



15th Automotive SPIN

Building Cybersecurity on Plant

Impacts on Manufacturing processes

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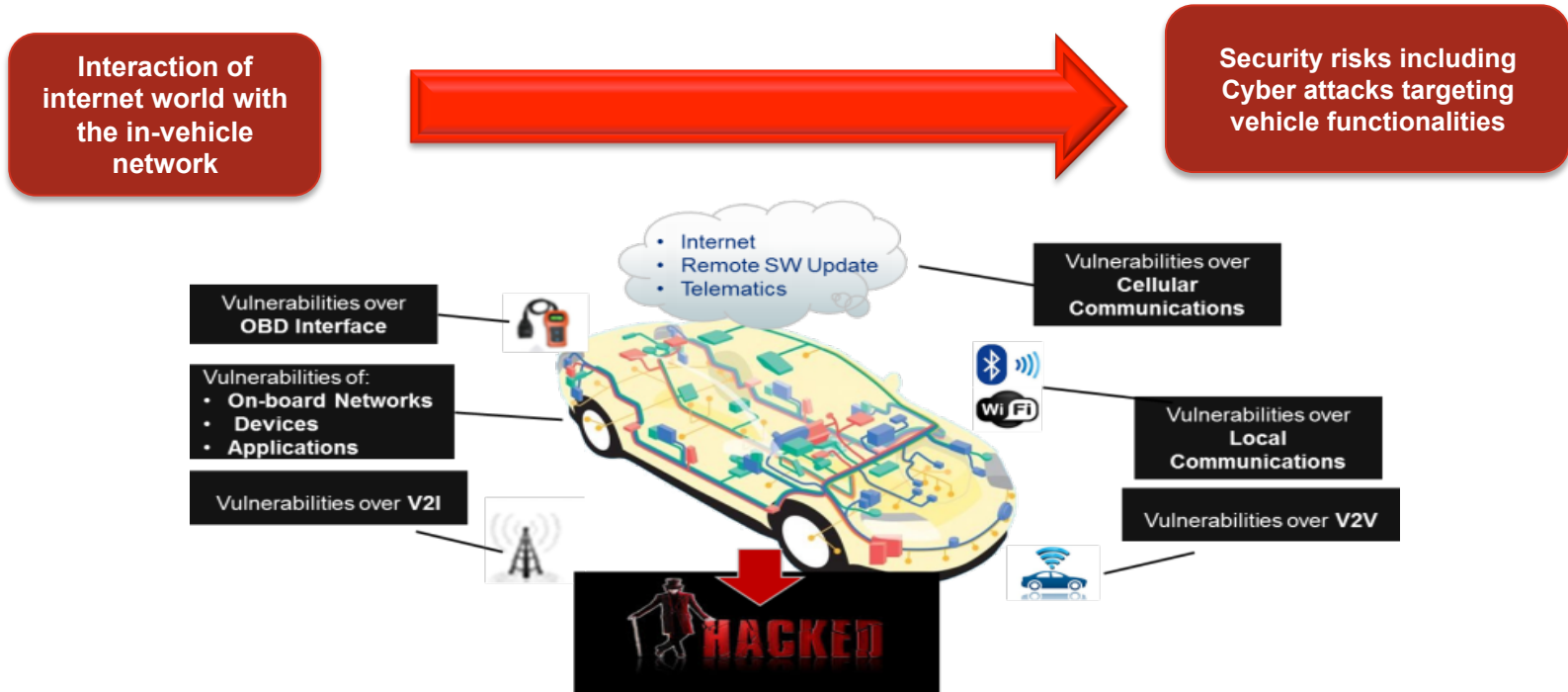
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Previously on Cybersecurity

Overview – Cybersecurity Use cases



Forecast is to have all cars connected to the Internet by 2025

Similar scenario to what happened in PC world in the nineties

Cybersecurity Project

Project Goals

GOAL

Protect Commercial Vehicles from Remote Cyber Attacks

Attack

SOLUTION

- Isolation of systems with external access
- Restriction of the EOBD port to authorized parties

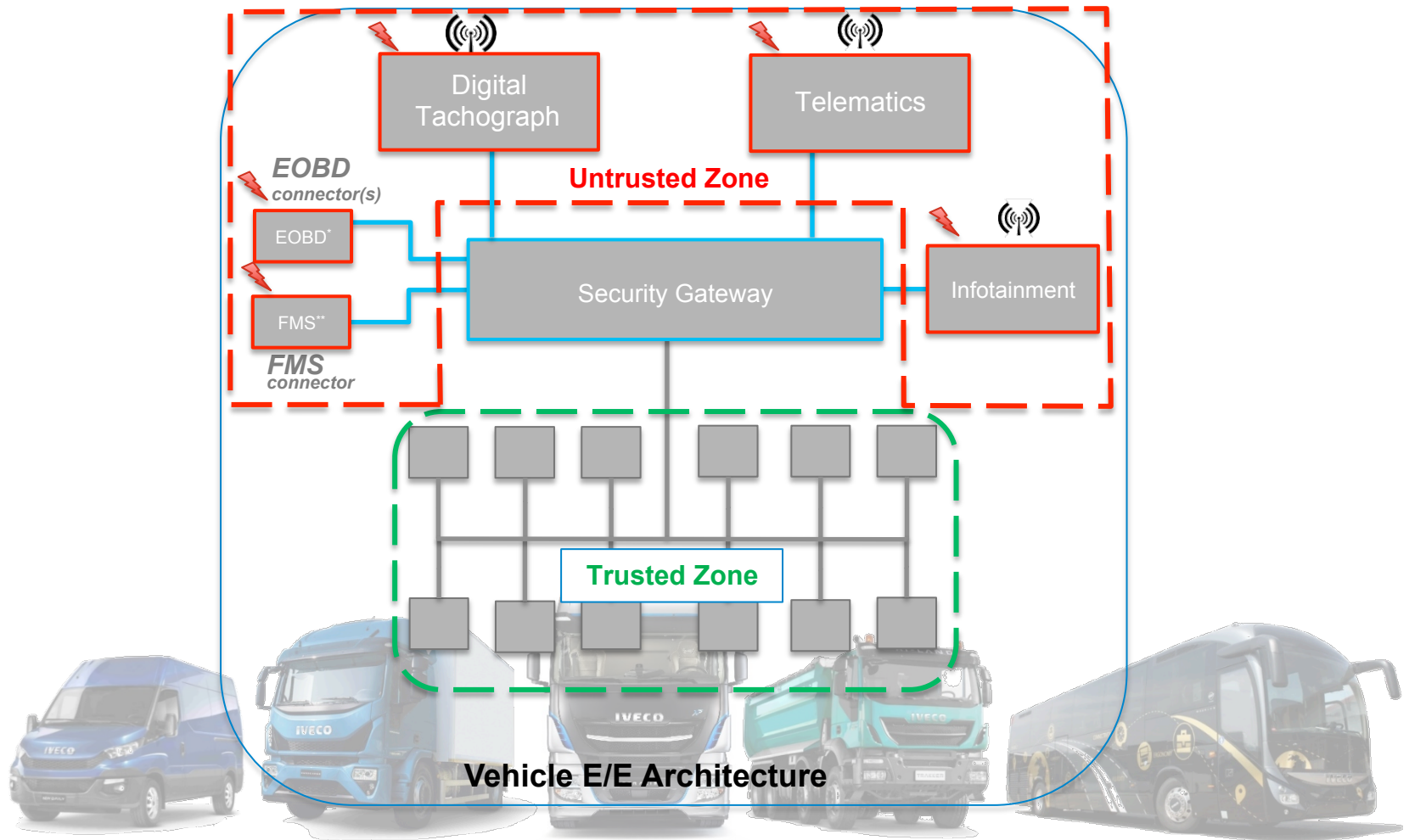
These types of attacks are considered most dangerous because:

- **Range:** unlimited (in case of vehicles with internet connection);
- **Target:** all vehicle with remote access (WiFi, 3G/4G)

- The isolation of the system with external access (**Untrusted Zone**) and of vehicle connectors from the rest of the E/E Architecture (**Trusted Zone**) is implemented by means of the **Security Gateway ECU**
- Restricting the EOBD connector access only to authorized parties, by means of **Authenticated Diagnostic Access** (that requires a Public Key Infrastructure)

Cybersecurity Project

Security Gateway solution



Legend	
EOBD	European On Board Diagnostics
FMS	Fleet Management System

Automotive Cybersecurity

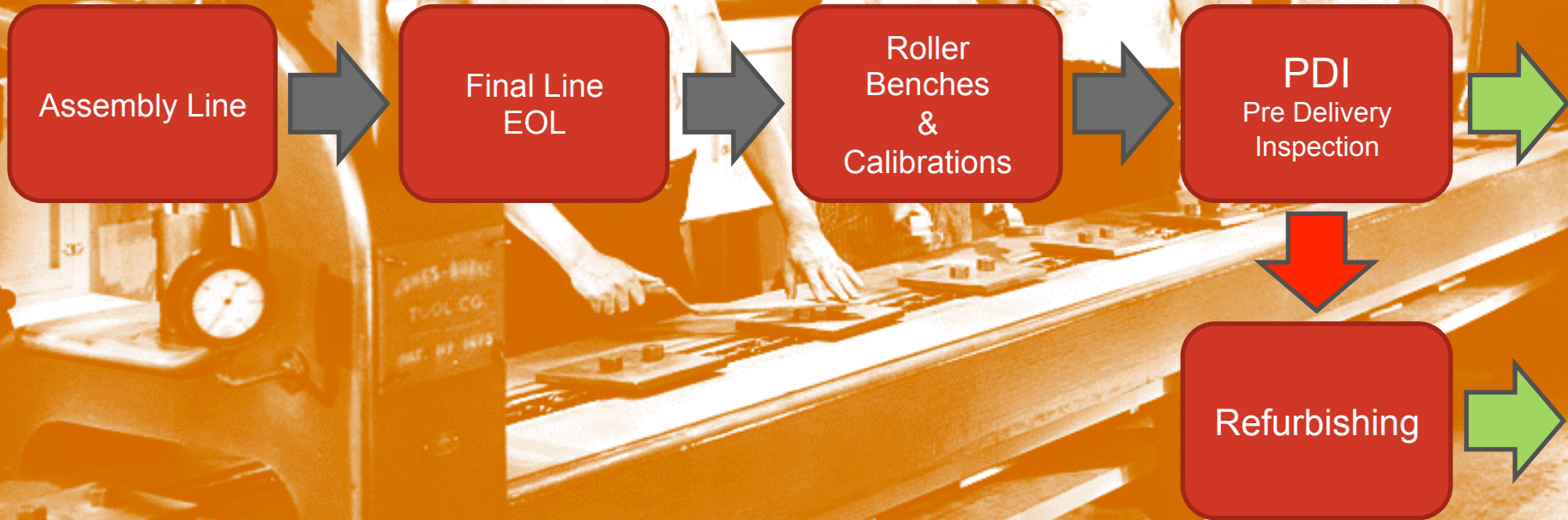
Possible impacts



Process

Impacts on Manufacturing Process

Plant operations

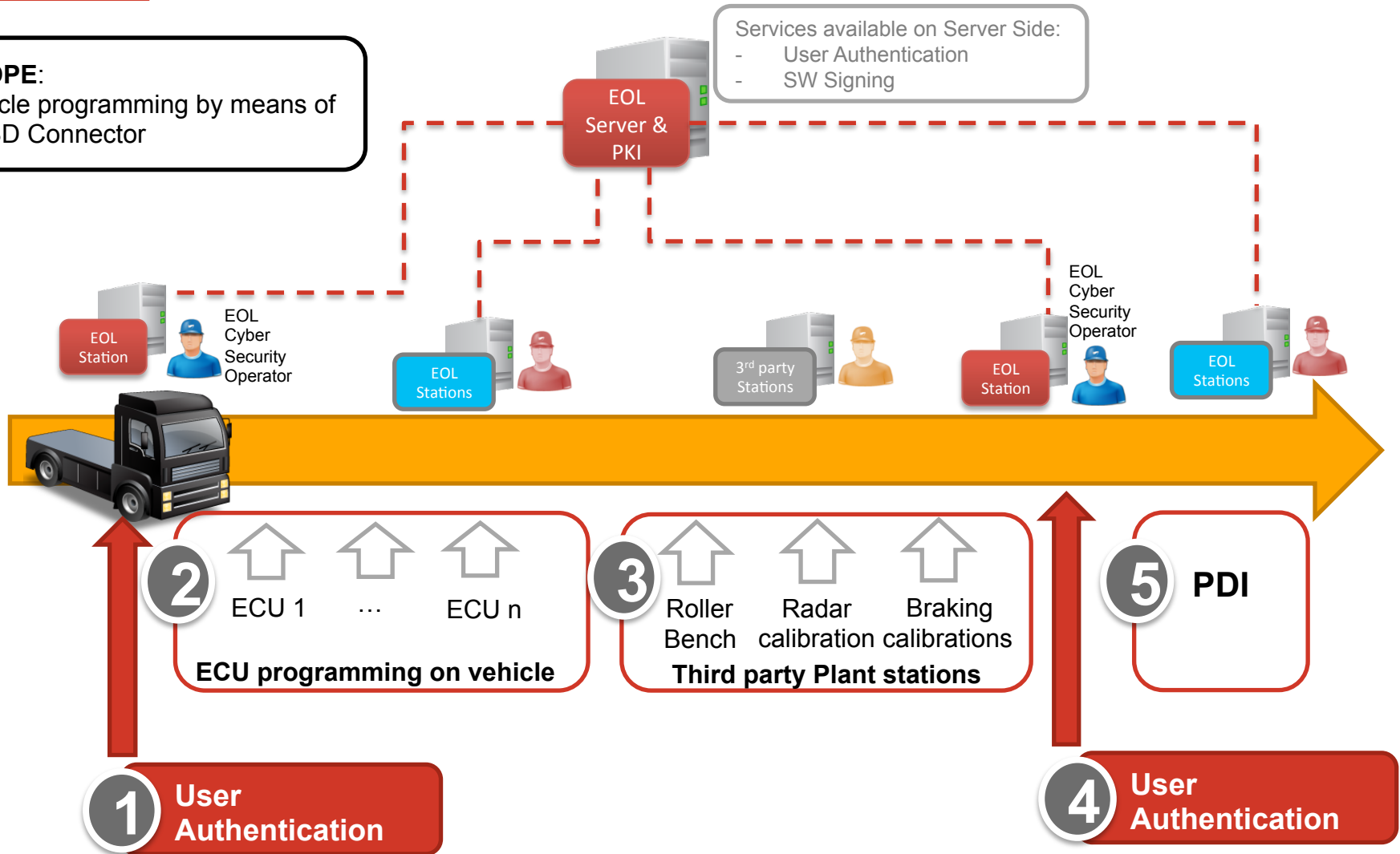


Cybersecurity – impact on Manufacturing operations

Vehicle programming @ EOL

SCOPE:

Vehicle programming by means of EOBD Connector



EOBD: European On Board Diagnostics connector

What's news with Cybersecurity introduction?

Impacts on Plant

▪ User authentication

- The User Authentication is needed for the Authentication on Vehicle
- How to perform the User authentication:
 - ✓ Username/password
 - ✓ Proximity solution
 - ✓ Badge

▪ Code Signing

- Before to download the Code on the ECU with Cybersecurity contents it is necessary to sign it by means of the PKI (Public Key Infrastructure)

User Authentication

Proximity Solution

- The proximity solution was based on a wearable Sensor
- The wearable sensor shall communicate via Bluetooth Low Energy (BLE) with the EOL Station
- It is necessary to identify a Process for the Proximity Solution:
 - Define the wearable object **Providing** and **Delivery** operations
 - Identify a specific **Kiosk** where the EOL Administration provide and collect the wearable Object



User Authentication

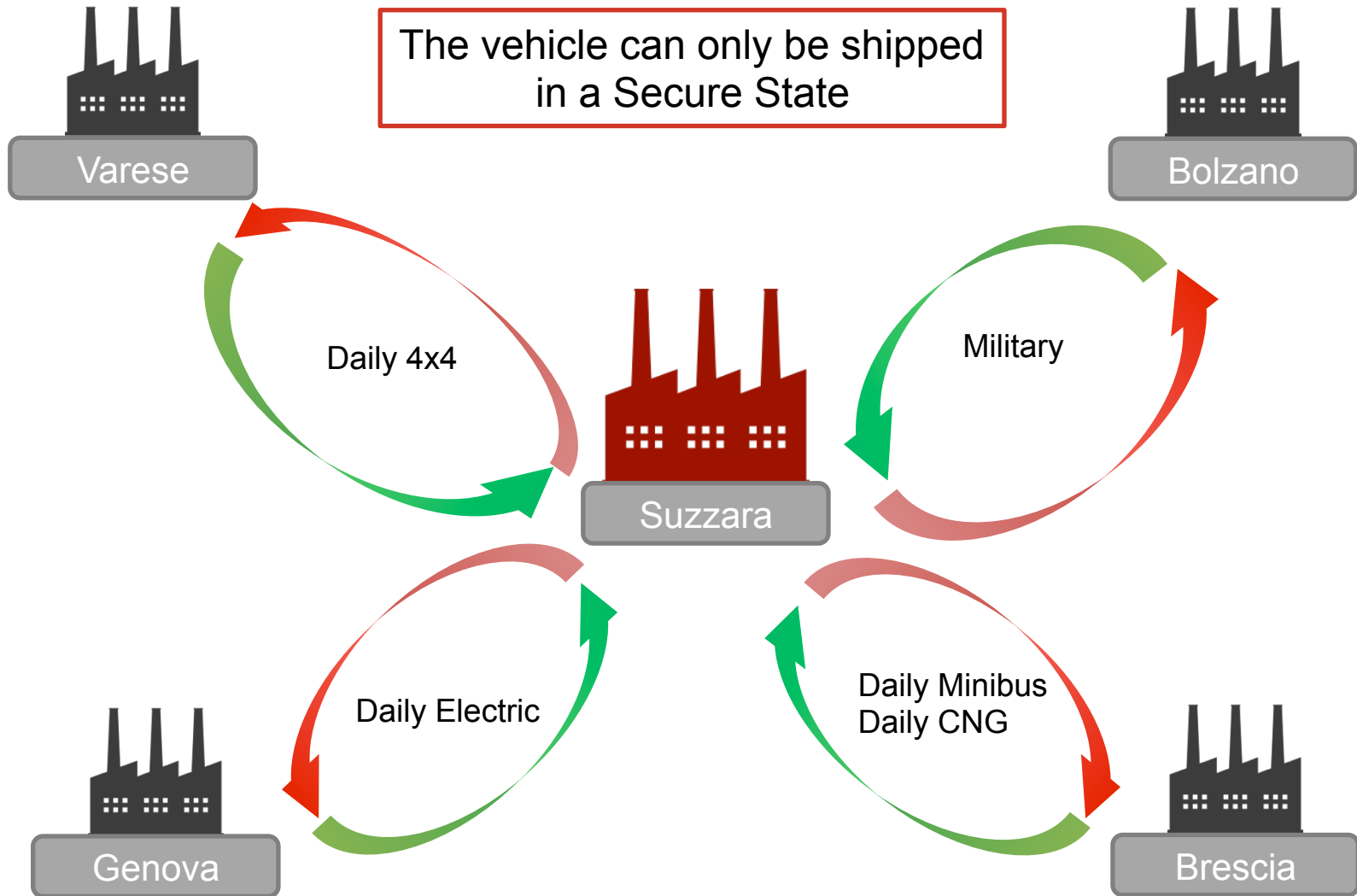
Proximity Solution



- **Some concerns about the human and psychological aspects**
- **Due to huge Implications with syndacate/HR this solution was canceled**

Plant's Geography

Suzzara case



Iveco - CKD

Introduction to CKD reality

- Vehicle in mounting KIT
- A vehicle produced on IVECO plant is disassembled and placed in boxes
- The boxes are sent to CKD plants
- Involved countries for CKD production
 - Russia
 - Kazakistan
 - IRAN
 - South Africa
 - Tunisia
 - Kenya
 - Philippines
 - Algeria
 - Nigeria



SIEM – Secure Incident Event Monitoring

Events monitoring & Alert generation in case of rules violation

- The Goal of the SIEM is the monitoring of the vehicle for all his life:
- The SIEM is driven by rules, and in case of a rule violation an Alert is generated and shall be managed
- The Rules parametrization according to a Time parameter shall be performed for each Plant involved
- The Time parametrization shall consider the followings constraints:
 - Stop of daily working turn on Plant
 - ✓ All working vehicles are stopped during the night and the week-end
 - ✓ The operator that execute the first User Authentication on a vehicle is different from the operatore that execute the last User Authentication on the same vehicle (Delibera)
 - Stop of Plant activities (vacancy)

Building Cybersecurity on Plant

Conclusions

- **Technology is inexorably changing the work and in the future there will be more and more integration between man and machine**
- **The SIEM integration and evolution is the key aspect for a quality process and product**

Contacts



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