2022

Report on OCCAM's activity

International Telecommunication Union, OCCAM and NAVAJO NATION
Memorandum of Understanding

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REPORT OF ACTIONS

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 UN ambit and coordinated by OCCAM (the 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 (ICT) regarded as tools able to provide broadband wireless services, (such as telemedicine, e-government, e-learning...) 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, who contribute to the concrete 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.

World Summit on Information Society and TV Space with Navajo Nation

At the World Summit on Information Society, OCCAM manages official Summit television space and makes an important step towards the realization of the Infopoverty Programme, in particular for the realization of digital villages in the ambit of the UN Alliance for Rural Development.

OCCAM organized and managed the WSIS TV space, the official Television of the World Summit on the Information Society, in more than 200 square meters next to the Plenary Hall. Thanks to the presence of BBC journalists and specialized technicians from the Navajo Nation, interviews with protagonists, Heads of Government and State were shot and then broadcasted worldwide by the main accredited television covering the Summit.

Among the main events of the Information Society in Tunis, **Infopoverty Seminar**, that was held on November 16th enjoying the participation, among the others, of the Minister of Telecommunications of Madagascar, the President of Navajo Nation, and prestigious representatives from the Governments of Tunisia, Congo, Tanzania, Dominican Republic, Morocco, Romania, Peru and Senegal.

The main initiatives of the Infopoverty Programme for 2006 were presented during the Seminar and include:

• Replicability of **ICT village model** experimented in Tunisia for developing countries, such as Madagascar and Dominican Republic, in the framework of UN Public-Private Alliance for Rural Development;

• Realization of the **satellite platform for humanitarian and development services** promoted by the main international organizations of the United Nations System;

• **Ville-village** initiative, for the creation of digital twinning between local entities in rich Countries and those in developing ones.

The Infopoverty Seminar has been concluded by the signing ceremony of the following agreements with:

• Navajo Nation, for the creation of an OCCAM antenna in Window Rock, specifically dedicated to indigenous populations issues;

• Oklahoma University, for the creation of the Infopoverty Institute, that will provide training and education in the field of infopoverty;

Recent World Summit on the OCCAM has organized the:

• LATIN-RITLA (Latin American Technological Information Network, international Latin- American Organization) for the realization of ICT Villages in the South American area.

During the next day of the WSIS, the ITU Pavilion host the presentation and the **signing of the Memorandum of Understanding with the ITU and the Navajo Nation** for the realization of the satellite portal for indigenous communities, at the presence of Roberto Blois, ITU Deputy Secretary General.

All the agreements signed are already in an operative phase, and explorative missions are envisaged within the end of the year in Madagascar, Dominican Republic, Mexico, Brazil and Peru. On November 18th, the last day of the Summit, a special press conference was realized to present the VI Infopoverty World Conference "Fighting poverty to promote development: new technologies at the service of the Millennium Development Goals", to be held on April 6-7, 2006. The Conference, following the innovative scheme of parallel sessions connected by videoconference, was held in New York at UN Headquarters and in Milan at Politecnico

and Università Cattolica. The other seats connected were the Congress of Peru, in Lima; the ITU, in Geneva; UNESCO and ESA, in Paris; RITLA, in Rio de Janeiro; the ICT Village realized in Madagascar; the Cabinet of Telecommunications of Dominican Republic; the Hospital of Tunis, in Tunisia; the Mumbai University, in India; at the OCCAM seat in Navajo Nation that was inaugurated on the occasion.
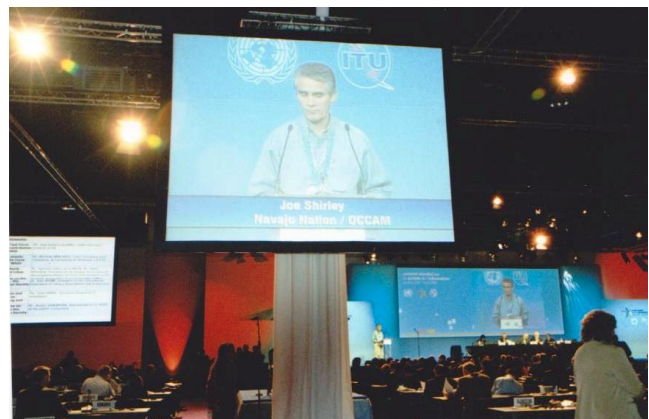
The creation of digital repositories, tell centers equipped with services such as e-learning, e- governance and telemedicine, virtual incubators for start-up, microcredit, digital botanic laboratories, energetic alternative sources, has proven to be very effective in giving an important contribute to the improvement in the lives of disadvantaged communities, with affordable costs to quickly reach self-sufficiency.

OCCAM strengthens its role as a leading organization in the UN System for the realization of ICT Villages, thanks also to the support of international institutions as the fish-farming, safe water, community renewal, environ media and e-health Institutes, and for the certification and diffusion of new products and services

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created to face the needs of disadvantaged communities in emerging countries, with the common objective to concretely fight poverty through innovative ICT applications.

ICT Villages – Report

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.

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.

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.

What is an ICT Village and how does it work?

The AI solution proposed by the ICT Village Project is to provide communities and villages with instruments and technologies able to develop the potentialities of such communities in a way which is coherent with the characteristics of the area interested. Special attention is reserved to three major fields: e-learning, telemedicine, and internet access. Each one of these fields is structured and developed in order to shape a connection between the in-need community and the service providers, that through knowledge sharing and transferring can adapt to the needs of the local communities and answer them in the most appropriate way.

The key features of the ICT Village project, in our opinion, are first of all the connection established between the in-need communities, the organizations and institutions providing the services required.

Secondly, another key feature is the empowerment that the Project generate in favor of individuals that previously had no possibility of accessing such a range of technologies and information. Individuals and communities are not just endowed with instruments and information: the key idea of the ICT Village Project is to add to the provision of instruments and information also a sort of training, a list of instructions and steps that allow individuals and communities to absorb and become able to effectively manage and use with success the instruments they are given. This sort of tutoring, for example, enables individuals to understand better, and after a certain period to use autonomously, technologies related to the development of their community: an example can be the education to some specific and more productive techniques of agriculture.

Another key feature is the centrality of the Internet connectivity: clearly, communities and service providers could not be connected, and therefore could not communicate in any way, without an effectively working Internet connection. It has been fundamental then, in every area of application of the Project, to establish a working broadband technology, able to support exchanges of material and information between parties located in different parts of the world.

The ICT Village approach is indeed articulated in the following **5 phases**:

Phase 1: Creation of a Community Centre of Access
Remote communities can start their approach towards new technologies only in a communitarian fashion, starting from the young people, who are always the most reactive. Youngsters will improve their skills and competence, which will facilitate the extension of the use of technologies to all members of the community.

The Community Centre of Access (the Centre) is the first nucleus of intervention and enjoys the direct participation of the community, which can use ICTs to solve many concrete problems and be part of an innovation which is shared and not imposed.

The Centre is located possibly in a public building, tied, if existing, with the town hall, the school, health services, post-office, social services. It consists of PCs (with screens, keyboards, mice, modems) plus the kit for satellite connectivity, which will be interfaced with specific education appliances, public access to the internet, medical presidium, and progressively will also become a unit for mobile communication, broadband interactive services, and eventually become a real incubator for social and economic development.

Deliverables include:

- Teleport, where the broadband satellite signal con be received and distributed, bi-directionally.
- WIFI System, for the whole territory
- Mobile telephone hub, thanks to an ad hoc antenna for the village
- Teleconference appliances

Phase 2: Training Human Resources

Training of local trainers is a key element for the success of this action. This crucial need will be satisfied though a phase of training concerning the use of ICTs and their maintenance at OCCAM headquarters or associated entities seat. Once trained, the trainers will become the means of innovation on the ground: they will have to be fluent in the local language, with a charismatic personality and high ethical profile.
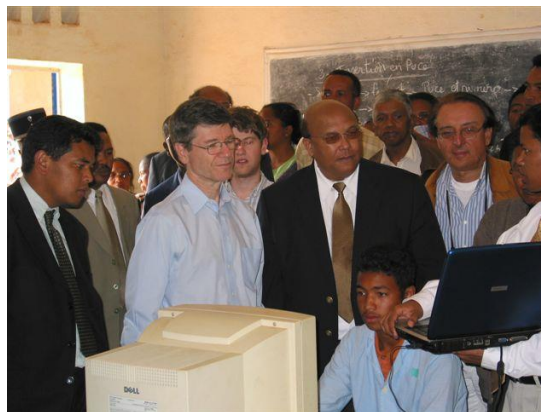
In synthesis:

- Training of 3 trainers for a period of 4 months.
- Once trained, the trainers will work with other locals in order to train some of them according to the different jobs related to the Centre in a module of 6 months.
- A leader will be chosen, able to coordinate with the other locals in order to fully implement the action. The leader will be hired for a period of 24 months.
- Research on vocations and social and economic resources of the community will be completed with the participation of all stakeholders in order to define the operative lines of intervention and assistance via specific on-line services.
- The following phases of the action will be tailor suited on the basis of the needs of the community and will try to establish as soon as possible broadband services and mobile communication, which by far can grant sustainability to the Centre.

Phase 3: Delivery of Broadband Services

Once the delivery of appliances and the training and alphabetisation are concluded, the needs and vocation of the community are defined, specific services are prepared by the central operative hub, which grants the efficiency of the connectivity system, coordinates the actions and feeds the web circuit with specific broadband "vortals", which provide the required 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:

1.1. **Telemedicine**, 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

1.2. **E-learning**, to be closely linked to the existing school structures, endowed with didactic room and interactive computer lab. A network of universities will take care of this part of the Project, guided by the University of Oklahoma, which has a very strong experience in this field and has developed a series of models fit to the needs of this kind of communities.

1.3. **E-governance**, 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.).

1.4. **Consulting for agriculture and herding**

Moreover, the teleport will support special web portals and will be used as virtual incubator to support local production and trade.

Phase 4: Incubator and Hub for Mobile Connectivity
In the light of these remarks, it is clear that the transformation of the Centre into an ICT for development incubator is a crucial factor for the self-sustainability of the whole program once the first phases are completed.

The establishment of a mobile phone hub can also be an important step in making people communicate within the country and with the outer world, activating inter-personal initiatives and eventually giving a physical and psychological perception of being part of an open world. This new perception can create positive reactions in the population, being an important factor also for the economic situation.

Thus, the incubator has a great responsibility: that of sustaining the process of innovation, fostering real and lasting development through the use of new technologies and avoiding the creation of possible frustrations in the case the initial hopes were not to be matched with the realisation of the program.

Phase 5: Activation of possible start-ups
At this stage the village is already open to new experiences, rich in knowledge, aware of its cultural and social identity and curious, stimulated to give real value to its agricultural and craft products. The community is getting hold of new techniques of trade, it is being structured also in regard to the administrative apparatus, thanks to basic applications of e-government. Now, at this stage, it is important that some business activities are carried out entirely by the locals, with initiatives such as ICT appliance maintenance, cyber cafes, and data elaboration.

This phase will lead to the sustainability of the whole incubator and the creation of widespread wealth and will be assisted for the initial 3 years.

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

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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".

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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.

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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.

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

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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.

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.

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.

eMedMed Project

It is the result of the experimentation of over 15 years of applications in various ICT Villages in the field of maternal care, emergencies, cardiology, and traumatology.

The goal is to improve health conditions in Southern Mediterranean countries through the participation of a network of clinical centres and European experts connected with local structures through a specific platform with ICT Solutions and innovative scientific m-devices. The system integrates the resources of hospitals and service centres in the area and the

data collected on the field (diagnostic imaging, medical records, patient records, consultations, training etc.) through the network, optimizing the home care of the patient, reducing costs and improving the use of resources. Due to political uncertainty, the project still needs to be validated.

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.