sector and private property, and participation in such trading of individual and legal entities registered in the Trading platform filed within the prescribed time electronic applications for participation in the auction.



In addition, using the trading platform, you can view information about the objects and materials sales, including Reports to assess the market value of the property, as well as get acquainted with the texts of informational messages about upcoming electronic trading, published in print media and on the Trading platform.

The trading platform is provided by JSC «Information and accounting center”, identified as a single operator in the field of accounting of state property (hereinafter- the single operator) according to the decision № 802 of the Government of the Republic of Kazakhstan dated July 15, 2011.

II. Goals and timeframe

Trading platform designed for organizing and conducting electronic auctions for the sale of:

- Objects of the “second wave of privatization”;
- State property (republican and regional / district municipal property);
- Non-state property;
- Assets of the debtor (bankrupt).

The Trading platform began to function on June 2013 and operates for now.

III. Project's added value and importance

Since June 2014 in Kazakhstan held a "second wave of privatization", in which the realization of assets carried out using electronic methods of trading (the auction, tender or competition) on the Trading platform.

Using of Trading platform opens access to participants for a huge market for the purchase of interested property and guarantee to all bidders an equal opportunity and the right to participate in them. The automated process of tendering ensures confidentiality of participants in the process of tendering, which excludes any possibility of lobbying interests of third parties. Availability, security, competitiveness, transparency, openness and honesty is the result of ongoing bidding process transfer into electronic form.

The advantage of electronic trading is accessibility and the ability to participate in multiple auctions simultaneously, regardless of the geographical location of the party and the seller. Trading platform provides physical access to the functional for participants by connecting via the Internet.

No need to transfer applications and documents directly into hands of the organizer (the operator) of trading, it eliminates the additional costs of organizing transport costs or attracting courier services.

IV. Challenges

Until now in the process of conducting electronic auctions for the sale of state property there were problems in the operational obtaining information about the Trading platform enrolling participants' guarantee fees on deposit accounts of the seller. It should be noted that to date, due to changes to the Rules of sale of objects of privatization, approved by Resolution of the Government of the Republic of Kazakhstan on August 9, 2011 №920, question efficiency of obtaining information about the Trading platform listing party guarantee fee has lost relevance as guarantee contributions of participants will be transferred to a specialized settlement account of a single operator.

V. Relevance of the project to the respective Action Line

Enabling Environment

According to the principles proclaimed at the World Summit on the Information Society Geneva 2003 and Tunis 2005, "ICT applications: e-government." The Government of Kazakhstan is making great efforts to build the information society, creating integrated information systems that provide transparency of public institutions and improve the efficiency of interaction with citizens. Thus, Trading platform is a shining example of enabling environment with access to Internet for the fulfillment of fair competitive bidding in Kazakhstan.

The use of modern information technologies in the activities of public authorities is essential for the modernization of the public administration system, increase transparency of state power and deregulation.

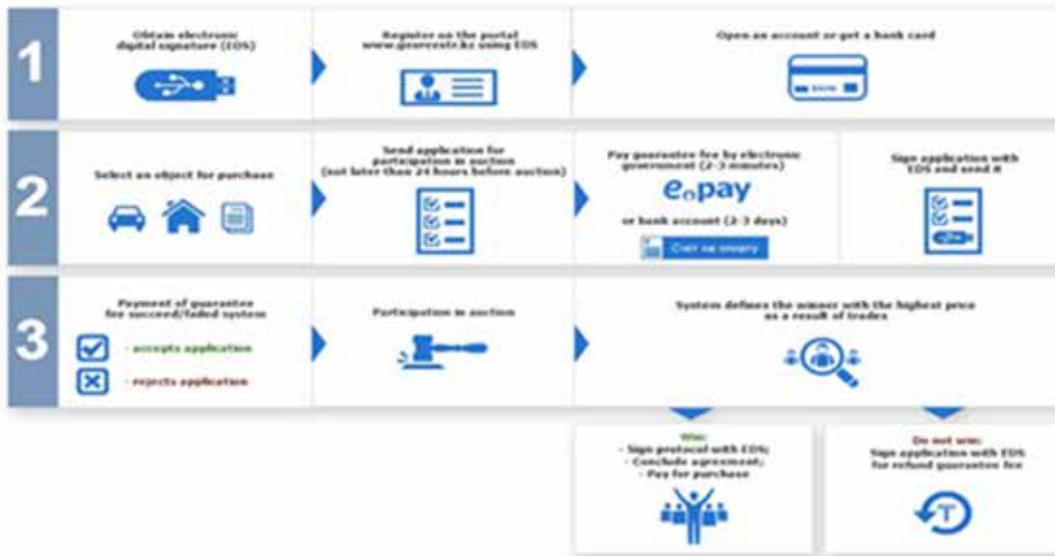
Trading platform is an effective tool for the privatization of state property. It should be noted that Trading platform covers the feasibility of non-state property that allows sellers, regardless of their affiliation to the subjects of law (individuals / legal persons) use its services. Trading platform also allows bidders registered in "My Account" of the Portal to have equal rights for the purchase of public and private property. Creating a Trading Platform will enhance and simplify the mechanisms used in organizations, which in turn also has a positive effect on the conduct of e-government activities in the country as a whole, since the procedure and rules of law are optimized to simplify the submission of applications for participation in the auction and the process of bidding.

THE DISPOSITION OF PROPERTY ELECTRONIC AUCTION

Small and medium-sized business level of prosperity characterizes stability level of the nation's economy. Open up for business sector development, reduce government participation in the economy, including asset development.

Eliminate indirect contact possibility of a seller and direct buyers, possibilities of corrupt practices allow auctions on-line- the disposition of property electronic auction <https://e-auction.gosreestr.kz>. It is a form of auction to sell objects of the government property, quasi-government sector and non-government property where participants announce their propositions.

Integration data system of the government property register with other systems government agencies allows to minimize documents presented by buyers.



Trading platform is one of the few unique and universal systems distinguished by their accessibility and acceptability. Most audience members can create favorable conditions for both sellers and bidders. Using Trading platform a large number of movable, immovable and other types of property being implemented that attracts potential participants, respectively, to participate in the auction.

To represent importance and attractiveness of project the following data can be shown:

From June 1, 2013 to February 10, 2015 Trading platform visited 165,568 users, on which (as of 02/10/2015):

- exposed to 9630 objects, including:
 - o 9570 privatization objects (for republican, regional and municipal utility district property);
 - o 494 objects “second wave of privatization”, and by the end of this year will be further exposed to 122 object (with June 1, 2013.)
- announced and conducted 10,214 electronic trading, including:

- o 5530 English auction;
- o 4220 Dutch auctions;
- o 148 commercial tenders;
- o notifications of 17 competitions and 299 auctions for the sale of debtor's (bankrupt) assets published;
- 5789 users registered, including:
 - o 4465 – Individuals, 436 – individual entrepreneurs, 888- legal persons.

Implementation effectiveness:

- No need to submit “paper” application and documents (application filled electronically and signed by electronic signature on the Portal);
- To apply for participation in the electronic trading no need to attach supporting documents for individuals and legal persons (other than bankruptcy / tender offer). Earlier, when applying for participation in the “paper” trades individuals had to submit 3 documents and for legal persons - 4 documents;
- Automated processing of electronic application and admission to trading, with the total exclusion of the “human factor” (when applying for a decision on the admission to trading is made within the first minute). Earlier employees of Seller considered applications within one business day.

Thus, during the first half of 2013 sellers of republican and communal property held 1795 “paper” auctions, and the same period of 2014- 1824 electronic auctions held. With a comparable number of trades, income from the sale to “paper” trades amounted to 527.5 million tenge (about 2 521 900 €), and “electronic”- 1 091.6 million tenge (about 5 195 238 €), so it is almost 2 times more.

As the Trading platform has recommended itself as an effective tool in the sale of the property, in the future it is planned to provide:

- land auctions for the sale of land by local executive agencies using Trading Platform;
- implementation of a mobile application for IOS «e-auction.kz», to view information of the object of sale, application for participation in the auction, with on-line payment of guarantee fee and participation in electronic trading (similar to a mobile app for Android launched in operation on September 1, 2014).

VI. Conclusion

The welfare of small and medium businesses characterizes the level of sustainability of the country's economy. Create conditions for the development of the private sector, to reduce government involvement in the economy is designed, including the privatization of state property.

Bids electronically exclude the possibility of corruption offenses, direct contact between seller and buyer, thus will strongly excluded acts of lobbying. This form of bidding for the sale of state property, quasi-public sector and private property, in which Participants declare their proposals publicly. Trading Platform's integrations with other information systems of government agencies minimize the number of documents provided by the buyers.

The definite plus of transition arrangements to electronic form may include effectiveness, efficiency, simplified procedures. One way or another, these advantages are reflected in the Trading platform conducted on electronic trading.

Towards building legal state and following the development strategy of the state, we make confident step and make our contribution in terms of improving public services. We clearly understand and know that the future in information technology and innovation.

Participate in auction and buy!

C7- e-Government

Project name: The system of Committees and Councils

Organization: Majmaah University, Saudi Arabia

I. Background Information

Since the establishment of Majmaah University, the administrators have adopted strategies that help the university assess its performance. The university has therefore been careful to mainstream technology in all educational and administrative processes in order to have a technology-supported environment that improves and develops work performance. As its committees and councils play an important role, the university decided to develop an electronic system to help them achieve their goals and thereby facilitate the task of decision-makers.

The Office of the Dean of E-learning and Distance Education started to work on this in 2011. Its efforts resulted in the first version of the system of committees and councils. There have been two subsequent versions. Each version had different, updated features. The fact that it won a prize at WSIS 2015 attests to the system's worth, especially since it was reviewed by experts and voters.



II. The system of committees and councils

What is the system of committees and councils?

It is an automated system for all committee and council session management processes used by the University's Colleges and Departments. The methodology, which is used throughout the university, applies the paperless principle in all processes, in order to facilitate and accelerate the work of the committees and councils and its follow-up.

III. Goals and Timeframe

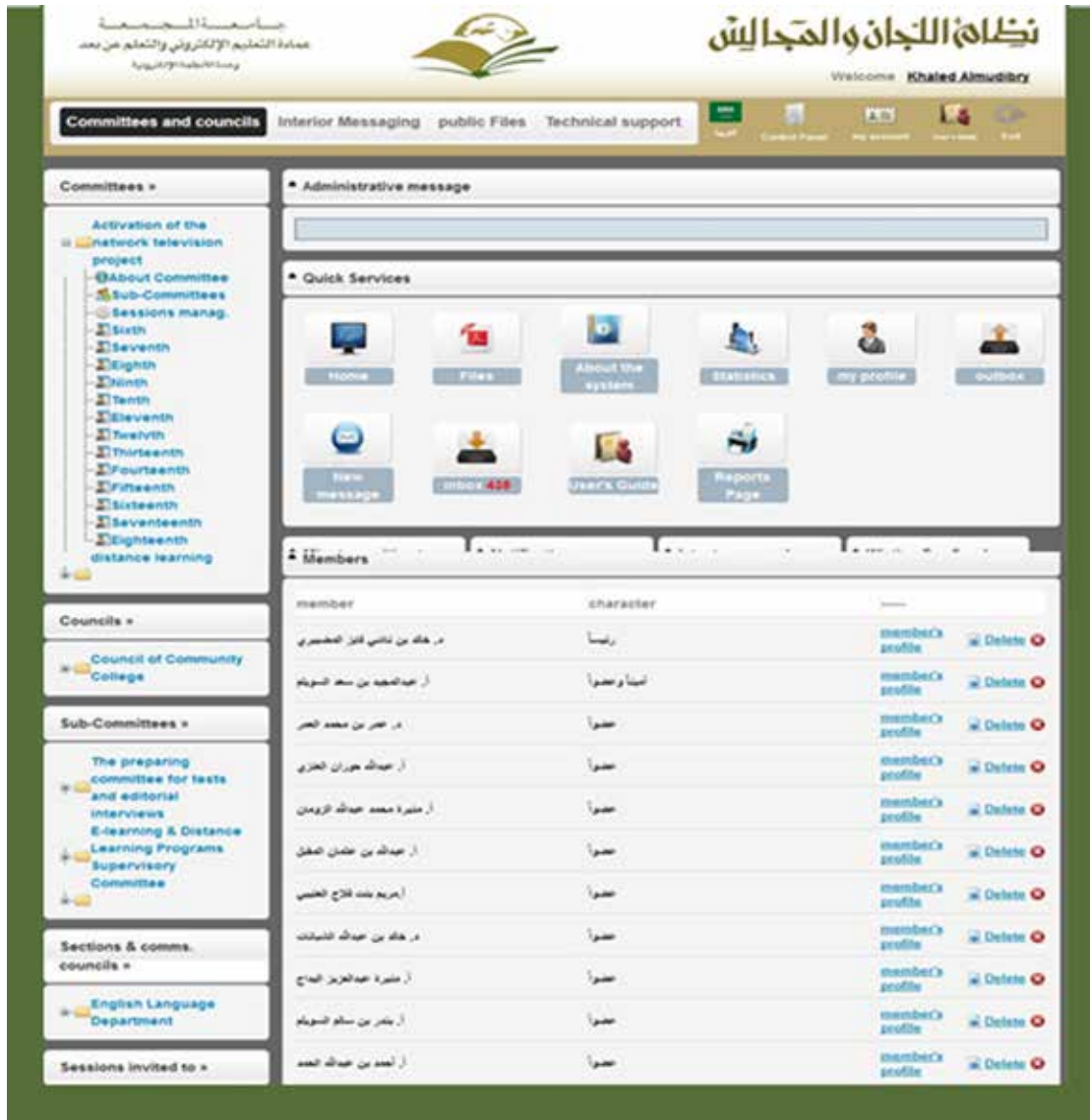
What is the purpose of the system?

First, the university is spread over five provinces, which means that time is lost sending and receiving records. Administrative processes can be used to shorten that time. Secondly, the committees and councils include members of various colleges and college departments (men and women). Or at the university level, like permanent committees (included members' participation from the various colleges and departments of the university). Thirdly, the unification of working models and procedures, controls (through a unified supported models according to a mechanism to ensure concrete work-flow and quality of work), is successfully achieved. Finally, the secretary and head of each committee are in charge of committee management, and administrative staff have to spend time and energy announcing the date of the session, distributing the agenda and its annexes, communicating with the committee members and obtaining their approval of the record and other documents.

The first consultative meeting (12/03/1432), held when the university was founded, recommended that technical solutions be found to unify meeting models.

How did the work start?

- The key elements required for all university meetings were studied, analysed and approved as a unified paper model for all working committees at the university.
- The team assigned to examine the situation and the systems used at Saudi and Arab universities identified no integrated e-system able to meet the university's needs.
- The university's work, structural organization and work-flow mechanism were studied with a view to creating and adopting records for the university's future needs.
- The system's technical and artistic specifications were analysed and external resources used to develop the system.
- A prototype of the system was tested on a sample before the business model was redesigned for ease of use.
- The initial version of the system was fixed and permanent and temporary committee records were targeted.
- The system received the guidance and approval of the Rector for all records through the e-system, strengthening its acceptance.
- Specialized and intensive training courses were introduced, first for committee secretaries and then members.



How does the system of committees and councils work?

1. Permanent committees are periodically established on the decision of the Rector, who also gives consent for the formation of the college councils.
2. These committees are integrated into the system and their members defined (member, secretary, chairman, vice-chairman , etc.).
3. All secretaries are trained to use the system.
4. The secretary creates a session (day, date, time and place of the meeting).
5. Files are attached.
6. Members are defined by message (e-mail, SMS).
7. Members view the session page and can participate with a written suggestion, apologize for absence, etc.
8. Members meet virtually
9. The Committee Secretary creates the record using the unified record model.
10. Members are informed that the record is open for signature (e-mail, SMS).
11. Members sign the record.

12. The head of the Committee sends the record to HE.
13. The record is submitted to the head of the Committee for review and then to the Rector, or returned to take account of observations.
14. The record is submitted to the Rector for approval or for completion if there are notes.
15. The approved record is submitted automatically as a PDF and the head is notified by SMS.
16. The record is archived, according to the year or the course.

How has the system of committees and councils facilitated the university's work?

The university works on the basis of college councils and permanent committees that help conduct administrative and academic affairs. Any delay at any level will affect, in one way or another, the rest of the system. Facilitating and accelerating action heightens the effectiveness of procedures.

- The committees and councils comprise the head of the committee, the secretary and the members.
- The secretary works to coordinate and follow up the work of the committee, including by:
 - scheduling sessions;
 - coordinating the agenda;
 - communicating with members;
 - writing the record;
 - following up presence signature;
 - sending the record for approval;
 - working on its content and informing the authorities after approval, i.e. after each session.

The system then reduces the process to a series of brief steps.

IV. Case study

At Rummah College of Science and Humanities, the procedure for approving a record is as follows:

- the record is issued two days after the session;
- the record is signed either during the next session or after its record is issued (2 days);
- it takes about 10 days to send the record to the authorized office;
- the record is studied and attached for review by the authorized person within five days;
- the approved record is distributed after 10 days.

In the Committee of Scholarship and Training, the procedure for approving a record is as follows:

- members sign in for the first session or the record is sent to them after it has been issued (it takes four days to send it to the members of the Committee at the university's headquarters and branches);
- the Chairman approves the record and sends it to the authorized person within three days;
- the record is studied and attached for review by the authorized person within five days;
- the approved record is sent to the Chairman of the Committee within three days.

When it comes to the status of the e-system:

- the record is drawn up after the session, within two days;
- all members are asked to sign the record directly in the system;
- presence signature and approval is completed within three days;
- the record is studied and attached for review by the authorized person within three days.



V. Conclusion

Evaluation of the first version of the system

The Office of the Dean and the team prepared a survey to gauge user satisfaction and collect the main observations of all the system's users (secretaries, chairmen, members). In all, 83.6 per cent reported that the system was easy to use, 85.5 per cent said that they had mastered the system and needed no additional training, and 83.6 per cent confirmed that the system saved its users time.

Training

Training is key to the success of any shift to a new work system or mechanism, and the team therefore invited all committee secretaries to be trained to use and activate the system. It invited members to attend similar training courses given by Mr Thamer Al-Dugaishi and Mr Abdul-Majeed Al-Swailem.

Technical support

The Office of the Dean of E-learning and Distance Education provides technical support through the beneficiaries care unit on the unified number (6666) and support for users of the committee and council e-system through the private telephone system (1605) and the e-ticketing system. In addition, the system enables individuals to give technical support to the beneficiaries in their office by sending a specialist to conduct a special simplified session on the system mechanism.

What's new in the second version

- The observations noted from the user satisfaction survey have been taken into account.
- The general appearance of the system and the distribution of objects on the page have been modified.
- The Secretary has been given more control powers.

- Additional reminder have been added for members signing late.
- Multiple statistical reports have been added according to the levels.
- A session's inventory has been added to facilitate the submission of financial receivables.
- A technical support system has been developed in the form of the e-ticketing system
- Additional control features and options have been added for the director.
- Subcommittees for the original committees were added after approval by the competent Authority. Sub-committees do all requirements and submit the record the Head of the original Committee for inclusion in its sessions.
- Invitees from outside the committee have been added and activated, according to the position of each specialist. This allows access to specific topics only, on the basis of a user name and password sent by SMS.
- Records of department sessions have been attached.
- Work on the standard university login.

Statistics for fast system

- Number of committees: 78
- Number of councils: 20
- Number of subcommittees: 1
- Number of sessions: 913
- Total members: 393
- Total invitees: 13
- Total topics: 3991
- Approved sessions: 805
- Records ready for signature: 47
- Sessions that have an agenda: 26
- New sessions: 5
- Lecturer ready for view: 13

C7 e-Business

Project name: Information System on Consumer Prices (SIPC)

Organization: Ministry of Economy and Finance, Uruguay

I. Background information

Under Executive Decree No. 503/06 issued in December 2006, the Directorate-General for Trade, Ministry of Economy and Finance, was authorized to disclose information on final goods and services, stating brands, prices, the trade name of the store and the location of the offer. In order to implement this decree, a first version was developed of the Consumer Price Information System (*Sistema de Información de Precios al Consumidor*, or SIPC in Spanish), an open source application enabling citizens to obtain information on consumer prices. From November 2010, the number of products analysed increased from 49 to 62. In 2011, the Directorate-General for Trade obtained a grant, through competitive funding offered by Uruguay's *Agencia de Gobierno electrónico y Sociedad de la Información y del Conocimiento*, for the development of a new version of the SIPC improving the user interface and facilitating the analysis of information.



II. Goals and timeframe

1. To improve consumer access to information on retail market operations and to promote competition, optimizing the dissemination of pricing information.
2. To create and maintain a database of price changes, enabling researchers to understand the process by which prices are set in Uruguay.
3. To analyse and interpret the information collected, and to monitor changes in the price of certain goods through the formulation of indicators.

III. Added value and importance

The system collects the daily prices of a series of products purchased regularly and massively by local consumers. There is also a website, to facilitate dissemination and analysis of the information collected. The interface is user-friendly and allows citizens from all over the country to obtain information on the price of various products, helping them to make informed purchases.

The system collects information on retail prices at stores around the country that have more than three check-out desks (currently around 190 retail stores in Montevideo and 150 in the rest of the country). Information is also collected on prices at 11 local produce markets in Montevideo.

The effects can be measured from the point of view of the different stakeholders benefiting from the system. First, the system is useful for retail stores providing information on prices. A survey carried out in 2012 showed that 80 per cent of respondents were satisfied or very satisfied with the service provided by the system. This high level of satisfaction shows that much of the information collected by the retail stores is used. The survey also showed the system's effect on those stakeholders by a question referring to the use of the information made available. Forty per cent of retail merchants answered that they used more than 30 per cent of the information collected.

Secondly, the way the information is processed allows prices to be monitored in the light of the type of goods and geographic areas. In addition to biweekly reports, the system provides specific reports, as required, on changes in the prices of certain goods or in certain areas. In this case, the effect is the possibility to assess economic policy.

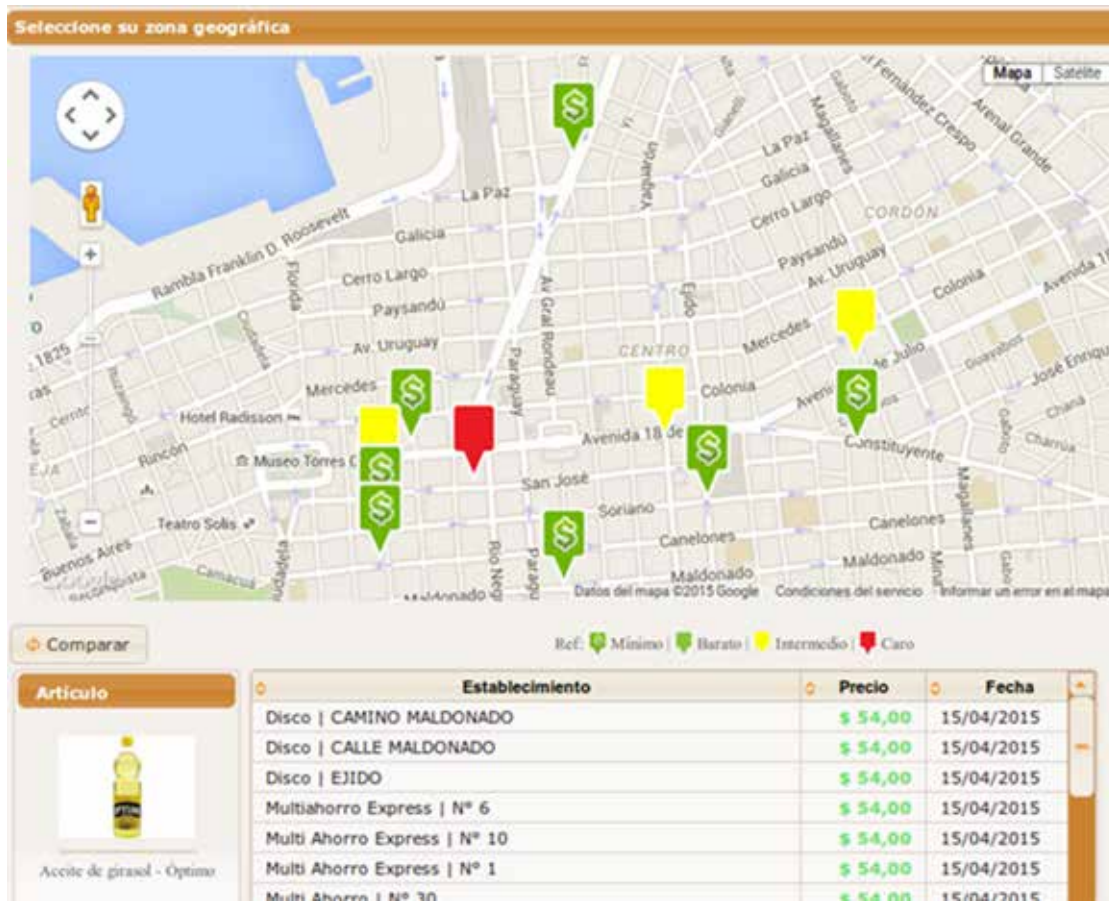
The effect on consumers is measured by the number of consumers who visit the site and use the information provided. During the last 12 months, the site received about 1 000 visits per month.

IV. Challenges

The following challenges were encountered when trying to improve interaction with users:

- improving the user interface to facilitate access to information;
- extending the use of the information through web services;
- increasing the number of goods covered, the frequency of statements, and the number of retail stores;
- taking specific action to attract more traffic to the application;
- enhancing knowledge of user needs through surveys and/or analysis tools;
- developing multimedia content (e.g. videos, games) to promote healthy consumer habits.

After considering the results (see Conclusions below), the website was better designed.



V. Relevance of the project to the respective Action Line

The SIPC employs technology to provide useful information for all those involved in local trade.

- **Citizens:** The SIPC provides a user-friendly interface for citizens to view the information collected. It also allows them to obtain customized results depending on location and/or consumer profile. This is a significant improvement over the first version, which only offered static lists of prices.
- **Ministry of the Economy:** The authorities use the information supplied by the system as input for decision-making (entering into agreements with the private sector on the price of consumer goods and assessing the effects of policies).
- **Media:** The SIPC publishes biweekly and monthly reports on changes in the prices monitored by the system, and those reports are retrieved by the press (e.g. newspapers, television, radio, websites).
- **Retail stores:** The system allows retail merchants to see the competition's prices, promoting competition and spreading information among those influencing prices.
- **Academic research:** The system's database is used by researchers interested in the price formation process. Click on the following links to see the most important papers published using information collected by the SIPC: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2079008 and <http://www.nber.org/papers/w18122>.

VI. Conclusion

The inclusion of a new application was a major success, given that it significantly improved the relationship with users and solved the problems encountered. The new application gives consumers user-friendly, visually attractive access to geo-referenced information on prices, creating baskets of goods that are adapted to the user's regular consumer profile. The interface is easy to use and allows analysts to download information in order to create reports. The application is embedded in a site

enabling user-friendly content management, and information analyses are published as a result. It allows datasets to be published that contain the information used to create the monthly reports. Finally, the information contained in each statement is issued in XML format. The information is available on the Uruguayan open data site (<https://catalogodatos.gub.uy/>) and may be used by third-party applications. The application facilitates data entry and allows pricing forms to be completed over the course of various working sessions, with changes saved after each session. Statements can be submitted via web services. Finally, retail stores are given the terms for submitting statements and the features of goods in user-friendly format. Thanks to the system, more products can be analysed and statements submitted more frequently. Considering the benefits that resulted from the incorporation of these changes, and given that consumers are the intended beneficiaries of this service, user opinions will be solicited in the future to make further improvements.

The screenshot displays the SIPC website interface. At the top, there is a navigation bar with links for 'Portal', 'Mapa', 'Contacto', and 'Ir al Contenido'. Below this is a search bar with the text '¿Qué es el SIPC?' and a 'BUSCAR' button. The main content area is divided into two sections. The left section features a map of Montevideo with several green price markers. A pop-up window for 'Disco' is open, showing the address 'Ejido 1530, Montevideo, MONTEVIDEO, 29083861', the website 'www.disco.com.uy', and the price 'Precio \$ 54.0' with the date 'Fecha 15/04/15'. The right section, titled 'Novedades', contains two news items: 'Reporte Quincenal Abril 2015' (dated Monday, May 4, 2015) and 'Reporte Mensual Marzo 2015' (dated Tuesday, April 21, 2015). At the bottom, there is a banner for 'Mejor precio de un producto' with a piggy bank in a shopping cart and the text: 'Los mejores precios a tan solo unos clics de distancia, SIPC le permite comparar precios de productos entre distintos establecimientos comerciales del Uruguay. Utilice SIPC ahora!'.

C7 - E-learning

Project name: SAME (Satellite and Advanced Multimedia Education), Karnataka, India

Organization: Indian Institute of Management Bangalore, India

The Satellite and Advanced Multimedia Education (SAME) project aims to improve the quality of education in rural government and government-aided high schools and upper primary schools by providing interactive high-quality multimedia content and delivery. This is done with the help of expert content developers, teachers, high-quality and reliable satellite and multimedia technology and appropriate institutional partnerships.

Karnataka has a total of 65 000 government and government-aided schools. In view of the social, cultural and geographical disparities, the SAME project was launched as a two-phase pilot programme before being extended to all schools in the gram panchayats of Karnataka.

Project objectives

1. To address the **gap in quality of education** between **urban and rural areas**, particularly in government schools
2. **To strengthen conceptual understanding** and elevate learning levels in mathematics, science and English (grammar)
3. **To improve the ability** of rural students to **compete with their urban counterparts** with confidence, facilitating their entry into higher studies
4. To facilitate all-round development by sharing information on life-enriching activities such as sports and music

Features of the first phase - Pilot project (2011-12 academic year)

1. The tele-education pilot project was conceived by the consortium led by the Centre for Public Policy, Indian Institute of Management, Bangalore, as a **satellite-based live interactive training programme** transmitted via EDUSAT. The first phase was **implemented by the IIMB Consortium, with tele-education led by Gumbi Software Pvt. Ltd. And content provided by Edutel Technologies Pvt Ltd** at **14** rural government high schools in the gram panchayats of **Gubbi Taluk, Tumkur District**.
2. **SIT studio in DSERT** was used to deliver the live classes.
3. All the hardware and software required for the programme was provided by **IIMB Consortium**.
4. The project provided satellite-based quality training for **3 112 8th to 10th standard students** in mathematics, science and English (grammar) in the 14 schools.

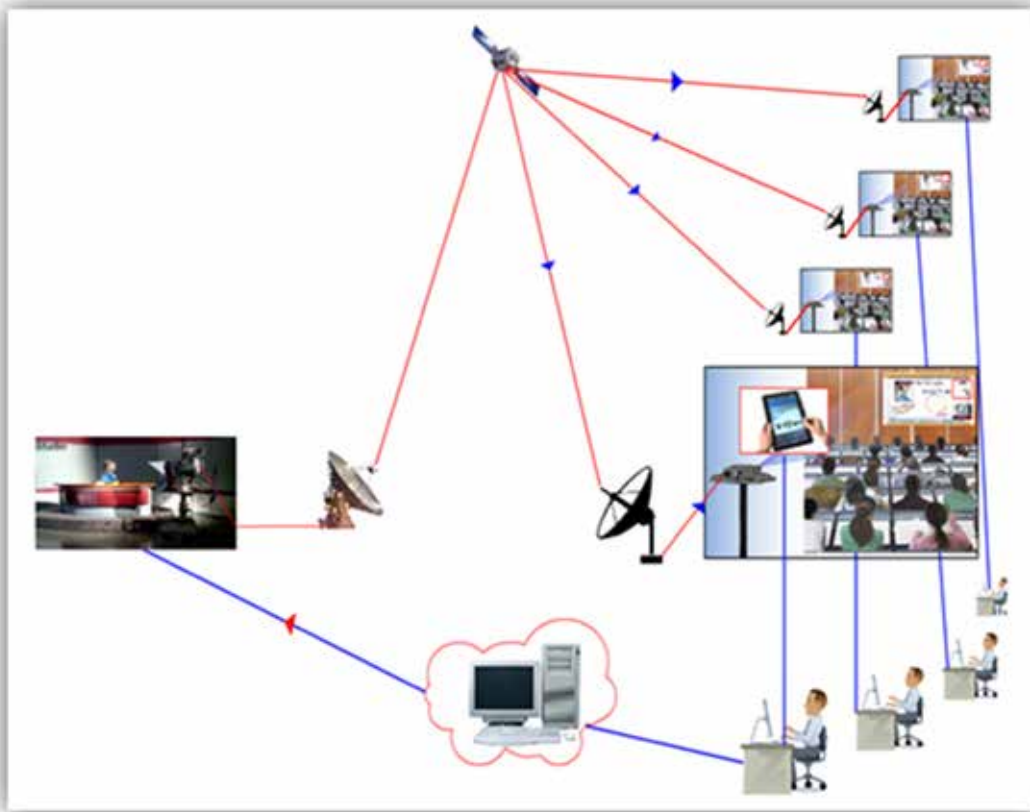
Mode of operation: This **unique hybrid technology** integrates the best features of **VSAT and the terrestrial broadband model**. It enables **two-way video** and **two-way audio** along with a **data-transfer system** by using a satellite forward path (in broadcasting / multicasting mode); for **student interaction, i.e. for reverse communication**, it uses **terrestrial broadband**. Complete multipoint two-way interaction is therefore possible.



The hybrid model takes into account the constraints of existing tele-education technologies, i.e. using **VSAT-only or broadband-only** systems. The VSAT-only model is hard to reconcile with moderators, entails high bandwidth costs and higher latency, requires expensive equipment and affords no backup should the system fail, whereas the terrestrial model comes with constraints such as bandwidth bottleneck, the inability to multicast, the impact of the distance from the exchange on quality, no backup should the system fail and server intensiveness. These shortcomings have been overcome by the hybrid model at a much lower cost, as illustrated in Figure 1 below.

Additional attributes of the unique hybrid satellite-terrestrial model are:

- A codec with a screen resolution of 800x600 and different frame rates
- A unique moderator system for student-teacher interface
- A low power system that can run on batteries (120 Ah for 4 hrs)
- Low-bandwidth Internet-based classes should the satellite feed fail (128 Kbps)



Feedback on and evaluation of the first phase of the pilot project

1. **Feedback from several government officers:** the Education Department District In-charge, the Deputy Director of Public Instruction of Tumkur District, the Taluka In-charge, the Block Education Officer of Gubbi Taluk, headmasters and subject teachers at the government schools where the pilot project was conducted during the 2011-12 academic year gave very positive feedback at a meeting held on 19 June 2012 at the **Director's Office, Department of State Educational Research and Training, Bangalore.**
2. A quantitative evaluation was conducted during the 2011-12 academic year of the impact of the action research pilot project.

Assessment methodology

An evaluation was conducted in order to gauge the project's effectiveness. Three different approaches were used.

1. Tests were conducted in two sets of schools – **six participating and six not participating in the SAME project in Gubbi Taluk.** The schools not participating served as a control set and were not selected for the project.
2. The students' results were tracked over two consecutive academic years, 2010-11 and 2011-12, in order to observe differences in performance.
3. **The Secondary School-leaving Certificate exam results** of students from both sets of schools were compared to assess whether students at schools participating in the SAME project had better results.

Results and observations

1. According to the evaluation report, both sets of schools had students with equal learning levels before the SAME project was implemented.
2. A quantitative analysis indicated that performance was significantly better in participating schools compared to non-participating schools for 9th and 10th standard students.
3. Tracking of individual results for each student at the regular examinations conducted by the schools clearly showed a significant improvement in the performance of students after the SAME project was implemented.
4. Live classes with multimedia content were widely accepted, whereas recorded classes with stored content resulted in a steep decline in interest levels.
5. The technology used is a **unique hybrid model** integrating the **best features of VSAT and terrestrial broadband** at a reasonable cost. The advantage of this technology is that it is highly interactive, making it better suited than VSAT alone, Broadband alone and other Internet-based solutions.
6. A comparison of standard 10 board exam results at the two sets of schools showed that the **failure rate was considerably reduced** at schools participating in the SAME project (by **53 per cent**, compared to 22 per cent at the second set of schools). The **percentage passing increased from 82 to 92 per cent** in participating schools, whereas at the state level the percentage improved from **80 to 82 per cent**.



Second phase of the project: SAME in 1 000 schools

In 2013, the Karnataka Department of Primary and Secondary Education agreed to support the scale-up of the project to 1 000 schools, preferably in backward areas. Eighteen backward districts were identified based on the Nanjundappa Committee Report categorizing taluks. Four taluks were randomly selected from each district: two were randomly assigned to tele-education classes, the other two serving as control taluks. The selected districts and taluks are indicated in Figure 9 below.

SAME features in 1 000 schools:

1. Live and interactive classes broadcast from **a studio at DSERT, Bangalore**
2. Reception centres to be established in 1 000 government and government-aided schools at GP
3. Course designed for the entire year and running for approximately **200 days, for a total of 1 000 hours** of Live lessons for 5th to 10th standard cumulatively
4. **Subjects:** mathematics, science and English (grammar)
5. **Multimedia content:** as per the state syllabus in Kannada
6. Stepwise description of concepts for easier understanding
7. **Direct doubt clearance** by moderators in real time
8. **Teachers** at the school involved in conducting tele-education classes
9. **Strong collaboration with the Department**

The Consortium led by the Center for Public Policy at Indian Institute of Management Bangalore, together with Gumbi Software Ltd, Edutel Technologies Ltd and OPEL Consulting Ltd has set up infrastructure in 700 high schools and 300 upper primary schools that are Government and Government aided in rural areas of 36 taluks in the 18 districts selected in September 2014. Trial classes were conducted in October 2014 and actual classes started in November 2014. Nearly 200000 students from 5th standard to 10th standard, more than 95% of them belonging to lower income group, were able access these classes during 2014-15. A sample survey of school Head Masters showed that more than 95% of them rated the tele-education program as excellent. Now the Government of Karnataka is planning to scale it up further and neighbouring State Governments are showing interest in adopting this model.

C7 - E-health

Project name: Mobile Health Information System (MHIS)

Organization: FHI 360, South Africa
Berhane Gebru, bgebru@fhi360.org

I. Background information

Every day, people in sub-Saharan Africa die unnecessarily from infectious diseases such as malaria, tuberculosis, HIV/AIDS, pneumonia and diarrhea. Chronic lifestyle diseases can also burden fragile health systems. According to the World Health Organization, there are 7.7 doctors for every 10 000 patients in South Africa. Only 17.4 per cent of the population in South Africa has Internet access. Many doctors and nurses, particularly in rural areas, cannot access the Internet to obtain life-saving information and clinical content for patient management.

Improvement in the quality of health care in South Africa is dependent *inter alia* on health-care workers being up-to-date on developments in medical and public health knowledge and fully informed of changes in Department of Health treatment guidelines, protocols and directives. Continuing provider development through in-service training is an important component of any health sector improvement plan, but traditional residential courses, which take clinicians away from their patients, can disrupt the provision of care and are an expensive method of maintaining an educated workforce. Under-resourced libraries, the high cost of medical journals relative to health budgets and health professionals' incomes, and poor infrastructure for disseminating current medical information and Department of Health directives limit the ability of health professionals to provide quality primary health care.

In order to make sound clinical decisions and, ultimately, provide better patient care, health workers need access to current and relevant health information presented in a language and format appropriate to their education and experience.

The Mobile Health Information System (MHIS) project is designed to bolster the capacity of clinical nurses and doctors in urban and rural settings to care for patients by giving them access to relevant and reliable health information at the point of care. Using smartphones and tablets, practitioners access a mobile health library comprising South African treatment guidelines, drug formularies, diagnostic tools and other evidence-based content, at the point of care. They download clinical and public health information to mobile devices using a mobile library portal developed by FHI 360.

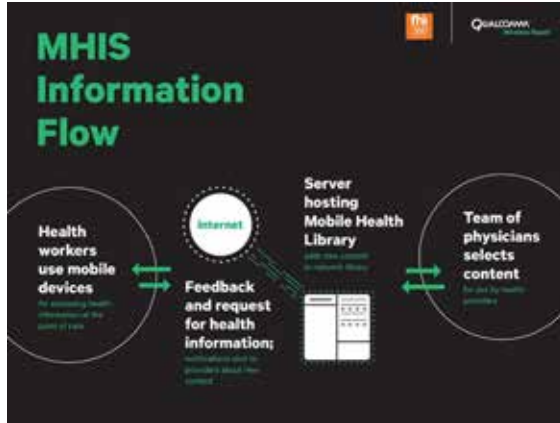


The project helped 175 nurses and doctors in three hospital complexes (East London, Mthatha and Port Elizabeth), five district hospitals and ten rural community health centres use the MHIS for accessing clinical and public health information at the point of care.

In view of the success of the MHIS, the Eastern Cape Department of Health is expanding the system throughout the province to over 20,000 clinicians .

The lynchpin of the sustainable financing model employed by the MHIS was the full engagement of the Eastern Cape Department of Health (ECDOH) in all aspects of the project. Partners in the sustainable financing model included the following.

- **ECDOH (government entity):** Champions within the Department of Health were instrumental in moving the MHIS from concept to implementation.
- **FHI 360 (non-profit):** A leading human development organization dedicated to improving lives by advancing integrated, locally driven solutions, FHI 360 was the lead implementing agency and built a relationship of mutual trust with the ECDOH that led to a better understanding of the project's vision and priorities and of current initiatives in e-health.
- **Qualcomm (corporate donor):** Funding the MHIS through its Wireless Reach initiative, Qualcomm brought strength as a technology partner dedicated to the use of 3G connectivity handsets to improve health in underserved areas of the world.
- **Henry E. Niles Foundation (donor):** The Niles Foundation provided support in the form of several generous grants over a period of years. Its mission is to help nurture and uplift people in need.
- **MTN South Africa (mobile network operator):** MTN provided preferential pricing on equipment and airtime packages for the deployment of the MHIS.
- **Nelson Mandela Metropolitan University, Department of Nursing Science (academic):** The university conducted an information needs assessment among nurses and a final evaluation of the project outcomes.



II. Goals and timeframe

The primary objective of the MHIS is to enable clinical nurses and doctors to provide better health care to patients by giving them access to the most current, relevant, country-mandated clinical and public health content at the point of care. To achieve this objective, the project developed an information delivery system using mobile telephones and cellular networks, giving health workers point-of-care access to up-to-date clinical information for prevention, diagnosis, treatment and care. The system includes a mobile health library consisting of locally relevant clinical and public health information with easy-to-use navigation tools for mobile devices, and a mobile health library portal that enables users to download new clinical and public health content using mobile devices through an Internet connection.

The goals of the MHIS were achieved thanks to a public/private partnership between government agencies, non-profit organizations, private sector corporations and academic institutions working synergistically with shared objectives to create social value for underserved populations. Embedding the MHIS within the ECDOH and transferring the technology and content were key goals for FHI 360 from the outset. The project started in 2008 and will continue through 2016.



III. Added value and importance

Participating doctors and nurses used the health information on their mobile devices to improve diagnosis, treatment and care in both urban and rural areas of the Eastern Cape. Having all the treatment guidelines easily accessible in one library on a mobile device that can travel anywhere has been of immense benefit, giving doctors and nurses a new appreciation of the potential of mobile technology to improve health outcomes.

The Nursing Sciences Department of Nelson Mandela Metropolitan University conducted the final evaluation of the first phase of the MHIS in 2013-14. The evaluation involved quantitative, comparative

and descriptive surveys conducted among 113 professional nurses and 62 medical doctors to assess improvements in clinical and non-clinical decision-making practice as a result of their enhanced access to relevant and reliable health information through the MHIS. It was designed to assess the clinical value of the information provided in terms of its relevance and accuracy, cognitive value, contributions to improved quality of patient care and time saved searching for the right content. It also assessed changes in the avoidance of adverse events such as hospital admissions and hospital-acquired infections. The major findings of the evaluation are provided below.

Making an accurate diagnosis: All (100 per cent) of the registered nurses and 84.61 per cent of the doctors said that accessing information at the point of care helped them make an accurate diagnosis.

Prescribing the correct treatment: All (100 per cent) of the nurses and 92.3 per cent of the doctors found accessing information at the point of care using mobile devices useful for prescribing the correct treatment for their patients.

Prescribing the correct dose of medication: 96 per cent of the registered nurses and 81.58 per cent of the medical doctors said that accessing information at the point of care helped them prescribe the correct dosage.

Managing the side effects of drugs: All the registered nurses (100 per cent) and 78.94 per cent of the medical doctors said that access to information at the point of care enabled them to manage the side effects of drugs.

Choosing laboratory tests: 96 per cent of the registered nurses and 65.78 per cent of the medical doctors said that access to information at the point of care helped them choose the correct laboratory tests for investigating their patients' health conditions.

Making referrals to a higher level: All the registered nurses (100 per cent) and 62.16 per cent of the medical doctors said that access to information at the point of care helped them make appropriate referrals to a higher level.

Reducing out-patient/clinic visits: All the nurses (100 per cent) and 46.13 per cent of the medical doctors said that access to information at the point of care reduced the number of out-patient/clinic visits.

Reducing operations: 80 per cent of the registered nurses and 42.11 per cent of the medical doctors said that access to information at the point of care reduced the number of unnecessary operations.

Avoiding adverse effects: 94 per cent of the registered nurses and 73.69 per cent of the medical doctors said that access to information at the point of care helped them avoid the adverse side effects of drugs.

Reducing hospital admissions: All the registered nurses (100 per cent) and 56.4 per cent of the medical doctors said that the information accessed at the point of care helped them reduce the number of hospital admissions.

Reducing patient mortality: All the registered nurses (100 per cent) and 80.56 per cent of the medical doctors said that the information provided in the mobile library helped them reduce patient mortality.

Preventing hospital-acquired infections: 92 per cent of the registered nurses and 60.53 per cent of the medical doctors said that access to information at the point of care prevented hospital-acquired infections.

IV. Challenges

Governments in the developing world have to deal with complex social, economic and health problems with limited financial resources. Poorly functioning health systems find it a challenge to use scarce funding resources to improve health-care delivery. For the ECDOH, a significant issue is the continuing professional development of its health workforce, in both urban and rural health-care settings. Exacerbating this situation is the fact that many nurses and doctors, particularly in

semi-urban and rural health care settings, do not have medical libraries nearby or access to current treatment guidelines via the Internet or newer mobile technologies. In addition, high costs and ineffective distribution mechanisms preclude the printing and widespread distribution of various standard treatment guidelines in South Africa and the Eastern Cape. The MHIS project addressed these challenges, making innovative use of ICT tools. The limited capacity to update locally relevant clinical and public health content in response to emerging clinical and public health issues nevertheless remains a challenge.

V. Relevance of the project to the respective Action Line

The MHIS project addresses the provision of better health-care delivery by tapping into the potential of m-health, which is directly relevant to the WSIS e-health Action Line. Using smartphones, nurses can refer to standard treatment guidelines and a drug formulary at the point of care.

VI. Conclusion

While the MHIS brought together public/private partners with different values and interests, it was able to leverage their ideas, expertise and resources in a manner that met the core needs of all. The strengths and capabilities of each partner were drawn on to serve the best interests of the population. The MHIS was built on the existing health-system infrastructure and harnessed mobile technology to improve health. Most significantly, it was aligned with the vision and goals of the ECDOH. A business model for scaling up and sustaining the system, predicated on full ECDOH responsibility and ownership, resulted in project activities being incorporated into the ECDOH's routine technical and financial plans.

Having access to clinical and public health information on mobile devices at the point of care had a substantial impact on the quality of health-care delivery, improving the ability of health-care providers to diagnose, treat and care for their patients, albeit to a significantly greater degree among nurses than doctors. Given the success of the MHIS project, the ECDOH is expanding the system to over 20 000 clinicians throughout the province.

C7 - E-employment

Project name: E-employment Collaboration

Organization: Ministry of Manpower, Oman

I. Background information

Owing to the lack of interface among the local systems in the Ministry of Manpower (MOMP), inefficient offline workloads increased because of the need to validate employment data. This validation process involved visual and manual input by government officials that led to errors including missing or inaccurate information. Every month, a total of 24 126 foreign worker permits were processed for visas, 9 000 Omani candidates were recommended for 6 500 job vacancies and 246 on the job training vacancies, 1 720 workers' contracts of employment were terminated in the private sector, 4 777 workers resigned from their jobs, 23 931 foreign workers left the country, 1 970 workers left their employers illegally, and there were 1 780 cases of workforce violations. Staff had to calculate and review the Omanization plan for 2 290 private sector posts manually before approving foreign work permits.

The biggest challenges faced by the Ministry at that time were:

- No integration with government entities and dependence on paper documents.
- No unified and accurate statistical reports for national private sector employees between different government entities.
- Sufficient information and data were not available to help decision-makers to formulate policies.
- Labour market information and number of vacancies were unclear.
- Skills and specializations needed for training in technical colleges, vocational centres and private institutions were not available.
- The amount of revenue for work licences to recruit foreign manpower was uncertain.
- Manpower databases in different government entities were separate and non-integrated, with many inconsistencies.
- Business, citizens and residents were required to visit different government offices many times because the offline system consumes much time (up to a month) to complete government requirements.



II. Goals and timeframe

To achieve His Majesty's vision as set out in Decree No (108/2001), the Ministry of Manpower (MOMP) has planned to implement electronic government on a high-speed network and focuses its efforts on implementation of information infrastructure with processing of administrative businesses. MOMP has developed a system called *E-employment collaboration*. This system has a critical role in human resource development in the country. The system is providing information for almost 2 million

employees who work in 203 000 private sector businesses and has integrated electronically with other government entities. The vision of the E-employment system is to provide reports and statistics for decision-makers in order to improve government functions and develop human resource capacities. This will work across organizational boundaries through learning, training and other capacity-building.

The System has developed the following methodology with the Project Management tools:

- **Phase 1: Planning** – dedicated to planning the initiative. In addition to consultations with all key stakeholders, planning entails the creation of a detailed vision for the finished E-employment System, engagement of the key personnel and resources to execute the project, and creation of an effective timeframe.
- **Phase 2: Process design** – dedicated to conducting a detailed design of the process from the perspective of integrating the system across the whole of government. The key actions in this phase included stakeholder needs, identifying the appropriate form and functionality for the system, and preparing an in-depth project plan to inform all development work.
- **Phase 3: Technical design and development** – encompassing all development work to deliver the finished system. In addition to the technical design of both the system back-end and front-end interfaces, the phase deployed a prototype of the system that was subjected to numerous rounds of technical testing to ensure good functionality.
- **Phase 4: Testing and training** – tested by both customer and government actors to ensure good functionality in every respect and compliance with requirements. Finally, the phase ensured that continuous training was implemented among staff to build their capacity to use the system effectively.

III. Added value and importance

The working population in the Sultanate of Oman continues to increase rapidly, which has prompted the Ministry of Manpower to utilize innovations in technology and business processes to implement and improve its employment collaboration in order to meet the ever-growing demand. With the availability of cutting-edge technologies and tools, MOMP is now able to process an enormous number of applications on a daily basis and a timely manner. Today, citizens do not need to visit Ministry of Manpower main offices to use its services, and training and education services are being provided in all Omani regions for all citizens. As a result, the Ministry has drastically reduced the travelling time and costs for members of the public requiring its services.

The impact of this initiative has:

- provided labour market information to all the relevant departments;
- provided a number of G2B, G2C and G2G services based on the integration capability of its system;
- helped to simplify the work process and regulate the labour market;
- created a strong portal for services and mobile apps for stakeholders (public and private sectors);
- enabled all Sanad Centres working under the MOMP umbrella to provide e-employment services for the public;
- enabled job seekers to use services through web-site or mobile apps, and to view and recommend themselves for suitable vacancies;
- allowed private sector businesses to access and use the ministry portal to view and interact with candidates' applications;
- allowed private sector businesses to terminate their employees' contracts without visiting the MOMP and social insurance authorities;
- enabled private sector businesses to check the status of applications and existing work permits and to view existing employees' records and status without going through government offices;
- facilitated SMS notification to employees once a contract is approved or once an online termination of contract is entered by employers;
- provided alerts regarding approval of work permits for foreign workers;
- alerted job seekers on new job vacancies via SMS;

- promoted social inclusiveness by reaching out to vulnerable groups such as women, minorities, youth, the elderly, persons with disabilities, and indigenous people;
- empowered users to access the E-employment system without visiting government offices.

The Ministry of Manpower web site provides employers and employees with links via communication channels in social media including Facebook, Twitter and Instagram, enabling them to participate and give feedback. MOMP also encourages employers and employees to provide feedback via randomly distributed surveys.



IV. Challenges

The main obstacles are quality of data (MOMP and other government bodies were required to correct some data). Much work was required to update and unify data. The biggest challenge that the ministry faced at that time was the lack of standardized processes, lack of automation, and data duplication.

To overcome this problem, MOMP worked closely with government entities, employers and the public to ensure that data were unified, updated and integrated according to the MOMP standard.

V. Relevance of the project to the respective Action Line

The E-employment programme is designed to promote, facilitate, coordinate and support job seekers and employers, enabling e-government to provide online access to a wide range of ministries, information resources and services. The Programme

- facilitates and supports the adoption of standards in key areas to ensure that government systems and databases are compatible and interoperable;
- ensures that government entities avoid data duplication;
- supports increased coordination and data sharing across the government;
- encourages and supports the private sector to use data to create new and diversified business opportunities and jobs in the knowledge economy;
- promotes public-private partnerships offering substantial public benefit;
- builds and promotes communities of interest and supports public benefits and social equity;
- promotes government transparency and public rights of access to information;
- maintains service orientation of stakeholders and the public;
- increases the value of e-government services through website and mobile applications;
- provides decision-makers with access to supporting information, statistical analysis, and reports.

Target audiences: government organizations, businesses and citizens, covering utilities and infrastructure, safety and security, education, and the public sector.

VI. Conclusion

Oman is experiencing unprecedented growth, and the economy and society as a whole have been evolving towards a diversified knowledge economy. It has provided an extraordinary level of cross-sector coordination and information exchange among many organizations. The initiative has facilitated the free flow of critical information across all government and private sector bodies, as well as the general public, in order to provide various services (G2G, G2B, and G2C).

The initiative will automatically help to tackle pre-existing constraints related to human resources development in the country. The system provides reports and statistics enabling decision-makers to improve government functions and human resource capacity-building. This initiative helps to provide the crucial information needed by government departments to study public needs in the areas of training and development, jobs, public services, and so on.

The project has been a success mostly because of the involvement of multiple stakeholders with their knowledge, motivation and efforts towards a common goal. The success of the project relied upon the combination of strong planning, committed individuals and supporting technology.

The future recommendation is to continue the development of more applications that can solve issues and become a part of the e-Government portal. Furthermore, to create an open government data system and to encourage the public to offer ideas and solutions. The employment system plays a key role in impacting a very large portion of the working population in the country.



C7 - E-environment

Project name: Kuwait Official Environmental Portal www.Beatona.net

Organization: Environment Public Authority (EPA), State of Kuwait

I. Background information

Authentic environmental information is fast becoming a necessity, just like any other strategic information necessary for human health and sustainable use of our environmental resources. Issues ranging from reduced availability of fresh water, contamination of natural systems, waste management, sustainable use of resources, population growth, air pollution and climate changes, conservation of biodiversity and land degradation to remediation of oil spills and land mines have all remained hot topics of discussion at public forums and media conferences in Kuwait. Finding environmental information in Kuwait has been a challenge for citizens and residents for a long time. They have usually ended up with a set of outdated and contradictory data emerging from various organizations and institutions working on the environment.

To tackle the above mentioned challenges through the provision of sound geo-environmental data, the Kuwait Environment Public Authority (KEPA) took an initiative in 2010 by establishing the 'Environmental Monitoring Information System of Kuwait (eMISK)', as a unique repository of geo-environmental information relating to Kuwait that is shared commonly with people over the internet through the Kuwait Official Environmental Portal www.Beatona.net in an easy and transparent manner.

Beatona ("our environment") is the Arabic name chosen for this portal, which is a key component and output of the Environmental Monitoring Information System of Kuwait (eMISK; www.emisk.org). The Kuwait Official Environmental Portal www.Beatona.net is a one-stop shop for all environmental data and information about Kuwait. For the past 4 years, www.beatona.net has been playing a leading role in raising awareness among Kuwaiti citizens and residents of the value of the environment.



II. Goals and timeframe

The Kuwait Official Environmental Portal offers information about Kuwait's environment from various national, regional and international organizations on a single platform www.Beatona.net. It also allows the public to participate and interact in the preservation and protection of the environment by reporting environmental phenomena and problems to the Environment Public Authority (EPA) in an easy manner, supported by location details, descriptive text and photos. The portal was launched in December 2011 and can be accessed using the link www.Beatona.net. Beatona.net comprises two major sections: the Environmental Explorer and the Knowledge Base.

The Environmental Explorer Section is a GIS-based window that allows the users to project over 260 thematic environmental GIS layers on GoogleMaps (figure 1). These maps were chosen because they are widely used by Kuwaiti communities and regularly updated. This is very much in accordance with the overall objective of offering simple and self-explanatory environmental maps to the public.

The Knowledge Base section (figure 2) is a multimedia platform that offers an impressive range of articles, reports, photos, videos, maps and publications about the environment in Kuwait. Over 15 years of monthly publications of Beatona Magazine are available for viewing in this module..

III. Added value and importance

The key services provided by the portal can be summarized as follows:

- Beatona.net is an environmental data and information network that offers the public information from various governmental organizations and institutions on one platform. This was initiated and supported by the UNEP initiative for the establishment of national environmental information networks (NEIN) in the GCC countries, in preparation for the GCC-wide network. Although Beatona.net is developed and maintained by Kuwait EPA, the portal is presented as Kuwait's official environmental portal, so that all stakeholders and contributors to the portal have a feeling of ownership.
- Crowd Sourcing is used effectively in Beatona.net, which uses information sent and contributed by the public. *Fix Our Environment (FOE)* (figure 3) is a platform that allows the public to report environmental problems, damage, incidents or phenomena to the EPA, by identifying the location concerned, sending a description and uploading photos, where appropriate. This could be, for example, a bad smell, a discharge of waste into the sea, an oil spill, remnants of construction material on the side of the road, or a tree about to fall. Beatona administrators will forward the report to the relevant EPA department or external department, follow-up on the problem and report back to the portal on progress made until the problem is solved.
- Environmental information sharing and dissemination is realized through two major modules. *Explore Our Environment (EOE)* is an environmental explorer that allows the user to turn on/off thematic environmental maps on GoogleMaps along with metadata and search functions. It also allows users to compose and print individual maps of their choice. Environmental layers come from different organizations. A metadata search engine allows the user to identify available data layers and their sources.
- *Our Environment Status (OES)* is another platform for displaying on-line, near real-time environmental quality data measured by EPA departments available to the public. This includes data on the quality of the air, sea water, soil, drinking water, beaches, and so on. The air quality measured continuously near 14 air quality monitoring stations in Kuwait are displayed in this module as the *air quality index (AQI)* and time series data (daily, monthly and annual averages) are also presented in chart format. Similarly, *drinking water quality index (DWQI)* is also presented for over 260 locations sampled every month by EPA and the Water Resources Development Centre.
- Raising environmental awareness among the public is realized through different modules, among them the *Environmental Alerts (EA)* module and the *Kids' Corner*. Environmental Alerts is a service that allows citizens and residents of Kuwait to check areas with environmental restrictions for some activities such as swimming, fishing, sailing, camping, building, digging and hunting. The

Kids' Corner is intended to raise the awareness of children on the environment and GIS through games, stories, cartoons, songs, self-experiments, films, puzzles, colouring photos, memory games and interactive maps.

- Beatona.net also encourages the use of technology by offering satellite imagery of Kuwait of different dates to the public for use in their environmental research projects. *Our Environment Maps (OEM)* allows users to search and locate ready-made maps on the environment from different organizations and download them. These includes maps based on satellite imagery, including the series *Kuwait from Space* as well as readily rectified and mosaic-capable Landsat imagery for Kuwait under an agreement between Kuwait EPA and USGS.



IV. Challenges

Although Beatona.net is developed and maintained by Kuwait EPA, it acts as a national network for environmental information in the State of Kuwait. It presents contributions from several Kuwaiti government entities as well as regional and international organizations. Kuwait EPA makes its valuable environmental data holdings, which are based on regular monitoring of air, water, soil and marine quality, available to the public.

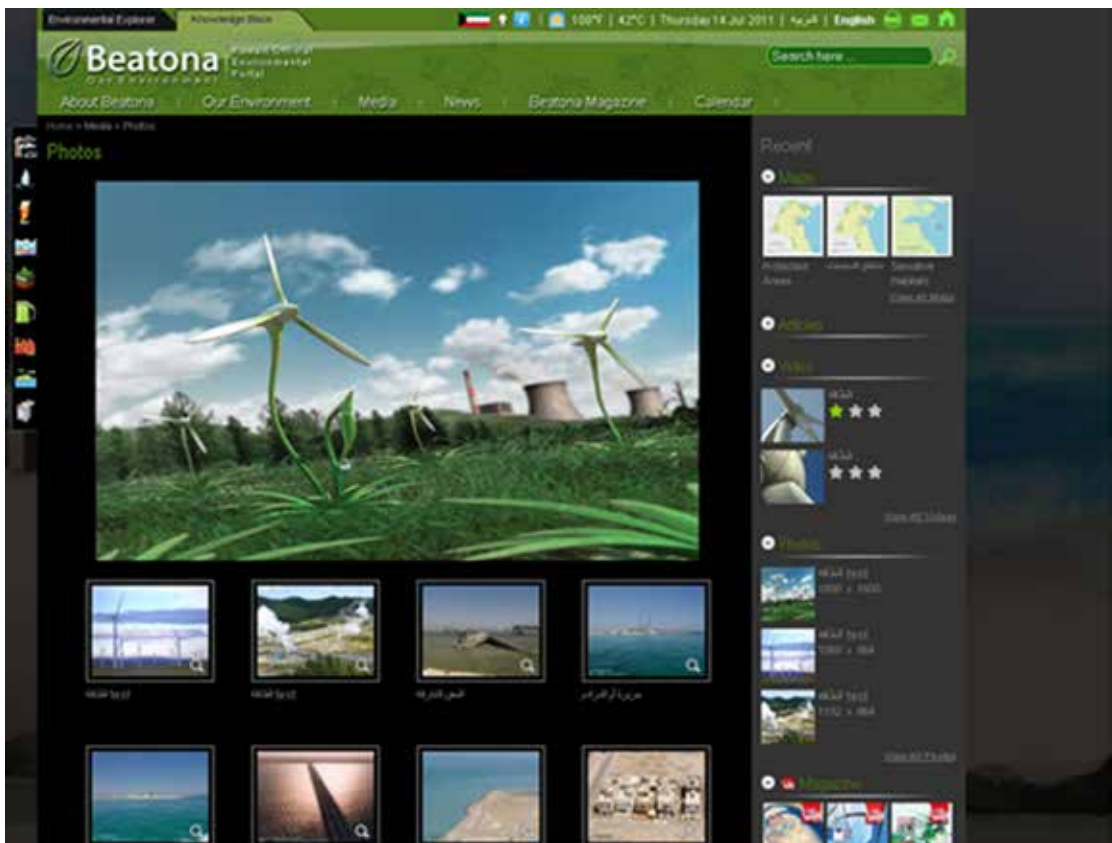
Along with the technical changes introduced by Beatona.net to Kuwaiti society in general and to Kuwait EPA in particular, a set of institutional changes are required and are seen as a challenge by the management of Kuwait EPA. A module such as Fix Our Environment (FOE), for example, requires a high degree of coordination and cooperation, not only among the different EPA departments, but also among various other organizations and stakeholders in Kuwait. Some complaints of environmental problems reported over FOE are within the mandate of other external entities, such as Kuwait

Municipality, the Ministry of Electricity and Water, and the Ministry of Public Works. Coordination efforts are now in place to ensure an efficient and prompt response to citizens' complaints. Any delay in addressing such complaints may affect the rate of use and overall confidence in the application.

All data layers offered by the Explore Our Environment (EOE) module are now collected from the various partners and held centrally in the eMISK Geodatabase by the Kuwait EPA. A set of agreements were signed between the Kuwait EPA and external entities to organize the data-sharing process. Future plans are to ensure that such information is maintained by the data custodian and shared electronically over Beatona.net through the Kuwait national information network. As partners and stakeholders may not be well prepared for such electronic links, which could affect the overall sustainability of the portal, discussions are being conducted with the Central Agency for Information Technology (CAIT) with a view to facilitating and supporting construction of adequate nodes for the various stakeholders.

Another challenge is the publication and dissemination of real-time environmental quality data for the public in a transparent manner as part of the Our Environment Status (OES) module, without causing panic among the population. Awareness campaigns are being planned so that air, water and other quality indicators are correctly interpreted and understood by the public.

Continuous operations and maintenance of the portal in the longer term depend on several factors. Funding for further maintenance and upgrades of the underlying systems is a major challenge that needs to be secured through contracts and agreements. Most of the current personnel are young Kuwaiti women and men who were well-trained during the portal development process. The sustainability and continuous training of that personnel is being considered by the management.



V. Relevance of the project to the respective Action Line

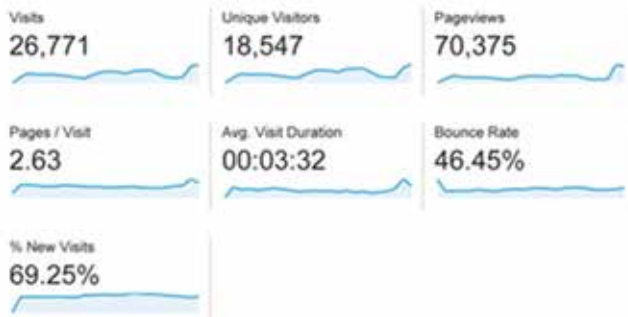
A number of opportunities could emerge from the development and publication of Kuwait environmental information via Beatona.net.

Beatona.net is being considered with a view to its joining the Kuwait e-Gov. Portal (Kuwait Government Online). Once this is completed, it will be a key component of the Kuwait Government electronic services and portal. This indicates the value of the environment to both the Kuwaiti Government and the public.

The eMISK system behind Beatona.net is defining Kuwait’s vision and policies for the collection, storage, processing and dissemination of environmental information in Kuwait over the next decade. The so-called “Kuwait Geo-Environmental Data Vision 2030” is being developed at Kuwait EPA under the eMISK initiative and is known for short as “eMISK Vision 2030”. This is seen in Kuwait as a cornerstone of the country’s geo-environmental data infrastructure. The anticipated policies and standards are to be used by all organizations working on environmental issues in Kuwait. An agreement has been reached between Kuwait EPA and ESRI Inc., following which ESRI is to review eMISK standards and models and adopt them as ESRI Environmental Data Models, complementing the various ESRI industry data models. The eMISK Vision could well be the core of an initiative to develop Kuwait’s spatial data infrastructure.



18,547 people visited this site



Country / Territory	Visits	% Visits
1. Kuwait	11,433	42.71%
2. India	1,744	6.51%
3. Egypt	1,729	6.46%
4. Saudi Arabia	1,637	6.11%
5. United States	993	3.71%
6. Algeria	889	3.32%
7. United Arab Emirates	764	2.85%
8. (not set)	653	2.44%
9. Iraq	649	2.42%
10. Morocco	622	2.32%

Beatona.net is regarded as one of the pioneer programmes in the Arab Region and one that fulfills the UNEP and AGEDI initiatives to establish a set of national environmental information networks (NEIN) in the Arab Region and other developing countries in the Middle East. Beatona.net could be replicated in other countries with a view to developing a GCC-wide, and subsequently an Arab regional, environmental information network.

The Kuwait EPA and eMISK teams are anticipating the development of some Beatona services and modules on mobile phones like iPhone and Android-based smartphones. There is a plan to start with an iPhone application for Fix Our Environment (FOE), to be followed in the future by further modules.

VI. Conclusion

Preliminary research on the impact of Beatona.net on the community in Kuwait showed that the population is waiting for such a platform as a means of obtaining official answers and information to their environmental questions. The direct and indirect benefits of Beatona.net portal are summarized as follows.

- It will promote Kuwait as an environment-friendly country and allow it to play a leading role in environmental information sharing and dissemination in the region.
- It will facilitate data sharing and data exchange among the stakeholders in Kuwait's Government.
- It will disseminate authorized and authentic environmental information about Kuwait to the public, both inside and outside Kuwait.
- It will act as a one-stop-shop for authorized environmental information in Kuwait.
- It will raise public awareness at all levels of the value and importance of the environment.
- It will act as a platform for interaction with the public and encourage public participation by collecting complaints, feedback and suggestions.
- It will facilitate international coordination and collaboration on the integrated environmental network project of the GCC, along the lines of the European Union's Eye on Earth platform.
- It will report environmental problems, damage, incidents or phenomena, by identifying the location, sending a description and uploading photos, where appropriate. This could be a bad smell, a discharge of waste into the sea, oil spills, remnants of construction material on the side of the road, or a tree about to fall. The Beatona administrator will forward the report to the relevant EPA department or external body, follow-up on the problem, and report back to the portal on progress made, until the problem is solved.

C7 - E-agriculture

Project name: Agriculture, Rural Development and Youth in the Information Society (ARDYIS)

Organization: Technical Centre for Agricultural and Rural Cooperation, Netherlands

I. Background information

The global food crisis in 2008 turned the world's attention back to agriculture and its importance for ensuring food security. The challenge is that the farming population is ageing and young people do not find agriculture attractive, choosing to work in other sectors. At the same time, unemployment and underemployment rates among young people are high, while agriculture, especially when coupled with ICT, can provide untapped opportunities.

Capitalizing on the fact that young people are interested in ICTs and that ICT use makes agriculture more appealing and more productive, the Technical Centre for Agricultural and Rural Cooperation (CTA), a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union, launched the **Agriculture, Rural Development and Youth in the Information Society (ARDYIS)** programme in 2010.

The ARDYIS programme is a framework of actions that helps raise young people's awareness of and capacity in agricultural and rural development issues in ACP countries through ICTs. It targets young people under the age of 35 (as per the CTA's Youth Strategy), by:

- raising awareness of agricultural issues or opportunities for young people, via online knowledge sharing and networking, and in physical meetings;
- building capacity in respect of ICT use in agriculture and ICT for agriculture (ICT4Ag) entrepreneurship;
- organizing competitions (blog awards, software development awards, etc.) on ICT and agriculture;
- promoting innovators and champions;
- supporting youth projects in agriculture and ICT4Ag.

ARDYIS has an advisory committee of regional and national organizations: the Forum for Agricultural Research in Africa, the African Network for Agriculture, Agroforestry and Natural Resources Education, the SPC, Yam Pukri, the Caribbean Farmers Network and the African Youth Foundation.

II. Goals and timeframe

The purpose of the ARDYIS programme is to strengthen young people's engagement and increase their opportunities in agriculture using ICTs. Launched in 2010, it has implemented a variety of strategies in order to meet the specific needs of its stakeholders.

In its first two years, ARDYIS engaged in awareness-raising and knowledge-sharing activities in respect of agricultural challenges and opportunities for young people, and in capacity building. It did this in a variety of ways, organizing essay competitions, web 2.0 training for young people, exchange workshops, publications and ongoing exchanges on different web and social media platforms. The second phase started in 2012 and focuses on innovation and entrepreneurship. In addition to ongoing awareness-raising activities, it comprises new initiatives in the form of the Youth in Agriculture Blog Competition (YoBloCo Awards) and the AgriHack Talent initiative (agricultural hackathon, incubation and promotion of winners).

Initiated in 2011-12, the YoBloCo Awards are bestowed every two years. The AgriHack Talent initiative is organized in a different ACP region every year: East Africa in 2013, the Caribbean in 2014 and West Africa (planned) in 2015. Each of these initiatives is organized over one year, from launch to the prize giving, CTA-ARDYIS incubation of best participants (AgriHack Talent), promotion of best products and networking.



III. Added value and importance

The programme's added value and importance is illustrated by two key activities: the YoBloCo Awards and AgriHack Talent.

a) Impact of the YoBloCo Awards

The YoBloCo Awards (<http://www.yobloco.info/>) aim to highlight the successes of young people engaged in agriculture, in urban and rural areas, to underscore the challenges they face and to promote the use of ICTs and the development of online agricultural content. For the 2012 and 2014 editions, 286 blogs were submitted from 40 ACP countries and a total of 15 prizes were awarded. Many of the winners went on to become resource persons in agriculture, strong voices on youth issues and advocates of e-agriculture in their countries.

One example of a winning blog, from 2012, is **Agricinghana** (<http://agricinghana.com>). Solomon Allavi from Ghana, CEO of Syecomp Business Services, uses this blog to promote Geographic Information Services (GIS) for agriculture. Solomon has won two ARDYIS prizes and the benefits have helped him launch his company. Another example is **Tech for Agri** (<http://tech4agri.com>), by Keron Bascombe, from Trinidad and Tobago. The award has helped Keron become a strong role model for young people in agriculture. Anne Matho from Cameroon, a YoBloCo winner in 2014, is the author of **Les Graines de l'info – une plume au service de l'agriculture** (<https://grainesdinfo.wordpress.com>). She is probably the best-known agri-blogger journalist in Central Africa today.

Apart from their involvement in the YoBloCo Awards, many of the young participants have also been given the opportunity to meet and develop their networks at international events.

According to a survey conducted after the second edition of the Awards, 59 per cent of participants found jobs or were given opportunities that allowed them to grow professionally, 86 per cent

declared that other young people had been encouraged to become engaged in agriculture thanks to their involvement in the Awards, 82 per cent said that other young people had been encouraged to start blogs on agriculture, and 93 per cent said they had improved their ICT capacity through the competition. An external evaluation revealed that, among participants who did not win the blog awards, 87 per cent claimed that the competition had had a positive impact on their activities.

b) Promotion of youth ICT4Ag entrepreneurship (AgriHack Talent)

A key factor when ARDYIS was established was the understanding that agriculture and food security can be enhanced by fully integrating ICTs. This was the conviction of stakeholders at WSIS when they adopted the **Plan of Action** in 2003. The CTA strongly believes that young people are decisive drivers of change and that their involvement can increase their livelihood opportunities as well.

Through the AgriHack Talent initiative, young people who are ICT specialists are helping to strengthen agricultural value chains.

ARDYIS developed the AgriHack Talent initiative as a series of activities centred on a **hackathon** (or software development competition), followed by **incubation** for the best participants (fine-tuning of prototypes, capacity building, ICT4Ag entrepreneurship support) and the **promotion** and eventual **experimentation of the products developed**.

A pilot experience was organized in the framework of the CTA International ICT4Ag Conference in Rwanda. It involved 14 key regional partners (10 ICT hubs, the Rwandan Ministries of Youth and ICT and of Agriculture and Animal Resources, the Alliance for a Green Revolution in Africa, etc.). The second edition was organized in the Caribbean in 2014. It involved 13 key regional partners (ICT hubs, the Caribbean Agricultural Research and Development Institute (CARDI), the Inter-American Institute for Cooperation on Agriculture (IICA), the Suriname telecommunication operator Telesur, etc.).

The teams attending the two editions developed about 50 ICT4Ag prototypes. Seventeen prototypes made it to the regional finals; six applications were winners and their developers have been incubated. Three hundred aspiring young entrepreneurs were alerted to the possibilities for, or trained in, ICT4Ag entrepreneurship in 14 countries.

The impact can be clearly observed in East Africa, where the activity started. For example, the overall winning team, Ensibuuko from Uganda, has now launched its company (<http://www.ensibuuko.com>). Ensibuuko operates software that helps farmer cooperatives manage loans. Winning AgriHack Talent has helped it find many partners, such as the international crowd-funding company KIVA and Mercy Corps, which is helping it test and strengthen its services. Ensibuuko provides new solar services and its mobile application has been recommended by the Ministry of Agriculture for use by farmer credit cooperatives; it has since won other awards.

Another best participant, FarmDrive, from Kenya, is headed by three young women who operate an application that helps farmers access finance. They are working with an investor they met during the AgriHack finals in Rwanda to launch their product.

The best team in Rwanda, REtronics, has developed a new product, an egg incubator. The team won a national ICT4Ag competition organized by the Rwandan Ministry of Agriculture and Animal Resources in 2014. It is worth mentioning that the Ministry was inspired by the AgriHack initiative and publicly promised to organise a national edition – which it did!

In the Caribbean, winning prototypes include the following: a weather analysis and yield forecast device, a pest management application and a farm management application. They are currently being incubated.

In a nutshell

Today, ARDYIS has a vibrant community of young people and youth organizations involved or interested in agriculture and ICT, as well as partners supporting them. Since its launch, it has directly involved over 2 000 young people in ACP countries through training sessions, workshops, competitions, social reporting and support for youth projects. It recently launched a call for proposals to support youth projects and about 500 organizations have submitted applications. ARDYIS has more than 3 900 Facebook fans and 2 100 Twitter followers. For the second edition of the YoBloCo Awards, more than 11 000 online votes were cast. A far larger number of people is reached indirectly, however, through each young person/organization.

According to a 2014 external evaluation report, a number of very good results have been observed: how young people perceive agriculture has changed; young people and their organizations have a greater ICT4Ag capacity; more young people are involved in various areas of agriculture; online access to local agricultural innovations and issues has been improved through blogs; youth ICT4Ag entrepreneurship has been boosted; and numerous agricultural social media platforms and initiatives have been created, inspired by ARDYIS. Gender-specific issues have been acknowledged and action is taken regularly to increase young women's engagement.

IV. Challenges

The first challenge is insufficient human resources or staff time for ARDYIS activities. Indeed, the two people working on the programme are at the same time implementing other ICT4Ag projects. Activities to harness and strengthen impact or help reach more young people in the 78 countries covered by the CTA cannot be easily carried out. A second challenge relates to the programme's insufficient financial resources. Thirdly, successfully supporting entrepreneurship, especially in a new territory like ICT4Ag, is a very complex task requiring long-term multi-stakeholder efforts. Among other things, the programme is looking for strong partnerships with institutions that support entrepreneurship in general, in order to complement efforts and better respond to young people's needs. Finally, the programme is looking to work more effectively with organizations supporting young people, in addition to working directly with individuals, in order to ensure more sustainable results and to scale up its initiatives.

V. Relevance of the project to the Action Line

The ARDYIS programme directly addresses the two dimensions of the WSIS e-agriculture action line.

First, its blogging activities and the hundreds of blog and web 2.0 spaces created clearly promote the "systematic dissemination of information using ICTs on agriculture, animal husbandry, fisheries, forestry and food". An example is the YoBloCo winning blog **Laikipia Rural Voices** (<http://laikipiaruralvoices.blogspot.nl>), which is operated by the Arid Land Information Network and today contains more than 400 articles. Another example is the social reporting by young people that ARDYIS facilitated for the CTA in the framework of two international conferences. To take a recent example, during the Finance for Agriculture Conference in 2014, 90 blog posts, 43 video interviews and 32 SlideShare presentations were created, and 13 669 posts were shared on #Fin4Ag14.

Secondly, thanks to the development of ICT4Ag applications and to blogs, the programme has engaged in public-private partnerships to "maximize the use of ICTs as an instrument to improve production". This is amply illustrated by cooperation with IICA, CARDI, the Food and Agriculture Organization of the United Nations, Rwanda's Ministries of Agriculture and Animal Resources and of Youth and ICT, Microsoft and ICT innovation hubs (in some cases from the private sector).

VI. Conclusion

The impact of the ARDYIS programme is steadily growing, as illustrated by evaluations and regular testimonials from young people. The programme has succeeded in getting young people to consider agriculture as a sector offering more opportunities than one might think. It has furthered their engagement in different agricultural activities and successfully encouraged them to embrace e-agriculture in order to help enhance food security and increase their own livelihood opportunities.

C7 - E-science

Project name: E-Science-Net: Universities and Research Network for Science and Technology Development in the Information Society

Organization: Research Center for ICT Strategic and International Studies, Iran University of Science and Technology

I. Background information

Ten years after the two phases of the World Summit on the Information Society (Geneva 2003 and Tunis 2005), which resulted in the Plan of Action and Declaration of Principles, the WSIS+10 High-Level Event (Geneva, June 2014) produced two further documents: the WSIS+10 Statement on Implementation of the WSIS Outcomes and the WSIS+10 Vision for WSIS Beyond 2015. All these documents lay considerable emphasis on the role of scientific and technical advances and sharing of research results in developing many of the building blocks of the information society. However, despite all the achievements of the past ten years, many challenges still remain, especially in developing countries. According to the WSIS+10 Vision, “e-science revolutionizes science by changing the way in which research is conducted; how the scientific agenda is defined; who participates in it; how the results and data are shared; the pace at which policymakers, scientists and individuals access knowledge; and who participates in the policy follow up of research outcomes.”

With the aim of developing a network of researchers, university professors and students for exchanging innovative ideas and scientific information among research and educational institutions across Iran, this project was initiated and is being carried out by the Research Center for ICT Strategic and International Studies (ICT-SIS) within the Iran University of Science and Technology (IUST), with support from the Iran Ministry of Science, Research and Technology (MSRT) and Iran Ministry of Information and Communication Technology (MICT). The project steering committee members are listed below:

Dr Hadi Shahriar Shahhsoeini (Iran University of Science and Technology)

Dr Ali Moeini (University of Tehran)

Dr Golamali Montazer (Tarbiat Modares University)

Dr Madjid Naderi (Iran University of Science and Technology)



The project seeks to conduct a parallel expert survey on e-science and the role of research, science and technology in sustainable development of the information and knowledge societies. The outcomes, which will be published and/or presented in thematic workshops, can be used in developing the national roadmap for e-science.

II. Goals and timeframe

The aim of this project, which began in 2015, is to establish an active national reference research point in the field of e-science, as well as a network of researchers and scientists who are familiar with the information society concepts in Iran. It is also looking to future scientific cooperation with other parts of the world in the areas of interest. The main focus is on determining how scientific development and its requirements affect the information society and/or vice versa.



First, the main pillars of e-science are identified and briefly studied. Then, a list of experts who are involved in ICT-based projects is drawn up among professionals, from the academic sphere and industry, as well as policy-makers. The literature review on related e-science concepts will be followed by parallel surveys among above groups of experts, and then a number of thematic workshops. The expert survey aims to identify the main challenges and opportunities in this area which may be helpful in creating the future roadmap of e-science in Iran. An electronic Delphi software system, which can work with four groups of experts simultaneously, has been developed to gather, via the web, the views of the experts involved in the projects. Expert surveys could thus be conducted remotely through a web-based platform. A number of face-to-face or physical meetings are planned following the remote web-based Delphi process. Finally, the results will be discussed in a conference of experts. The main purpose of the expert survey and conference is to investigate the drivers that push e-science in a way that helps to create an advanced and sustainable knowledge-based society.

Through this approach, the project seeks to determine the most appropriate directions for the future orientation of e-science in Iran. Since it will be implemented on the basis of cooperation between selected experts in specific reference groups from the academic sphere, as well as groups of experts from policy-makers and industry, we hope to see the emergence of an active network of researchers with the requisite expertise and professional skills in the field of the information society. Furthermore, the results will be published in order to propagate the concepts discussed and/or developed in the project into the scientific community. The corresponding reports may help policy-makers involved in drawing up the national development plan.



The main objectives of the project and its expected outcomes are listed below:

- Investigating the challenges in the decision-making procedure for e-science development in Iran.

- Identifying the required national actions and describing the achievements made in the fields of research, science and technology in the information society.
- Investigating the records and reports of academic activities with respect to indexes of the information society.
- Creating a national synergy for sustainable and knowledge-based development by using the facilities provided by the information society.
- Creating opportunities for enhancing the professional skills and capabilities of researchers in the field of the information society.

III. Added value and importance

Scientific knowledge is now a key factor in the innovation process and in finding pathways to sustainable, inclusive and equitable development at the national, regional and international levels. The e-science sphere can provide a better understanding of emerging trends, including their impacts and future directions. It can enhance the building blocks of the information society and improve the sustainability of scientific research outcomes. The project is focused on a conceptual study of e-science and on conducting a parallel expert survey in that sphere. A starting point for creating a national roadmap for e-science will be the outcome of the expert survey, which will be available for use by policy-makers in MSRT and MICT. The outcomes of the project will be published as technical reports in the related fields, and can in particular be used in gap analyses for determining development policies and building up the roadmap for e-science in Iran.

In the project's first year, its main potential achievements will be establishing the supporting documents for the national development plan, preparing technical reports in the field of e-science as a strategic pillar for ICT-based sustainable development, and conducting seminars and workshops aimed at enhancing the expertise and professional skills needed to build a knowledge-based society.

IV. Challenges

The following are the main challenges on the road to meeting the goals set out in this project:

- Identifying outstanding researchers with a background in related subjects, who are familiar with ICT and the information society and who actively participate in the e-sessions and web-based Delphi system.
- Identifying the committed, well-informed and strong session coordinator in physical meetings.
- Ensuring that there is a full and comprehensive understanding of the known project risks when preparing the required information regarding the selected subjects and analysing the gathered data.

V. Relevance of the project to the respective Action Line

While e-science is one part of Action Line C7 in the WSIS Declaration of Principles, it can also help in determining the priority of ICT projects and making a policy framework for sustainable development in all other Action Lines.

This project aims to create a network of researchers located in universities throughout Iran and even abroad, to enable the exchange of new and innovative ideas in the field of e-science, an important application of ICT that has been highlighted in WSIS Action Line C7.

VI. Conclusion

Implementation of the goals set out in the WSIS Declaration of Principles and fulfilment of the WSIS Plan of Action cannot be effectively achieved without research and without taking advantage of e-science. E-science has been changing the way in which research is conducted and has considerable impact on the outcomes of research projects. In this project, following a conceptual study in the

field of e-science, a network of researchers, university professors and professional individuals who are active in this area will be formed to exchange their ideas on the predefined topics through a special web-based parallel Delphi system. The project aspires to be a reference research point for e-science in Iran, and to promote and conduct high-quality applied research in the field of e-science in particular, and international and regional cooperation with related technical organizations in general, with outcomes that can be used in the related national development plans.¹

More information can be found at <http://ict-sis.iust.ac.ir> and <http://e-science-net.iust.ac.ir> .

1 *Acknowledgments:* This article was written by Hadi Shahriar Shahhoseini, who is an associate professor in the Electrical Engineering Department of IUST, Director of International and Scientific Cooperation for IUST, and Director of the IUST Research Center for ICT Strategic and International Studies (ICT-SIS).

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C8 - Cultural diversity and identity, linguistic diversity and local content

Project name: Youth Mobilization – Cultural Heritage and Athletic Valorization

Organization: South-West University “Neofit Rilski”, Bulgaria

The overall objective of the YMC(H)A project was to provide partners and others engaged in policy-making related to the promotion of sports as part of the cultural heritage with infrastructure and guidance on how to sustainably promote sports.

Related sub-objectives:

- 1) To raise awareness of the current situation and of initiatives designed to promote and protect sports. This structured framework for the sharing and dissemination of information will create opportunities for open dialogue between research centres, sports centres, sports associations, youth centres, policy-makers, local organizations, NGOs and the public.
- 2) To share best practices and existing experience among partners.
- 3) On a cooperative basis, to develop works (renovation and construction) and multimedia applications contributing to the promotion of sports.
- 4) To engage with a wider stakeholder network, including sports associations, such as the Bulgarian Basketball Association, through the dissemination of activities including festivals and regional and international events.
- 5) To produce practical guidance for local and regional authorities and agencies across the EU, thereby extending YMC(H)A’s relevance well beyond the life of the project and ensuring continued support for sports and culture policy development.

YMC(H)A’s specific objective is to increase the benefit derived from the preservation of sports for the population and local actors by enhancing its promotion through, among other things, sports education.

The outputs achieved under the project are: a sports museum equipped with ICT facilities; renovated sports facilities incorporating ICTs; a publicity and information strategy; a ceremony to mark the opening of the new museum; an educative seminar in museology; a basketball tournament; a conference in Greece entitled “Basketball Nowadays” presenting results and information about future EU policy; a sports festival in Blagoevgrad; an international conference in Blagoevgrad to present the results of the Biometric Centre’s renovation; voluntarism and social activities; a YMC(H)A leaflet translated in the national languages; a final publication in a bilingual version.



The results achieved under the project are as follows:

- Communication and interaction among young people with the use of state-of-the art technological interventions.
- Modern infrastructure provided by cultural centres to enhance their attractiveness to young people, including the provision of valuable tools for schools;
- Transformation of existing cultural centres into centres for sustainable development. During the period of project implementation, the University of Rilski in Blagoevgrad organized a sports festival on the renovated playgrounds, where some 300 students from Greece and Bulgaria competed in sports such as basketball, tennis, football, handball, streetball and volleyball. A streetball tournament was organized on the YMCA playgrounds. An international conference on and presentation of renovation was held in Blagoevgrad on the premises of South West University, where the results of biometric measurements and analyses were presented by experts. A workshop on the theme of museology and social action for volunteerism was held in Thessaloniki.
- Design and development of educational programmes beyond traditional education.
- Promotion of cross-border cooperation for the development of educational material and innovative technologies.
- Enhancing security by strengthening regional ties and cultivating good relations between peoples.
- Ensuring the harmonious, balanced and sustainable development of the cross-border area.
- Development of educational applications that will enhance cultural awareness, particularly in the areas of traditional games, musical instruments, folklore music and dances.
- Support for the cultural sector and the field of new technologies.
- Provision of infrastructure for future development.

The impact of YMC(H)A will be sustained across the EU. Partners and others will be better prepared to promote sports history and heritage in the interests of a better quality of life, beyond the lifetime of the project.



Impact on Target Groups, Added Value and cross border cooperation

The YMC(H)A project represented an opportunity for both partners to put their experience and resources to good use by improving the conditions for sports promotion and preservation, and to actively involve and educate young people, other citizens of all ages, athletes or otherwise, sports

organizations and associations, other local actors and the wider public, and to protect and promote the cultural heritage.

Through the project, the existing sports facilities were modernized and renovated and a sports museum was constructed. The sports facilities, owned by the University, are located in Blagoevgrad, and the sports museum was built in Thessaloniki, on the existing basketball court owned by YMCA. The awareness activities were implemented in each partner's area in a balanced manner. The project provided modern sports facilities with ICTs, and an exhibition area showcasing the past, present and future of sports, taking into account the comparative advantages of the neighbouring countries. All the activities took place in two major cities of the participating countries, involving a great number of local, regional and national associations and organizations, individuals, etc. They were promoted at the national level, in Bulgaria through the Bulgarian Basketball Association, which was associated with the project partner, and in Greece through YMCA Greece and a number of other organizations. The project provided results on an integrated approach that could, on such a geographical scale, bring about significant changes and wide-ranging reforms in the mechanisms for exchanging best practices in terms of the development of methodological tools capable of enhancing cultural and athletic elements and disseminating information about the participating partners. The approach taken covered not only the specific geographic area of the participating partners but also cross-border areas in terms of influence and youth mobilization.

The modernization (including multimedia), upgrading and digitization of documentation and other interesting material related to the past, present and future of sports, gave added value to the YMC(H)A project.

Sustainability of results and follow-up

YMC(H)A's tangible achievements contributed to its durability. They will inform future efforts at the local, regional, national and European levels to promote sports as part of the cultural heritage by raising awareness of best practices and successful, tested multimedia applications.

People across Europe and the whole world will be able to visit the Sports Museum and benefit from the sports facilities. YMC(H)A's international conference presented the results to a transnational audience of policy-makers, athletes, experts and practitioners.

The outputs are owned by the project partners, but will be open to the public and disseminated widely across Europe. Indeed, throughout the operation, results and updates will be made available to a wider network of interested players. The impact of YMC(H)A will be sustained across the EU. Partners and others will be better prepared to promote sports history and heritage in connection with a better quality of life, beyond the lifetime of the project.



Publicity and visibility of the project

Information and publicity activities focused entirely on information, awareness-raising and dissemination throughout the project. The two partners shared overall responsibility and handled their respective local/regional/national promotion material, with translation where appropriate. Communication activities initially focused on project newsletters and a calendar of relevant events to which both partners contributed.

The sports festival in Blagoevgrad and the international scientific conference involved external professionals and delegations, and they presented to the wider public the sports facilities and the results of the Biometric Centre. The development, progress and results of each partner's testing were

promoted regionally and on the partners' websites. The sports festival and international conference were geared towards officials, networks and organizations, including NGOs active in sports and national and EU policy-makers, and they reported on YMC(H)A results, launching the final report in both languages. Overall, all the information and publicity actions in the framework of the project were accurate, timely and as wide-ranging as possible in their provision of information on the final and potential beneficiaries of the Project's actions.

The publication and distribution of information materials about the initiatives assumed within the framework of the Project included:

- A website
- A YouTube profile
- A Twitter profile
- A Facebook page
- Leaflets, translated in the national languages, for the kick-off meeting, Sports Festival, International Conference and final meeting
- Posters announcing the holding of project events
- Publications in national and regional newspapers promoting the Sports Festival and the International Conference in Blagoevgrad.

The linkage between the various stakeholders in the project's implementation was realized through a system of communication and information. This mechanism systematized and documented all actions related to the project (initial planning, periodic monitoring, evaluating progress/gaps, quality assurance, etc.) in order to achieve the necessary coherence and coordination between the various parties involved, and facilitated the smooth implementation of the entire project in accordance with its programming.

C9 - Media

Project name: Farm Radio International – Radio to Improve Production and Marketing for Small-Scale Farmers

Organization: Farm Radio International, Canada

I. Background information

Small-scale African farmers produce 70 per cent or more of their countries' food supplies but are among the most vulnerable to hunger. Many factors contribute to this problem, but an important part of the solution is to share knowledge of how to derive greater benefits from the agricultural "value chains" to which small-scale farmers are connected. A value chain is the sequence of activities that take place to bring a product or service to market. By choosing the right planting materials, harvesting at the right time, processing and storing produce carefully, and negotiating with different buyers, small-scale farmers can cultivate more food for their families and generate more income from the produce they sell.

Traditional face-to-face extension services are constrained by resource and capacity limitations, and are not sufficient to serve the large numbers of small-scale farmers wanting affordable, reliable and effective agricultural advisory services. Radio has proven potential as a scalable and cost-effective extension method, and is regularly listened to by some 80 per cent of African farmers.

Farm Radio International (FRI) is a Canadian NGO which builds the capacity of African radio broadcasters to research, design, produce, broadcast and evaluate interactive radio programmes that reach millions of small-scale farmers and result in measurable change. FRI operates directly in seven countries of sub-Saharan Africa, working with a range of funding partners from the Government of Canada through the Department of Foreign Affairs, Trade and Development (DFATD) to the Bill & Melinda Gates Foundation, USAID, and Irish Aid. FRI also supports approximately 600 rural radio stations from a distance by producing and distributing free content (radio scripts, news stories, "how tos" – documents that provide broadcasters with tips related to producing good radio programmes), e-learning courses, and on-line platforms.

II. Goals and timeframe

Through the five-year *Radio for Farmer Value Chain Development* initiative, FRI is helping around 1 million small-scale farmers in sub-Saharan Africa to achieve improved food security and income by using participatory radio strategies to enhance farmers' participation in selected value chains such as groundnuts, poultry and cassava. The project was launched on 12 July, 2012 and will end on 31 August, 2017. The project was first implemented in Tanzania and Malawi for two and half years before moving to Ghana and Mali for a further two and a half years. This project is supported by DFATD.

The specific objectives of the project are:

- To develop the capacity of ten radio stations in Mali, Malawi, Ghana and Tanzania to research, plan, produce and broadcast "impact driven" farm radio programming;
- To provide 5 million small-scale farming women and men with regular radio access to reliable extension information about an agricultural value chain of relevance to them;
- To ensure that radio strategies and programmes attract and are of high relevance to the needs and interests of female small-scale farmers;
- To assemble and enable a group of partners, including radio stations, departments of agriculture, farmers' organizations and NGOs, to produce and broadcast participatory radio campaigns that raise the knowledge and skills of 2 million farmers related to improved production practices and post-harvest management practices in a specific value chain; and,

- To work with radio stations and market access organizations to design, develop and broadcast market information (“Radio MarketPlace” (RMP)) services that help 2 million farmers understand and identify new markets and buyers for products related to the selected value chains.

Based on other FRI project results, it is anticipated that of the 2 million farmers who increase their knowledge and skills, 1 million will put into practice what they learn and improve their food security and income as a result.

After consultations with farmers and on the basis of an analysis of the value chains in which farmers, particularly women small-scale farmers, are involved, the cassava value chain was selected in Tanzania, the groundnut value chain was selected in Malawi, the chicken value chain were selected in Mali, and the cowpea and guinea fowl value chains were selected in Ghana.



III. Added value and importance

The project employs two innovative radio strategies developed by FRI – Participatory Radio Campaigns (PRCs) and Radio Marketplace (RMP)- which improve small-scale farmers’ knowledge and practice. FRI has proven that PRCs encourage one out of five people who simply listen to the PRC episodes to adopt the practice they hear about on the radio.

PRCs are carefully designed radio series which help farmers to learn about, evaluate, and introduce new agricultural practices on their farms. With training and support from FRI, selected radio stations work closely with farmers and farmer organizations, agricultural extension and advisory services, researchers and others, to carefully plan and deliver a four-month radio campaign. During the PRC, farmers are able to explore, exchange knowledge, gain information and share experiences with a new agricultural practice that can improve their family’s food security. Lively and entertaining, PRCs feature the voices, stories and perspectives of ordinary farmers through a mix of radio formats,

including village debates, phone-in shows, mini-dramas and music. Farmers provide feedback and are involved in monitoring and evaluating the PRCs throughout. Modern information and communication technologies (ICTs) such as cell phones, MP3 players, interactive voice response systems, bulk SMS messaging systems, and *beep-to-vote* systems, are linked with radio to boost the interactivity, reach and accessibility of PRCs.

A PRC uses a core story to keep the campaign focused and engaging, and builds a “dramatic arc” throughout the broadcast. The PRC unfolds in four stages: Phase 1- introduction to the agricultural practice; Phase 2- discussion of the agricultural practice; Phase 3 – encouraging listeners to make a decision to introduce or not to introduce the agricultural practice, and to register their decision with the radio station; and Phase 4 – implementation information.

Unlike top-down, externally-driven campaigns, PRCs engage farmers as active participants from day one. The focus of the campaign is farmer-approved; the time of day and day of the week of broadcast is farmer-selected; and farmers are intimately engaged in the knowledge sharing process throughout.

The agricultural calendar is a major driving force in determining the ideal timing of a PRC. The purpose of the PRC is to help farmers evaluate and make an informed decision about a new practice that could help them. They are provided with the best information from reliable sources to help them navigate and implement these practices. PRCs are designed to have a measurable impact. In fact, experience has shown that PRCs result in many farmers adopting improvements. When they succeed, farmers’ lives improve.

For the value chain project each radio station involved in the project designs and broadcasts one PRC on a key issue related to production of the specific value chain and one PRC on a key post-harvest management issue. For instance, in Malawi the focus was on using improved groundnut seed varieties for the production PRC, and a specific way of drying groundnuts to prevent aflatoxin poisoning for the post-harvest management PRC.

An ICT-enhanced Radio Market Place (RMP) is a tailor-made participatory radio series that focuses on the market barriers faced by farmers in a specific value chain, through the use of different radio formats and ICTs for increased interactivity, feedback and reach. This radio series goes beyond sharing general market information by providing a platform for comprehensive engagement of various value chain actors on the ‘4Ps’ of marketing i.e. Place, Price, Product and Profit. RMPs often take great advantage of ICTs, specifically mobile phones, since the actors cannot be found at the same place at all times.

Farmer-identified issues addressed by RMPs include: lack of information on different markets/buyers and market opportunities, lack of information on market prices in order to negotiate a good price, feeling cheated by middlemen on prices, and use of non-calibrated scales.

An RMP show is usually a magazine format (i.e. a blend of formats) and may include interviews with buyers, price announcements, phone-ins or discussions with ‘middlemen’ and farmers. SMS (text messaging) is used extensively, for example to send out automated price lists to farmers, send farmers an SMS alert 30 minutes before the start of a programme, or enable farmers to send an SMS requesting specific information to be tackled in the programme.

More than 350 hours of radio programmes (PRCs and RMPs) have been aired by six radio stations (four in Malawi, two in Tanzania) on the cassava and groundnut value chain, reaching a total of 2.5 million farmers in Tanzania and Malawi.

Preliminary results from these countries show that the PRCs and RMPs have improved farmers’ knowledge and practice related to the groundnut and cassava value chains. For example, according to a December 2014 outcome evaluation survey, approximately 41 per cent of 625 cassava farmers surveyed in Tanzania have earned more money from their cassava harvest this season than last season.

“We’re making a very huge impact,” said Sheila Chimphamba, a broadcaster with Zodiak Broadcasting Station in Malawi. She sees and hears the difference the project is making each time she visits the field. By discussing improved post-harvest drying practices for groundnuts, Sheila is helping her listeners to avoid aflatoxin, a by-product of a mould that commonly affects the groundnut plant. It is known to contribute to cancer, and is especially dangerous for children. Aflatoxin keeps many groundnut farmers from getting a good price for their crop.

This information is so highly valued that farmers share it from village to village, and Sheila faces questions from farmers even when she travels beyond the reach of the radio station’s transmission. “You see this programme has reached people who are not in our [broadcasting] area — people who are not even targeted.”



IV. Challenges

Challenges include the increasing costs faced by radio stations in airing programmes, as rising costs of fuel and electricity make it more expensive for radio stations to operate. This has implications when it comes to negotiating air time rates for the radio programmes related to the project. Because FRI offers training and provides ICT tools for gathering audience feedback, stations do not charge their full rate for airtime.

In Tanzania, one of the popular programme producers died suddenly and unexpectedly. Fortunately he had a co-host who was able to continue producing the programmes on a weekly basis.

Many participants in the 12-week online training course for broadcasters on how to develop a high-quality farmers' programme had problems with online connectivity. In Ghana, for example, the high prevalence of power outages made it more difficult for people to participate regularly.

V. Relevance of the project to the respective Action Line

This project addresses the Action Line C9 (Media).

This project works directly with a broadcast medium – radio – and acknowledges how radio can effectively reach millions of small-scale farmers.

Using radio in combination with other ICTs, this project aims to increase the information available to small-scale farmers on specific value chains relevant to them, as well as increasing their knowledge.

The project provides training – both face-to-face and distance learning – for radio broadcasters involved in the project so that they may deliver high-quality radio programmes on specific value chains to their farming audiences.

In our 12-week online e-course for radio broadcasters on how to develop a high-quality farmers' programme, which is an activity of the project, we pair African broadcasters with experienced broadcasters from around the world, most of whom work or have worked with the Canadian Broadcasting Corporation (CBC).

VI. Conclusion

The value chain project is a leading example of the way in which innovative communication strategies make agricultural development efforts more relevant and accessible to small-scale farmers, more engaging and effective, on a larger scale and at lower cost.

This project is on track to meet its overarching goal of helping 1 million small-scale farmers to achieve improved food security and increased income through enhanced knowledge and skills.

The depth and scale of project outcomes are achieved by participatory, interactive communication strategies employing an innovative combination of radio, mobile and digital media to link small-scale farmers with appropriate information and content, with experts, and with one another.

While the project has demonstrated important results for farmers with respect to specific agricultural value chains, there are also longer-term benefits in terms of increased capacity of radio broadcasters, extension services and other stakeholder groups to build responsive and effective information systems and communication platforms.

C10 - Ethical dimensions of the information society

Project name: Tackling ethical dimensions of online media content through self-regulation

Organization: Rwanda Media Commission, Rwanda

I. Background information

The 2013 media reforms in Rwanda ushered in self-regulation in the Rwandan media sector, and particularly empowered journalists to establish a media self-regulatory body. The law regulating the media, commonly known as the Media Law of 2013, in its article 4 mandated such a media self-regulatory body to “regulate the daily functioning of the media and the conduct of journalists”. The Rwanda Media Commission (RMC) was subsequently set up by journalists in interpretation of the Media Law and to pursue that mandate. While the initial focus of the RMC has been on the mainstream media, specifically print and broadcasting media outlets, the fast-changing media landscape in Rwanda is shifting focus onto a rapidly evolving form of media – online media. According to current figures, there are 33 radio stations, seven television stations and 40 newspapers and magazines, as well as 100 web-based media outlets. These statistics indicate that there is a greater presence of web-based media outlets than of all the other media platforms combined, which has led to calls for more attention to the ethical dimensions of online content than previously afforded. But the exponential growth of online content is not specific to the media sector but reflects the broader social, economic and technological shift in Rwanda’s socio-economic structure. The country has made significant strides in developing an information and knowledge-based society through initiatives such as investing in ICT infrastructure, affordable access to ICT services, mainstreaming ICT services in the economic sector, and promoting ICT literacy among the Rwandan population. As a result, Internet-based media have leveraged this technological capability to change the nature of the media landscape by forming a significant base of web-based media outlets. In regulatory terms, the Rwanda Media Commission has had to come up with an online media content monitoring and complaints-handling framework that captures the broad scope of the ethical and professional principles upon which self-regulation is based, as specified in the Rwandan Journalists’ and Media Practitioners’ Code of Ethics. This project, entitled *Tackling Ethical Dimensions of Online Content Through Self-Regulation*, is part of the broader strategy of dealing with online content contained in the Strategic Plan 2014-2018 of the Rwanda Media Commission, which proposes three main approaches (development of self-regulatory codes of ethics for online content, adoption of mechanisms for handling complaints, and education of online content producers on the ethical and professional dimensions of their work).



II. Goals and timeframe

The overall goal of this project is to integrate online media content into the mainstream self-regulatory mechanism in Rwanda under which the media sector is regulated.

The specific objectives are:

- To promote the highest ethical standards in online content.
- To protect individual rights online, such as the right to privacy and dignity of persons through a fair regulatory framework.
- To encourage fair and responsible use of the internet in the process of news dissemination.
- To leverage the internet as an appropriate platform for news dissemination in a fair and responsible manner.

This project is part of the 2014-2018 Strategic Plan of the Rwanda Media Commission, under the section that deals with online content, and is thus part of a five-year time frame.

III. Added value and importance

This project has added a new dimension to media self-regulation in Rwanda, namely, online content. Much as the assumed focus of self-regulation was the mainstream media, the exponential growth of online content to supersede mainstream media outlets has put new demands on the Rwanda Media Commission to deal with complaints regarding online content. Dealing with these complaints has not only strengthened public confidence in a regulatory system that responds to public complaints, but has also contributed to awareness that online news production should conform to the same ethical and professional obligations as mainstream media production. This being the case, the RMC has developed a robust strategy of addressing online content-related complaints. The strategy includes the following key activities:

- Regular spot monitoring of news websites to identify ethical and professional gaps
- Telephone conversations with editors of news websites where ethical gaps have been identified
- Regular group meetings with news website owners and editors to discuss ethical issues particular to online media
- Handling of complaints related to online media.
- Dissemination of the sections of the Code of Ethics relevant to online media.

This strategy has promoted not only fair and responsible use of the Internet, but also, more significantly, a peer mechanism for dealing with complaints against online content rather than a policing model that suffocates the leveraging of the Internet as a progressive tool for social, political and economic development. This project therefore contributes to a progressive understanding of the Internet as a platform that can be leveraged fairly and responsibly to promote citizens' access to information.

IV. Challenges

The project faces challenges that are technological, procedural, and attitudinal. Technologically, regulating a platform that has no central point of control and whose capabilities make possible the instant uploading and removal of content poses significant difficulties. This technological capability makes it difficult to carry out both proactive monitoring and complaints-based monitoring, since content can come and go within a short time span.

Procedurally, the RMC has not yet developed detailed and specific complaints procedures regarding online content. While this is part of the plans formulated within the Strategic Plan, different cases pose different challenges to arbitration. The development of these procedures will go a long way towards easing the work of the RMC in this respect.

Attitudinally, there is a general feeling that the Internet is a platform upon which people can freely express themselves without interference. This attitude frowns upon any form of imposed regulation, and online content producers come to regard regulation as a form of infringement of Internet freedom. This attitude, coupled with the sense of anonymity which the Internet gives its users, is one of the factors in the increasing incidence of violations of privacy and undignified representations in online content. This sense of anonymity creates a feeling of protection not only from view but also from any form of regulation. The Rwanda Media Commission continues to educate producers of such content that online media are subject to the same ethical and professional obligations as the mainstream media. Another aspect of this is the view that self-regulation does not provide appropriate sanctions against online media excesses, with calls for a more punitive approach to any perceived transgressions. The Rwanda Media Commission thus has a difficult responsibility to educate the public about the way in which peer-review mechanisms work and why self-regulation is the most appropriate form of regulation that can guarantee a balance between Internet freedom and responsible use of the Internet.



V. Relevance of the project to the respective Action Line

The project tackling the ethical dimensions of online content through self-regulation is a system based on the Code of Ethics for dealing with complaints regarding online content. Based on the work of the Rwanda Media Commission, most of the ethical concerns dealt with through monitoring and complaints handling have been about violation of people's privacy, graphic images depicting obscenities and violence, inciting hatred towards particular individuals and groups, and indecent exposure of minors. The focus of the project, therefore, is based on seven key articles of the Rwanda Journalists' and Media Practitioners' Code of Ethics. These articles are:

- Article 1 (defense of universal values)
- Article 2 (honesty and search for truth)
- Article 3 (social responsibility)
- Article 4 (incitement to hatred)

- Article 6 (respect for privacy and human dignity)
- Article 7 (violence and obscenities)
- Article 8 (protection of minors and victims of rape).

By monitoring how online content relates specifically to these provisions of the Code and handling complaints that arise, this project is contributing to addressing the broad concerns about the ethical dimensions of the information society. This project is thus an action-oriented approach to promoting the common good in Rwanda society. It also contributes to respect for privacy, prevention of online hatred, graphic and obscene images, as well as the protection of minors. This is in conformity with Action Line 3 of C10 which requires all actors in the information society to *“promote the common good, protect privacy and personal data and take appropriate actions and preventive measures, as determined by law, against abuses of ICTs such as illegal and other acts motivated by racism, racial discrimination, xenophobia, and related intolerance, hatred, all forms of child abuse, including pedophilia and child pornography, and trafficking in, and exploitation of, human beings”*.

VI. Conclusion

Tackling the ethical dimensions of online content through self-regulation is an innovative project that deals with the consequences of online communication by focusing on the ethical concerns. It is innovative in the sense that it employs a proactive monitoring approach to identify ethical gaps in online content, but uses a peer-review mechanism of addressing them through self-regulation. This approach has promoted collegial means, rather than policing means, of dealing with online content. By doing so, this project is achieving a balance between the positive uses of the Internet as a social and economic development tool, as well as acknowledging the misuses of the Internet that work against the common good in society.

C11 - International and regional cooperation

Project name: Plan of Action for the Information and Knowledge society in Latin America and the Caribbean (eLAC2015)

Organization: Economic Commission for Latin America and the Caribbean

I. Background information

In 1998, the process of organizing the World Summit on the Information Society (WSIS) began, under the terms of Resolution 73 of the plenipotentiary conference.

In Latin America and the Caribbean in 2000, as a result of the decision of the Economic and Social Council of the United Nations that the high-level segment theme for 2000 was to be dedicated to the “Development and international cooperation in the twenty-first century: the role of information technology in the context of a global economy based on knowledge “; a regional dialogue was promoted based on the Florianopolis Declaration (2000). This was the first time that the countries of the region had expressed a shared aspiration to become full members of the Information Society and conveyed their interest in designing and implementing public programmes for access to and use of ICTs. Subsequently, in 2003, as a result of a series of preparatory meetings, regional representatives met in Bavaro, Dominican Republic, at the Regional Ministerial Conference of Latin America and the Caribbean for the World Summit on Information Society and approved the Bavaro Declaration.



In this context, the Regional Ministerial Conference of Latin America and the Caribbean for the Second Phase of the World Summit on the Information Society took place in Rio de Janeiro, Brazil. The

conference approved the Plan of Action of the Information Society in Latin America and the Caribbean (eLAC2007). Thus eLAC was born as a regional proposal to WSIS and as a political commitment to reduce the digital divide and enhance the use of ICTs for social, economic and cultural development.

The first phase of eLAC was then followed by the regional action plans approved in El Salvador in 2008 (eLAC2010) and Lima in 2010 (eLAC2015), at the second and third Ministerial Conferences on the Information Society in Latin America and the Caribbean.

eLAC2015 was developed by means of a participatory process with a public consultation involving stakeholders from the public, private and academic sectors and civil society. The action plan identifies six priorities, ten action lines and 26 goals for 2010-2015. During the fourth Ministerial Conference on the Information Society, held in April 2013, in Montevideo, Uruguay, the governments of the region adopted the Montevideo Declaration and a Work Plan for 2013-2015. In this work plan the region identified the main political and institutional challenges of eLAC2015, along with strategic areas where efforts should be focused in the approach to 2015.

The eLAC2015 follow-up mechanism has three levels of coordination and cooperation: the ministerial follow-up conference, the presiding officers and national focal points. The follow-up mechanism also has three observers from civil society, the private sector and the technical community. The presiding officers comprised representatives of Argentina, Colombia, Cuba, Ecuador, El Salvador, Mexico and Uruguay (in the chair). The action plan also recognized 14 working groups in the following areas: access and infrastructure, e-waste, ICTs health and social security, digital content, IT industry, cyber security, teleworking, legal framework, e-commerce, consumer protection, Internet governance, gender, digital development for education and open government data. The UN Economic Commission for Latin America and the Caribbean (ECLAC) acts as technical secretariat of the action plan.

II. Goals and timeframe

The action plan identifies six priorities, ten action lines and 26 goals for 2010-2015. The eLAC2015 goals are summarized below.

Access

1. Line of action: achieving access for all
2. Priority: achieve a leap towards universal broadband access

Goal 1: Increase direct investment in broadband connectivity

Goal 2: Advance towards universal availability of affordably priced broadband

Goal 3: Coordinate efforts to bring down the costs of international links

Goal 4: Collaborate and coordinate with the IPv6 deployment

Goal 5: Harmonize indicators which provide an overview of the situation of broadband in the region

Goal 6: Promote ICT access and use by persons with disabilities

e-Government

1. Line of action: treating e-government as an obligation of Governments towards their citizens
2. Priority: achieve transactional and participatory e-government

Goal 7: Make as much data and information possible available online to citizens and enterprises

Goal 8: Provide the necessary tools and technological platforms to support capacity-building among governments for the deployment and use of applications

Goal 9: Make the necessary regulatory changes to increase public services interoperability by means of open standards

Goal 10: Promote the adoption in all countries of the region of critical information system infrastructure protection plans

Environment

1. Line of action: promoting the use of ICT to mitigate the impact of climate change and broadening the use of technologies for natural disaster and emergency prevention, mitigation and response

Goal 11: Formulate public policies to encourage the integrated management of e-waste

Goal 12: Promote cooperation and policymaking in the region for the use of ICT in natural disasters, and for prevention of and response to climate change and emergencies

Social Security

1. Line of action: promoting the use of ICT for inclusive social security
2. Priority: use ICT to ensure access, security and continuity of health care for users of health services

Goal 13: Promote integrated, ICT-based, comprehensive health-care management

Goal 14: Develop interoperability for regional epidemiological cooperation

Productive development and innovation

1. First line of action: driving research, technological development and innovation in the region
2. Second line of action: helping to close the digital divide between large enterprises and micro-, small and medium-sized enterprises
3. Priority: achieve access to ICT for all microenterprises and SMEs and promote innovation

Goal 15: Facilitate access by microenterprises and SMEs to the different digital technologies

Goal 16: Develop policies to help expand e-business

Goal 17: Promote large-scale innovations that foster the development of national and regional enterprises

Goal 18: Promote public policies and national and regional projects to produce digital content

Goal 19: Promote the digitalization and storage of analogue content in order to preserve the region's stock of cultural assets

Goal 20: Increase investment in research, technological development and innovation

Enabling environment

1. First line of action: crafting a legal environment that facilitates the development of the information and knowledge society
2. Second line of action: moving towards the implementation of policies that facilitate the development of the information and knowledge society
3. Priority: promote the use of ICT for regional integration

Goal 21: Foster dialogue and cooperation in the area of regulation

Goal 22: Further dialogue and cooperation in order to promote e-billing at the regional level.

Education

1. Line of action: developing and implementing ICT for an inclusive education
2. Priority: provide universal access to ICT for education and expand their use in this field

Goal 23: Connect all educational establishments to broadband

Goal 24: Ensure that all professors, teachers and management of educational institutions have received basic ICT training

Goal 25: Encourage the development of interactive applications for education

Goal 26: Promote support for the Latin American Network of Educational Portals (RELPE)

Institutional structure for a Policy of State

1. Line of action: promoting coordination at the national level

III. Added value and importance

eLAC2015 has successfully brought governments of the region together in a political commitment to prioritize access to broadband, achieve a transactional and participatory e-government, ensure access to health services through ICTs, ensure access to ICTs for all microenterprises and SMEs, promote the use of ICTs for regional integration and ensure universal access to and use of ICT's in general.

In this regard eLAC2015 has proven to be an efficiently multi-stakeholder platform for promoting cooperation, capacity building, exchanges of experiences and political dialogue around the challenges and opportunities of the Information Society. Among other achievements eLAC2015 has been capable of:

- Developing capacities to stimulate the integration of various actors in the Information Society
- Supporting initiatives that favored cooperation in ICT issues in the region.
- Compiling a directory of over 3 000 multi-sector actors to promote their participation and integration in the eLAC2015 platform
- Organizing nearly 20 events of various kinds since 2010
- Facilitating networking of specialists in different areas of research relating to the Information Society
- Organizing regional meetings for the exchange of experiences regarding the design, implementation and follow up of digital agendas
- Promoting the production of harmonized ICT statistics
- Promoting the generation of several documents and working papers on the analysis of ICT policies.



IV. Challenges

In the work plan for 2013-2015, approved at the fourth ministerial conference on the information society, the governments of the region identified the main political and institutional challenges

that eLAC2015 faces in 2015. The priorities established consider: i) integrating the region into the World Summit on the Information Society review process (WSIS+10); ii) encouraging the debate on Internet governance, iii) fast-tracking growth of the digital economy (ICTs for production change and sustainable development); and iv) strengthening infrastructure roll-out.

Accordingly, the work plan for 2013-2015 has also defined a series of emerging issues which are deemed important for digital development in the region, and which should therefore inspire regional cooperation initiatives in the framework of eLAC2015:

- Raising awareness of the rights and responsibilities associated with the use of new technologies
- Promoting action to ensure the exercise of human rights in the digital environment
- Promoting policies on open government data
- Encouraging the use of new technologies for public security
- Recognizing that digital television represents an opportunity for the information society
- Taking steps to mainstream the gender perspective across all policies designed to close the digital divide and promote the generation of statistics and information on gender
- Encouraging the use of ICTs to contribute to environmental protection
- Promoting dialogue and the adoption of regional measures with a view to improving the transparency, quality and costs of cross-border and international roaming services
- Enhancing cooperation on cyber security and protection of critical infrastructure
- Promoting ICT mainstreaming in education
- Promoting the inclusion of persons with disabilities
- Fostering universal digital literacy
- Strengthening initiatives on mainstreaming ICTs in the health sector

In 2015, governments of the region will meet at the Fifth fifth Ministerial Conference on the Information Society in Latin America and the Caribbean, to be held at the headquarters of the Ministry of Foreign Affairs in Mexico City. The purpose of the Conference is to consider a draft digital agenda for Latin America and the Caribbean, whose aim will be to strengthen cooperation processes and reaffirm regional commitments on digital matters, identifying new challenges and paying particular attention to the marked trends of Internet ubiquity, technological convergence and big data analysis.

V. Relevance of the project to the respective Action Line

eLAC2015 outlines 26 goals for 2010-2015 under eight key areas for the development of the information society in the region: (i) access; (ii) e-government; (iii) the environment; (iv) social security; (v) productive development and innovation; (vi) enabling environment; (vii) education; and (viii) institutional structure for a policy of State. eLAC2015 also integrates into the follow-up mechanism key stakeholders from governments, the private sector, civil society and academia. In this regard the action plan is relevant to every WSIS Action Line.



VI. Conclusion

It is clear that eLAC2015 has become a regional and world reference for ICT policies. The different phases of the plan had promoted the development and strengthening of national e-strategies through a multi-stakeholder approach. eLAC2007, in its 22 goals, has aimed to: “a) establish a body to coordinate national strategies in each country of the region, which takes the participation of civil society and the private sector, and b) promote and strengthen national action plans for the development of the information society in all countries of the region”, while eLAC2015 has defined as part of the institutional framework for state policy the promotion of coordinated efforts between public institutions involved in national e-strategies. Its impact is also observable. The region has been active in the design and launch of digital strategies. For example, from a sample of 23 countries, 21 have developed digital agendas since 2005 (the year the eLAC process started); currently, 15 of them have ongoing programmes and the same number already have two or more digital agendas (ECLAC, 2013).

Although the region has bridged to a certain extent with regard to accessibility and use of ICTs, some gaps with more advanced countries remain, as well as the digital divide between countries of the region and asymmetries within countries by geographical area, level of income, age and education, among other factors. Overall, clear progress has been made in these fields, but efforts must still be broadened and intensified.

Latin America and the Caribbean have made clear commitments to reduce the digital divide and foster an inclusive information society. Even though we have been able to achieve several economic and social improvements in the last decade, sustaining this improvement poses major challenges in terms of reorienting our development agenda. ICTs play a major role within this context and could help us to achieve our goals for greater equality, social inclusion, economic development and environmental sustainability.

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