



Inventory management & business processes

Ascolab creates a service offer with CommonSense IoT Platform to manage dismantlable and re-assemblable industrial assets: site cranes.

Presentation of Ascolab

Ascolab is an open and collaborative innovation laboratory which offer its clients, managers of machines fleets, to address their breakthrough innovation strategies. To achieve these innovations, Ascolab needs to set up quickly industrial

demonstrators, in order to extract from their clients' process the true added value.

We are listening to the true needs of our clients and put technology at their service.

The original process of Ascolab takes root in modern innovation methodologies: effectuation, design thinking, C-K theory.

Issues & business needs

Today, IoT service providers such as Ascolab are facing an atomized market with multiples protocols, manufacturers and heterogeneous equipment even on equivalent products. Indeed, in some cases devices send different units of measurements for the same physical quantity. This heterogeneity can be found in the existing fleets of connected things like those of cranes part managers with GPS trackers and others sensors deployed from different manufacturers.

To satisfy their clients and fleet managers, Ascolab, an IoT service provider, has to rely on a flexible tool enabling to support any IoT device by standardizing its behavior compared to other equipment. In the case of crane management, the inventory management and business processes requires to keep track of events and alarms.

Solution

Ascolab has partnered with Vertical M2M and has adopted its CommonSense IoT Platform® to develop its IoT inventory management solution demonstrator for crane pieces management.

Overall, the demonstrator developed by Ascolab with CommonSense IoT Platform brings real time information from the operation fields in a consistent and automated manner acknowledging information communicated by the field teams. Visualization tools alerting and data processing tools enable this solution. This solution improve inventory management and operations.

Here are two scenarios illustrating concrete benefits:

- 1) **Productivity**: storage areas can extend over several hectares, the system enables to find them quickly.
- 2) **Coordination & organization** : the tracking of the crane elements facilitate the coordination during arrival phase of all the necessary ressources for mounting or unmounting, alert the right team members and organize the site area (e.g. truck waiting line...).

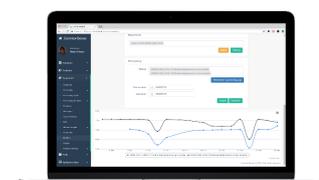
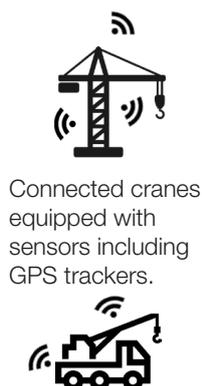
Frédéric Lamarche, CEO, Ascolab

"The integration of CommonSense as a central brick of our fleet management demonstrator system enabled us to compare and choose the geolocation tools the most adapted to our clients' profiles and missions.

The technical support and the native integration of scripts enabled us to quickly implement calibration and calculus algorithms. The scalability prevents from having to modify the solution during the first phases of deployment."

Architecture of the demonstrator

The flexibility of the platform enables the integration of heterogeneous sensors through various networks.



Device management tools
Usage through a web interface or RESTful APIs

Usages of the solution

Management of heterogeneous equipment

Crane managers deploy heterogeneous sensors on their cranes to monitor them remotely. The data sent is not always open and is often heterogeneous despite the fact that the sensors are equivalent : units or sampling period might be different which is a problem when processing data.

```
15 -- little indian to big indian
16 local tempHexa = string.sub(payload,7,8)..string.sub(payload,5,6);
17 local tempRaw = tonumber(tempHexa,16);
18 if string.sub(bin,1,1) == '1' then
19 -- negative temperature
20 temp = - (65536 - tempRaw) / 10.0;
21 else
22 -- positive temperature
23 temp = tempRaw / 10.0;
24 end
25 setOutputRecordData(5, temp);
26 end
27
28 if prefix == "02" then
29 -- humidity record
30 -- little indian to big indian
31 local humHexa = string.sub(payload,11,12)..string.sub(payload,9,10);
32 local humRaw = tonumber(humHexa,16);
33 setOutputRecordData(46, humRaw / 10.0);
34 end
```

Image 1. LUA scripting enables to integrate various sensors through various networks and calibrate generated data.

Geofencing and alerts

Geozones enable to alert on pieces movements and therefore to organize equipment and identify errors for instance pieces that should be in a zone..



Image 2 - Geozones. Geozones alert on pieces movements.

Benefits

Optimized inventory management and operations:

- Quicker search and identification of the crane pieces on stock site
- Improved team coordination on site
- Better forecast of pieces stocks and allocation to projects
- Shorter works delivery times
- Extendable with AI and data analytics tools for a predictive solution.

Data visualization and alerts

The Ascolab solution with CommonSense enables to identify the movement of different pieces whether they are still or moving (image 3) but also the different stages of the project such as the transport (image 4) or mounting and unmounting (image 5). All of this enable to better manage the pieces stock for the different projects and to gain time on works delivery.

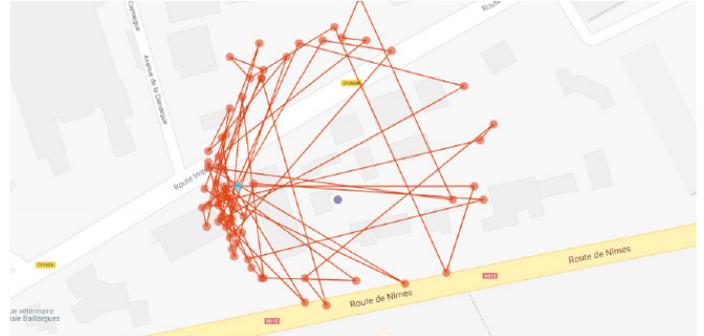


Image 3 - On site GPS tracking view. The blue dot is the mast base and the orange ones are the different positions of the end of the crane's boom. Associated with a gyrosopic sensor, mounting and unmounting stages can be identified when elements are put in horizontal or vertical positions.



Image 4 - Transport tracking view. Monitoring of transport from the stock until the site.

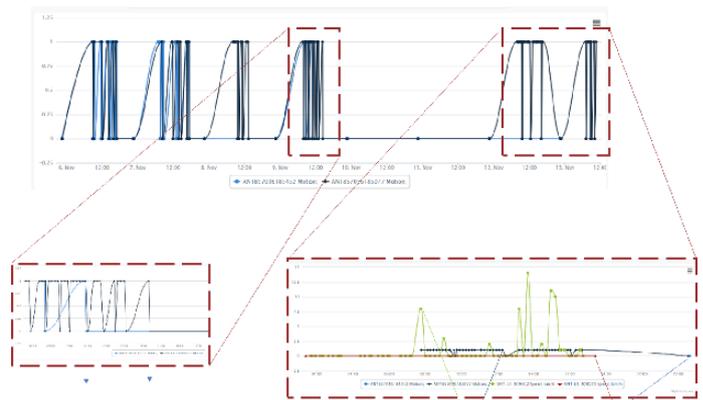


Image 5 - Data chronological view. The curves describing sensors' behaviors (acceleration x, y, z) allow to identify the stage of the project owing to data patterns : mounting and unmounting for instance.