Webinar:

Energy Optimization through IoT

For Building Management, Utilities, Industrial Facilities

Actility

adeunis
WIRELESS PRODUCTS & SOLUTIONS

opinum

Introduction

Shmuel Solomon

Webinar Meeting Agenda

- Webinar Introduction – **Shmuel Solomon**
- The Energy Management Solution – **Shmuel Solomon**
- Adeunis - **Luke Carden**
- Opinum – **Louise Baufays**
- Actility – **Shmuel Solomon**
- Use Cases **– Luke Carden, Louise Baufays, Shmuel Solomon**
- Live Demo – **Shmuel Solomon / Louise Baufays**
- Summary and Q&A

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Webinar Introduction

Today's speakers:

Shmuel Solomon
Your Partner For Digital Transformation - Enterprise Channel Sales Manager at Actility.
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Louise Baufays
Inside Sales Account Executive
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IoT Solution provider - Export sales manager.
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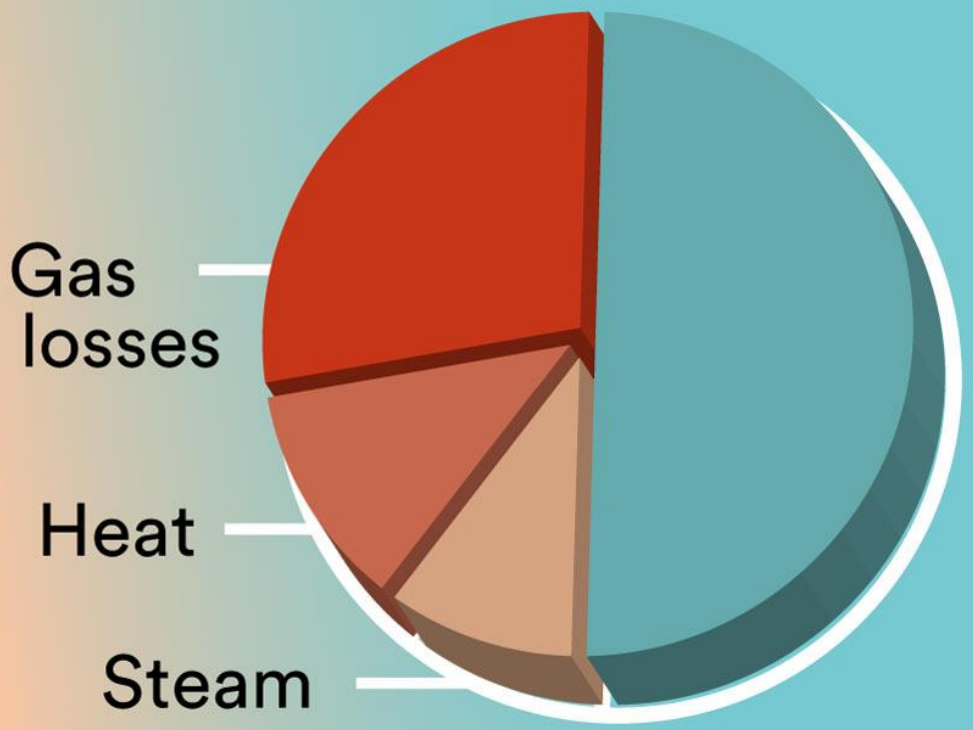
The Energy Management Solution

Shmuel Solomon

What Is Your Industrial Energy Management Strategy?

50% of all **Industrial** energy is wasted



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Industrial Energy Outlook and Challenges

According to the U.S. Energy Information Administration's, in 2012 the industrial sector consumed 54% of the world's total delivered energy. From 2012 to 2040, the global industrial sector's energy use is expected to increase annually by approximately 1.2%.

How we generate energy today and, more importantly, in the future is a key issue of our time. Critical are the solutions that are energy-efficient, renewable, and produce fewer or no greenhouse gas emissions.

Industrial companies seek ways to maintain optimal system processes and plant performance while planning and supporting all aspects of global sustainability improvements, energy management can act as the solution to counter the challenges faced.

These factors deliver benefits that can generate profits, increase competitiveness, manage risks to the environment, reduce carbon footprints, and attain operational excellence.

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Industrial Energy Efficiency Solution

One of the main energy management strategies is efficiency. This requires the establishment of a system of collection, analysis, and reporting on the organization's energy consumption and costs.

Energy management solution plays a key role in terms of improvements in the usage of assets, efficient industry, and energy processes, to eliminate or reduce operational and energy inefficiencies and decrease total operating costs.

Our energy optimization solution is a technique and technology dedicated to energy efficiency. It is used to determine the existing energy spending of in-service equipment's through identification of patterns preventing costly operational spending & optimize energy spending.

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Energy Intelligent Solution - A Truly Integrated Story

✓ **An off the shelf pre-integrated energy solution combined of three products**

Sensors adeunis

WIRELESS PRODUCTS & SOLUTIONS

- Masters the management of equipment energy and its optimization through intelligent connected sensors.

Connectivity Actility

- ThingPark Enterprise.
- ThingPark Wireless.

Application opinum

- Opinum Data Hub Analytics for smart energy management.

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Energy Intelligent Solution - Features

✓ **Energy savings are realized through enhanced visibility. Data visibility drives appropriate energy saving actions, thereby achieving organizational objectives.**

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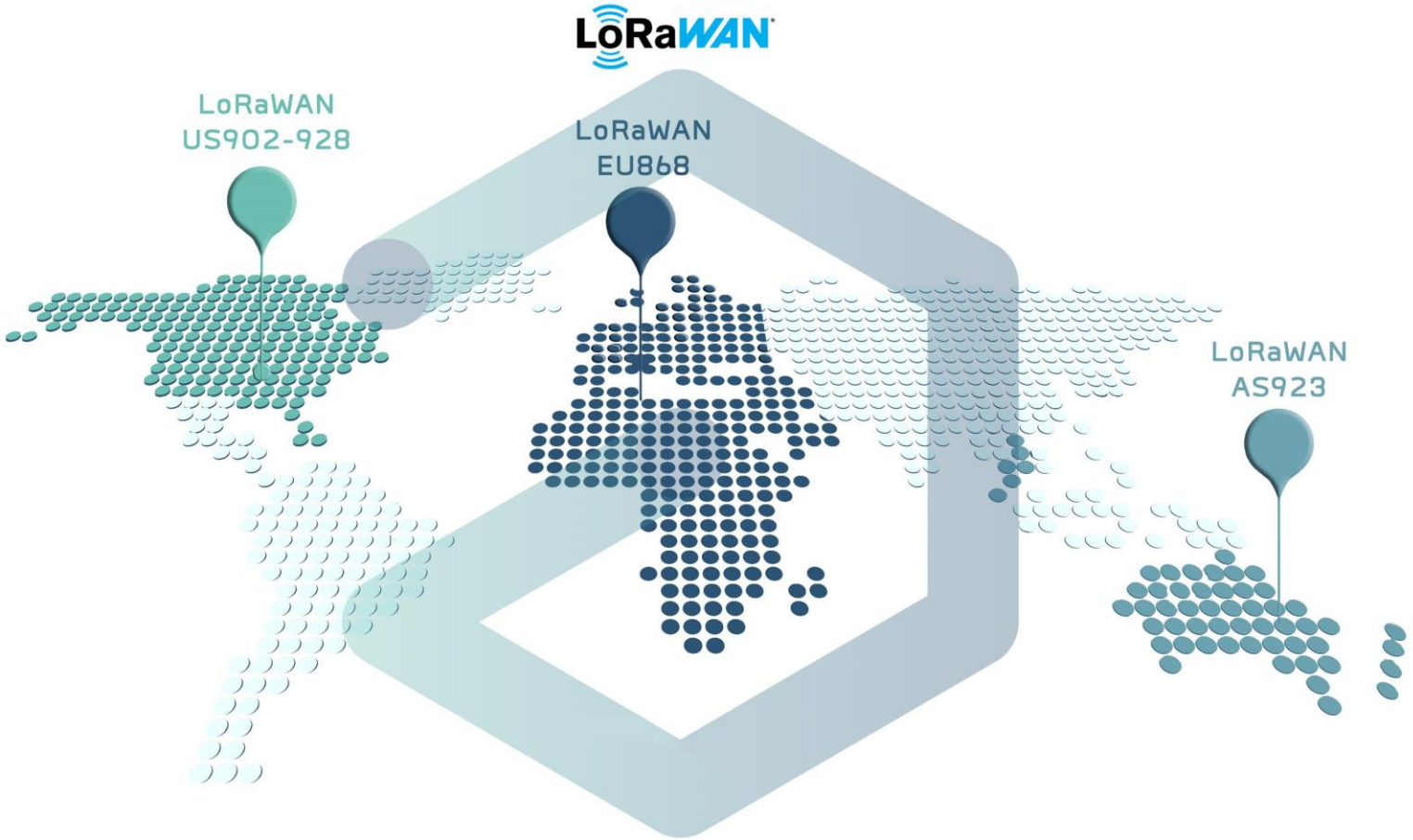
Adeunis

Luke Carden

Adeunis products in the world



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Adeunis & IoT

01
COLLECT

Data thanks to IoT sensors

02
TRANSMIT

Data via network protocols

LoRaWAN

Actility

03
ADD VALUE

The data analysed

opinum

04
MANAGE

Sensors over time

To collect data

Adeunis has a wide range of IoT sensors to meet the following main use cases:

Consumption

Monitor energy consumption

Temperature / Humidity

Record temperature and/or humidity levels

IAQ

Monitor and analysing Indoor Air Quality

Ventilation

Monitor the proper functioning of a ventilation system

Luminosity / presence

Analyse the luminosity of a room and control human presence

Functioning

Check the correct functioning of a system or equipment

Pulse Meter

Device – LoRaWAN Class A

Examples of connected meters

- Water - Itron Flodis / Wehrle / Diehl
- Gas – Elster BK
- Electricity – Socomec
- Thermal – Itron CF

Pulse Meter Device Description

Device Features

- Transforms any meter into smart wireless meter - Any industrial equipment with an impulse output.
- Supports two connectable meters.

Major Use Cases

- Building Energy Management System.
- Increase performance, optimize energy consumption.
- Machines and Industrial Equipment.
- Streaming mode - water leak detection.

Typical Applications

- Energy consumption monitoring and control.
- Water, gas, electricity and thermal metering.

Advantages

- Interoperability - Pre-integrated with Actility IoT-Flow for simple decoding and encoding services.
- Simple installation process - locally and remotely configurable.
- Tamper detection.

Reference Use Case

- Grenoble CHU : Report water meter readings from external points of the Grenoble University Hospital.
- Ibis Hotels : Adeunis PULSE and PULSE ATEX sensors measures electricity and gas meters consumption.
- Hervé Thermique : Optimize energy consumption, improve the well-being of occupants and ensure the proper functioning of equipment.

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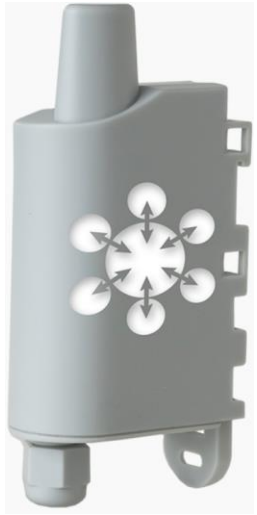
Modbus Interface

Device – LoRaWAN Class A/C

Examples of connected equipment

- Electrical automates
- Pumps
- Valves
- Control Machines



Modbus Interface Device Description

Device Features

- Provides wired to wireless equipment connection.
- Support any equipment and machines through a Modbus slave.
- Supervision of up to 20 slaves.

Major Use Cases

- Increase performance, optimize energy consumption.
- Machines and Industrial Equipment.
- HVAC control and monitoring.
- Legacy industrial equipment.

Typical Applications

- Water, gas, electricity and thermal metering.

Advantages

- Locally and remotely configurable.
- Interoperability - Pre-integrated with Actility IoT-Flow for simple decoding and encoding.

Reference Use Case

- An industrial factory connected all its installed PLCs (Programmable logic controller) to upload entire energy data reported from various machines.
- In a Smart Building management project, the operator, monitors the energy consumption and temperature of its DHW (Domestic Hot Water) circuit by connecting their thermal energy meters through a modbus interface.
- A large manufacturer of industrial speed variator collects and analyzes different machines operational data such as energy and maintenance alerts through the modbus interface.

Installation Examples

Pulse Meter –
Connected to an Itron Water Meter

Modbus Interface –
Connected to a monitoring device

Actility

Actility

Shmuel Solomon

Actility

In Short

- ✓ Actility is a **world leader** in LPWAN **industrial-grade connectivity solutions** for the IoT.
- ✓ Also provides revolutionary **ultra-low TCO geolocation technologies** through its subsidiary **Abeeway.**
- ✓ Headquarters **– Paris, France / Worldwide regional offices.**
- ✓ Founded – **2010.**
- ✓ Employees – 130. **60% R&D and Product Managers.**
- ✓ Founder, CTO & CEO - **Olivier Hersent**.
- ✓ Actility is **ISO 9001 certified.**

Mission

✓ Actility believes in a more efficient and sustainable world through **ubiquitous digital-twin technology.** We want to spark this transition and become the **leading global mediation** platform between cloud apps & physical world by 2023.

✓ Actility's ambition is to **put IoT at the service** of cities, citizens, industries, and communities, enabling them **to form a connected ecosystem**.

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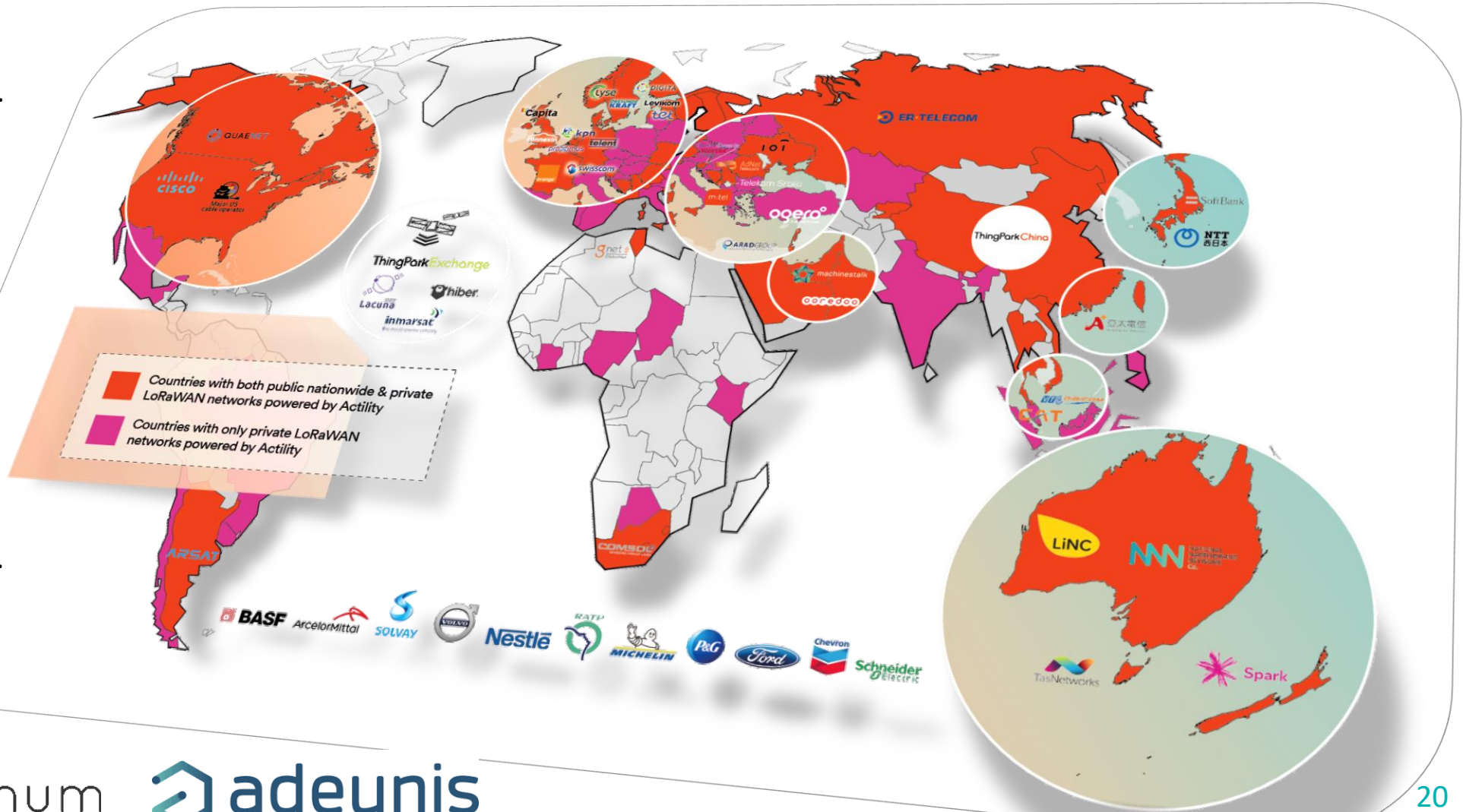
Actility Global Footprint

We deploy IoT networks across campuses, regions and whole countries, everywhere.

- ✓ **Thousand + of industrial enterprise** networks worldwide.
- ✓ Over **35K public network** base stations worldwide.
- ✓ **20 billion** IoT transactions per year.
- ✓ **24/7 regional georedundant datacenters.**
- ✓ **50+ large-scale Tier-1** service providers.
- ✓ **20 interconnected networks** across countries and space through an **operational Activation & Roaming** platform.



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ThingPark Product Suite

We accelerate the creation of IoT solutions, bringing a profound digital transformation of industries and society

- ✓ **ThingPark™** is our **multi-radio IoT connectivity** platform allowing to deploy LPWAN worldwide, integrating LoRaWAN®, but also low-power cellular (LTE-M, NB-IoT).
- ✓ **ThingPark™ Suite** is a comprehensive portfolio of **products and value-added services.**

Connectivity

Tools to plan, deploy, operate and monetize IoT networks:

ThingParkWireless
LPWAN core network platform for Service Providers (public & managed private networks) with single interface for LoRaWAN®, LTE-M & NB-IoT.

ThingParkEnterprise
LoRaWAN® network management for on-premises or hosted private enterprise networks.

ThingParkExchange
Peering hub enabling global device activation and connectivity, interconnecting public & private networks.

Added value IoT Services

Dataflow management and data enrichment tools:

ThingParkX
Transforming, storing and exposing data to apps and cloud platforms.

ThingParkLocation
Multi-technology location service using Abeeway Tracking Devices.

GPS · LOW POWER GPS · WiFi Sniffing · BLE Beaconing · LoRa Location

Scalability

Device life cycle management tools for large-scale deployment:

ThingPark Activation
Secure large-scale device activation service for LoRaWAN networks.

ThingParkFUOTA
Reliable firmware update over-the-air update platform for LoRaWAN devices.

Ecosystem Engagement

Tools for device development & market deployment:

ThingParkDeveloper
self-service portal & developer network.

ThingParkMarket
Marketplace for IoT devices, Applications and end-to-end IoT Solutions.

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LoRaWAN – A Leading Choice For Energy Optimization Solution

Why LoRaWAN is the best wireless tech? because it is easy to deploy (long range indoor), provide a reliable connection (macro diversity) and network investment can be amortized over various verticals.

Coverage
- ✓ **5-15 km range**
- ✓ Deep indoor
- ✓ Star network
- ✓ **Bidirectional communication**

Cost
- ✓ **Low deployment costs**
- ✓ License-free spectrum (ISM band)
- ✓ **Minimal infrastructure**
- ✓ Low power consumption
- ✓ 10+ years battery life

Eco-System
- ✓ **Availability of end-products to ensure ROI of network deployment**
- ✓ Strong ecosystem to ensure quality and longevity of the solution
- ✓ **Actility is at the hearth of the LoRa Alliance**

Security
- ✓ **Secured communication protocol**
- ✓ Two layers of security: one for the network and one for the application
- ✓ AES encryption is used with key exchanges

Usage
- ✓ Public & private networks
- ✓ Network scalability
- ✓ **Easy to install, simple to operate and do not rely on wires**

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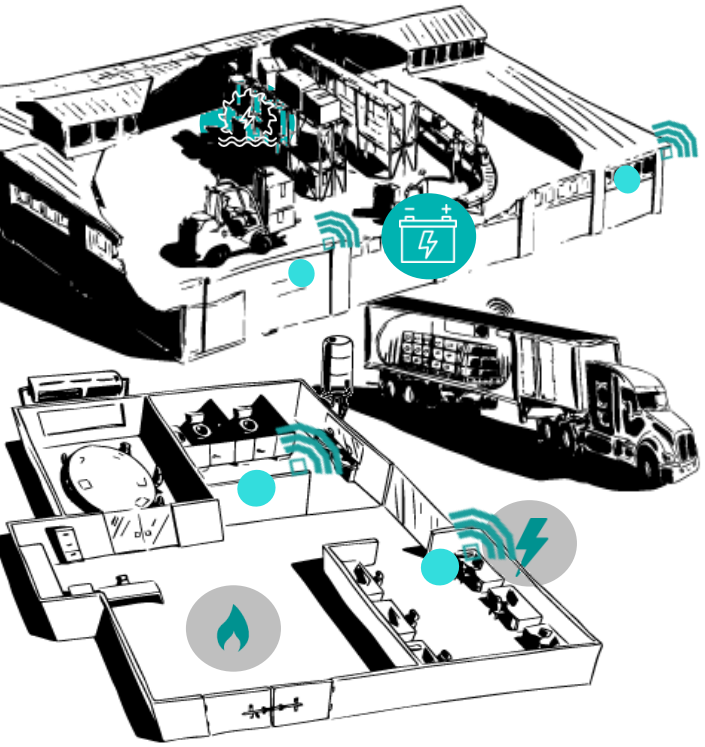
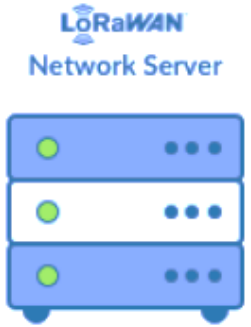
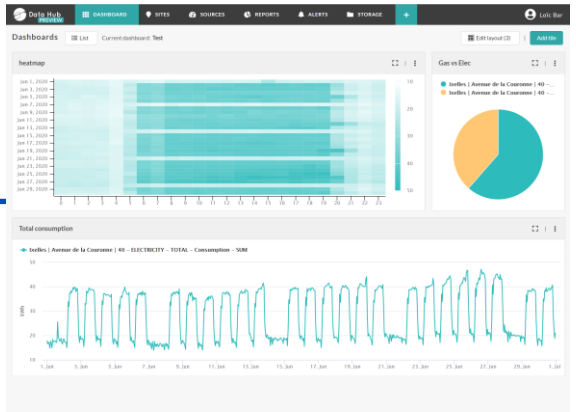
Transform Energy Data Into Useful Information - How Does It Work?







Pulse, Modbus Adeunis Sensors → ThingPark Private Gateways → ThingPark Network Server (SaaS, OCP) → Opinum Application for Insights and Analysis

Low Power communication enabling 10 years battery life	Robust Radio technology Immune to interferences from Cellular, Wi-Fi…	Operation & Management of a highly scalable Network via a simple user interface	Data Mediation Layer for seamless integration of the LoRaWAN Network to the Application

Native End-to-End encryption and authentication of communications

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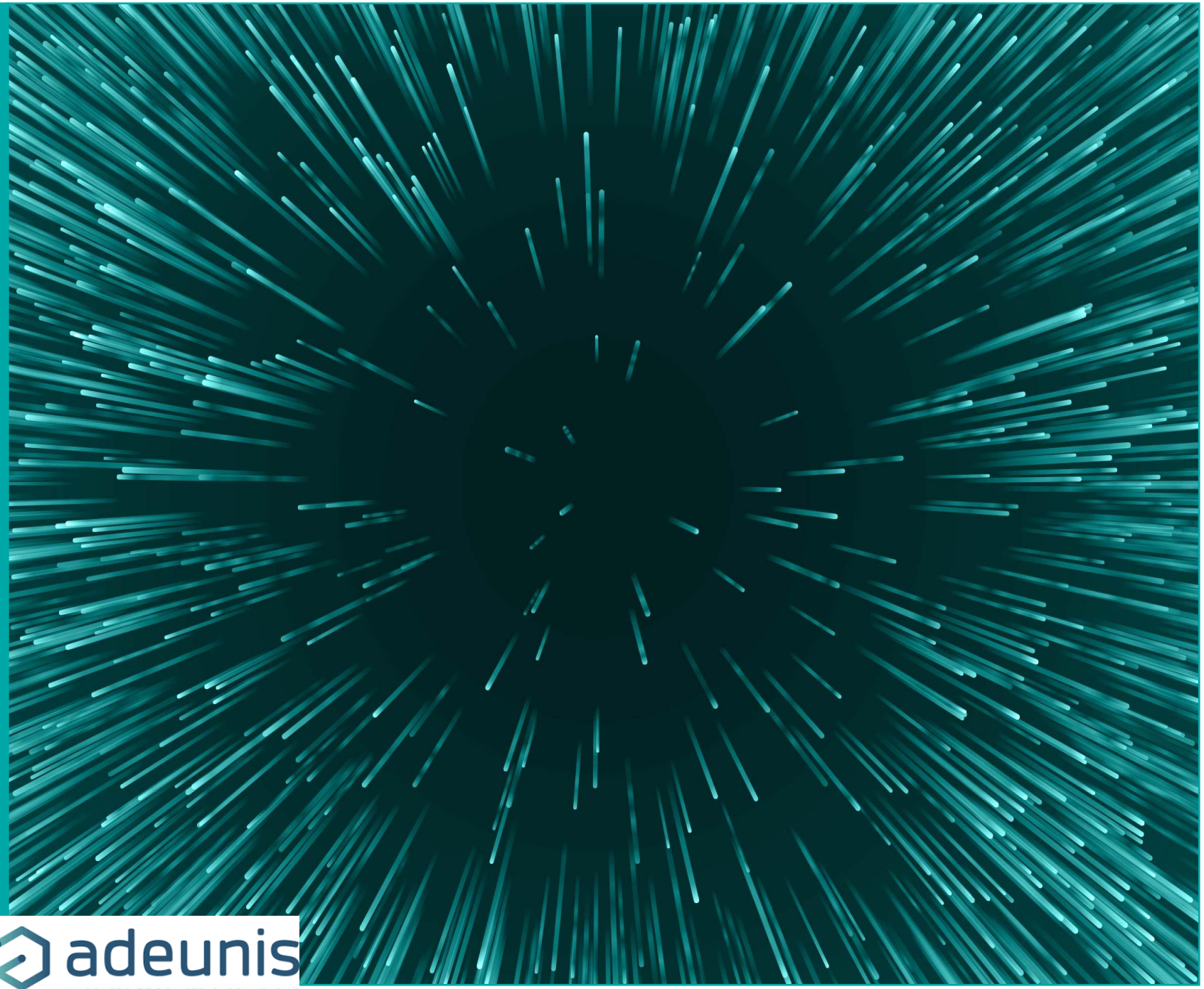
Opinum

Louise Baufays

opinum

The First Datahub Designed for Energy & Environmental Actors



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Opinum contributes to a better environment and to the energy transition with a Data Hub letting energy and environmental actors leverage the untapped potential of data

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Data Hub is the foundation to rapidly build data-oriented applications to improve operations, engage with customers and generate new revenue from digital products.

socomec
Innovative Power Solutions

- Leverage your IoT data to propose new services

EDF

- Lower maintenance cost by using predictive maintenance

ORES
OPÉRATEUR DES RÉSEAUX GAZ & ÉLECTRICITÉ

- Build customer portal for B2C customers

SOLVAY
asking more from chemistry®

- Optimize renewable power revenue

TOTAL

- Implement a EMS for your B2B customers

Bouygues Immobilier

- Innovate in Facility Management

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IT / DEV OPS / DATA SCIENTIST

BUSINESS

BACKEND

FRONTEND

DATA ACQUISITION

FLEXIBLE DATA CONNECTORS

{API} PULL FTP CRM Actility

COMMON DATA MODEL

DATA EXPORT

BI {API} ...

DATA QUALITY

CUSTOM ANALYTICS

OUTLIER PEAKS ANOMALIES GAP

DATA CLEANING

DATA QUALITY ALGORITHMS

CUSTOM ALGORITHMS

DATA ANALYTICS

CUSTOM ANALYTICS

R ...

MARKETPLACE

BUILDING ENERGY MODELING

inetum

ASSETS PREDICTIVE MAINTENANCE

Atos

CO2 ANALYTICS

DATA VISUALISATION

DASHBOARD & ALERTS

DASHBOARD GENERATOR

REPORTS SCHEDULER

EVENT / ALERT GENERATOR

BI

TIME SERIES

DATABASES

Connect & Transform

Data Quality & Processing

View & Share

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Backbone of your digital transformation

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Success Stories

Shmuel Solomon
Luke CARDEN
Louise Baufays

Vietnam - DEEP C Industrial Zones Use Case

Customer

- DEEP C Industrial Zones is a **large industrial infrastructure operator** based in Vietnam.

The need:

- Understand the existing electrical distribution model, collect and analyze customers energy consumption data, reduce energy spends and reduce manual tasks.
- "Since we were operating on a large area, we needed an automation solution to collect information to better organize our own activities and also needed a solution to process this data in the most practical way possible…." says Niels Hubert, COO of DEEP C Green Energy, one of the group's entities.

The Solution:

- Centralized ThingPark Enterprise & Opinum analytics, as well as smart meters that were installed across the big industrial infrastructure to automate the collection and analysis of ener[illegible]d environmental d[illegible]

DATA ACQUISITION | DATA QUALITY | DATA ANALYTICS | DATA VISUALISATION

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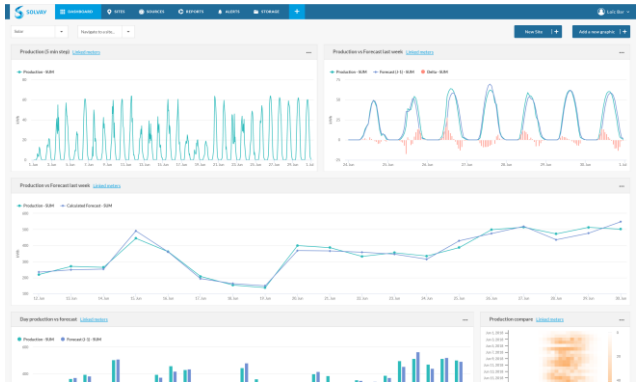
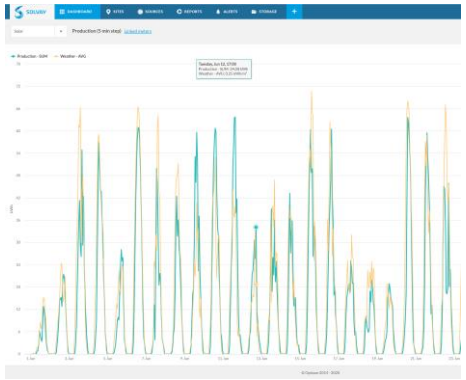
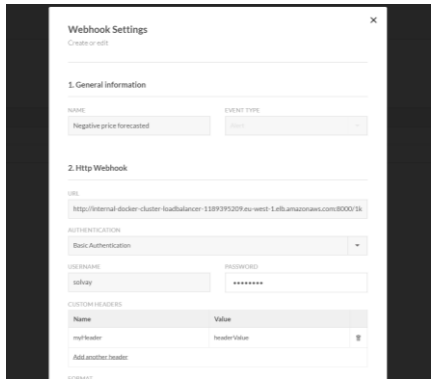
SOLVAY
asking more from chemistry®

Solvay Energy Services is a Power & Gas Utility company in France. They also act as an integrator for third party energy procuders. They use Data Hub to collect SCADA data alongside with pricing information to forecast production and act on negative prices.

- → Wind & Solar SCADA integration
- → Active management of negative price
- → Alerting & reporting
- → EPEX & weather forecast data integration







Key numbers

- → 100+ Wind & Solar farms
- → Since 2019
- → 5min based data

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Denmark- Smart Industry Use Case

Customer

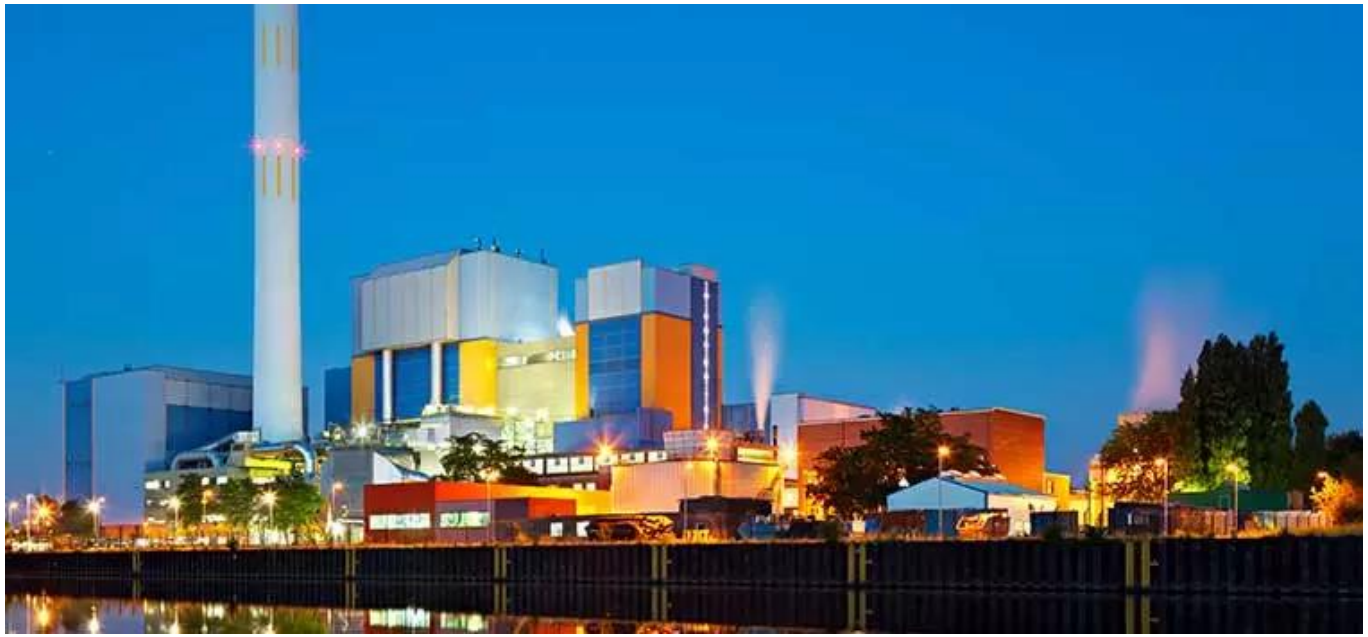
- Manufacturer located in Denmark with 5 buildings and 50 sub meters

The need:

- Monitor the water consumption of sub water meters
- Determine the equipment's using the most energy and need to be upgraded

The Solution:

- Adeunis pulse IoT device installed on every sub meter. The data analytics were provided by a partner solution provider in Denmark



1 Start

2 Deploy

3 Operate

4 Maintain

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Live Demo

Shmuel Solomon

Louise Baufays

ThingPark Enterprise - Actility Energy Optimization Backend Solution Dashboard

Information | Status | Applications | Location | Radio Traffic History | Radio Statistics | Last 10 Packets | No uplink activity alarm settings

DEVICE INFORMATION

Name: Pulse New model

Manufacturer: Adeunis

Model: Pulse Sensor

DevAddr: 04-97-C6-98

DevEUI: 00-18-B2-40-00-00-5B-16

Additional Information: Adeunis LoRaWAN Pulse Device - Smart Energy Solution with Opinum App

SEND DOWNLINK | REMOVE DEVICE

Last update Shmuel Solomon - 09/09/2020 - 15:23:02

DEVICE STATUS

Connection: ACTIVE | CLASS A

Power Source: Battery 100%

Last Uplink: Yesterday - 15:32:57

Last Downlink: Yesterday - 15:32:35

Average Packets: 3.0 packet(s)/day

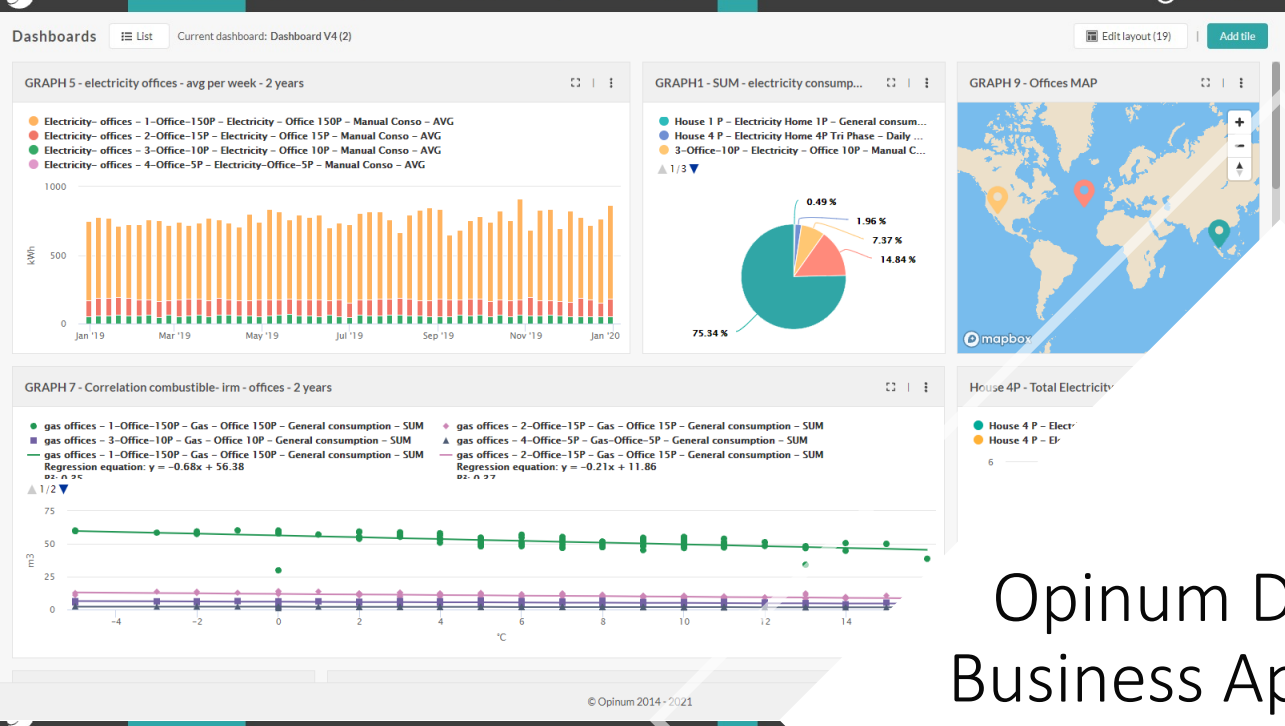
APPLICATION

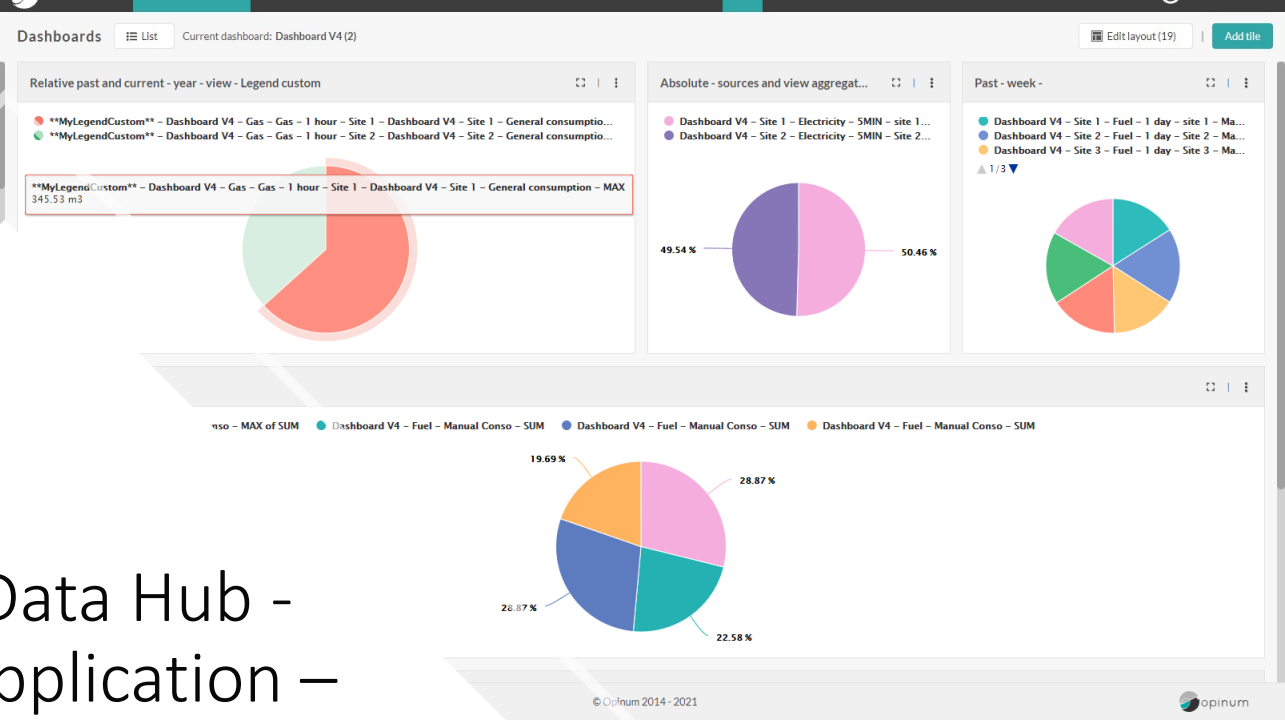
Application: Tpx-IoT-Flow Labs | Opinum - Test

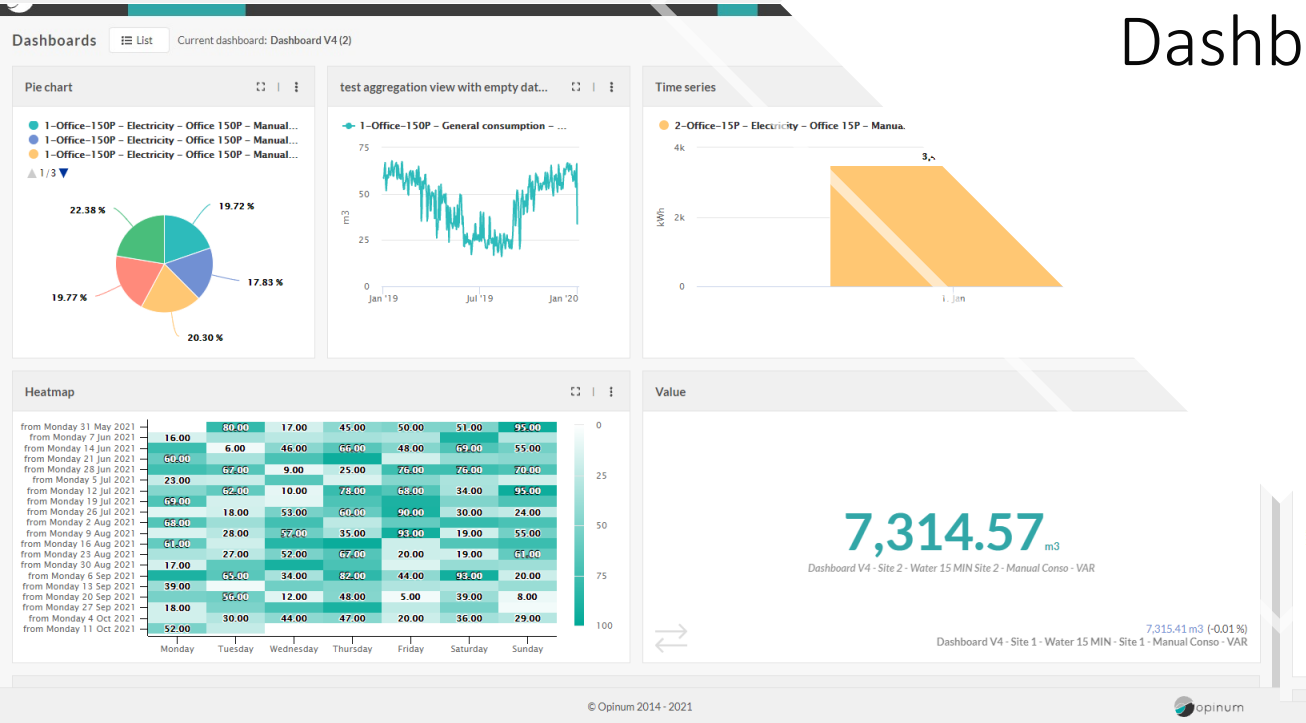
ADD AN APPLICATION

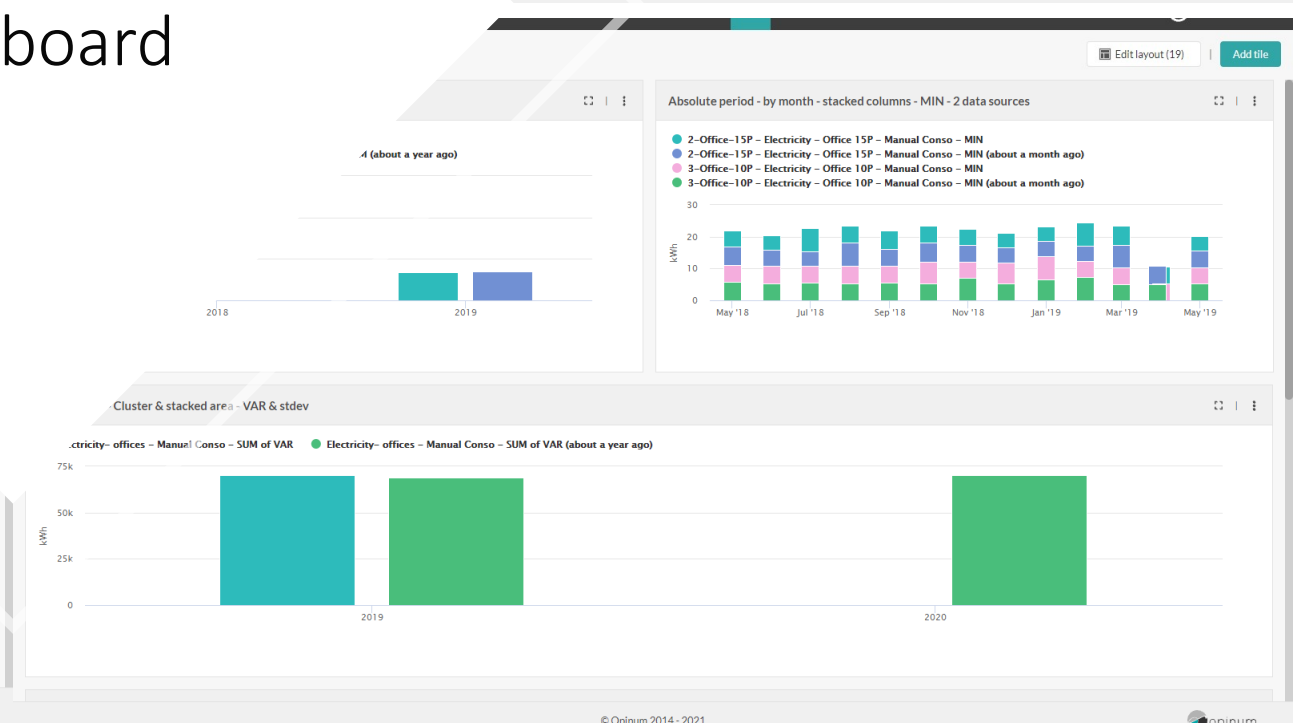
Actility ThingPark Enterprise Backend

Opinum Data Hub - Business Application – Dashboard





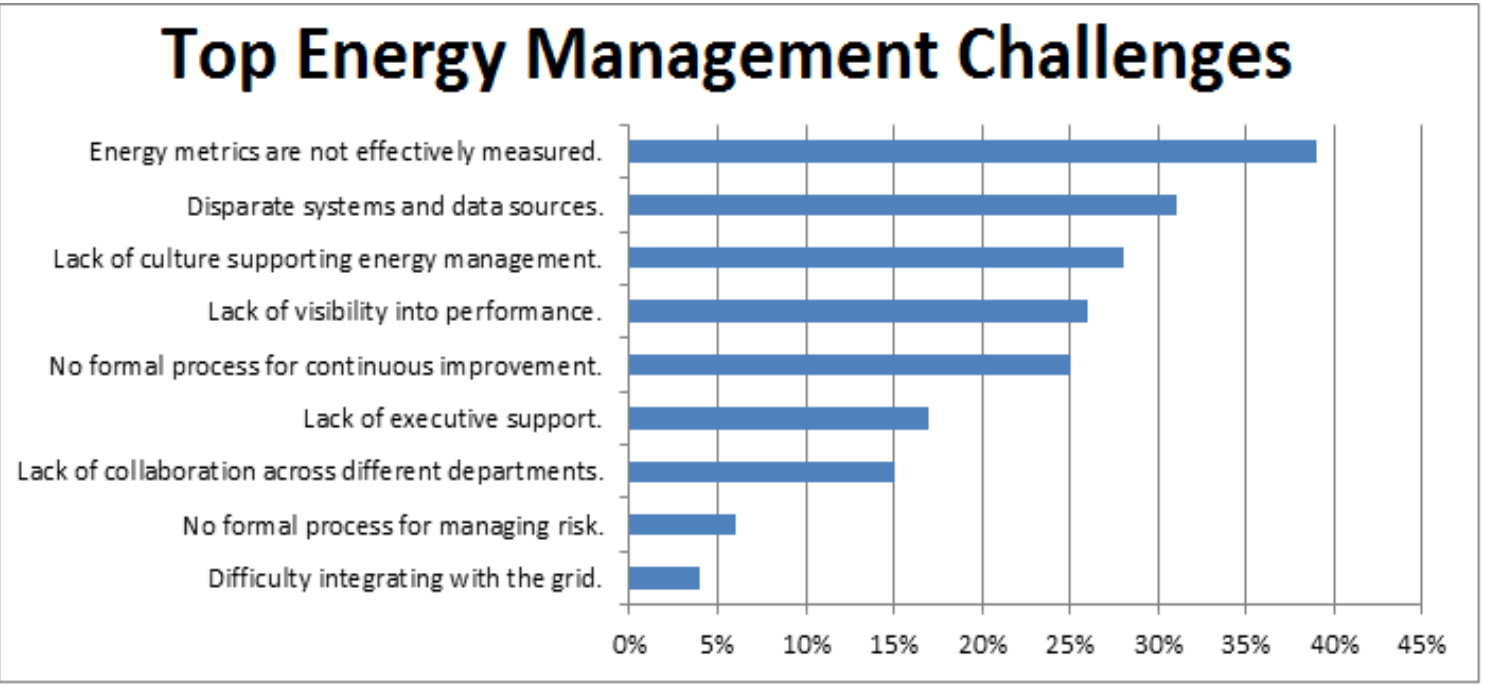




Summary

Shmuel Solomon

Actility, Opinum, Adeunis
A Combined Energy Solution



We solve 6 out of the 9 Energy Management Challenges

- ✓ Monitor hundreds of remote sites in a **unified portal**
- ✓ Integrate with existing **meters & systems**
- ✓ **Understand and visualize** the energy profile of your organization
- ✓ Helps better energy planning with **pre-defined targets / KPIs**
- ✓ **Improve energy budgeting** corresponding to the plan
- ✓ Helps better capacity utilization, **reduced maintenance & man-power**
- ✓ Improve **system up-time**
- ✓ Provide easy **accessibility, usability, management & control**
- ✓ Available as **on-premise & cloud-based application**

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Get your start kit here

https://market.thingpark.com/energy-optimization-starter-kit.html

ThingPark Market by Actility

Search entire store here...

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IoT Solutions | IoT Devices | IoT Connectivity | LoRaWAN Gateways | Antennas | Accessories | Services | Frequency Guide | FAQ | Blog

Home > Opinum - IoT Energy optimization starter kit

ACTILITY - IOT ENERGY OPTIMIZATION STARTER KIT

Be the first to review this product

The Energy Optimization Starter Kit dedicates technology to identify precisely how, when, and where the energy is being consumed and how best to implement energy-saving measures.

Please refer to the Product Information section below to obtain technical and setup instructions for this kit.

IN STOCK

COMMERCIALLY AVAILABLE

Notify me when the price drops

RF Region

AS923 | EU868 | US915

Actility

CONTACT THE SELLER

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Thank You!

Continue the discussion and contact Opinum, Adeunis and Actility

Technical and commercial experts directly at:

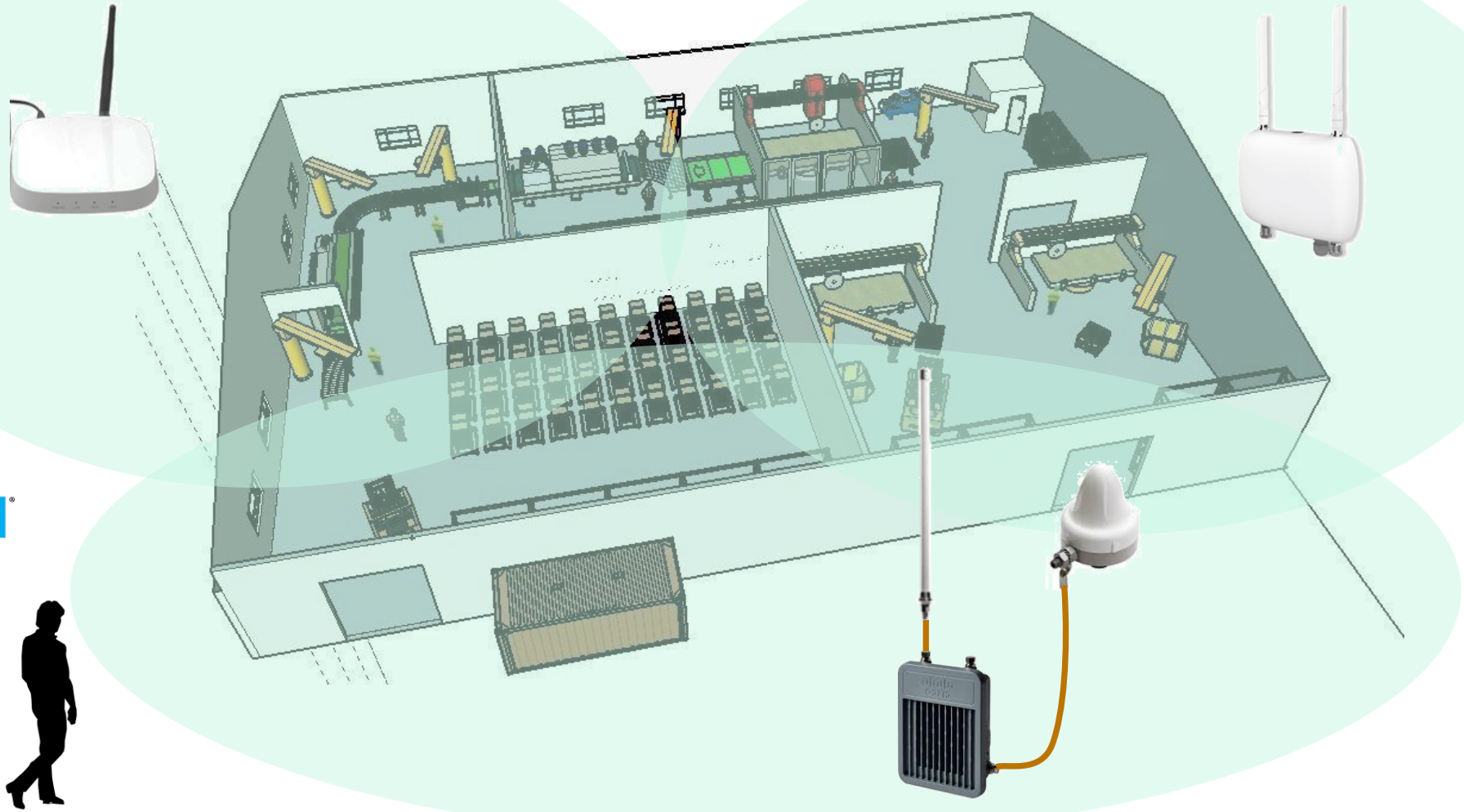
Luke CARDEN *l.carden@adeunis.com*

Louise Baufays – lob@opinum.com

Shmuel Solomon - shmuel.solomon@actility.com

Annex

LoRaWAN™ macro-diversity provides robust connectivity Indoor, outdoor and in motion



LoRaWAN

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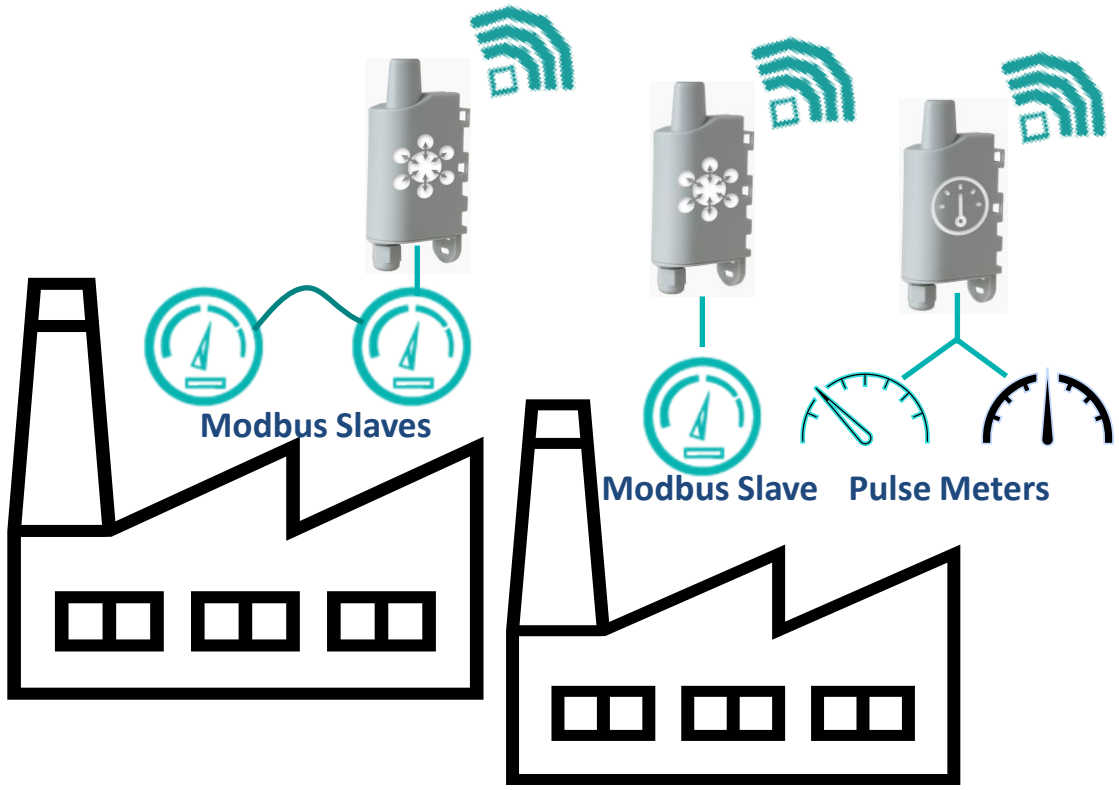
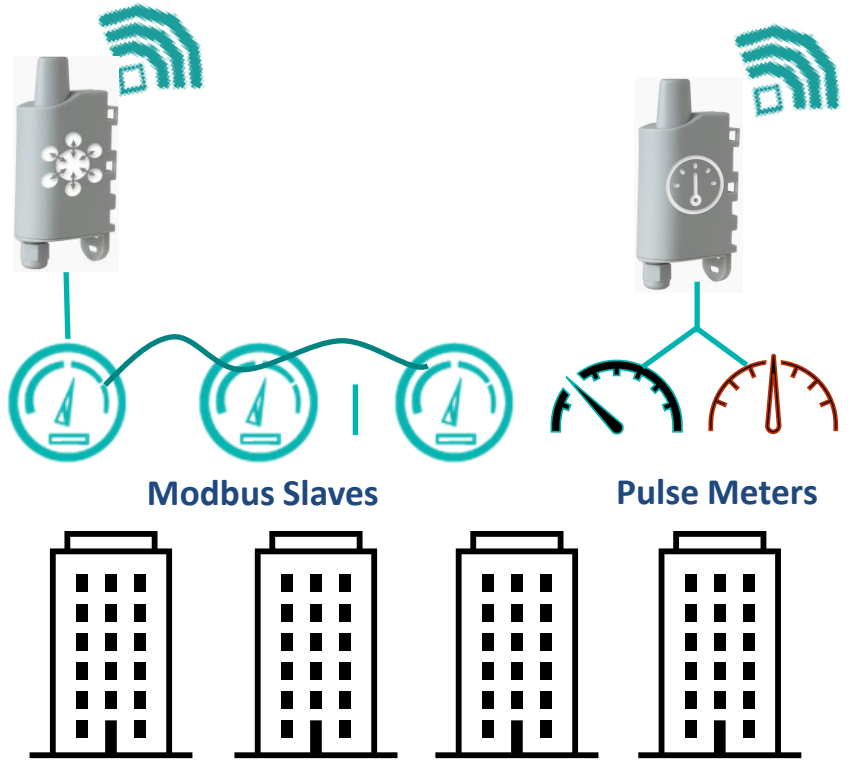
Collect Physical Energy Data And Submit Wireless

Smart Industry



Pulse sensor is connected directly to the machine. It counts electrical pulses. The counting of pulses is done in the sensor. The counters are then sent at a programmable frequency (for example every hour) through the LoRaWAN network.

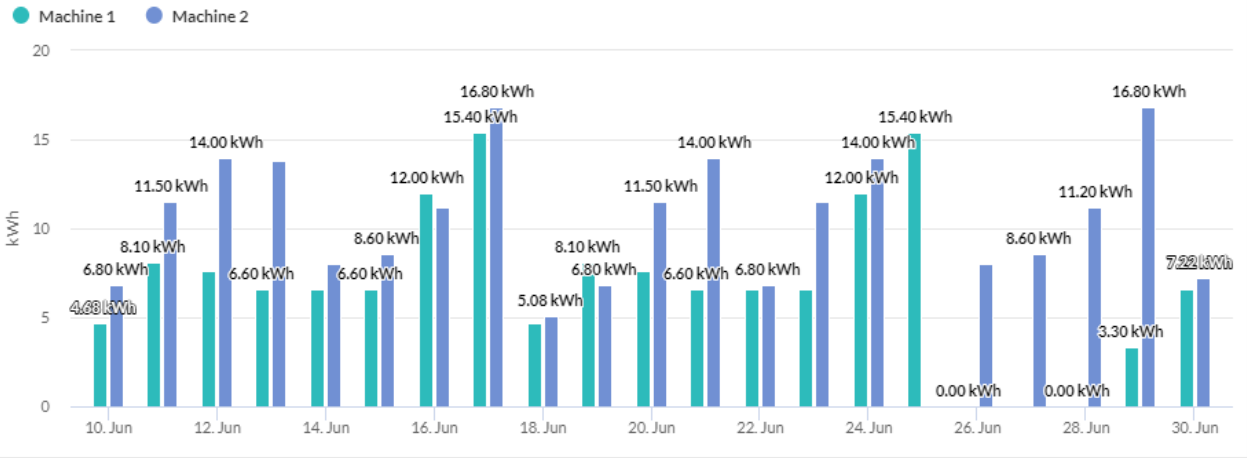
Smart Building

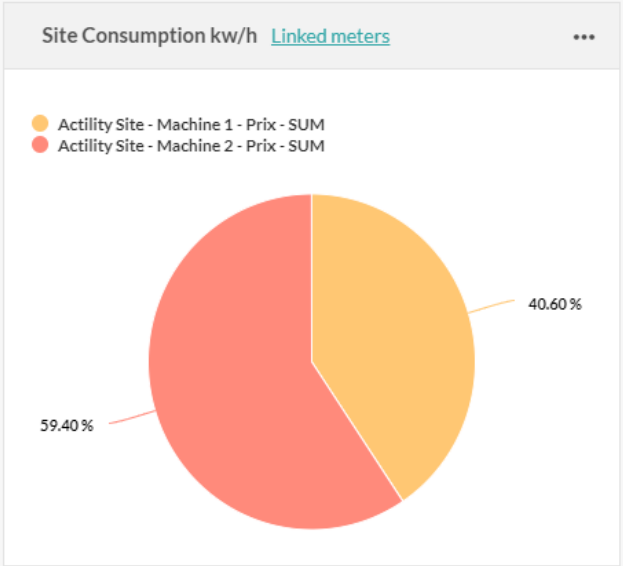


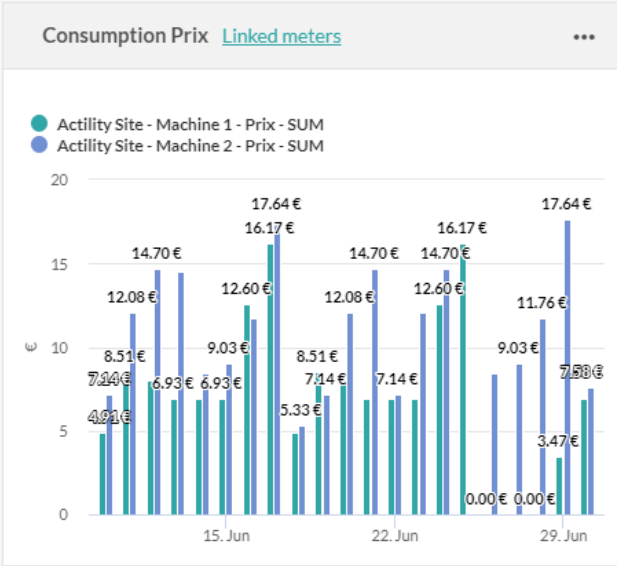
Modbus interface, acts as a Modbus master, manages up to 20 slaves connected to a wired bus (RS232/RS485) RTU mode (Remote Terminal Unit). It enables to read and write Modbus equipment registers through the LoRaWAN network

Business Application – Dashboard

Build Custom Dashboards – Pie Chart, Time Series, Benchmark, Relationship Correlations, Map and more to best visualize energy data





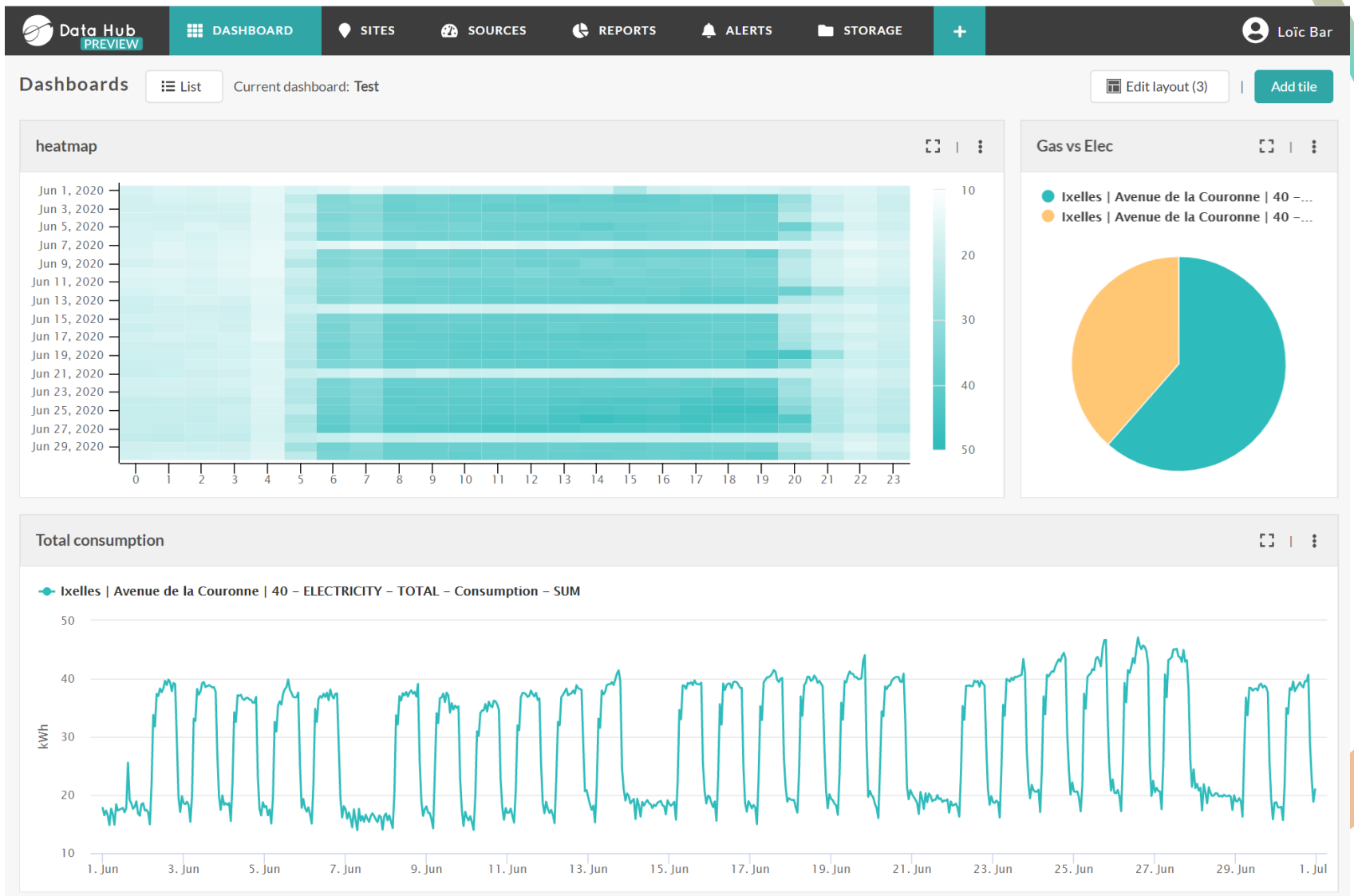


Business Application – Data Analytics

Visualize and analyze standardized data relationship that may exist - The example below presents a scatter diagram and the calculated value of ‘r’, which tells whether the data are linearly related. In this example electricity consumption of two industrial machines are analyzed.

Business Application – Data Analytics

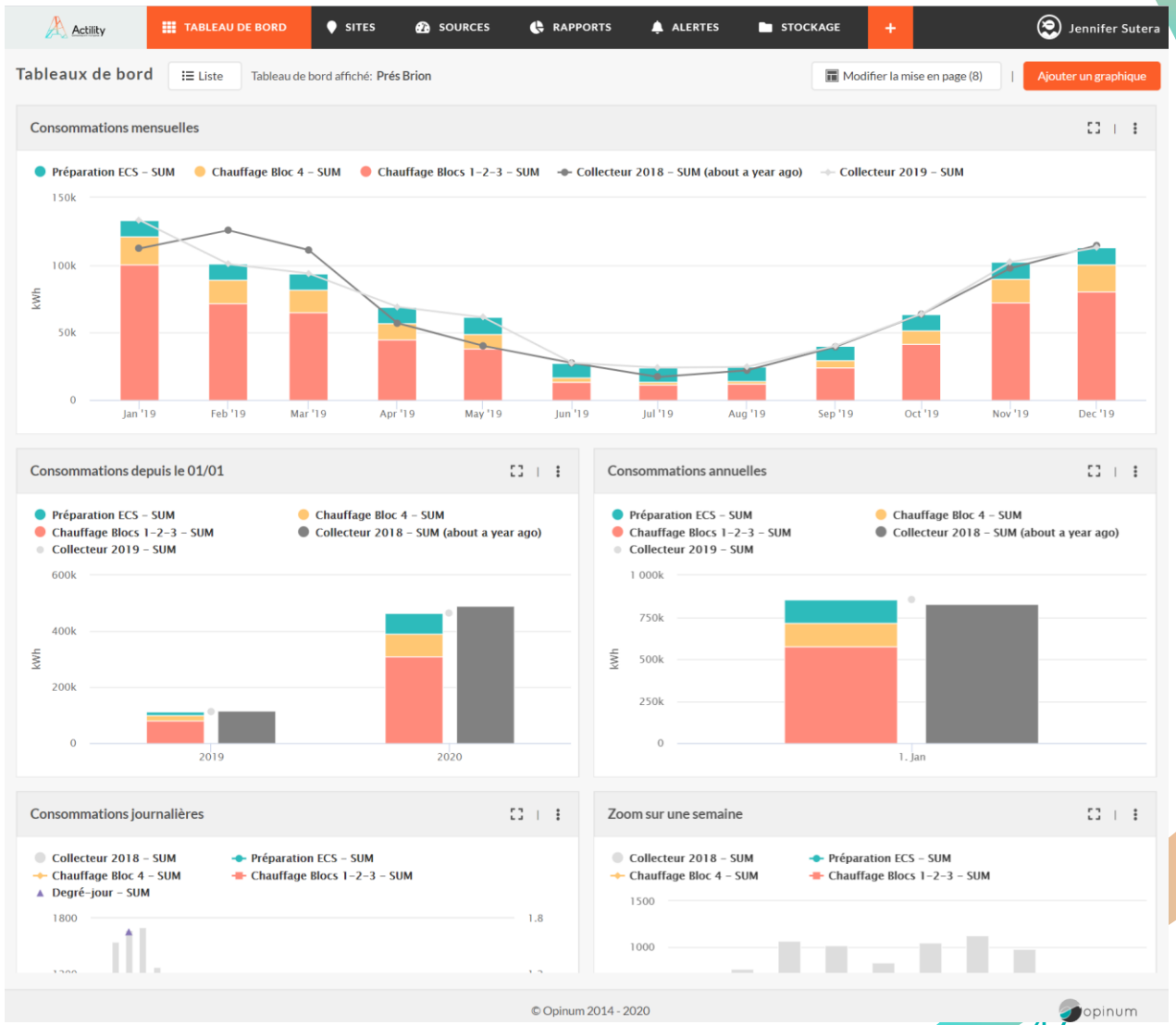
Seek and analyze standardized data relationship that may exist – In this example an heatmap which allows to analyze the intensity of energy use on two-time axes. The more intense the color, the more consumption there is. We can see that the building energy consumption is distributed over time in quite standardized way.



Business Application

Unlocks meaningful insights:

- Connect all energy IoT devices.
- Centralizes entire energy data in one single place.
- Detect abnormal energy usage with meaningful dashboards.
- Share dashboards across the organization.
- Export and share data.



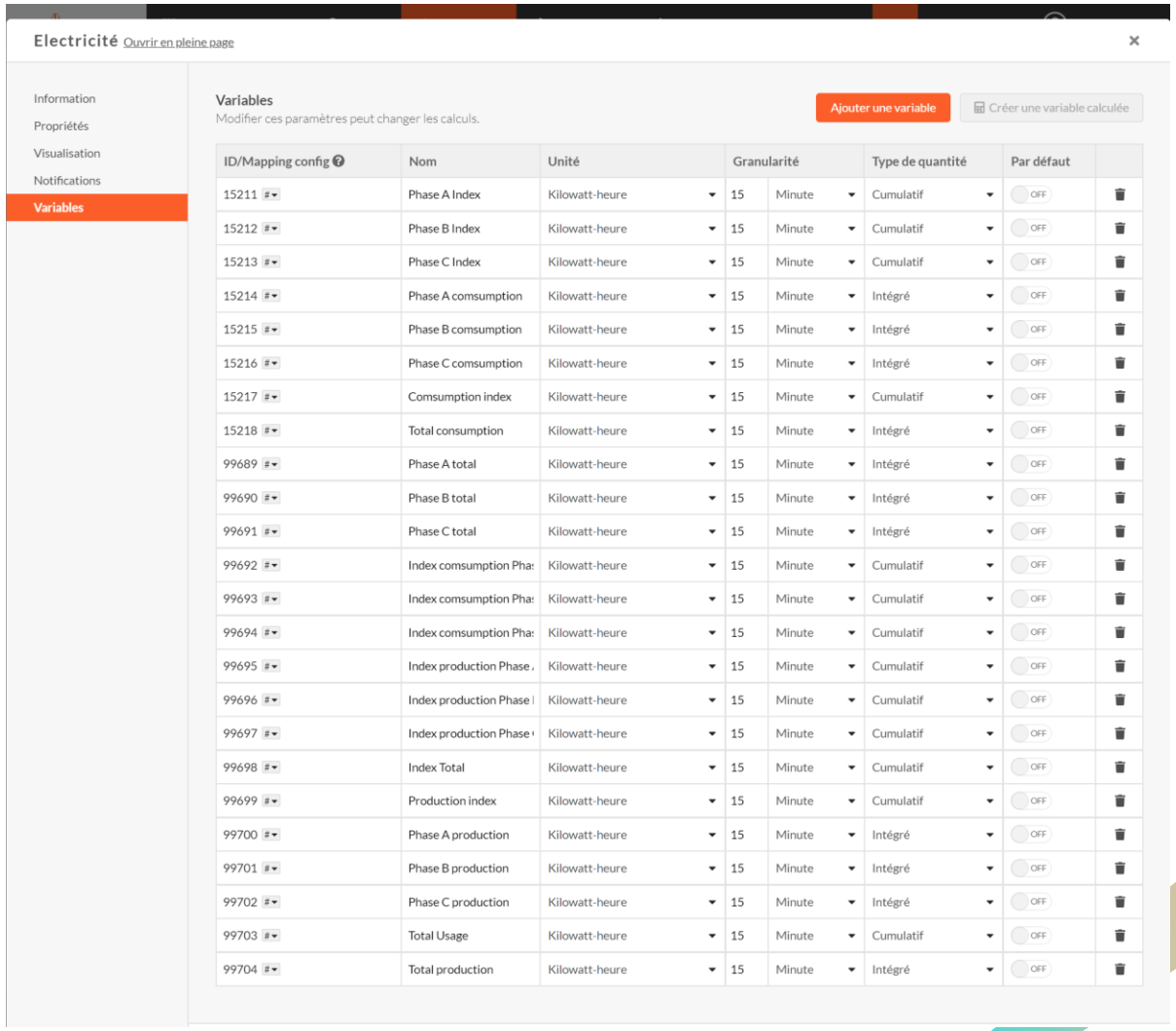
Business Application

Remove the complexity of managing energy related data through:

- Units management
- Time zone management
- Multi-source, multi-site environment
- Edit data model to fit your needs

APIs for automatic integration

- Integration with third party applications.
- Interoperability of data.
- Extension of web portal functionalities.
- Integrated & flexible ETL system.



Business Application

Enables automatic management tools:

- Reports engine.
- Rules and Alerts be notified when an equipment is over consuming energy.
- Use machine learning to predict behavior and trends.

Flexible – Agnostic to algorithms:

- Allows clients to visualize, edit and add their own algorithms for data processing and enables additional client autonomy