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Intent-driven Chatbots for Precise Maintenance in 5G-enabled Industry 4.0 Environments

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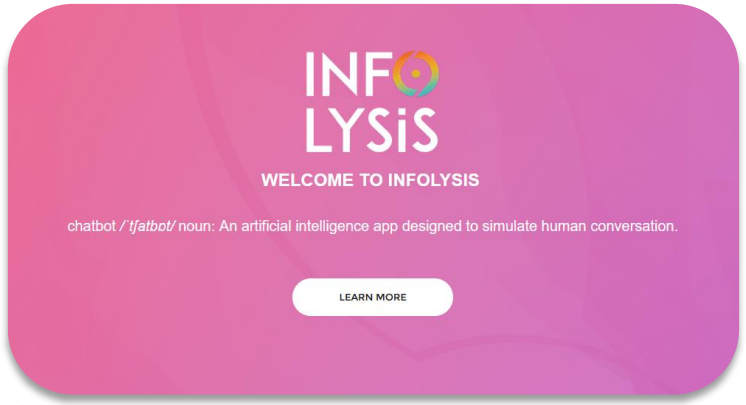
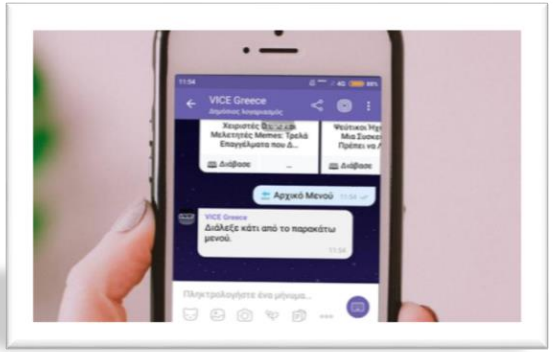
INFOLYSiS Overview

INFOLYSIS is a Greek SME

- located in Athens, Greece
- with 15 members personnel
- specializing on the design and development of chatbot apps
- chatbots for anonymous feedback, complaints management, surveys, contests, training etc.
- commercial presence in the fields of retailing, marketing, tourism, education and maritime
- research activities focus on IoT and 5G
- Participation in EC funded projects and Open Calls with different roles
  - 5GENESIS, 5G!Drones, EVOLVED-5G, ASSIST-IoT, Smart5Grid, SECANT
  - Leading Impact and Communication activities
  - Development and contribution in use cases (fields of disaster recovery, smart cities, UAVs, training, industry 4.0)





- Research Interests:
  - Chatbot apps over IoT environments
  - Chatbot apps over 5G for Industry 4.0 and Training
  - Containerisation, Virtualization
  - IoT interoperability, VNFs
  - IoT vGWs with DPI functionalities
  - DL/NLP technologies

The Chatbot Application

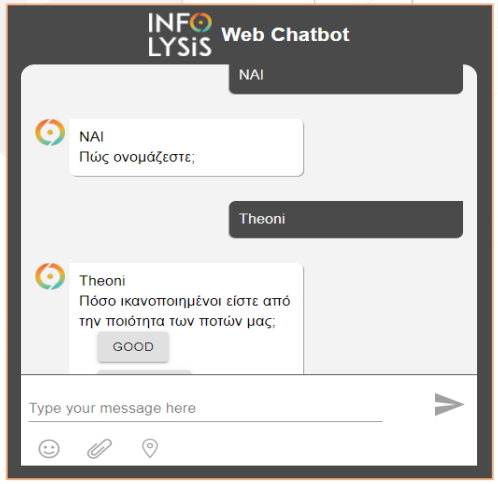
- ✓ INFOLYSiS already has a **Viber-based** and a **web-based** platform for the chatbot application.
- ✓ **Chatbots are applications that simulate human conversation**, based primarily on conversational flows and occasionally enriched with DL/NLP technologies for more sophisticated use-cases, applicable to several sectors such as Retailing, Marketing, Foods and Beverages, Tourism, Maritime.

The Chatbot Assistance NetApp developed within EVOLVED-5G Project:

- ➢ Is based on the **web-based version** of the chatbot platform in order to be **self-contained within the factory environment**.
- ➢ **Utilizes the 5G functionality** to provide accurate indoor location.

Multiple choice questions

Answer to questions with free text



Upload Files

EVOLVED-5G Overall concept

11 SMEs grouped in 4 Industry 4.0 – related pillars bring their vertical apps

Products and solutions from SMEs

The Project targets 5G NPN for the Industry 4.0 sector with FF-specific use cases

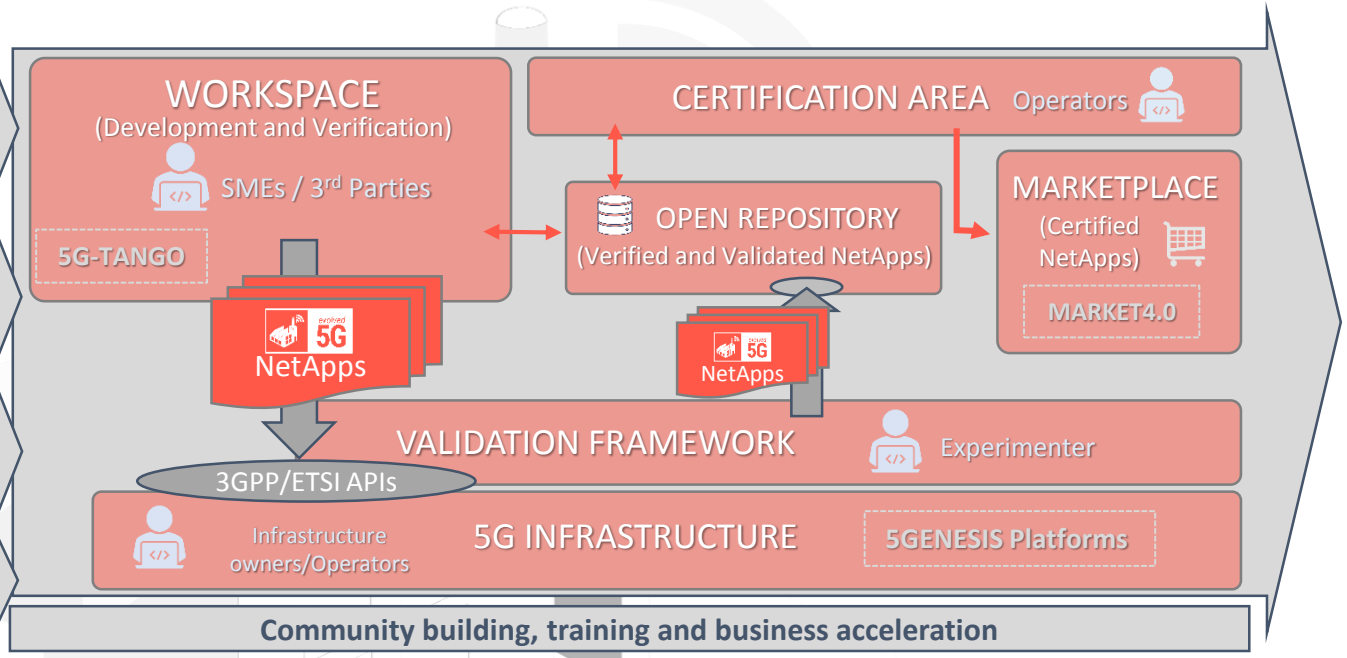
Vertical-specific requirements

5G-Enabled vertical apps with the aid of NetApps that consume 5G core Northbound APIs (and MEC APIs from the edge)

Standard 5G exposure APIs

NetApp development environment from 5G TANGO, validation framework from 5GENESIS and Marketplace design from MARKET 4.0

Input from liaison projects



IEA (EVOLVE Global) and supporting organizations: Code.Hub, MIT Enterprise Forum, Lefkippos Technology Park, Eurada.

Innovation in the interaction of employees and machines though AR features and remote-control capabilities

Efficiency in FF operations with novel predictive maintenance applied on digital factory twin

Security guarantees and risk analysis for the FF communication and management systems

Agility in the production line infrastructure through automation and robotic parts

INFOLYSiS in EVOLVED-5G

INFOLYSiS is part of the first pilar Innovation; the Interaction of Employees and Machines pilar.

For our application we take advantage of the indoor location that 5G provides to offer a solution for automating some time-consuming procedures of factories.

In specific, a **Chatbot application that facilitates the reporting procedur**e of faulty machinery, ensuring the **workers' safety**, and provides the authorized personnel with the **necessary documentation** for the repair.

Use Case Overview

For EVOLVED-5G:

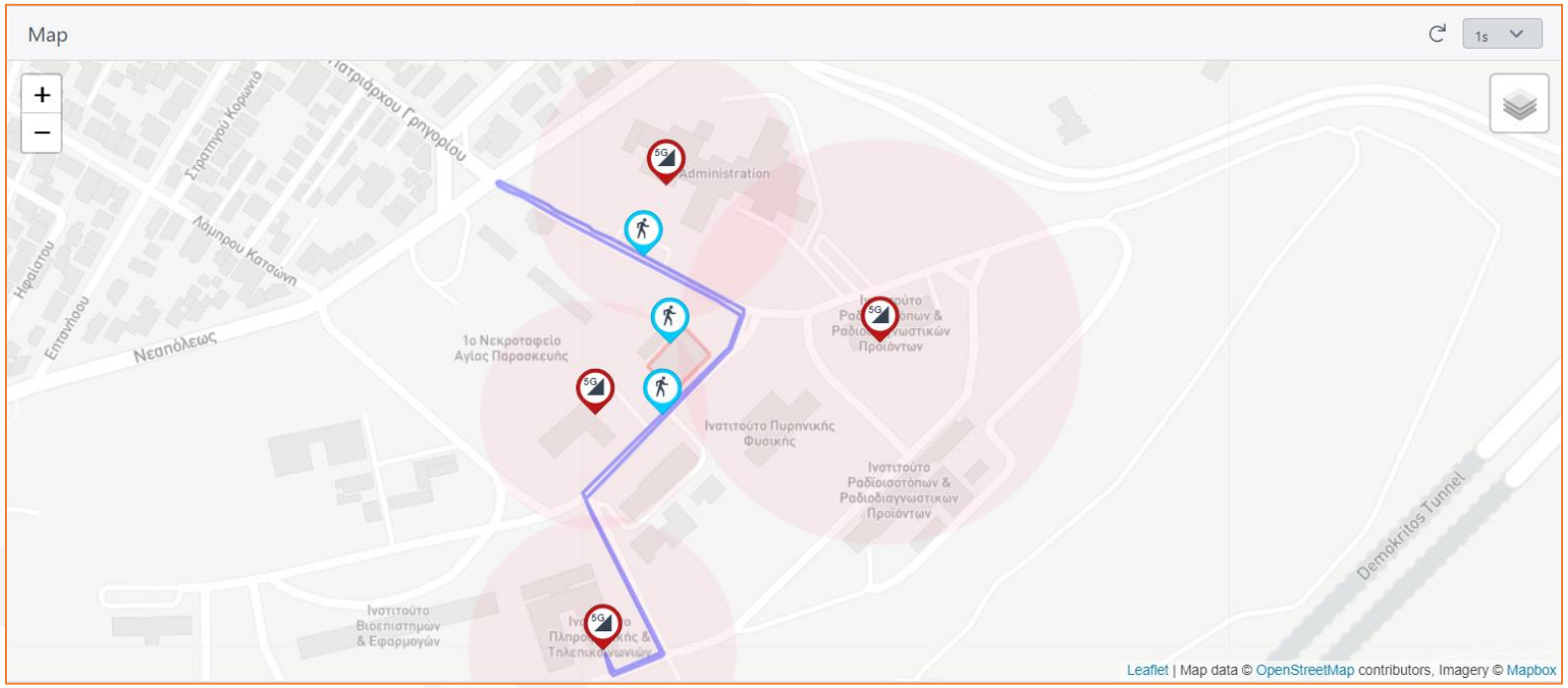
More specifically, …

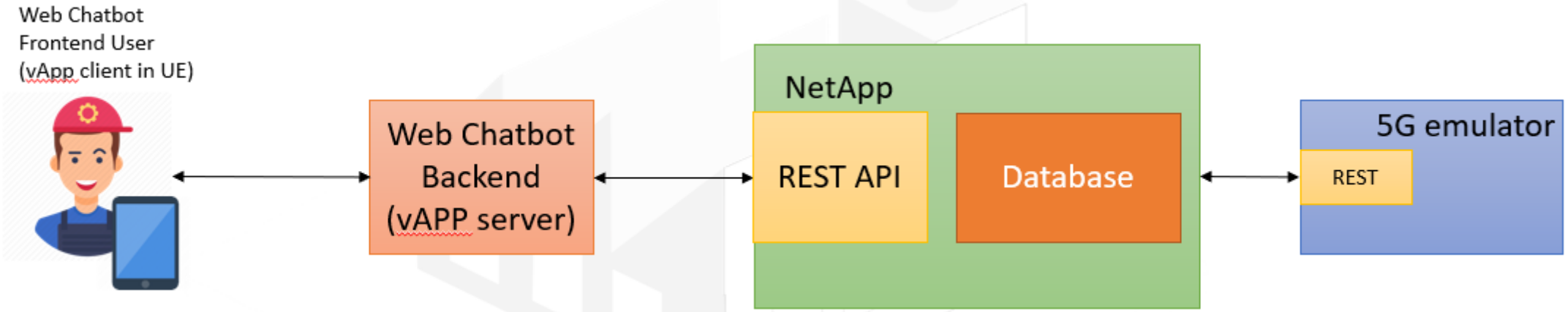
If a worker **spots an issue** inside the factory areas, he will **use the chatbot**, on his mobile device, for the reporting.

- If the respective **area is closed** due to safety reasons, the worker is **promptly notified to evacuate**.
- In any other case, **a list of machines** that fall under this specific area, appears on the chatbot screen.
- Afterwards, **if the worker has the proper authorization level** to perform an action on the specific area:
  - First, the worker chooses the machine he want to refer to.
  - A series of questions dedicated to the **reporting procedure** appear on the screen in order to guide the worker on the reporting.
  - After the reporting, the worker will **download, through the chatbot, the necessary documentation** to perform the **repair.**
  - Then, the worker can continue on **another area or machine** to repeat the procedure.

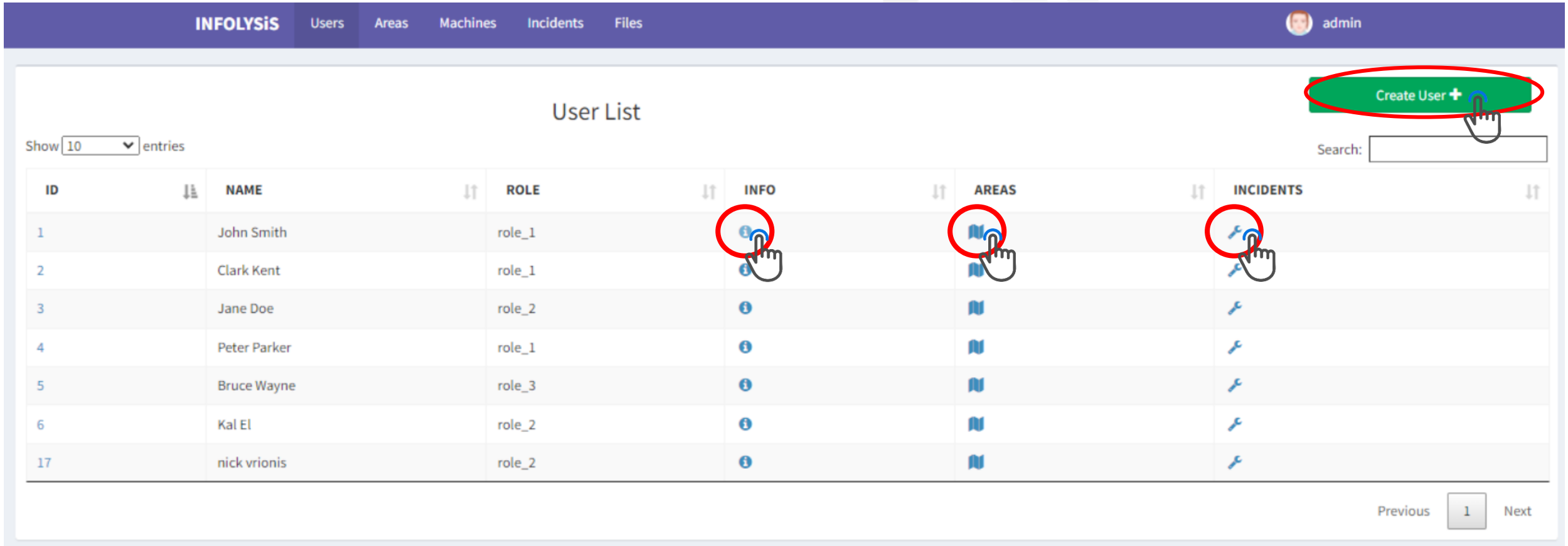
The Set-up Environment

- Factory divided in cells according to the 5G network.
- Each cell has a specific list of machines.
- Each worker has access to a chatbot installed on a smart device.





Administrative Platform



Thank you