



open**SAP**

TOUCH IOT
WITH SAP LEONARDO
PROTOTYPE CHALLENGE

IoT in Connected Ambulances

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Story

With the burgeoning population, cities all over the world are experiencing an ever-increasing high demand to the emergency services. In a connected world, people would benefit from the on-time availability of critical amenities such as ambulance, police and other emergency services.

For the providers, this means constant monitoring of such services to ensure timely repair and maintenance to attain the on-time service goals. Using the onboard telematics platform, ambulance coordinators could remotely monitor, inspect and analyze the performance of various parts of their fleet of vehicles. Such platforms additionally could be utilized to check on the fuel consumption, driving behaviors/patterns with an accurate vehicle health status analytics. All these aid in better vehicle maintenance, timely repair and overhaul of costly service parts.

The prototype design for Connected Ambulances submitted in this exercise is an attempt to demonstrate the prototype of the visualization of the sensor information that a central ambulance coordinator gets remotely via SAP IoT apps. These enable the coordinator to visually analyze the data and send notifications exchanging details to the driver of the ambulance that have technical problems unknown to the driver.

The heart of this diagnosis and analysis are the IoT sensors that relay the telematics signals communicating the health status of various automobile parts.



Persona

Name: Robert

Role: Ambulance Coordinator

Persona Statement: I want to go to work every day to make a difference in lives of people whom we interact by helping them or their near & dear ones avail emergency transport to the nearest medical facilities.



About:

- Robert, aged 42, married, over 17 years of Ambulance Facilities Specialist experience.
- Responsible for keeping a fleet of ambulances available, serviced and road-ready at all times. I constantly work with various service technicians and ambulance drivers and operators to explore opportunities for improving our quality of service.
- Being partly responsible to lowering costs of operation, I look out for means to cut down the overall fuel consumption by reducing the redundant trips or finding quicker means of reaching destinations.
- I am constantly on the phone with the various stakeholders advising and preparing for easier rides for the patients and their caregivers while cutting costs for my company and my customers.
- I come in at 6:00AM and work until 7:00PM every day, thus working nearly 10-12 hours every day, constantly talking with my team, internal and external contractors, my supervisors and the team of ambulance specialists.
- Personal Achievement – Proud winner of Best Performing Ambulance Coordinator, 3 years in running!

Responsibilities:

- Responsible for upkeep of the fleet of 30 odd ambulances – including their serviceability and maintenance and overall service-readiness.
- Responsible for producing better service at lower costs.

- Timely monitoring and analyses of critical analytical information that are relevant from vehicle performance as well as personnel efficiency.
- Constantly challenged to produce cost savings with increased work efficiency.
- Attain current levels of SLAs while aiming to reduce vehicle downtime.
- I get my data remotely on desktops, laptops and company provided rugged laptops. Sometimes I get notifications on my iPhone/ iPad that are of critical nature.

Main Goals:

- Get timely analytical reports on vehicle performance based on on-board sensor data without any delay beyond our agreement compliance.
- Better management of my time in analyzing the vehicle data and making decisions regarding the coordination with the maintenance & servicing department and the scheduling team for arranging ambulance for the next few days. Since emergency situations can be demanding, it was always a case of chance. Having data before these critical service vehicles break down could make a huge difference between a nice day or a challenging day.
- Keeping our operation costs lower by reducing fuel consumption or by keeping fuel-efficient ambulances in top condition.

Needs:

- I need to have all performance information at least 2-3 days before they become code red. In other words, trends are critical in our line of business.
- I need to be aware of all information that would help keep my fleet running smoothly without any risks.
- I need my customers (patients and their family members) to feel safe and secure in our ambulances, knowing fully that we will strive to make their journey on-time.

Pain Points:

- Sometimes the sensors are bit flimsy and send incorrect data. Such incidents could cause waste of time to check and ensure correct functioning (in other words – false positives).
- Sometimes the sensor information could throw up multiple opportunities for correction. I wish somehow these are brought down as valuable time is lost in checking all options before the correct root causes are found.
- Driver behavior analysis is quite difficult to automate and needs to be investigated in deep.



Point of View

As an ambulance coordinator, I need a way to monitor and analyze the performance of my fleet of ambulance vehicles so that I can reduce the operation costs (due to fuel consumption, erratic driving behavior, faulty equipment, vehicle downtime, etc.) and increase efficiency of my employees and ultimately increase my customer satisfaction.



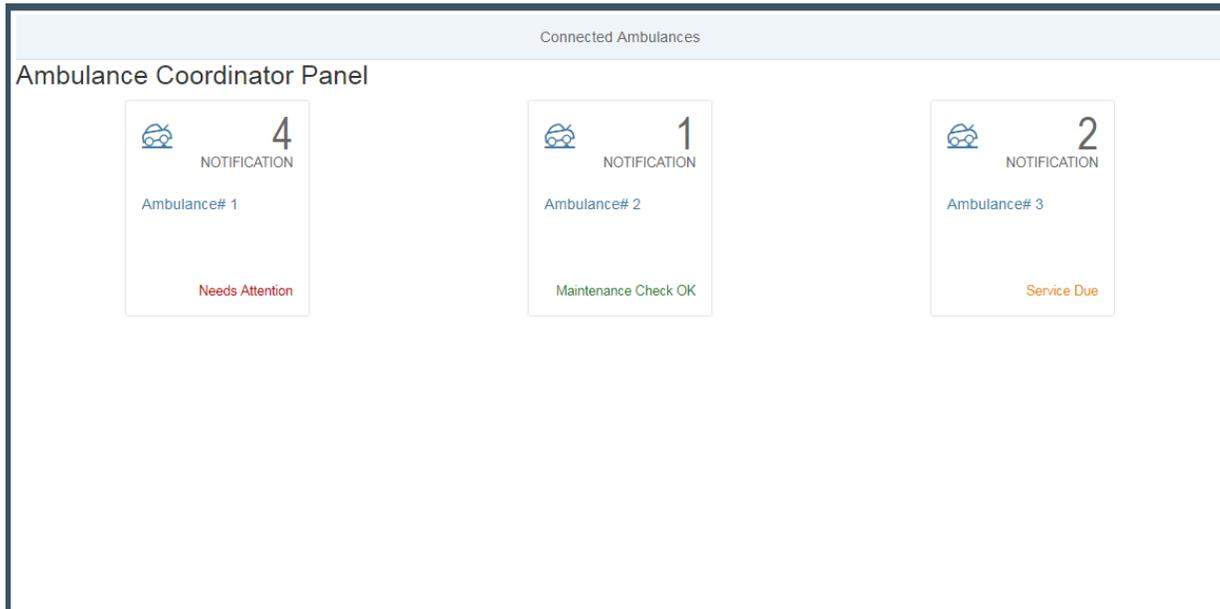
User Experience Journey

ACTIONS	<ul style="list-style-type: none"> ➤ Start the day with a complete inventory of available ambulances, trip details, vehicle health status, etc. ➤ Start looking at the telematics data, sensor relay signals, IoT signals, etc. 	<ul style="list-style-type: none"> ➤ Review the analytical data for every ambulance in an hourly manner 	<ul style="list-style-type: none"> ➤ Based on the performance data, start recommending maintenance tasks or vehicle overhaul activities ➤ Based on severity, recommend grounding or downtime for ambulances for maintenance work. 	<ul style="list-style-type: none"> ➤ Receive updates on maintenance activities. ➤ Depending on the schedule, review and plan to roll the ambulances back into service ➤ Discuss schedule impacts for ambulances that are deemed to be out of service for additional periods owing to non-availability of parts and labor services, or due to higher costs of maintenance. 	<ul style="list-style-type: none"> ➤ Every vehicle is running smoothly!!!
MINDSET	<ul style="list-style-type: none"> ➤ Do I have everything to have an uneventful day? ➤ Do I have the data on the vehicles that were found with issues yesterday? ➤ Do I have any vehicles with new technical problems or issues today? 	<ul style="list-style-type: none"> ➤ Are these telematics performance signals correct? On what basis? ➤ Can these data points be compared with historic values for similar period for the same vehicle? ➤ Are these comparable to other vehicles of same class, mileage and similar performance? 	<ul style="list-style-type: none"> ➤ Based on the data on hand, I would have to verify with the Maintenance, Repair & Overhaul team to suggest the downtime for repair work. ➤ Communicate the maintenance activity schedule to Service Schedulers, Fleet Managers and Supervisors, Maintenance Teams. 	<ul style="list-style-type: none"> ➤ What do we have today in the maintenance reports? ➤ Can we plug these vehicles into service? ➤ What? I cannot get the vehicles back into service for additional XXX weeks/day? That's just bad for my employees and customers? 	<ul style="list-style-type: none"> ➤ Vehicles diagnosed to work efficiently with no issues whatsoever. ➤ No scheduling conflicts exist. ➤ All personnel reporting to duty, working on ambulances as per the schedule ➤ My customers are being provided with the best service!!
FEELINGS	 	 	 	 	 
TOUCHPOINTS	<ul style="list-style-type: none"> ➤ Connected Ambulances Mobile App ➤ Vehicle Diagnostics Data ➤ Driver Behavior Analysis Charts ➤ Trip Information using Google Map 	<ul style="list-style-type: none"> ➤ Connected Ambulances Mobile App ➤ Vehicle Diagnostics Data ➤ Driver Behavior Analysis Charts ➤ Trip Information using Google Map 	<ul style="list-style-type: none"> ➤ Connected Ambulances Mobile App ➤ Vehicle Diagnostics Data ➤ Driver Behavior Analysis Charts ➤ Trip Information using Google Map 	<ul style="list-style-type: none"> ➤ Maintenance, Repair and Overhaul Reports ➤ Connected Ambulances Mobile App ➤ Vehicle Diagnostics Data ➤ Driver Behavior Analysis Charts ➤ Trip Information using Google Map 	<ul style="list-style-type: none"> ➤ Customer Service Satisfaction Charts



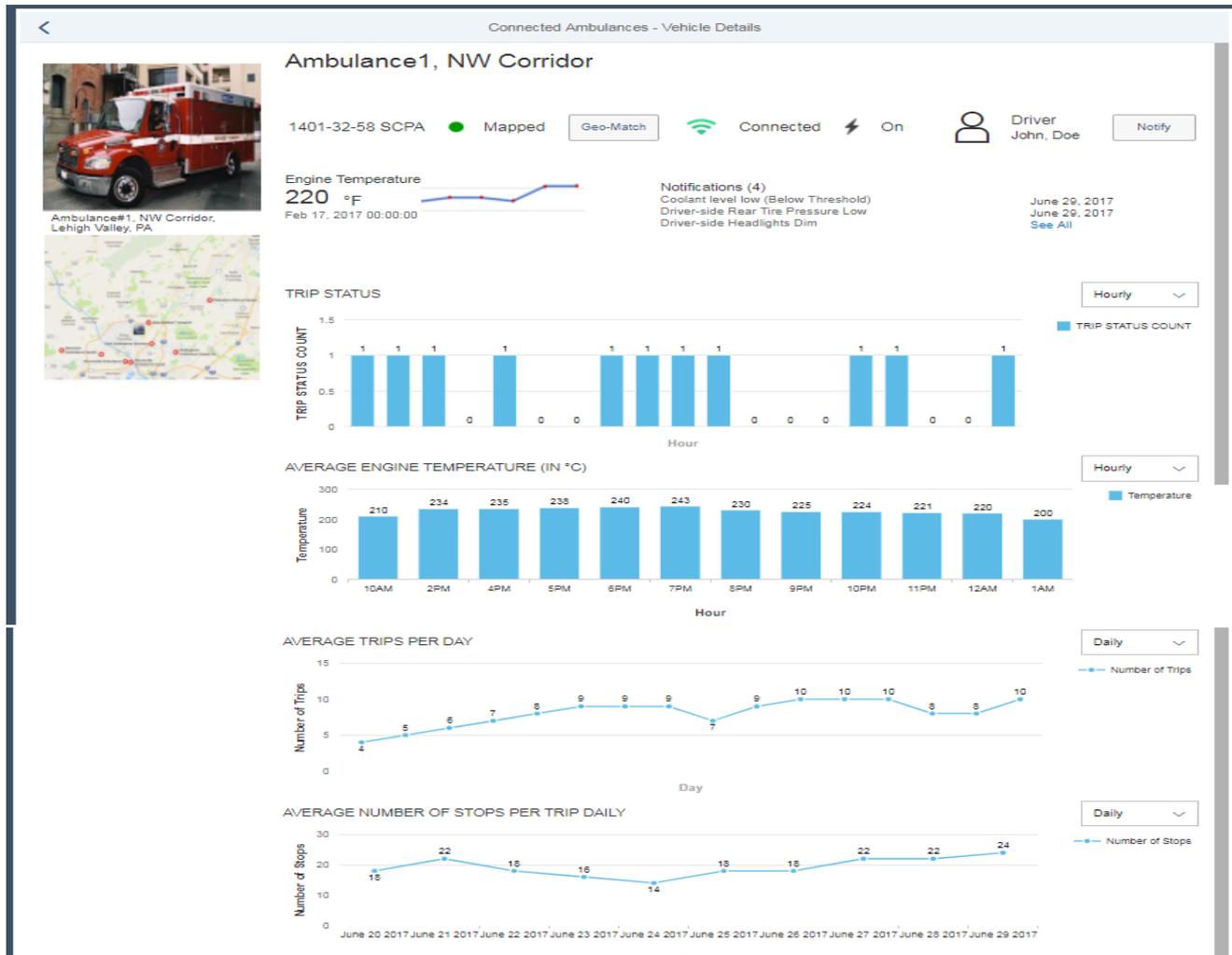
Prototype

Landing Page for the Mobile Connected Ambulances App:



On clicking the first tile that shows Ambulance 1, the next screen opens up showing the details of the vehicle and the various performance charts relevant for this ambulance.

Vehicle Details Information Page:



Key Performance Indicators:

- ✓ Engine Temperature
- ✓ Ambulance In-Service/Out-of-Service Status
- ✓ Average No: of Trips Per Day
- ✓ Average No: of Stops Per Trip Per Day

SAP BUILD Page

The BUILD prototype shows 3 ambulances on the Ambulance Coordinator Panel on the Launchpad. Clicking each tile opens the corresponding details screen displaying the performance data for that particular ambulance.

https://standard.build.me/prototype-editors/api/public/v1/snapshots/0a6371f881b804130e1eef51/artifacts/latest/index.html#/launch_page