TOUCH IOT WITH SAP LEONARDO
PROTOTYPE CHALLENGE

MONITORING OF SOLAR POWER PLANTS
Story

Concentrated solar power is an innovation for regions with a lot of direct sunlight. It concentrates the sunlight and increases the efficiency. These modules need a tracker to follow the sun. This tracker is important and due to mechanical problems a typical failure.

A good condition monitoring system and live evaluation of all technical data can help to monitor and maintain the solar power plant.

With Leonardo the operator of such solar power plant has the ability to overview all single modules and can plan maintenance activities in a predictive way. This helps all stakeholder to fulfill
**Persona**

### MARIA
Senior Service Manager

“I like to optimize workflows and to see the live problems to deal with them.”

### About
- 42, 10 years of power plan supervisor experience, 8 years’ experience as electrical engineer and data science
- Analytical person who loves to find the real sources of troubles and not only looking for the symptoms
- Familiar with deep learning tools and knowing the methods
- Very mobile, visiting different power plants each week

### Responsibilities
- I am responsible for the operation and maintenance of different solar power plants
- I am coordinating the maintenance activities
- I am planning new solar plants and I am calculating efficiencies and the rate of return
- Partly I spend time directly on the area of the solar fields

### Main Goals
- Optimizing Maintenance of solar power plants and of the single module
- Improving the overall efficiently of the power plant
- Reduce the impact of polluted modules, failures and degradation

### Needs
- I always need real time access to the data (aggregated and drill down to a single module)
- Assistant with KI and machine learning for prognoses of failures based on the historical data
- Transparency and reliable information of all data with a plausibility check

### Pain Points
- Actual no drill down / complicated to locate the modules with failures
- No real time data
- No mobile access to verify the solved failure
Point of View

As an responsible engineer for the different solar power plants

I need a way to visualize and review all states of the single modules of the power plant (singular and aggregated) and the error message and the efficiency per module for maintenance reasons

so that this IoT Leonardo solution helps me to lower the downtime and increase the outcome of electric power, due to perfect located error messages and prognoses of failures with the intelligent machine learning system.
## User Experience Journey: Maintenance of a solar power plant

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>Planning maintenance activity</th>
<th>Travel to solar plant</th>
<th>Access to solar plant</th>
<th>Repair/Main tenance of module with failure</th>
<th>Evaluatio n</th>
<th>Maintenance successful</th>
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</thead>
<tbody>
<tr>
<td>MINDSET</td>
<td>“A failure again”</td>
<td>“What is the failure?”</td>
<td>“At which module is the failure?”</td>
<td>“Easy to locate the module and assistance to solve the problem”</td>
<td>“Great, the problem is solved!”</td>
<td>“Fine, very easy with this new system”</td>
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<td>FEELING</td>
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<tr>
<td>TOUCH POINTS</td>
<td>Live system</td>
<td>Car with mobile access</td>
<td>Entry point to solar plant</td>
<td>Module with assistance of mobile access device</td>
<td>Mobile access device</td>
<td>Mobile access device</td>
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</tbody>
</table>

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Prototype mockup:

2405-Solar Power Plant

CPV-PT-05

Average Efficiency (last 24h)

79 %

Solar Power Plant 2405 - Connected with grid
Solar Power Plant 2405 - Down time due to generator failure
Solar Power Plant 2405 - Maintenance of module 6
Solar Power Plant 2405 - Maintenance of module 8

Image source: https://en.wikipedia.org/wiki/Concentrated_solar_power