

afnic

*Why DNS should be the naming service
for IoT?*

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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**

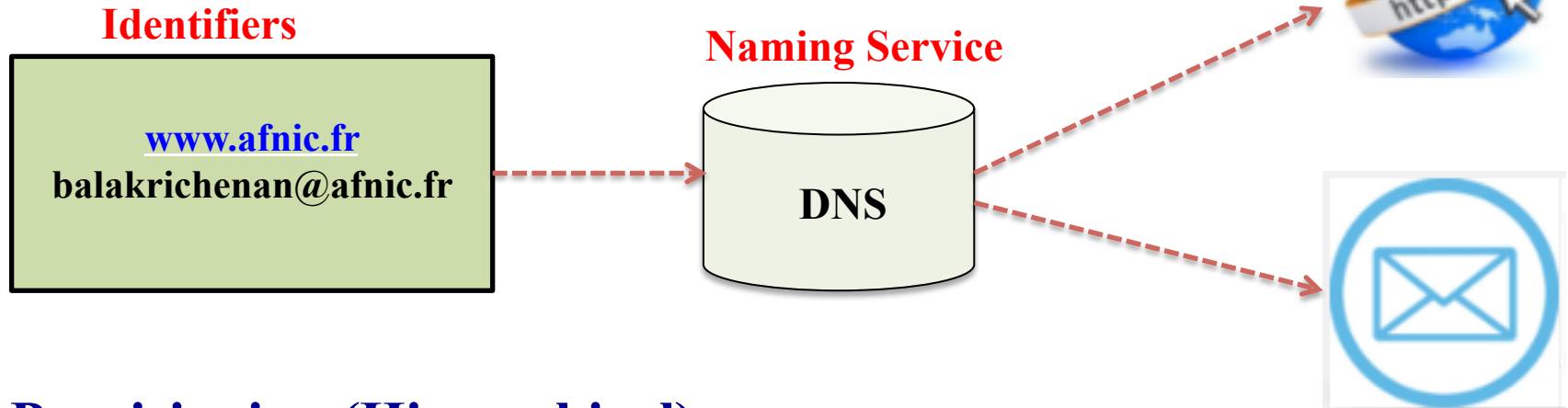
- **Unique** way of identifying a physical or virtual object in the scope of communication
- Need to follow a particular “**naming convention**” (E.g. Postal Address, IPv4/IPv6, MAC Address)

- **Naming Service**

- Mapping the **unique** identifier to its appropriate **unique** service/ information

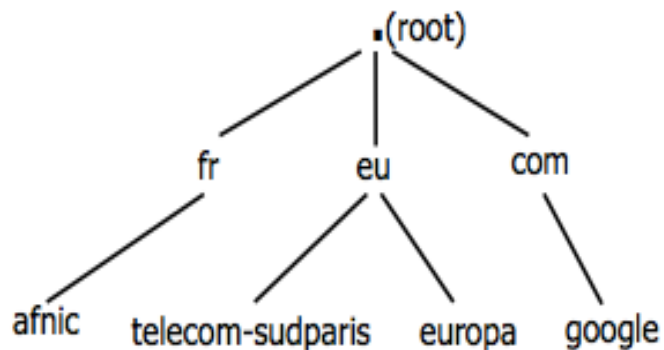
Preamble with the Internet

Resolution



Provisioning (Hierarchical)

Naming Authority

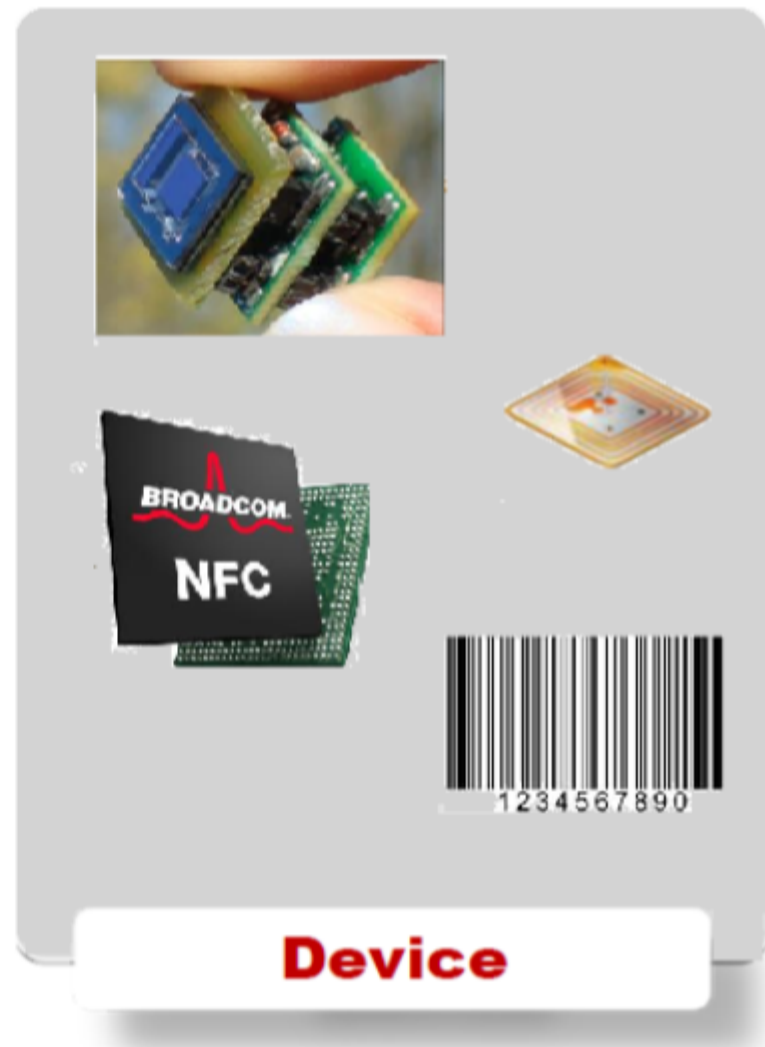


Naming convention for the Identifiers

IETF

- Domain names, URI

Making the things identifiable in IoT



IoT applications – Example of a private naming Service



Identifier



MAC address Provisioning

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

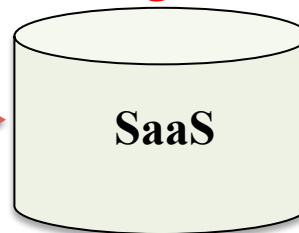
Naming convention = EUI-48 and EUI-64

Resolution

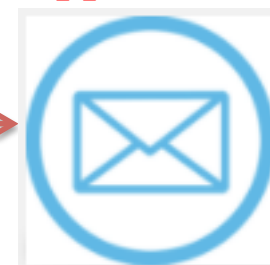
Identifier

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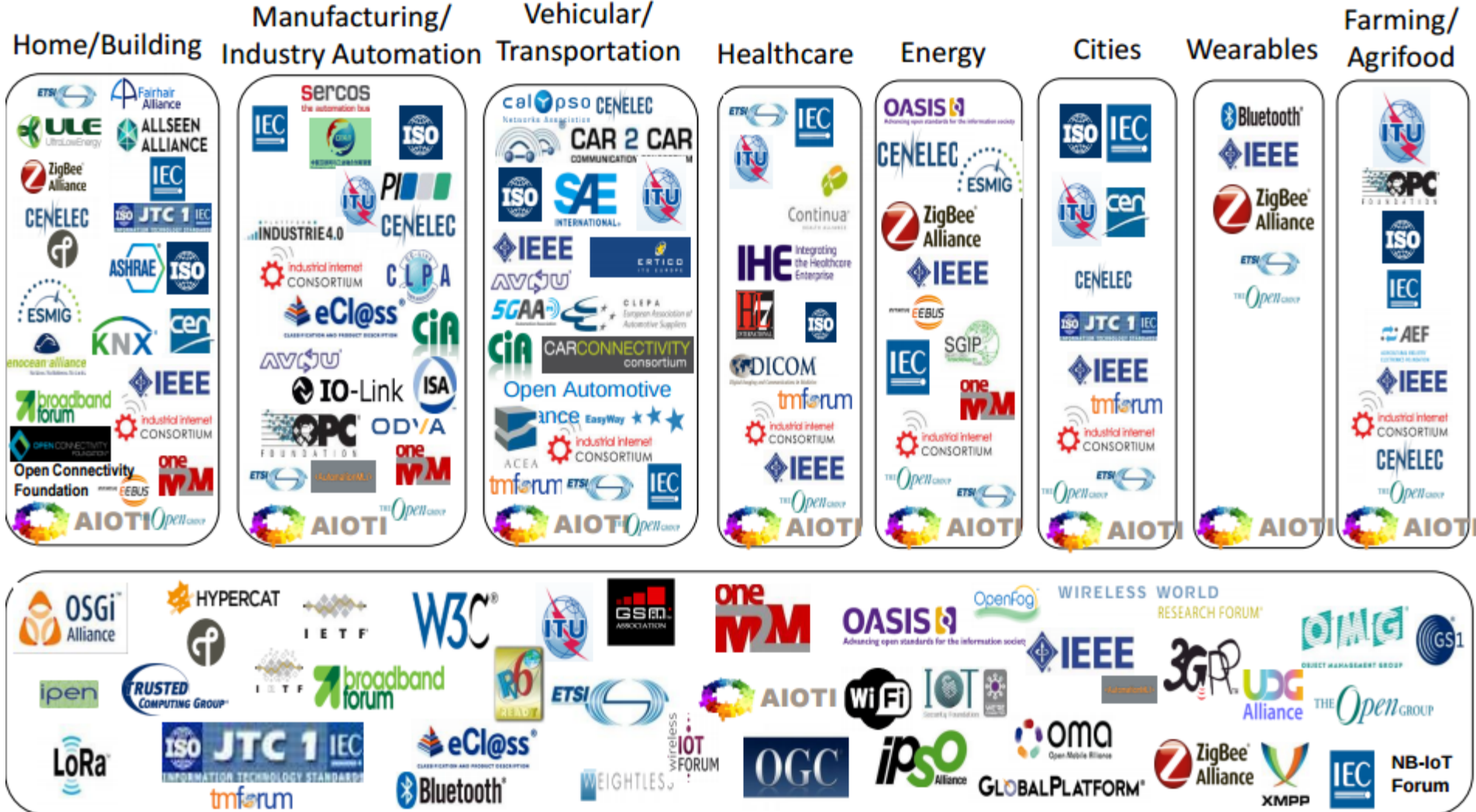
Naming Service



Application



IoT SDOs and Alliances landscape



IoT - Consumer Industry provisioning

EPC Provisioning (Hierarchical)



Naming Authority

GS1 Prefix (Country Code)

Company Code

Product ID

Serial number

IoT - Consumer Industry without DNS

Application

Resolution

Naming Convention = EPC

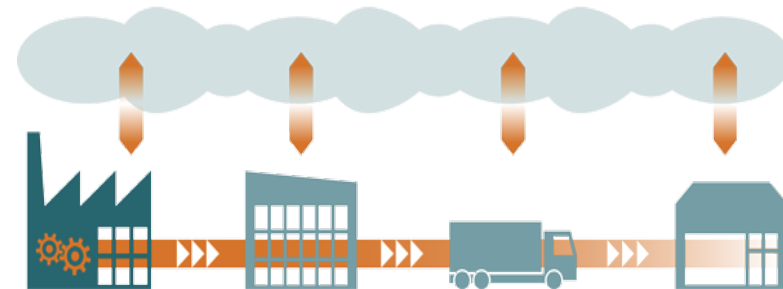
Extended Packaging



Naming Service



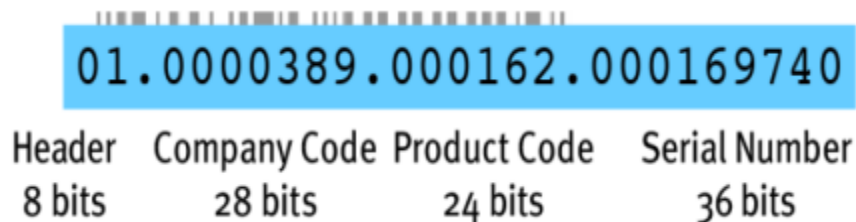
Track & Trace



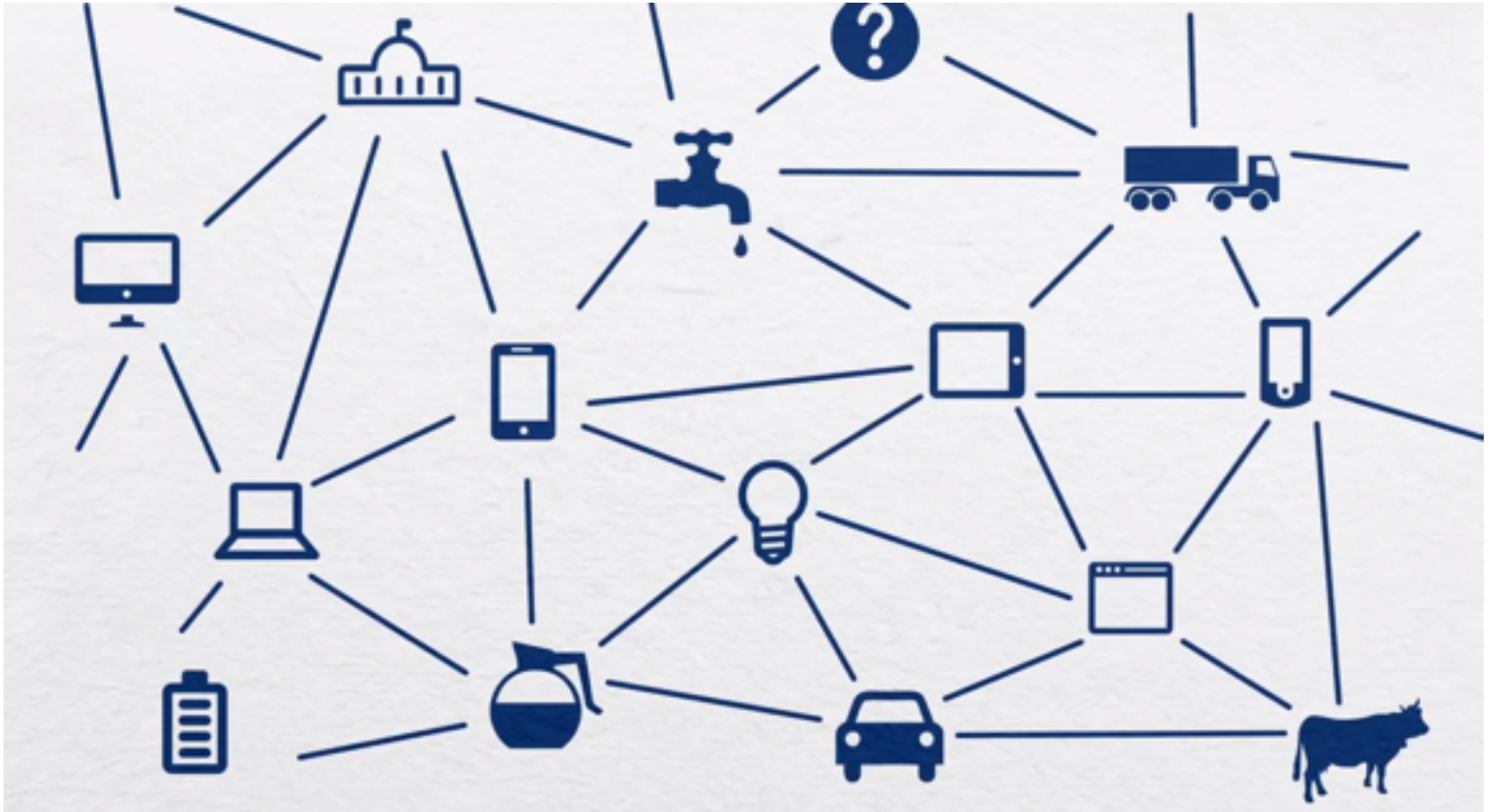
Barcode



RFID



$$Need = I(Internet)oT$$



IoT - Consumer Industry using DNS

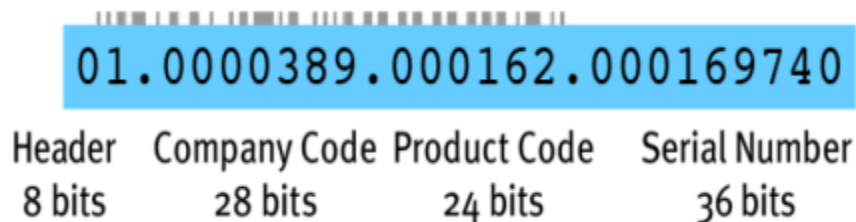
Resolution

Naming Convention = EPC

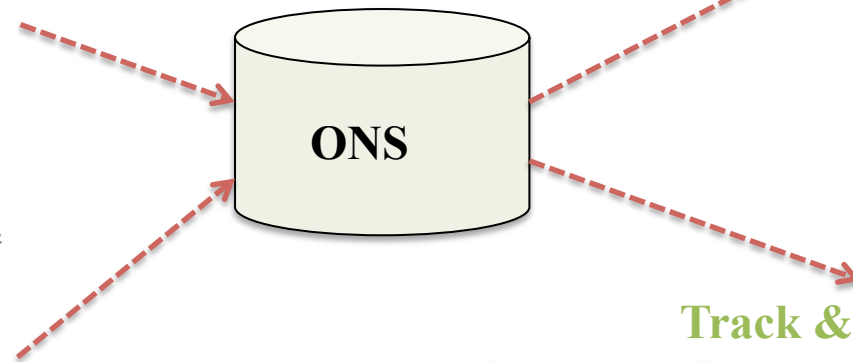
Barcode



RFID



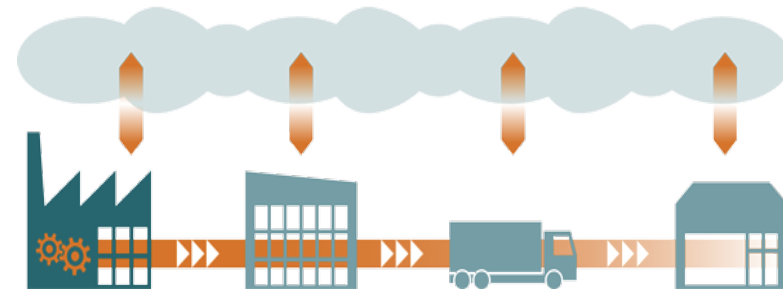
Naming Service



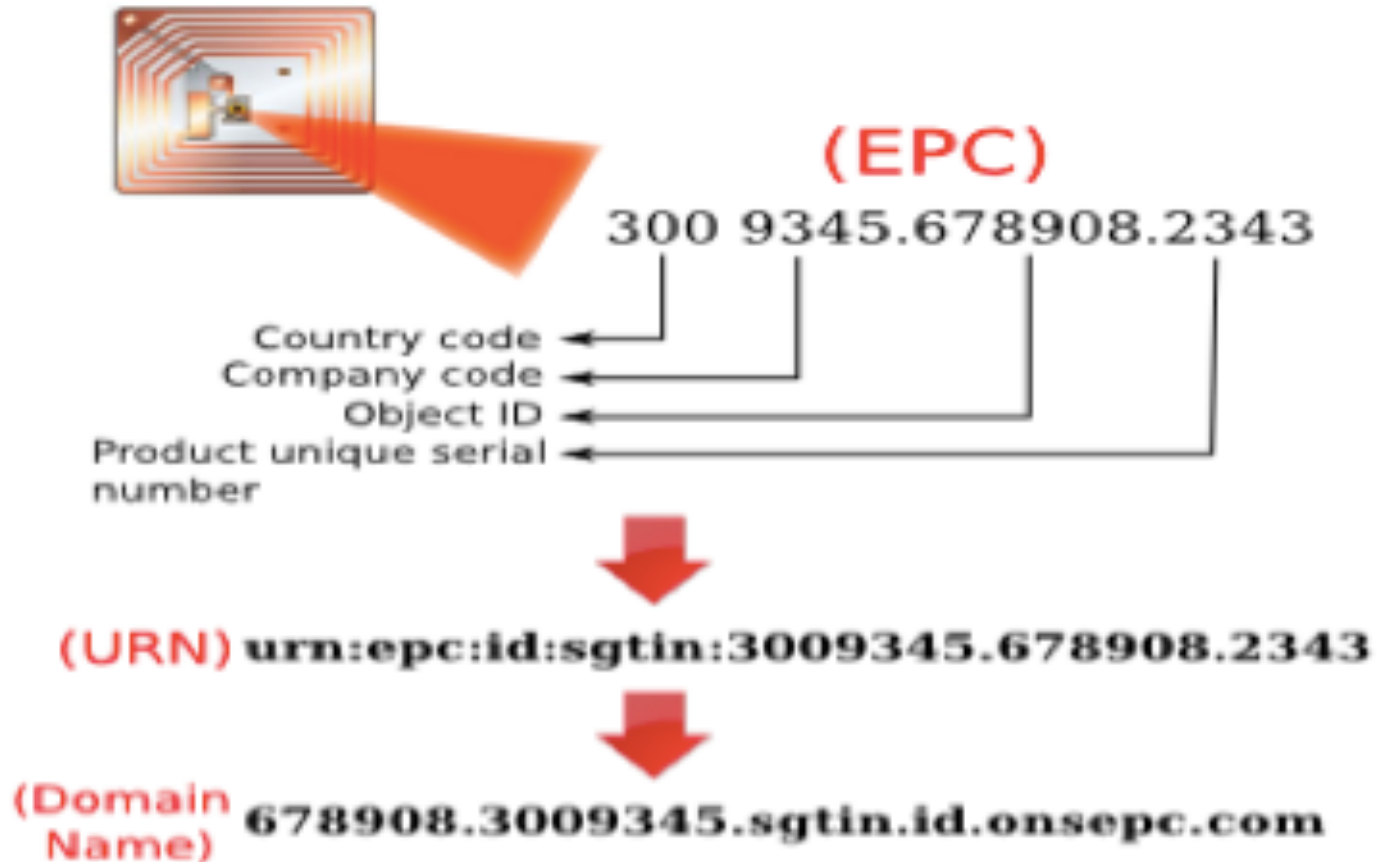
Application Extended Packaging



Track & Trace



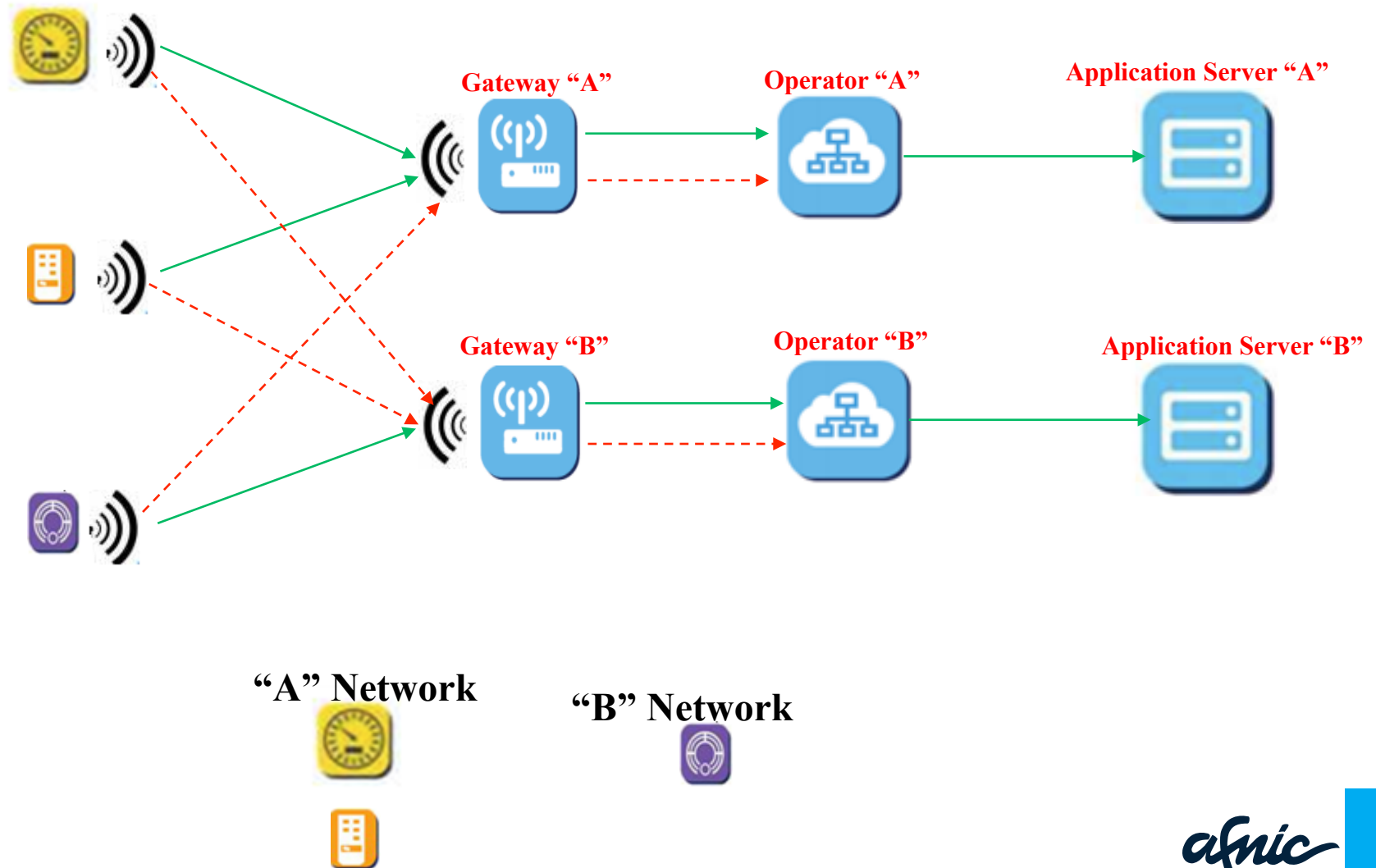
IoT - Consumer Industry FQDN



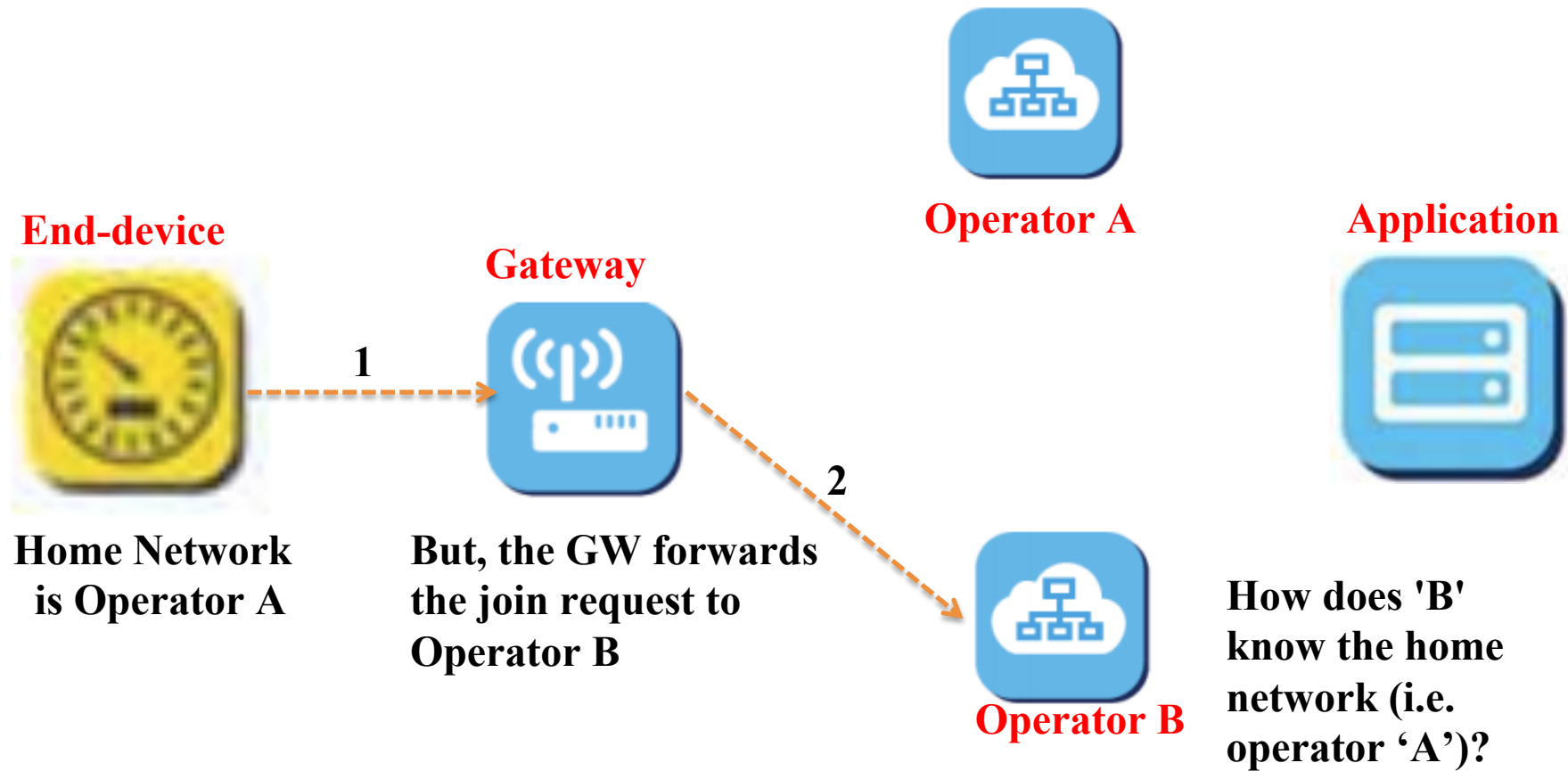
IoT - LPWAN Industry eco-system



Detailed view of the LoRa network

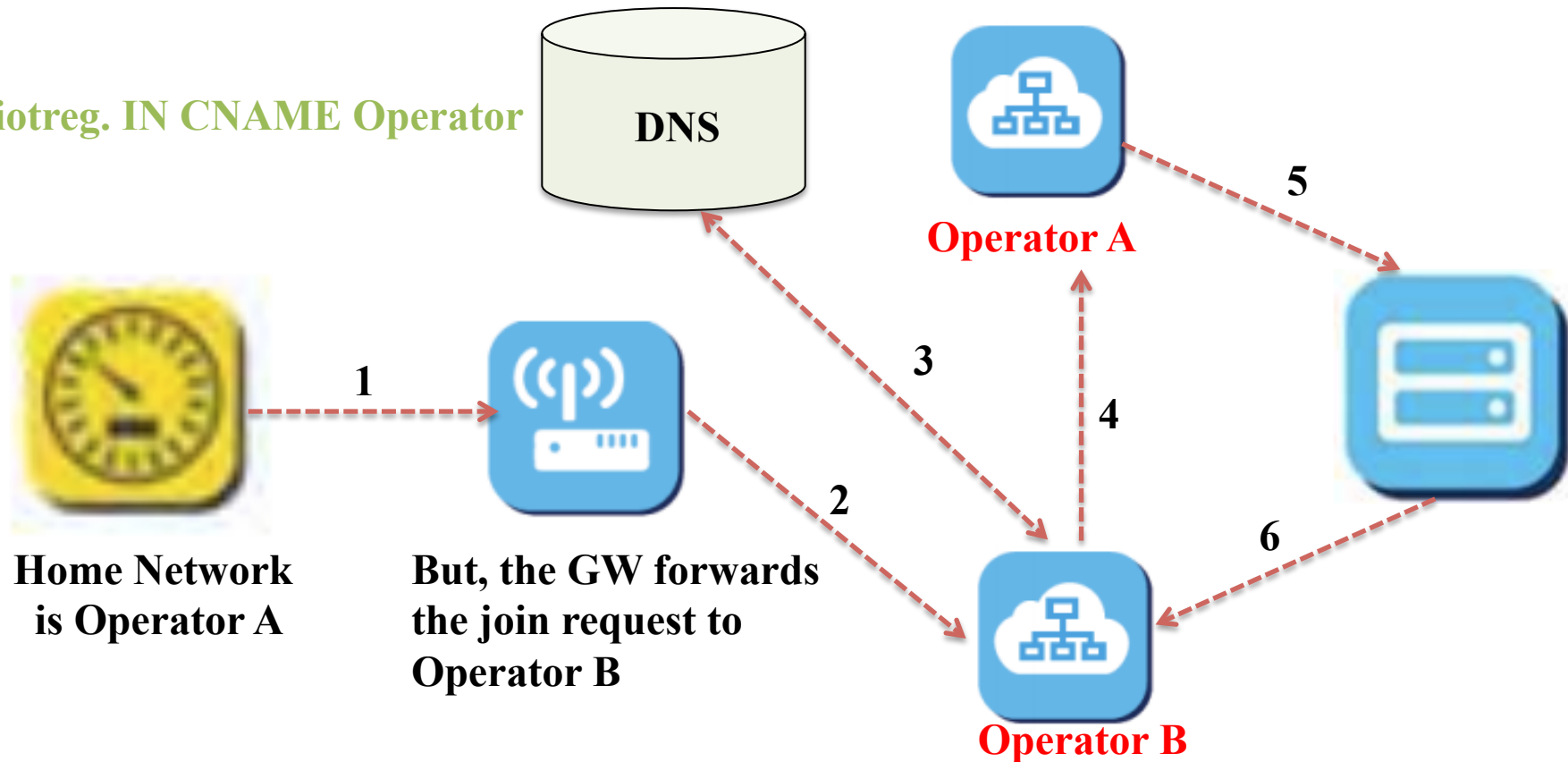


Portability issues in LoRaWAN



Possible solution for portability using DNS

MAC.iotreg. IN CNAME Operator



FAB000000000000007.iotreg.net.	IN	CNAME	FAB000000000000007.Orange.rd.nic.fr.
FAB0000000000000024.iotreg.net.	IN	CNAME	FAB0000000000000024.Bouygues.rd.nic.fr.
FAB0000000000000011.iotreg.net.	IN	CNAME	FAB0000000000000011.Orange.rd.nic.fr.

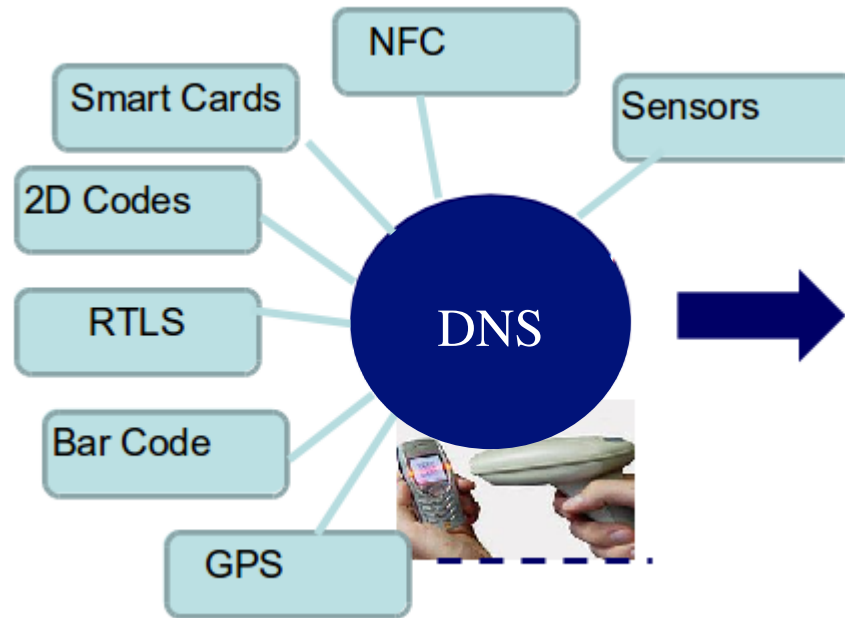
Naming service requirements for IoT

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

Naming service in different standard organisations

- ✓ Domain names (IETF) – DNS
- ✓ Electronic Product Code (GS1) – ONS which uses DNS
- ✓ Object Identifier (ISO, ITU-T) – ORS which uses DNS
- ✓ Digital Object Identifier (ISO) – For initial resolution uses DNS

Vision



Merci !

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