

Digital Talk Mobility

Smart Charge Management System

siemens.pt/digitalizacao

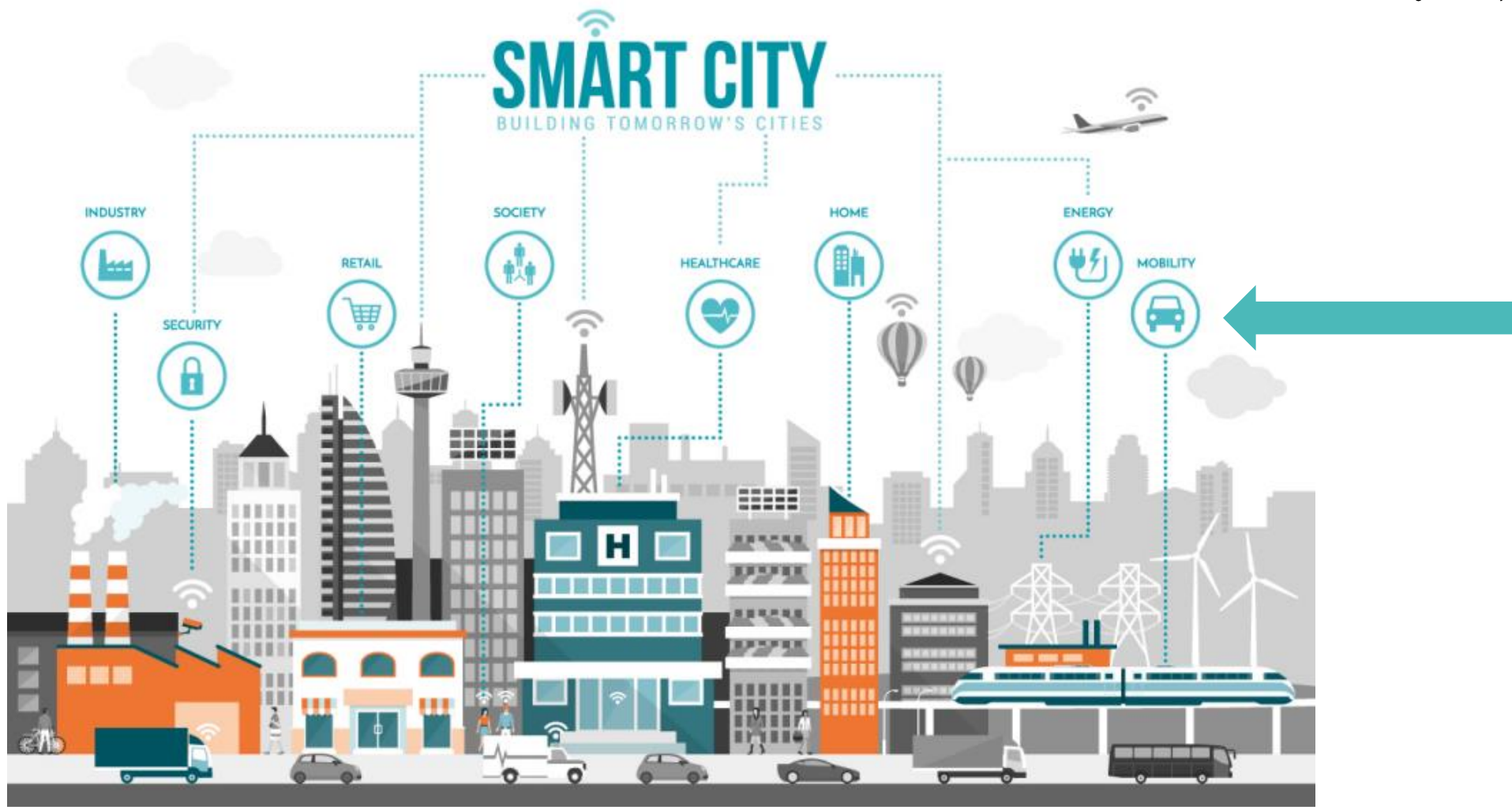
A night view of a city with digital data overlays. The image shows a cityscape at night with lights from buildings and streets. Overlaid on the city are glowing blue lines and dots, resembling a digital network or data flow. The lines form a grid-like pattern in the upper left and extend downwards, with dots scattered throughout. The background shows a dark sky and distant mountains.

What is digitalization?

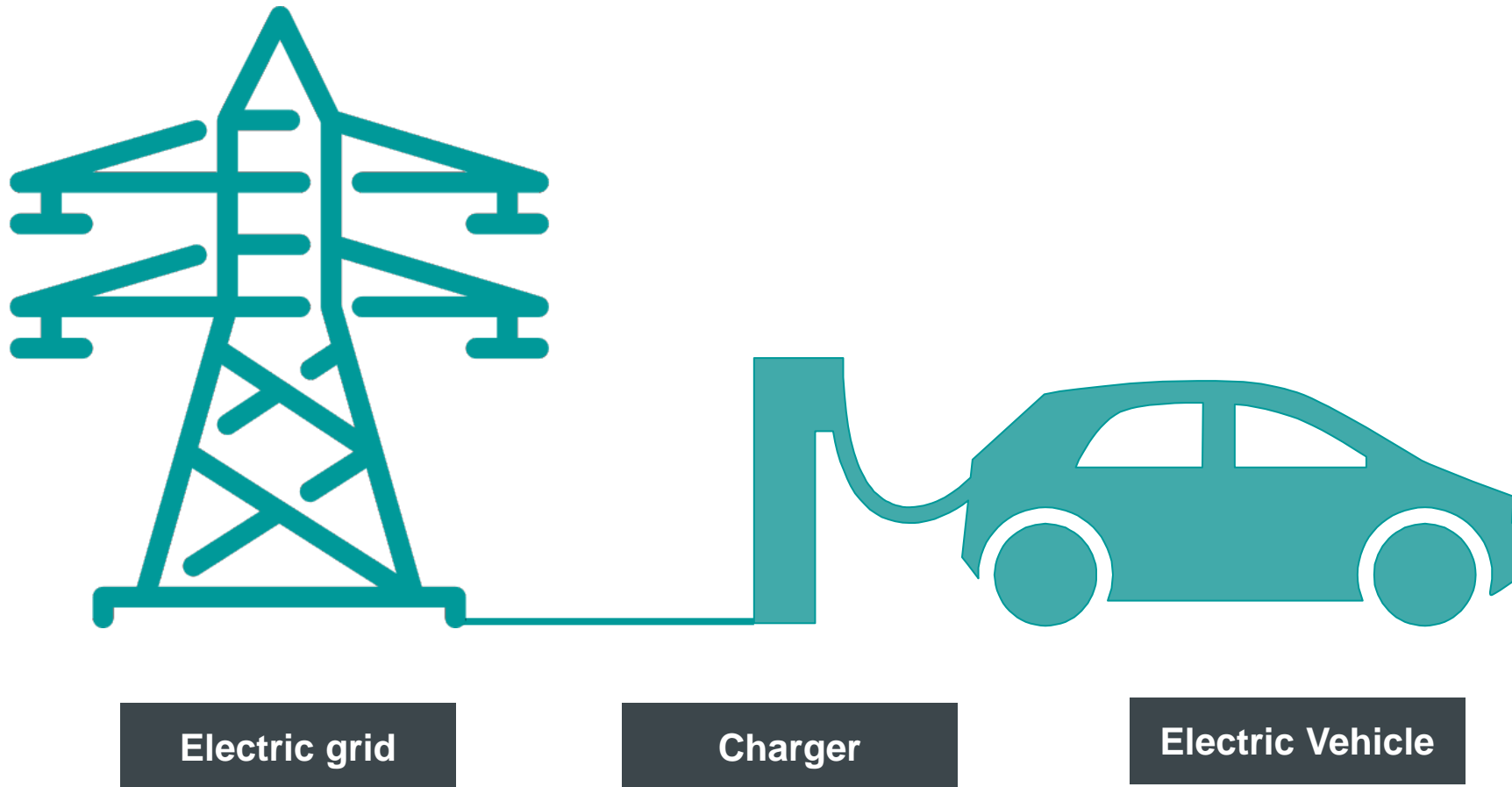
Is the process of converting
information into a **digital**
format in order to optimize
processes

Digitalization – Smart Cities

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Ingenuity for life

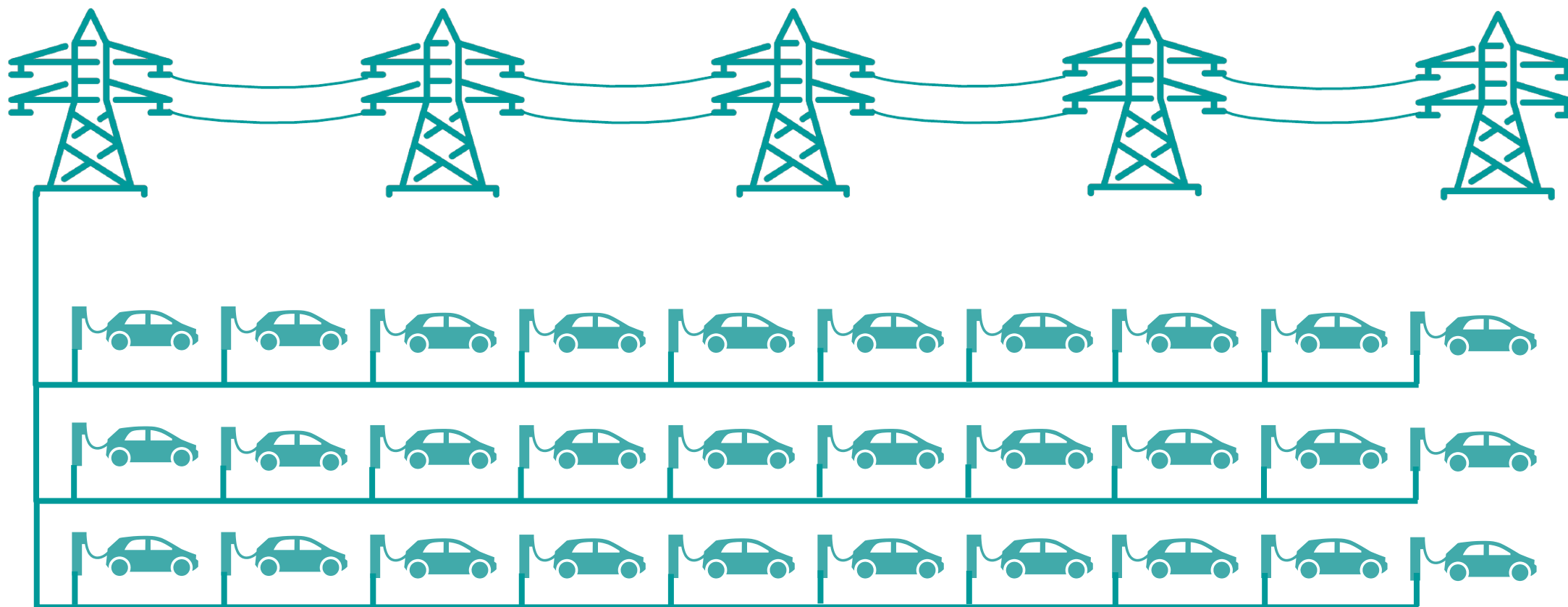


Why should we have a Smart Charger?

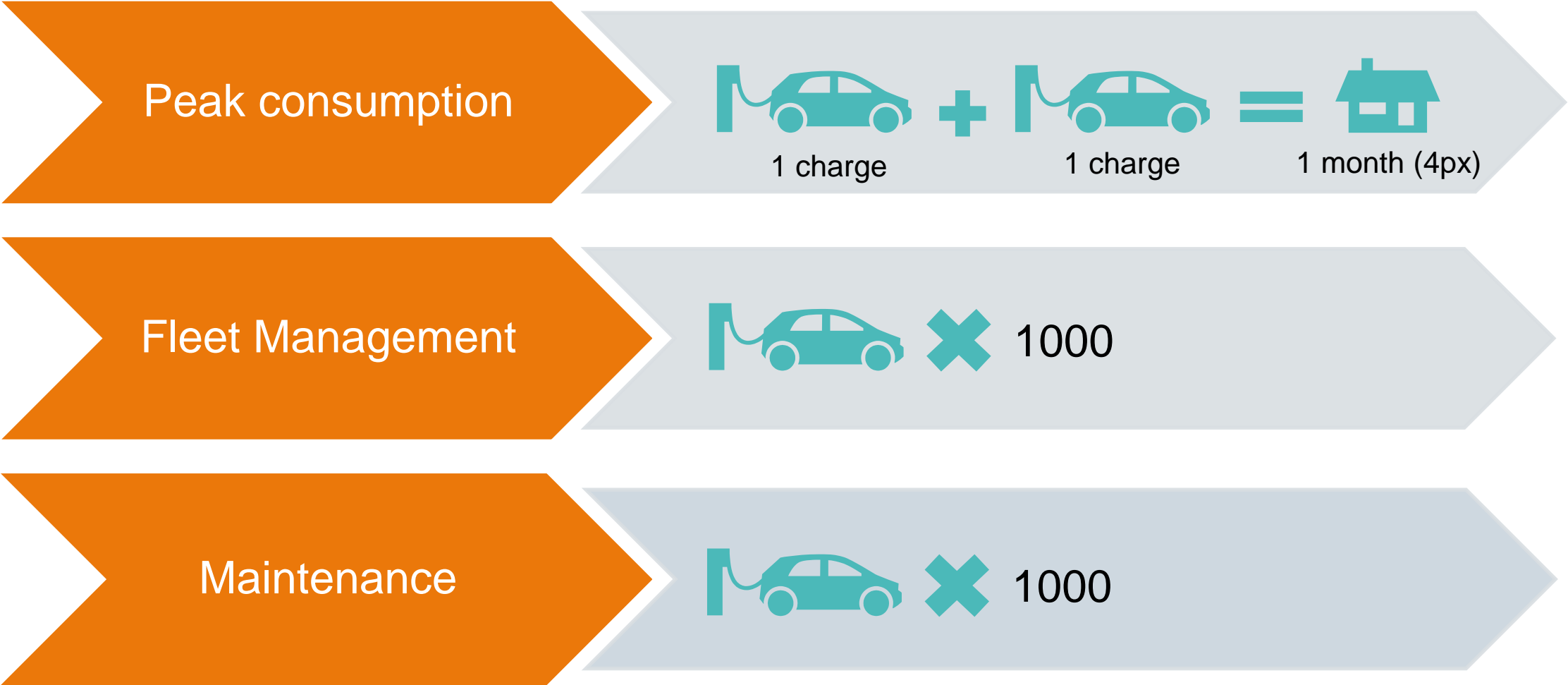


Why should we have a Smart Charger?

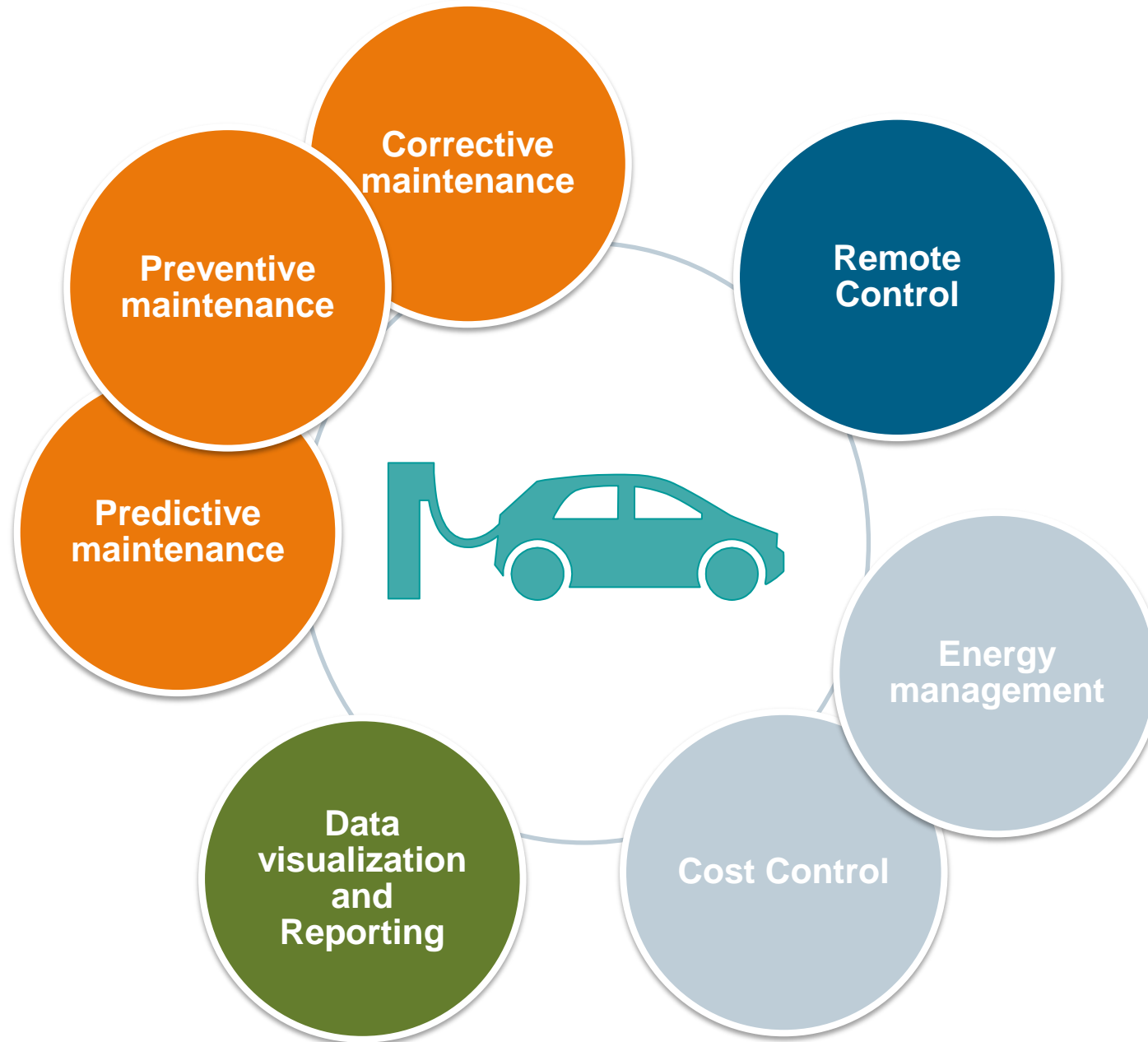
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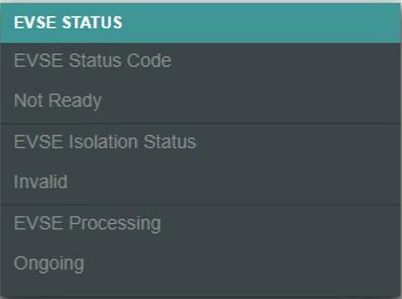
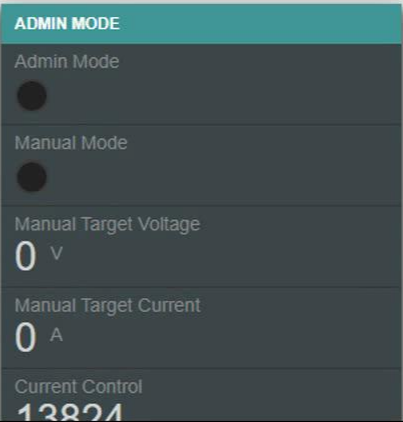
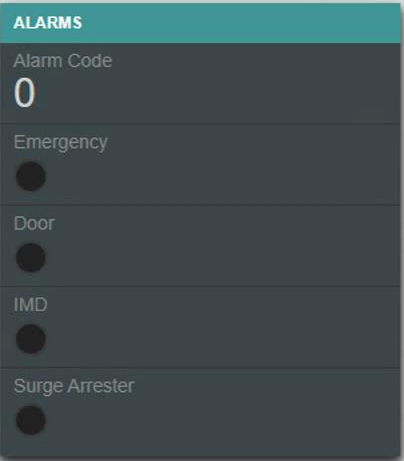
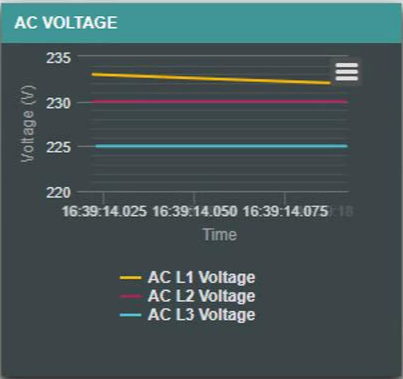
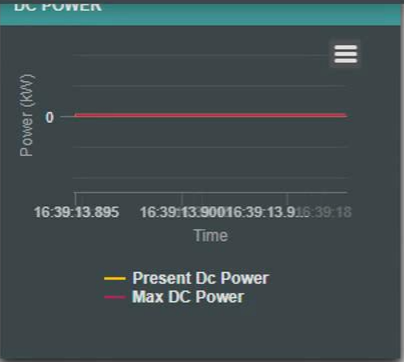
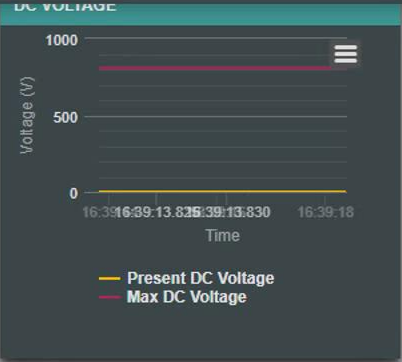
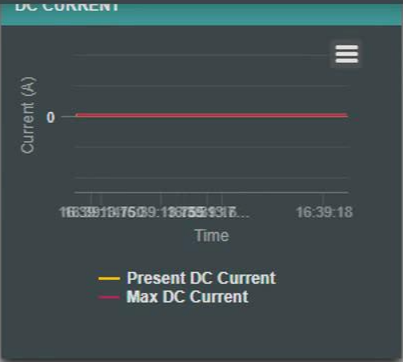


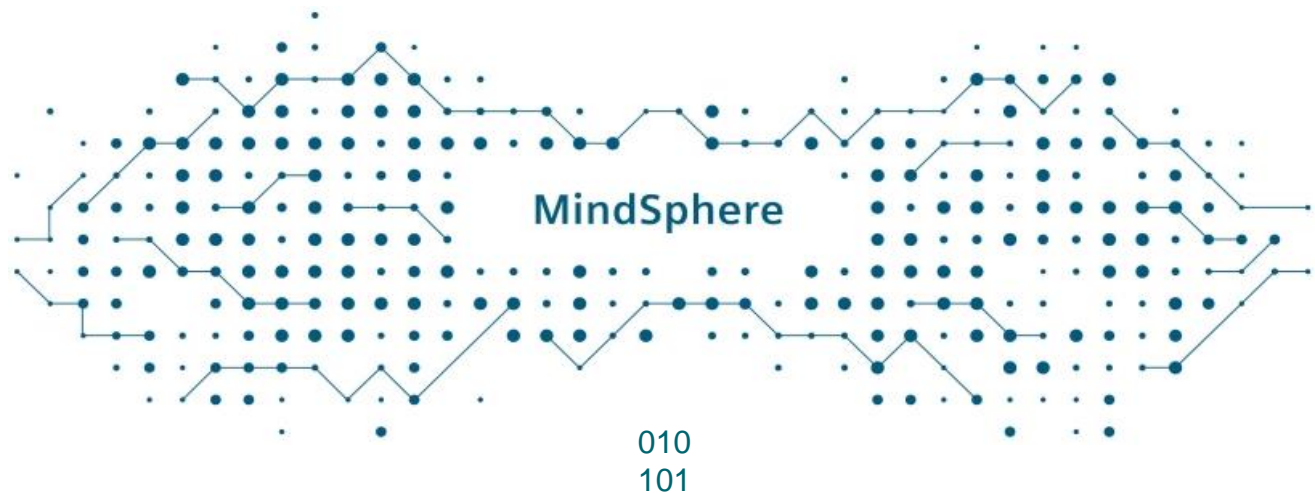
Problems arise.....



Smart Charger







LIS Airport

Non Conveyable Baggage Detection

Baggage Classification

Issue

- **Irregular Shape** of the bags and straps are one of the main causes of disruption in Baggage Handling Systems,
- **Identification** of irregularities in the baggage universe was, until now, a problem that could only be mitigated by human intervention.



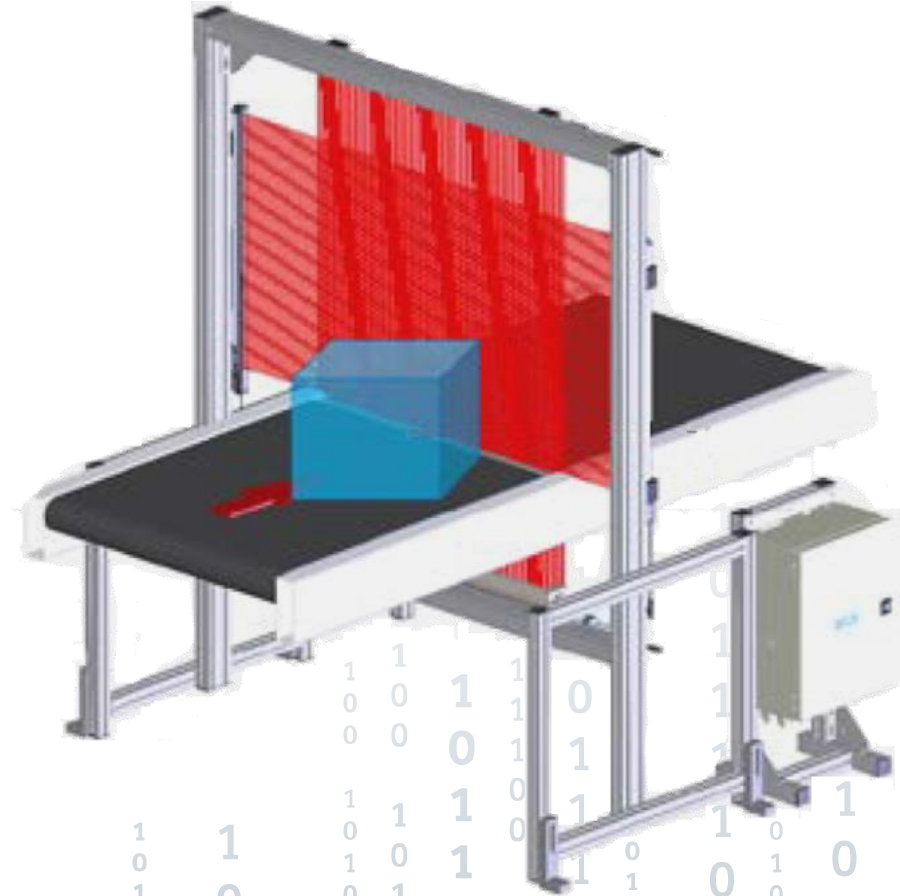
Objective

- How to avoid that irregular bags are fed into the system?
- Avoid impacts of:
 - Downtimes caused by Baggage Jams,
 - Damage of Bags
 - Damage of Baggage Handling System Hardware.

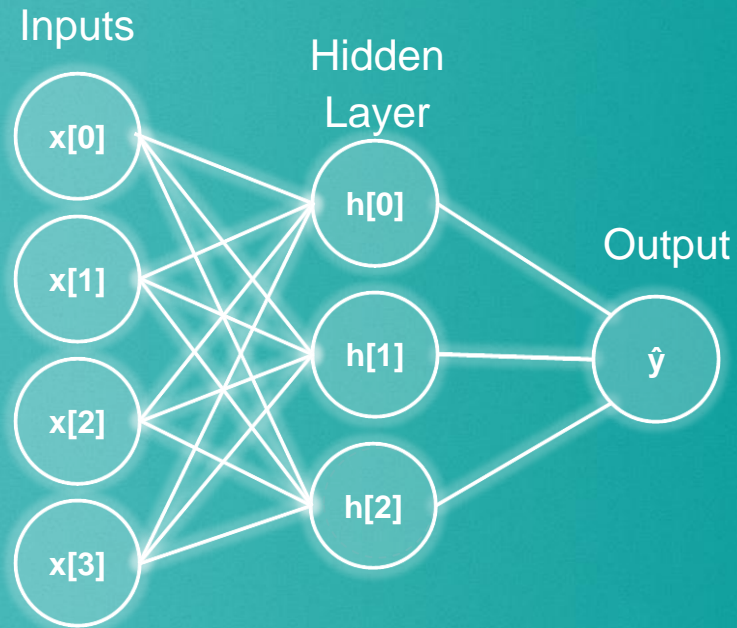


Digitalization of a Physical Bag

- **Digitalization** of a bag shape is performed by a dimensioning system,
- **Features** extracted by the dimensioning system, such as shape and photographic image are passed onto a dedicated computer for processing.



How did we solve the Issue?








- **Machine Learning** combined with the features extracted through the Bag digitalization Process, will engage the possibility to automatically identify non-conveyable bags,
- **Neural Networks** are at the heart of the non-conveyable system for classification of the Bags. With the increase in data input, the system will automatically learn how to better classify what is a conveyable item.

Baggage Classification

Lisbon Airport – Test Pilot

Item Overview

Image	ID	Attributes	
	1528381118890- NON_CONVEYABLE_DETECTION- M-1-1-112	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable
	1528381115722- NON_CONVEYABLE_DETECTION- M-1-1-111	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable
	1528381108357- NON_CONVEYABLE_DETECTION- M-1-1-110	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable
	1528381105034- NON_CONVEYABLE_DETECTION- M-1-1-109	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable
	1528381101636- NON_CONVEYABLE_DETECTION- M-1-1-108	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable
	1528381094555- NON_CONVEYABLE_DETECTION- M-1-1-107	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable
	1528381091463- NON_CONVEYABLE_DETECTION- M-1-1-106	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable
	1528381088159- NON_CONVEYABLE_DETECTION- M-1-1-105	timestamp classification-result	Jun 7, 2018 3:18 PM conveyable

Image



2






Image



Baggage & Operations Profiling

Relate Baggage Data with Flight Data

Baggage					
Airline	Flight Num.	Destination	BSM	WxHxL	Classification
	TP59	BSB	9000000001	38x20x48	Conveyable
	EK192	DXB	9000000002	37x33x63	Non-Conveyable
	LH1497	FRA	9000000003	32x35x74	Non-Conveyable

Bag Metadata Related to Bag ID



Baggage Profiling

Digital Log

Bagage ID

Classification

Digital Log of the Baggage



Conveyable Baggage Classification



1528381101636-
NON_CONVEYABLE_DETECTION-
M-1-T-108

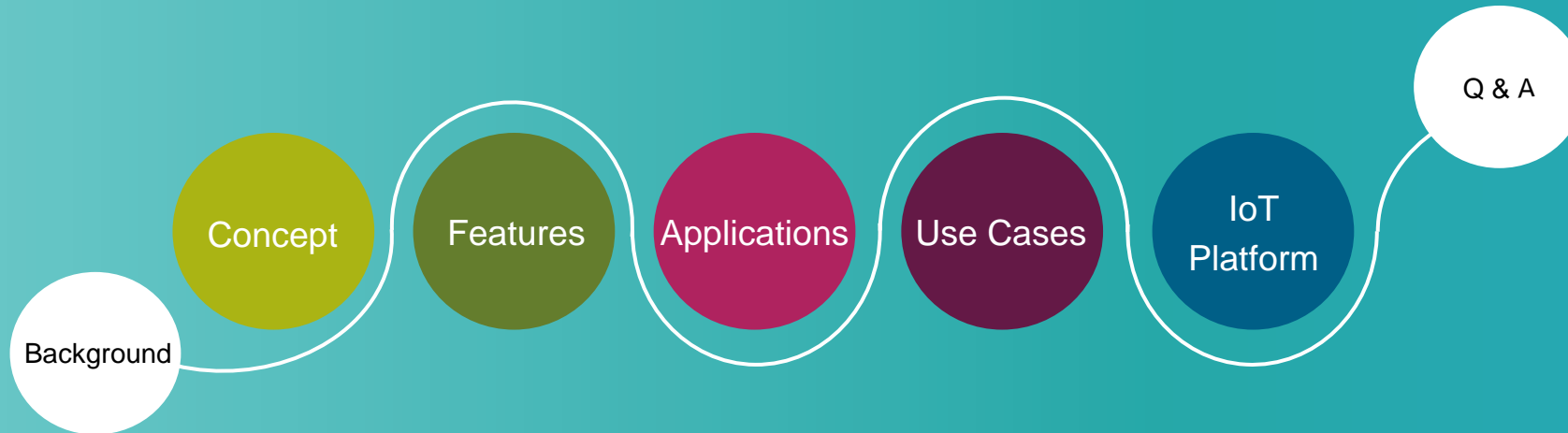
Jun 7, 2018 3:18 PM
conveyable

OmniLED

Autonomous IoT Connectivity

siemens.pt/digitalizacao

Agenda



Background



IoT will need a suitable infrastructure to connect billions of sensors



Current infrastructure is not prepared



Energy availability is commonly a problem to connect IoT sensors



Current solutions are not integrated
(multi-component with complex field installations)



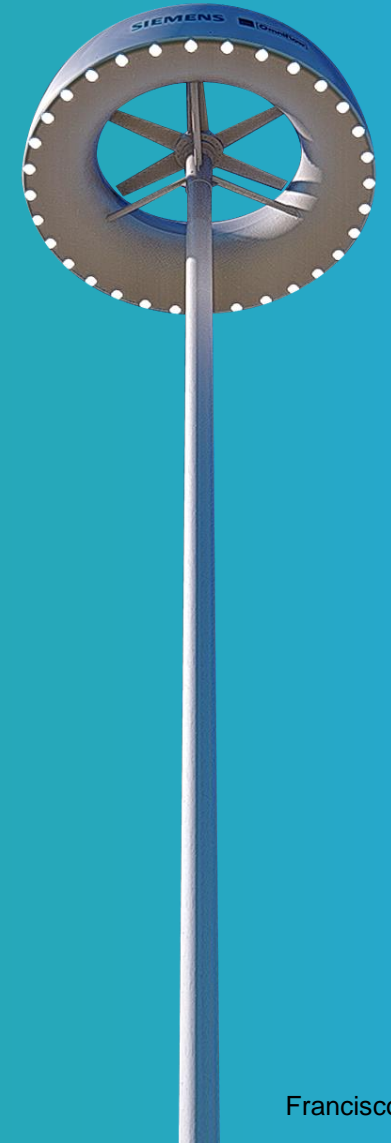
World's awareness to decrease energy consumption

Concept

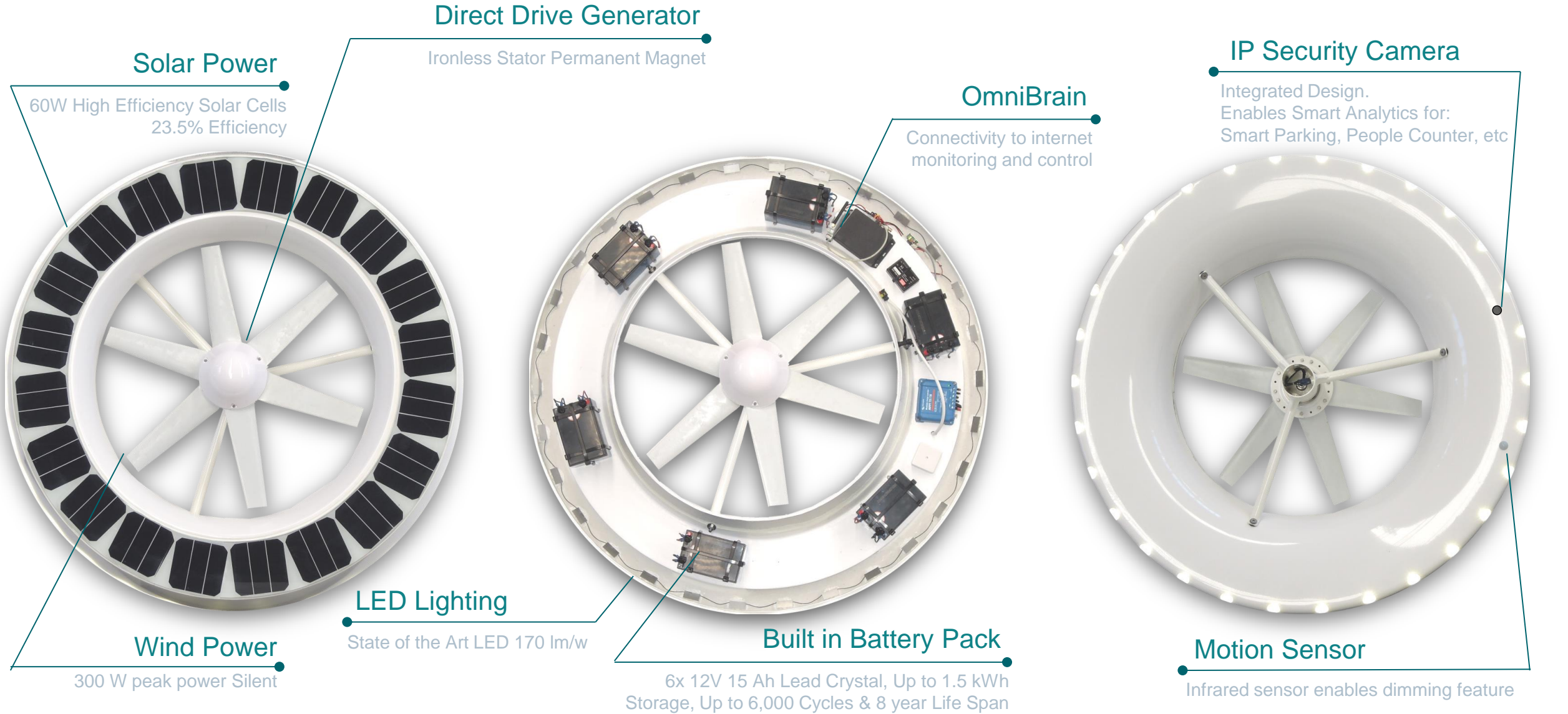


An out of the box system ...

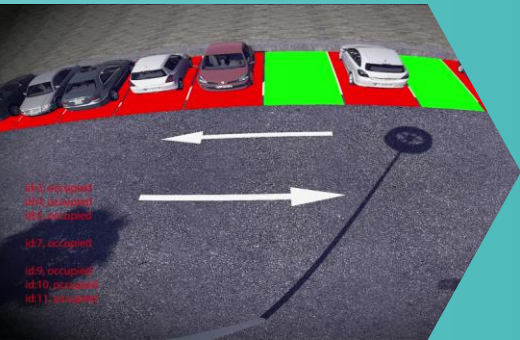
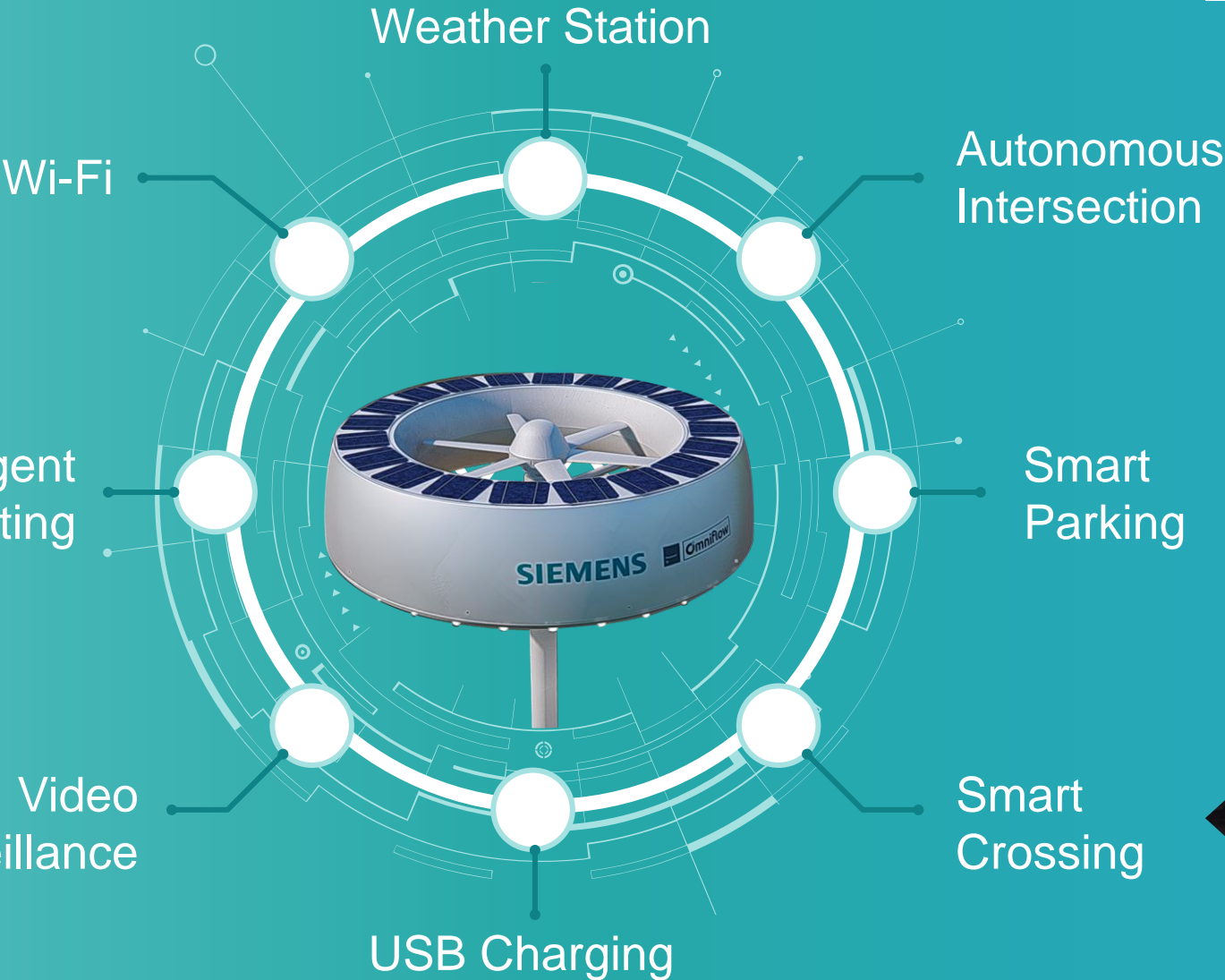
- Energetically autonomous with wind and solar power generation (no energy costs)
- Flexible Hardware Architecture for IoT
- Remotely monitored and controlled
- Plug & Play installation



Main features



Different Applications

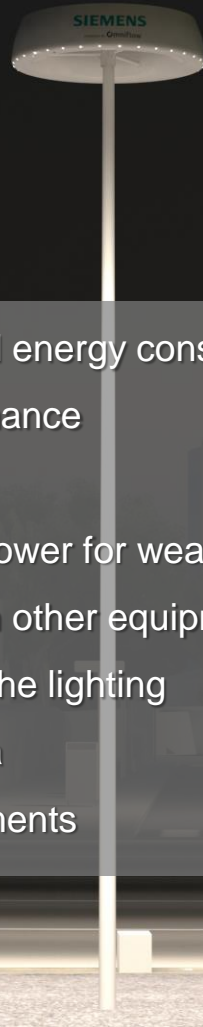


Some Use Cases



IoT Platform

- Monitor energy generation and energy consumption
- Assess the equipment performance
- Alert if there is a malfunction
- Evaluation of wind and solar power for weather analysis
- Integration and interaction with other equipments
- Controlling and programming the lighting
- Video streaming of the camera
- Management of sets of equipments



MindSphere

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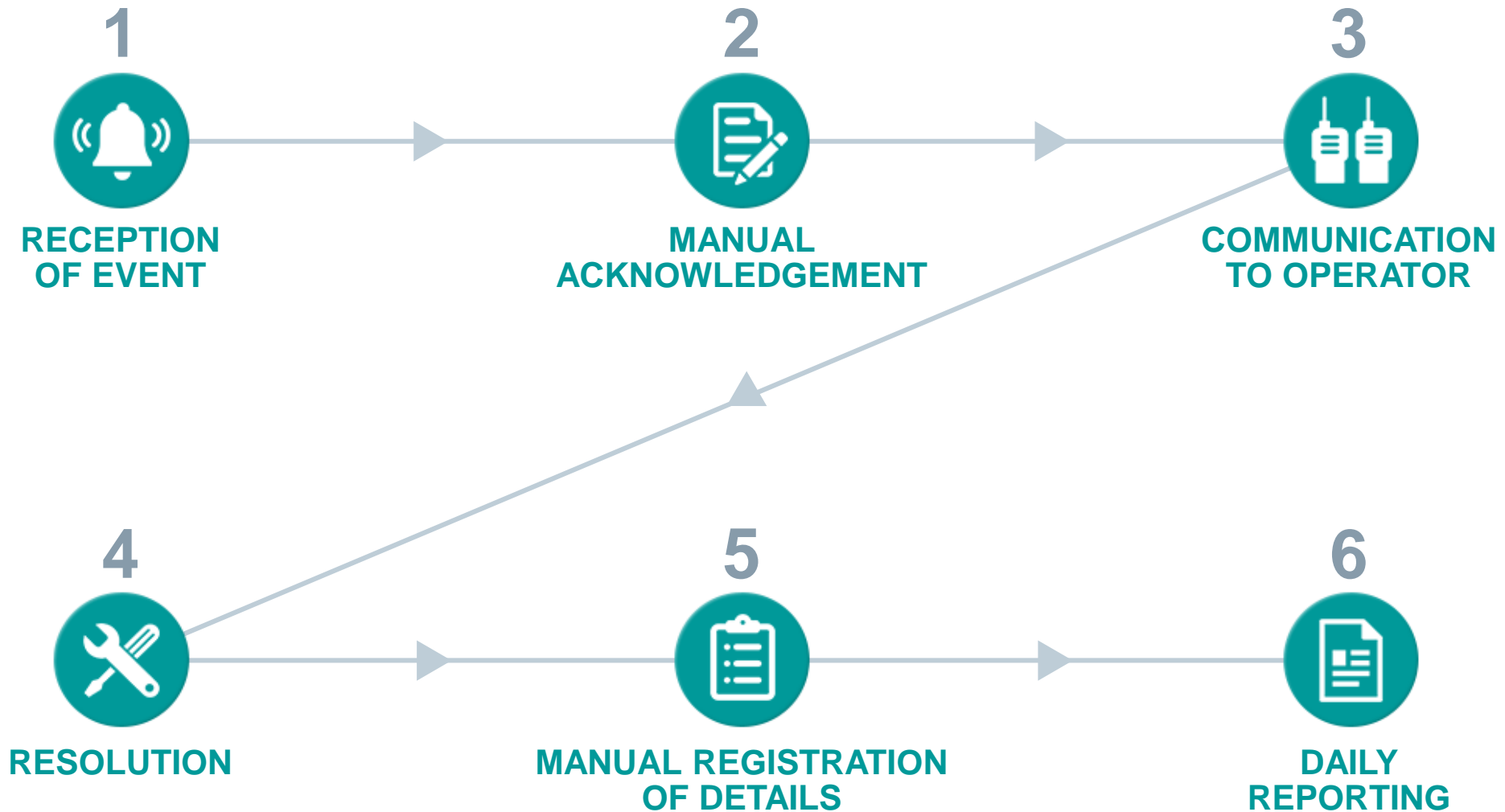
LOGIC Operations Manager

The logical approach to Issue and Resource Management

LOGIC _____ OPERATIONS MANAGER

INITIAL OPTIMIZATION CHALLENGE

Initial Optimization Challenge



Initial Optimization Challenge



RECEPTION OF EVENT



- Event may be occurring for **a period of time** before being noticed



MANUAL ACKNOWLEDGEMENT



- Events may **not be acknowledged** at the time of occurrence



COMMUNICATION TO OPERATOR



- Reception of event details are **unclear**
- Operator may end up at the **wrong location**

Initial Optimization Challenge



RESOLUTION



- Event resolution not performed in an **accurate or timely** manner



MANUAL REGISTRATION OF DETAILS



- **Overlooked or inaccurate event details** especially in peak periods



DAILY REPORTING



- **Inconsistent** event information
- Reports **not reflecting** the true installation performance

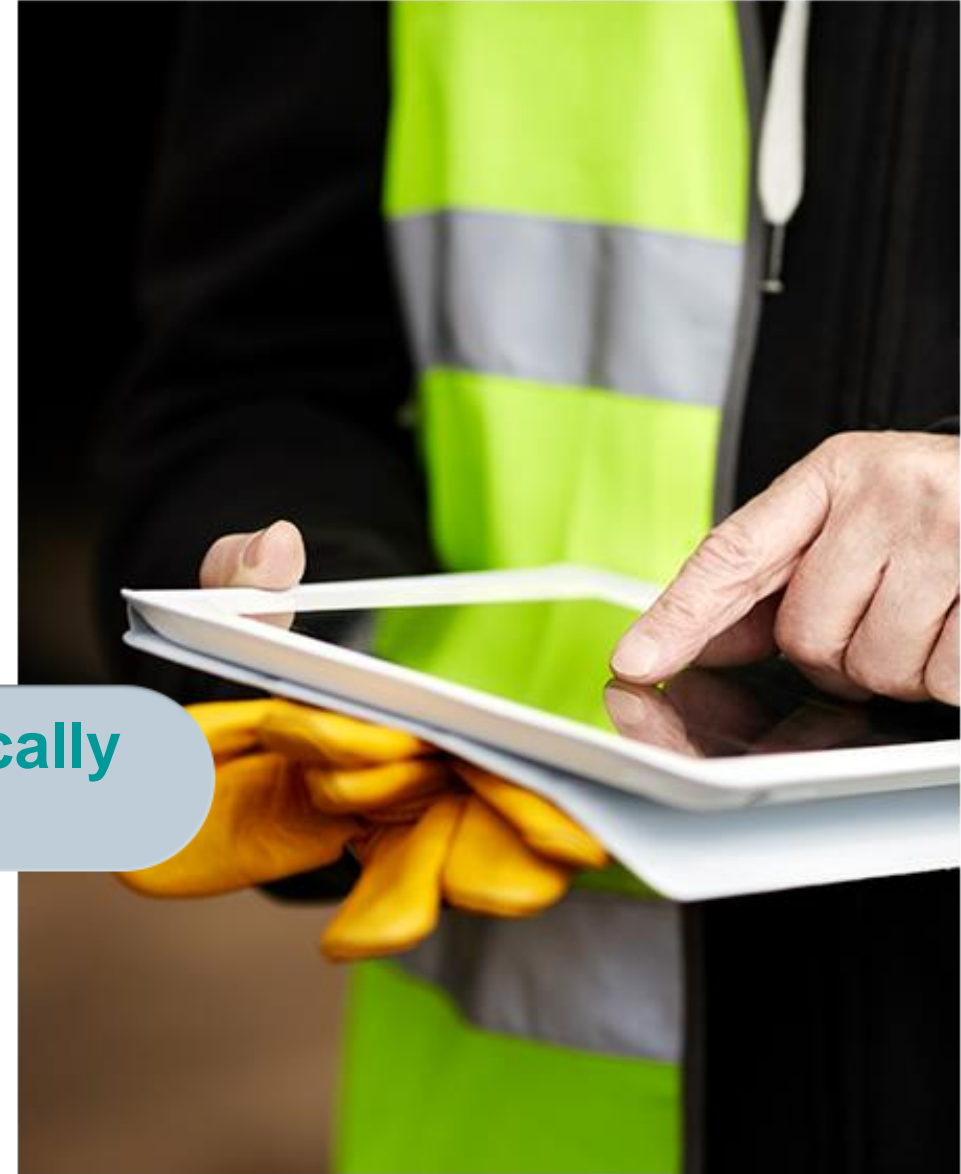
LOGIC _____ OPERATIONS MANAGER

DOING IT
WITH LOM


1 RECEPTION OF EVENT



Event **automatically**
received

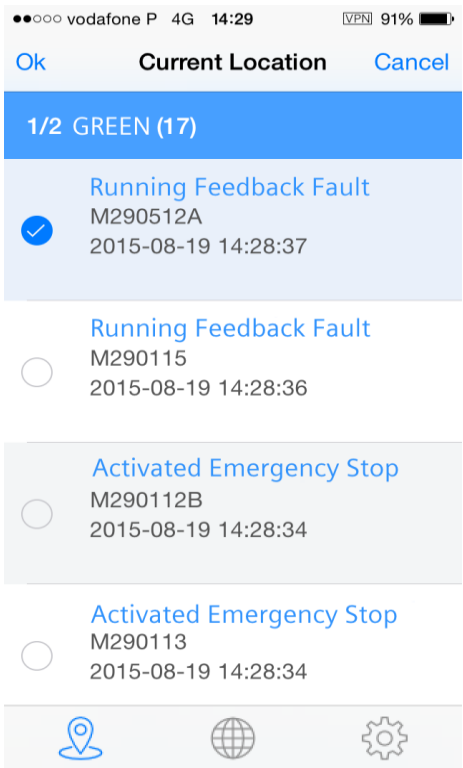
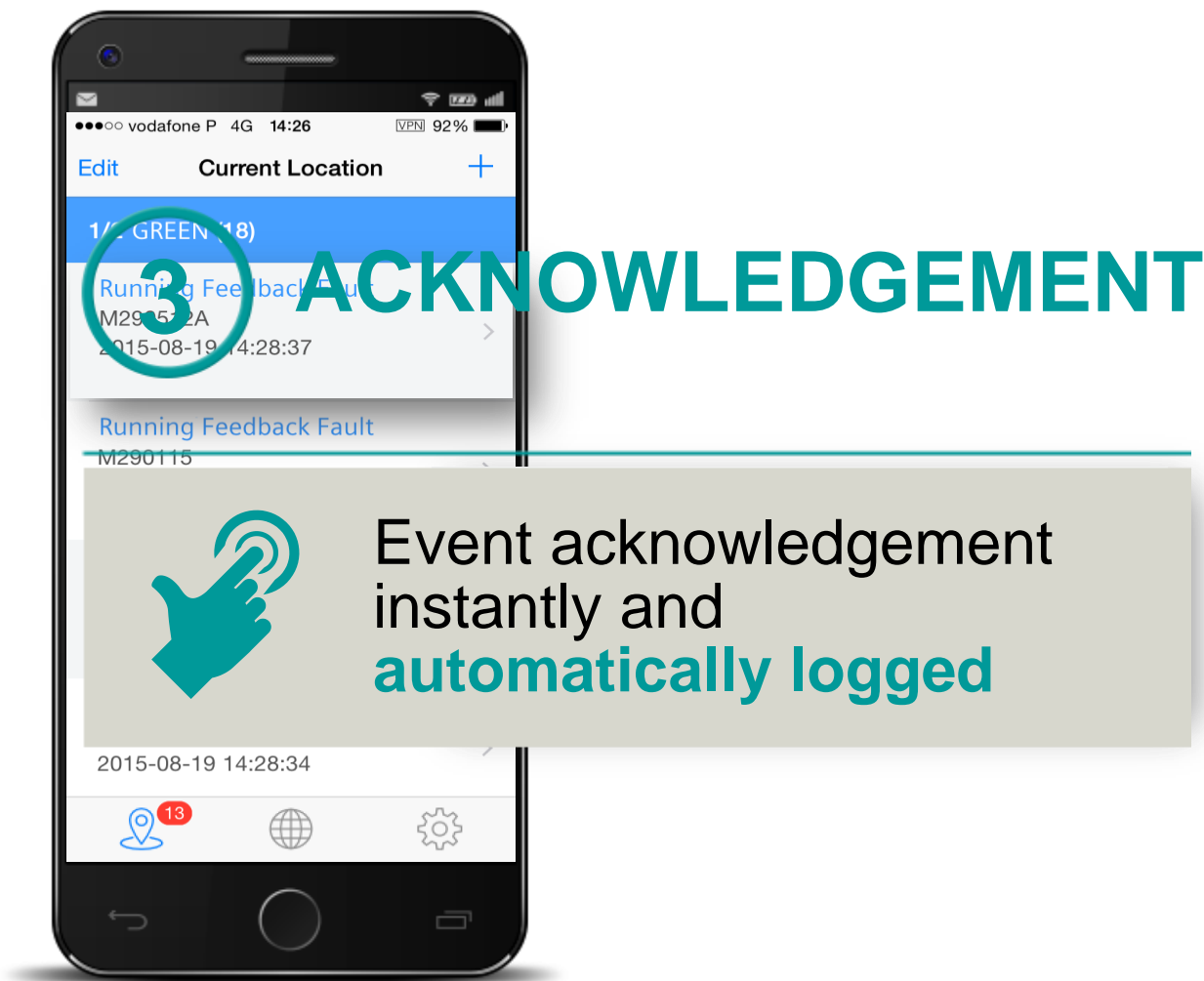


How it works with LOM



All event details
automatically available
to field operator

How it works with LOM



How it works with LOM

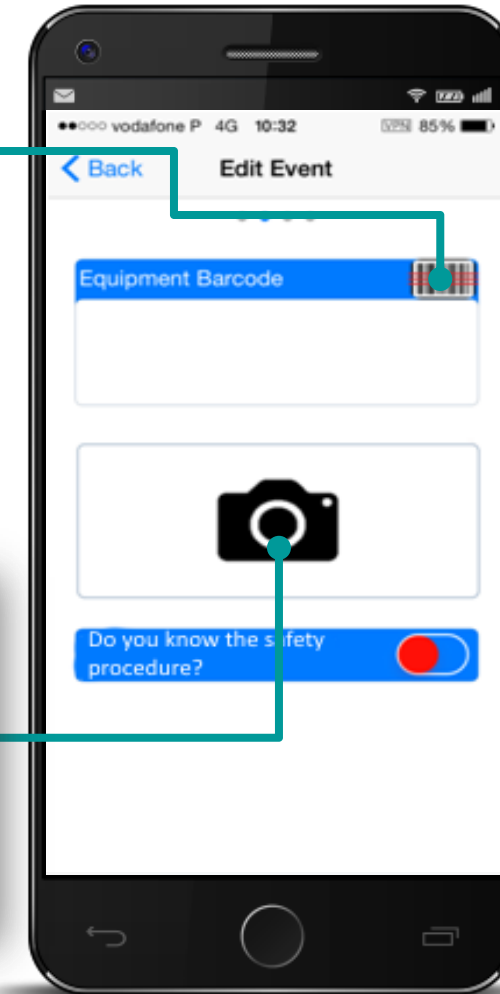
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4

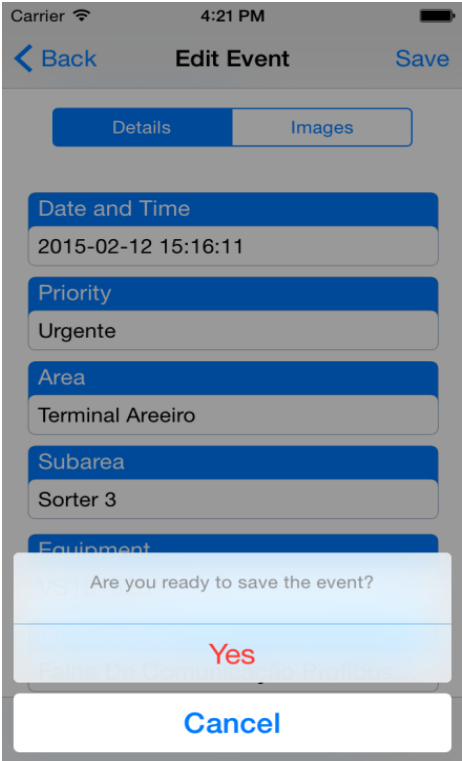
RESOLUTION



Step-by-
step **input**



How it works with LOM



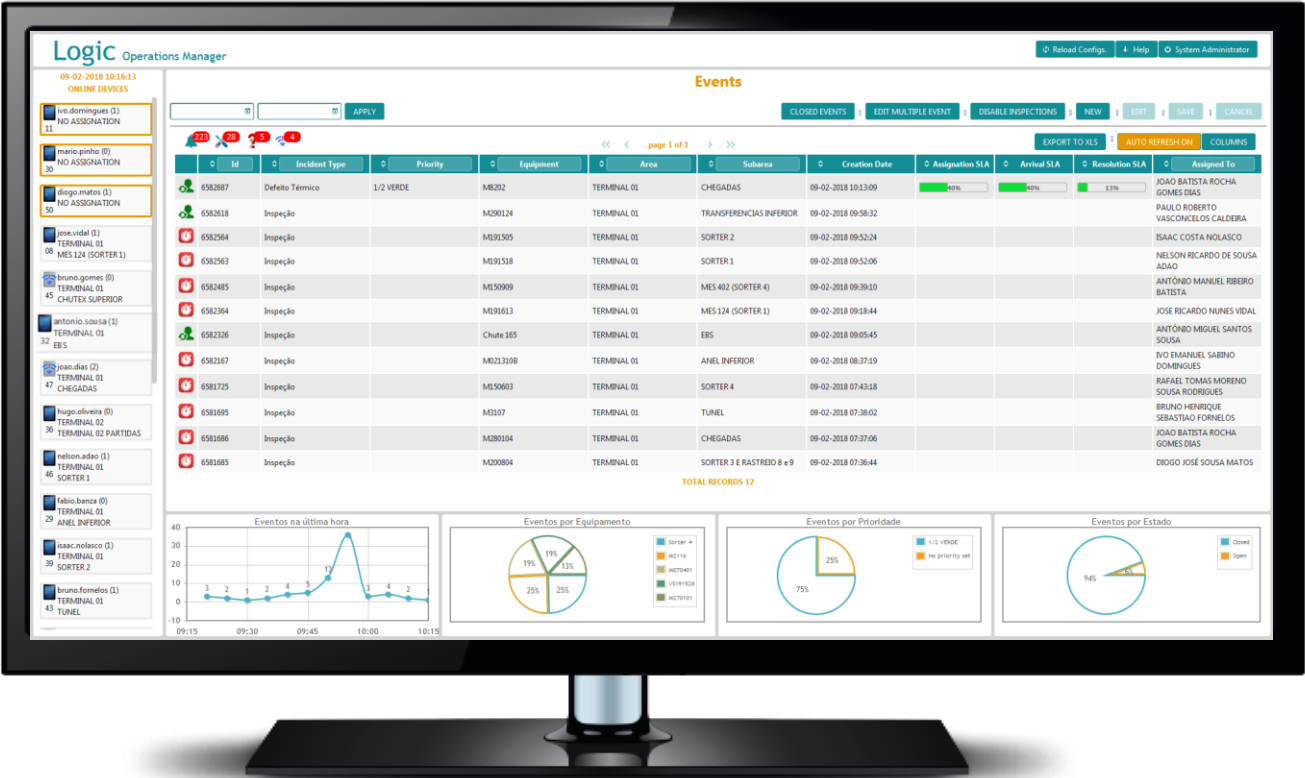
5 LOGGING



Event resolution **immediately logged** with duration and timestamp



How it works with LOM



6 REGISTRATION OF UPDATES



All event details recorded on a **single platform**



Information automatically sent to **one location**

How it works with LOM



ID	Date / Time	Terminal - Area	Equipment	Event	Operator	BSM (Flight)	Photos	Close
6581469	09/02/2018 04:43:21	TERMINAL 01 ANEL SUPERIOR	VM140411	Congestionamento ou Fotobolha Final Desfocada	VITOR MANUEL DOS SANTOS SILVA		Não	09/02/2018 05:03:57
6581651	09/02/2018 07:26:18	TERMINAL 01 SORTER 1	INJECT_131	Bagagem Suspeita em Linha OK. Outro Motivo	IVO EMANUEL SABINO DOMINGUES	0047932584 (TP 1535)	Sim	09/02/2018 07:33:37
	09/02/2018 07:30:09			Bagagem suspeita				
	09/02/2018 07:30:26							
6581713	09/02/2018 07:41:31	TERMINAL 01 CHUTES E PIBT'S	M201039	Defeito Térmico	LAURO ALEXANDRE PINTO MONTEIRO		Não	09/02/2018 07:44:49
6581734	09/02/2018 07:44:08	TERMINAL 01 CHUTES E PIBT'S	M201031	Defeito Térmico	LAURO ALEXANDRE PINTO MONTEIRO		NÃO	09/02/2018 07:45:22
	-							
6581824	09/02/2018 07:53:56	TERMINAL 01 SORTER 3 E RASTREIO II e 9	CL-V3200405	Bagagem Suspeita em Linha OK. Outro Motivo	DIOGO JOSÉ SOUSA MATOS	0047930479 (TP 412)	Sim	09/02/2018 07:55:25
	09/02/2018 07:53:56			Bagagem suspeita				
	09/02/2018 07:54:35							
6581850	09/02/2018 07:59:50	TERMINAL 01 ANEL INFERIOR	M2105C	Congestionamento ou Fotobolha Final Desfocada. Bagagens Juntas	JOÃO RUBÉN DOS SANTOS SMOES		Sim	09/02/2018 08:04:07
	09/02/2018 08:03:49							

Ocorrência ID: 6581651

Ocorrência ID: 6581824

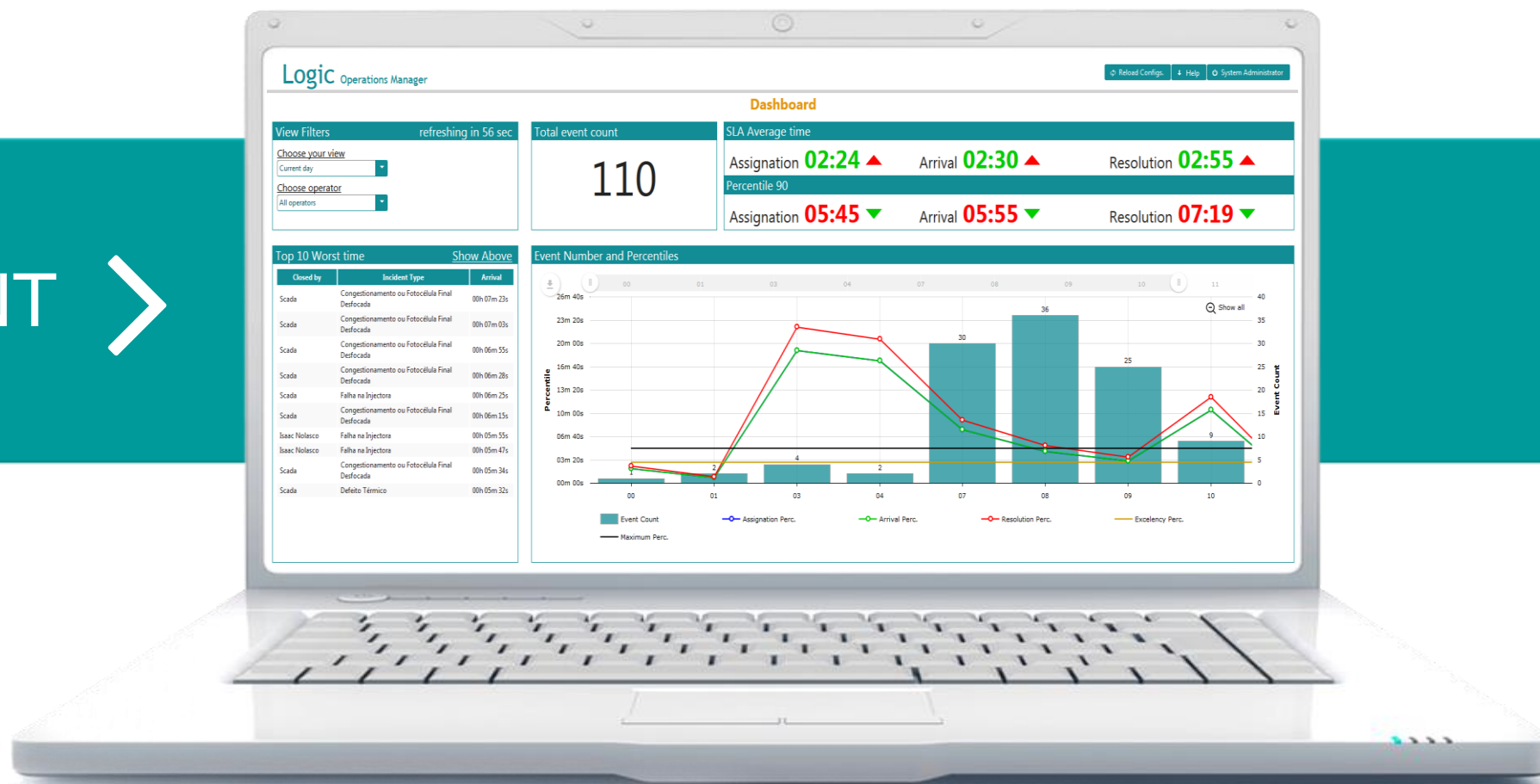
Ocorrência ID: 6581850

7 REPORTING



All event details documented and available for **extraction & analysis**

WEB-BASED MANAGEMENT CONSOLE



Current Features



Automatic assignation of **alarms/ events** to operators



Incorporation of contractual **SLA's**



Automatic assignation of **Inspection** routes



Predefinition of **Priority levels**



Predefined **motives**



Global list of **alarms/ events**



Alarm acknowledgement



Inter-operator **Messaging services**



Reporting

FUTURE ENHANCEMENT ROADMAP



Safety related enhancements



Audit and Operation related KPI **Dashboards**



Geolocation Map indicating user and equipment location



Help guide with manuals to assist operator in solving frequent events



Analytics to proactively anticipate needs and increase operational KPI's

LOGIC _____ OPERATIONS MANAGER

IMPLEMENTATION

@ LISBON INTERNATIONAL
AIRPORT



LOM @ Lisbon International Airport

March 2015

3 years in operation



80

Active registered users



~20%

Increase in productivity



4.000

Assets



~500

Events per day



50

Mobile devices



~50%

Improvement in response time

How did LOM enhance operations at Lisbon Airport?



In addition to providing **extensive statistical and reporting features**, a more rigorous control over the location of the operators has emerged, in terms of responses and event registration, as well as with the inspection routes. With LOM we are able to **fully maximize** the work of each operator and of the installation itself. ”

Carlos Maruta

Operations Manager

BENEFITS OF IMPLEMENTATION

Centralized event
management from
different sources

KPI
Monitoring

Automatic distribution of
events to mobile devices
segregated by zone

Intuitive

Real-time status of
users

Accurate evaluation
of necessary labour
force

Increase in
Response Time

Centralized
Management of Reports

Self-learning ability in
relation to new issues

Increase in
Productivity

Reduction in
Operational Costs

Thank
You

