

Why DNS should be the naming service for IoT?



Some terminology

- **Identity**
  - Definable and recognizable (.e.g. My name is “Sandoche”)
  - Need not be unique and does not need to follow any particular “naming convention” (.e.g. Name could be “John Paul II”)
- **Identifier**
  - Unique way of identifying a physical or virtual object. Should follow a particular naming convention (e.g. Passport Number)
- **Addressing**
  - Unique way of identifying a physical or virtual object in the scope of communication
  - Need to follow a particular “naming convention” (E.g. IPv4/IPv6, MAC Address)
- **Service Discovery**
  - Mapping the unique identifier to its appropriate unique service/ information

Preamble with the Internet

Resolution

Application

Identifiers

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Naming Service

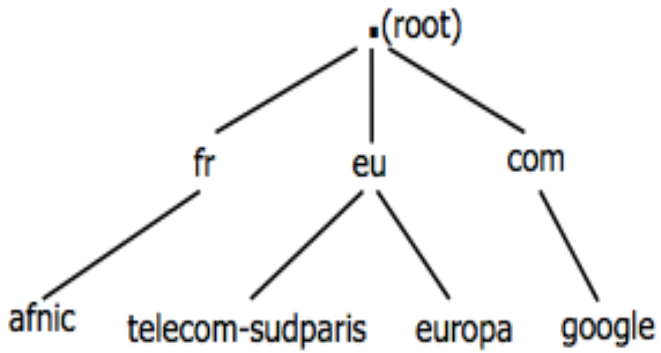
DNS





Provisioning (Hierarchical)

Naming Authority



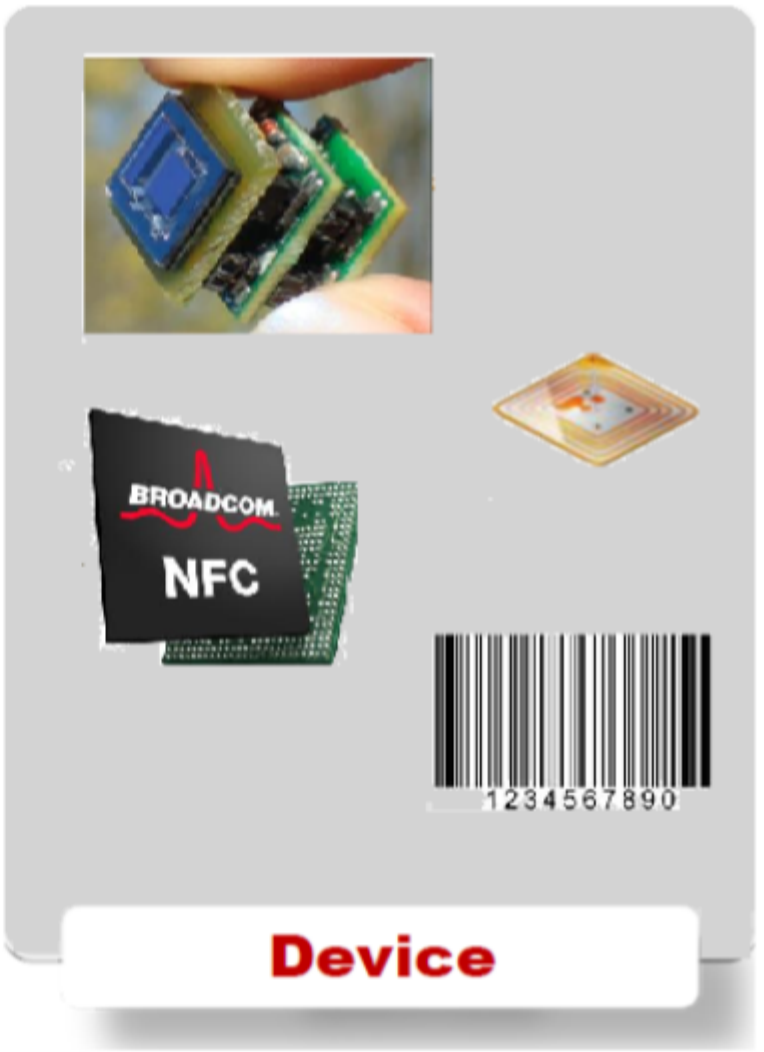
Naming convention for the Identifiers

IETF

- **Domain names, URI**
- **IP Addresses (IPv4/IPv6)**

Making the things identifiable in IoT





IoT applications – Farming industry currently



Identifier

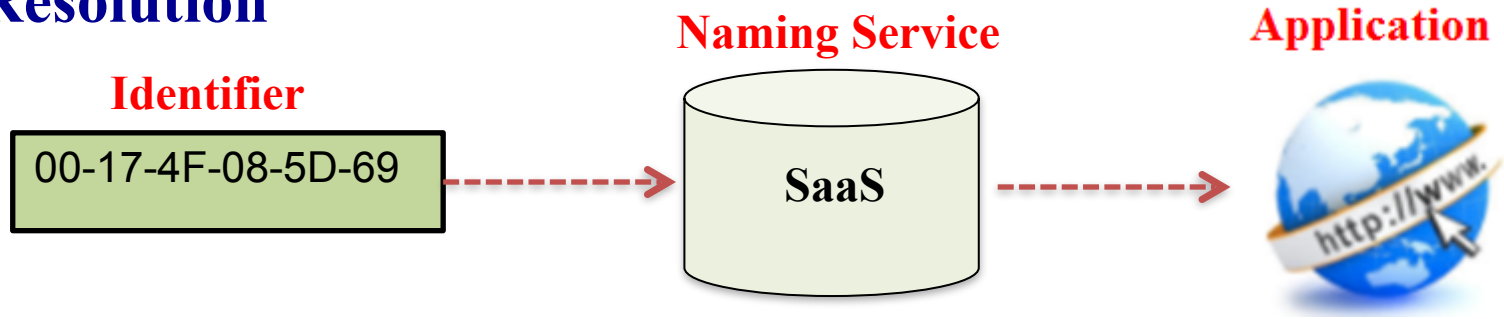


Naming convention = EUI-48 and EUI-64

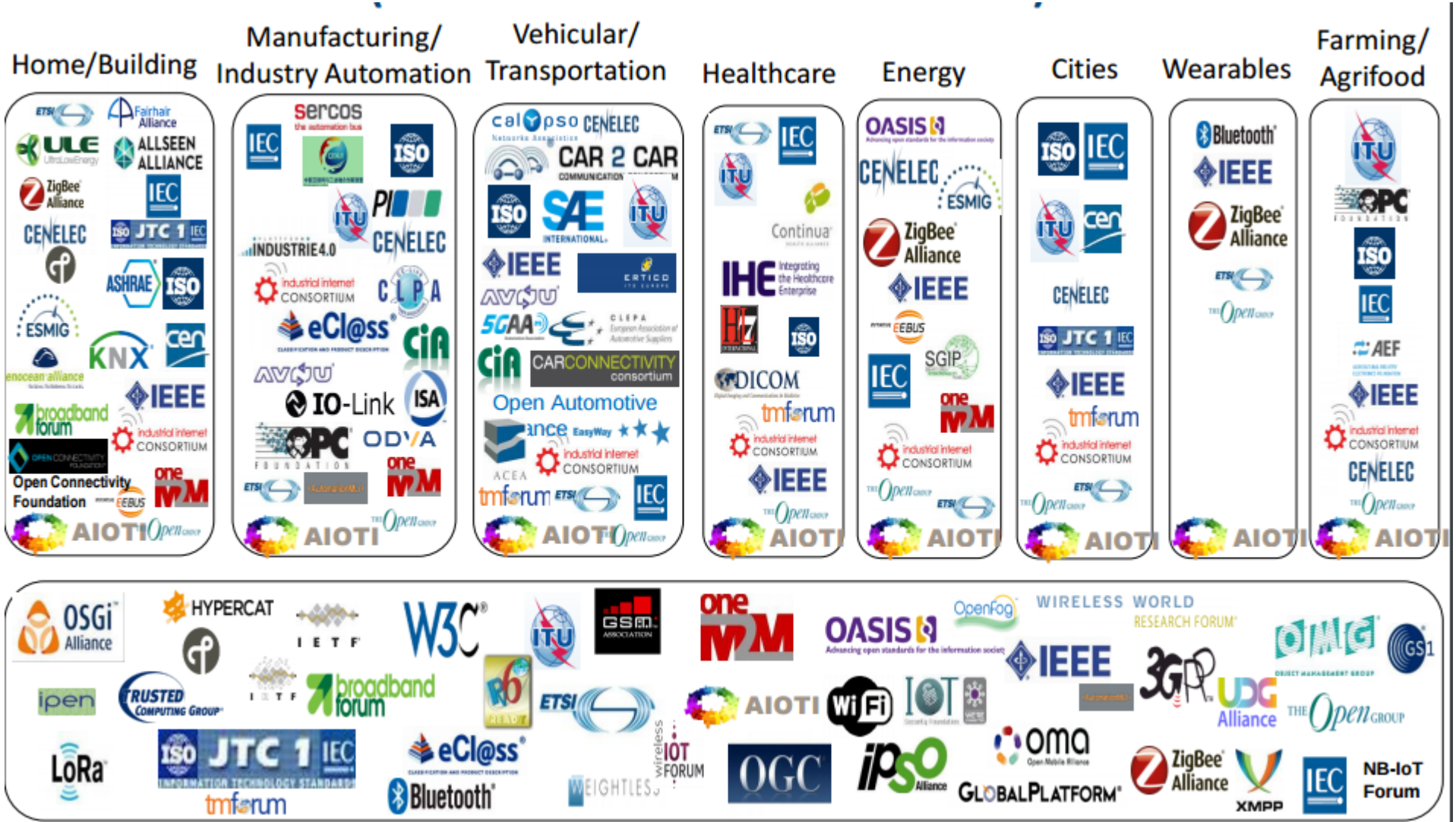
MAC address Provisioning

- 00-17-4F-08-5D-69
- Blocks – assigned to vendors by the IEEE
- Adapters - assigned by the vendor from its block

Resolution



IoT SDOs and Alliances landscape



Source: AIOTI WG3 (IoT Standardisation) – Release 2.7

IoT - Consumer Industry without DNS

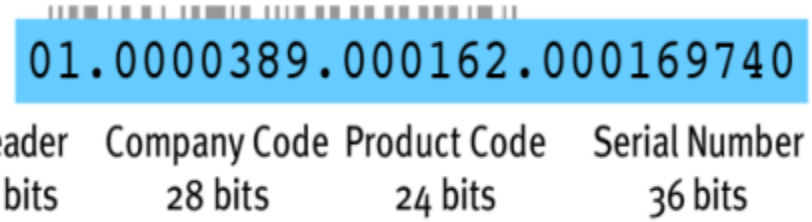
Resolution

Naming Convention = EPC

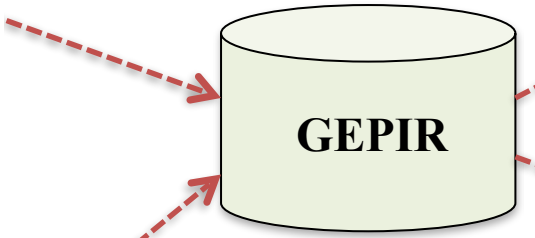
Barcode



RFID



Web based search Service



Application

Extended Packaging



Track & Trace

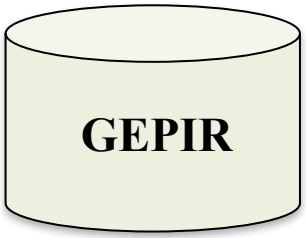


Identification

GTIN



Web based search Service



Application

Extended Packaging

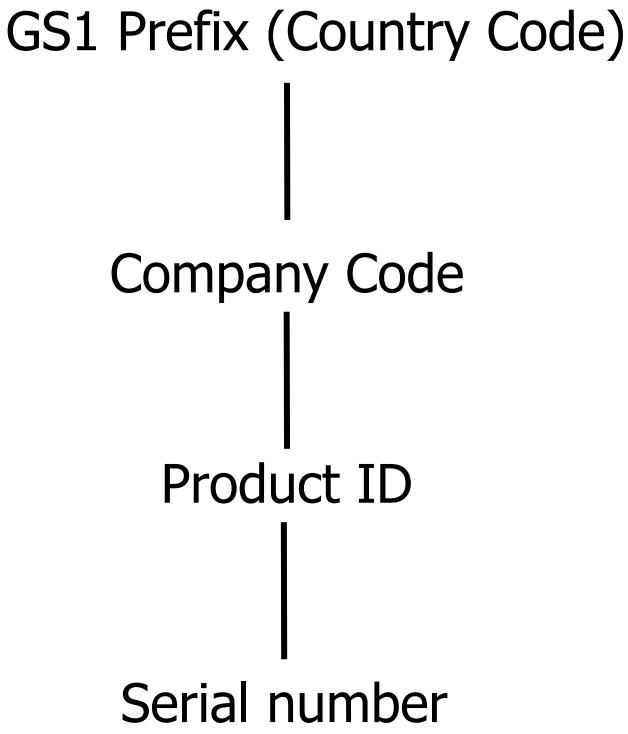


Standardisation in naming, addressing and service discovery

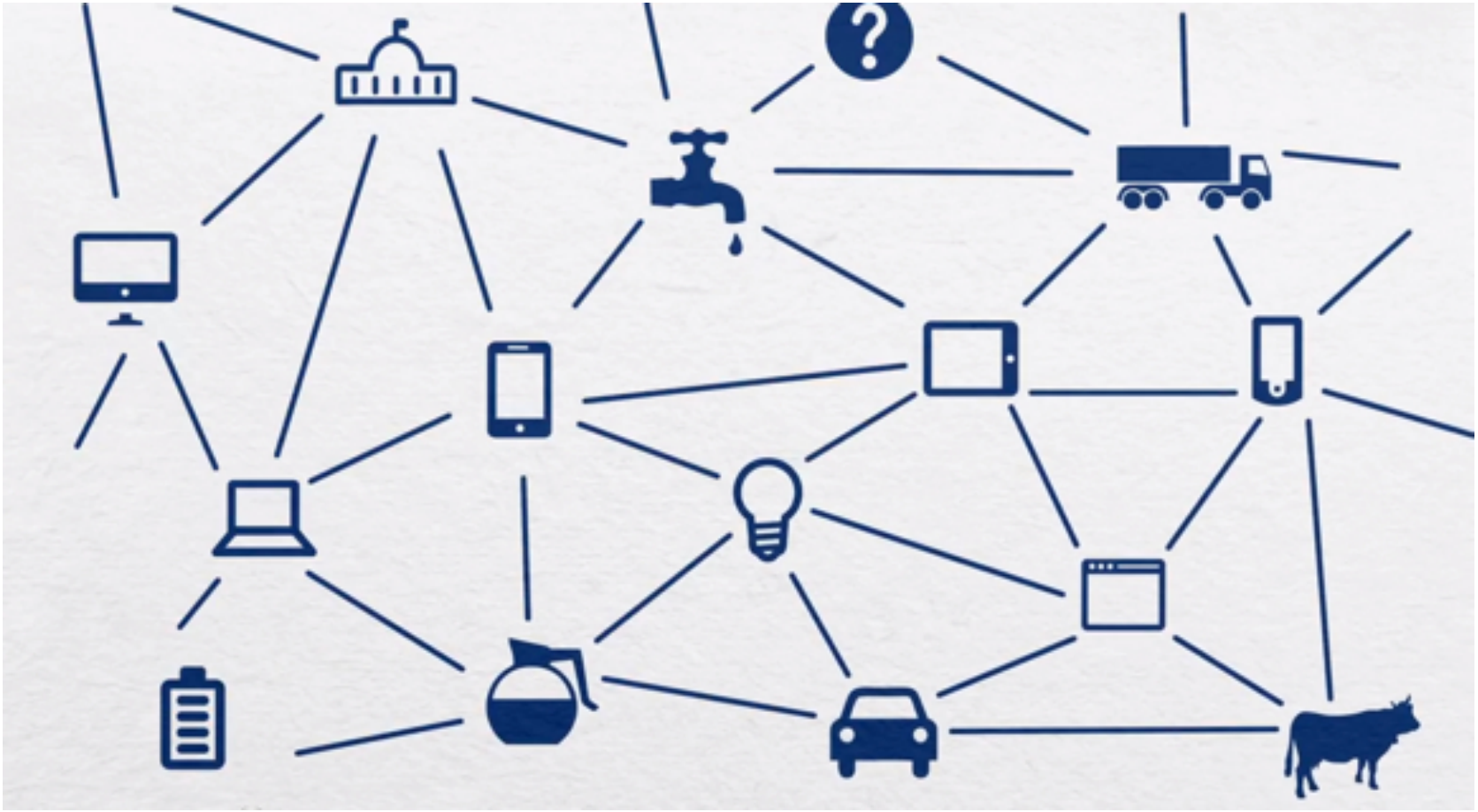
- ✓ IETF – Domain name, URI
- ✓ GS1 – EPC, ONS
- ✓ OID – Normally defined in ASN1
- ✓ DOI – Handle
- ✓ IEEE – EUI-48, EUI-64

IoT - Consumer Industry provisioning

EPC Provisioning (Hierarchical)



Need = I(Internet)oT



IoT - Consumer Industry using DNS

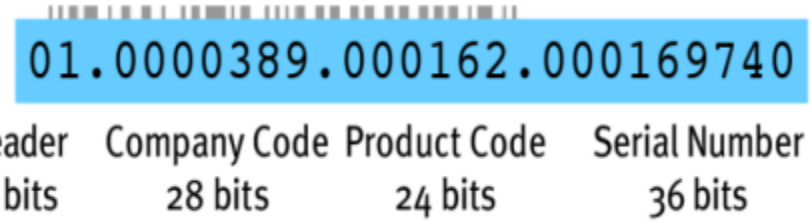
Resolution

Naming Convention = EPC

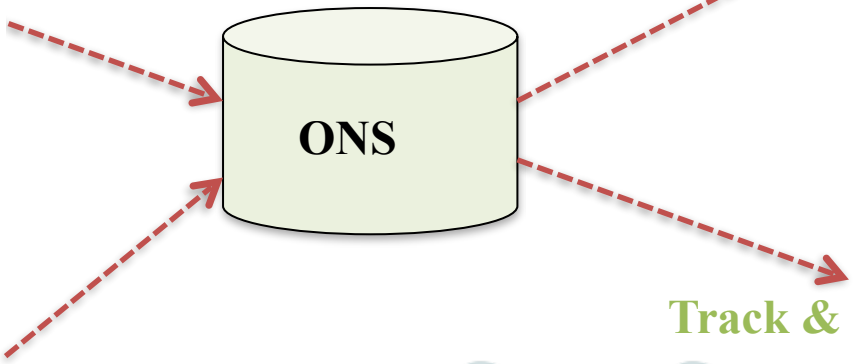
Barcode



RFID



Naming Service



Application

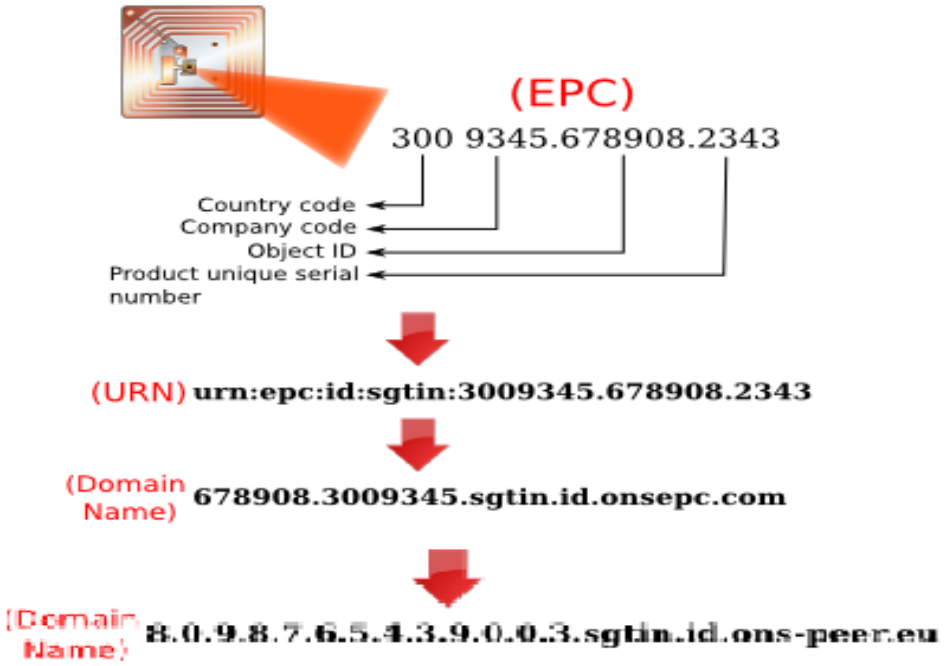
Extended Packaging



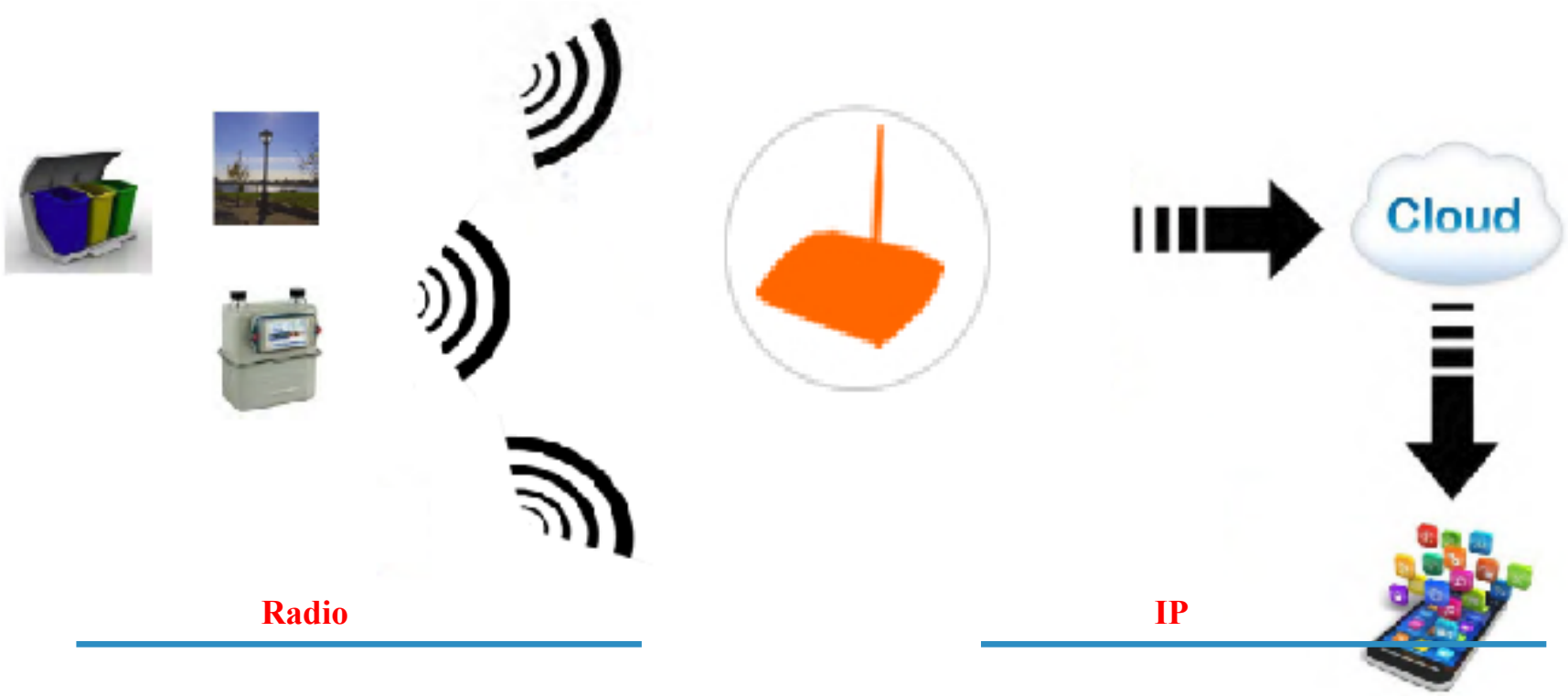
Track & Trace



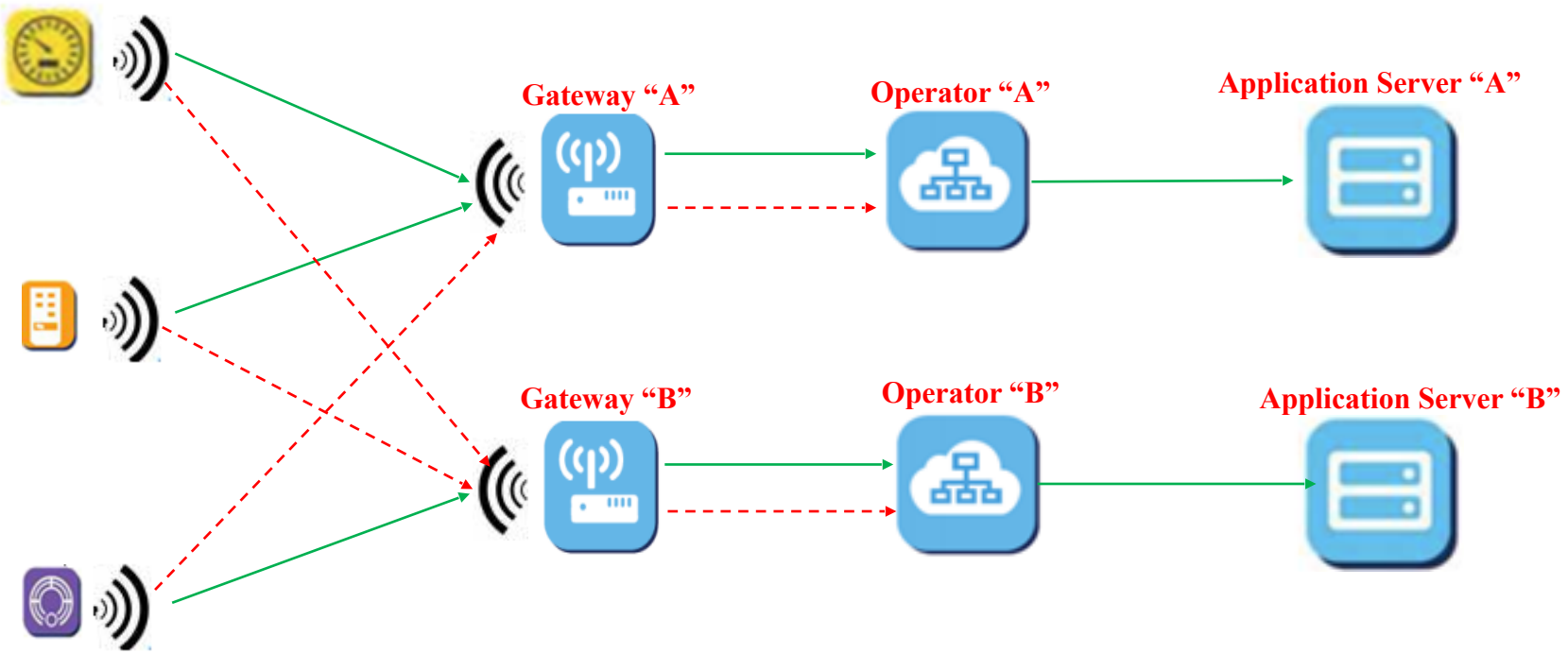
IoT - Consumer Industry FQDN



IoT - LPWAN Industry eco-system



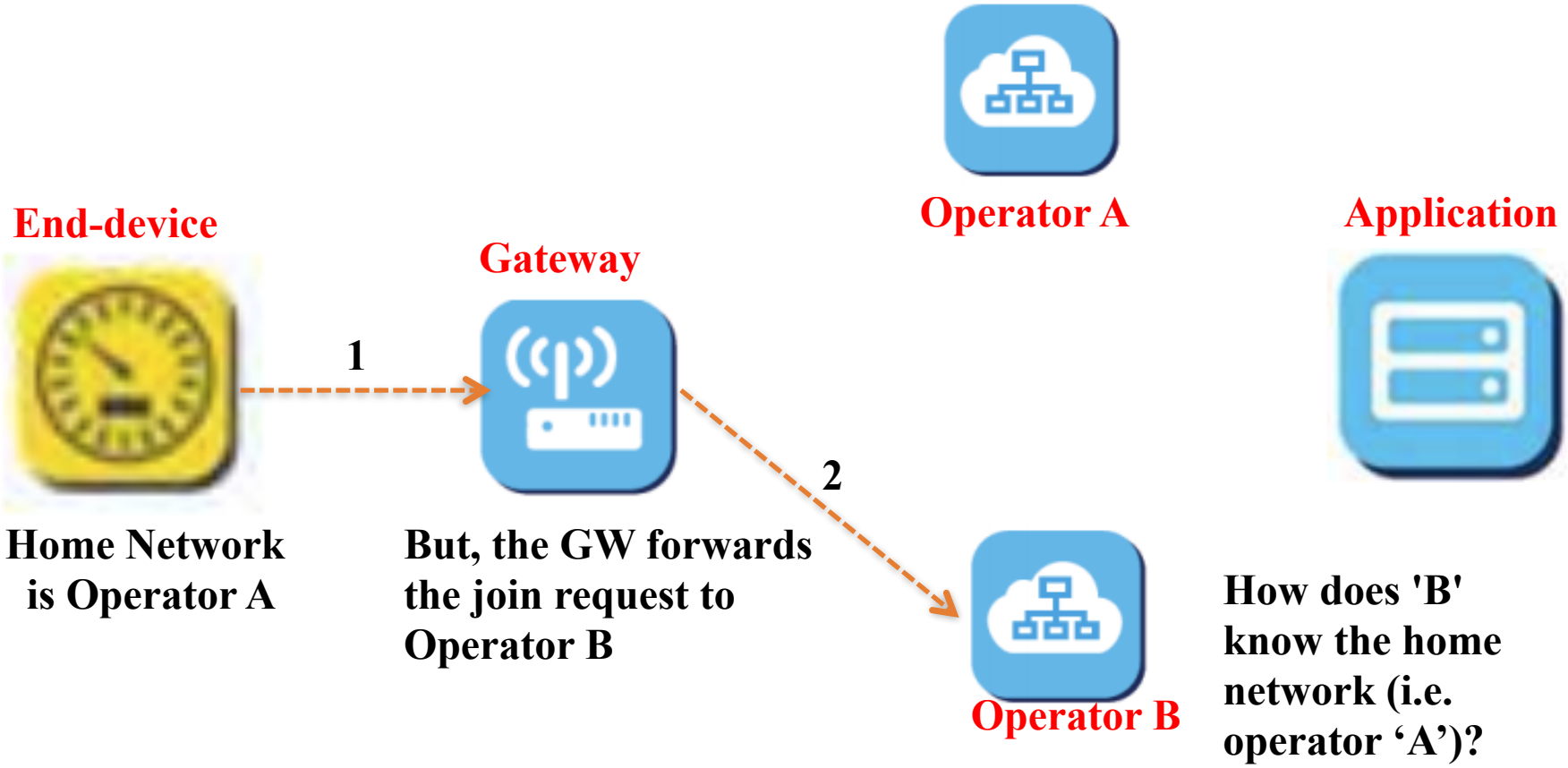
Detailed view of the LoRa network



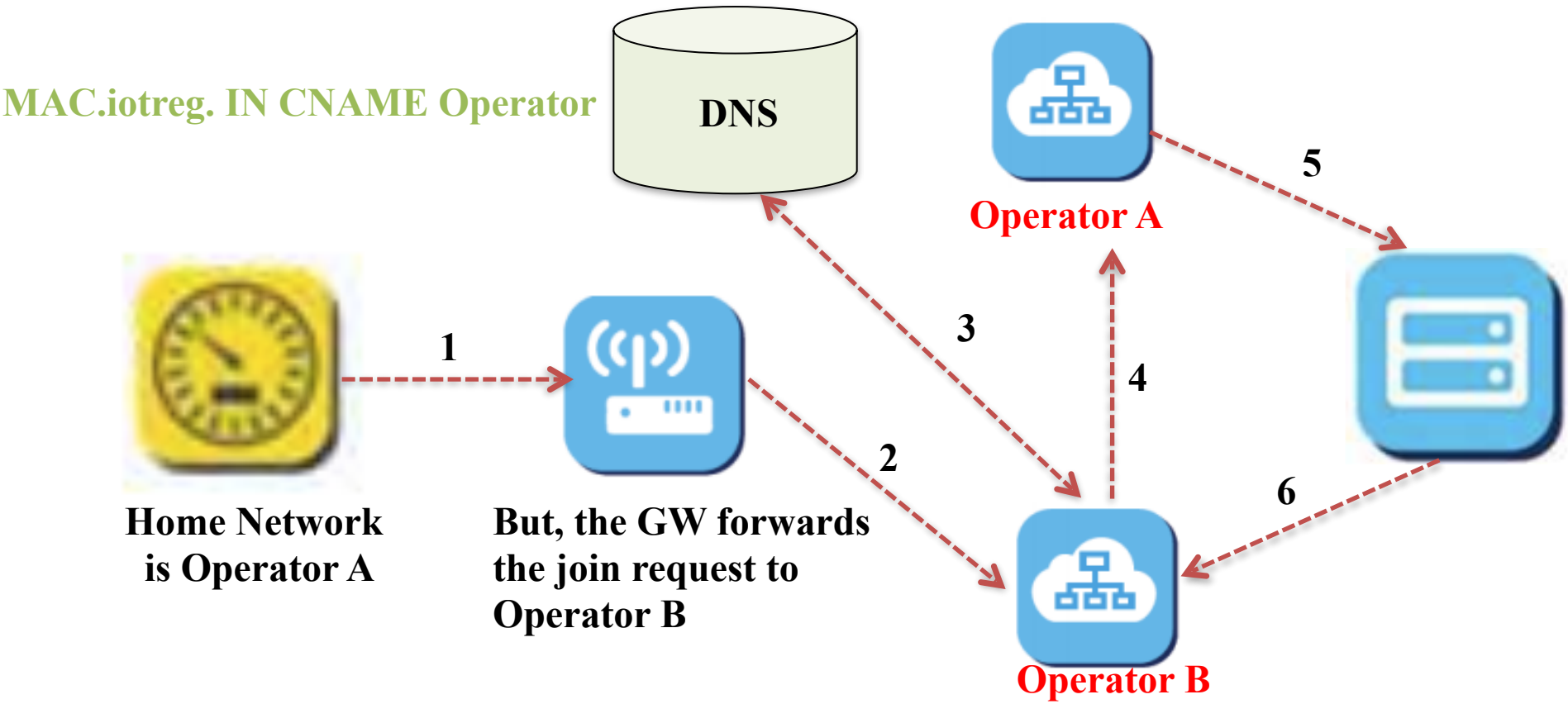
“A” Network

“B” Network

Portability issues in LoRaWAN



Possible solution for portability using DNS

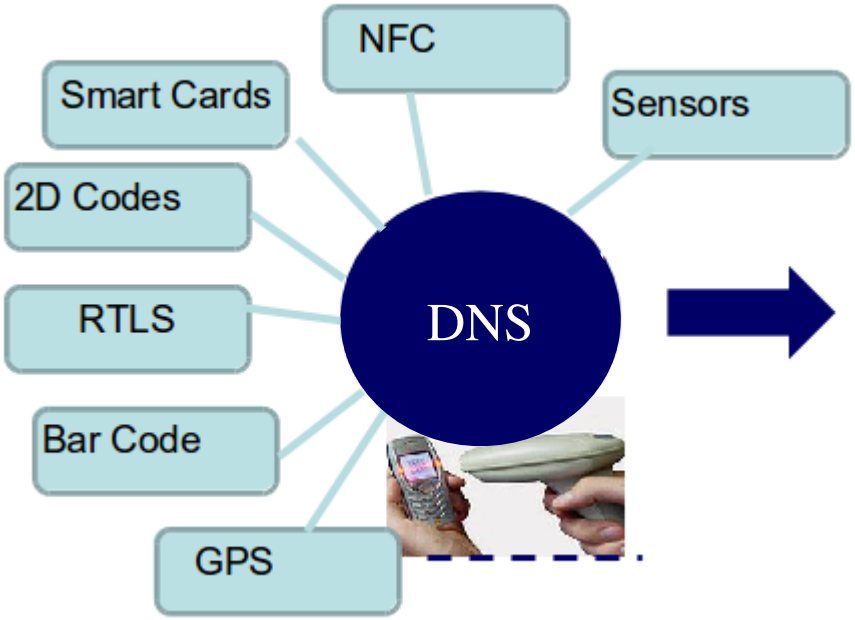



```
FAB0000000000007.iotreg.net.    IN CNAME  FAB0000000000007.Orange.rd.nic.fr.
FAB0000000000024.iotreg.net.    IN CNAME  FAB0000000000024.Bouygues.rd.nic.fr.
FAB0000000000011.iotreg.net.    IN CNAME  FAB0000000000011.Orange.rd.nic.fr.
```

Requirements

- ✓ Must be scalable
- ✓ Must work for legacy and new naming conventions
- ✓ Should work for hierarchical and flat identifiers

Vision



Merci !

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