The journey of a regional IXP into the future of interconnection

Web: www.top-ix.org   Place: Linx121   Date: 21/2/2024   Speaker: Alessandro Galardini

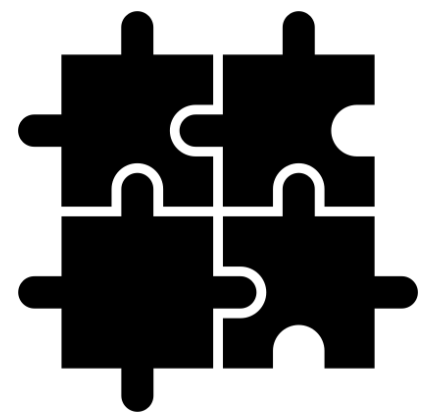# TOP-IX

NON PROFIT CONSORTIUM

MISSION

DP — PROMOTES AND SUPPORTS INNOVATION AND IMPACT PROJECTS LEVERAGED BY NETWORK INFRASTRUCTURE
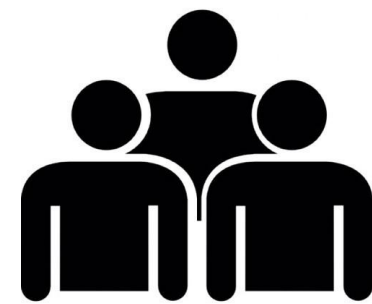
IX — MANAGES AND DEVELOPS THE INTERCONNECTION PLATFORM FOR NORTH-WEST ITALY

90+ Members (15 in 2003)

PUBLIC-PRIVATE PARTICIPATION

2 directors
27 employees
4 collaborators

IX

Peering
Interconnection
P2P connections
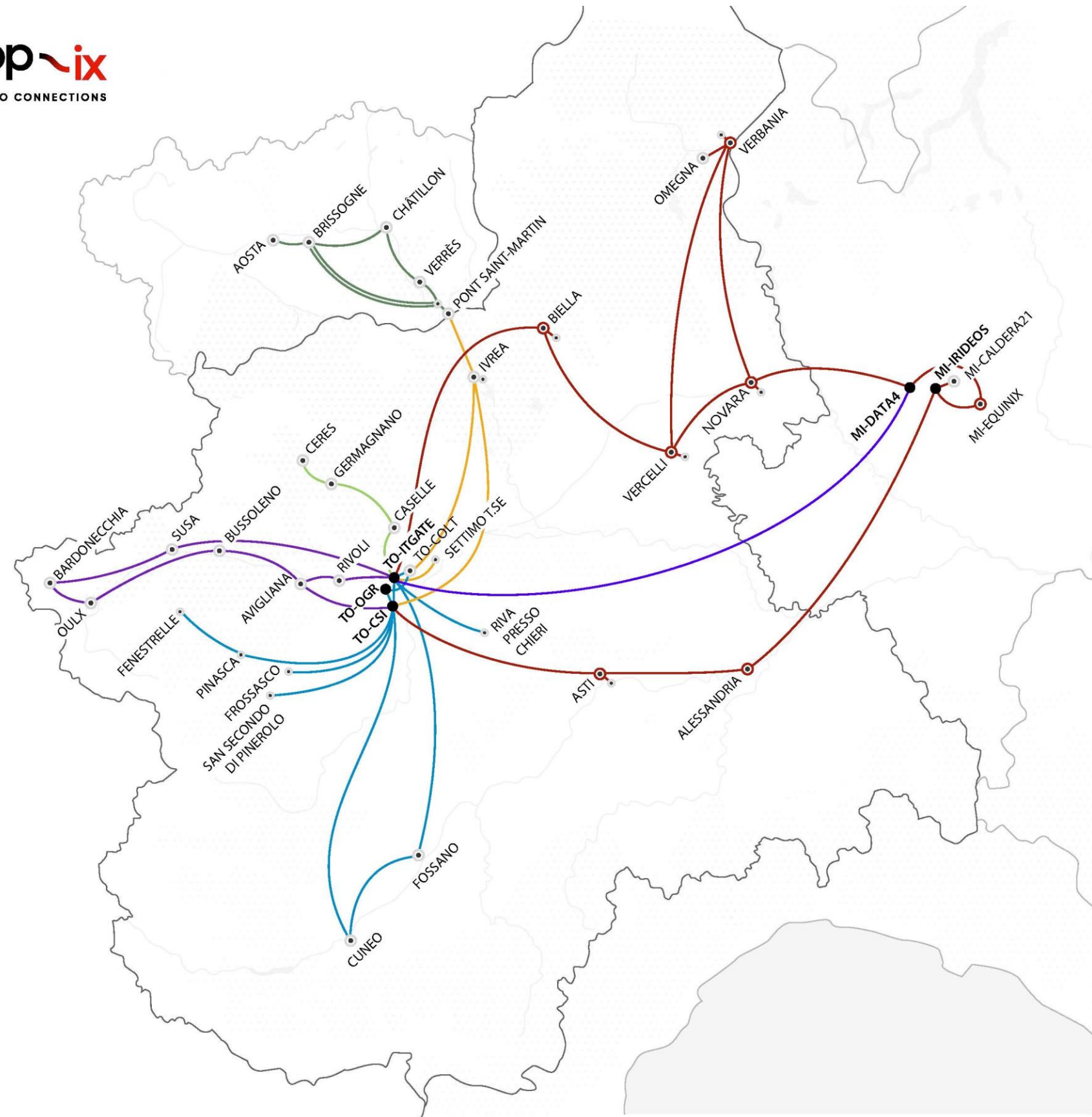Marketplace
Time as a Service
...

DP

Innovation
Data
Streaming
Impact
Cloud
Training
...

PEOPLE

SKILLS

INFRASTRUCTURE

2

INFRASTRUCTURE

#PEERING

#INTERCONNECTION

#MARKETPLACE

#P2P CONNECTIONS

#TIME AS A SERVICE

42 nodes
   4   core
  11 backbone
  13 edge
  14 wireless access

1350 Km optical fiber
200+ used ports

3

INTERCONNECTION

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	2023	2022	2021
Networks	126	124	128
Traffic (Gbps)	221	200	200
Prefixes (on RS)	116k IPv4 25k IPv6	110k IPv4 23k IPv6	98k IPv4 20k IPv6

Tech Specs
EVPN/MPLS Fabric
Nokia Technology
MANRS Compliant

Remote Peering
Partnership with other IXPs (VSIX, France-IX AURA, France-IX Paris)
Resellers (ITGate, BICS, Retelit, Sparkle, FiberTelecom, Lepida)

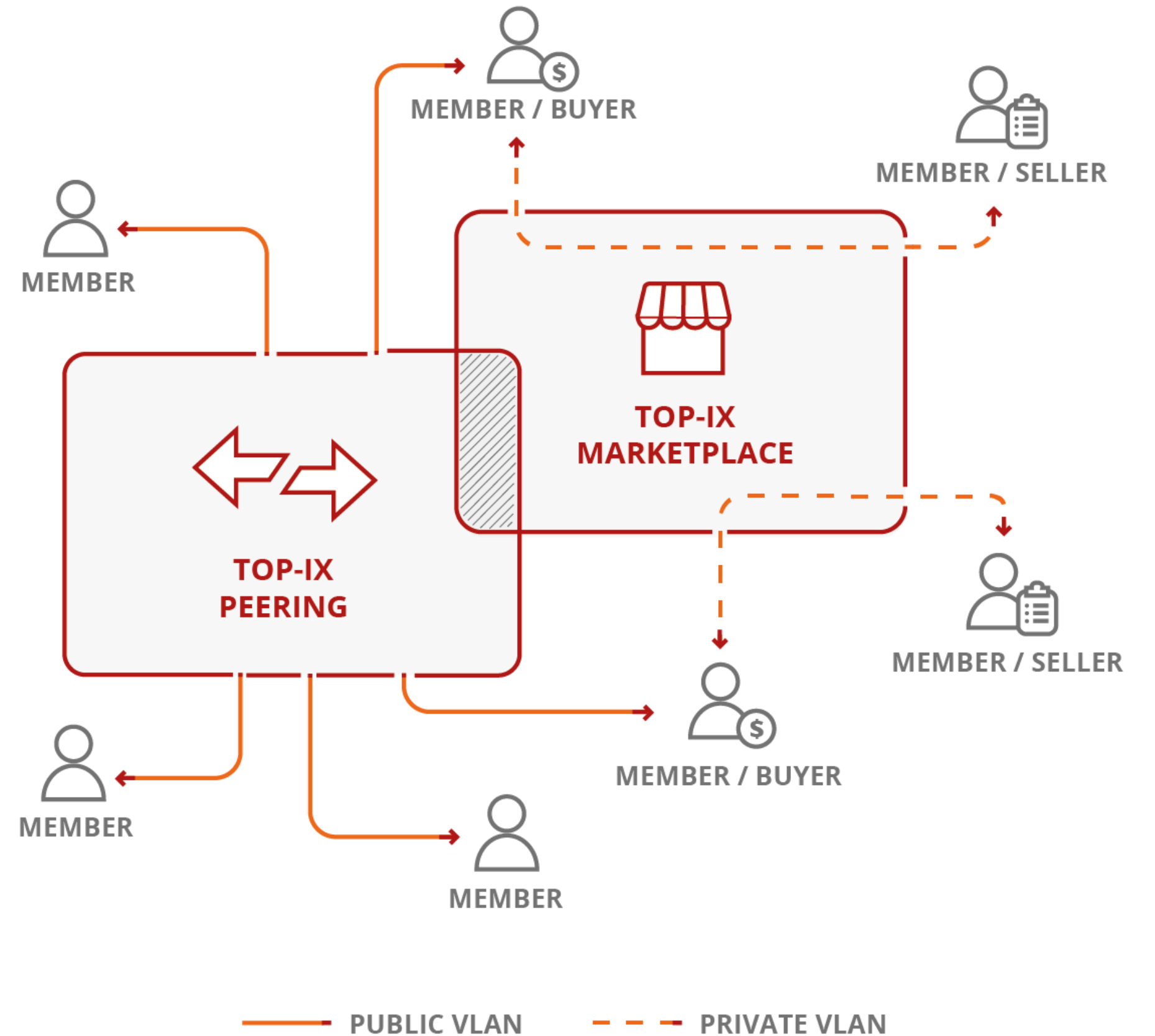# MARKETPLACE

Not only peering!

IP Transit

Ethernet connectivity

Public cloud connectivity

Remote Peering to other IXPs

Security services

MEMBER / BUYER

MEMBER / SELLER

MEMBER

TOP-IX
MARKETPLACE

TOP-IX
PEERING

MEMBER

MEMBER / BUYER

MEMBER / SELLER

MEMBER

MEMBER

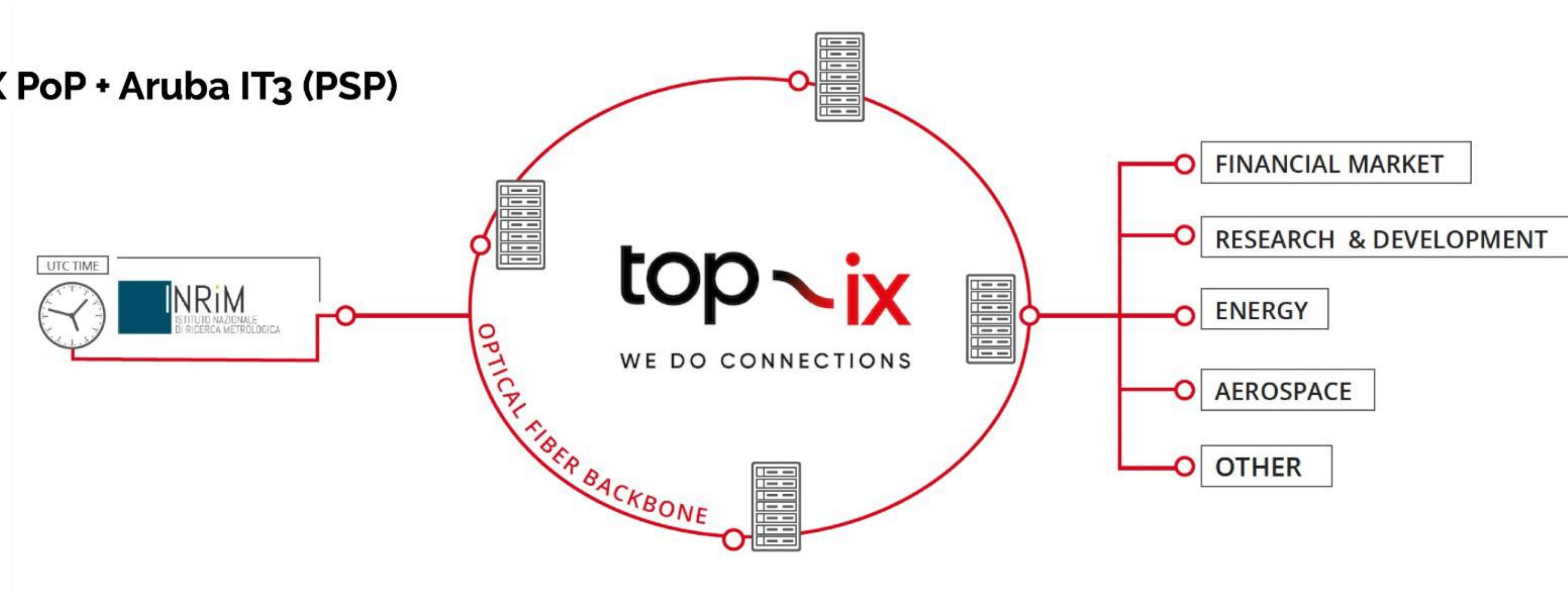—— PUBLIC VLAN   – – – PRIVATE VLAN

TaaS - Time as a Service

Time and Frequency Services

Traceable to UTC(IT) and very accurate **PTP** service

NTP server available to direct connected members

Available in every TOP-IX PoP + Aruba IT3 (PSP)

Ge-DIX

Genova Data Internet eXchange

PoPs:
Liguria Digitale WTC
TISparkle Genoval Digital Hub

Services:
Public Peering
Private Peering
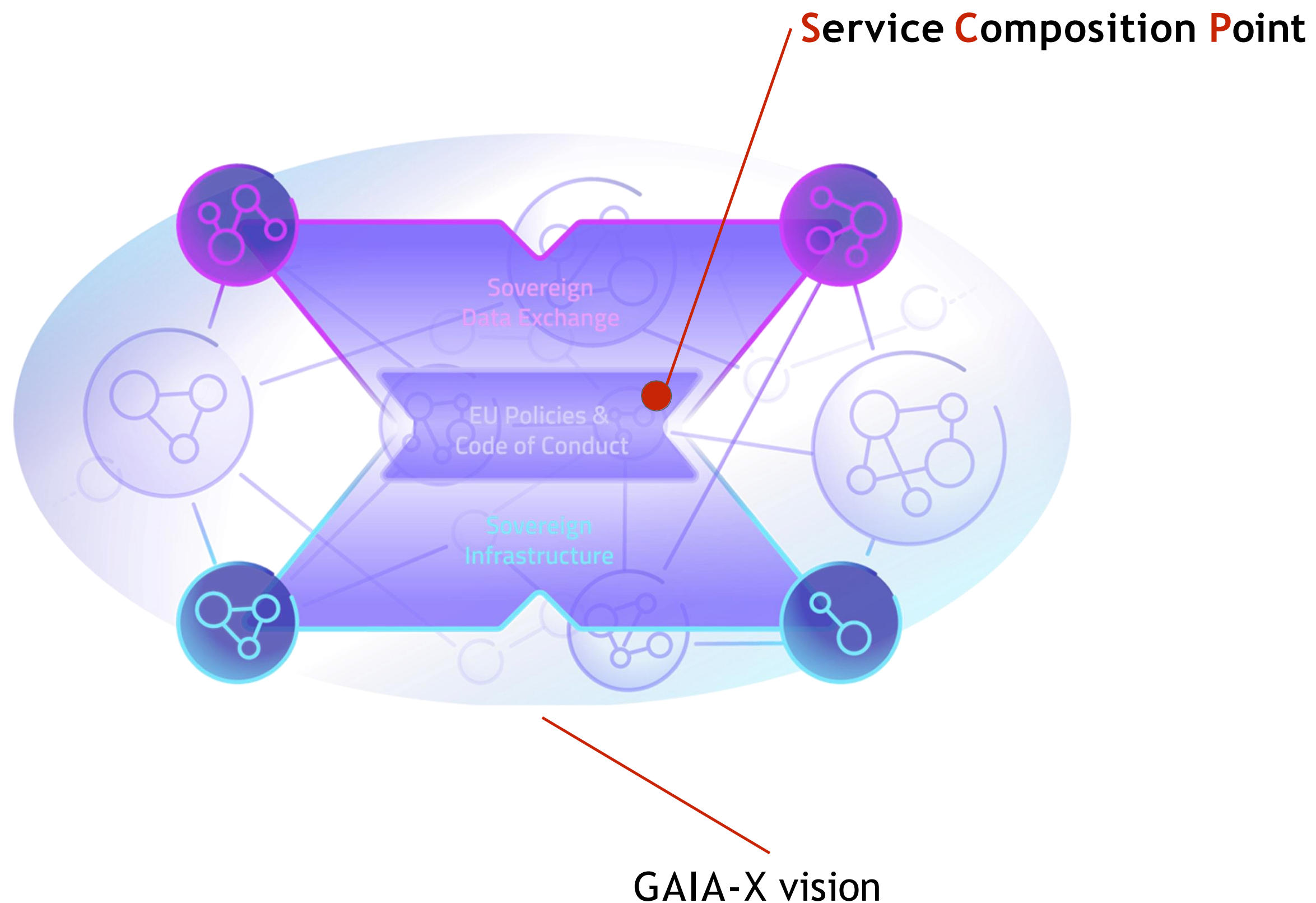**Colocation (in Liguria Digitale)**
Nokia technology

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TOP-IX LONG TERM VISION: SERVICE COMPOSITION

Service Composition Point

A BROKER enabling data and infrastructure federation

- Distributed governance
- Open Source Software
- Full-stack (from interconnection to applications)
- No lock-in

Sovereign Data Exchange

EU Policies & Code of Conduct

Sovereign Infrastructure

GAIA-X vision

8

STRUCTURA-X: AN ECOSYSTEM TOWARDS DATA SOVEREIGNTY

In November 2021 Atos, Aruba.it, DE-CIX, Deutsche Telekom, Engineering, Noovle, and **TOP-IX** launched Structura-X.

GOAL: to define interoperability models that allow European Cloud providers to federate their own infrastructures.

The initiative boasts **28 members.**

Structura-X
connected data
infrastructure
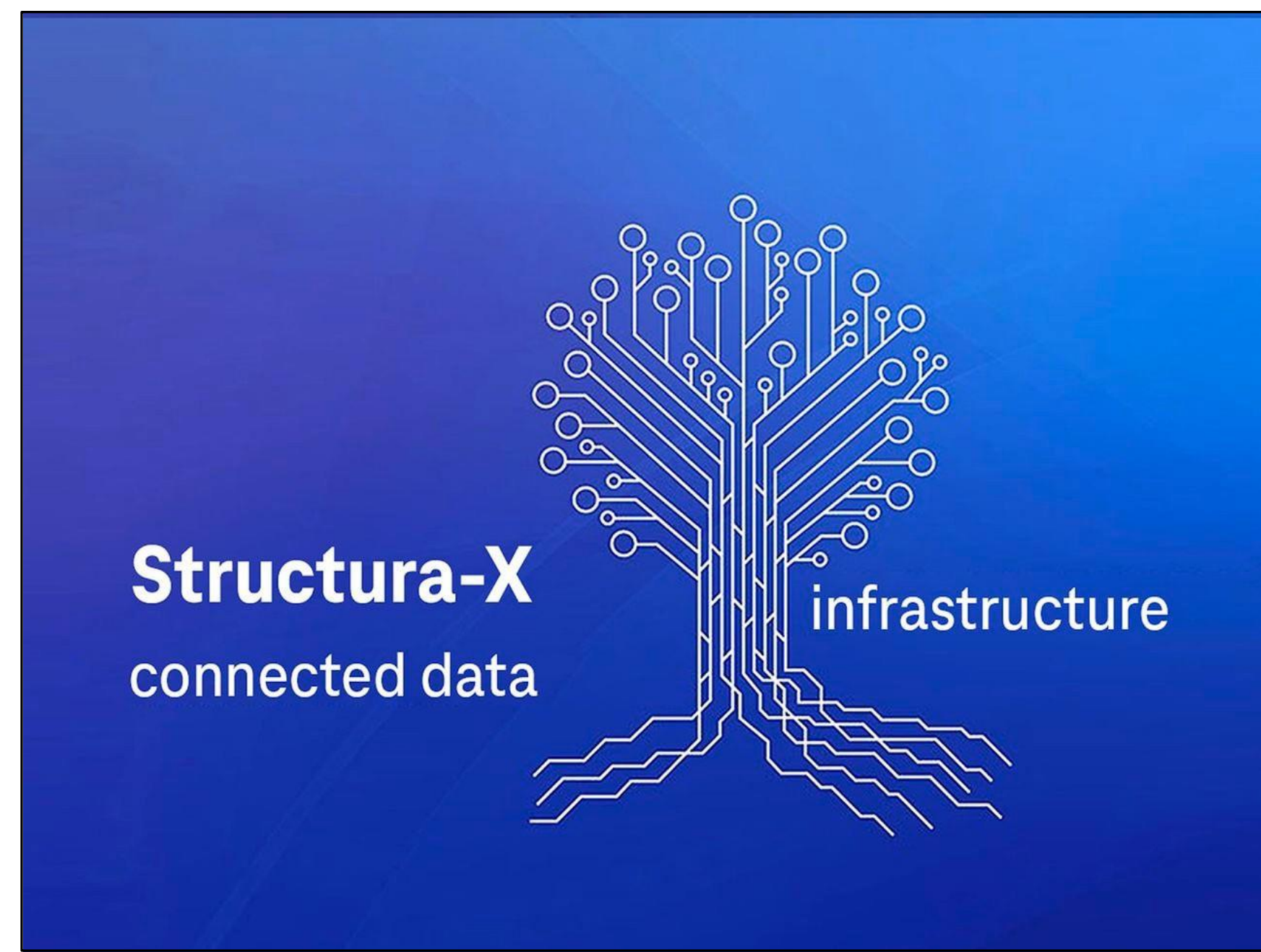
AUTOMATION AS SERVICE COMPOSITION ENABLER

Nokia 7250IXR infrastructure upgrade:

- lightweight and reliable CLOS fabric in the core PoPs

- modern, programmable NOS with streaming telemetry support

- EVPN overlay on proven SR-MPLS underlay

- 400G grey and ZR/ZR+/ZR+0dBm support for flexible and scalable PoP connections

Ready for deploying IX-API automating the IXP platform!

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TOP-IX AUTOMATION STORY

Long time ago starting with Route Servers automation:

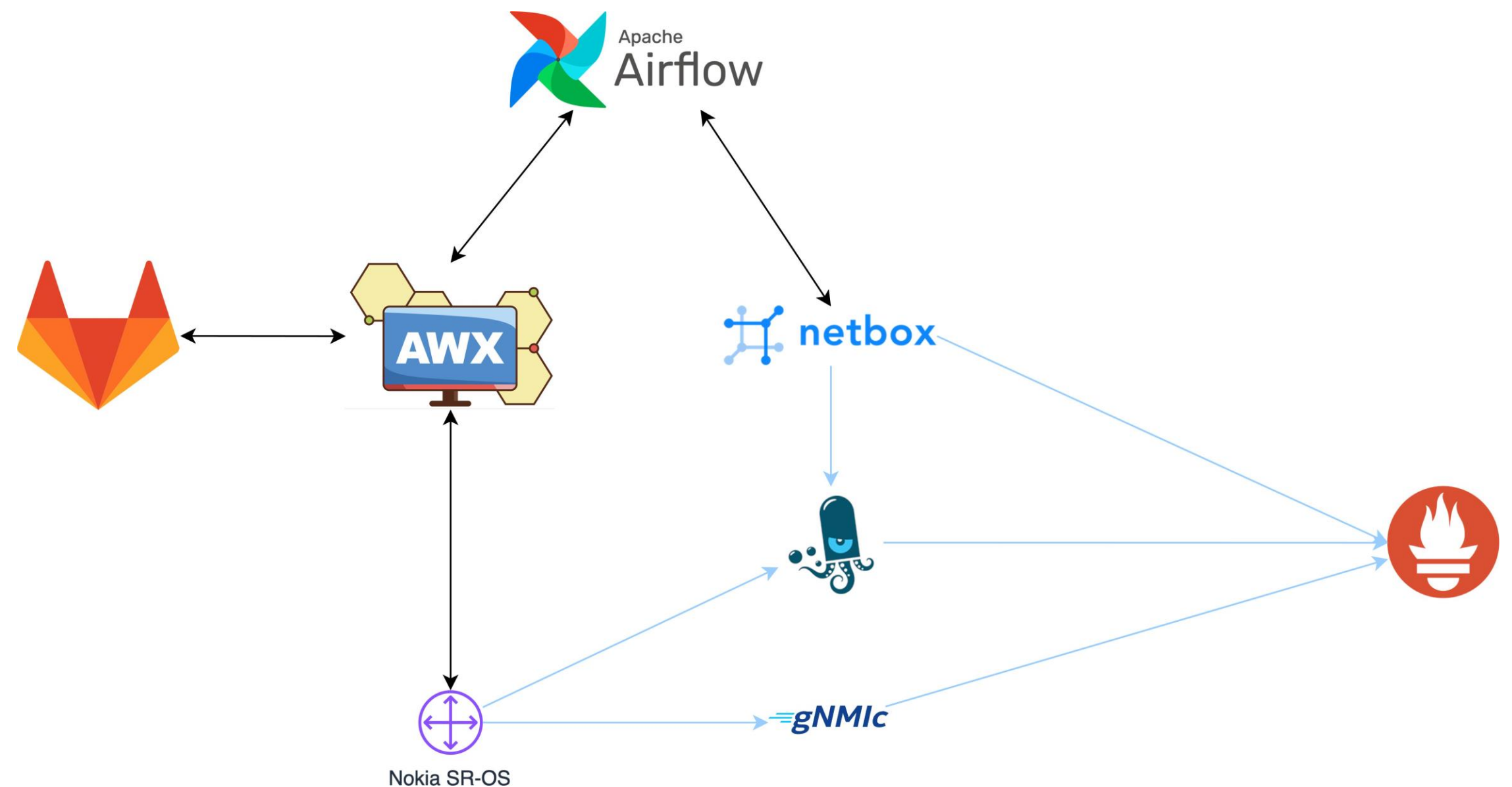- Gitlab config repository

- Runner for creating config

- Pulled from RSes

TOP-IX AUTOMATION STORY

New platform, new solutions

- complete redesign of backend DB (netbox plugins)

- running automation locally (ansible/netconf)

- push analitycs

- from noc to devops world (hardest!)

THANKS!

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