

The Data-Driven World of IoT

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DATACONSULT

Agenda

The business background

The IOT Ecosystem

The sensor data aggregation challenge

The IOT Data flow

Internet Governance Concerns

Governance Security and Privacy in IoT

Ethics and IoT

Will not cover:

IOT Security

Smart Device's IOT

Cisco Completes Jasper Acquisition

Simplifying IoT for Enterprises and Service Providers

[Read Press Release](#) 



Samsung snaps up SmartThings, embracing Internet of Things

The tech giant acquires the open platform for smart home devices to "improve the convenience and services in people's lives."

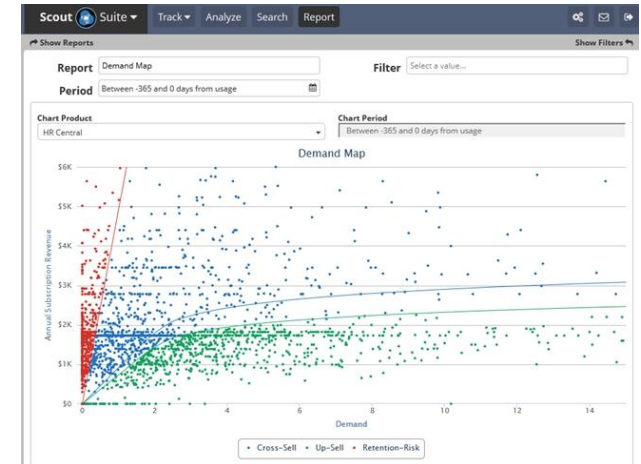
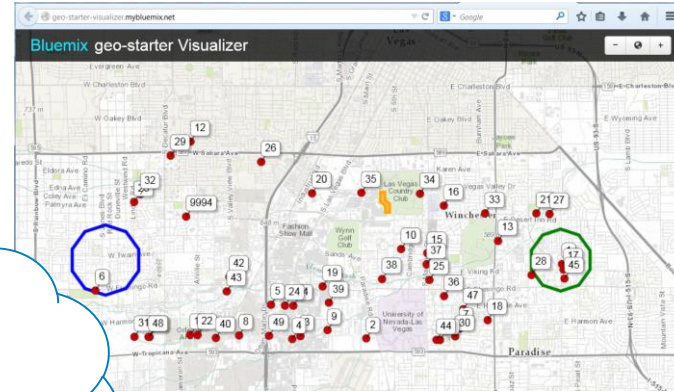
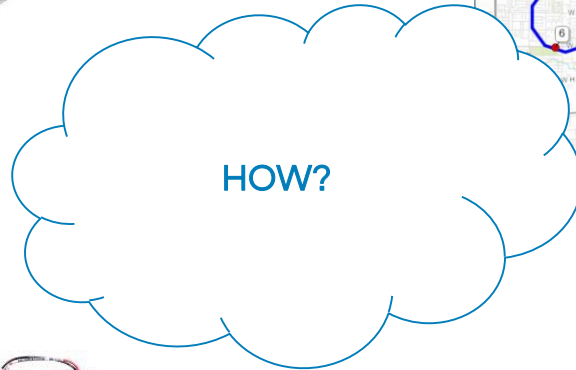
Huawei buys Cambridge Internet of Things pioneer Neul

Ericsson buys MetraTech to muscle in on IoT

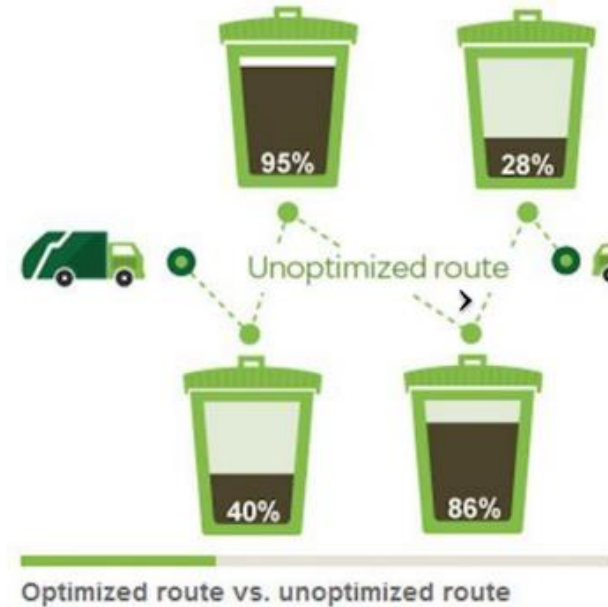


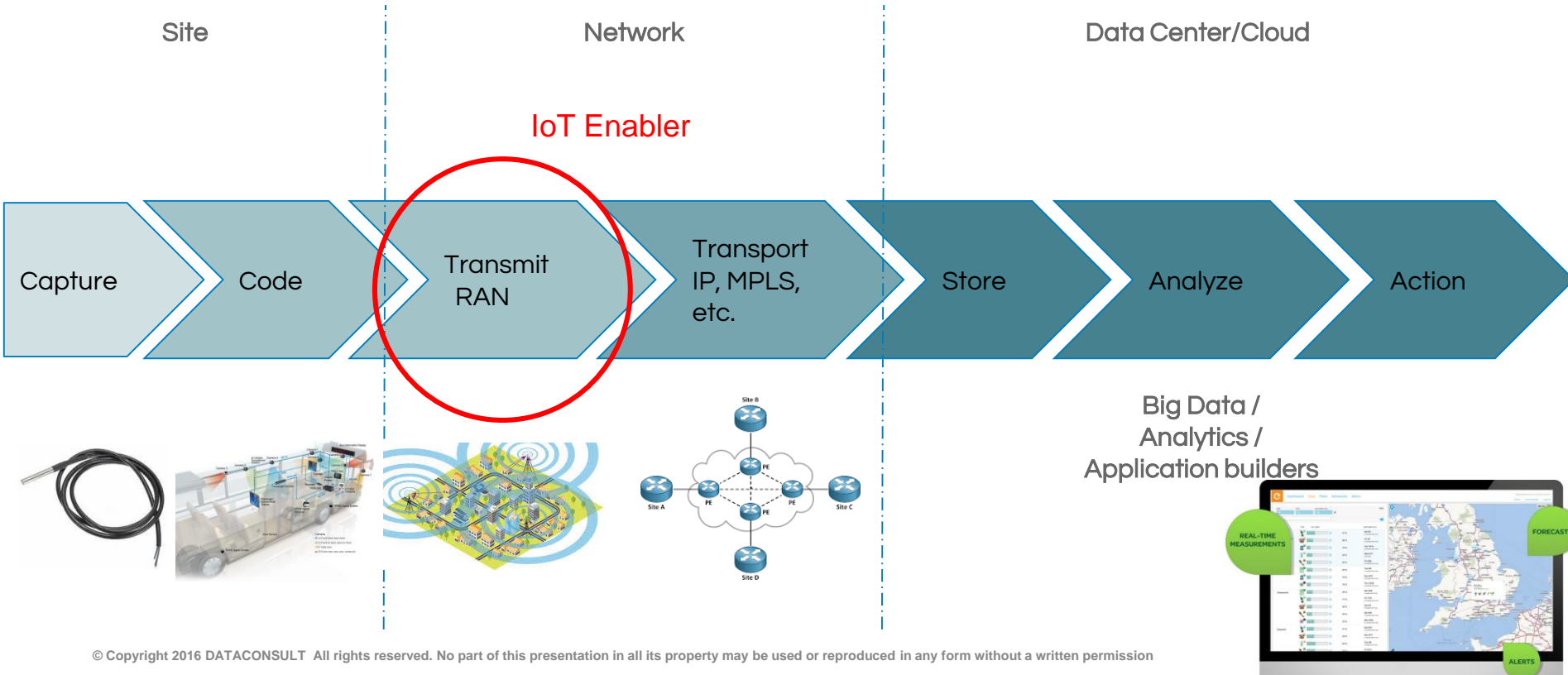
The IOT Paradigm

How do we get there?

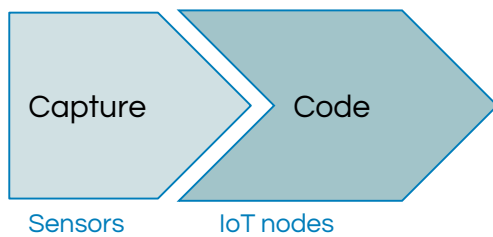


Mapping the business case: waste management





Within the Site

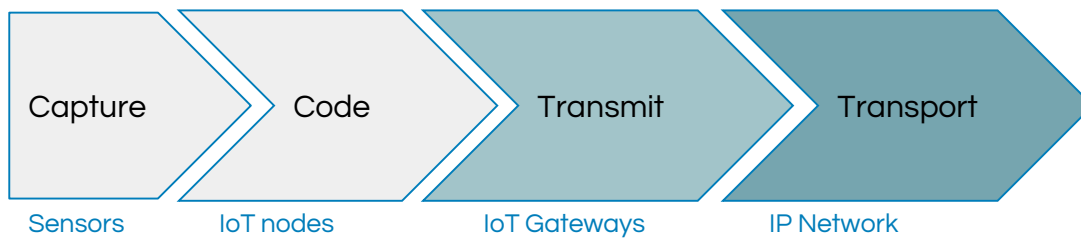


- Part of Operation Technology (OT);
- Sensors with analog or digital electrical outputs;
- Powered by the IOT node or through an external source;
- The IOT node transforms the electrical signal into data packets;
- Message Queuing Telemetry Transport (MQTT)
- Rugged design;
- Or Sensors can take form of any IP based protocol.

IoT nodes connect one or multiple sensors and translate an analog signal into packets.



Radio Access Network: Transmitting the M2M chatter



Collecting data from on a massive scale while preserving the sensor battery life is a challenge;
Ferocious competition for the Low Power Wide Area (LPWA) technology dominance;

The "LPWAR": lets look at the market alternatives in this area:

Sigfox

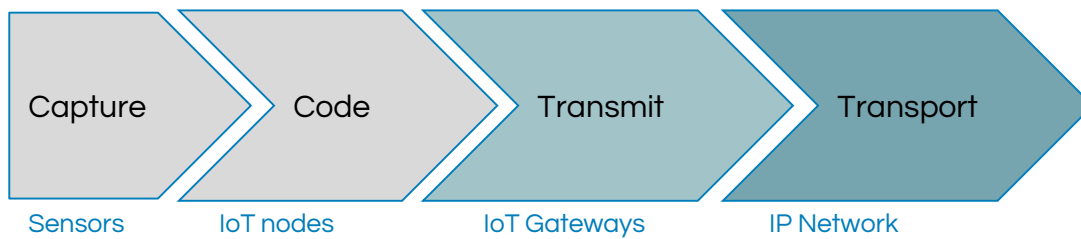
LoRaWAN

LTE-M, NB-LTE & 5G

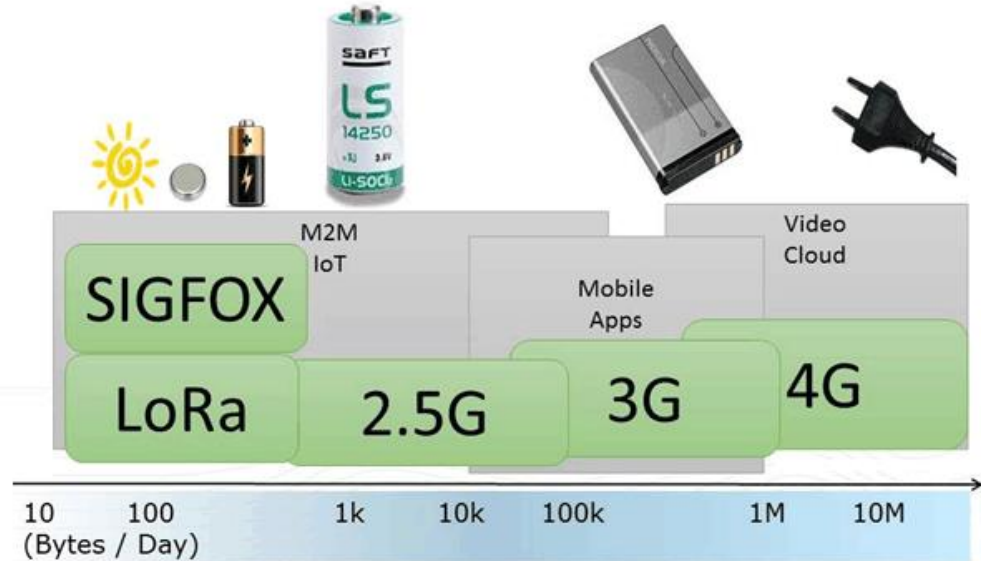
Wifi + 3/4G

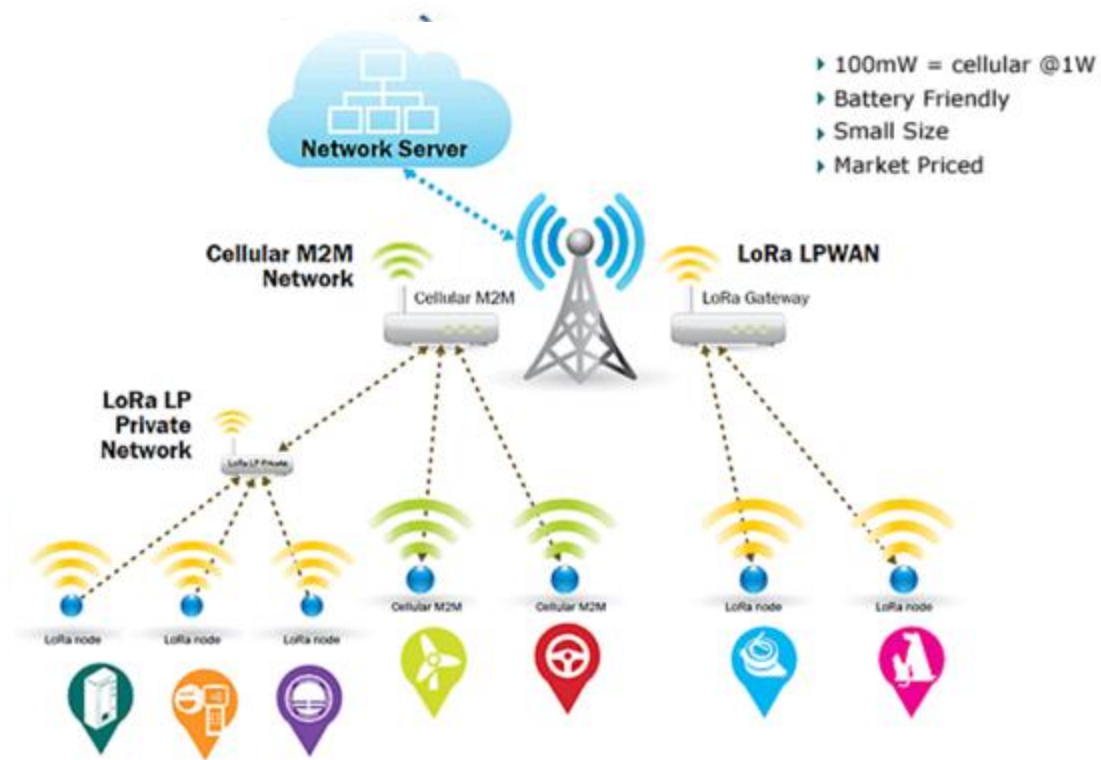
Zigbee + 3/4 G

Transmitting the M2M chatter

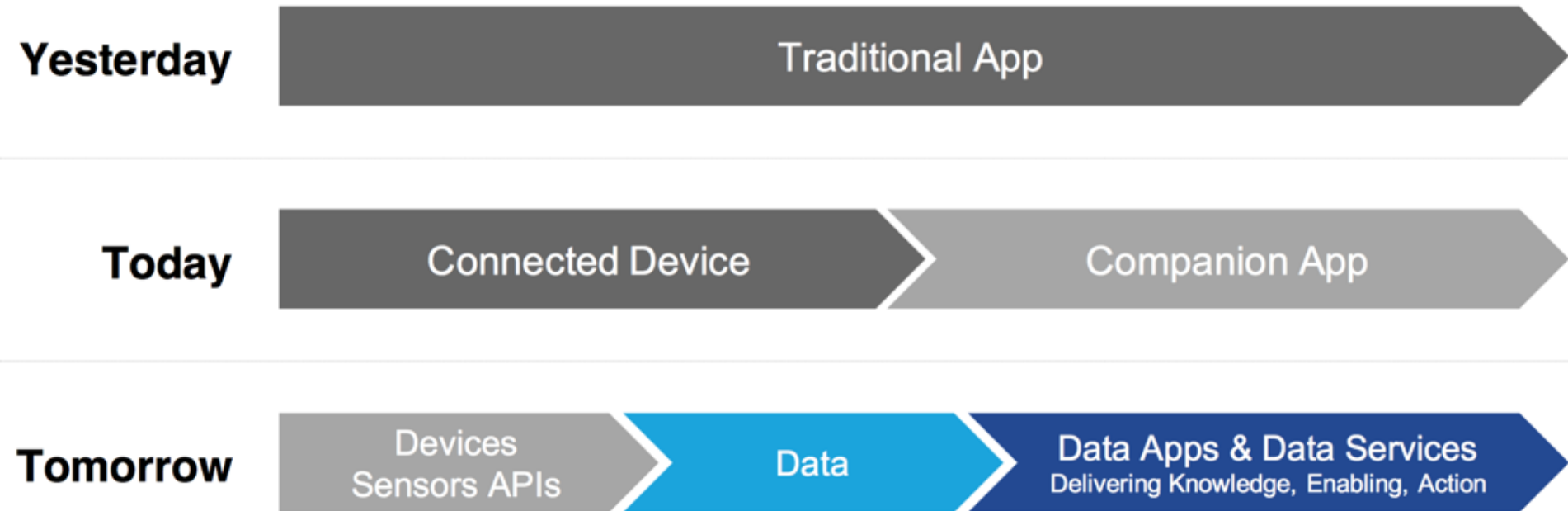


Technology
decision factor





Making Sense of Data



The three layered approach



IoT Data Svcs and Apps

Manufacturing

Utility

Oil/Gas

Transportation

Cities

Retail

Energy Mgt

Remote Expert

Smart Space

Collab/Video Apps

Analytics

Locations



IoT Data Platform (IoT Cloud)



IoT Fabric

Devices

Sensors

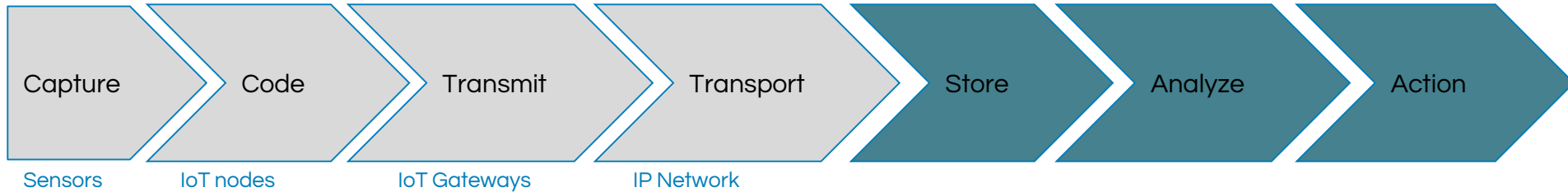
Actuators

Silicon

Device Security

RTOS/Agent

Gathering, structuring and processing the data



Top courses on coursera about data science and machine learning.

Input from IOT Gateways (MQTT)

Any other input

Data modeling and data set definitions

Machine Learning, Analytics

Data Science for IOT: making sense of massive data and give the machines the ability to take intelligent decisions.

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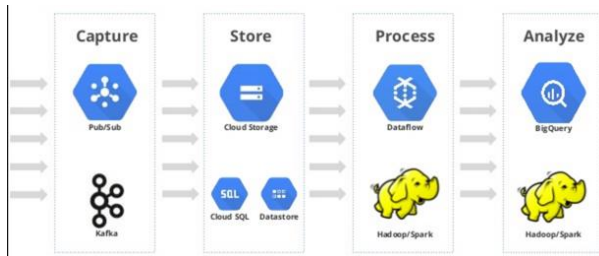
All Topics

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Data Management



Device Management



Connectivity Management

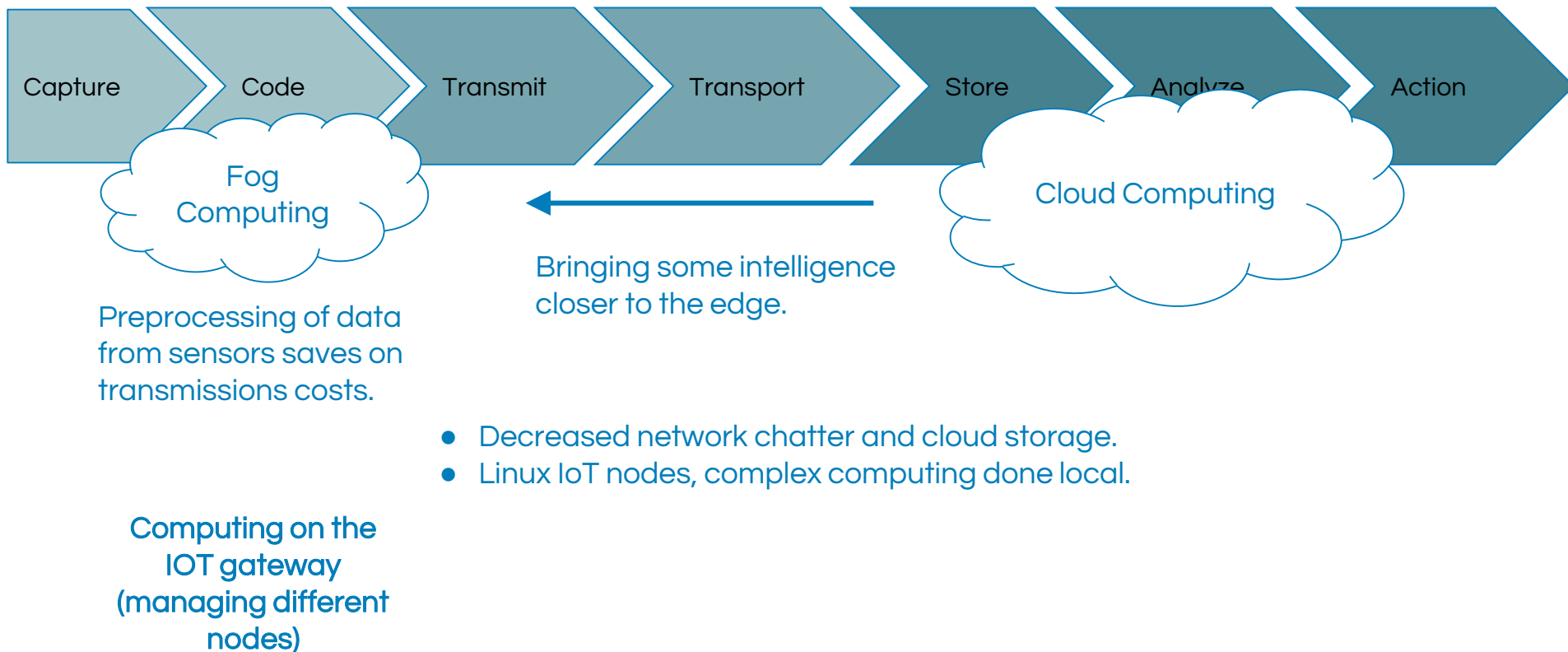
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Application

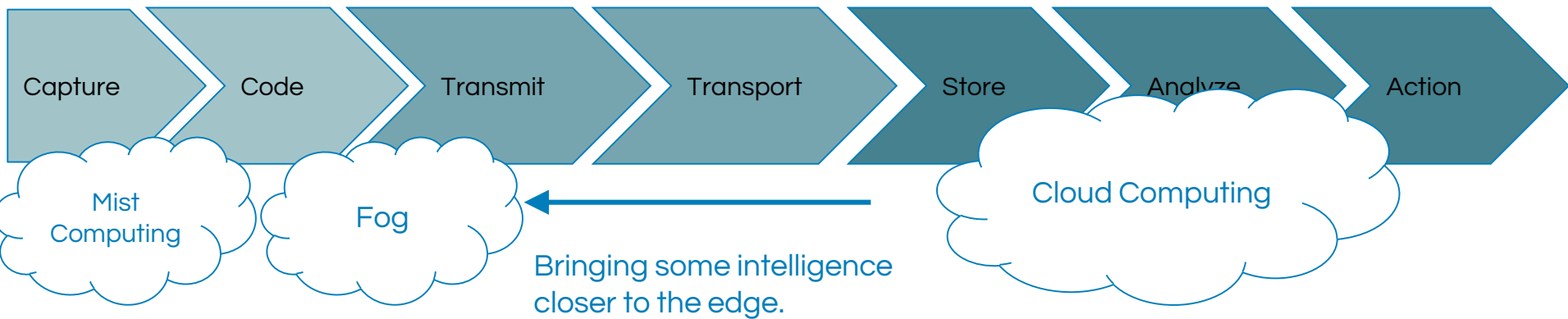
**Enterprise
Integration**

Cloud 2 Cloud

Eliminating the unnecessary chatter on the radio



Eliminating the unnecessary chatter on the radio



Computing on the
IOT node
(sensor or actuator)

- Decreased latency
- More autonomy

Back to our IoT application

It's all about the business case



-40%
Savings

Simple Equation



System Integration

- Operation technology & Low Current
- Radio Access
- Networking
- Data Integration, software
- Data science

Since the 3rd Internet Governance Forum (IGF) meeting in Hyderabad (2008), IoT has been on the agenda for multistakeholder discussions of all IGFs

- Intellectual property
- Law enforcement cooperation
- Traffic shaping
- Data sales
- Tariffs
- Jurisdiction

Identification of Challenges – 1

Main challenges for the Governance, Security and Privacy in IoT identified by the AC05 cluster projects and during discussions in IERC:

- Context based security and privacy
- Cyber-Physical systems and IoT
- Identification in a distributed environment
- Device authentication
- Data Correlation and Information Retrieval
- Anonymization of users' data in a distributed and mobile environment
- Anonymization of protocol metadata in a distributed and mobile environment
- Scalability for the billions of devices in IoT

Identification of Challenges – 2

Main challenges for the Governance, Security and Privacy in IoT identified by the AC05 cluster projects and during discussions in IERC:

- Secure Setup and Configuration
- Physical availability of devices
- Critical infrastructures and IoT
- Conflicting market interest
- Considering IoT in an evolving Internet
- Delegation of human autonomy in IoT
- Human IoT Trust relationship
- Risks of isolation and confinement

The key notion here is that of informational incompressibility, which is a form of essential unpredictability. In keeping with von Neumann's intuitions on complexity, a complex process is defined today as one for which the simplest model is the process itself. The only way to determine the future of the system is to run it: there are no shortcuts. This is a radical uncertainty".

Jean-Pierre Dupuy
French epistemologist

Thank you!

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