Internet of Things solution
LPWAN Presentation

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Agenda

History of Internet Of Things

LPWAN

Common use cases


History of Internet Of Things

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80s

1926 *"When wireless is perfectly applied, the whole earth will be converted into a huge brain"*– **Nikola Tesla**

1983 Ethernet standardized

1989 World wild web

90s

1994 The OPC Foundation forms

to secure data exchange in industrial automation

1995 MS Windows

becomes the mainstream OS in the factory

1999 “Internet of things”

is coined by Kevin Ashton

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2000 - 2010

2002 **Cloud technology**
starts to growth with the launch of Amazon Web Services (AWS)

2006 **OPC Unified Architecture (UA)**
protocol is released, enabling secure remote communications between devices, data sources and applications

2009 **Foundation of Sigfox**

2010 - today

2010 **Sensors drop in prices**

2015 **LoRa Alliance inception**

2016 **IIoT vision emerges**
Data scientists move into leadership

What next ?

2019 • 3,6 billion devices
Were used for daily tasks (26 billion devices connected)

2020 • More than 450 billion dollars of market

2025 • 75 billion of devices connected

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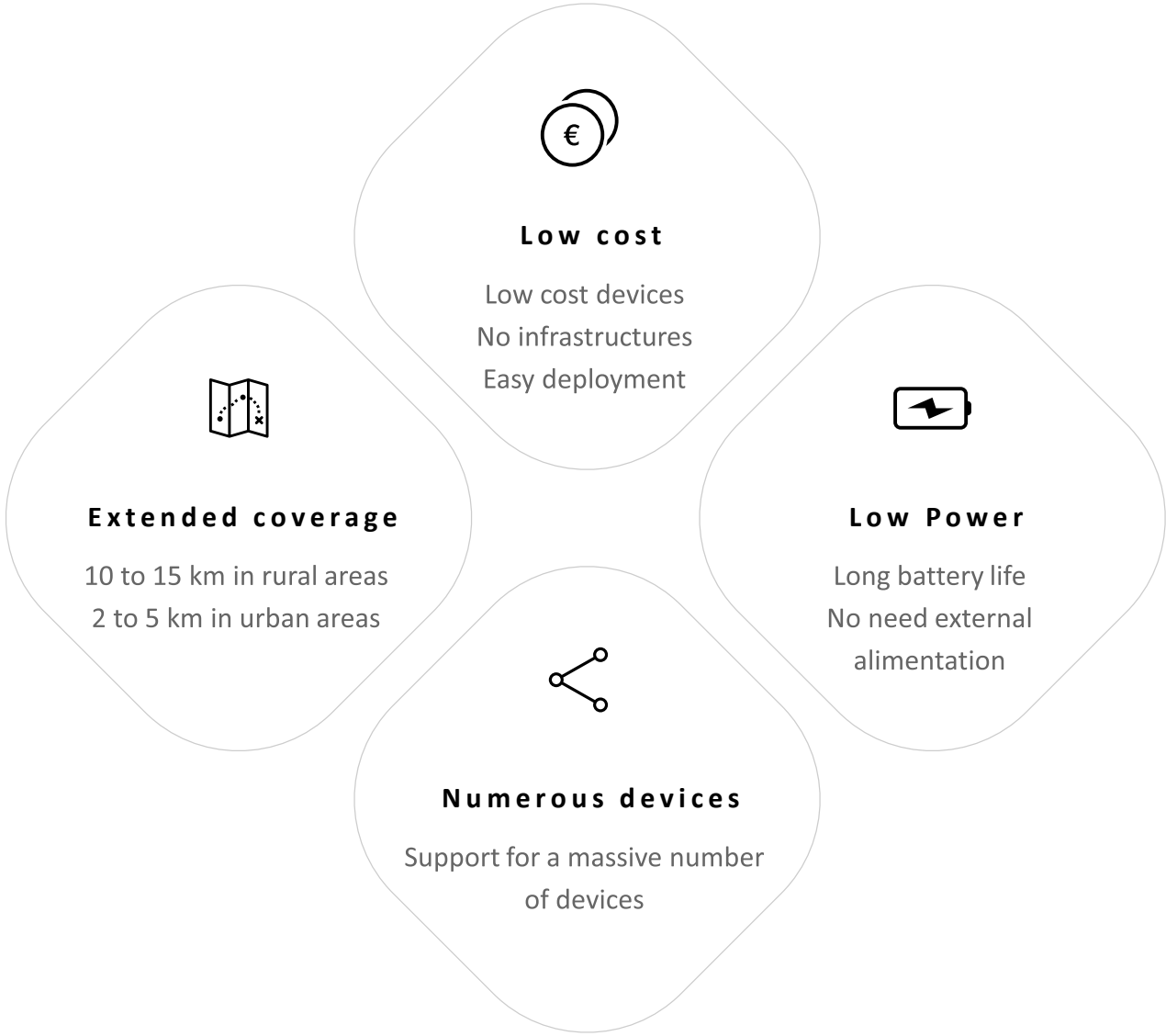
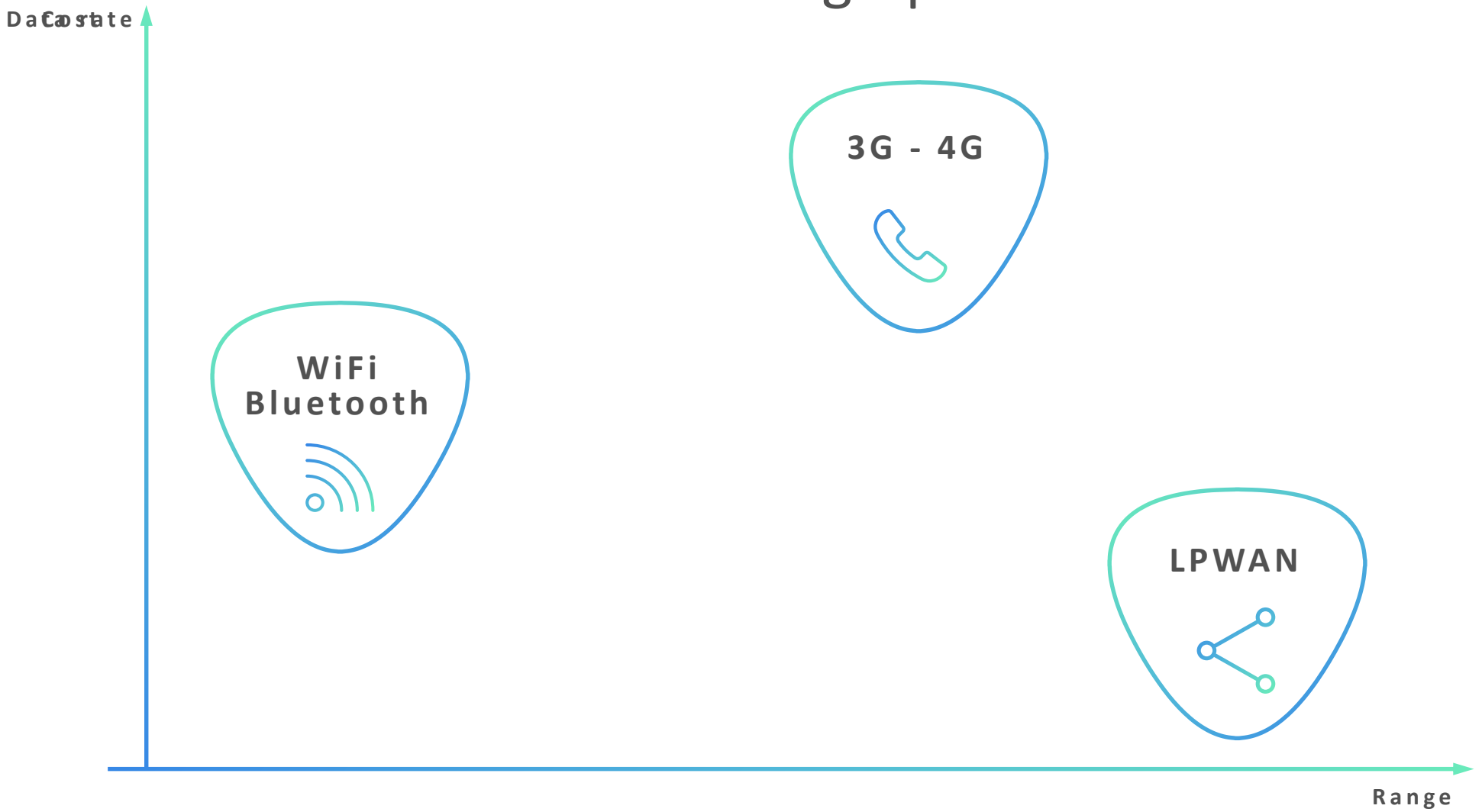
LPWAN – Low Power Wide Area Networks

Key-features

Due to LPWAN base's specificities, here are listed the mains advantages of these networks.



Networks graphics



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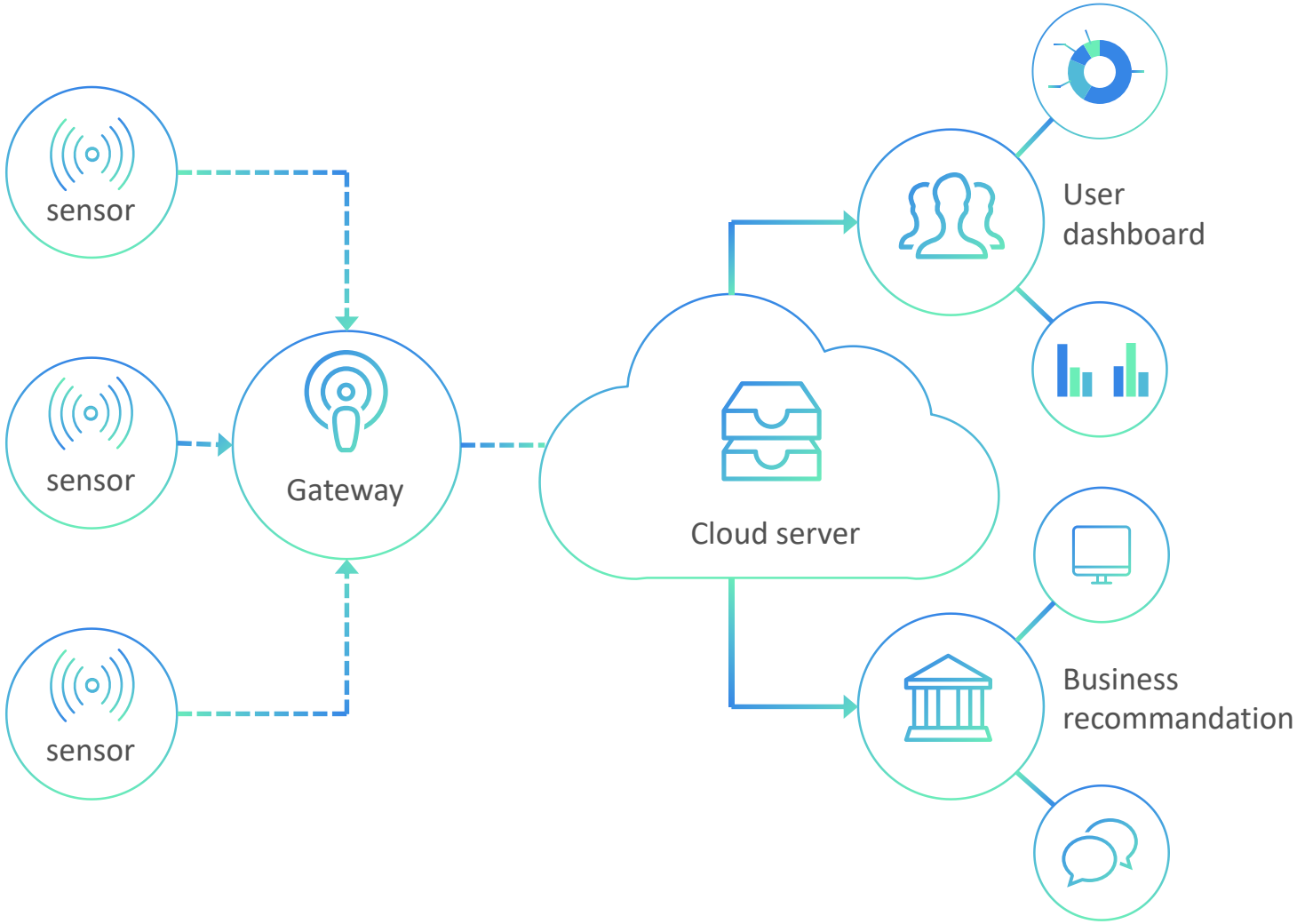
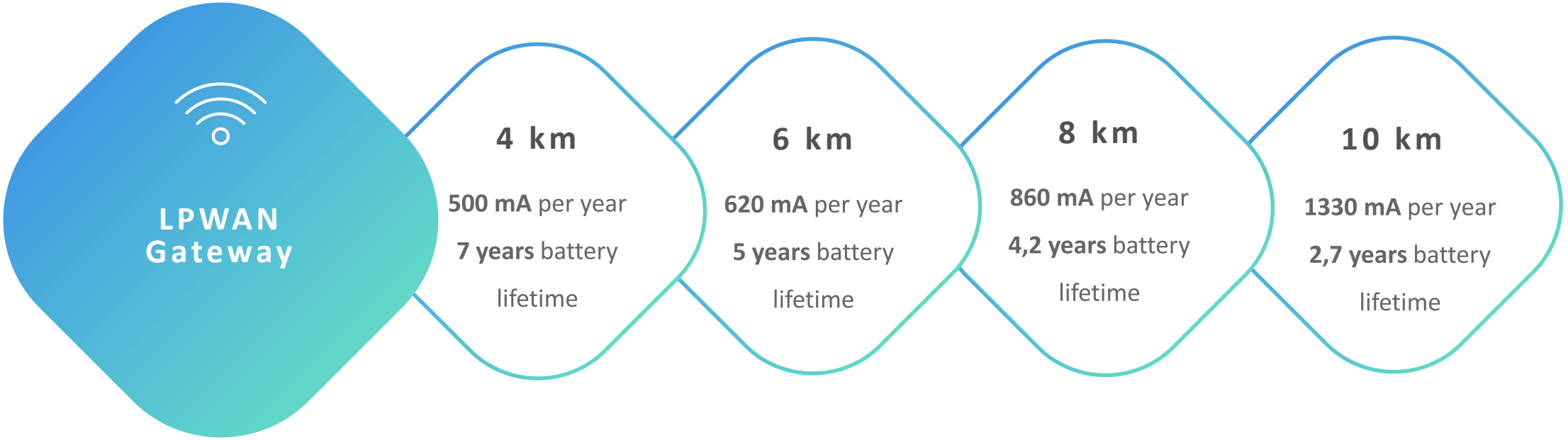

sensor
sensor
sensor
Gateway
Cloud server
User
dashboard
Business
recommandation

Power consumption over distance



LPWAN leaders

LoRaWAN

LoRaWAN is a low speed, but long range and low power communication protocol. It is an open specification so anyone is free to implement the protocol themselves on their own equipment.

SIGFOX

Sigfox is a proprietary network and protocol. It is meant for remote meter reading, but can be used for any remote data uplink. It is low speed and low power, but also long range.

NB-IoT

NB-IoT runs in the mobile telephone radio spectrum, and piggybacks on old, unused GSM channels, or free space between LTE channels.

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	LoRaWAN	SIGFOX	NB-IOT
Regulation	License free ISM band	License free ISM band, but base stations are only run by Sigfox.	Needs an expensive dedicated regional frequency/channel
Typical Range	5-15km typical (heavily dependant on line of sight)	5-50km	10-15km
Max output power	0.025 W	0.025 W	0.2 W
Security	Key exchange a unique set of AES keys	No encryption by default but could be add in the application layer	NB-IoT inherits LTE's authentication and encryption.
Data rate	10 kbps	0,1 kbps	200 kbps

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Common use cases

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Selected use cases

SMART CITIES

Improve social efficiency

SMART BUILDING

Better energy management

MINING INDUSTRY

Enhance safety and productivity

Smart cities

As urban population grows, cities face new opportunities… and challenges. They turn to IoT technologies to ease the strain of city growth and ensure better life quality.

Air quality monitoring

LPWAN sensors are easy to install and so cheap to run that an entire city can be covered, enabling dozens of metrics to be tracked such as humidity, temperature, air quality and more

Optimized refuse collection routes with connected dumpsters

Collection routes can be optimized to save time, energy and money with low-power connected ultrasonic sensors that indicate the level of waste in dumpsters.

Remote monitoring of water facilities

Monitoring the level, pressure, turbidity, Ph, salinity, ORP and flow of water remotely means you can prevent overflows, track drinking water supply and monitor waste water network and treatment operations.

USE CASES

Smart buildings

IoT is changing the way facility management, security and construction companies are operating

Lets the heat system talk

You can now look to optimize every aspects of the infrastructures, from the heater to the last room in the building.

Smoke and fire alerts sent via the Internet

Smoke detectors connected can send real-time alerts, keepalive status and battery level.

Collect consumption data effortlessly

You can now monitor and optimize your infrastructure in real time to detect leaks, automate billing and remotely activate and deactivate services.

Back-up alarm systems

Cheap sensors can provide useful data as motion, open doors or light.

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Internet of things

Make your infrastructure talk, it matters

Social media automation

Empower your business

necio

Innovating for you