



WINNER

Dedicated Mobile 4G LTE Network for industrial users



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Contents

- Company profile
- Market needs
- Select Use cases

Company profile

Company Profile

- ❑ Athonet is a technology company that has developed a complete compact **Software-only Mobile Core Network**, called PriMo, which runs on common-off-the-shelf (COTS) hardware supporting 3G, 4G & WiFi technologies including macrocells and smallcells
- ❑ **Athonet's fully virtualised mobile core** allows superior LTE dedicated network solutions to be deployed at a fraction of the cost of inferior technologies such as TETRA, WiFi etc.
- ❑ PriMo mobile network is currently up and running in several situations around the world and winner of **Glomo Awards 2016 as Best Solution for Growing Smaller or Independent Networks**



Market needs

Fundamental communications issues to solve....

VERTICAL MARKET ISSUES



**Enterprises,
Smartgrid
Smartcity,
Mission Critical
and Public Safety**

- Require High SLA's that conventional mobile core deployments cannot provide
- Need very low latency, reliability and high security for mission critical & industrial automation applications
- Need to be able to prioritise traffic for emergency or time sensitive data
- Need in-building and campus wide coverage that LTE provides better than WiFi – and also redundancy and resilience if backhaul goes down in an emergency or other situation
- Customers need visibility and control of their networks as they can with WiFi but cannot without a dedicated mobile core
- Need to be able to provide Network Slicing for different types of traffic and applications



ATHONET

Low Latency & High Security

ISSUES

- Need very low latency (10's ms) and high security for mission critical & industrial automation applications
- Normally requires dedicated fibre connectivity which can be prohibitive for geographically diverse businesses or large campuses
- Fixed solutions do not support mobility
- WiFi is not an option due to reliability, prioritisation
- Conventional cellular cannot guarantee such latencies across the whole network

SOLUTION

- Dedicated mobile network reduces the transit and backhaul requirements to the operator core and allows very low latencies
- Prioritisation capabilities ensure that mission critical/time sensitive traffic has priority and latency is not affected by other traffic
- Customers can directly monitor network performance in a way not possible on conventional mobile cores

Traffic Separation & Prioritisation

ISSUES

- Most use-cases will see an enterprise with different types of users and multiple modes of traffic contending for network access – mission critical, time sensitive, executive communications, everyday operational communications etc.
- Conventional cellular service cannot differentiate between these users and modes in the way that a private LTE network can
- Enterprises require that the network differentiate between user roles and types of traffic, prioritizing and separating traffic accordingly

SOLUTION

- Dedicated mobile core allows user profiling, prioritisation and access management
- By deploying a dedicated mobile core for the customer, a dedicated high security overlay network is created that also allows further user definitions in terms of white-lists and prioritisation
- IT department can manage access and prioritisation in real time according to business needs and use cases.

Coverage, backhaul and redundancy

ISSUES

- Industrial Automation, safety at work, surveillance, communication requires secure dedicated wireless communications as fixed line is often prohibitive in cost and does not provide ubiquitous coverage
- WiFi is not suitable for wide area coverage and does not provide the access and traffic management control that LTE does
- LTE offers superior coverage characteristics with data rates stable up to the cell edge compared to the attenuation on WiFi
- The cost of WiFi access points can be relatively high and complex to manage compared to LTE on large campuses
- Licensed LTE also allows higher power transmission than WiFi providing better coverage

SOLUTION

- Dedicated core allows the operator to “slice” its existing base stations or provide dedicated LTE access via smallcells in the capex
- It also permits greater flexibility in spectrum bands as higher frequency bands, often underutilized in remote areas, can be used for industrial sites
- The dedicated core also allows the network to be secure (local traffic stays local), resilient and provides redundancy in a situation where the backhaul is down or operator core is unavailable
- Operator also benefits by shifting all local traffic to the customer’s intranet

Visibility and Control of Networks

ISSUES

- Whilst the advantages of LTE over WiFi are often well understood by customers, a big barrier to moving services to LTE are the loss of control by the IT department over the customer's internal network
- Whereas WiFi allows the IT Manager to identify, monitor and control each device, access point and network link, moving these services to the operator's LTE network results in loss of control.
- Coupled with lack of reliable SLAs, enterprises find their devices in a "black-box" with genuine issues for the operator in terms of identifying network faults or integrity

SOLUTION

- Dedicated mobile core allows the customer's IT department to retain visibility of the network and its elements
- Operator benefits as it can off-load network management to the customer's IT department
- Athonet's mobile core is extremely IT friendly and has very simple GUI interfaces that allows IT departments to manage the network
- Installation and provisioning is very simplified as it can be deployed on standard IT servers or enterprise data centres

SLAs

ISSUES

- For the issues identified in the preceding sections, operators have been unable to provide SLA's resulting in customers pursuing suboptimal build-to-suit networks using WiFi and other complementary services

SOLUTION

- Using dedicated mobile core, the mobile operator is able to provide guaranteed SLAs
- Athonet's user interface allows the operator and customer to monitor KPI's in real time, identify and rectify faults and provide a very high level of customer service and satisfaction
- This transforms the service model between customer and operator resulting in a more rewarding relationship for both

Verticals – Select References

Enel Smartgrid Phase II – 2014 – Power Plant Communications

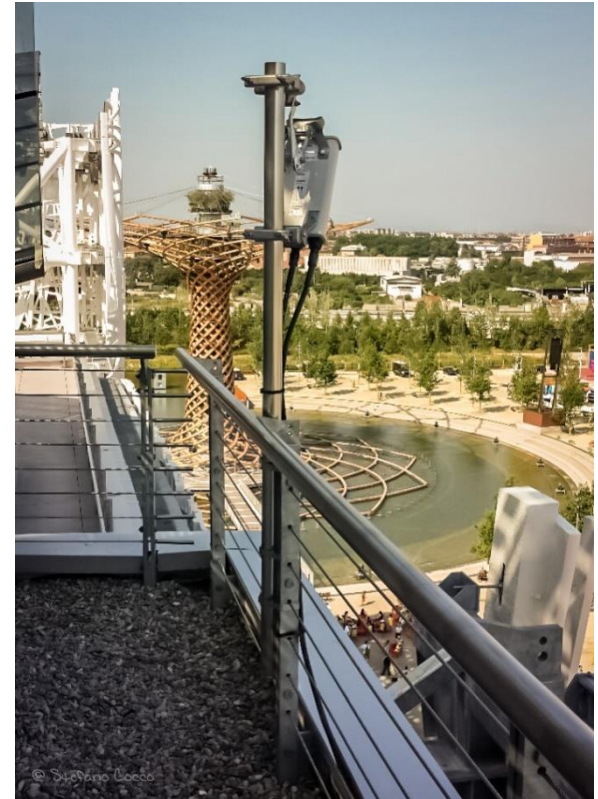
- ❑ Dedicated TD-LTE coverage of one of Europe's largest and most advanced power plants including indoor and underground rooms in collaboration with operator H3G
- ❑ Dedicated coverage of adjacent construction site for new coal storage domes
- ❑ Complete mobile Intranet (data, voice, video) on standard tablets, smartphones and dongles
- ❑ Integration with utility ICT infrastructure and enterprise PBX
- ❑ Very low latency access to sensors, video cameras and LAN
- ❑ Integration with safety-at-work applications for power plant and building site personnel



LTE for Broadcasters – Milan World Expo 2015

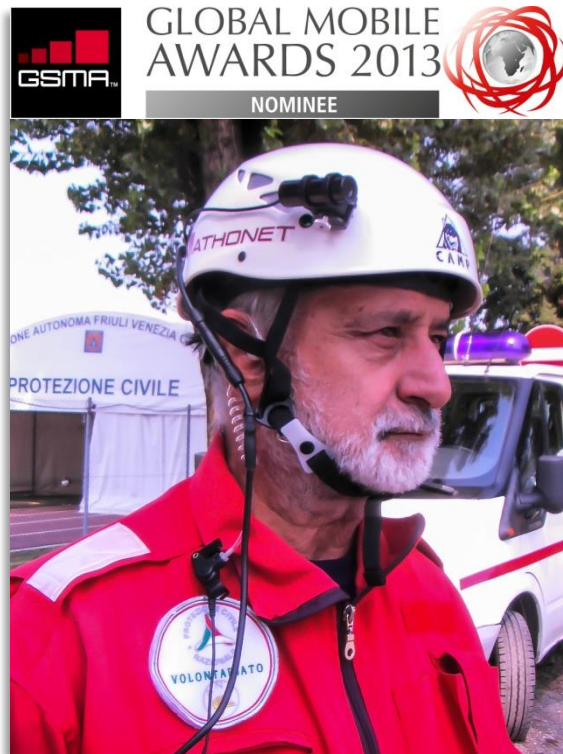


- ❑ Rai Way, Italy's state-owned transmission and broadcasting network provider, in collaboration with Athonet has deployed a ground-breaking private LTE network dedicated to serving the high performance connectivity needs of RAI's television and radio transmissions within the large area covered by EXPO 2015 World's Fair in Milan.
- ❑ This dedicated broadband wireless network has enabled Rai Way to manage its site communications and connect mobile high definition TV cameras, radio locations and its Media Center in real-time.
- ❑ The private LTE network can be installed very rapidly allowing Rai Way to provide real-time wireless broadband connectivity to cover events and provide images in real-time from specific areas of interest even during critical situations when public networks become congested.



First LTE solution in earthquake disaster - 2012

- ❑ **PriMo** supported both professional uses (video surveillance, work force management) and public access for civilians (Internet and voice for tent camps)



Smartcity Brazil - 2014

- ❑ Smartcity LTE network in Brazil
- ❑ Complete data, video, voice solution
- ❑ Work force management, video surveillance, mission critical communications (PTT, group call, ...)
- ❑ HD real time video images from fixed and mobile cameras
- ❑ Voice and video communications between field personnel and control room
- ❑ M2M for monitoring and maintenance activities



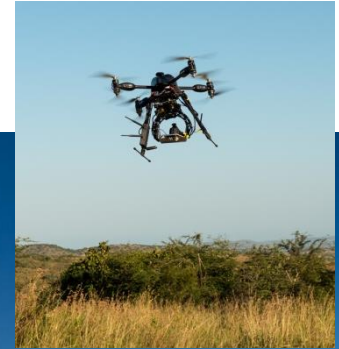
LTE High Definition Video - 2014

- ❑ Nurburgring circuit LTE coverage by Deutsche Telekom
- ❑ Standalone LTE network for High Definition Video professional broadcasting
- ❑ Complete data, video, voice solution
- ❑ Car race coverage transmitting High definition images in real-time from fixed and on-board cameras
- ❑ Multi-screen (Picture-in-Picture)
- ❑ Real time cockpit images
- ❑ Telemetering data transmission
- ❑ Live streaming of event for local and remote viewers with individual choice of camera views



Wildlife conservation - 2014

- ❑ Standalone LTE network in Africa
- ❑ Complete data, video, voice solution
- ❑ Wild life conservation
- ❑ Anti poaching activities
- ❑ HD real time video images from drones
- ❑ Data from many sensors, fixed video cameras
- ❑ Voice and video communications between people on-field
- ❑ Work-force management from control room



Army tactical support - 2016

- ❑ Standalone LTE network
- ❑ Solution fully outdoor based on compact rugged server and 5+5 Watt small cell
- ❑ Complete data, video, voice solution
- ❑ Crypto communications
- ❑ Connection with helicopter flying at 200 km/h
- ❑ HD real time video images from drones
- ❑ Voice and video communications between people on-field
- ❑ Work-force management from control room

