2022

OCCAM as provider of E-services

INFOPOVERTY PROGRAMME

OCCAM – The Observatory on Digital Communication

The Observatory was founded in 1996 by UNESCO with the mission of fighting poverty through digital innovations. Since 2003, OCCAM has been associated with UNDGC, while in 2005 it received Special Consultative Status at ECOSOC.

Since its foundation, OCCAM has been led by the core principle of becoming a pilot explorer actively involved in the digital revolution, while applying innovations through best practices to help disadvantaged communities. OCCAM interprets and forecasts new trends, leading the various turning-point momenta to share the results achieved at the annual Infopoverty World Conference.

What's Infopoverty?

Infopoverty is a Program born in the UN ambit and coordinated by OCCAM – Observatory for Cultural and Audiovisual Communication created by UNESCO in 1997 that involves more than 100 international institutions and national entities participating since 2001 in the annual Infopoverty World Conference, promoted by the European Parliament under aegis of the United Nations, and under the High Patronage of the President of Italian Republic and the Patronage of the Presidency of the Italian Council of Ministers.

Infopoverty is a common platform aimed at fighting poverty through an innovative use of Information & Communication Technologies (ICTs) regarded as tools able to provide broadband wireless services (telemedicine, e-government, e-learning etc.) to support development in the most disadvantaged communities. The aim of the Infopoverty Program is working to make the digital revolution an instrument for a sustainable development that gives to communities the possibility to promote themselves as socio-economically valid subjects. Infopoverty is open to the contribute of those institutions and agencies that concretely contribute to the promotion of human rights as a component of their mission. At the same time, besides the social implications, the Infopoverty Program also represents an opportunity for the ICT sector agencies to broaden markets in emerging Countries.

The Infopoverty Programme operates as the executive arm of the deliberations of the Infopoverty World Conferences.

Infopoverty World Conference – It has been taking place annually since 2001 at the UN Headquarters in New York and in videoconference with parallel sessions with the European Parliament Liaison Office in Milan and in other prestigious Location in various countries. It is the occasion for drafting and validating the Programme.

Infopoverty Events and Webinars – Held throughout the year, they take place in the framework of the UN activities, as working sessions of the Programme.

Infopoverty Exhibitions – They present the best practices and most advanced technological innovations.

ICT Villages – The model follows a process of flexible intervention easily replicable in many areas of the globe and provides various e-services designed to promote endogenous and a sustainable development process.

Infopoverty Platforms – They are used to connect the communities with international assistance centers specialized in telemedicine, e-learning, e-governance, and food security.

Main results of the Infopoverty Programme

2001 First Infopoverty World Conference at the UN Headquarters & First Infopoverty Exhibition at Cattolica University in Milan with the President of the Rotary international. Among the high-level panelists: Staffan De Mistura – *Former UN General Secretary Assistant*, Mario Panaro – *Former Foreign Affair Ministry and General Directory of Cultural Cooperation and Development*, Gerardo Zepeda Bermudez – *Selar.net Village President*, and Donaldo Ochoa – *Central American Bank for Economic Integration (BCIE)*.

2002 Support to the initiative of the Government of Honduras to expand solar.net Village Model in the more advanced program COMUNITEC, in the border region of Trifinio, improving, at low costs and in a short period of time, the social and economic conditions of the community. The project was also presented at the 2nd Infopoverty World Conference, attended by, among others, Armida de Lopez Contreras – *Republic of Honduras Vice President*, Gerardo Zepeda Bermudez – *Vice President, OCCAM-America*, Enrique Murgia – *Latin America Supervisor, IFAD – UN*, Eduardo Membreno – *Central American Bank for Economic Integration Director*, Danilo Piaggesi – *Inter-American Development Bank ICT Supervisor* and Leda Martinez – *San Pedro Sula Council Coordinator* in Honduras.

2004 The OECD published a Paper in order to disseminate the Best Practices of OCCAM in the field of Sustainable Development through ICTs, which were further presented during the 4th Infopoverty World Conference. Among the attendants: Guerrero Ruiz Jaime – *Minister of Telecommunication and Information Society of Ecuador*, Ouaili M. Montasser – *State Secretary at the Ministry of Communication and Transport* and Ronchi Alfredo – *Minister of Cultural Heritage*.

2005 During the WSIS in Tunis, the Infopoverty Programme and OCCAM were invited to develop a series of avant-garde initiatives, through:

- the implementation and management of the Summit's television, WSIS-TV, with a staff of Navajo operators, previously trained for the Navajo program – Infopoverty antenna.

- the launch of a specific cooperation MoU for the realization of the Indigenous people program, in collaboration with ITU.
- the realization of an experimental ICT Village in Borj Touil, as operative demo for the applicator model in Honduras and Southern Lebanon, previously validated in WSIS 2003 in Geneva.
- the launch of the WSIS-Infopoverty Seminar, chaired by the Tunisian Minister for Cooperation, Ben Mammouth. The seminar was widely promoted by media and attracted the interest of various Governments, including Madagascar, whose President asked for the launch of the ICT Village in his Nation.

All these results were later presented at the 5th Infopoverty World Conference attended by, among others: Joe Shirley Jr. – *President, Navajo Nation*, Giorgio Bosco – *Plenipotentiary, Ministry of Foreign Affairs, Italy*, Adele Smithers Fornaci – *Smithers Foundation*, Stefano Cacciaguerra – *Cooperation for Development, Ministry of Foreign Affairs, Italy*.

2008 Discussion on the emergency of low-cost market technologies and encouragement of companies and governments to boost this process. On this occasion, the Infopoverty Programme presented its accomplishments in the network of the ICT Villages, created in Peru, Southern Lebanon and Lesotho. During the 8th Infopoverty World Conference, participants included: Joe Shirley Jr. – *President, Navajo Nation*, Ernest Franklin – *Executive Director, Navajo Nation Telecommunications Regulatory Commission, NNTRC*.

2013 A discussion on the empowerment of people and nation-building throughout innovation took place at the ECOSOC AMR in Geneva, where OCCAM-Infopoverty was invited to expose the e-services experimentations (e-learning, telemedicine, food security) applied to the ICT Villages' network, at the Innovation Fair. The results were also presented at the 13th Infopoverty World Conference where the high-level panelists included: Ali Mariama Elhadj Ibrahim – *Minister of National Education, Niger*, Babagana Abbas – *Princ. Tech. Officer, eGov/IT, Federal Ministry of Communication, Nigeria*, ChamisaNelson – *Minister of Information Communication Technology, Zimbabwe*, Kroes Neelie – *Vice President of the European Commission in charge of the Digital Agenda*, Nsengimana Jean Philbert – *Minister of Youth and ICT, Rwanda*, Quiroga José – *Vice Minister of Information Society and Knowledge, Ecuador*,

2014 The launch of the e-MedMed Project on telemedicine. The Euromediterranean Conference on Cinema and Communication is also organized by OCCAM in the wake of the Barcelona Agreements. The practical realization of e-services is the main topic studied in parallel by the Euromediterranean Conference and the Infopoverty World Conference. While the former is focused on the specific framework of the Mediterranean region, the latter has a broader global range with high-level attendants including: Hiroshi Ishkawa, Minister – *Permanent Mission of Japan to the UN*, Friedrick Norkeh – *Minister of Technology, Liberia* and Jean-Francis Zinsou – *Ambassador Permanent Representative of Benin to the UN, Chairperson of the UN Coordination Bureau for the Least Developed Countries Group*.

2016 Infopoverty Seminar at COP22, Marrakech, Morocco. During this event the World Food Security e-Center was validated after a preliminary validation at 16th IWC (2016, April), attended by among others: Emilia Gatto – *Plenipotentiary Minister*, H.E. Amb. Ahmed Sareer – *Ambassador, Permanent Mission of Maldives to the UN*, Pallassana Parameswara Kanthan – *Former Deputy Director, Commonwealth Secretariat*.

2019 Seletion of the 3D Robotic Building System at the "Resilient Home" Challenge, promoted by World Bank and UN Habitat. The project aims at supporting families in disadvantaged areas thanks to its low cost and high capacity of inclusion in terms of easy auto-constructions facilities. Indeed, it uses a new 3D Robotic Technology to create different housing typologies for slums recovery and emergency, making possible to realize thousands of dwellings a day at a minimum cost.

The 19th Infopoverty World Conference was attended by: H.E. Manlio Di Stefano – *State Secretary for Foreign Affairs and International Cooperation, Italy*, H.E. Hesham El Nakib – *Ambassador Extraordin. of Egypt in NY*, and H.E. Toshiya Hoshino – *Japanese Ambassador to the UN*.

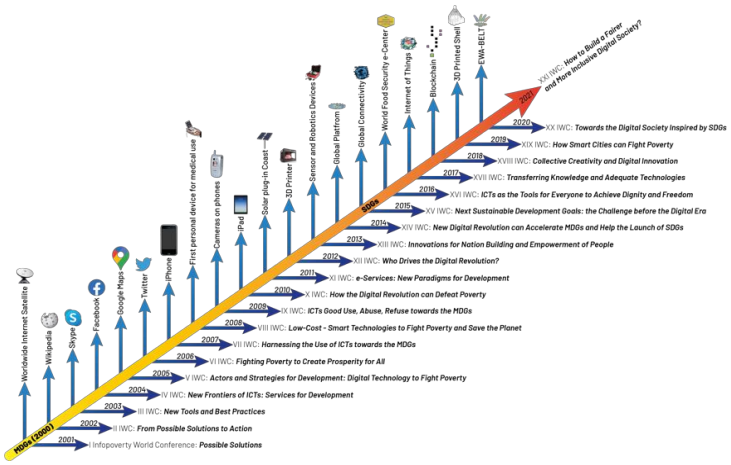
2020 OCCAM organised the first session of the Conference during the 2020 World Economic Forum in Davos, focusing on the implementation of SDG 1: End poverty in all its forms everywhere. It was underlined how only 2% of the total world population holds the vast majority of the global wealth, and how endemic inequalities lead to three quarters of the planet to live in absolute poverty.

Moreover, in 2020 OCCAM organized the launch of the Linking East and West African farming systems experience into a BELT of sustainable intensification - EWA-BELT Project under the European Horizon 2020 Programme. The Project aims at developing Sustainable Intensification (SI) of agriculture productions in organic, agroforestry and mixed crop and livestock farming systems in 38 study areas of 6 countries belonging to EAST (Ethiopia, Kenya and Tanzania) and WEST (Burkina Faso, Ghana, Sierra Leone) Africa.

Virtually held, the 20th Infopoverty World Conference saw the participation of, among others: H.E. Emanuela Del Re – *Vice-Minister of Foreign Affairs and International Cooperation, Italy*, Staffan De Mistura – *Former UN Under-Secretary-General, Special Envoy to Afghanistan, Iraq, Lebanon and Syria, Deputy Foreign Minister of Italy*.

Infopoverty World Conference

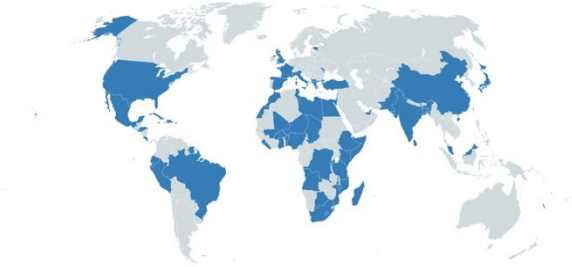
The first Infopoverty World Conference was organized by OCCAM in June 2001, on the momentum of the signature of the Millennium Declaration of the United Nations, where the joining States were committed to the achievement of the eight Millennium Development Goals. The Conference represents, for its continuity, operational capability and strong interoperability with the UN System, a unique global forum, gathering leading experts, academics, opinion leaders, managers, government officials and philanthropists. Working in collaboration with the European Parliament Liaison Office, various UN bodies, the C. Smithers Foundation and other scientific and academic institutions, the Infopoverty World Conference rallies leaders worldwide to operate for the realization of the ICT4D tasks. Throughout the years, the Conference has continuously addressed the advancements brought about by the Digital Revolution and has progressively discovered and launched best practice models in the fields of telemedicine, e-learning, e-agriculture, and e-finance, followed by their successful implementation in many African and Latin American remote villages and disadvantaged communities.



Infopoverty Worldwide attendees and speakers

The Conference represents a high-level elaboration forum for ICT solutions and digital services for the SDGs achievement. In the past editions we established a strong network of relationships and contacts thanks to the attendance of over two thousand speakers, hundreds of companies and public and private institutions, including:

- **International Organizations:** UN, FAO, IFAD, ILO, ITU, WHO, UNDP, UNESCO, European Space Agency, NASA, World Bank, European Union, Inter-American Development Bank, African Development Bank, CERN, OECD, International Federation of the Red Cross, C. Smithers Foundation
- **National representations:** Albania, Andorra, Angola, Bangladesh, Benin, Botswana, Brazil, Burkina Faso, Burundi, Chad, China, Costa Rica, Cuba, Dominica, Dominican Republic, DR Congo, East Timor, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, France, Ghana, Greece, Grenada, Haiti, Honduras, Hong Kong, India, Israel, Italy, Jamaica, Japan, Kenya, Lebanon, Lesotho, Liberia, Libya, Macau, Madagascar, Malawi, Malaysia, Maldives, Mali, Mauritius, Mexico, Moldova, Morocco, Mozambique, Niger, Nigeria, North Macedonia, Pakistan, Palau, Palestinian Territories, Peru, Rwanda, Samoa, Sao Tome and Principe, Sierra Leone, Somalia, South Africa, Spain, Sri Lanka, Suriname, Tanzania, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States, Vanuatu, Vatican.



The Infopoverty Institute

The University of Oklahoma has started the Infopoverty Institute together with OCCAM in 2002 for the organization of the anual Infopoverty World Conferences as well as for the development of relevant actions. The University of Oklahoma has agreed to continue its cooperation, coordination and collaboration with OCCAM overall.

OCCAM born from the notion of the great development registered over the last ten years in comunication technologies; communication is a fundamental factor for social, economic and cultural development. Open communication can be one of the strongest means to fight poverty in rural areas as well as in less developed countries, and a guarantee of the respect of human rights and the affirmation of democratic values within society.

The Infopoverty Institute is heavily involved in these issues. One of its main mission is to reach the widest audience as possible - students, civic leaders, families, educators and local government officials - to heighten the awareness of the need for connectivity and to increase the number of people working toward universal connectivity. The next step in connectivity is to deliver content. That is, to deliver messages that will lead and assist citizens with the lowest income to improve their living conditions. Within the overall goal and commitment to connectivity, the Infopoverty Institute intends to focus attention on the importance of developing and using information and content suitable for access by Internet connection to empower local countries and regions to impact sustainable development in the areas of health, education, water safety, economy and all quality-of-life areas. Such a message coordinated with other applied content areas must reach the world.

FOCUS ON E-SERVICES

At the end of the first phase of the World Summit on the Information Society (WSIS), organized in Geneva in December 2003, one of the main expected objectives was to provide connectivity and services for development to all poor communities of the world by 2015.

In order to achieve this goal, OCCAM convened the Infopoverty Seminar, which took place on June 24th, 2004 in Hammamet (Tunisia) to begin a consultation process among the main stakeholders of ICT4D and prepare the Tunis phase of the WSIS scheduled for November 2005.

The Advisory Board, created in Hammamet, including representatives of international organizations (ESA, FAO, IFRC, ITU, UNDP, UNESCO and World Bank), private corporations, universities, development research institutions and civil society organizations, closely collaborated with the partners of the Infopoverty Program and with participants of the 5th Infopoverty World Conference that convened in May 2005 at the UN Headquarters in New York.

Five sectors of intervention were identified retaining high priority in the fight against poverty through the ICTs:

- **Telemedicine**: to provide medical services through ICT where distance constitutes a critical factor, for professionals;
- **E-learning**: to promote remote teaching, making it interactive not only for the primary and secondary schools, but also for continuing education;
- **E-agriculture** to promote food security;
- **Job creation** in the field of communication to support traditional crafts;
- **E-governance**: to enhance services related to the public administration.

Delivery of Broadband Services

The close relations among the different entities associated to the program and their approval to place online their specific competence in different sectors (telemedicine, e-learning, e-work, e-commerce, e-government, etc.) let the communities have a concrete opportunity for development.

Moreover, services will be provided on the basis of business plan where some initial services (such as those included in the initial phases of this project and those provided by international organisations) will be provided free of charge, while other more specific services will generate an economic growth that will progressively pay for them. This is in line with the whole concept behind the Infopoverty Program, which aims at the full self-sustainability of the development process, with a real economic growth: without the progressive eradication of poverty all actions will have no lasting effect on the population.

Amongst the most important services:

a. **Telemedicine,** a term coined in the 1970s, which literally means “healing at a distance”, signifies the use of ICT to improve patient outcomes by increasing access to care and medical information. Recognizing that there is no one definitive definition of telemedicine – a 2007 study found 104 peer-reviewed definitions of the word. Moreover, it is useful to be inserted in the local medical facilities (if existing) or in other seat fit to host the first nucleus of health structures. In the following months the services delivered through a specific portal will include diagnosis, prognosis, prescriptions, special services for disabled people and eventually light

distance surgery thanks to the participation of a network of local and international hospitals, research centres and centres of excellence. Telemedicine and all its technologies have great potentials for optimizing the health system at the national and international level, making use of equipment that allows doctors and nursing teams to interact with remote colleagues and patients. As a result, updates and information, discoveries and innovations are much more easily exchanged and discussed so to break those geographical barriers that would deprive many disadvantaged areas of health care as well.

b. **E-learning** is system based on formalised teaching but with the help of electronic resources is known as E-learning. While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning. E-learning can also be termed as a network enabled transfer of skills and knowledge, and the delivery of education is made to a large number of recipients at the same or different times. Earlier, it was not accepted wholeheartedly as it was assumed that this system lacked the human element required in learning. No doubt, it is equally important to take forward the concept of non-electronic teaching with the help of books and lectures, but the importance and effectiveness of technology-based learning cannot be taken lightly or ignored completely. It is believed that the human brain can easily remember and relate to what is seen and heard via moving pictures or videos. It has also been found that visuals, apart from holding the attention of the student, are also retained by the brain for longer periods. Various sectors, including agriculture, medicine, education, services, business, and government setups are adapting to the concept of E-learning which helps in the progress of a nation. Moreover, to be closely linked to the existing school structures, endowed with didactic room and interactive computer lab.

c. **E-governance** includes information and communication technology (ICT) platforms and applications that the public sector uses to provide services. Governments worldwide have been using their resources to ensure that they provide a greater level of citizen-centred service over the past two decades. However, while some countries have progressed, some continue to lag. E-governance signifies that Information and Communication Technology (ICT) infrastructure is employed to manage relationships across the government machinery. The intentions for e-governance are the same as those of good governance. In essence, then, e-governance supports the sharing of information across government, improves transparency and accountability. It improves accessibility and eliminates barriers to accessing public services by reducing discrimination and promoting inclusion. E-governance enhances coordination between the public and private sectors and supports economic development. Furthermore, it tied to the local government authority, with a communitarian centre of access, where the population can start learning how to use ICT (internet, e-mail, word processing) under the supervision of local trainers, and where they can have access to basic services such as the distribution of ID, permits, licences, official documents, visa, passports, etc.).

d. **Consulting for agriculture and herding.** Agricultural consultants are specialist advisers who provide technical, commercial, and financial advice and information to farming, agricultural and public sector staff. Typically, they specialise either in business or technical expertise; specialists in the former area advise agricultural landowners on financial issues and business strategy, while technical specialists consider how to make the most effective use of the land. Technical specialists often focus on a particular area, such as pollution control, forestry consultancy, or crop rotation. Whatever the specialisation, the ultimate aim of an agricultural consultant is to balance the commercial viability of agricultural land with sustainable development. Moreover, the teleport will support special web portals and will be used as virtual incubator to support local production and trade.

EXAMPLE OF SUCCESSES

The eMedMed Project

The eMedMed Project was born in the wake of the creation of the Mediterranean Platform of e-Services, validated by the UN during the ECOSOC Ministerial Review. It was presented during the First Economic Forum of the Western Mediterranean in 2013 by the Italian vice-minister of the Foreign Affairs Lapo Pistelli to the Union for the Mediterranean General Secretary Sijilmassi.
During the XXI Euromediterranean Conference held in Catania in February 2016 an agreement was signed by the Mayor of Catania Enzo Bianco and the President of OCCAM, in order to create in Catania the "Hub Centre of Catania for Health security, migrant's emergency and supportive development in the Mediterranean area" to monitor the health security in the Mediterranean Area.
EMedMed was then validated at the XVI Infopoverty World Conference held at UNHQ in New York in April 2016. The main focus of the eMedMed Project is to improve the health conditions of the Southern Mediterranean Countries thanks to the new technologies of Telemedicine
It aims at providing e-services through an innovative platform system that links main, local, and peripheral hubs, overcoming a large amount of healthcare problems, such as malnutrition, obesity, and the chronic diseases brought on by sedentary lifestyles and tobacco smoking. Moreover, the project is specifically devoted to face the health security challenges that the migrant emergency might provoke.
Fully aware of the fact that the potential of digital services in the field of education and healthcare is still largely unexploited and that it would be a fundamental catalyst in the economic and social development of the Southern Mediterranean shore, the eMedMed project will use Information and Communication Technologies (ICTs) to solve healthcare gaps afflicting these countries.
The area of intervention of the eMedMed project is the Southern Mediterranean shore. In particular, it will be implemented in Egypt, Libya, Morocco, and Tunisia. The main tasks are:

- Boosting the capacity of national health-care systems to make health services accessible to the population at large with the use of telemedicine;
- Increasing medical and paramedical professionalism and performance through continuous e-training;
- Giving remote assistance in the delivery of health-care;
- Integrating knowledge in the region via the e-Services Mediterranean Platform, linking service users and service providers, as the Italian hospitals and centres of excellence;
- Giving assistance during the migrants landing on the Mediterranean shores.

The eMedMed Project will address four tiers of beneficiaries:

- The first is the tier of medical institutions involved at the country level that will benefit from professional advancement of staff, upgrading of existing technology, and enhancement of services quality and accessibility.
- The second is the tier of assisted population, with an emphasis on patients located in remote communities or communities with scarce presence of healthcare structures and services.
- The third is the tier of national health systems where the capacity installed is meant to be replicated at a larger scale.
- The fourth is the regional tier where a platform for sector integration will be launched.

The program has been developed by OCCAM in partnership with IITM, the International Institute of Tele-Medicine, an independent scientific and technological structure involved in research, development and transfer of ICT projects and initiatives in medicine and healthcare.
In the framework of the eMedMed project, the XXI Euro-Mediterranean Conference launched a Mediterranean Master of Telemedicine, together with the universities of the Mediterranean Basin, in order to homogeneously train the medical and paramedic staff, whose preliminary study will be assigned to the professors Hassan Ghazal (University of Rabat), Francesco Basile (University of Catania), and Francesco Sicurello (University of Milano Bicocca).

World Food Security e-Center

The World Food Security e-Center project, launched during the XV IWC and further illustrated during the International Conference 'Beyond Expo': new digital services for food security' 2015, aims to provide digital services to support agricultural development and food security in communities in need through a high connectivity digital Platform, using new sensors and robotic devices.

EWA- BELT Project

The EWA-BELT project aims at developing Sustainable Intensification (SI) of agriculture productions in organic, agroforestry and mixed crop and livestock farming systems in 38 study areas of 6 countries belonging to EAST (Ethiopia, Kenya, and Tanzania) and WEST (Burkina Faso, Ghana, Sierra Leone) Africa.

The EWA-BELT working plan has been developed to achieve the goals of the Call "SFS-35-2019-2020: Sustainable Intensification in Africa", namely "Scope: A. [2019]: African Farming Systems, sustainable intensification pathways (RIA) ". EWA-BELT is structured in 7 work packages and 21 tasks providing 57 Deliverables (including ethics requirements) and 30 Milestones. The research activities, carried out in Farmer Field Research Units (FFRU), address areas such as marginalized or abandoned lands and existing agricultural lands to increase their yield potential.

Through integrated participative research innovative tools (FFRU, ICT, Integrated Pest Disease Management - IPDM) and identification and dissemination of best practices, participating countries will be linked into an interregional East-West African BELT able to reinforce Sustainable Intensification in agriculture. The project will introduce highly innovative, cost-affordable technologies, to be easily used in the field by unskilled personnel. EWA-BELT will address gender issues and empowering women at every stage of the process. At the end, to maximize the impact, project results (in progress and final achievements) will be disseminated yearly during the Infopoverty World Conference at the UN Headquarters, one of the highest-level initiatives to elaborate strategies and design solutions towards Sustainable Intensification.

ICT Village: a successful model

At the end of the first phase of the World Summit on the Information Society (WSIS), organized in Geneva in December 2003, one of the main expected outcomes was to provide connectivity and services for development to all poor communities of the world by 2015.

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The ICT Village model is intended to provide remote and disadvantaged communities with these services: broadband satellite connectivity as well as e-services for development, such as telemedicine, e-learning, e-governance, etc. Furthermore, the Model partners with institutions, academia, R&D agencies to develop innovative services for development, such as those for food security. In order to make the ICT Village sustainable, renewable energy (solar, biomasses, compound, hydrogen, etc.) as well as water sanitation systems are put into place and are matched with continuous training and support aimed at the empowerment of the members of the community and the full utilization of the natural and human potentials. **All this work ensures a real people-center ICT development**.

The ICT Villages model established in Honduras, Lebanon, Ghana, Ethiopia, Navajo Nation (USA), Peru, Lesotho, Tunisia, Madagascar represents a successful model, prelude of the digital development in developing countries, as testified by the awarding of the Sambaina Village in Madagascar with the title “UN Millennium Village” in 2007.

These Villages feature advanced useful technologies, such as the Medical Unit - an interconnected solar trolley with 12 remote high diagnostics features -, the Food Security Kit - built to detect parasites, plant DNA and other parameters -, and the Smartbox, which provides for energy, connectivity, and other primary digital services for villages.

History of the ICT Villages

The first ICT village project was carried out in 1999 in Honduras hit by the devastating hurricane Mitch. With the support of the Ministry of Science and Technology, the local University, and the main international organizations it was possible to implement two projects called Solar Village in the communities of San Ramon and San Francisco de Lempira. Thanks to the use of solar panels, the supply of electricity was guaranteed. A connection to 108 mb / sec, a real record for the time, for more than 30,000 people enabled the creation of the first e-learning and telemedicine services, allowing the population to use these new technologies advantageously and to connect to the rest of the world through e-commerce and e-government initiatives.

Presented and discussed in the various IWC 2001-2003, the model has been proposed to the Government of Tunisia for an experimentation in the village of Borji Ettouilat. The success of this WSIS-ICT Village – supported by the National Solidarity Fund and visited by numerous government delegations and personalities, who appreciated the operational applications of telemedicine, e-learning, and internet community access – allows validating their effectiveness and opens the doors to numerous invitations to replicate it in various countries, including Peru, Ethiopia, Dominican Republic, Lesotho, Tunisia, Ghana, South Lebanon, Navajo Nation, Madagascar.

In particular, the village of Meiss al-Jabal, in South Lebanon, born from a collaboration with Staffan de Mistura, High Representative of the UN Secretary General in the region, as a support action for the refugee communities, was provided with two digitized classrooms, satellite connection and various specialized devices for remote consultation and assistance services, obtaining a rapid professionalization of the students. Unfortunately, with the war events of 2006, Meiss al-Jabal has been destroyed.

A long-lasting project is the ICT Village of Sambaina, also born thanks to the support of the then President of the Malgasy Republic, H.E. Marc Ravalomanana. The project has been developed focusing on telemedicine, e-learning schools, and center for internet access for the population of the district. Sambaina soon aroused international attention, including the visit of Jeffrey Sachs, director of the UN Millennium Project and Special Advisor of the Secretary General, Kofi Annan.

Some of the experiences

HONDURAS

As pilot experiences, developed in Honduras between 1999 and 2000, with the support of the United Nations Education, Science and Culture Organization (UNESCO) and the Organization of American States (OEA), the Solar Villages and Solar.Net Villages Projects were successfully implemented in two rural communities of Honduras: San Ramón, Choluteca and San Francisco, Lempira. These pilot programs were executed by the Honduran Council of Science and Technology (COHCIT), together with the Departmental ad Municipal Governments, as well as with a very active participation of the communities themselves.

The success of the Honduran pilot experiences led to the inclusion of the Honduran model as a presentation, in December 2000, to the World Conference “Village Power 2000”, in Washington D.C., realized at the World Bank, organized also by the United Nations and important agencies of the government of the United States, as well as private foundations and corporations dedicated to search innovative energetic solutions. The

Honduran experience was considered as a promising model of "rural transformation and fight against poverty", within the scope of solutions to "bridge the digital divide".

Following the momentum won in Washington D.C., a historic meeting was held in January 2001, in Tegucigalpa, Honduras, gathering important international institutions, private foreign corporations, universities, as well as associations and world charity and welfare foundations. Several governmental and non-governmental institutions from Honduras also participated. In that event, it was agreed to transform the actions, so far led by COHCIT, into an important national integrated initiative. As of the previous event, in Honduras the initiative was taken by the "Picacho Christ Foundation", led by His Eminency, Cardinal Oscar Andrés Rodríguez, in order to effectively initiate a nation-wide initiative, which began to be known as "Communities with Integrated Technology" (COMUNITEC). Internationally, an enormous initiative was carried out, led by OCCAM (Milan, Italy).

NAVAJO NATION

The Navajo Nation is a sovereign territory with a territorial extension of approximately 27,000 square miles, located in the United States, within the States of Arizona, New Mexico, and Utah.

The Navajo Nation is spotlighted as a success model for the world, because Internet communication and wireless technology have been placed at every chapter (local community) throughout Navajo Nation, in addition to its capital, located in Window Rock, Arizona. With this, the Navajo Nation has created one the largest wireless communication networks in the world. Navajo Nation, together with OnSat, installed a broadband satellite service to connect the 110 communities, called chapters, throughout the Navajo Nation to the Internet.

This gives free public Internet access and e-mail to every Navajo across the Navajo Nation. Navajos are also using this connectivity to become more self-sustainable through distance education, health care, e-government, security, and e-commerce.

In this framework, OCCAM and the Navajo Nation have signed on the occasion of the WSIS 2005 an agreement with the ITU, specialised agency of the United Nations, in order to extend the successful model, set in the Navajo Nation to other indigenous communities and to the youth.

Once the agreement was signed, several meetings have taken place and an exploratory mission has been carried out in Brazil in the following years, at the presence of representatives also of the Republic of Honduras with the following results:

- Formulation of a document leading towards an Administration Agreement, that had to be signed with the Government of Brazil, for a project addressed to indigenous communities in Brazil, and based on the Navajo Nation successful experience;

- The high visibility that the parties could obtain through the development of this project will represent an asset towards the enlargement of the project development activities for the indigenous communities;
- Through its development this project could become a model to be replicated in other countries that have the same needs;
- Continue negotiations with the Honduran Ministry of Science, Technology and Innovation, in order to fulfil the specific support requested by the President of Honduras towards the implementation of similar projects covering communities in remote areas in the Republic of Honduras using a re-engineering concept of the existing Tele-Centres towards the implementation of a nation-wide project, based on the Navajo Nation successful experience for indigenous communities in the context of the "Strategy for the reduction of poverty" and in accordance to the WSIS commitments

TUNISIA

It is important to give concreteness to the aims envisioned in the approved Plan of Action of the WSIS and to set a model, or a set of models, which can grant connectivity to villages by 2015 and verify the above-mentioned relevant points.

The business community is currently divided in its different know-how's, oriented to the needs of rich but saturated markets more than to those which are still to be opened. Satellite carriers have to choose between the present situation of high costs (and a small percentage of market) or investing in future market opportunities by lowering their costs. Service providers have to retune their supply in order to be more effective in regard to services for development, which have to be cost-effective, reliable and development oriented.

Developing countries aim at being recognized as emerging markets, so that they will be included in the marketing strategies and, once and for all, in the production lines, so that they are not left behind.

Thus, the project will create a set of infrastructures able to provide broadband satellite communication, Wi-Fi, mobile phone, as in the most advanced countries of the world.

The project will serve as concrete example of how a remote village can benefit from the ICT and of how ICT, if well designed and used, can foster, and accelerate development.

This particular project, differently from remote villages, was in the outskirts of Tunis and with good connectivity. The project was prepared in partnership with the National Solidarity Fund and involving many institutions within Tunisia.

Once the Feasibility study was completed, the Government of Tunisia has taken charge of its implementation, intending this initiative as the first step in replicability within Tunisia, and a new approach towards fighting poverty in the country using the ICTs.

One of the lessons learned was that, due to the vertical and hierarchical structure of the administrative entities, introducing in a village the ICTs requires a real convergence and close interoperability between the ministerial bodies involved in the projects (Ministries of Health, Education, Solidarity, Information Technologies). This feasibility study prepared on the occasion was at the basis of the ICT Village Model that was presented by the Tunisian Government at the WSIS 2005 and incorporated the lessons learned in the past.

SAMBAINA

The government of Madagascar requested as soon as possible that the ICT project could be applied in its country too. After an attentive analysis and meetings with the local authorities and the audience given by

Excellency **Marc Ravalomanna**, President of the Republic of Madagascar, in December 2005, Sambaina was selected. The rural municipality of Sambaina is 40 km from the capital Antananarivo of Madagasacar. It is accessible by a RN7 paved road going to the port city of Taomasina. It has a surface area of 33 square km with 15 Fokontany (district or administrative subdivision) and each of these is composed of hamlets for a total of 70. The population is about 10.000 people, mostly farmers. Thanks also to the active participation of all the population, the buildings of the village (primary school, health presidium and access center) was restructured.

In particular:

- A national satellite broadband connection implemented by EUTELSTAT was provided
- 55 computers were initially provided in different locations:
    - Mairie (Town Hall office): 8 computers
    - Hospitals: 3 computers
    - Middle school: 4 computers
    - Elementary school: 2 computers
    - Access centers open to the population: 38 computers
- A digital room within the school system was provided. It has seen thousands of students who all learnt several digital techniques guided by experts.
- The hospital was renewed. On the matter, digital services related to pregnancy were improved. 3 doctors sent by “Win Focus” prepared and lectured medical students.
- Services related to e-governance were established. Thanks to them and to the hierarchical structure put in place, it was possible, without so much trouble, to obtain authorizations, official documents.

Specifically, the village’s dispensary, connected to national and regional hospitals utilizing public air-band width free of charge, implemented the **maternal unit** with the use of new **e-ultrasound tools** by local midwives, thus decreasing the mortality range by 82%. The **local school**, which was then supplied with **40 computers**, professionalized 320 pupils toward new jobs exploiting local rural and craft resources. The municipal seat opened to internet community access

so that the entire population had the possibility of learning how to access information useful to improve their activities, as well as facilitating governance with e-documentation. **Specialized assistance** on matters of the harvesting of rice, cattle ranching, pest-control and water and food security was furnished to local farmers as well as 85 doctors specialized in clinical imaging at the National University, able to assist a large part of the population with the new mobile x-devices, distributed in various other villages. At its launch in 2007, a high-level **UN delegation led by Jeffrey Sachs** proclaimed the ICT Village of Sambaina as **UN Millennium Village**. It became the model for further projects and was planned to be cloned all over the Malagasy territory.

On this matter, it is relevant to refer to the **IX Infopoverty World Conference** where the **Cooperation Project** between the **City of Lodi** and **Sambaina** was presented. The organizational progress of this important experimental program (the first example worldwide of a co-development project based on new communication

technologies between a city in the most advanced area of the planet and a village in a poor country) was illustrated during the IX edition of the Infopoverty World Conference, held in a videoconference between the Pirelli Hall of the Palazzo Delle Stelline in Milan and the UN Headquarter in New York, in conjunction with the UNESCO headquarters in Paris and the European Commission in Brussels, and dedicated to the theme "*Communication and Information Technologies: Uses, Abuses, and Waste in the Perspective of EXPO 2015*". This project was considered to be the following step to the **agreement signed** on the 3rd of December 2008 by the mayor of Lodi, **Lorenzo Guerini**, and the ambassador of Madagascar in Italy, **Rafazy-Andriamihaingo**.

The aim of the initiative was to create an operational twinning between an underprivileged community with a developed one, to share the analysis of problems and the study of effective solutions, valuing practices of excellence already established, as in our case scientific research in the field of agri-food, the training of

professional figures in the medical and nursing sector and remote clinical diagnosis, networking schools, hospitals, and research centres".

Extending to a community such as Sambaina in Madagascar the increasing number of technological innovations available to our advanced society will, for example, ensure adequate levels of medical diagnosis even in remote dispensaries, make up for the shortage of medical staff (0.02 per 1,000 inhabitants, the average in developing countries) with paramedical staff assisted at a distance, provide distance training of specialist professionals in a crucial sector such as

agriculture and livestock, encouraging the qualitative and quantitative improvement of production and therefore of food supplies. " $10 PCs; solar cell Wi-Fi; devices capable of transmitting electrocardiograms, ultrasound, and other vital data for diagnosis and prognosis live to clinical centres thousands of miles away; portable capable of capturing images of plants affected by infestations and have them analysed by specialized centres; satellite hubs to bring broadband connectivity to every corner of the world; WiMAX able to extend the signal to over 180 kilometres of radius; mobile phones capable of transferring even a few coins to scattered villages and thus make microcredit truly universal: the explosion of new digital technologies applied to development is changing the lives of millions of Africans and hundreds of thousands of disadvantaged communities in the world - emphasizes Pierpaolo Saporito, president of Occam and founder of Infopoverty - It is precisely in these realities that the digital revolution is taking shape more, not in the opulent territories of well-being, now in crisis for saturation and dilapidation, because it looks at the real needs, the

ability to transform immense human and material resources still latent in productive goods, health and educational services, overcoming historical gaps with a leap similar to that of the first industrial revolution that allowed Europe, afflicted by 80 percent poverty, to earn general well-being"[1].

After an initial intervention and provision of goods and instruments in the 00s (telemedicine and other services), followed by an interruption caused by a political crisis, in **2019** OCCAM has been asked by the local communities to relaunch and upgrade the project. Despite the difficulties, OCCAM has relaunched the Millennium Village thanks to the support of STMicroelectronics Foundation, Telma Foundation, and the courage of its smart inhabitants and local institutions.

The priorities set and developed by the renewed intervention in 2019 were two: the **relaunch of e-education** and the **development of a system of food security and e-agriculture**.

Five major results were achieved during **2019** and **2020**. First and foremost, the signature of *« Protocole d'accord relatif au programme informatique pour tous* », with Telma Foundation, STMicroelectronics Foundation (Suisse), the Collège d'Enseignemnt General de Sambaina and OCCAM in January 2019. Moreover, the provision by Telma of equipment for Internet connection and the purchase and diffusion by STMicroelectronics and Telma of digital intruments and devices. Contacts with potential partners in Madagascar have been created and hopefully will be exploited. Finally, a space devoted to the new devices at CEG in Sambaina was established, so that the entire population of the village would benefit from it.

In **November 2021** OCCAM held a remote Conversation with more than 100 students of the Sambaina ICT Village connected from the townhall of Tomasina to discuss how young people could positively surf the Digital Revolution. During these remote lessons, challenges and constraints of the Digital Society were discussed in prevision of the 21st Infopoverty World Conference that was held on 4th December 2021.

In conclusion, OCCAM, more than ever, is on the front line to provide for the best technologies and tools to achieve for what it calls "welfare for all" so that Sambaina can continue being the example to follow in this field.

[1] http://www.comune.lodi.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/845

LESOTHO

Basutoland was renamed the Kingdom of Lesotho upon independence from the UK in 1966. The Basuto National Party ruled for the first two decades. King MOSHOESHOE was exiled in 1990 but returned to Lesotho in 1992 and was reinstated in 1995. Constitutional government was restored in 1993 after seven years of military rule. In 1998, violent protests and a military mutiny following a contentious election prompted a brief but bloody intervention by South African and Botswanan military forces under the aegis of the Southern African Development Community. Subsequent constitutional reforms restored relative political stability. Peaceful parliamentary elections were held in 2002, but the National Assembly elections of February 2007 were hotly contested, and aggrieved parties continue to periodically demonstrate their distrust of the results.

After the first fact finding mission organized by OCCAM at the invitation of the Ministry of Science and Technology of Lesotho, it was agreed by all stakeholders that the first replica of the ICT Village model in Lesotho will be implemented in the community of Mahobong, which, from a variety of points of view, is a typical community of the Country and can easily constitute a model to be replicate elsewhere in the Country.

The ICT Village in Mahobong will be an activity carried out within the Infopoverty Network of villages and disadvantaged communities endorsed by the Infopoverty World Conference 2009. Its main partners, apart from those above mentioned include representatives from all stakeholders: universities (University of Oklahoma, Università Statale di Milano – Department of Veterinary and Agriculture), companies (Microsoft, Siemens, Eutelsat, etc.), civil society (including Faith Based initiatives, WINFOSCUS and others, such as the National Society of the Red Cross), the community of Mahobong, which has been fully involved in the process, and the Government of Lesotho, under the leadership of the Ministry of Science and Technology.

The ICT Village model in its implementation in Mahobong was proved to be an effective tool for the promotion of development in disadvantaged communities in Lesotho, and the following step would be to it to replicate it in a number of communities to be chosen, according to the plans of the Government.

The choice of the replica villages will be based on different issues, on the one side the social and economic conditions of the villages (population, age distribution, level of education, economic activities, natural resources, etc), and also some technical data (above all distance from any other form of connectivity, electric supplies). It is also important to consider that one ICT Village is connected to a platform of e-services that can be used for all the other villages, thus it is possible to create economies of scale to optimise costs and efficiency, reducing redundancies and waste of time and funds.

Apart from the above-mentioned deliverables, the project has also promoted partnerships among international organisations, harmonising their procedures on the ground and highlighting best practices in each field of operation (e-health, e-governance, e-learning, etc). Thus, the project becomes replicable for other disadvantaged locations Madagascar. The services provided to Mahobong (“ICT village”) can be replicated elsewhere in Lesotho on the basis of the results achieved, adopting it to the specific needs of other selected disadvantaged communities. It will be possible to valorise the vast wealth of competences articulated in the UN system (FAO, IFAD, ITU, UNDP, UNESCO, etc.) and transform them into services. The innovative platform, accessible everywhere, means transferring our knowledge to concrete aid to disadvantaged communities and strengthening Lesotho and International Organisations in their role of promoters of development and coordinators of activities aiming at fighting poverty and achieving the MDGs.

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