TOUCH IOT WITH SAP LEONARDO PROTOTYPE CHALLENGE

VIRTUAL FIREFIGHTER
Story

Introduction

We have all heard about the recent Grenfell Tower disaster in London. In the early hours of June 14th, a fire breaks out. The London Fire Brigade receives the emergency call at 12.54 AM. Still, the fire kills at least 79 people.

This very dramatic incident leads me to think about, how innovative technologies and developments can be used to prevent those vast security deficits.

Summary

This elaboration describes a prototype for an anti-fire system called Virtual FireFighter. It’s addressed to all people who are interested in a safe housing and companies which want to sell high-end anti-fire systems. The implementation also includes the local fire brigades which are responsible for the end user’s region.

Because the solution aims to improve the effectiveness and safety, especially in case of a fire outbreak, the Persona was written from the perspective of a firefighter.
Bob
The Firefighter
“I love to help people with my job, but fire runs are often unclear and very dangerous.”

About
• 41, married, 8 years of firefighter experience
• 3 children, 2 girls and 1 boy
• Over 3 years professional firefighter chief

Responsibilities
• responding immediately and reliable to emergency calls and requests for assistance
• attending emergency incidents including fires, road accidents, floods, terrorist incidents, spillages of dangerous substances, and rail and air crashes
• taking time to become familiar with local streets, roads and buildings so I can respond to emergency calls with speed and efficiency
• safeguarding my own and other people’s personal safety at all times

Main Goals
• Rescue lives
• Save buildings and minimize damage

Pain Points
• Race against time
• Dangerous missions
• Confusing conditions

Needs
• Before fire runs we need more information about structural conditions to act purposeful
• We also need more information about the fire and details about the smoke
• The opportunity to act partially remote would be helpful
Point of View

As a firefighter chief

I need a way to get important and already condensed information about the fire as fast as possible.

so that I can minimize the overall risk for my team during a fire runs and focus on the main goal to saving lives.
## User Experience Journey: *During a fire run with the Virtual Firefighter*  

### ACTIONS

| 5 • Lunch break | ▪ Lunch break | ▪ Incoming smoke warning | ▪ Check the smoke analysis and the local conditions | ▪ High temperatures were also detected | ▪ Fire run starts | ▪ Local sprinkler was triggered by victim | ▪ Incoming emergency call | ▪ Get additional details and give further instructions | ▪ Arrival at the place of action | ▪ Extinguish the fire | ▪ Hand over the rescued people to the emergency doctor | ▪ Come down, clean up and return to the fire station |

| 6 • “Mhmm, what a delicious Schnitzel!” | ▪ “Mhmm, what a delicious Schnitzel!” | ▪ “Okay colleagues, let’s get ready.” | ▪ “Mainly burn of organic material is detected.” | ▪ “There are at least 3 people inside.” | ▪ “11 mins to get there and good access to the fire side.” | ▪ “40 metres distance to the next hydrant.” | ▪ “Ok guys, we are well prepared. Let’s do it.” | ▪ “Fortunately, we know exactly where the fire is.” | ▪ “Someone triggered the local sprinkler by the FireFighter App, well done!” | ▪ “There are still two persons left on the 1st floor, we have to rescue them fastly.” | ▪ “Luckily, we’ll be there soon.” | ▪ “Oh, the fire really looks as predicted.” | ▪ “Hopefully, the people inside are still ok.” |

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Prototype – Infrastructure and Applications

One FireFighter Unit consists of:
- RFID unit (Connection to mobile devices)
- Smoke sensor
- Temperature sensor
- Airstream sensor
- Sprinkler
- Microcontroller (+Connection interface)

How it works:
Information about the local conditions (access street, hydrant, ground plan, floors, etc. ...) will be stored in the cloud.

After Virtual FireFighter was implemented:
Units send secondly room condition data to the gateway.
If there is a critical value:
- In-house sirene starts
- All connected devices get the FireFighter Alarm on their display
- All sensor data are forwarded to the cloud
- Responsible fire brigade gets informed and can access the FireFighter Commander
End user’s side:

Information about the fire/smoke
- Where is it from my perspective (ground plan)?
- How dangerous is it (status)?
- Is somebody near the concerned room?

Possible Actions via FireFighter App
- **All-Clear**: Deactivation of the alarm
- **Fire Sprinkler**: Activation of the local room sprinkler
- **Emergency Call**: Phone connection to the responsible fire brigade

* Only people near the concerned room / on the same floor

Firefighter’s side:

Information overview

Locational conditions:
- Where is the next hydrant?
- How can we access the fire side?
- Where exactly is the fire?
- Are still people inside?

Smoke analysis (room-based):
- How dense is the smoke inside?
- How dangerous is the smoke?
- What kind of fire is it and how should we extinguish it?

Heat development (room-based):
- Is there really a fire?
- What temperature is there inside?
- Does the sprinkler work?

Airstream direction (room-based):
- Is there an airstream?
- Which direction does the stream have?