COMMUNICATIONS SOLUTIONS FOR SMART MANUFACTURING

micro-link

SOLUTION 1
PRIVATE COMMUNICATIONS NETWORK

- **Brief Description of the Solution:**

For the needs of communication across the factory, a private mobile network (PMR) is being implemented, providing integrated communications platform with advanced features which ensure a secure and efficient communication and reduce the total cost of communication. Integrated communications include people-to-people, people-to-machine and machine-to-machine.

- **Partner:** Motorola Solutions

- **Micro-Link role:**
  - System Integrator of Motorola solutions for Manufacturing (Motorola Solutions Platinum Partner for Croatia)
  - Application Developper (Motorola Authorized Application Provider)

MOTOROLA SOLUTIONS

MOTOROLA SOLUTIONS
PLATINUM VALUE ADDED RESELLER

AUTHORIZED APPLICATION PROVIDER
MOTOTRBO™
MOTOROLA SOLUTIONS

CONNECTED WORKPLACE SYSTEMS

- **PEOPLE**
- **MACHINES**
- **SENSORS**
- **DEVICES**

Industrial Internet of Things (IIOT) connects 'things', such as machines, to talk to each other. Smart manufacturing or Industry 4.0 adds a more holistic view so all elements involved are connected – people-to-people, machine-to-machine, people-to-machine – using an array of sensors and devices.

20-25% [5]

Average improvement in productivity in organisations with connected employees

MOTOROLA SOLUTIONS TEAM COMMUNICATIONS FOR MANUFACTURING

ANY TEAM MEMBER

EXECUTIVE
- Instantly contact all employees with PTT app
- Monitor emergency talkgroups
- Stay connected from anywhere

PLANT MANAGER
- Communicate with front line workers using a PTT web client
- Monitor any GPS tracking and workflow applications from the same device

DISPATCH
- Dispatch team members using an integrated console or web client
- Communicate with management when needed
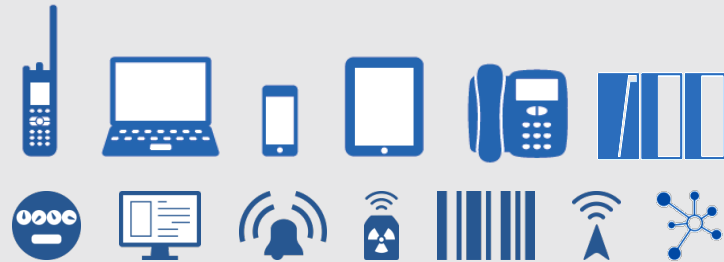- Monitor alarms, GPS tracking and workflow applications

PRODUCTION
- Leverage a purpose-built device for the simple communications and enhanced durability
- Work order ticketing and GPS tracking integration
- No recurring costs

ANY NETWORK

- LAND MOBILE RADIO
- CARRIER NETWORK
- WI-FI
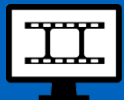- LAN
- TELEPHONY

ANY DEVICE

ANY APPLICATION

- Work Order Ticket Management
- Dispatch Solutions
- Asset Management
- Alarms and Telemetry
- WAVE™ PTT

SCENARIO

- A technician is driving a fork truck across the shop floor. She's wearing a **heavy-duty headset**, so her hearing is protected, but she can stay connected.

- One of the machines on the line sends her a low pressure **alert**. It's received as a text, which her radio reads out loud.

- She goes to the chemical store to get hydraulic fluid. The radio senses that she's in a hazardous environment and activates the "**Lone Worker**" feature.

- She discovers a safety issue in the chem store, and needs to talk to her supervisor. The supervisor is out of town, but he is still reachable on his **WAVE** communicator.

SAFETY VIDEO

PRODUCTIVITY VIDEO

SUMMARY

UNIFIED TEAM COMMUNICATIONS FROM MOTOROLA SOLUTIONS HELP MANUFACTURERS

- Implement smart manufacturing practices

- Connect workplace systems

- Drive competitive advantage

  - Boost efficiency
  - Increase productivity
  - Improve safety

SOLUTION 1
MICRO-LINK DEVELOPPED APPLICATION

EXAMPLE 1:

Increasing the range of Bluetooth barcode scanner

By integrating different communications technologies (PMR & Bluetooth), Micro-Link developped the solution for extending the reach of existing Bluetooth barcode scanner accross the manufacturing plant and/or warehouse. From estimated standard reach of 10m, the reach of barcode scanner can be extended to more than 500m (indoor), which makes the operations much easier and flexible, and saves the time and costs ito additional equipment.

Extending the range of barcode scanner

Standard range: 10m

Extended range: >500m

12345678

SOLUTION 2
WI-FI BASED SOLUTIONS

- **Brief Description of the Solution:**

The important component of manufacturing plant or warehouse today is a high-performance and reliable Wi-Fi network that connects all Wi-Fi clients – mobile terminals, scanners and computers. The network can also be used for on-line employee access via tablets and video surveillance and sensor and RTLS applications.

By implementing professional Wi-Fi solutions intended for industry applications, we ensure coverage of large production units and / or warehouses with an optimal number of access points in order to increase the efficiency while maintaining reliability of the barcode system or Internet access via Wi-Fi.

- **Partner:** Ruckus Networks

- **Micro-Link role:**
  – System Integrator of Ruckus Networks wireless & wired solutions for Manufacturing (Ruckus Networks Authorized VAR and Authorized Training Partner)
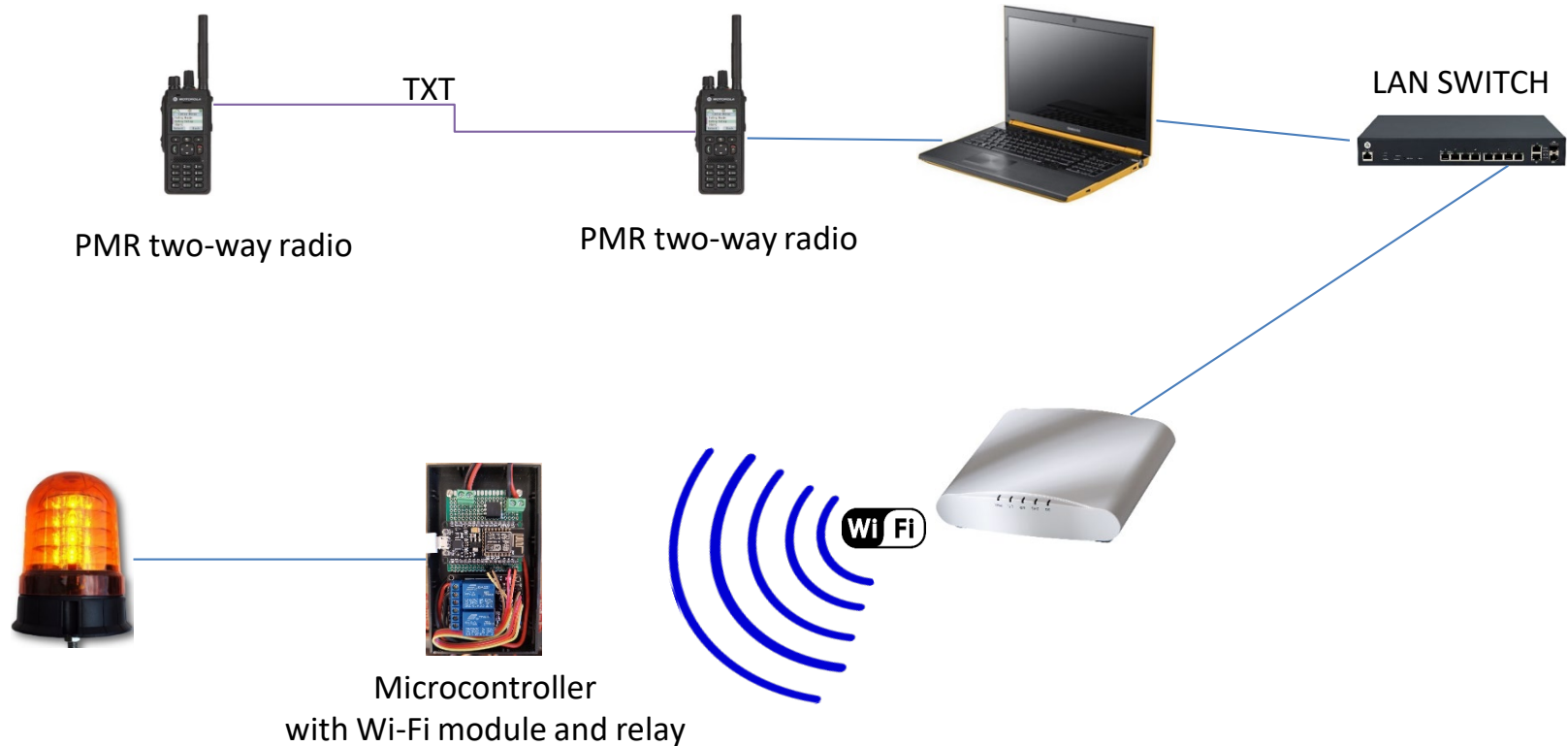
SOLUTION 2
MICRO-LINK DEVELOPPED APPLICATION

EXAMPLE 1:
Integrating Wi-Fi with PMR & IoT for alarm applications

By integrating different communications technologies (Wi-Fi & PMR) with IoT, Micro-Link developped the solution that can be sucessfully implemented as a part of procedures for detecting alarms and alerts in manufacturing plants or warehouse areas and reacting to certain security events.

Alarms & Alert application: Using Wi-Fi technology for integration of PMR, telemetry & IoT solutions

TXT

LAN SWITCH

PMR two-way radio

PMR two-way radio

Wi Fi

Microcontroller
with Wi-Fi module and relay

SOLUTION 3
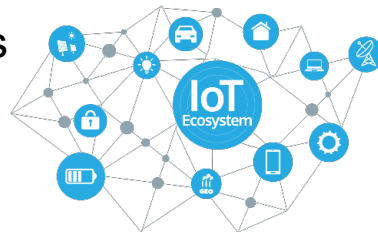# IOT APPLICATIONS IN MANUFACTURING

- **Brief Description of the Solution:**

With the focus on process optimization and rationalization of maintenance costs, IIoT (Industrial IoT) applications open up unmatched possibilities in automation, smart manufacturing, tracking the position of goods and machines and their status or general conditions in the plants.

- **Partners:** varios vendors of IoT components, different IoT tehnologies and protocols supported (LORA, Sigfox, BLE, Zigbee, etc.)

- **Micro-Link role:**
  - System Integrator of various IoT solutions, technologies & components
  - Dedicated IoT R&D team and laboratory

SOLUTION 3
MICRO-LINK DEVELOPPED APPLICATION

EXAMPLE 1:
Integrating PMR & IoT for alarm applications

By integrating different communications technologies (PMR & IoT), Micro-Link developped the solution that can be sucessfully implemented as a part of procedures for detecting alarms and alerts in manufacturing plants or warehouse areas and reacting to certain security events.
The solution Micro-Link developped consists of
- Data collection over LoRa and programming database
- Integrating of LoRa with PMR and GSM
- Development of application server and software

Integration of PMR telemetry & IoT solutions

Computer (application) – display of the sensor parameters

PMR digital two-way radio device – alert when monitored parameters reach the values outside of defined range (limits)

Mobilne phone

Application server

Database

Core network – LoRa Network Server

Ethernet, 3G/4G

LoRaWAN Gateway

LoRa sensor – measuring temperature, vibration, movement, etc.