# Architectural Consideration for transitioning from 5G to 6G

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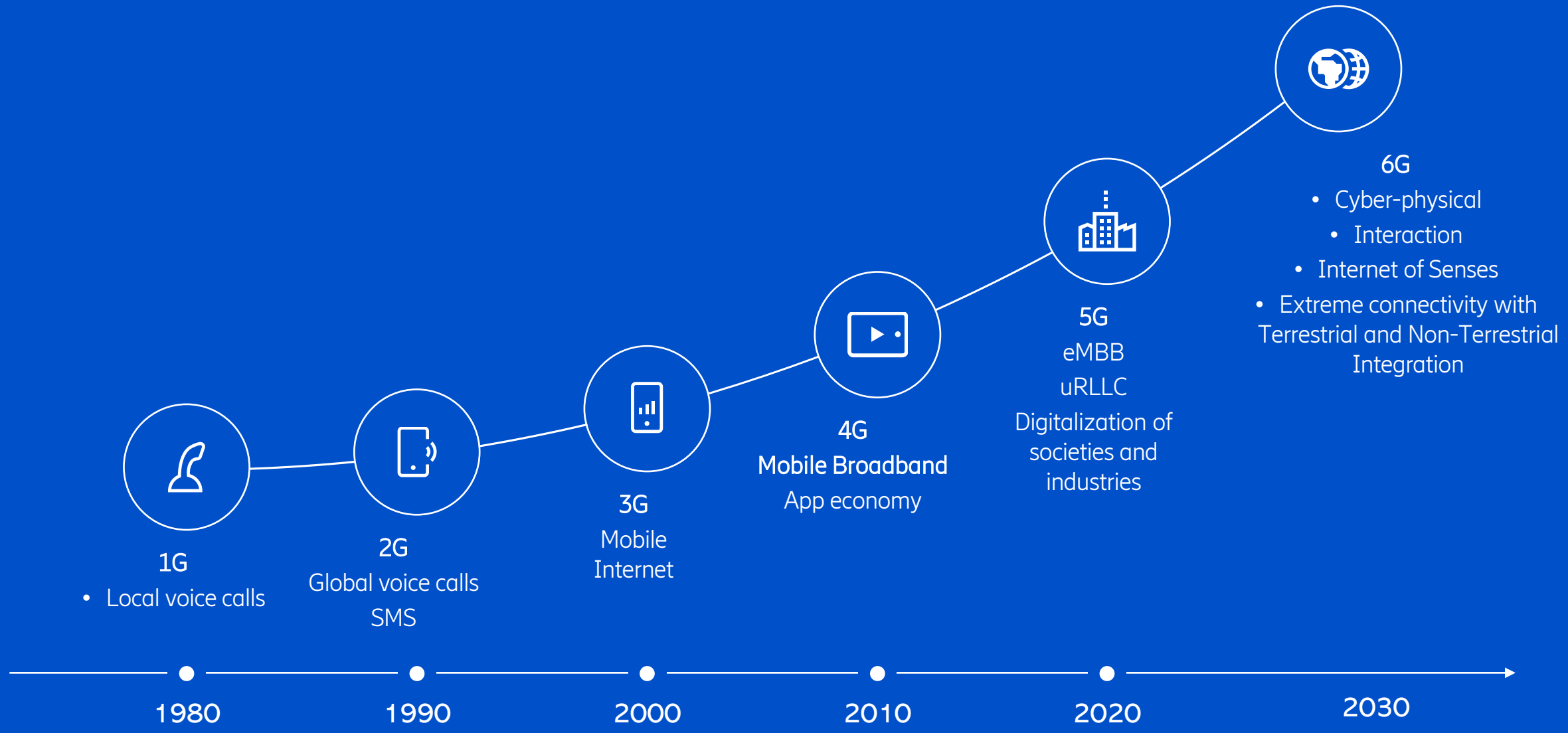
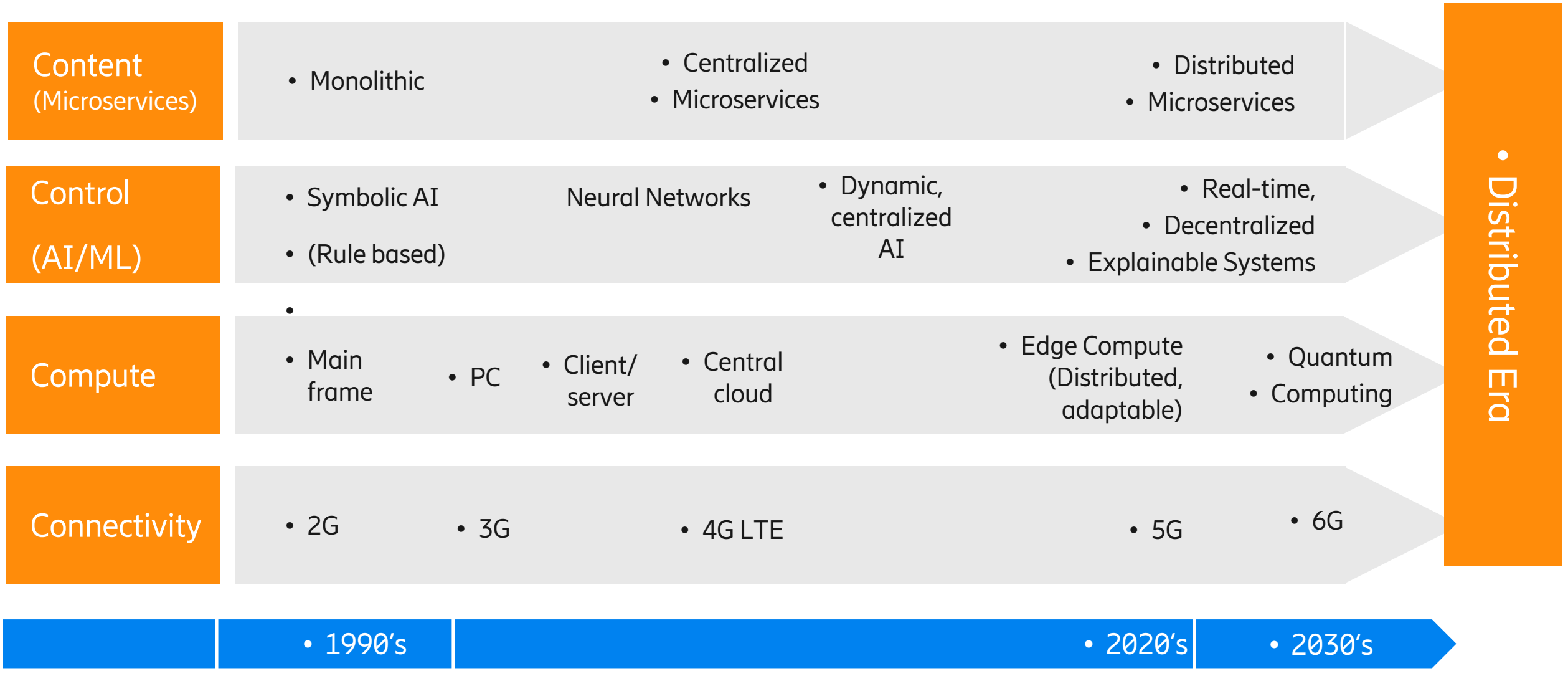
# Past, Present and Future of Mobile Networks



# Architectural Evolution towards Convergence of Connectivity, Computing, Control and Content



# Equation

# 3C + 3D = 6G

- (Connectivity + Compute + Control ) (Densification + Disaggregation + Distribution)

# Technology constructs and architecture principles

# 4 Constructs of SDN + NFV

Connectivity

Abstraction

Programmability

Virtualization

Orchestration

# 4 Constructs of Cloud Native

Computing

Microservices

Containers

CI/CD

DevOps

# 4 Constructs of Machine Learning

Control

Supervised

Unsupervised

Reinforcement

Explainable Systems

# 4 Architecture Principles of FNA

Architecture

Densification

Disaggregation

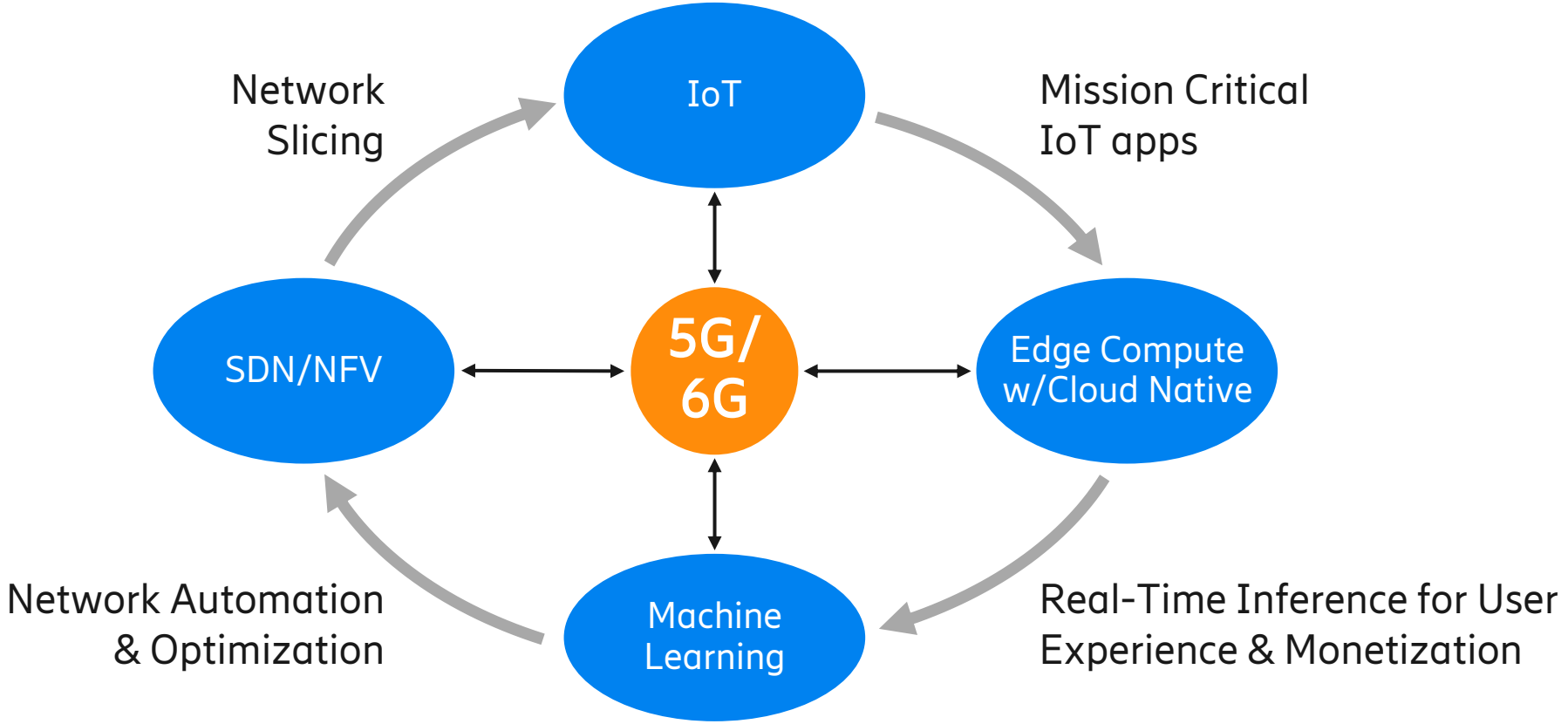
Distribution

Data Driven Operation

# Reimagining Future Network Infrastructure for Distributed Era

**Distributed Cloud: Cloud → Applications**

| Connectivity | Compute | Control (Distributed, Real-time, explainable ML systems) |
|---|---|---|



# Distributed Multi-Cloud Deployments

## How to federate and orchestrate security policies across multi-cloud deployments

Cloud native security

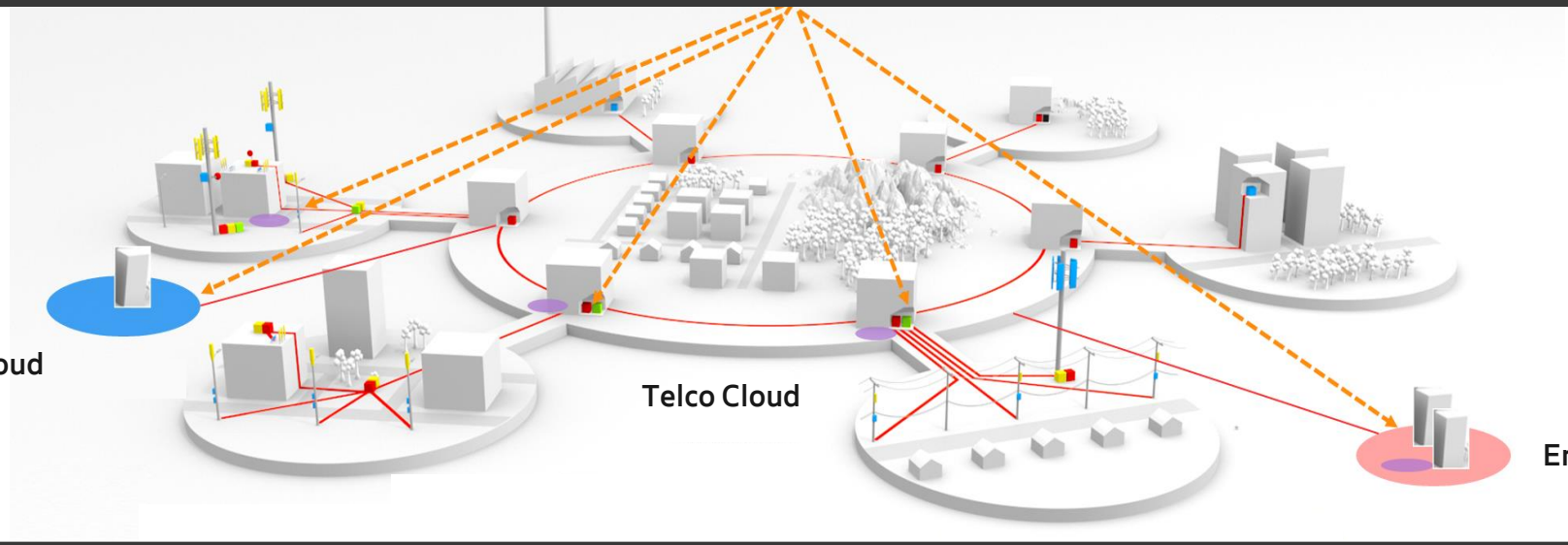
Visibility and Monitoring

Security Orchestration & Automation, Service Assurance

ML driven security analytics

Service chaining of security services

Intelligent Threat Detection and Response




Micro Data Centers enabled by Cloud Native for seamless Multi-cloud migration

- Better visibility into data, assets and risks
- Consistent and comprehensive security
- Speed and agility to stay ahead
- Reduced operational cost and complexity

To Deploy Any Application, Anywhere, With Consistent "security services & Policies"

# Past 10 years versus Next 10 years

## Transitioning from Central Cloud to Distributed Cloud

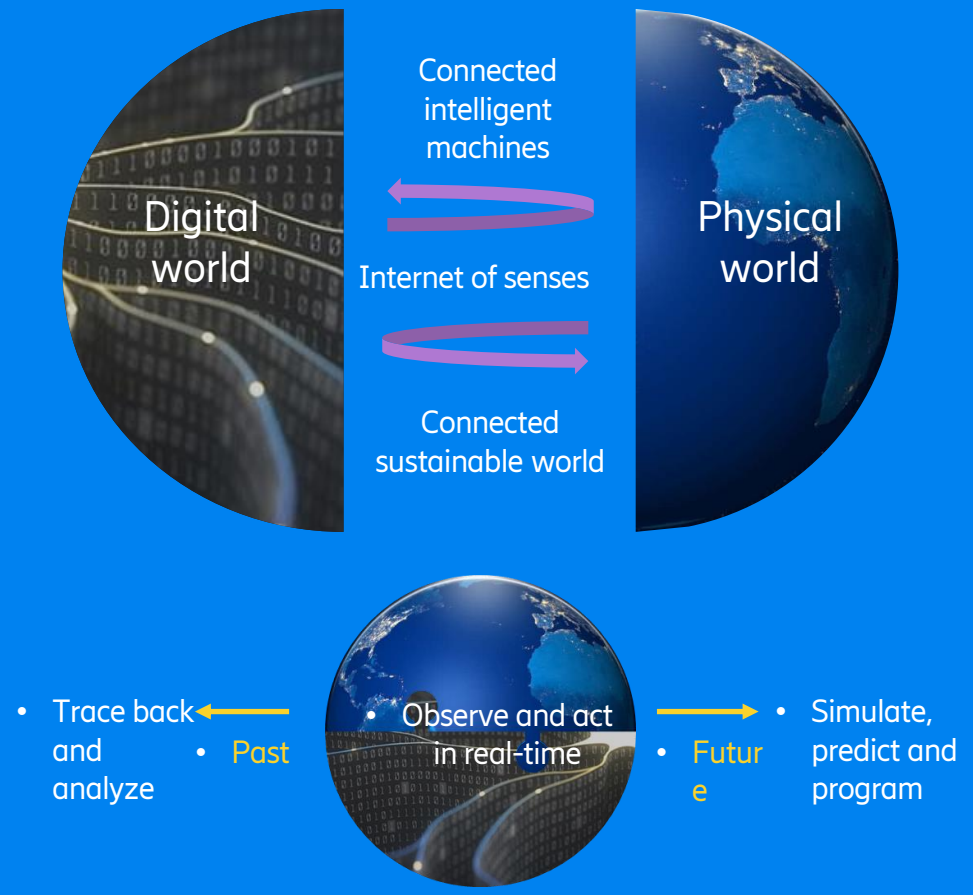
| Past 10 years (Central Cloud) | Next 10 years (Decentralization driven by Distributed cloud) |
|---|---|
| Applications: Monolithic | Microservices |
| Application Migration: On-Prem to Central Cloud | Applications distributed across multi-cloud or micro-DCs |
| Applications: Non-real time | ultra-low latency Applications |
| Centralized Hyperconverged Infrastructure (HCI) | Decentralized Converged Infrastructure driven by integrated connectivity, compute and storage |
| Cloud: Siloed (Migration is not seamless) | Multi-Cloud (Seamless Applications migration) |
| Centralized AI/ML algorithms for training and inference | Distributed, federated, coordinated real time explainable systems (for decentralized training and inference) |
| Traditional Software Release mgmt., | Automated Software Release Mgmt with DevOps and CI/CD |
| VM Based (little of Container) | Container based, Serverless |
| Fragmented orchestration systems & Siloed Clouds | Kubernetes for multi-cloud (Telco, Enterprise and public cloud) |
| Event, Static Management driven | Data driven, Autonomic Services Management |

# • 6G - Moving in a cyber-physical continuum

**Programmable digital representation of the physical world**

The network provides intelligence, limitless connectivity, and full synchronization of the physical and digital worlds

*Cyber-physical continuum*




**The physical world of sensing, action, and experience**

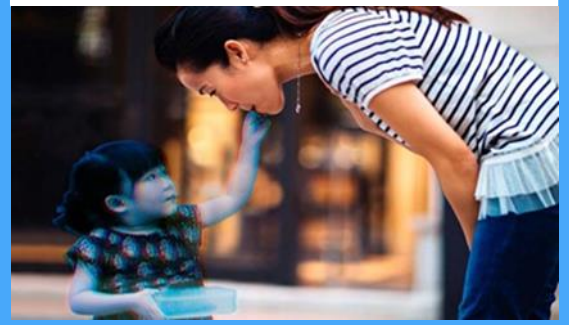
Vast amounts of sensors embedded in the physical world send data to update the digital representation in real time

Actuators in the real world carry out functions that are programmed in its digital representation

# 5G evolving towards 6G: 2030 scenarios

- Use case scenarios enabled by the network platform

## The Internet of Senses



## Connected Intelligent Machines

## Digitalized & programmable physical world

## Connected sustainable world

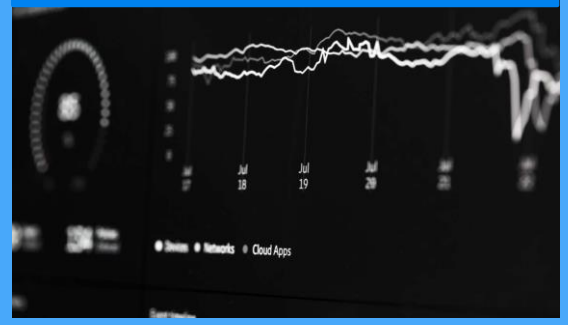
Use case focus

## Limitless connectivity

## Trustworthy Systems

## Cognitive network

## Network compute fabric




Technology focus

- Technology scenarios evolving the network platform