



(Angela D'Angelo)

UMOBILE Project, Kick-off Meeting

February 26th-27th, 2015

University College of London (UCL), London

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  - Many regulatory certifications (ISO 9001, It. DM.314/08, WISP licence, ...)
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- Two business units:
    - **AFA Engineering**: designing and building broadband networks, integrating fiber optic and wireless techniques
    - **AFA Industrial**: MajorNet production; MajorNet is a smart platform for managing Internet presence and unified communication
  - **R&D lab**: involved in national and international projects
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Beyond Internet access sharing: AGGREGATE BROADBAND USER'S DEMAND

- the better way to cope with telcos users/contents discrimination
- the better way to obtain "net-neutrality" and overcome "fast-lanes", etc.

Extensive, planned deployment of 802.11ac (HiperLAN2) technology over an (urban) area

## FIRST MILE

[www.primomiglio.org](http://www.primomiglio.org)

## THE WIRELESS CITY

[www.lacittawireless.it](http://www.lacittawireless.it)



AFA Systems has financed the realization of IP broadband networks for many cities, on the basis of Project Financing contracts. The success of project is in the cost reduction and the strong innovation brought to the Municipalities.



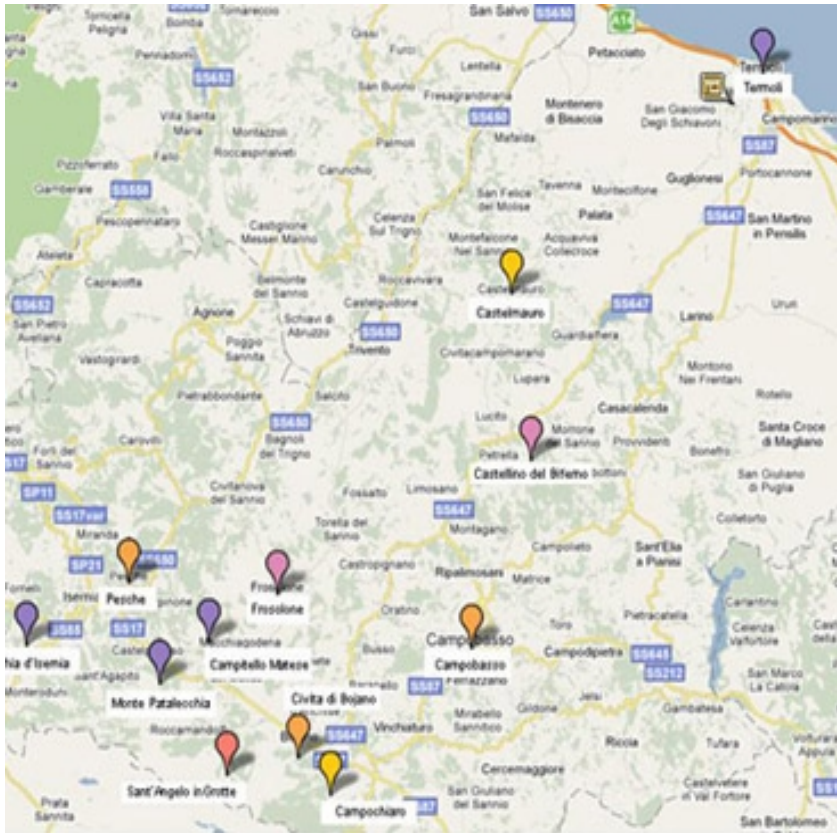
The systems provide the integrated satellite communications with the Regional Operation Centers, making possible Internet access, VoIP, fax, videoconferencing and access to the internal geographic information system.

The vehicles were widely used after the L'Aquila Earthquake in 2009. One of the vehicles remained in operation for 18 months at the Arischia refugee camp.



- AFA Systems's **video surveillance solutions**, analytics software **(i.e. smoke detection)**, and video management software allow public safety organizations to integrate IP video surveillance, access control, and emergency response solutions with existing network infrastructures and legacy technology, where necessary.
  - The **mass notification system** enables organizations to send notifications to individuals or groups using lists or locations. This comprehensive notification keeps your contacts informed before, during and after all critical events, incidents, and emergencies.
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# MajorNet<sup>®</sup>

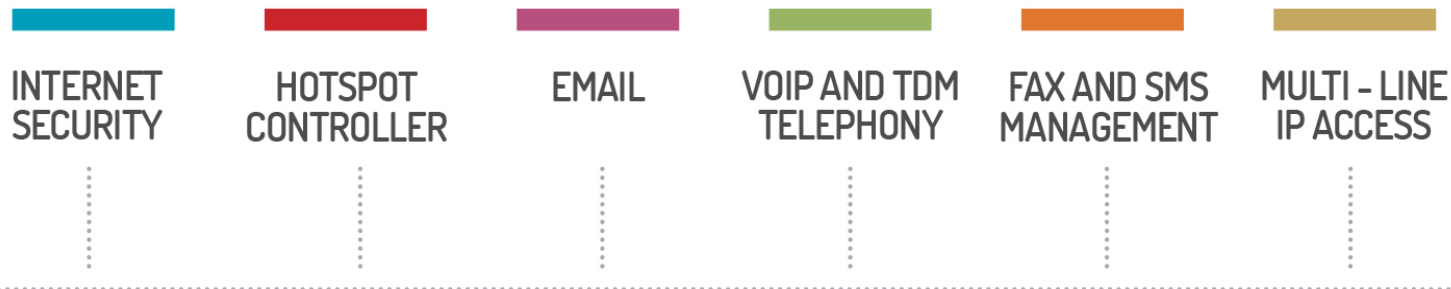
MAKE SMART YOUR INTERNET EXPERIENCE

THE SMART PLATFORM FOR MANAGING YOUR INTERNET PRESENCE AND  
UNIFIED COMMUNICATIONS

**[www.majornet.it](http://www.majornet.it)**

(the english version of the website is under construction)





**MANAGE** - All network activity, from communications to user-generated Internet traffic, are efficiently managed and optimized by the MajorNet platform which enables you to regain control of your Internet footprint.

**INTEGRATE** - Different MajorNet functions can be hosted on different systems or on the same system by choosing from a wide range of models and configurations differentiated for specific features and numbers of users.

**PROTECT** - The user-aware and user defined perimeter gateway, that is not just-IP-address based, makes it indispensable in large and small networks for protecting internal nodes and monitoring all Internet activity.

**DEPLOY** - The industrial grade hardware is subject to continuous quality controls during the production process to ensure high reliability. For the highest reliability, the MajorNet platform can be configured in redundant clustering.

- Active Project:
    - **Smart Node**
      - To find out routing techniques based on **dynamic, not-invasive, measurements of the quality parameters of a network**, choosing the best paths (respect to a service) among nodes.
      - To deliver rich multimedia and interactive communication through the WebRTC protocol.
      - To optimize voice communication over Satellite based on Header compression techniques
-

## Physical link topology

- L1. Internet wired (ADSL) DOWN:8Mbit/s UP:0.128Mbit/s
- L2. Internet wired HDSL2 (SHDSL, G-SHDSL) DOWN:2Mbit/S UP:2Mbit/S
- L3. Internet Mobile (UMTS) DOWN:8Mbit/s UP:2Mbit/s
- L4. MAN Wireless 5GHZ P-t-MP DOWN:8Mbit/S UP:8Mbit/S
- L5. MAN Wireless 5GHZ a P-t-P DOWN:32Mbit/S UP:32Mbit/S
- L6. MAN/INTERNET Satellite 2Mbit/s UP:0.512Mbit/s

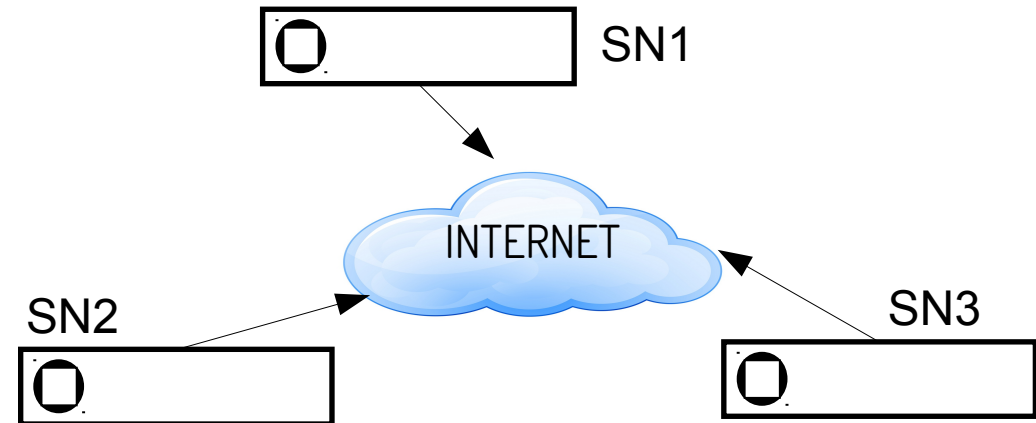
## Path topology between two endpoints:

- T1. P-t-P Point to Point
- T2. MP-t-P MultiPoint to Point
- T3. Star
- T4. Mesh

Typical real application scenarios match one of the combinations given by the matrix  $L \times C$

- Experimental Results**

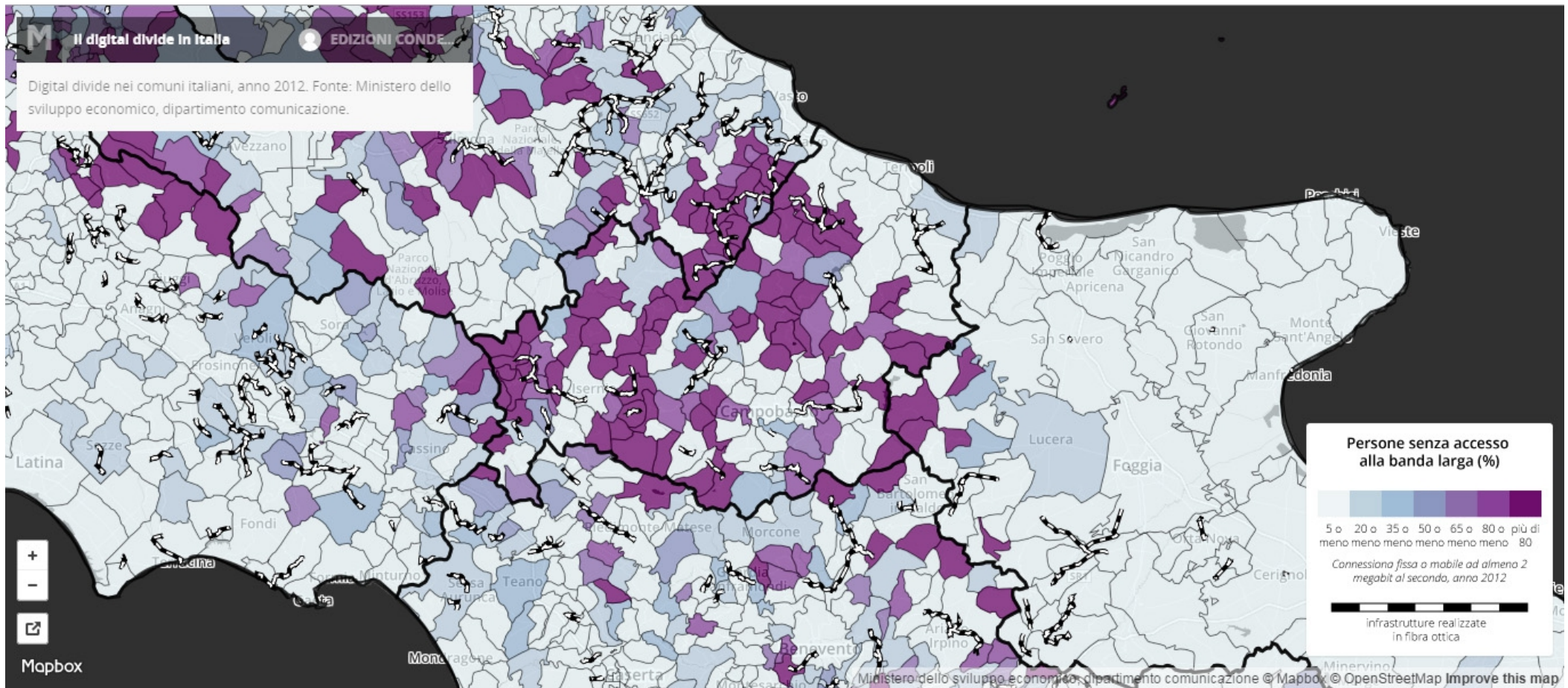
- Bandwidth seems to be the most representative metric in most applications (?!)
- The bandwidth estimation algorithm shows good results (except in the satellite scenario)
- Very slow measure method (2mins)
- On-the-fly meters (Bandwidth, RTT, Packet Loss) integrated in MajorNet
- Environment to evaluate the quality of the path between two Smart Nodes



	SN1	SN2	SN3	...
SN1	-	plot	plot	plot
SN2		-	plot	plot
SN3	plot	plot	-	plot
...	plot	plot	plot	-

- **On-the-fly quality evaluation of a network**, choosing the best paths (respect to a service) among nodes (i.e: Smart Node Continuation)
  - Exploitation of the **disaster prevention scenario**
  - **Digital divide** is still widespread in Italy
  - **Reachability of the node** is still a big issues with italian operators (abroad?)
    - every node should be reached through a direct IP path from all the other nodes (public routed IP address, no NAT, ...)
-

## Digital Divide map of center of Italy





As a system integrator AFA Systems is specialized in bringing together component subsystems into a whole system ensuring the correct functionality

- **WP1 - Project Management**
    - contribute with reports and participation to the scheduled meeting and conference calls
  - **WP2 - System requirements and specifications**
    - Task 2.2 - System and Network Requirements
    - Task 2.3 - System Deployability Design
      - AFA will utilise its expertise in design of wireless platforms to set architectural and operational requirements
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- **WP3 - Systems & Node development architecture**
    - Task 3.3 - Smart routing based on social interaction approach (tecnalia + copelabs + afa + ucam)
      - AFA Systems will contribute on the development of the smart routing mechanism (?)
  - **WP4 - Services enablement**
    - Task 4.2 - Data collection and contextual inference
      - AFA Systems will contribute on the development of a filtering model to interpret collected data based on specific parameters (user and network based) as well as specific utility (qoe) function
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- **WP5 – Overall platform integration and validation**
    - Task 5.1 – Definition of the validation setup
    - **Task 5.3 – Proof-of-Concept**
      - AFA Systems will lead the task, contributing to the development of the UMOBILE prototype
  - **WP6 – Dissemination, Exploitation and Standardization**
    - We lead the WP
    - Task 6.1 – Dissemination
    - Task 6.2 – Exploitation
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## Task 5.4 – Deployment Trial → **AFA is not in!**

- 1) AFA Systems is ICT supplier of Civil Protection Department of Regione Molise and Civil Protection Department of Regione Umbria
  - 2) Many installations of 802 .11ac networks for **natural disaster monitoring**
  - 3) Many installations of 802 .11ac networks in **urban areas** (i.e: the wireless city projects)
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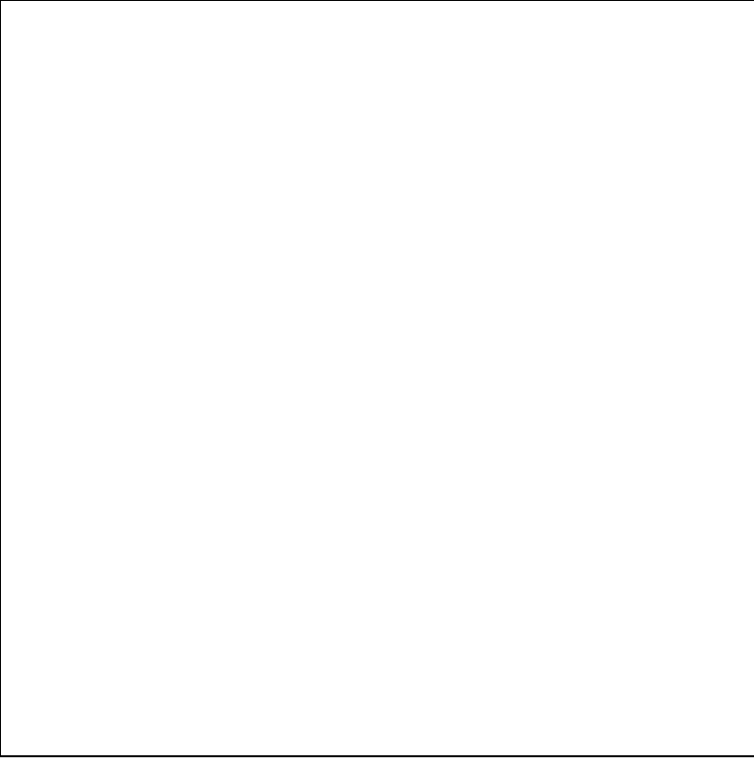
THANKS FOR YOUR ATTENTION

[www.afasystems.it](http://www.afasystems.it)

[www.majornet.it](http://www.majornet.it)

[contact.us@afasystems.it](mailto:contact.us@afasystems.it)

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## AFA ENGINEERING TRANSPORTABLE SATELLITE IP COMMUNICATIONS

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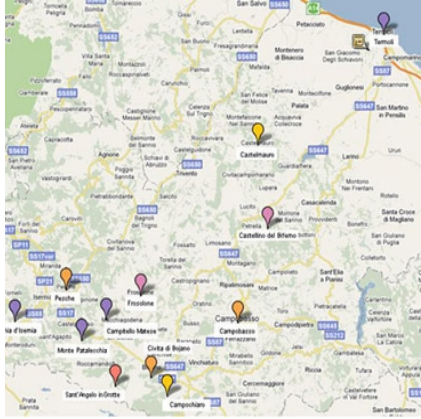
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# AFA ENGINEERING VIDEOSURVEILLANCE SYSTEMS





**AFA INDUSTRIAL**  
**THE MAJORNET**

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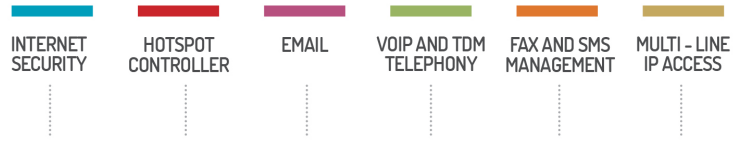
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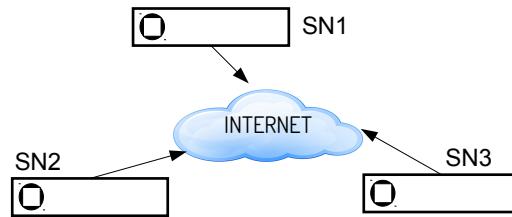
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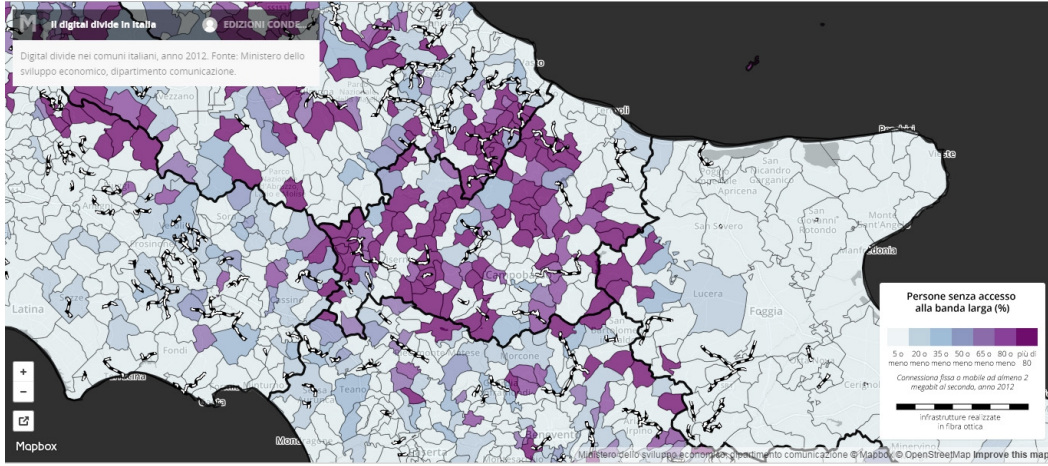
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