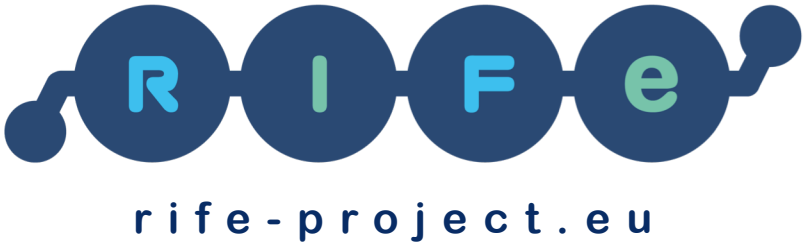


IETF 101: GAIA RG

Insights into RIFE field trial

22nd March 2018

Dirk Trossen
Renan Krishna
InterDigital Europe

Roger Baig
Guifi.net

RIFE is funded by the EU's Horizon2020 Programme

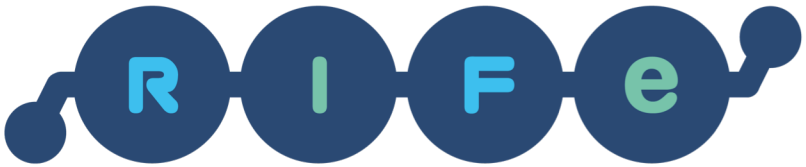
Outline

- Objectives
- Architecture background
- What we deployed
- Next steps

Objectives

- Utilize new network architecture to provide a *better* Internet for community

- Better being
  - Easier to deploy (SW only)
  - Performance benefits for certain IP services
  - Enabling services hard to do (e.g., expensive) otherwise

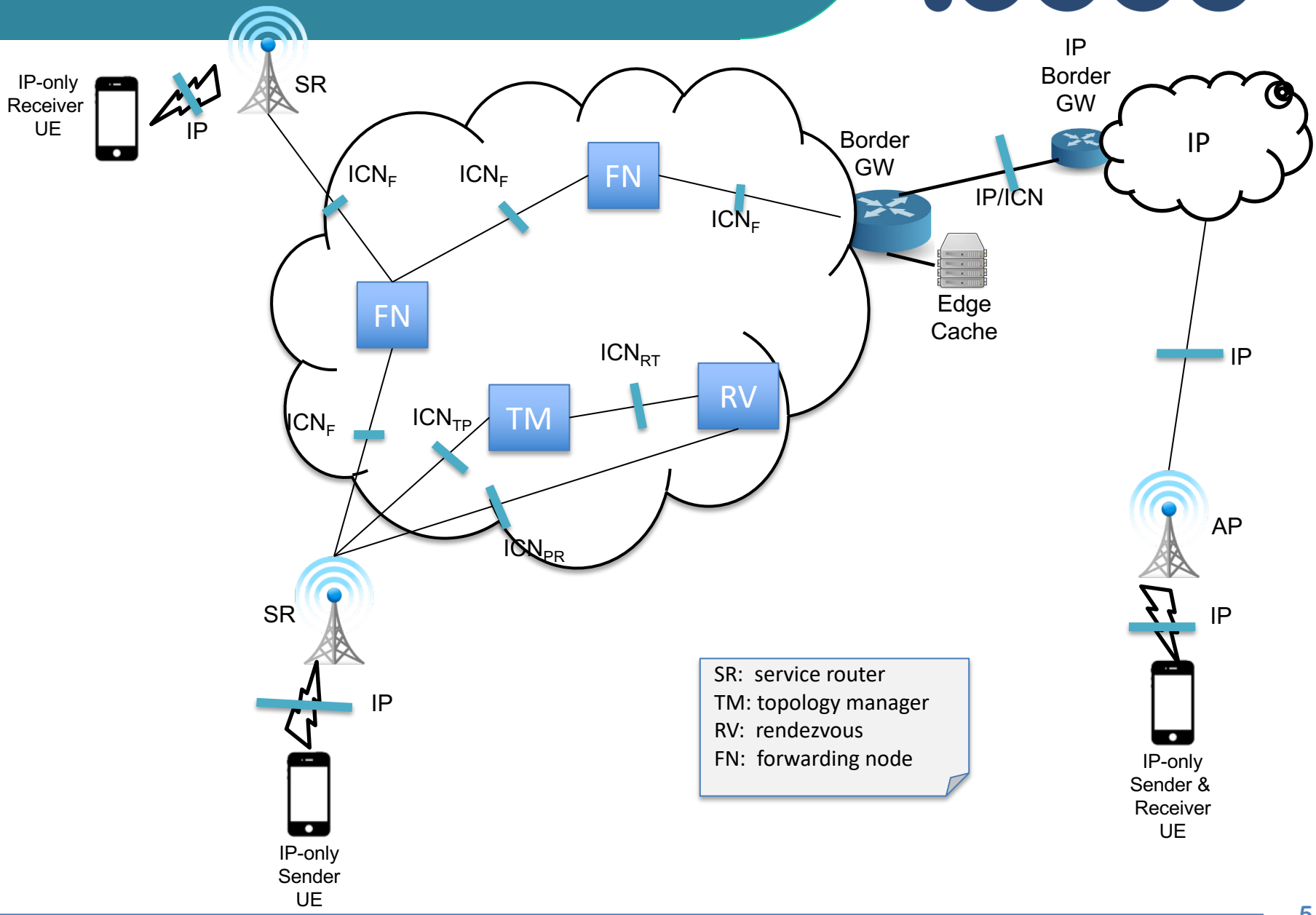


rife-project.eu

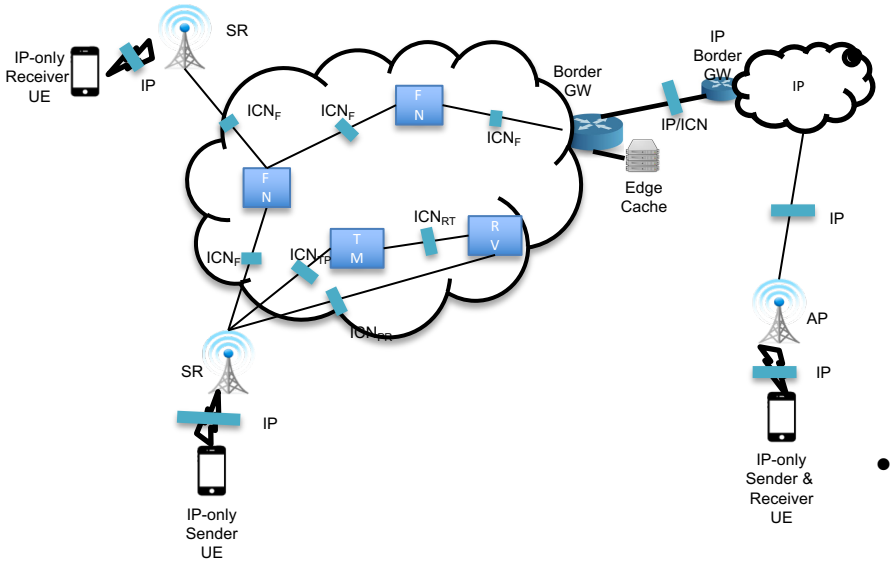
Architecture Background

RIFE is funded by the EU's Horizon2020 Programme

A Gateway-based System Architecture



Services



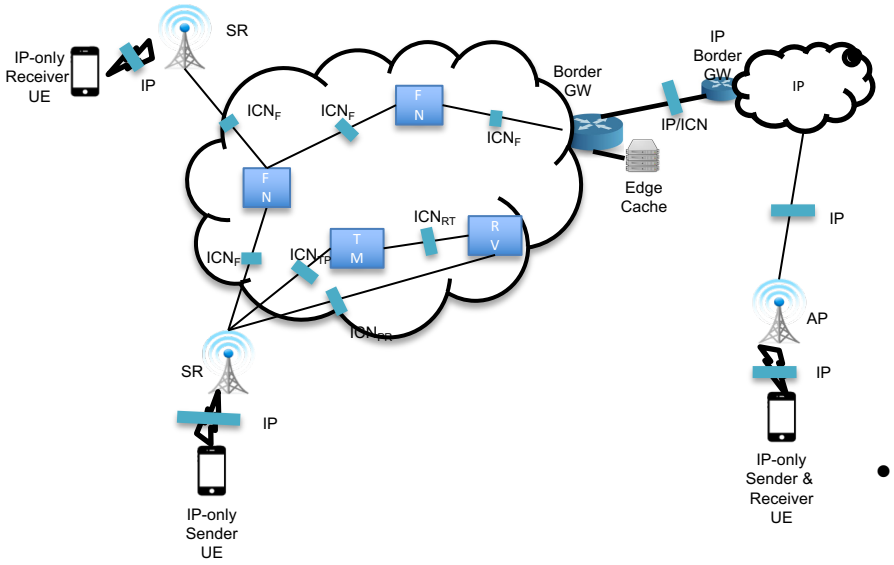
- **IP-based services**
  - Must support current Internet, but with better performance!
    - Address affordability and QoE aspects
  - Foundations for other propositions, such as surrogates

-> IP/HTTPoverICN solutions

- **New services**
  - Native ICN in selected areas?
  - DTN-based services

-> new ways of providing universal access?

Fronthaul Flexibility



- **Deployment flexibility**
  - Well-planned
  - Well-connected, less well-planned
  - Less well-connected, little planning
  - Random encounters

  -> address affordability aspect

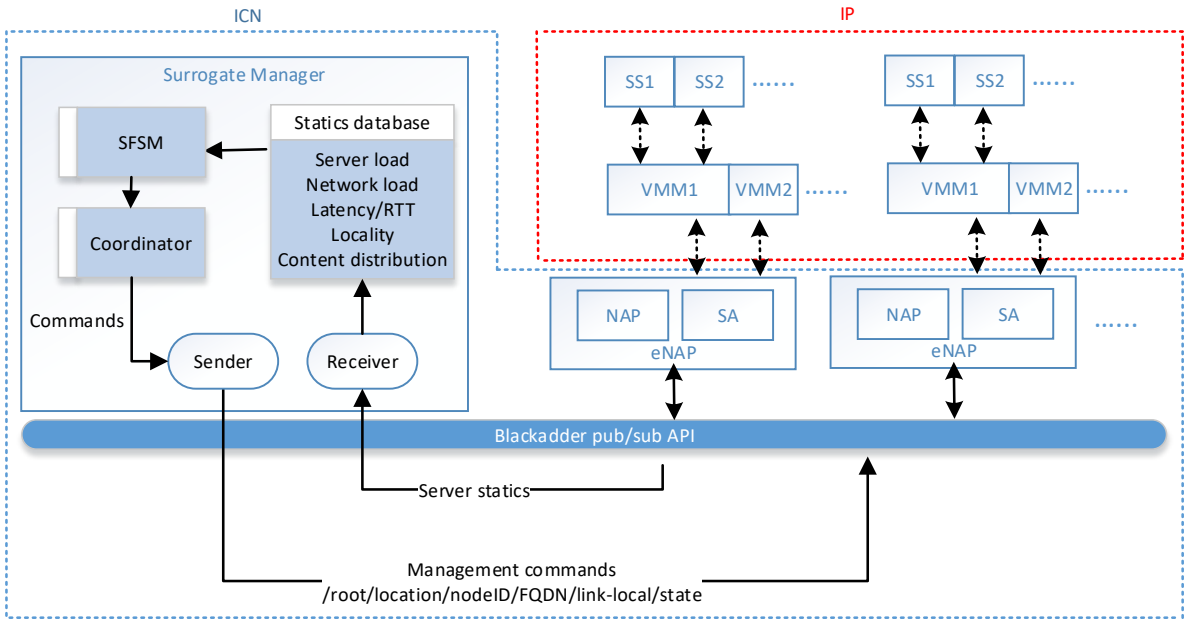
  -> provide foundations for new operator models

- **Surrogate placement**
  - Place personalized surrogates in fronthaul

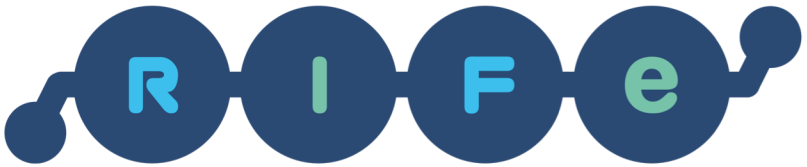
  -> same feel, no special portals, still contextually relevant

Localization

Moving beyond Content only!



- Move from content retrieval to service routing over ICN!
  - Surrogacy is about moving computation and content at the same time!
  - Latency one target
  - Localization, i.e., cost, another
  - NFV integration done in new InterDigital FLIPS platform
- Control activation and placement of service surrogates
  - An ICN application alongside the basic SR functionality over the same ICN base prototype

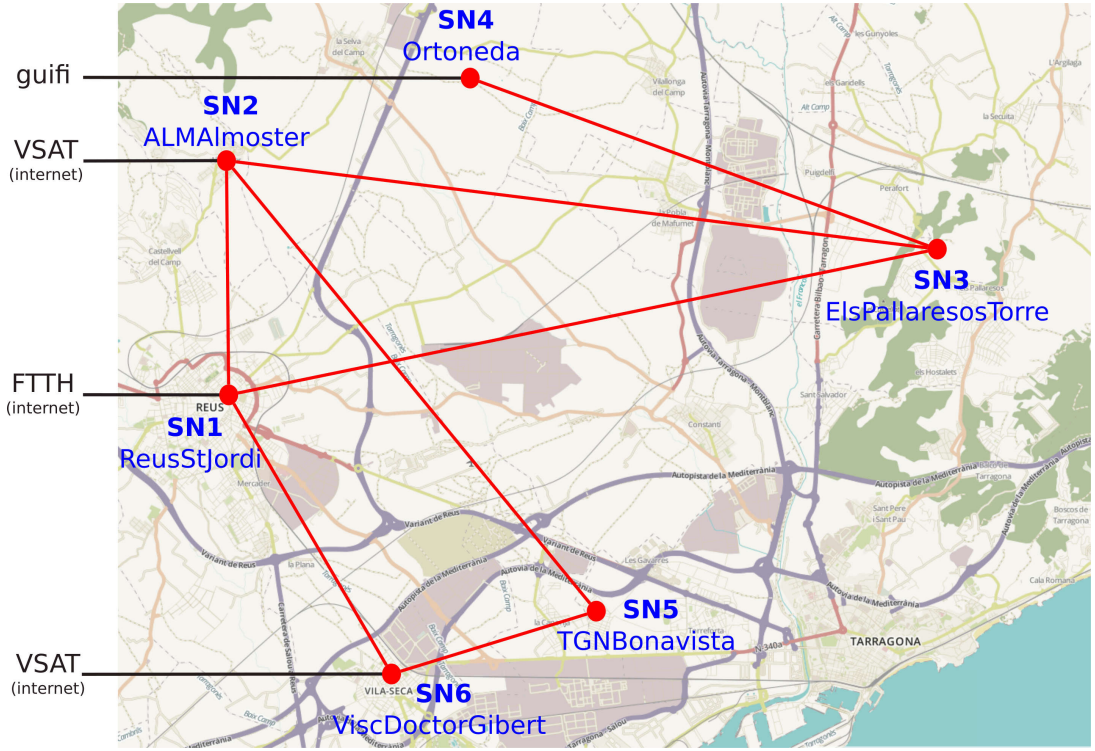


rife-project.eu

Deployment

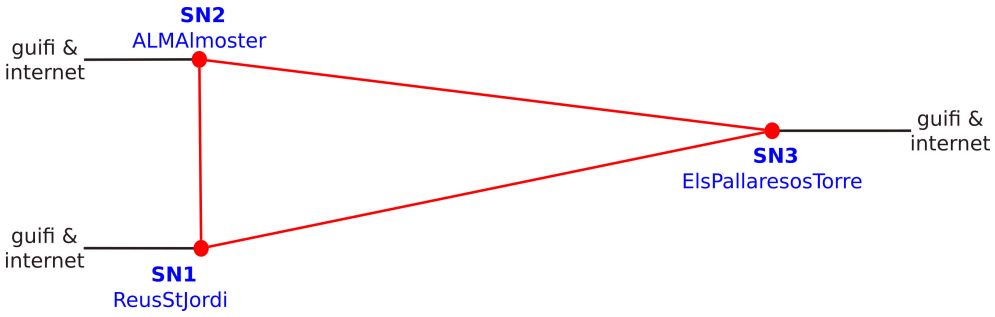
RIFE is funded by the EU's Horizon2020 Programme

Deployments: Field trial & Lab.



Field trial (FT)

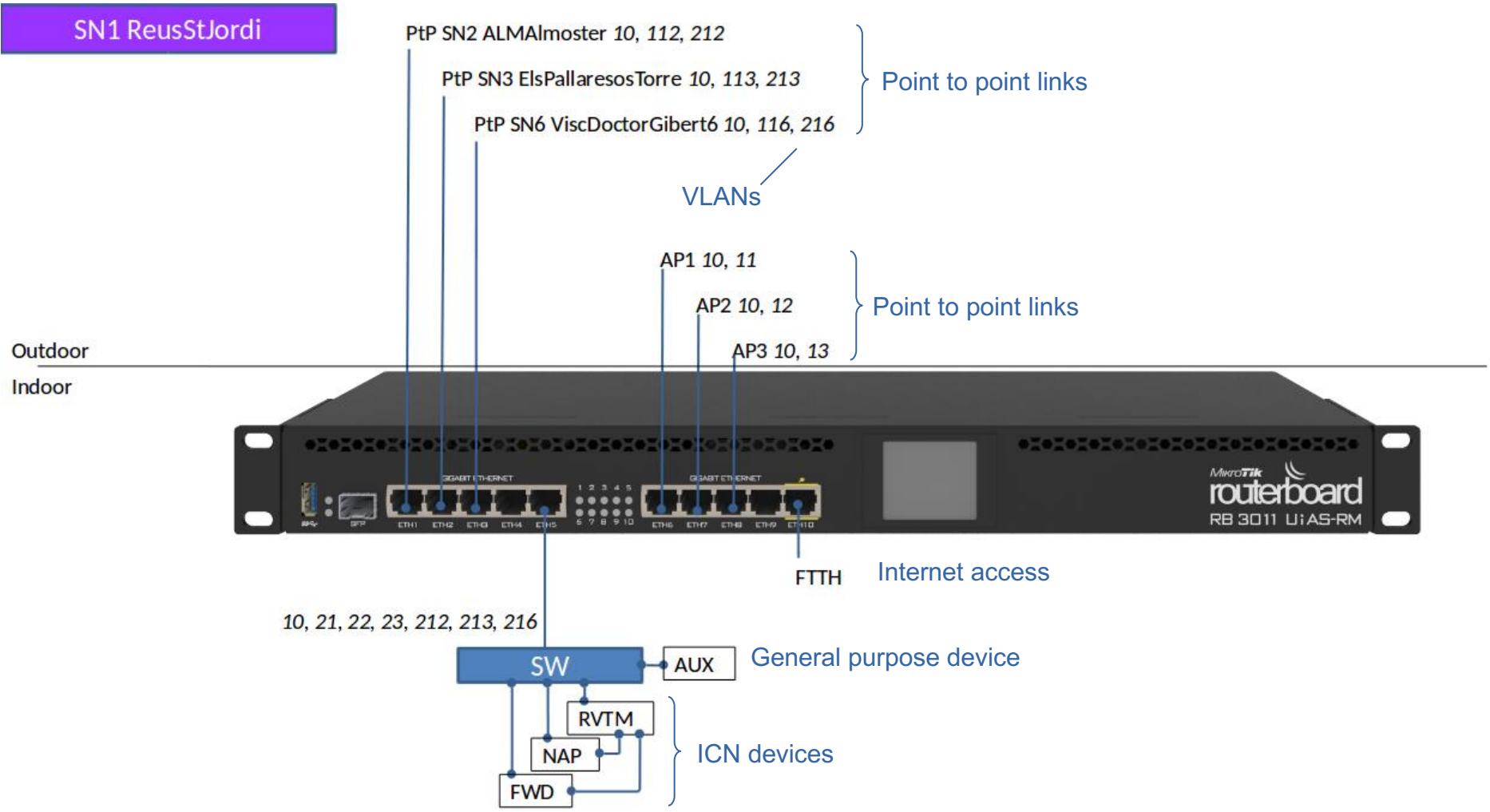
- Location: **Tarragona** (Catalonia)
- Type network: **Production**
- Links technology: **WiFi**
- Backbone: **6 Supernodes**
- Access: **15 APs, >40 households**
- Provides: **Real world environment**



Laboratory (Lab)

- Location: **Barcelona** (Catalonia)
- Type network: **Experimental**
- Links technology: **WiFi & Ethernet**
- Backbone: **3 Supernodes**
- Access: **2 APs, some users**
- Provides: **Partial replica of FT for testing**

Supernodes' architecture



https://guifi.net/node/77362 ReusStJordi Lat:41.160795 Lon:1.113514 10.142.40.1

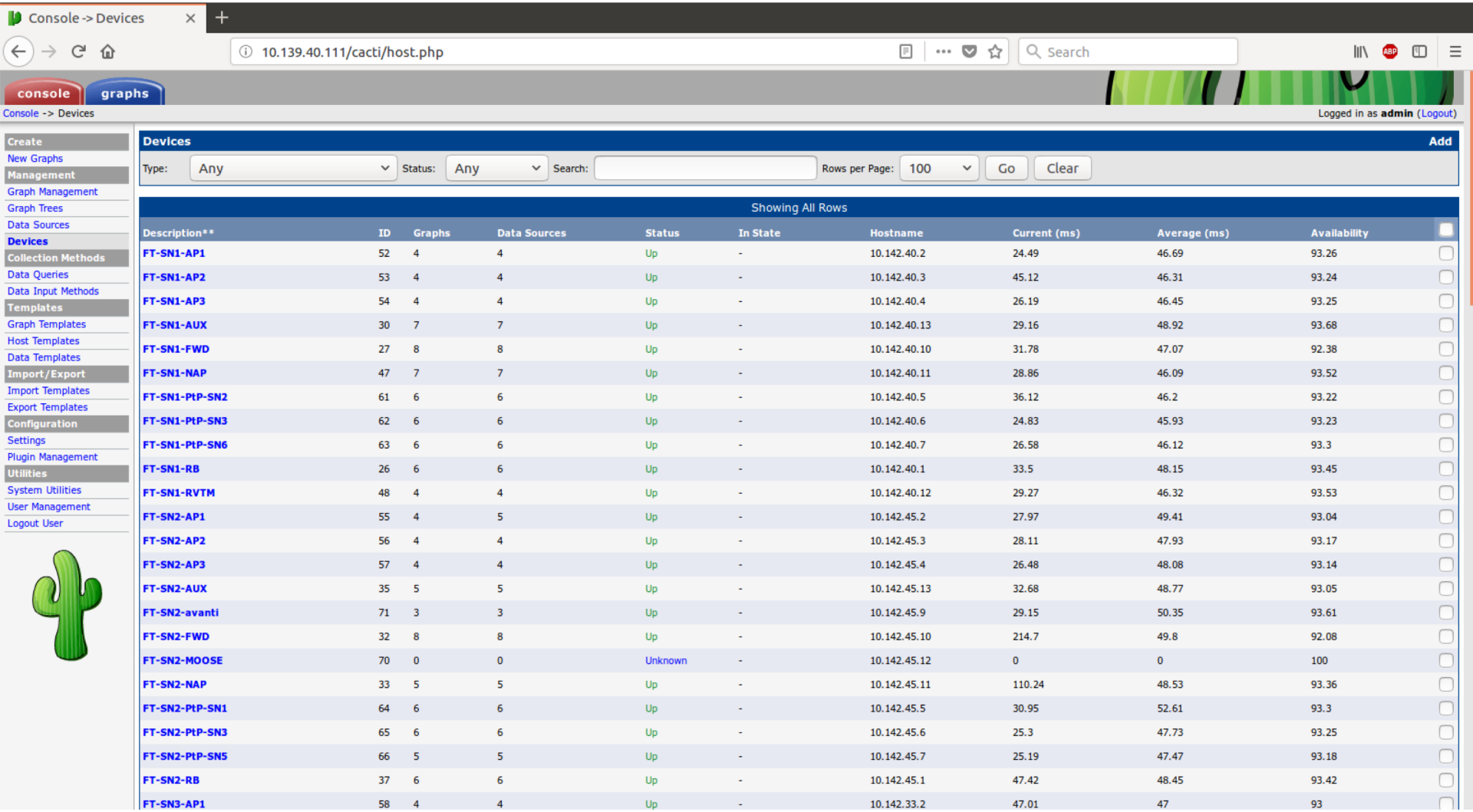
Supernodes' components

ICN	**FWD**	Forwarder	Has access to all PtP VLANs
	NAP	Network attachment point	Has access to all APs VLANs; the GW IP of each AP; can act as Internet Gateway
	RVTM	RendeVouz/Topology Manager	One per deployment
	MOOSE		One per deployment
General Purpose	**AUX**	Auxiliary device	Has access to all APs VLANs; one IP of each AP
	Client device	Emulates a full AP-Clients unit with LXC	
Network	**PtP**	Point-to-Point link	Between SNs. VLAN tags: 1XY for IP, 2XY for ICN, X first SN num, Y second SN num
	Access Point (P2M link)	Between SN and households. VLAN tags: 11 for AP1, 12 for AP2, 13 for AP3	
Internet-work	**FTTH**	Fibre to the home	
	Satellite connection		
	Guifi.net connection		

Deployments' main features

- Dual stack backbone (IP, ICN)
- ICN backbone links L2 addressable (VLAN 212, 213, etc.)
- Households attachable at AP level
- Core components always reachable via IP (management VLAN 10)
- IP and ICN constant monitoring

Deployments' implementation



Next Steps

- Ongoing discussions with community to replace prototype with InterDigital's FLIPS platform
  - Higher stability
  - Better security
- Extend trial for one year
  - Perform long-term observational studies in utilization and performance
  - Perform planned experiments regarding particular KPIs

rife-project.eu

Thank you for your attention

RIFE is funded by the EU's Horizon2020 Programme