

# Energy and connectivity mesh grid pilot in Mali



Non-discriminating access for Digital Inclusion  
Pilot in Rural Areas for Information for All



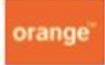
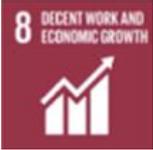
**Tanzania**

- health as basis for development
- reach women and girls
- towards global digital health



- Mali**
- Energy
  - Connectivity

Partnership for Information for All

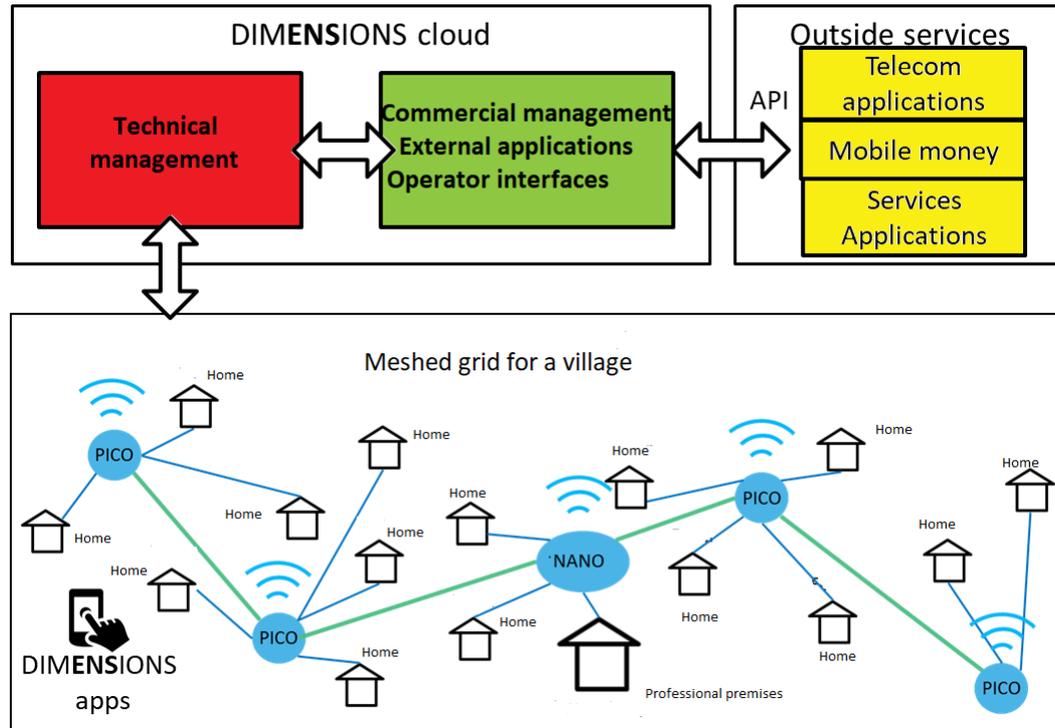


**18-19 May**  
Erwan Le Quentrec  
Orange Labs Research



# A decentralized mesh mini-grids? An answer to the challenges of a "dynamic" and sustainable electrification

The Startup **DIMENSIONS** 's promise: a solution between the SHS and the centralized mini off grid



# Achievement of the various milestones

## T1 actors' involvement

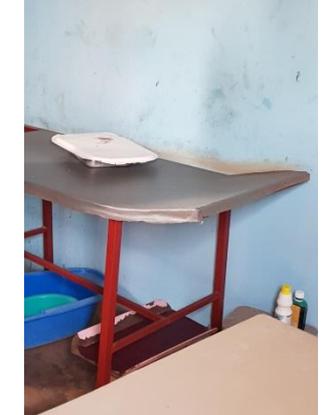
- Report describing: the detailed tasks of the local entrepreneur and the tasks of DIMENSIONS, the geographical deployment and the chosen architecture. **(done)**

## T2 solution configuration

- Report describing: The targeted usage, the chosen configuration
- Technical system Configured in France **(done)**
- Service platform on cloud (Management system **done**, customer interface under development **end June**)

## T3 POC Deployment

- A full system delivered in Africa with 1 PICO and 1 Nano connected and managed by the service platform on the cloud (equipment **shipped**, deployment in Kassela **in June**)
- Usage analysis from the data acquired on the service platform **(September)**
- A final report giving a synthesis on the technical test and on the observed usages plus some proposals to deploy the solution for exploitation at a village scale a minima **(December)**



# Thank you

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# Prototype of a Pico system and the shelter where it will be installed



... leading to 2 products for individual and professional or collective needs



## PICO

User target: small group of households in neighborhood (around 10 Households per PICO)

**Basic electricity needs** are estimated between 50 and 100kWh/person/year for lighting, education, health and communication

Technical characteristics:

- Production capabilities: **2.5kWh/day** ensured in the worse conditions
- **Direct Current distribution on short**



## NANO

User target: Collective usage (pumping, water treatment, public lighting, health house, schools, **ICT**, ...) & professionals (craftsman, cooperative, ice production & cooling, irrigation,...)

Technical characteristics:

- Production capabilities: **5 kWh / day**
- **Direct Current distribution on short distance & alternative current for professional applications**

### Industrialisation

All components on the shelves, system integration is subcontracted, the added value is in the software developed by DIMENSIONS

## An architecture based on 8 features ...

**DIMENSIONS products integrate 8 features which simplify operations for their customers (B2B):**



**PV energy production & longlife storage (10 years)**



**Low cost metering integrated in the architecture**



**Direct Current distribution on short distance for energy efficiency (Telcos solutions). Alternative current remains possible**



**Micro payment: daily or prepaid package. Pay as you go solution**



**DIMENSIONS products are connectable to ensure energy sharing & optimization. It strengthen resilience**



**Mobile application: energy efficiency, usage monitoring, dashboard,...**



**Distant management for operators (tele-maintenance, billing)**



**Cloud based server for: billing, energy optimization, tele-maintenance, ...**

## What is tested during the pilot?

- Evaluated the involvement of the local actors
- Validate the technical solution and the cost of the kWh/day.
  - At this stage DIMENSIONS approximates it at 0.68 € per kWh/day (0.84 € with the margin)
  - Capacities to deploy and maintain the solution
- Test the *InfoInternet* model and the sustainability of the spot with additional services
- Test the concept of a minimum sharing energy (energy are a fundamental right). In urban areas Electricity is sold at 0.20 € kWh
- Approximate the revenue generated with a mixed model: 3-4€ fees par month + a the revenue generated through a pays as you go solution. To equilibrium the model the minimum is around 10 € per month for a Pico line
- Push sales (TV, small appliances, internet access, etc.) thanks to digital finance (Orange Money and pico credit) **at the InfoInternet spot**
- Facilitate entrepreneurship
  - Demonstrate how to **gain in productivity** with new tools for local businesses (**cereal mill, water filter, welding station**)