# APPLYING TELECOMMUNICATIONS DEVELOPMENTS TO SUPPLY AND LOGISTICS

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# OBJECTIVE

Can the Telecommunications sector be an inspiration for the Physical Internet?

- Technology perspective
- Business perspective

What would be next steps?

# THE TELCO INDUSTRY HAS A HIGH DEGREE OF STANDARDIZATION, AS A BASIS FOR INNOVATION

## Mobile

- 1991 – GSM: Voice (limited data)
- 1998 – 3G: higher data rates, worldwide standard
- 2008 – 4G: everything is data

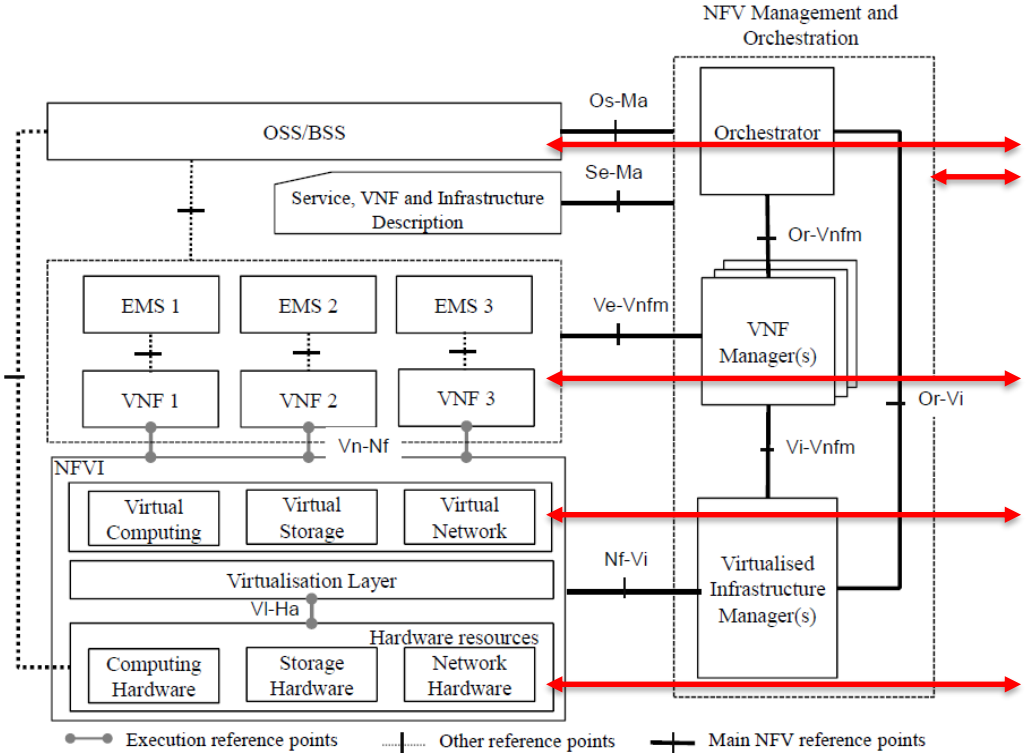
## Telecommunications Network

- 1989 – WWW: mail browsing, interaction
- 2000 – TriplePlay: voice, data, video
- 2015 – SDN
- 2015 – Virtualization: network in an app

## Result

- Limited number of large global players
- Huge investements in new technology (development, permits, installation)
- Job replacement

# VIRTUALIZATION BY STANDARDIZATION OF API'S




Network Service Providers

Software service providers (e.g. routing and firewall)

Cloud providers

Multi-tenant network providers

# TELCO ←→ LOGISTICS

| Telco | Logistics |
|---|---|
| Multi-tenant network provider | Multi-tenant asset owner |
| Cloud provider | Logistics cloud service provider |
| Software service provider | Software service provider |
| Network service provider | Logistics service provider |

# SUPPLY AND LOGISTICS FUNCTIONALITY

Logistics Operating and Support System

**Operation and tactical planning**
Dashboards, (predictive) Quality of Service of VNF and Physical Layer for cargo flows

Virtual Network Functions (software)

**Software based services** (utilizing location based services)
Bundling, payment and settlement, ETA/ETD, dynamic planning, traffic flow optimization, etc.

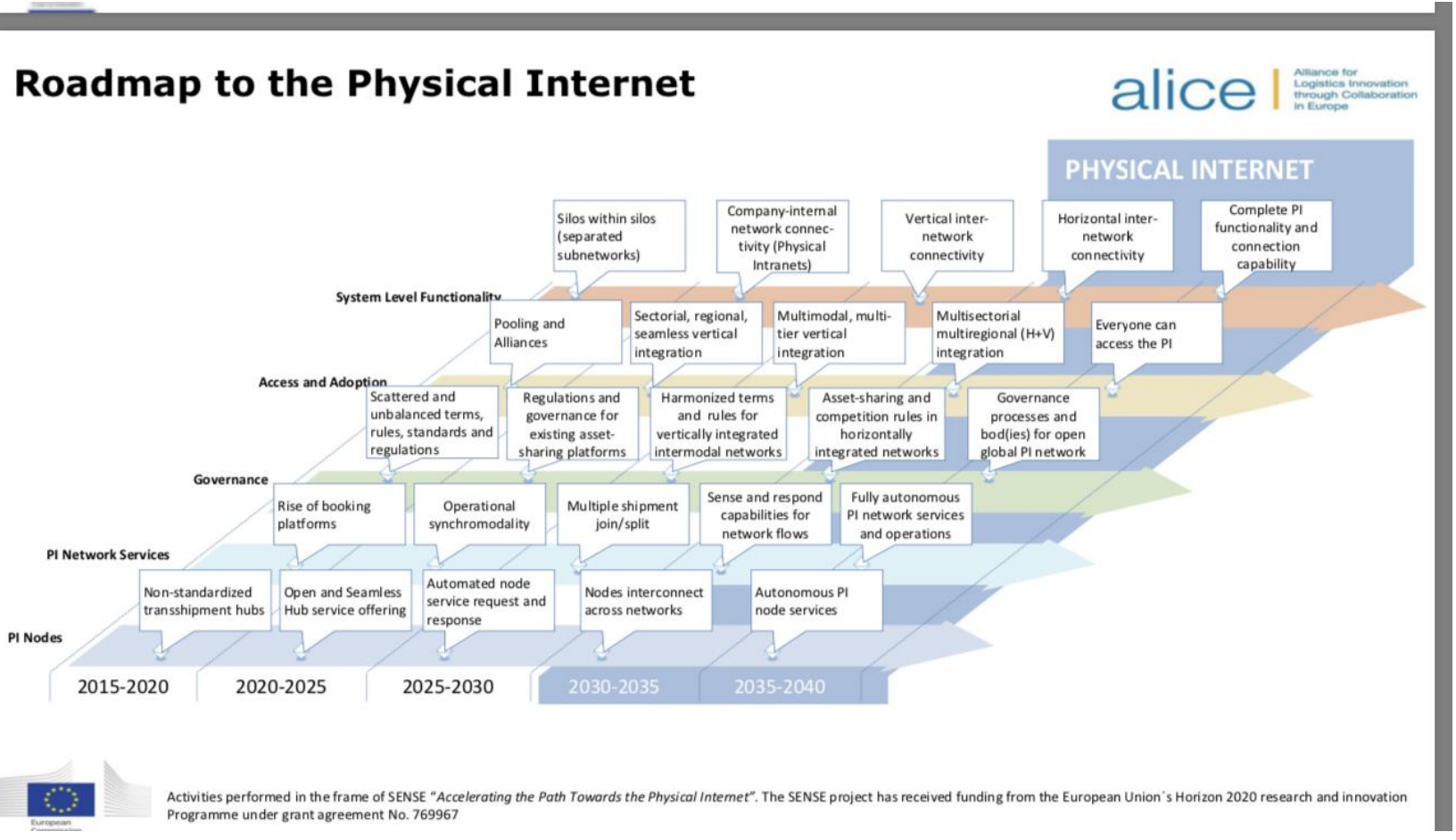
Physical Layer

**Physical environment**
Hubs, equipment, transport means, infrastructure

# PREREQUISITE – DATA SHARING

- Supply Chain Visibility – status and progress
- Available capacity (ad hoc, timetables, etc.)
- Quality of Service (of a subnetwork, mode, node/cluster, etc.)
  - Actual
  - Predicted
  - Parameters: cost, performance, availability, etc. (to be determined)
- Parameters influencing QoS
  - Disruptions (maintenance and accidents)
  - Weather forecast, water depth, etc.
- Providers of physical functions and their business services

# A POSSIBLE SCENARIO - NODES AS CORE OF NETWORK




Activities performed in the frame of SENSE "*Accelerating the Path Towards the Physical Internet*". The SENSE project has received funding from the European Union´s Horizon 2020 research and innovation Programme under grant agreement No. 769967

# POTENTIAL SCENARIO'S

- Existing thoughts in logistics (see ALICE PI roadmap) – intelligent physical layer
  - Intelligent hubs/smart port/…
  - Intelligent assets
- Multi-sided platforms for data sharing and provisioning of VNF
  - Focus on particular functionality like supply chain visibility or electronic marketplace (including payment services)
  - Lots of examples (TEUBooker, Cargostream, Uber4Freight, etc.)
- Telecom model – virtualization of the LSP
- Mixed scenario

# WE DON’T KNOW WHICH SCENARIO WILL WIN, BUT

- There is a need for collaboration to prevent suboptimaliztion (PI is expected to reduce 49% of the carbon footprint)
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- It requires a change in culture (data needs to be shared, software and a data sharing infrastructure need to be developed collaboratively, etc.), exploring innovative business models, etc.
- Observation: especially those with physical assets are keen to change (innovate their business model) and collaborate


THANK YOU FOR YOUR ATTENTION
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