



Internet of Things

Reply

Sept 2015



Reply

IoT Definition

A network of networks of uniquely identifiable end points (or things) that communicate without human interaction (by either wired or wireless access) using IP connectivity—be it locally or globally. (IDC Research)



Key Areas of Interest

- Smart Objects and how it relates to people
- Smart City and Places. How it will affect our infrastructures
- Automotive and Smart Transportation
- Smart Energy, production and consumption
- Smart manufacturing, Industry 4.0



Smart Things
People



Smart City
Places & Gov



Automotive



Energy



Manufacturing

IoT – Reply positioning

Reply's point of view

A **strategic** approach to the IoT requires to move from a **focus on the objects** to an approach that considers the **overall integration** within a broader ecosystem

Reply's Role

**Partner
Product & Services
System Integration**

IoT challenges in a not-integrated approach

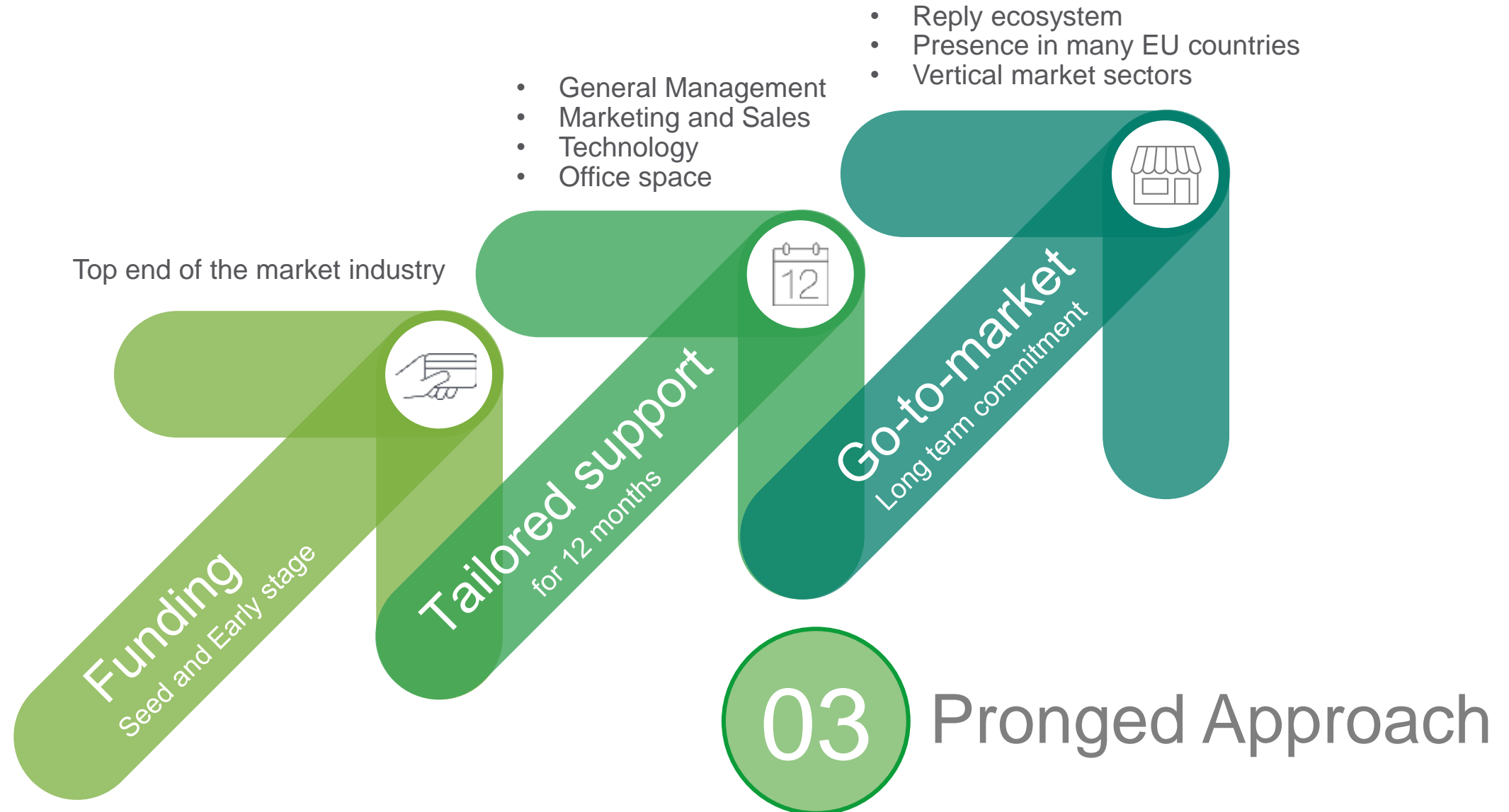
- A **proliferation of objects** without a business logic that has to be defined in a model with well-defined goals
- Creation of «**silos**»
- Mass-market devices exposed to **rapid obsolescence** due to their shortening lifecycle
- Professional devices requiring **extended lifecycle** (e.g. smart meters).
- Possible targeting in «**BYOD IoT**» logic that requires an increasing flexibility
- An **unmanaged data asset**, not usable to understand the customer and the product
- A **business model based on obsolete logics** with negative effects for both customers and internal organization



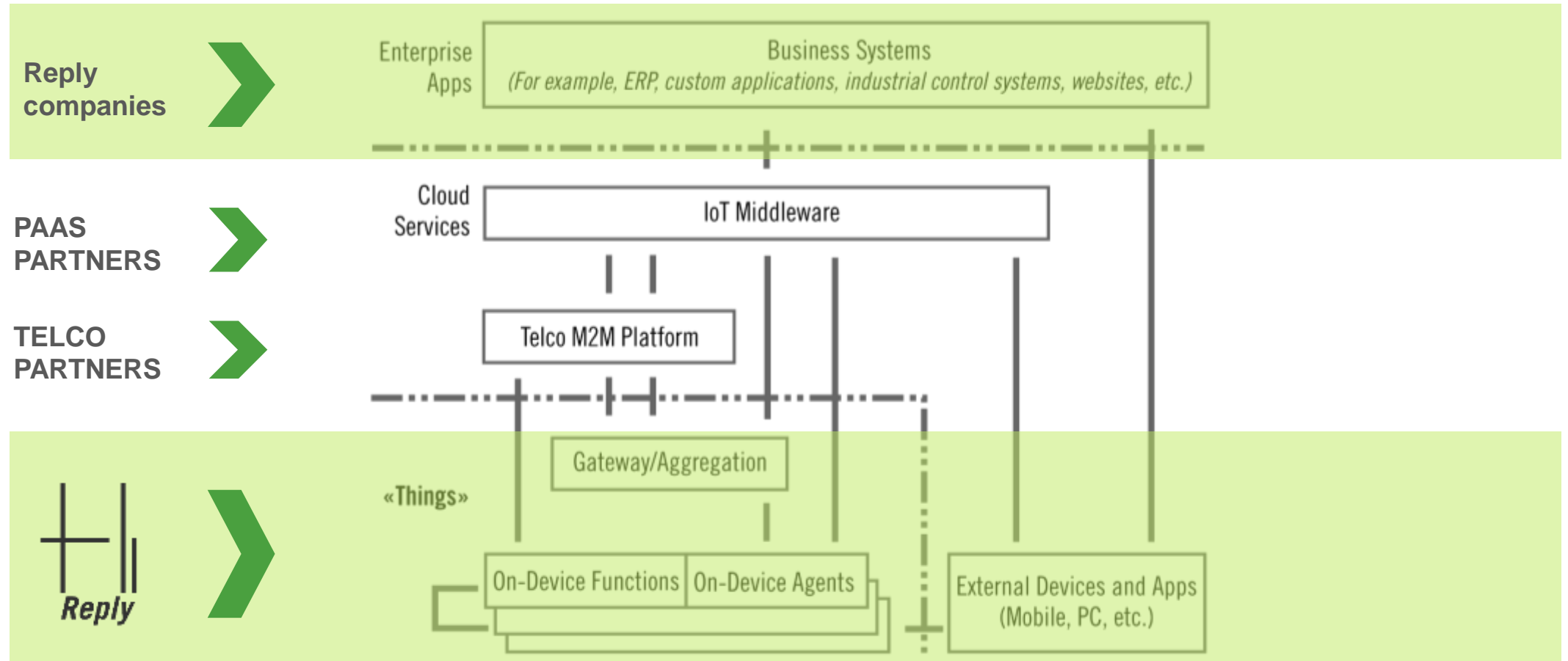
Reply's value proposition

- **Specific vertical capabilities** provided by many Reply Companies already building solutions in the IoT space for specific Markets – Customers.
- **Innovation and experimentation on IoT** (Concept) plus advanced **IoT Incubator** (Breed)
- **IoT Support Services** (Big Data, Analytics, Fraud, Workflow, CRM) of specialized Reply technology companies.

Innovation and Incubator



Gartner IoT reference architecture



Source: Gartner 2014



Conventional architecture cannot be used

IoT at a scale introduce severe Infrastructure challenges

- ✓ High number of users
- ✓ Heterogeneous devices/sensors
- ✓ Unreliable connectivity
- ✓ Un-deterministic storage growth
- ✓ Middleware must scale at needed
- ✓ Responsiveness to real time request
- ✓ Bi-directional data consumption
- ✓ Batch analysis



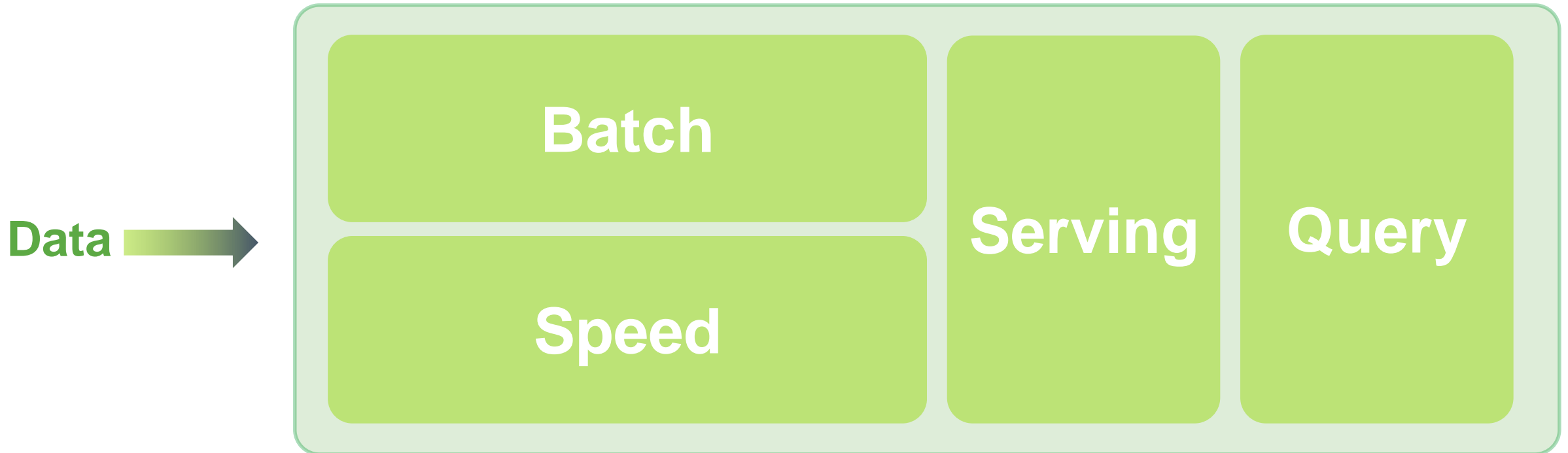
Over the top

Big player are proposing their own solutions to bring together IOT and Data processing



Theoretical reference architecture

Lambda architecture



Lambda architecture is a data-processing architecture designed to handle massive quantities of data by taking advantage of both batch - and stream-processing methods and we need to implement it on the cloud...several cloud

Healthy Reply – Tele Health & Tele Care



Patient

Takes the **readings** according to the doctor **prescribed plan**

Can **check readings** and historical data via **web** and **mobile** devices



Operation Center

Receives and **analyses** the readings

Detects and **handles** possible **anomalies** or **alarms**

Alerts the doctor in case of need



Doctor

Takes in charge alarms and **manages assistance requests**

Main characteristics:

- Chronic Patients program or frail subjects to keep under continuous monitoring
- Personalized Kit of medical devices and wearable or environmental sensors wirelessly connected to the ops center and the monitoring plan
- Server Stored Data on a secure cloud and available via Web and Mobile to the patient and doctor for trend or detailed analysis

TeleHealth – Continuity of care



The program addresses chronic patients, whose vitals are kept under constant control. This allows a more attentive care of the patient and relapse cost reduction

- ✓ Patients are given a personalized kit of wireless medical devices connected to the central system (i.e. glucose meter, pressure meter) and a plan defined by their physician.
- ✓ The devices measure vital parameters and sent data to the ops center where a medic operator or a physician is alerted if the data are above defined levels for each patient.
- ✓ In addition data are store on a secure cloud server and are made available to the physician to analyze historical readings.



Telehealth and care coordination



The project starts from the centralization of all data collected during Day Hospital stay, with the goal to follow the patient closely during the whole year instead of concentrating solely on the hospital visit.

- ✓ The project is about all 500 Down Syndrome patients, 100 will receive remote monitoring medical devices (weight scales, ECG, etc.). The plan includes the launch for all 43 Day Hospitals starting with Cardiology, Rare Diseases, Oncology.
- ✓ Data are collected from different sources (DH, remote monitoring, Self care portal), the personal physician and pediatrician will be involved as well in the process
- ✓ The main benefits include a more efficient *follow-up* and a better adherence to the medical plan prescribed



Energy Efficiency

Strategic partnership with associations, universities and innovative technological platform providers



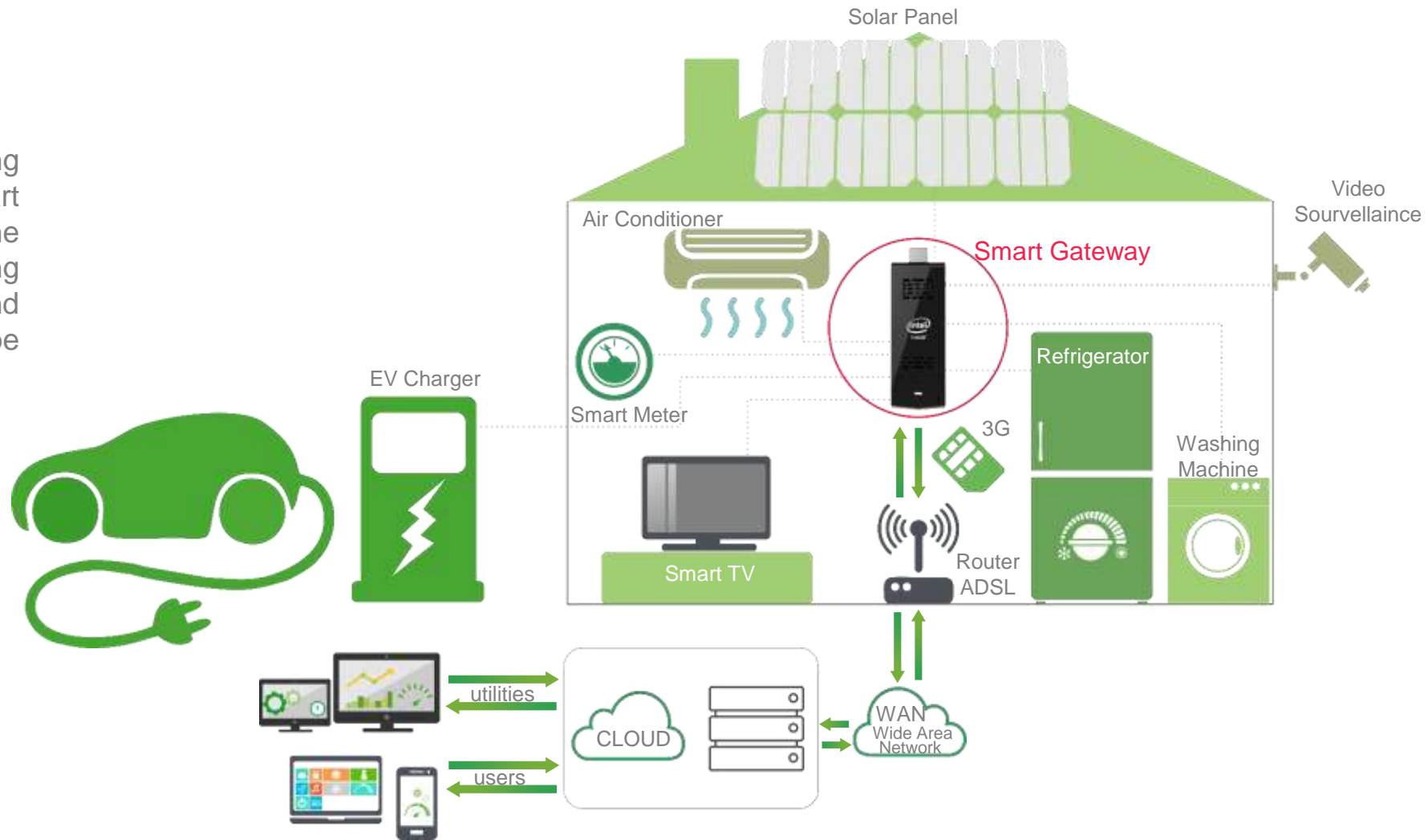
Provision of end-to-end services for efficiency and customer engagement

Enabling infrastructure for services

- Consumption is measured either using an optical LED sensor on the smart meter or using a clamps installed on the electrical panel. In case of long distances between the smart meter and the gateway, repeaters can be introduced in the first option

- Measurements are sent through a wireless channel and collected using an intelligent receiver/gateway

- Measurement are sent to the cloud applications either using an ADSL connection or a 3G connection



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Thank You....

