



# **Mobile and wireless technologies and their applications in Industrial environment**

**-- *stories from the trenches* --**

*IEEE Instrumentation and Measurement Society  
Wireless and Telecommunication in Measurements*

*TC-13 Technical Committee Meeting*

*14<sup>th</sup> of October, Faculty of Electrical Engineering Iasi, Romania*

**Quartz Matrix *Iasi***

## Quartz Matrix

- 20 years of experience in Engineering, IT&C and Software Development;
- Certified ISO (9001- quality, 14001 - environment, 18001 – work health and security & 27001 – information security);
- Certified by the Nation Authority for Energy – ANRE – for energy audits, energy management and energy efficiency evaluation ;
- Active R&D Department focused on high value solutions for industrial and professional markets;
- Partnership with worldwide leaders (Eaton, Schneider, Axiomtek, Pramac, Microsoft, IBM, HP, Cisco, Molex, GE Security, Honeywell);
- Own software development team and Data Center with advanced software cloud services (energy management, remote machine control, productivity applications)

## Industrial services

- Developed base on a strong Business Case;
- All services are designed for maximize user's value;
- Solutions developed based on solid Engineering standards;
- Success key – mastering IT, software and communication technologies and system integration;
- Agile (SCRUM) project Management for rapid requirements and technology change response;
- Seamless integration of fixed/cable/wireless and mobile communication technologies;
- Maximize Information Confidentiality, Integrity and Accessibility through the use of latest technologies.



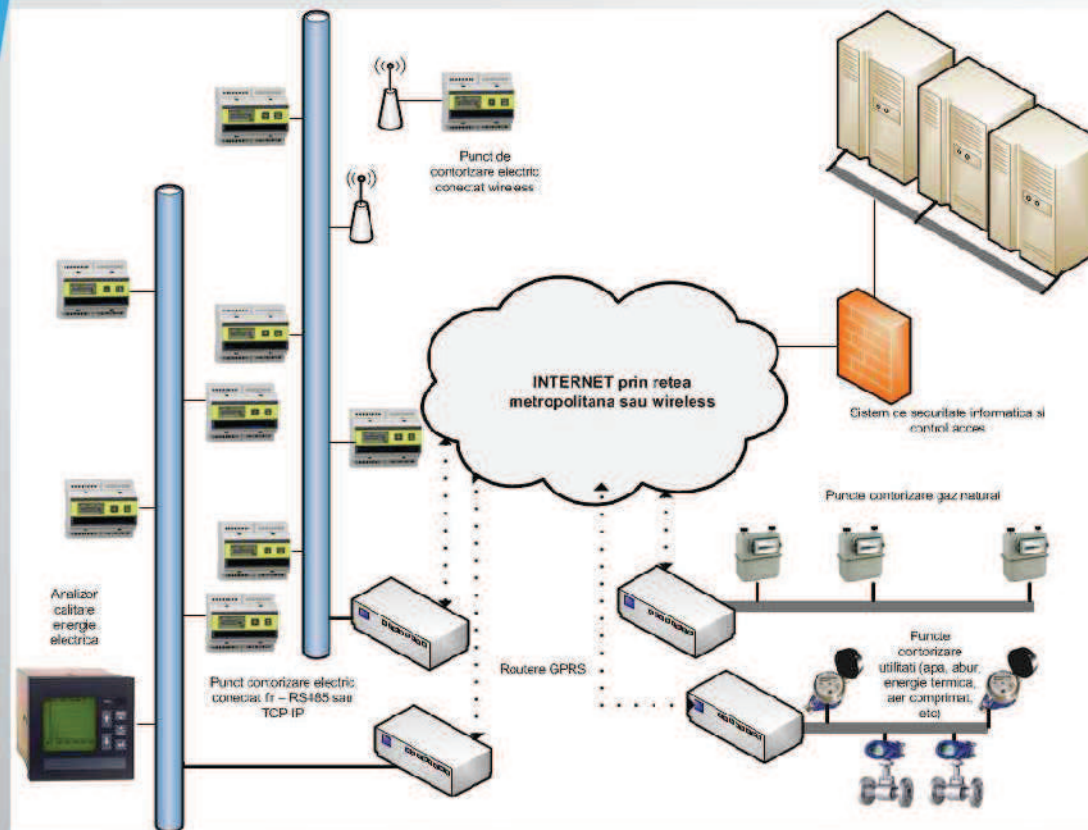
# **Industrial Applications Of Wireless Technologies**

## **Quartz Matrix Story**

- Data Communication-the backbone of Industrial Systems in Digital Factory.
- The use of the right mix of fixed to mobile, wire to wireless technology maximize the reliability, the security and the speed of data networks.
- Speed, Security and Flexible Deployment are basic requirements for data networks in digital factory.
- Need for more open standards, more flexible inter-standard gateways and more secure data-links. Update of standard data protocols is required (Modbus/Fieldbus) to accommodate with new high speed wireless standards.
- Attacks most often used: Denial of Service, Middleman. Need for multiple path and dynamic reconfiguration (self-healing) of industrial data networks. Agile approach on both wireless standards and M2M data protocols.

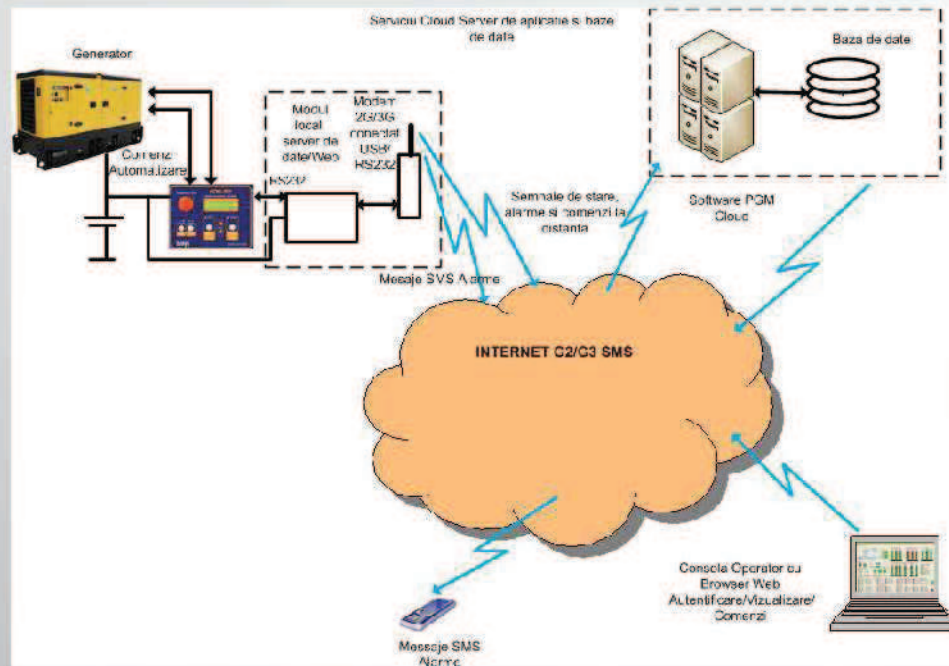


# Case study 1 ENET Energy management



- Combined GPRS and RS485 standard, GPRS / Ethernet / Wi-Fi / RS485
- Multiple paths to reach a metering device. Secured VPN for metering information.
- Secure user Access for cloud application SSL

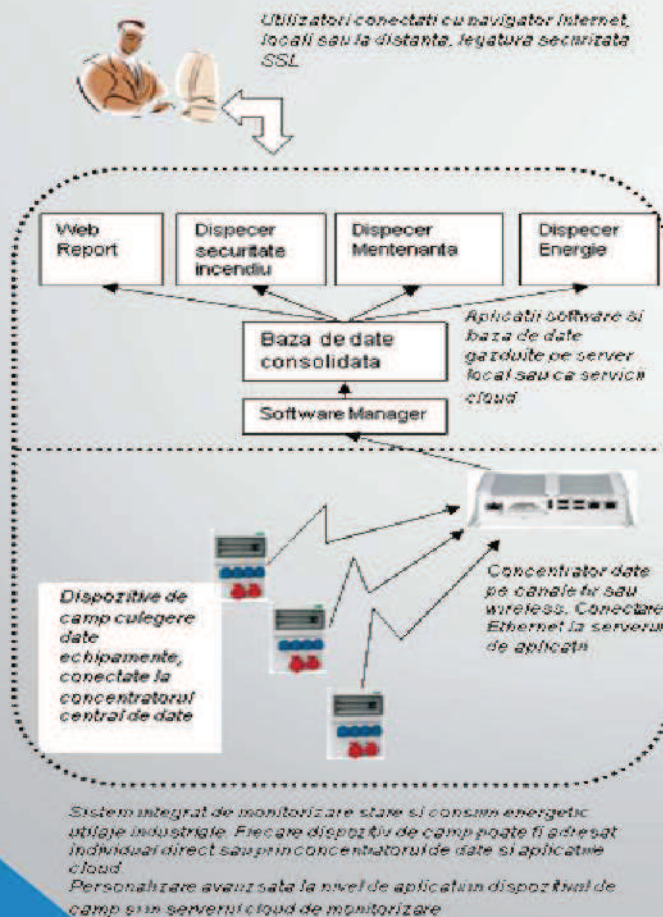
## Case Study 2 Mobile Remote Control of Power Generators GPRS



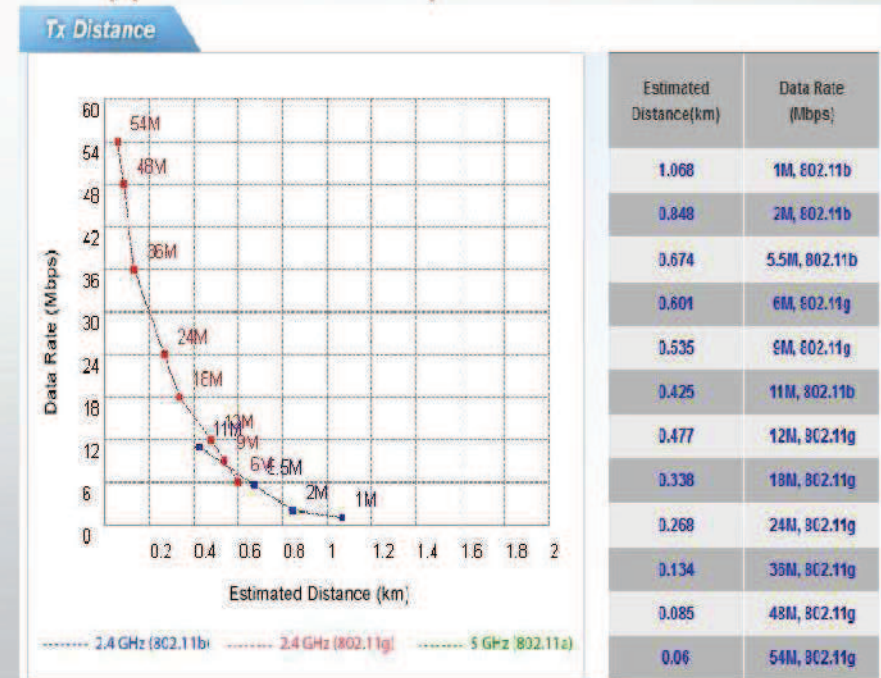
- Large area (country wide) distributed remote control for power generators.
- Smart programmable GPRS modem, able to send SMS alarms.
- Secured VPN
- Cloud software application



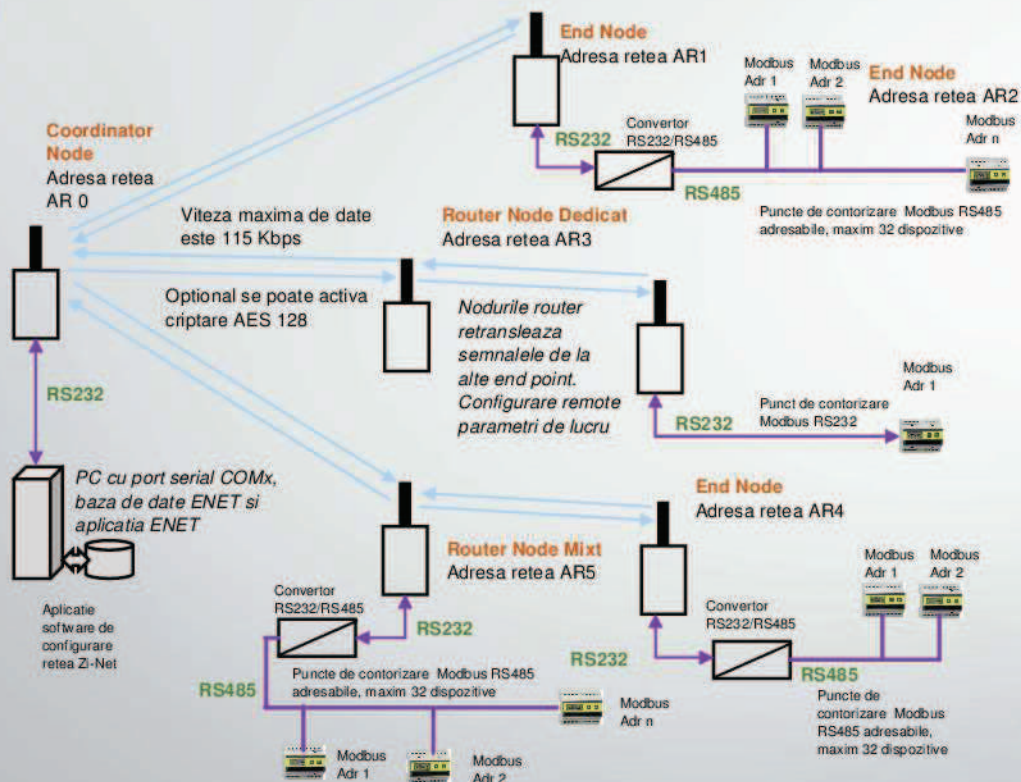
# Case study 3 Maintenance System based on Wi-Fi Communication at Factory Floor IEEE 802.11.x



- Local wireless (Wi-Fi) data network for machine maintenance (predictive maintenance based on working hours and load level). High Power multimode dual frequency devices
- Cloud based application with separate user and machine VPNs



## Case study 4 Smart Meter Reading ZigBee IEEE 802.15.4



- ZigBee mesh network for smart metering, factory wide.
- Use of High power ZigBee coordinator, end-device and routers to extend reach.
- Encrypted data link
- Secure network with no automatic network registration