



Organization in Special Consultative Status with the UN  
Economic and Social Council since 2005  
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24

# OCCAM

## OBSERVATORY ON DIGITAL COMMUNICATION

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**Observatory on Digital Communication**

# HISTORY AND PROJECTS

## BRIDGING THE DIGITAL DIVIDE

OCCAM, established by UNESCO in 1996, is a non-profit organization that works on the transformation brought by the Digital Revolution for global development, with a specific focus on fighting poverty through digital innovations. Since its founding, OCCAM has helped the world's poorest communities use ICTs in socially, economically, and environmentally demanding situations.



OCCAM President, Arch. Pierpaolo Saporito, with Staffan de Mistura at the inauguration of the OCCAM HQ in Milan.

The Infopoverty Programme, created within the UN framework, involves hundreds of international institutions and national bodies and is open to contributions from those harnessing the concrete promotion of human rights as part of their mission. Among the main projects presented during the Infopoverty Conference and realized by the Infopoverty Programme are the ICT Village Project, World Food Security e-Center, eMedMed, and 3D Robotic Building System.

OCCAM continuously renews its efforts to create a fairer, more inclusive, and sustainable Digital Society inspired by the United Nations 2030 Agenda and the famous SDGs (Sustainable Development Goals). Since the Infopoverty World Conference was established in 2001, OCCAM has been working on several main issues, including bridging the digital divide, creating digital repositories, equipping centers with services such as e-learning, e-governance, telemedicine, virtual incubators for start-ups, microcredit, digital botanic laboratories, and energetic alternative sources.

## GLOBAL ALLIANCE FOR ICT AND DEVELOPMENT (UNG@ID)

On the occasion of the meeting in Kuala Lumpur, Malaysia in 2007, the Steering Committee of the Global Alliance for ICT and Development (UNG@ID) certified OCCAM, the Observatory for Cultural and Audiovisual Communication "as proclaimed *Community of Expertise in E-Services for Development* assigned in the Focus Area: Governance, within the UN GAID Expertise Framework.



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# INFOPOVERTY PROGRAMME

## EMPOWERING SDGS AND FIGHTING POVERTY

The Infopoverty Programme was established to concretely help the poorest and most disadvantaged populations in the developing world through the use of Information and Telecommunication Technologies (ICTs). It operates as the executive arm of the deliberations of the Infopoverty World Conferences stated in the final declarations drafted at the end of each Conference. It puts into practice the guidelines issued by the Conference through the creation of the ICT villages model.

It is composed by:

- **Infopoverty World Conference:** It takes place every year in New York, at the UN Headquarters, via videoconference with parallel sessions with the European Parliament Liaison Office in Milan and in other prestigious Locations in various countries. It is the occasion for drafting and validating the Programme.
- **Infopoverty Seminars 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.



*Solar - ICT Village in San Ramon, Honduras*



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# INFOPOVERTY WORLD CONFERENCE

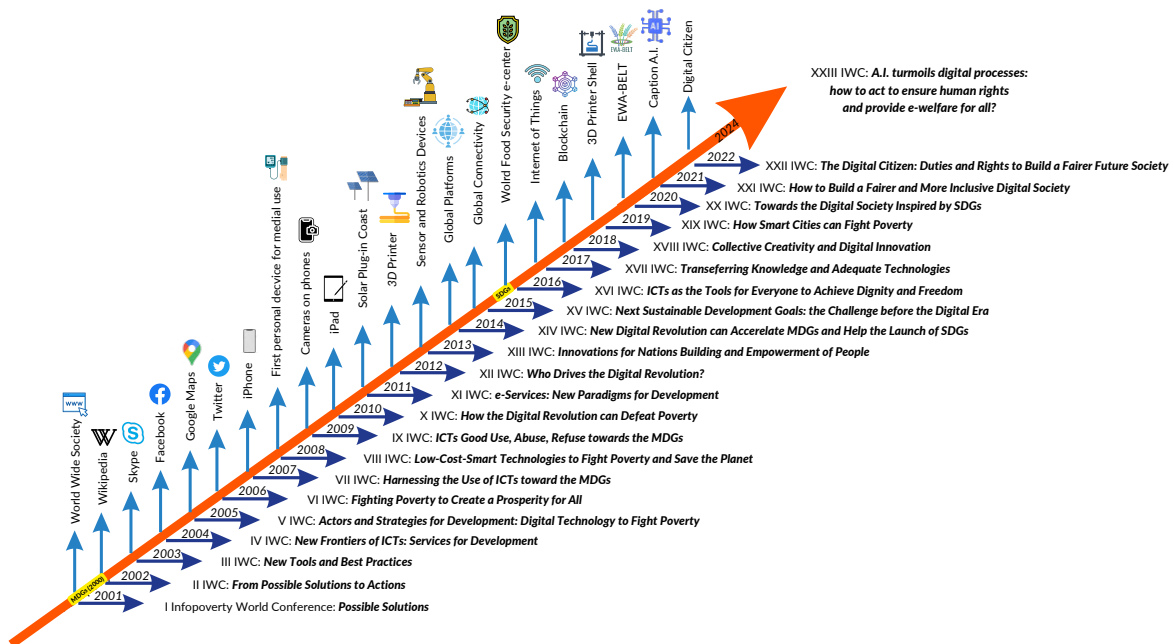


THE GLOBAL GOALS

## EMPOWERING SDGS AND FIGHTING POVERTY

The Infopoverty Programme operates as the executive arm of the deliberations of the Infopoverty World Conferences. Established in 2001, proclaimed key project and initiative during the United Nations General Assembly held on July 25, 2013; Sixty-Eight Session with the launch of the Millennium Development Goals, later denominated the Sustainable Development Goals (SDGs), the Infopoverty World Conference is an annual *UN Flagship Event*, taking place at the United Nations Headquarters in New York and live streamed on the official UN Channel UN Webcast, has been inserted in the UN Agenda for the past 22 years. Such a prestigious role has been strengthened by the rigorous and continuous search to find the best digital solutions and innovations apt to fight poverty – SDG1 – with contributions from eminent thinkers, experts, and field operators.

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.



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# THE WORLD SUMMIT ON THE INFORMATION SOCIETY - 2005

In the Framework of the World Summit on the Information Society OCCAM made a crucial step forward in the realisation of the Infopoverty Programme, and in particular for the creation of digital villages in the framework of the **UN Alliance for Rural Development**. On the occasion of the World Summit on the Information Society, among the actions of the Infopoverty Programme for 2006, the most important were:

- Replicability of the **ICT Village Model** for developing countries, such as Madagascar and the Dominican Republic, in the ambit of the UN Public-Private Alliance for Rural Development.
- Realization of the **satellite platform** for humanitarian and development services promoted by the UN System agencies and programs.
- Ville-Village initiative, for the **creation of digital twins** between local entities of industrialized Countries and developing countries.



*President of OCCAM, Pierpaolo Saporito, at the WSIS 2005*

In this high-level context, OCCAM confirmed its Status as the leading organization for the realization of digital villages aiming at fighting poverty through the ICTs, also thanks to the recent opening of the OCCAM Laboratories focused on the realization, certification, and diffusion of new products and services created to fit the needs of disadvantaged communities in emerging countries.

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# WSIS VILLAGE OF BORJ ETOUIL - TUNISIA

The project carried out by OCCAM in Tunisia created a set of infrastructures able to provide broadband satellite communication, Wi-Fi, and mobile phones, as in the most advanced countries of the world. The project is a concrete example of how a remote village can benefit from ICTs and of how ICTs if well-designed and used, can foster and accelerate development.

This particular project, different from remote villages, was on the outskirts of Tunis and with good connectivity. The project was prepared in partnership with the National Solidarity Fund and involved many institutions within Tunisia. Once the Feasibility study was completed, the Government of Tunisia took 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 ICTs.



*Community Tele-Center of Borj Etouil*



*Medical point of care in Borj Etouil*



*Local School equipped with digital class in Borj Etouil*

One of the lessons learned was that, due to the vertical and hierarchical structure of the administrative entities, introducing ICTs in a village 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 for the occasion, was on the basis of the ICT Village Model that was presented by the Tunisian Government at the World Summit on Information Society 2005, and that incorporated the lessons learned in the past.

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# ICT VILLAGE MODEL

The ICT Village model follows a flexible and easily replicable process of intervention in many areas of the world, providing various services designed to promote endogenous and sustainable development. The first ICT village project was carried out in 1999 in Honduras, hit by the devastating hurricane Mitch. Thanks to the use of solar panels, the supply of electricity was guaranteed. A connection up 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 exploit these new technologies and to connect to the rest of the world through e-commerce and e-government initiatives.

Throughout the years, OCCAM established several ICT villages around the world:

- San Ramon, Honduras
- Dagarà, Ethiopia
- Villa San Salvador, Peru
- San Salvador Norte, Dominican Republic
- Mahobong, Lesotho
- Jarapa, Ghana
- Borj Etouil, Tunisia
- Mais el-Jabal, South Lebanon
- Sambaina, Madagascar



Four sectors of intervention were identified as 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 primary and secondary schools but also for continuing education;
- E-agriculture to promote food security;
- E-governance: to enhance services related to public administration.

The modeling work was presented during the World Summit on the Information Society organized by the United Nations in Tunis in November 2005.



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# UN MILLENNIUM VILLAGE SAMBAINA, MADAGASCAR

Madagascar, the world's fourth largest island, is about 1,000 miles long and 350 miles wide at its widest and lies 250 miles off the East African coast. Economically considered a Least Developed Country, its population numbers about 17 million. An ICT-Model Village was established in Sambaina, Madagascar to promote the achievement of the Millennium Development Goals through the use of ICTs; provide broadband connectivity and innovative services to the community; and promote sustainable development and job creation. The ICT Village of Sambaina set a model for the UNPPA which can be reproduced in disadvantaged communities around the world. In 2007, Sambaina was proclaimed UN Millennium Village by Jeffrey Sachs, Director of the UN Millennium Project.

The community was first named an ICT (Information Communications Technology) Village in 2005 through the Infopoverty Programme, which provided **access to technology** through **classrooms equipped with computers**. In 2008, the Millennium Villages Project declared Sambaina a third-generation Millennium Village and contributed to technical expertise.



*The community of the UN Millennium Village of Sambaina, Madagascar*

The success of the model of intervention implemented in Sambaina exploits the ICTs as instruments to fight poverty and promote development also through the deployment of services such as e-learning, telemedicine, e-governance, etc. The great interest expressed by the local population and the immediate intervention made by the Government has made possible the **inauguration of a digital classroom** that will serve the more than 600 students of the community and be accessible to the inhabitants of neighboring areas, in order to accelerate the digital alphabetization of the community and create new jobs. This important initiative is part of the wider project aiming at the application of the ICT Village model, in which Madagascar and the Dominican Republic are identified as pilot Countries of the **UN Public-Private Alliance for Rural Development**.

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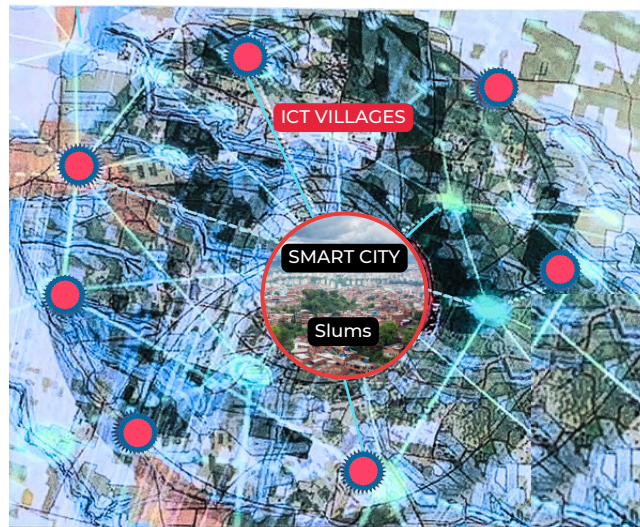
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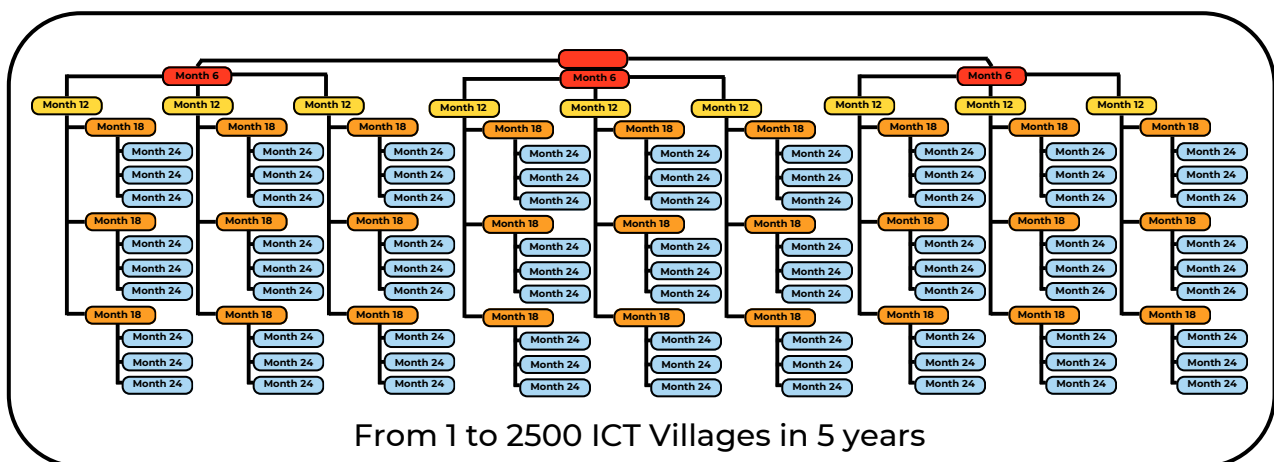
# THE REPLICABILITY MODEL

PRESENTED AT THE XIX INFOPOVERTY WORLD CONFERENCE AT THE UNITED NATIONS HQ, NEW YORK

The Sambaina Village methodology, applied through the ICT Village model, will deliver all essential services to the community. To support this, three individuals will be selected and trained in the system's operation, equipping them to establish telecenters in the village to provide remote assistance. This platform will create a robust digital framework, alongside a growth strategy aimed at driving exponential development in surrounding villages over a three-year period.



## EXPONENTIAL GROWTH OF THE REPLICABILITY MODEL



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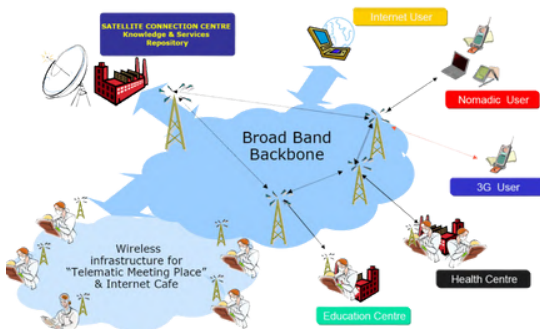
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# E-SERVICES 4DEV INFRASTRUCTURE

The Observatory for Cultural and Audiovisual Communication was proclaimed Community of Expertise for E-Services and Development under the aegis of GAID, The Global Alliance for Information Technologies and Development which prioritized information and communication technologies as powerful tools for further development encouraging the use of the United Nations convening power to bring together ICTD actors to contribute to the attainment of a development-oriented Society.

Technology and knowledge, that provide a transfer of appropriate digital services for rural development and urban nutrition, to overcome the existing gap, are fundamental and essential to update and strength operations with more advanced Information and Communication Technologies (ICT) solutions.



Global connectivity and smartphone large diffusion allow people to implement better life conditions for disadvantaged communities. To this aim, the E-Services Platform was provided as a Permanent structure event at the service of the UN Mission for the Sustainable Development Goals.



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# TELEMEDICINE

Telemedicine is a term that involves many fields: online medical reports, telehealth, remote medical examinations, remote monitoring, use of portable medical devices, etc. OCCAM has signed several agreements and a Memorandum of Understanding with experts in the field (i.e., the University of Insubria, International Society for Telemedicine, and eHealth) to provide basic healthcare services to all communities.



OCCAM and Insubria University have been working on the Remote consultation/Second opinion between healthcare professionals for the benefit of the patient. The purpose of the project is to provide shared action plans for the well-being of patients in developing countries with acute and chronic diseases of varying degrees.

Previewed activities will involve healthcare professionals of various fields capable of interpreting clinical questions using computer services and web-based computerized procedures. Special training courses for healthcare staff will guarantee successful service implementation. Specific tutorials will be available through short videos for didactics and explanations of medical-surgical maneuvers for each disease. Healthcare professionals involved in the project will organize outpatient clinics to collect the diagnostic and therapeutic doubts of the patients.

The Remote consultation/Second Opinion service will be able to realize an integration between the Varese/Como hospital and the territory of interested emerging countries that do not have Hospitals on site to create a "pre-hospital service".

It will be possible to provide a stable infrastructure for the creation and management of large clinical databases with a unified and shared structure in compliance with the most stringent security and confidentiality standards.

Visibility will be given to the scientific potential of the data collected to also serve as a catalyst for the influx of new public and private resources. Solutions and technologies to support disease management with a strong communication component among healthcare professionals for the benefit of patients will be evaluated, compared, and tested.

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# E-MEDMED 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 centers 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 centers 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.



The COVID-19 pandemic has made the necessity of collaborations between several institutions at an international and supranational level undoubtedly clear in order to solve the biggest challenges of today. In particular, Covid-19 has accentuated not only the need for more investments and adequate health systems but also, more importantly, the increasingly urgent request to provide medical support at a distance. It is in this context that the eMedMed could be expanded and applied to several disadvantaged instances.



*Presentation of the SmartBox for telemedicine at the UNHQ in New York on the occasion of the Infopoverty World Conference*



*A live-demo session of telemedicine on the occasion of the Infopoverty World Conference*

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# EXPO 2015 - WORLD FOOD SECURITY E-CENTER

The World Food Security e-Center (WFSeC) promotes agricultural development and food security by transferring technologies and knowledge from Italian universities and laboratories to underserved communities through a highly connected digital platform, utilizing sensors and robotic devices for data collection. After its presentation at EXPO Milano 2015, the project implemented its fundamental concepts in subsequent years. The primary objective of the World Food Security e-Center (WFSeC) is to offer digital services that facilitate agricultural development and enhance food security for those engaged in the transfer of technology and knowledge via digital platforms.



The WFSeC center consists of three main elements:

- **Service providers:** Digital service providers, such as specialized centers, colleges, and international organizations supported by the UN, can assess user difficulties, develop effective solutions, and provide them to the necessary users. The Center partners with AISSA, Desertification Research Centre of Sassari, PTP Science Park, Universities of Milan for EXPO, Confconsumatori, Ordine degli Ingegneri di Milano, Christopher D. Smithers Foundation, and Oklahoma University-Infopoverty Institute as Service Providers.
- **Service Users:** Institutions and communities in areas of need join the initiative to benefit from the Center's expertise and technology, and get support. Local centers for Service Users are being developed in Brazil, Sierra Leone, DRC, Ethiopia, Liberia, Madagascar, Lesotho, and Honduras.
- **Digital Platform:** Based on the IoT (Internet of Things), the Digital Platform is the hub of the system, receiving and sorting information from Service Providers to Service Users and connecting the apparatus using data from field sensors and robotic devices.

Following the endorsement of the WFSeC within the framework of EXPO Milano 2015, a research group was established to take the first step toward the development of a project on Sustainable Intensification (SI) in Africa.

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The Project has received funding from the European Union's Horizon2020 research and innovation programme under agreement No 862848



# EWA-BELT

## LINKING EAST AND WEST AFRICAN FARMING SYSTEMS EXPERIENCES INTO A BELT OF SUSTAINABLE INTENSIFICATION

EWA-BELT project aims at promoting food production systems through SI in representative small-holder farming systems of different agro-climatic areas of East (Ethiopia, Kenya, and Tanzania) and West (Burkina Faso, Ghana, Sierra Leone) Africa and, consequently, to realize an interregional African “belt” able to promote SI by assessing and exchanging best practices and experiences among different contexts.



Among the EWABELT tested technologies are:

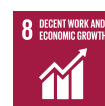
- Neglected Underutilized crop Species (NUS)
- Sustainable Soil Management
- Land Recovery
- Sustainable Water Management
- Agri-livestock integrated Management
- Pre and Post-Harvest Plant Protection
- ICTs for Plant Disease Detection and Diagnosis



Farmers and experts in action on the EWA-BELT FFRUs

## SOME RESULTS ACHIEVED SO FAR...

- Biopesticides such as neem oil extract and Cassia nigricans extract have shown promising results in Burkina Faso and Ghana, increasing yields of crops such as maize and cowpea.
- Combinations of organic fertilizers show increases of between 30 and 40% in the yields of target crops such as maize, fonio, groundnut, and various short crops.
- Aflasafe trials in Ghana and Kenya have resulted in low contamination for crops like groundnut, finger millet, sorghum, and maize.
- The use of stone bunds as a water management practice in Ghana increased soil moisture and boosted Sorghum yield compared to control fields.
- PlantHead Platform to promote real-time diagnosis and environment-friendly crop protection approaches has been tested on the field



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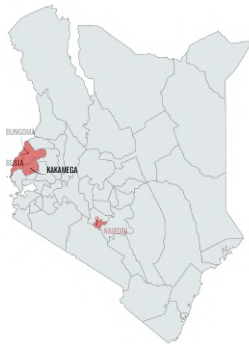


# EWA-BELT FARMER FIELD RESEARCH UNITS (FFRUS)

Within the EWA-BELT Project, a FFRU is conceived as a learning space, where research, restoration, innovation, demonstration, SI education, extension, and capacity building (workshops, field visits) are realized.

## KENYA

### KALRO FFRUs



### UoN FFRUs



## SIERRA LEONE

### UNIMAK FFRUs



## BURKINA FASO

### INERA & UNB FFRUs



### ACRA FFRUs



## GHANA

### KDC & CSIR-SARI FFRUs



## ETHIOPIA

### JIMMA FFRUs



### HU FFRUs



## TANZANIA

### NM-AIST, ICRAF, TARI FFRUs





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**Observatory on Digital Communication**

The Project has received funding from the European Union's Horizon2020 research and innovation programme under agreement No 862848

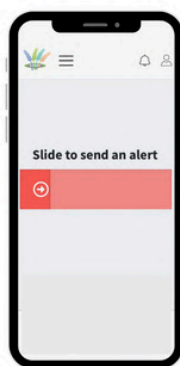


# UPSCALING THE GLOBAL PLATFORM TO FOOD-SECURITY APPLICATIONS

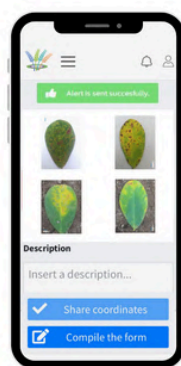
Providing ICTs to remote and rural communities has great potential for mitigating poverty and improving the socio-economic status of the beneficiaries. To reach such objectives, within the framework of the EWA-BELT Project, the PLANTHEAD Platform for plant disease detection has been developed. The rural villages involved in the Project implemented the platform applications using the remote plant detection service. This ICT system could be also endorsed for food - security, e-commerce, and telehealth diagnostics. those potential application will bridge the challenging needs of the communities in need to sustain local production and enhance the local Market structure. To this aim, the platform will leverage the technological disparities.

## PLANTHEAD PLATFORM FOR TELE-DIAGNOSTIC PLANT DISEASE DETECTION

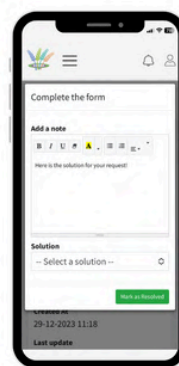
Based on the Internet of Things (IoT), wearable technologies, and mobile devices, PLANTHEAD allows for the creation of a database for scientific research and for the use of Artificial Intelligence for phytopathogenic recognition and diagnostics. Taking stock from the World Food Security e-Centre, the project introduced highly innovative cost-affordable technologies, to be used in the field by unskilled personnel. Among others: Smart Data Integration through images, text, and voice recognition, with geolocation; profiled users with secure access and data history tracking; web database to store any sort of information and geo-referenced data entry with geo-visual data navigation; centralized data collection, validation, and sharing; interoperability with external tools and scalable in functionalities; interoperability with IoT and intelligence services.



1. The farmer sends an alert



2. The farmer can provide informations, such as localization, photos, crop, a short description of the problem, etc.



3. The researcher in the competent node formulate a diagnosis and assign a solution to the ticket. The diagnosis is stored in the Platform Database for future use.



4. The farmer receives a notification of successful response for his request. Now the ticket is solved and the farmer can view the solution

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# FROM RURAL TO URBAN

## *HOW COULD A.I. ACCELERATE SDG N.11*



Following our expertise in rural development, OCCAM draws attention to the urban communities affected by poverty. These communities often face limited access to essential services, which deepens social and economic disparities. Through digital solutions and ICT-based models, OCCAM aims to provide access to e-services and facilitate knowledge exchange, fostering urban-rural linkages that reduce inequalities and improve quality of life.

### TOWNS AND VILLAGES: FROM THE DIVERGENCE TO THE CONVERGENCE

Rural areas struggle with inadequate infrastructure and limited access to primary resources. The living conditions deteriorate, and at the same time rural areas continue to be overlooked and underdeveloped. A balanced development approach, where rural areas strengthen their economies and infrastructure to support urban growth, can break the cycle of overcrowding and poverty in megacities. By improving conditions in rural regions, we can reduce migration pressures, promote sustainable growth, and foster shared prosperity, leading to a higher quality of life for both rural and urban populations.

### SUSTAINABLE HOUSING, WASTE MANAGEMENT & CLEAN ENERGY

On sustainable housing and energy, OCCAM has collected the best practices as well as the most efficient solutions to allow everyone to live in decent conditions all over the world. Learning from the enriching inputs that heterogeneous personalities have put forward during the seminars and conferences promoted, close to its mission to eliminate slums, reduce waste and poverty, providing basic e-welfare for all, OCCAM has endorsed several proposals and projects. Among these, the 3D Robotic Building System, an innovative technology project designed by the OCCAM ARCHGROUP aiming at providing large-scale housing for emarginated individuals and residents of slums quickly and efficiently, was selected at the "Resilient Home" Challenge 2019, which was promoted by the World Bank and UN-Habitat.



3D Printed constructions

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# CLEAN ENERGY SOLUTIONS FOR A DECARBONIZED FUTURE

OCCAM is actively collaborating with Giacomini S.p.A®, an Italian energy company dedicated to developing sustainable technologies, leveraging hydrogen for clean energy solutions. Giacomini S.p.A.® is advancing the decarbonization process in rural areas through the HYDROGEN BOX project®, unveiled at the 23rd Infopoverty World Conference. This project leverages hydrogen technology to offer a sustainable energy storage and management solution, addressing the intermittent nature of renewable energy sources like wind and photovoltaic.

## HYDROGEN BOX FOR CLEAN ENERGY BY GIACOMINI SPA®

The HYDROGEN BOX embodies Giacomini's commitment to sustainable innovation, delivering scalable, safe, and environmentally friendly energy solutions to rural areas. By enhancing energy reliability and supporting decarbonization, this project contributes to a cleaner, greener future.

HYDROGEN BOX main components:

- **Hydrogen Catalytic Combustor:**

Generates heat through catalytic combustion of hydrogen, emitting no CO<sub>2</sub> or NO<sub>x</sub>—only water vapor.

- **Electrolyzer:** Splits water into hydrogen and oxygen, enabling renewable energy storage in the form of hydrogen.

- **Hydrogen Tanks:** Ensures safe storage of hydrogen for future energy needs.

- **Fuel Cell:** Converts hydrogen back into electricity, offering a reliable and on-demand power supply.



Components of the HYDROGEN BOX

- **AI-Powered Energy Management System:** Optimizes system operations for maximum efficiency and sustainability.
- **Pre-assembly Approach:** Systems are pre-assembled at Giacomini's facilities, ensuring high-quality standards and streamlined global deployment.
- **Scalability and Flexibility:** Tailored for diverse geographical and climatic conditions, the HYDROGEN BOX is a versatile solution for rural and remote areas worldwide.
- **Maintenance and Lifecycle Management:** Designed for simplicity, the system minimizes maintenance challenges and maximizes lifespan, with centralized refurbishing capabilities.
- **End-of-Life Recycling:** Engineered for easy disassembly, its components can be recycled with minimal environmental impact.

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## GALLERY



*Technological Hub of communication in Borj Etouil, Tunis*



*Computer supply for e-learning systems in Sambaina, Madagascar*



*The classroom in Sambaina Village*



*John Steffens and Pierpaolo Saporito at the UN Millennium Village of Sambaina*



*Digital Classroom in Sambaina, Madagascar*



*The UN Millennium Village, Sambaina, Madagascar*

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# GALLERY



Opening of the 23rd InfoPoverty World Conference, held on April 12, 2024, at the UNHQ in New York



President Pierpaolo Saporito with Enzo Bianco on the occasion of the EUROMED Conference in Catania, 2016



Undersecretary of State, H.E. Alberto Barachini, Pierpaolo Saporito and H.E. Marco Romiti at the 23rd IWC



A group of farmers from the EWA-BELT Project in Burkina Faso



A group of farmers from the EWA-BELT Project



Farmers from the EWA-BELT Project

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# Contact us



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