20e édition

infoprodigital

Forum
TERATEC 25

21 & 22 MAI 2025 | Parc Floral, Paris

LE RDV des experts du supercomputing
HPC – IA – Simulation – Quantique

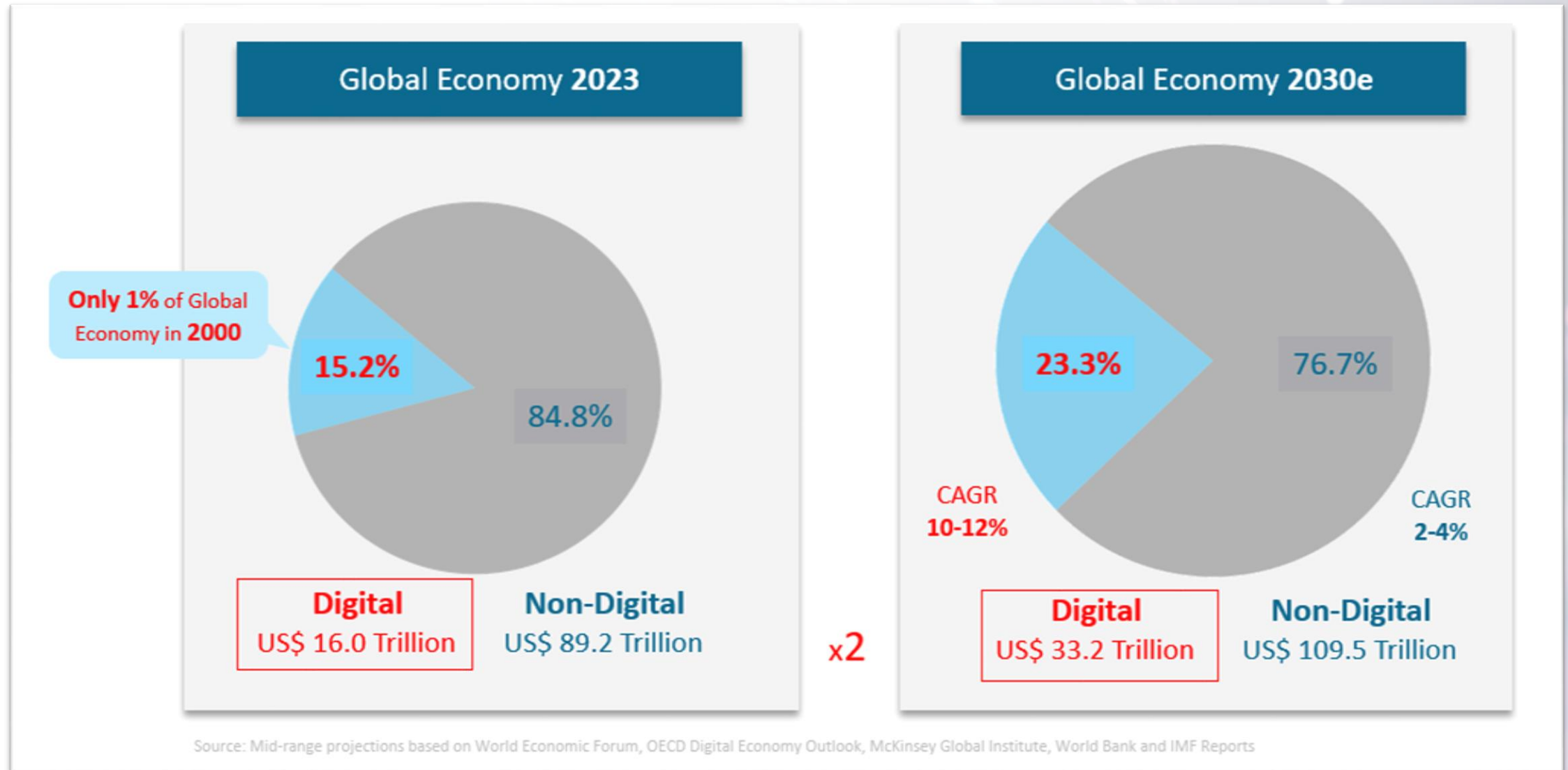En partenariat avec

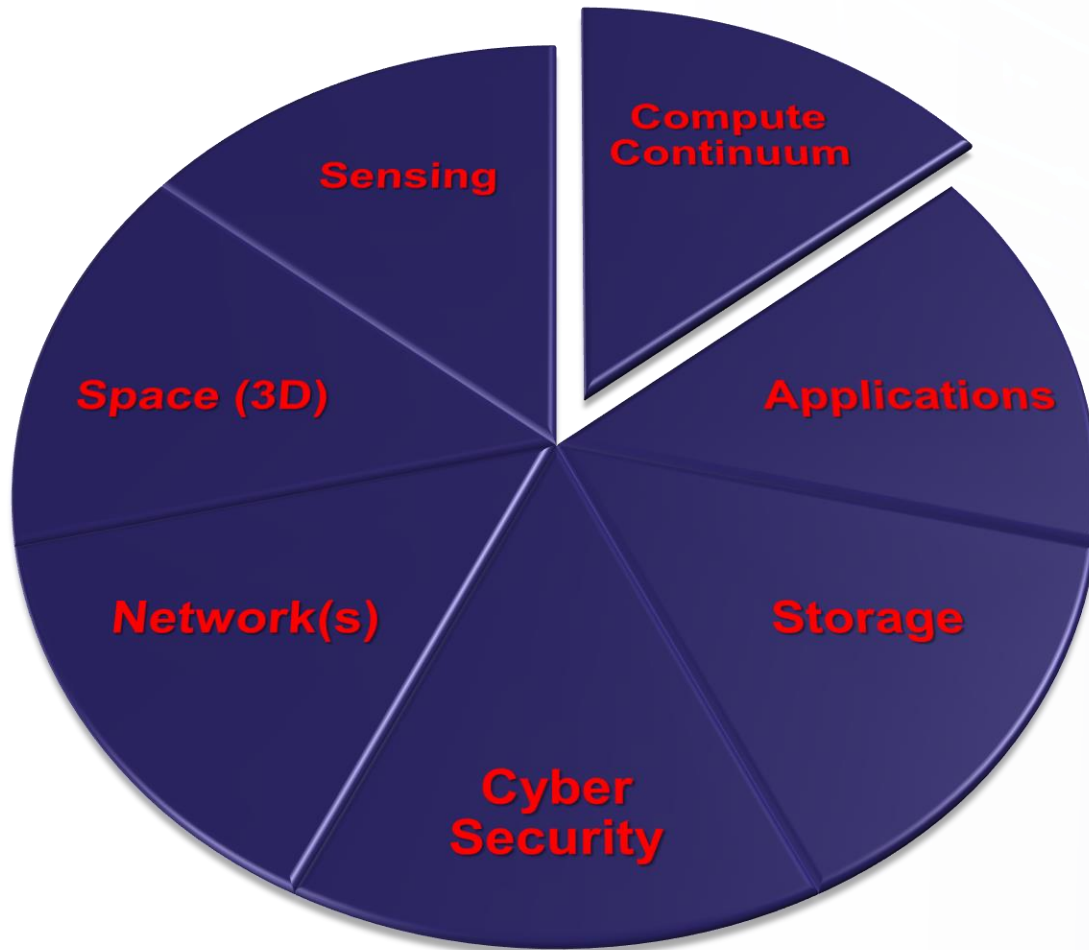L'USINENOUVELLE   L'USINEDIGITALE   iT INDUSTRIE & TECHNOLOGIES

Teratec

Global Economy 2023

Only 1% of Global Economy in 2000

15.2%

84.8%

Digital
US$ 16.0 Trillion

Non-Digital
US$ 89.2 Trillion

x2

Global Economy 2030e

23.3%

76.7%

CAGR
10-12%

CAGR
2-4%

Digital
US$ 33.2 Trillion

Non-Digital
US$ 109.5 Trillion

Source: Mid-range projections based on World Economic Forum, OECD Digital Economy Outlook, McKinsey Global Institute, World Bank and IMF Reports

➔ Shares won't be uniform
➔ Community's biaised visions

    * Edge wo connectivity
    * Telco cloud wo/ CSP
    * infinite bw, zero trust Arch, delays zero…for free
    * …
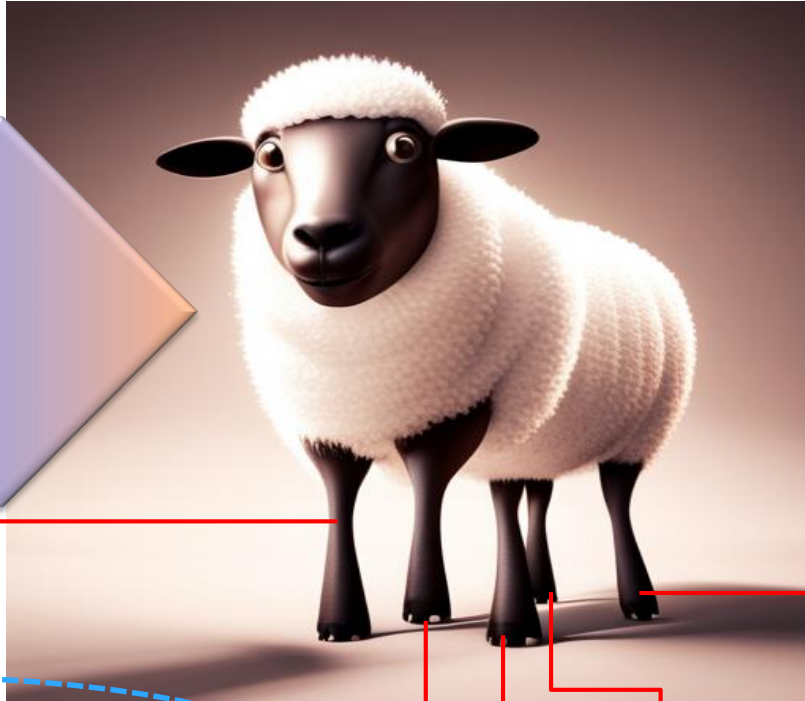
➔ Strongly correlated to the architecture
➔ Strongly influencing regional strategies
➔ Who's the bigest ?
➔ What's missing ? New game ?

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6G MEGA Trends
You can say it's biaised ..but

EU-US Trade and Technology Council

The European Union and the United States are partners strongly committed to driving digital transformation and cooperating on new technologies based on their shared democratic values, including respect for human rights.

The EU-US Trade and Technology Council serves as a forum for the United States and European Union to coordinate approaches to key global trade, economic, and technology issues and to deepen transatlantic trade and economic relations based on these shared values. It was established during the EU-US Summit on 15 June 2021 in Brussels.

1. Advancing transatlantic cooperation on AI, 6G, critical and emerging technologies

From 5G

...
SW predominance
Orchestration
SBA
Private & Public Use cases
XaaS usages

Converged Communication & Computing

ISAC: Integrated Sensing And Communications

3D AI-Native

Differentiated Security

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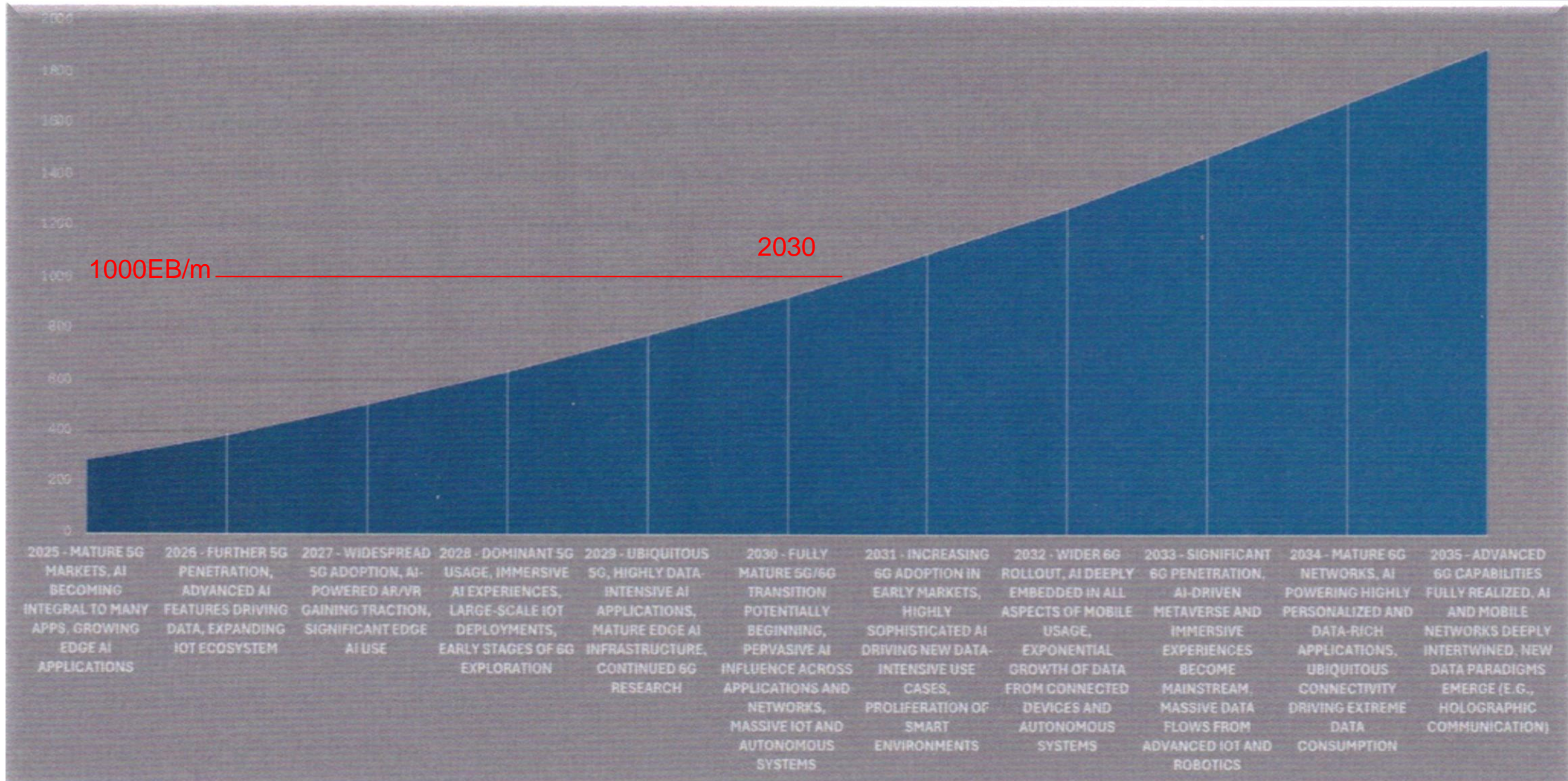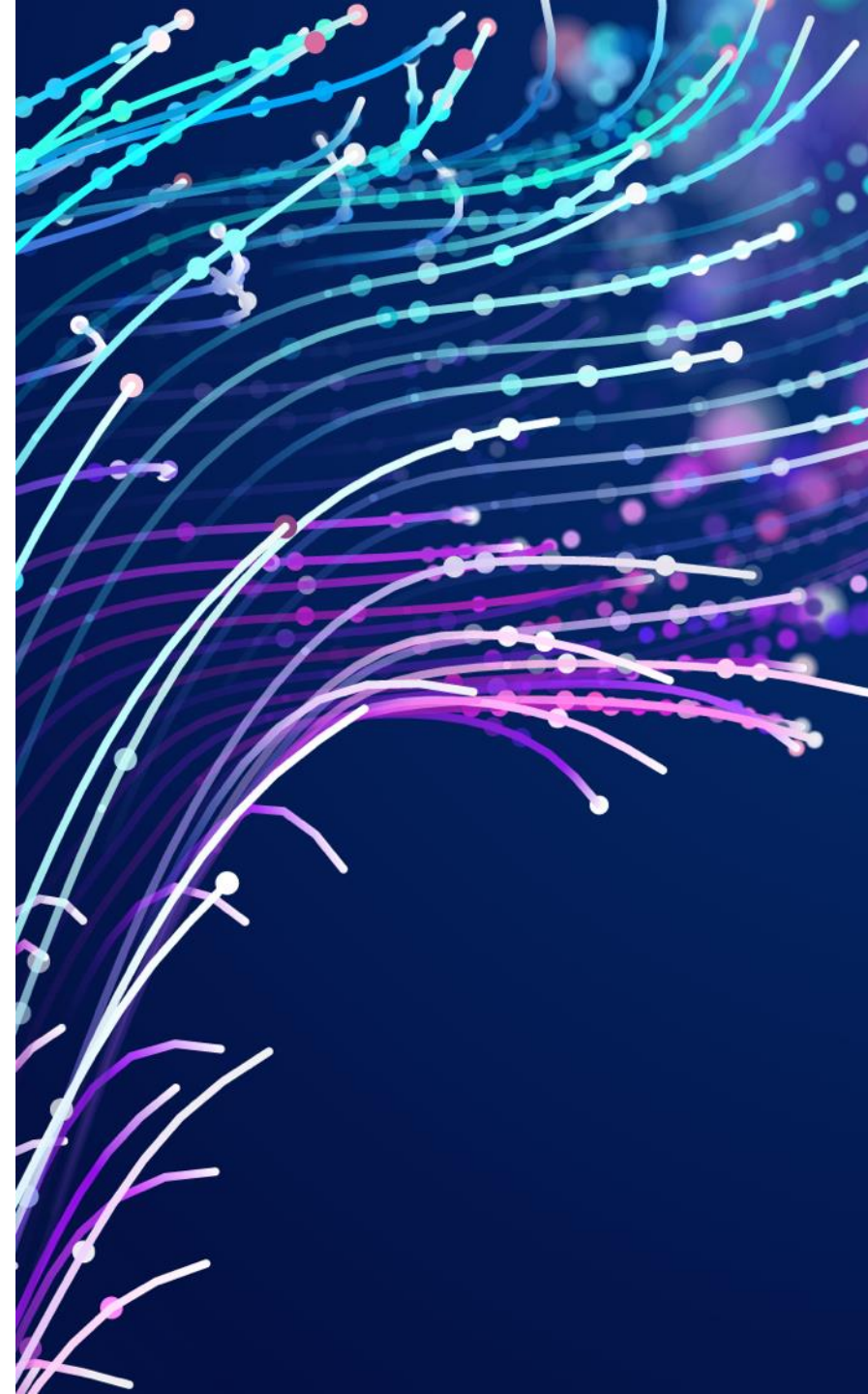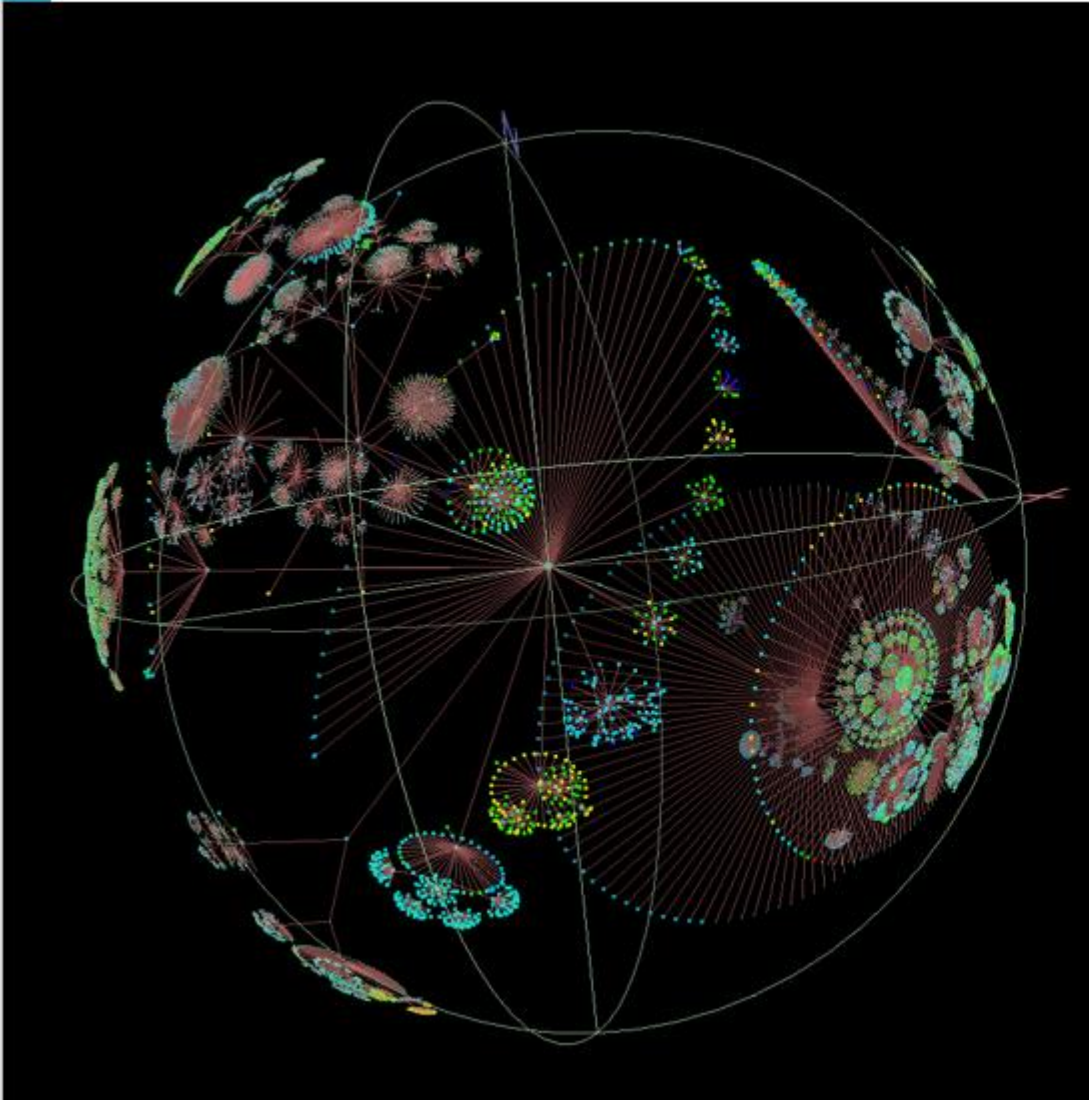# AI generated traffic…Take one…MNO forecast…it's big !

Figure 3: Estimation of AI-related traffic in mobile networks (EB/month)

Let's talk about distributions…
…and correlation with stakeholders

- **Symetrical traffic patterns**
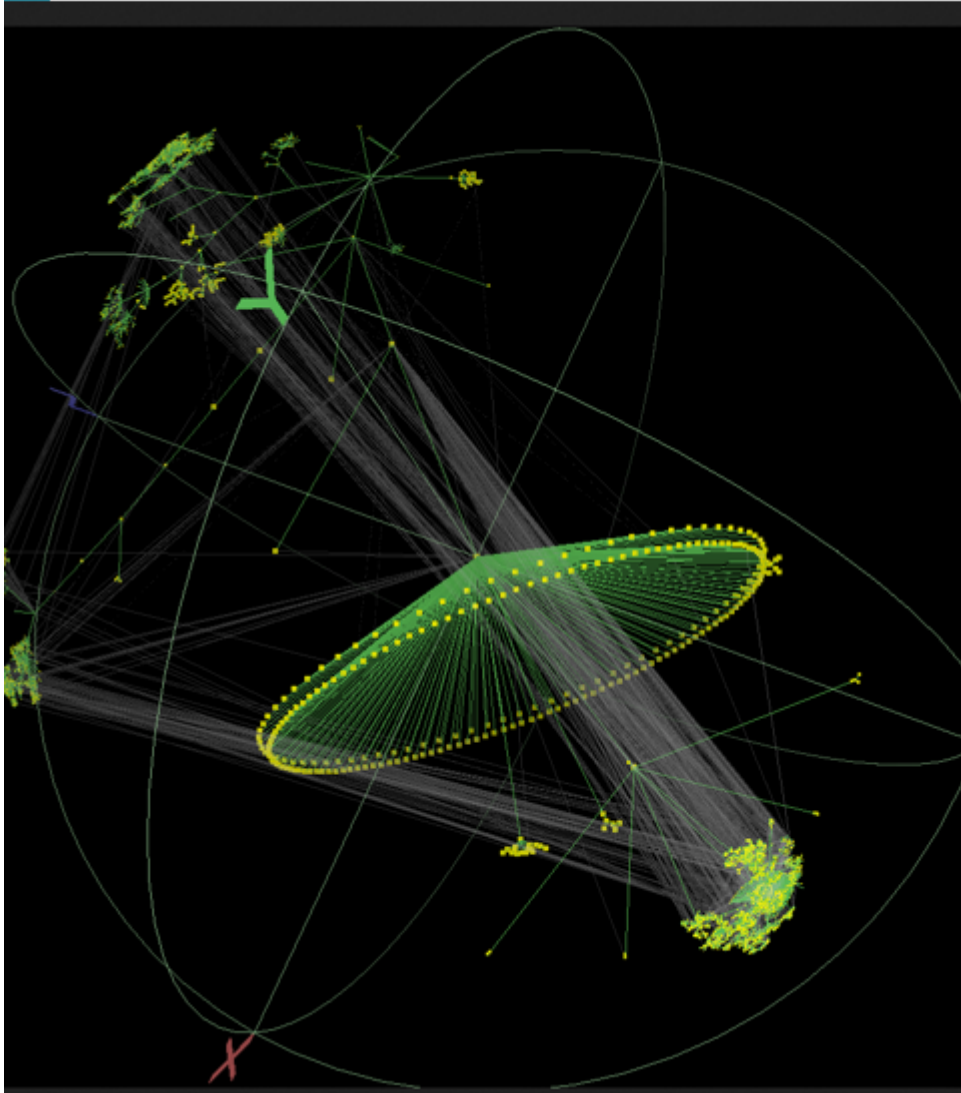
- **Decreases inversely as of the distance**

TELCO Golden Age

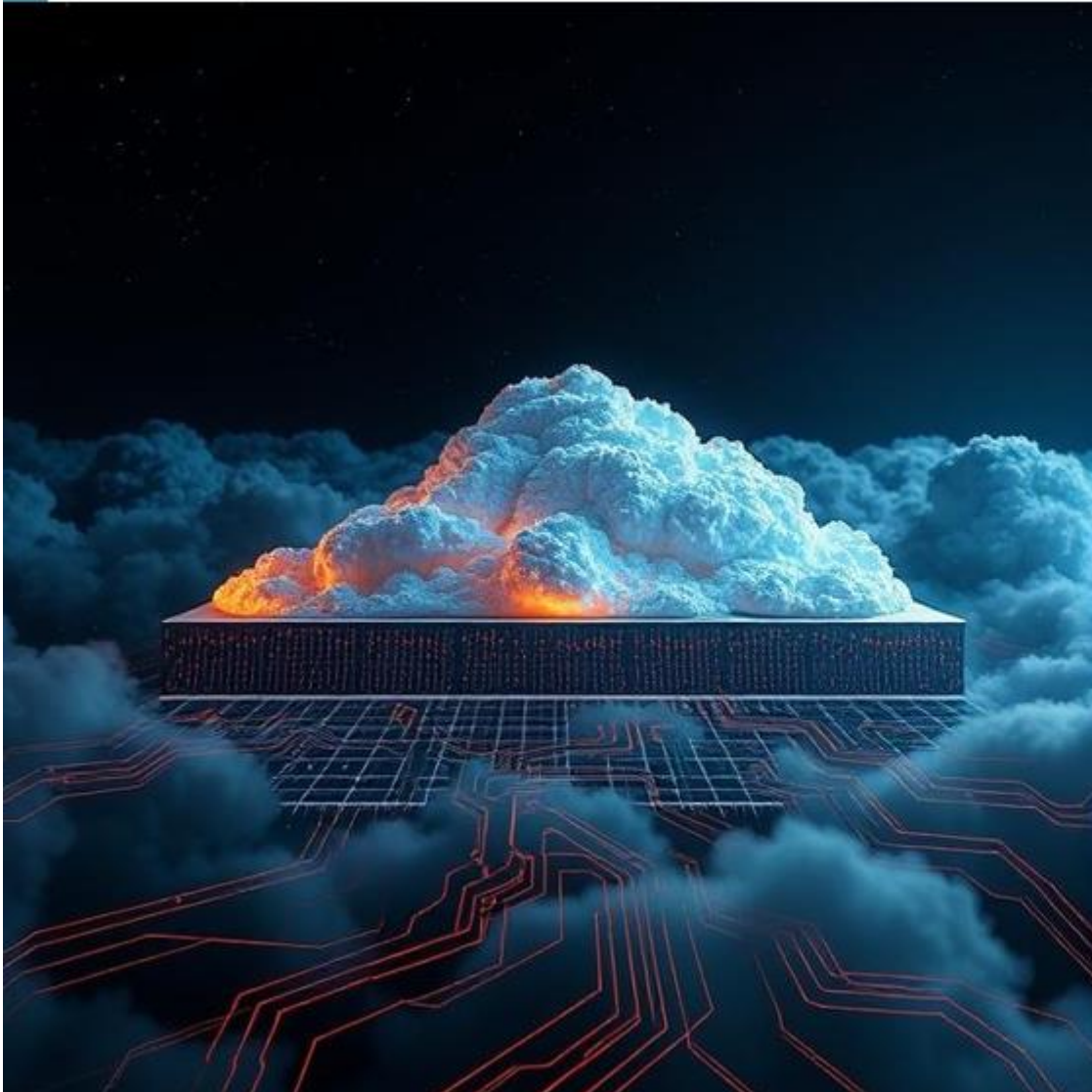**Downstream dominant traffic**

Central Office caching

Internet begins: *"Dumb Pipes, Smart Endpoints"*

- processing, decision-making, and application logic

➔ *scalability, efficiency, resiliency, it works !*
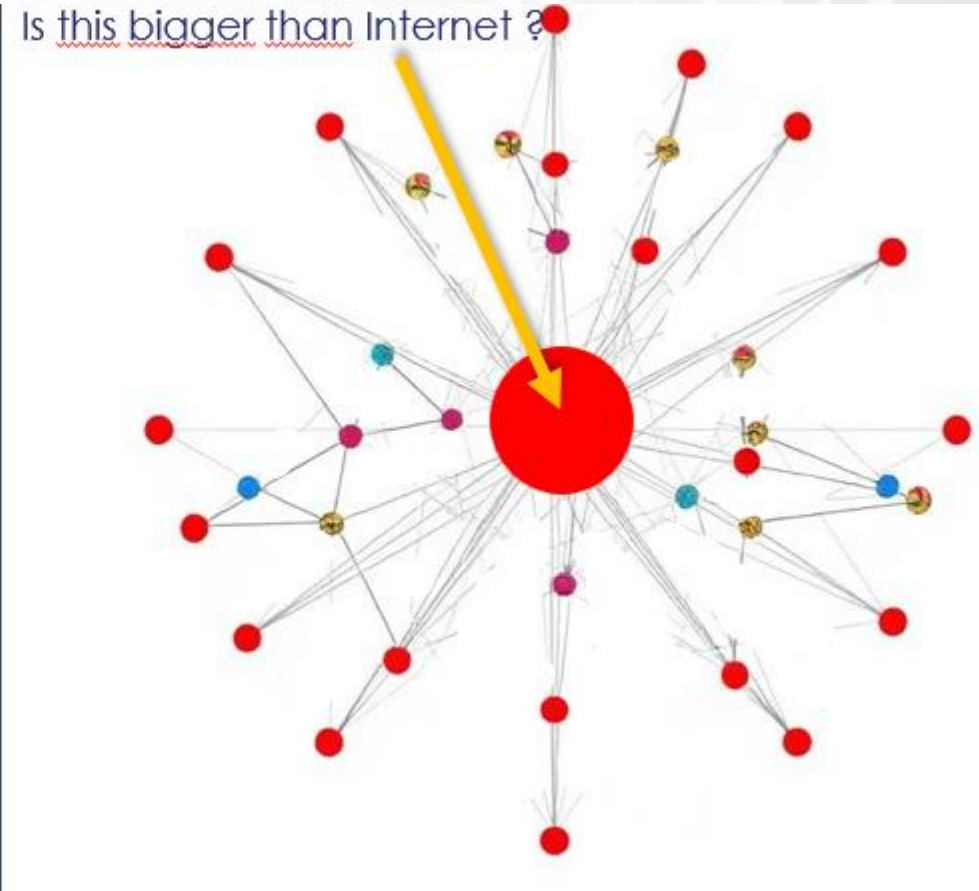
ISP & Content provider Golden Age

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- **Data Storage**

- **Apps (SaaS)**

- **Centralized Computing**

- **Internet collapse onto "all inclusive" places**

  > Economy of scale, powerful processing, simplified SW life cycle

  > Greedy approach, latency increase, end of friendly approaches

Hyperscaler Golden Age

Hyper [scalers/centralization] changing Internet distributions on topologies: traffic, capacities, …

Is this bigger than Internet ?

Two contradictory (?) visions:

> Edge = data capture towards DC…« All inclusive » remains

> Edge = local workload, system/services

Beyond over-simplistic buzz, it mandates deeper analysis of:

→ AI life Cycles incl. Bizz models, AI types

→ AI applications

→ Convergence context

→ Key factors

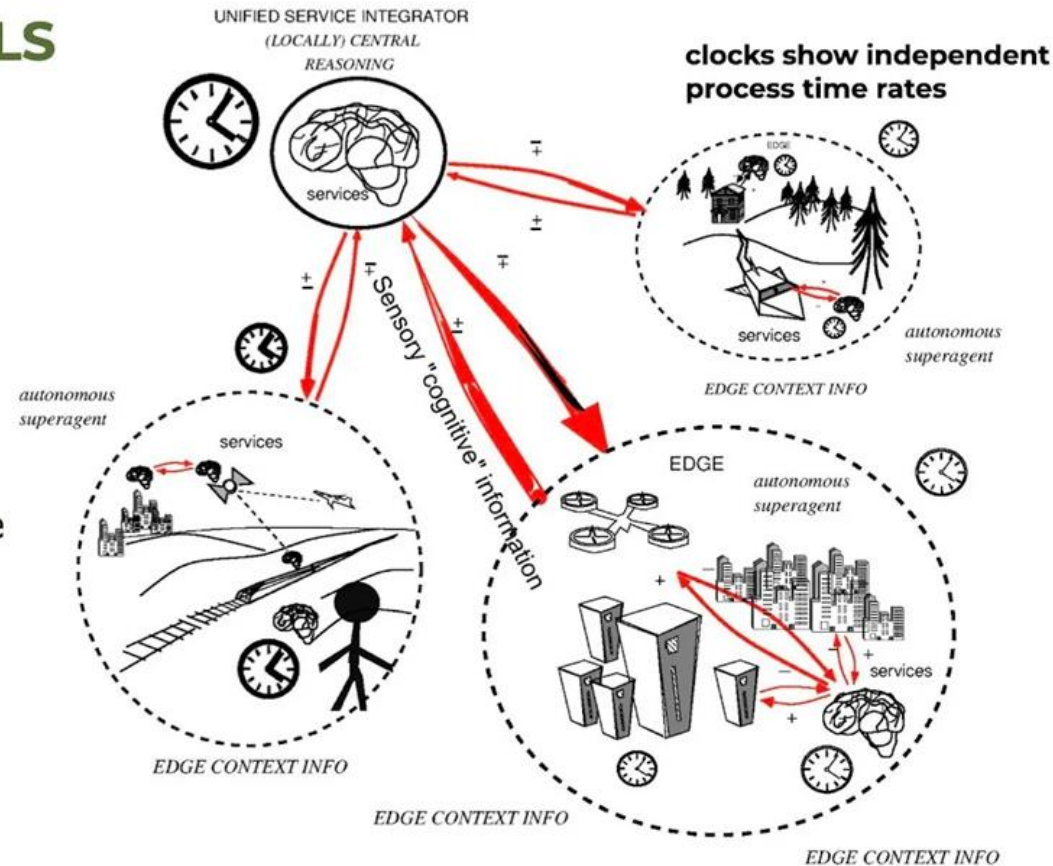→ (XaaS, security, Ergonomy, dev, KPIs, KVIs…)

?? Golden Age

FUNCTIONAL MODELS
DATA + SEMANTICS

Each bubble of spacetime can be autonomous unless coordination needed

Sensory cognition -> data loops, from edge to centre ...

Spacetime (process) is the language of interaction

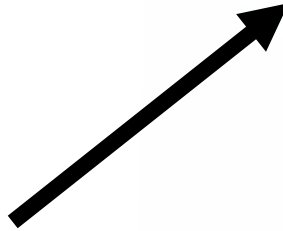Promise Theory is the algebra of interaction outcome

https://mark-burgess-oslo-mb.medium.com/semantic-spacetime-and-data-analytics-aabbb811cb26

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AI(s)…
Need to be specific
Need to map onto the continuum

- **(where is the)Data**
- (where is the)learning
- (where is the)inference
- AIaaS, ModelaaS,….
- ML, RL, Agentic, hybrid, federated, embedded,…….
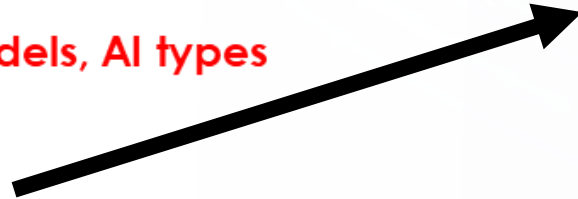
➔ AI life Cycles incl. Bizz models, AI types
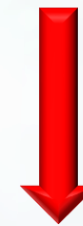
➔ AI applications

➔ Convergence context

➔ Key factors (XaaS, security, Ergonomy, dev, KPIs, KVIs…)
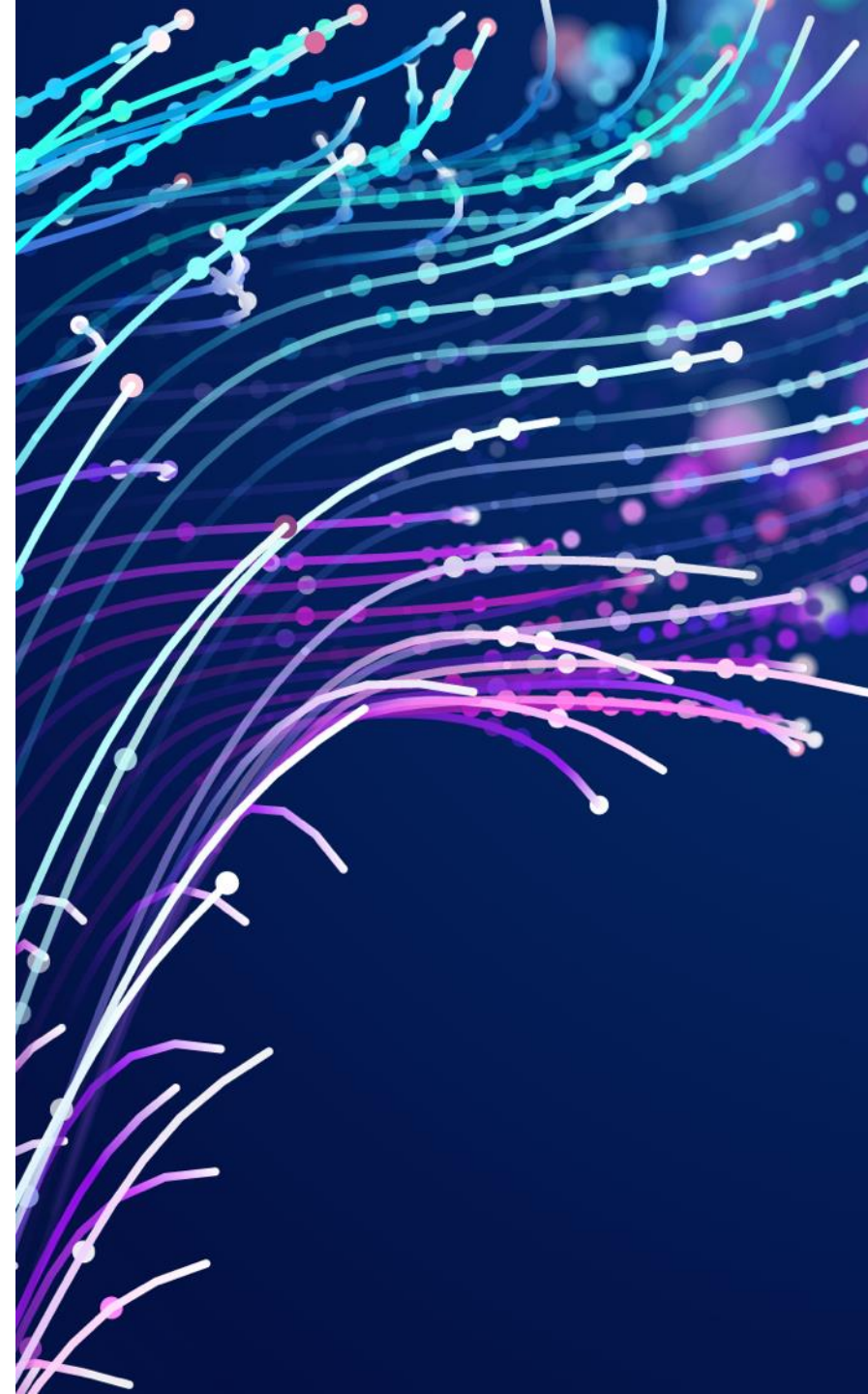
Before ZettaBytes, let's talk a bit about money

- Black box
- All inclusive…again
- xPU champions incl. Optics/electronics
- Not even at Layer 3, not even Internet principles
- **Developer friendly**

or

- Super meta glue of numerous distributed « small » actors
- Telco cloud, « 3C » networks,…
- Open…?

➔ **AI life Cycles incl. Bizz models, AI types**

➔ **AI applications**

➔ **Convergence context**

➔ **Key factors (XaaS, security, Ergonomy, dev, KPIs, KVIs…)**
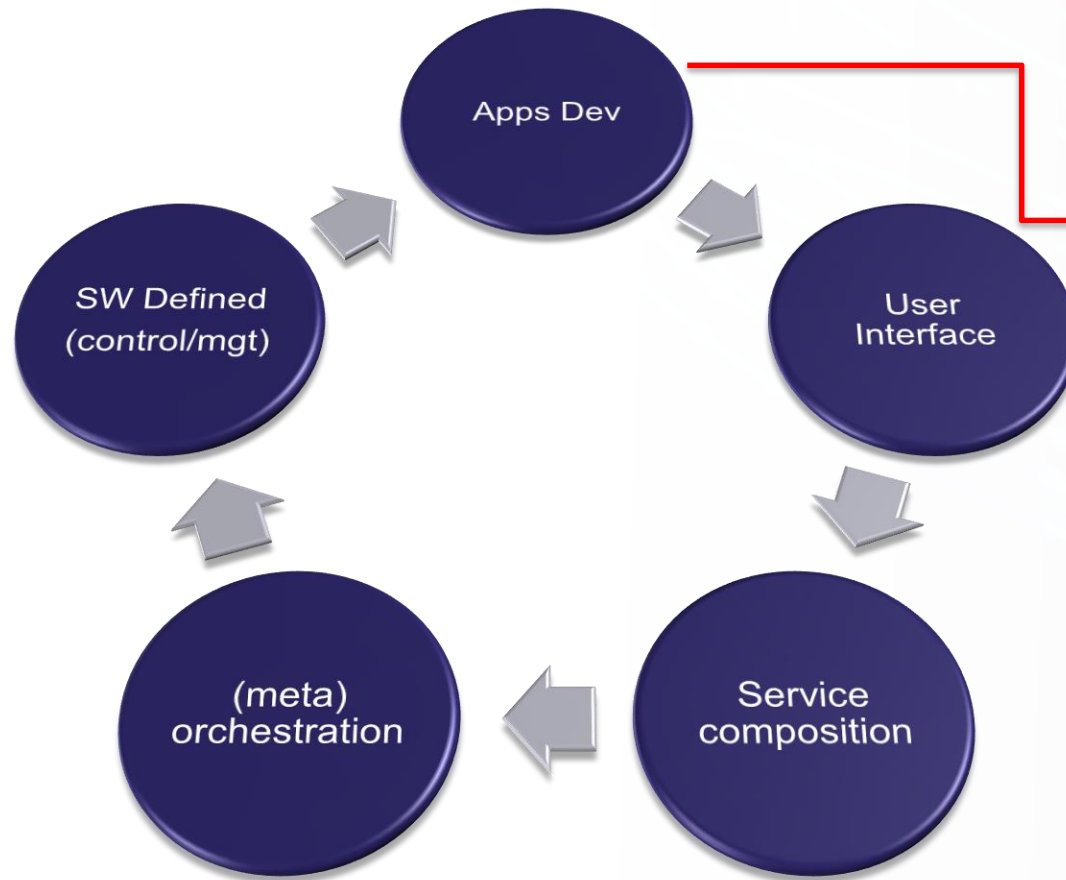
Applicability is driven by architectures and usages
This is (system of) system(s) & services
[Connectivity + Computing] + Security + AI + Sensing + 3D
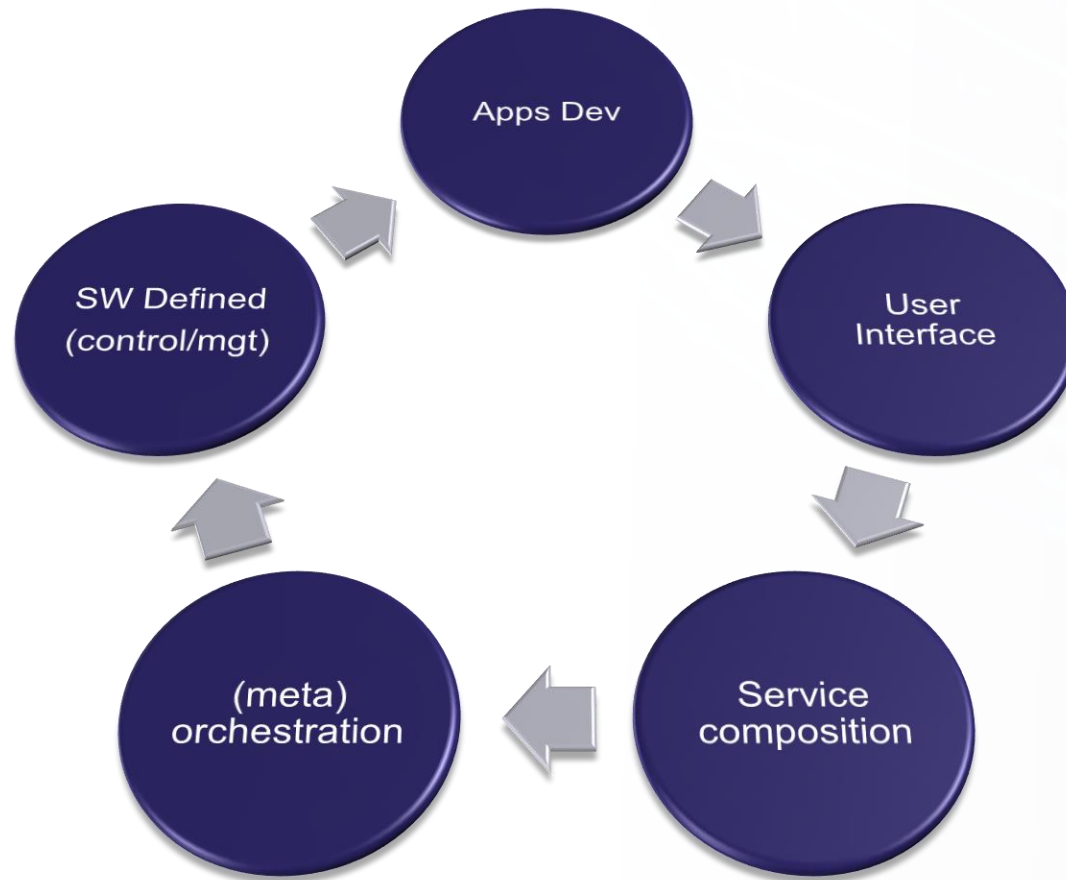
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**Who's the boss…
…few more key factors to consider**

Is your continuum actually: integrated or self-sufficient ?

Whatever the techno merits:
- Most of the value is in the app
- Monetization and/or perf. IFF developpers step out from Best Effort and like your ecosystem

Apps Dev

User Interface

Service composition

(meta) orchestration

SW Defined (control/mgt)

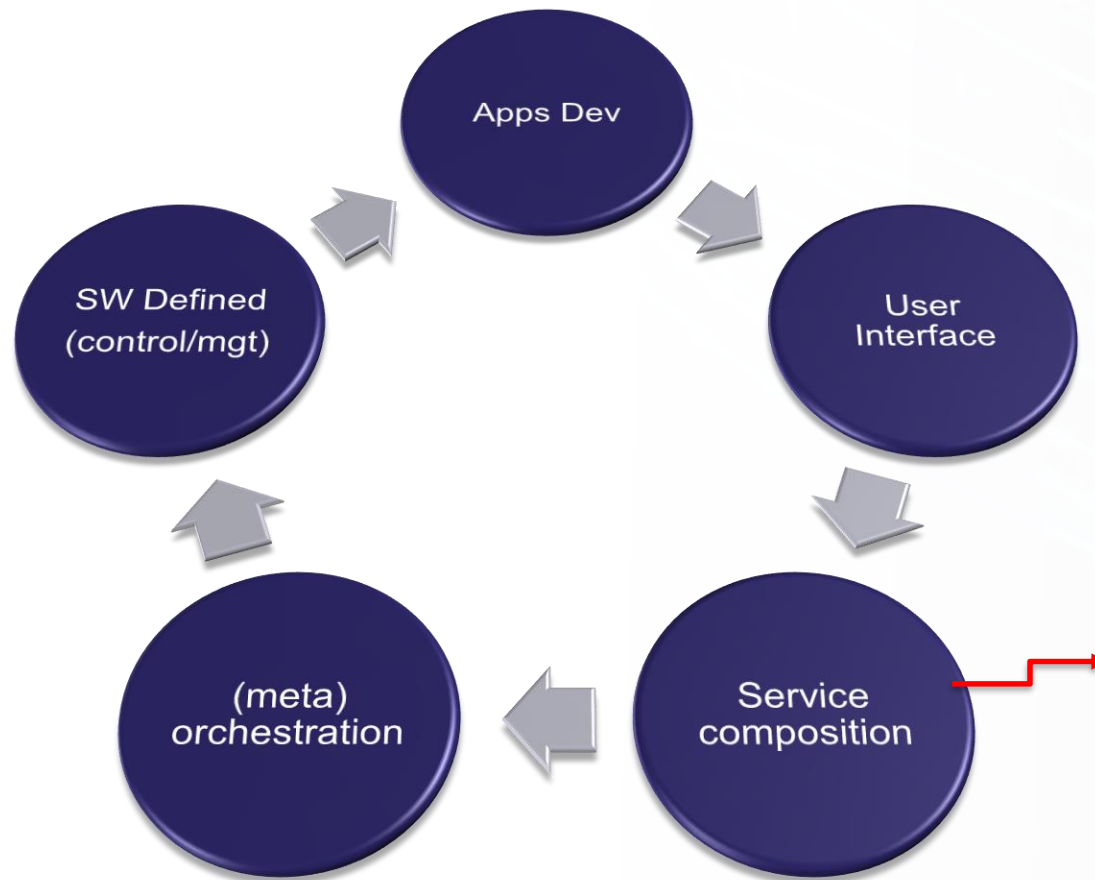**Is your continuum actually: integrated or self-sufficient ?**

After decades of ICT still Bronze Age
Both for Humans and Machines
Intent-based, NLP, Semantic extraction give hope !

Distribution of loads, usage pof resource should be driven by User's policies and ndersatning of its constraints. Unless full ubiquity of services !

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Is your continuum actually: integrated or self-sufficient ?

Apps Dev

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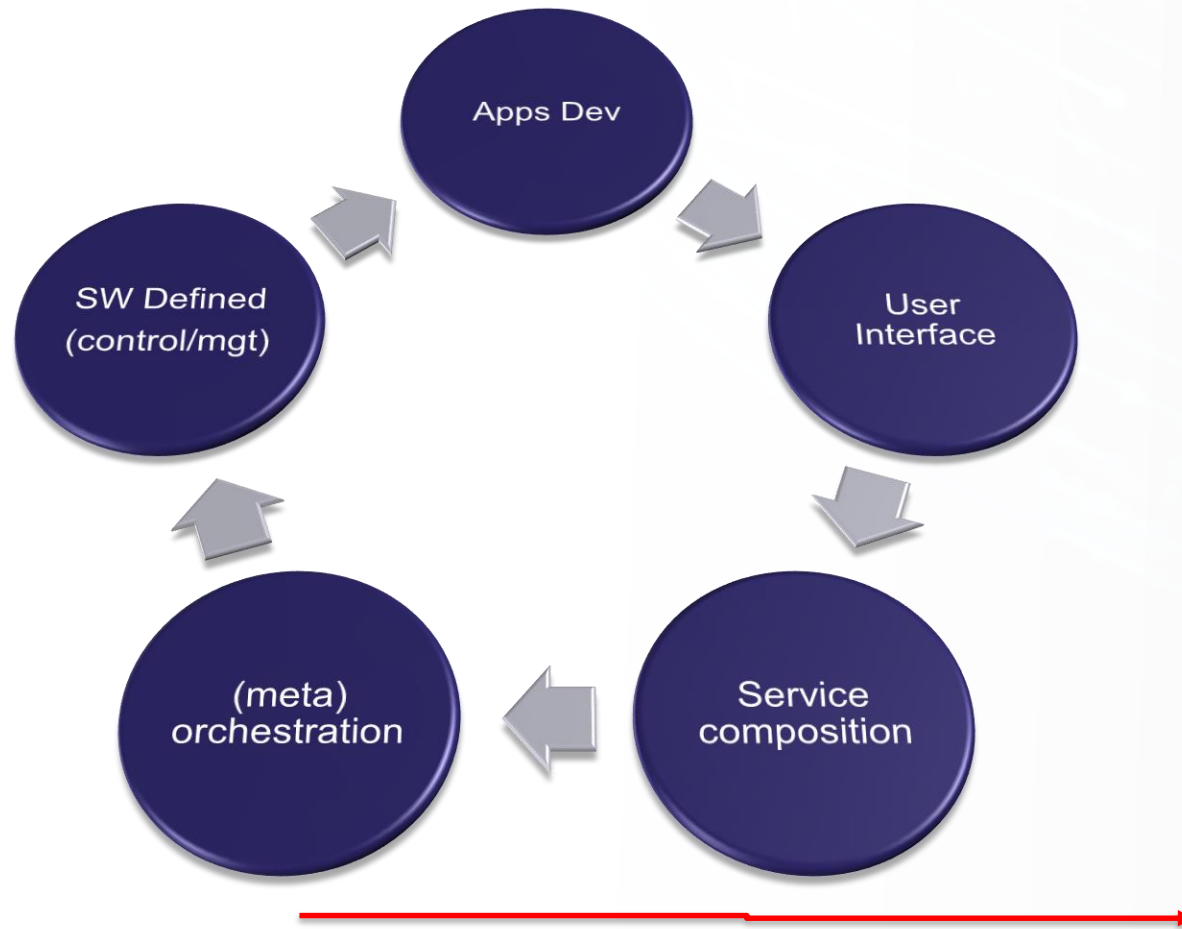
No unique combination of service components to answer a need
Looking exclusively to its area
- compute (by segment)
- networks
- cyber
- …
Leads to submission to someone else

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Is your continuum actually: integrated or self-sufficient ?

All functional and non-functional performances depends on orchestrations of resources…distribution across the continuum
Local optimum is potentially useless

High complexity with multi constraints
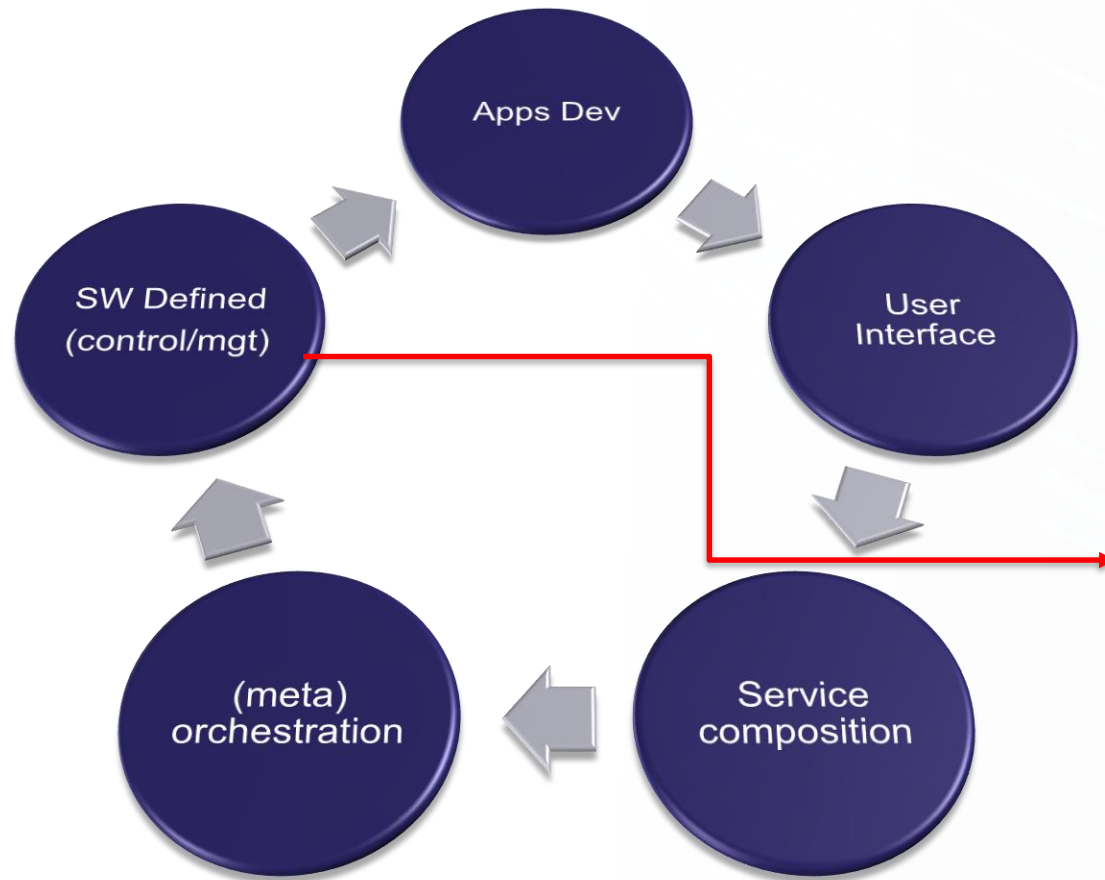
Taking Space edge Computing example
- **SWAP**
- **Delays**
- **…**

Taking the security topic:
- **No security by design is not enough**
- **Need to orchestrate protection functions**
- **Need to orchestrate detection functions**
- **Need to orchestrate response/remediation**

NO GOD VIEW

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Is your continuum actually:
integrated or self-sufficient ?

Control/management plane resilience is to be reconsidered
Multi-agent approach is the AI promise

- AI is a game changer with kind of « metamorphic » impact on systems and services

- This directly impact the distribution along the computing continuum with respective constraints capabilities as per type of resource

- Without holistic considerations for System Integration and Service aggregation/composition, value will be captured by actors able to deliver « all inclusive »

Thanks

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