

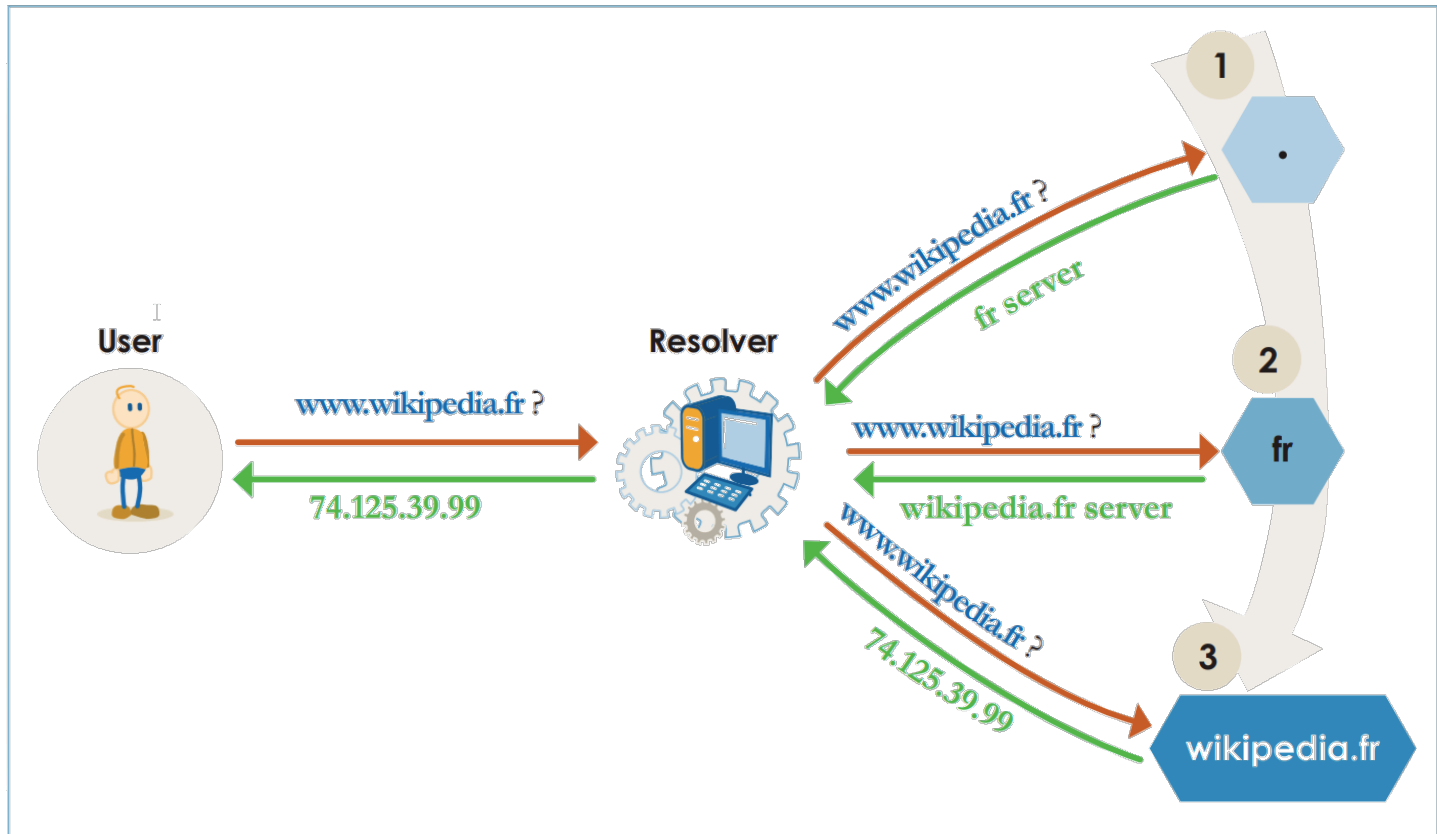


*Roles and challenges for the
numbering and naming community in
the IoT domain*

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A simple view of numbering and naming in the Internet



- ✓ Numbers = IP addresses
- ✓ Naming = URI (e.g. domain names)

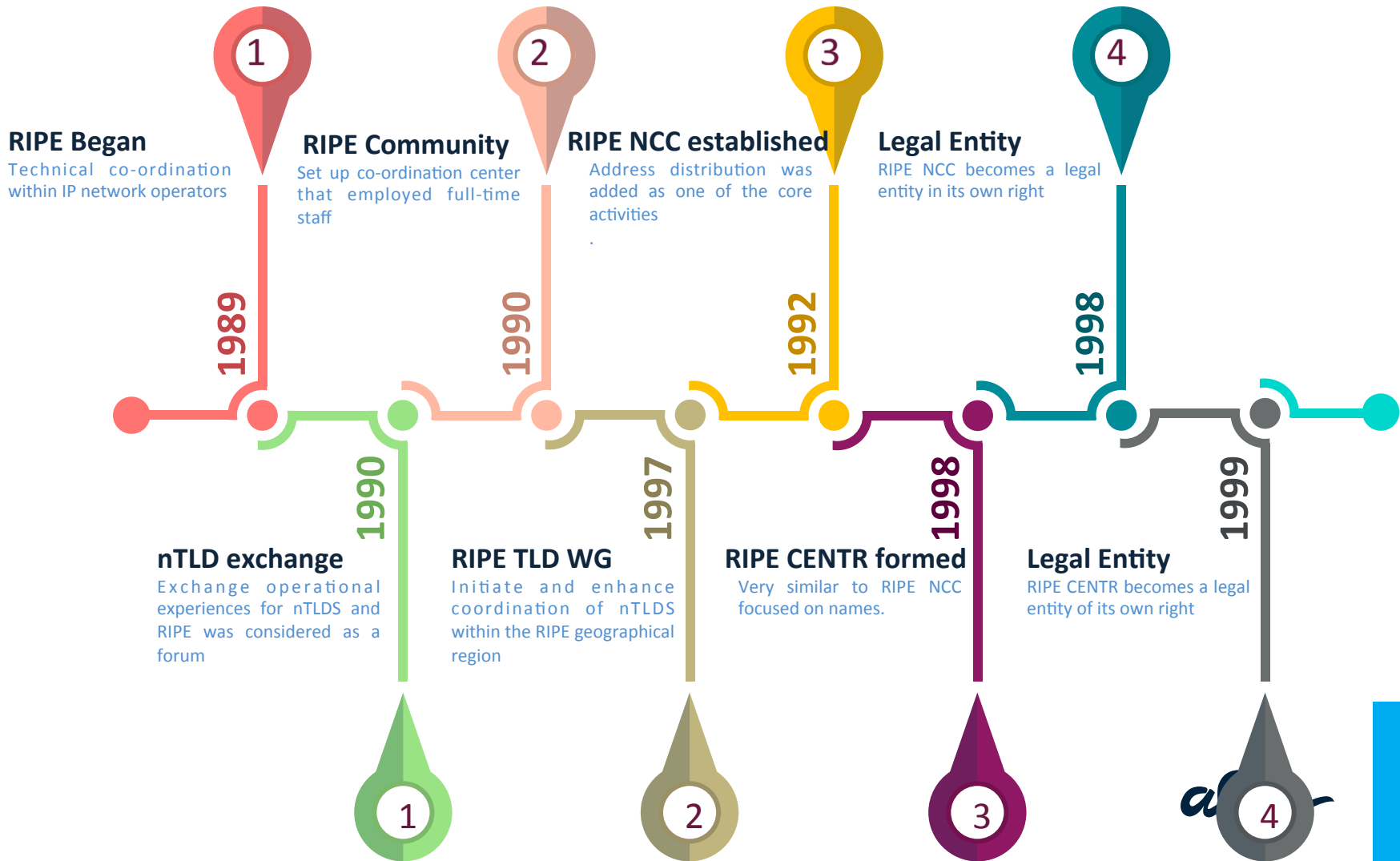
RIPE NCC & CENTR sign MoU at IGF 2017



Salient features of the MoU

- ✓ Formalises the existing relationship between RIPE and CENTR
- ✓ Collaborate on *Internet* coordination activities in the EU region
- ✓ Promote the use of *IPv6* among their respective memberships
- ✓ Provide training to EU policy makers and other stakeholders

Some history for the numbering and naming community at the EU level



RIPE and CENTR members roles and responsibilities

RIPE members

LIRs

RIPE members pivotal service

IP address allocation assignment and routing

Play a crucial role in the technical layer of the Internet eco-system

CENTR members

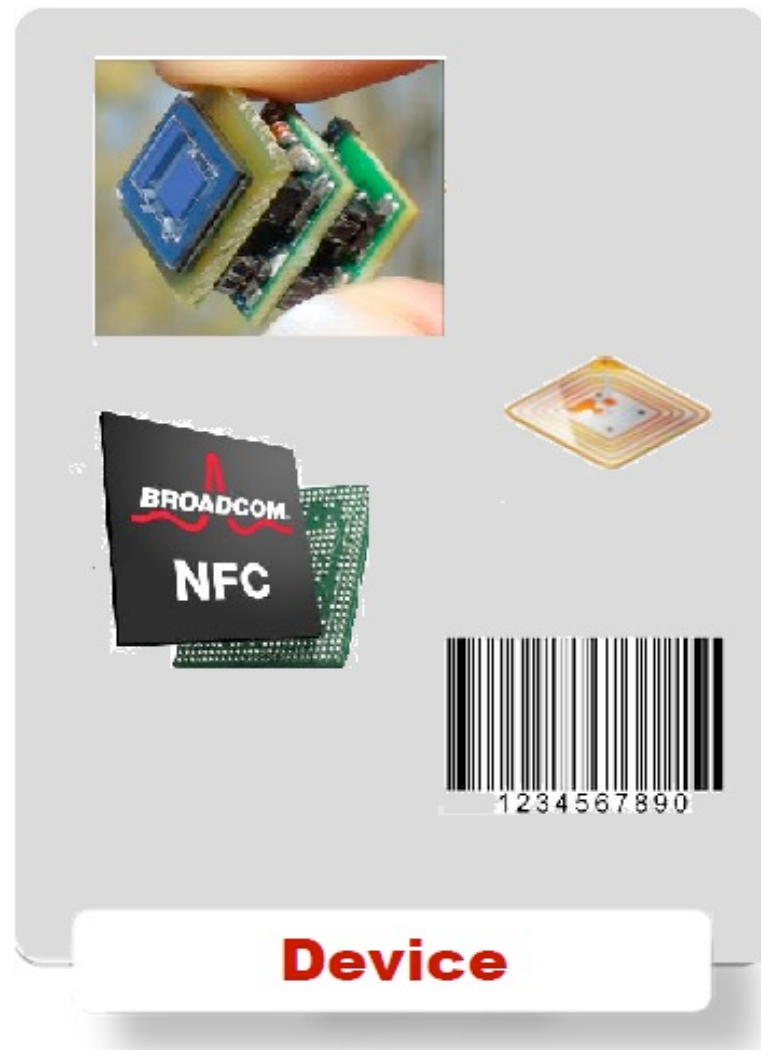
ccTLDs

CENTR members pivotal service

Domain name allocation and resolution

Play a crucial role in the technical layer of the Internet eco-system

Making things identifiable in IoT



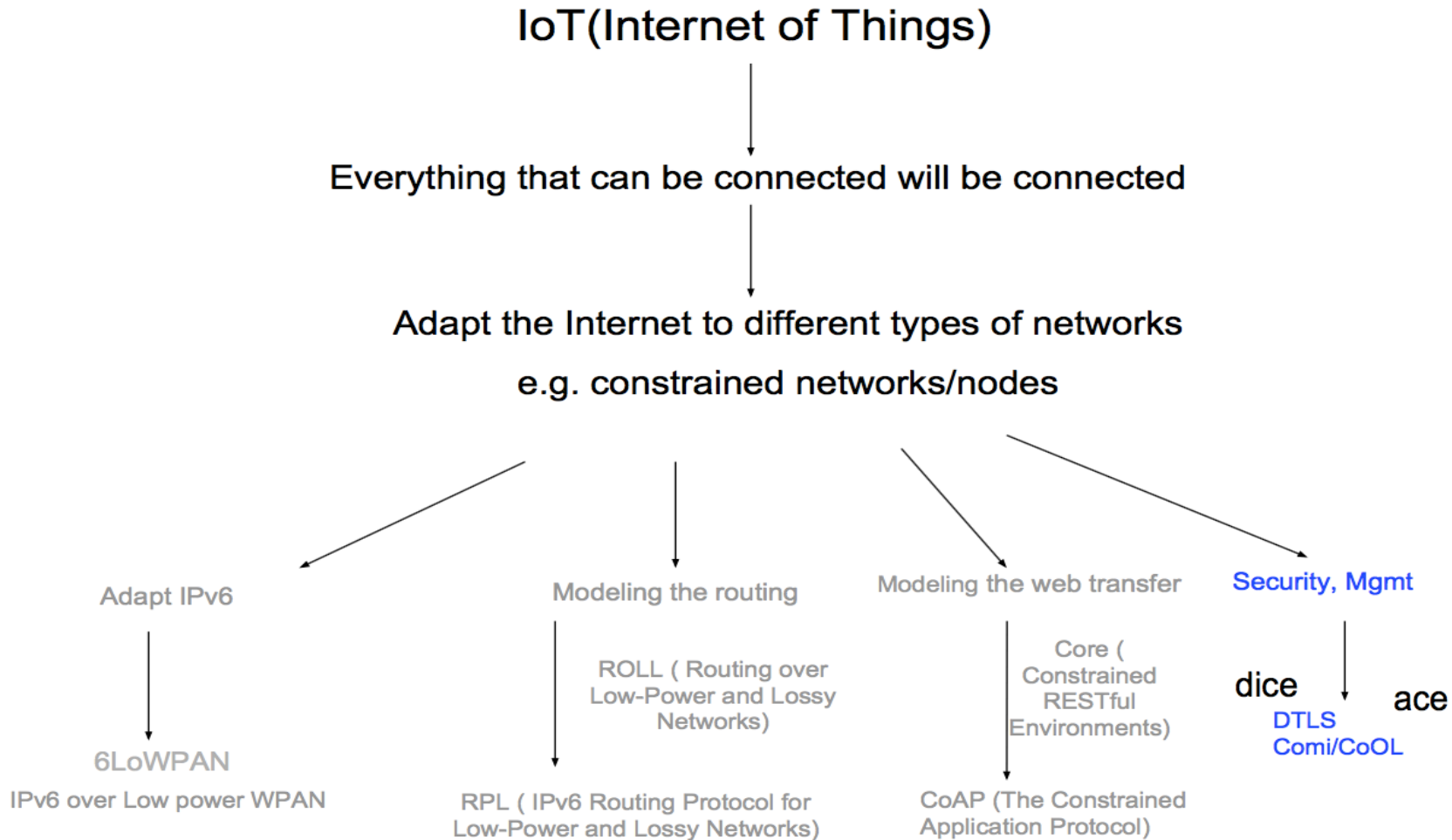
Issues of the silos in IoT. From an identifier perspective

- ✓ IoT devices use different communication identifiers (RF-ID, barcode, EUI-64 addresses etc.)
 - ✓ *Hierarchical (e.g. EUI-64, EPC) and flat identifiers (e.g. Apple UDID)*
 - ✓ *Different rules to constitute the identifiers*

To use IP or not in IoT?

- ✓ IoT is about connecting « things » to the Internet
- ✓ Non IP devices connect to the Internet through an Internet gateway
 - ✓ *The gateway is an application layer gateway – Needs to strip the data and restructure it with a TCP/IP stack in order to enable communication with an Internet service*
 - ✓ *Packets encrypted at the IoT network must be decrypted and re-secured in the IP datagram at the Internet gateway*
- ✓ IP based IoT devices can route and forward data without much intervention

Advantages of using IPv6 as the identifier for IoT – Existing standards



Source : IETF

afnic

Will Wal-mart use IPv6 for product identification?



Legacy IoT identifiers provisioning and resolution in the Internet



2b6f0cc904d137be2e1730235f5664094b83118.udid.apple.

3.1.3.1.6.2.3.3.9.3.4.0.3.gs1. (supposing that there is a TLD called 'gs1')

Examples of SDO and respective naming services

Identification Schema	SDO	Naming Service
URI (e.g. Domain names)	IETF	DNS
EPC	GS1	ONS
OID	ITU and ISO/IEC	ORS
DOI	ISO	Handle

Prepare ourselves for new challenges

✓ Numbering

- ✓ *IPv6 assignment policies (e.g. for IoT service providers, non IP network with IP gateway, IoT dedicated closed network)*

✓ Naming

- ✓ *New types of TLDs (IoT based TLDs such as .gs1, .lora etc.)*
- ✓ *Load at the DNS*

✓ Common issues such as Scalability, Security, Privacy, governance etc.

Roles for the numbering and naming community in IoT

- ✓ Outreach program to convince new IoT technologies/business the benefit of using IPv6 as IoT identifiers
- ✓ For legacy IoT technologies, we have a role to help them to migrate from their walled gardens to the Internet using naming services such as DNS (e.g. ONS)
- ✓ Continue what both the community is doing for Internet for the IoT (e.g. tools, training, standardisation, liaison etc.)