

OFC

The future of optical networking
and communications

Technical Conference: 15 – 19 March 2026

Exhibition: 17 – 19 March 2026

Los Angeles Convention Center
Los Angeles, California, USA

OFCConference.org

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OPTICA

ETSI and ITU Present Advances in International Optical Networks Towards 2030 and Beyond (ION-2030)

Tuesday, 17 March 2026, 14:45 – 15:45, Theater III

Moderators

- Hiroshi Ota, *ITU-T SG15 Counsellor, Switzerland*
- Xiang Liu, *Hong Kong Research Center of Huawei, China*

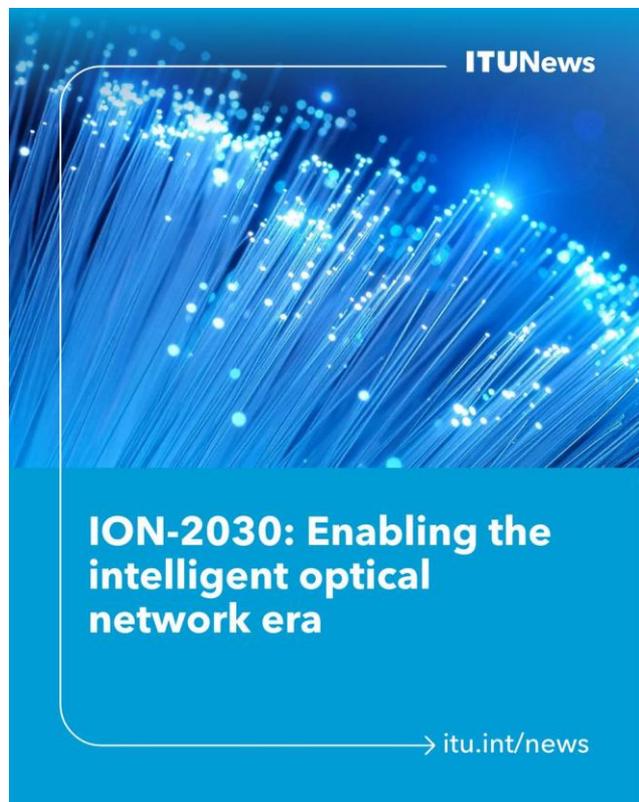
Panelists

- Vince Ferretti, *Corning, United States*
Progress of ITU-T ION-2030 for AI, Datacenters, Broadband and Home Networking
- Marcus Brunner, *ETSI ISG-F5G Vice-Chair, Switzerland*
New Use Cases of Next-Generation Optical Networks in the Era of ION-2030 and F6G
- Yuyang Liu, *China Telecom, China*
Progress on AI-OTN and ION-2030 for Datacenters Optimized for AI
- Raul Muñoz, *Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain*
Mutual Empowerment between ION-2030 and AI: ION-2030 for AI & AI for ION-2030

Presented By:



ION-2030: Enabling the Intelligent Optical Network Era



The International Telecommunication Union (ITU) has released a new framework to guide the evolution of global optical connectivity in the age of artificial intelligence (AI).

The framework – [International Optical Networks towards 2030 and Beyond \(ION-2030\)](#) – was developed by ITU-T Study Group 15, the expert group responsible for standards on networks, technologies, and infrastructures for transport, access, and home.

ION-2030 sets out a strategic vision for how optical networks should evolve to meet the demands of 6G mobile networks (IMT-2030), AI, data centres, broadband access, home networking, and integrated sensing and communication (ISAC).

The framework emphasizes the mutual empowerment of AI and optical networking, positioning both as drivers of the next wave of digital transformation.

Reference: <https://www.itu.int/hub/2026/02/ion-2030-enabling-the-intelligent-optical-network-era/>



ION-2030 for AI & AI for ION-2030

- Sustainability
- Connecting the unconnected
- Security and resilience
- Ubiquitous intelligence

ION-2030 for AI:

Large bandwidth and coverage

Low latency and jitter

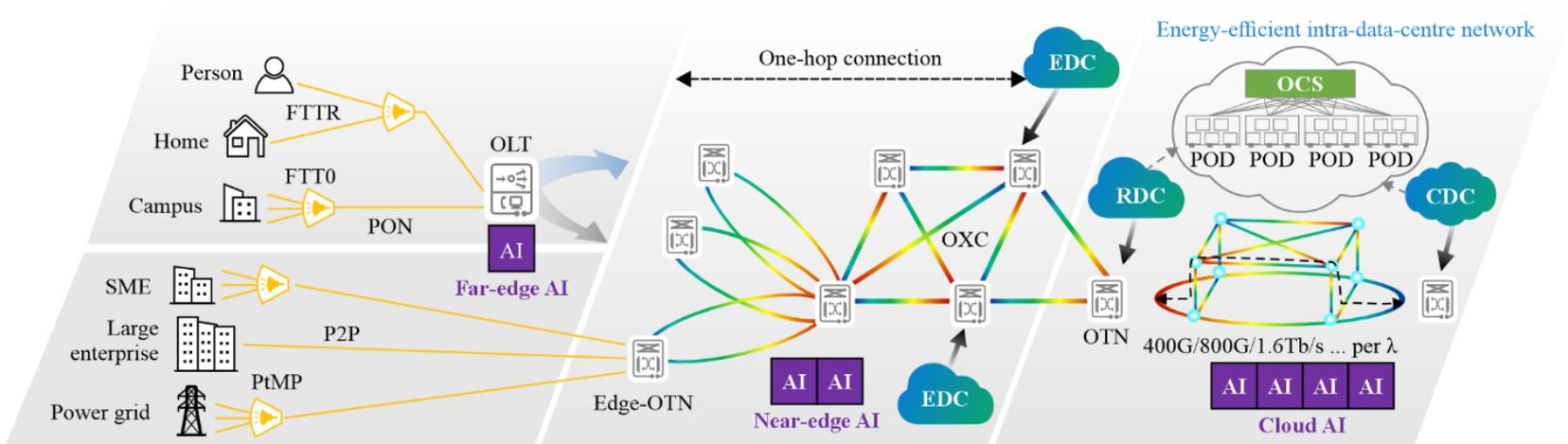
High availability and resilience

AI for ION-2030: E2E guarantee of QoS and QoE with automation, optimization, and protection

Service-assured access network

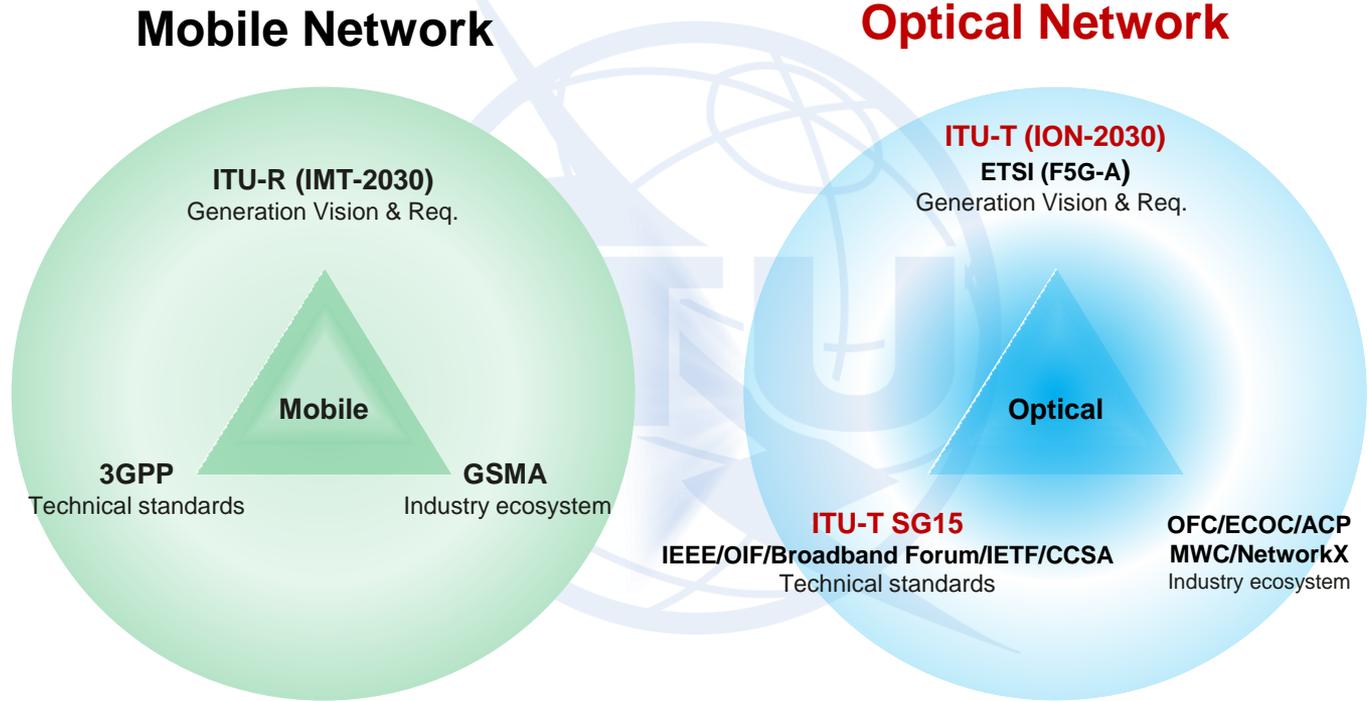
Low-latency metro network

High-capacity backbone network



GSTR-ION-2030(25)

Optical Network Standards & Ecosystem Landscape





www.ecoc2026.org



Submission deadline

15th April, 23:59 CET

**ITU ION-2030: Architectures and Standards of Optical Networks for the AI Era
- Advancing United Nations' Sustainable Development Goals (SDGs) Symposium**

52nd European Conference on Optical Communication

20 - 24 Sep. 2026 · Málaga, Spain



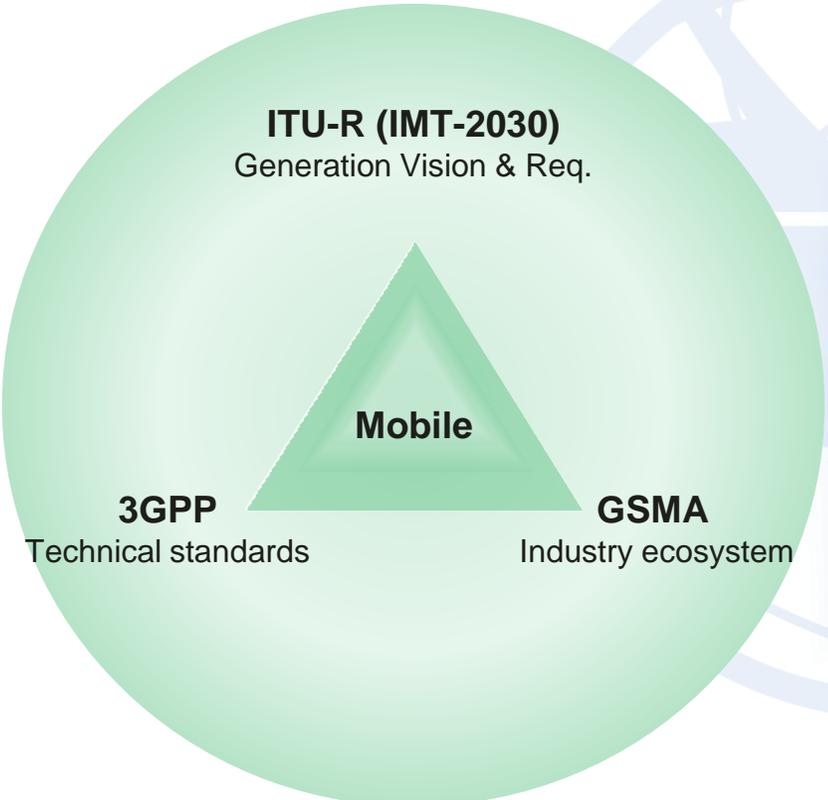
**Introduction to
International Optical Networks towards 2030 and
Beyond (ION-2030)**

Vince Ferretti
Vice Chair Promotion & Coordination
ITU-T SG15
March 2026

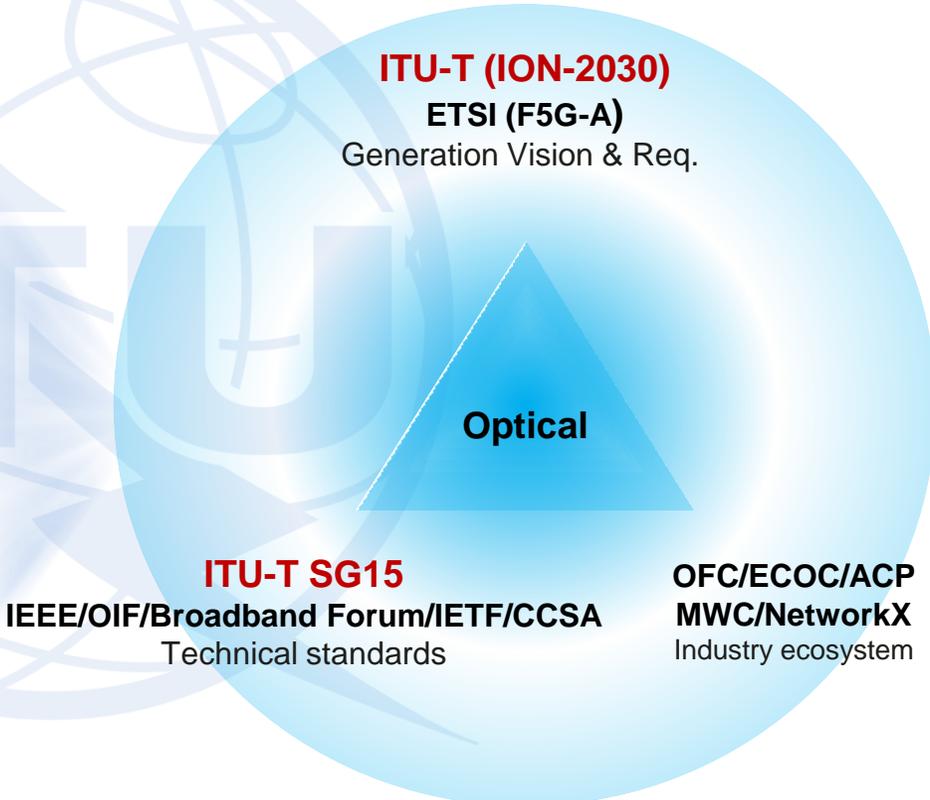


Optical Network Standards & Ecosystem Landscape

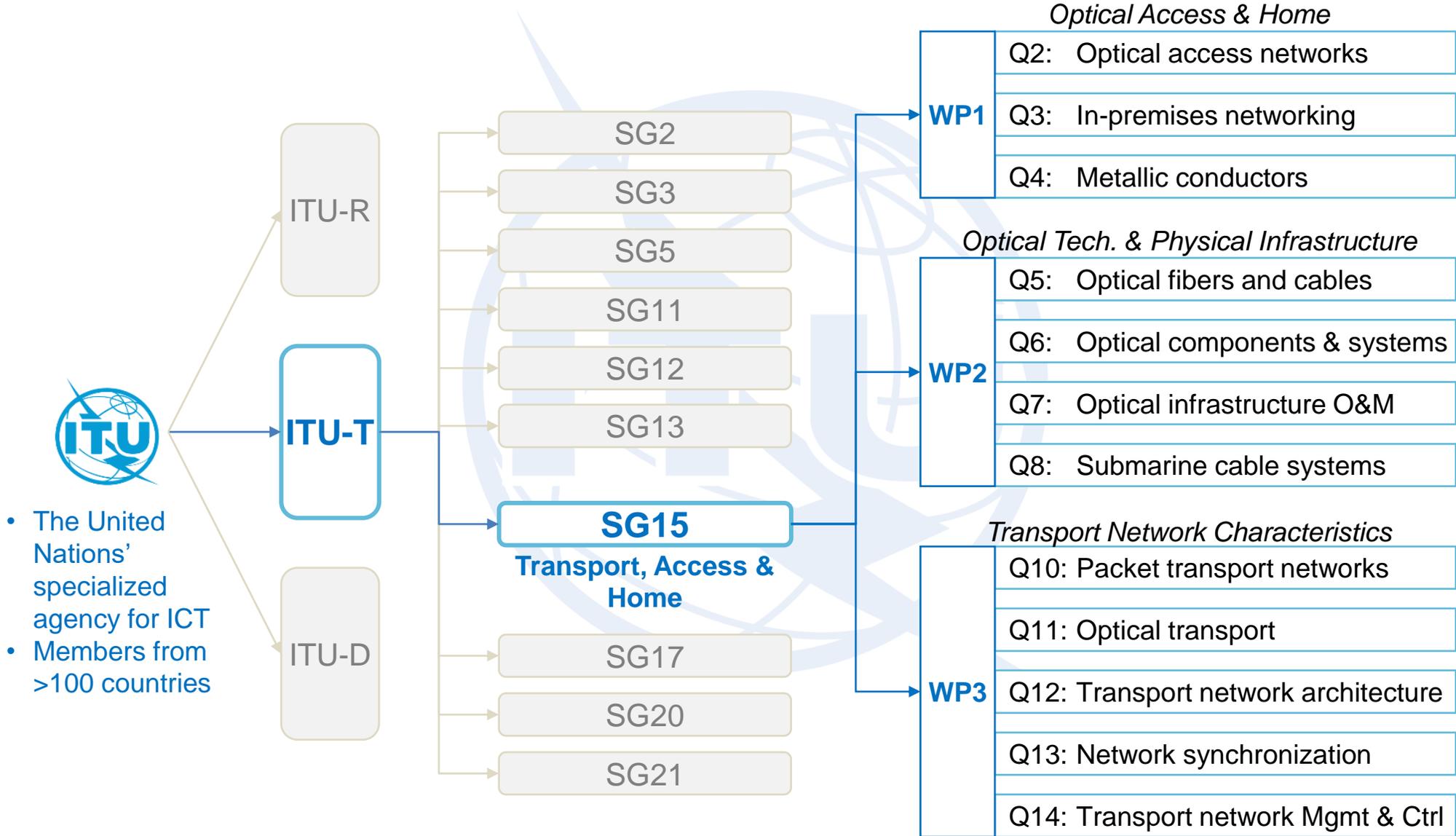
Mobile Network



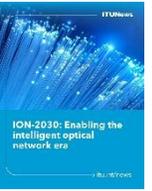
Optical Network



ITU-T SG15: The Leading SDO for Optical Networks



ION-2030: Enabling the Intelligent Optical Network Era



The framework – [International Optical Networks towards 2030 and Beyond \(ION-2030\)](#) was developed by ITU-T Study Group 15, the expert group responsible for standards on networks, technologies, and infrastructures for transport, access, and home.

ION-2030 sets out a strategic vision for how optical networks should evolve to meet: the demands of:

- 6G mobile networks (IMT-2030)
- AI
- data centres
- broadband access
- home networking
- integrated sensing and communication (ISAC)

The framework emphasizes the **mutual empowerment of AI and optical networking**, positioning both as drivers of the next wave of digital transformation.

Reference: <https://www.itu.int/hub/2026/02/ion-2030-enabling-the-intelligent-optical-network-era/>



Key capabilities and architecture

The ION-2030 framework envisions a service-oriented architecture combining high performance with intelligence and sustainability. It highlights four principal advances:

- **Terabit-per-second connectivity** and **sub-millisecond latency** to support emerging digital services.
- **Integrated sensing, computing,** and **AI agents** within optical layers for real-time awareness and automation.
- **Energy-efficient and quantum-resilient designs** to ensure long-term security and sustainability.
- **End-to-end service optimization** across multiple network domains and layers.

Standards collaboration

ION-2030 promotes cross-sector collaboration both within ITU and with other standards bodies, including:

- 3rd Generation Partnership Project (3GPP)
- Broadband Forum
- European Telecommunication Standards Institute (ETSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- International Electrotechnical Commission (IEC)
- Internet Engineering Task Force (IETF)
- Optical Internetworking Forum (OIF).

To support IMT-2030, ION-2030 also supports joint efforts with:

- ITU's Radiocommunication Sector (ITU-R)
- ITU-T Study Group 13 (Future networks)



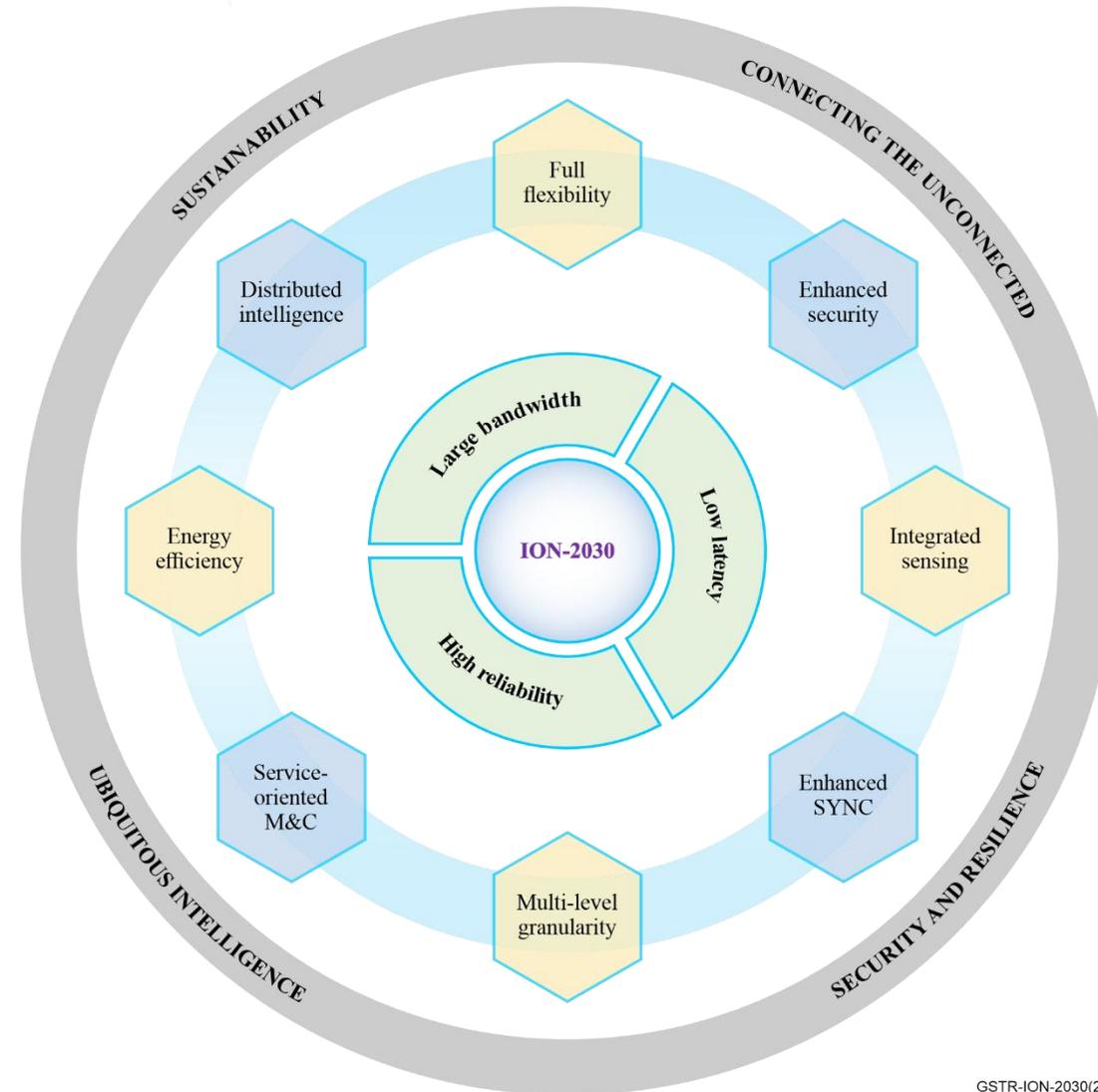
Towards sustainable, intelligent connectivity

ION-2030 contributes directly to sustainable digital infrastructure by combining intelligence, energy awareness, and interoperability. Its principles support sustainable social and economic development through enhanced efficiency, reduced operational costs, and inclusive access to digital services.

“ION-2030 represents a holistic vision for the optical networks of the future,” said the ITU-T Study Group 15 Chair Glenn Parsons. “It integrates industry demands including for IMT, AI and sensing into a unified framework that can support humanity’s growing digital and sustainable aspirations.”

[ION-2030 \(GSTR.ION-2030\)](#) complements ongoing work in ITU-T Study Group 15 on transport network evolution and digital transformation.

ION-2030 Vision, Characteristics and Features

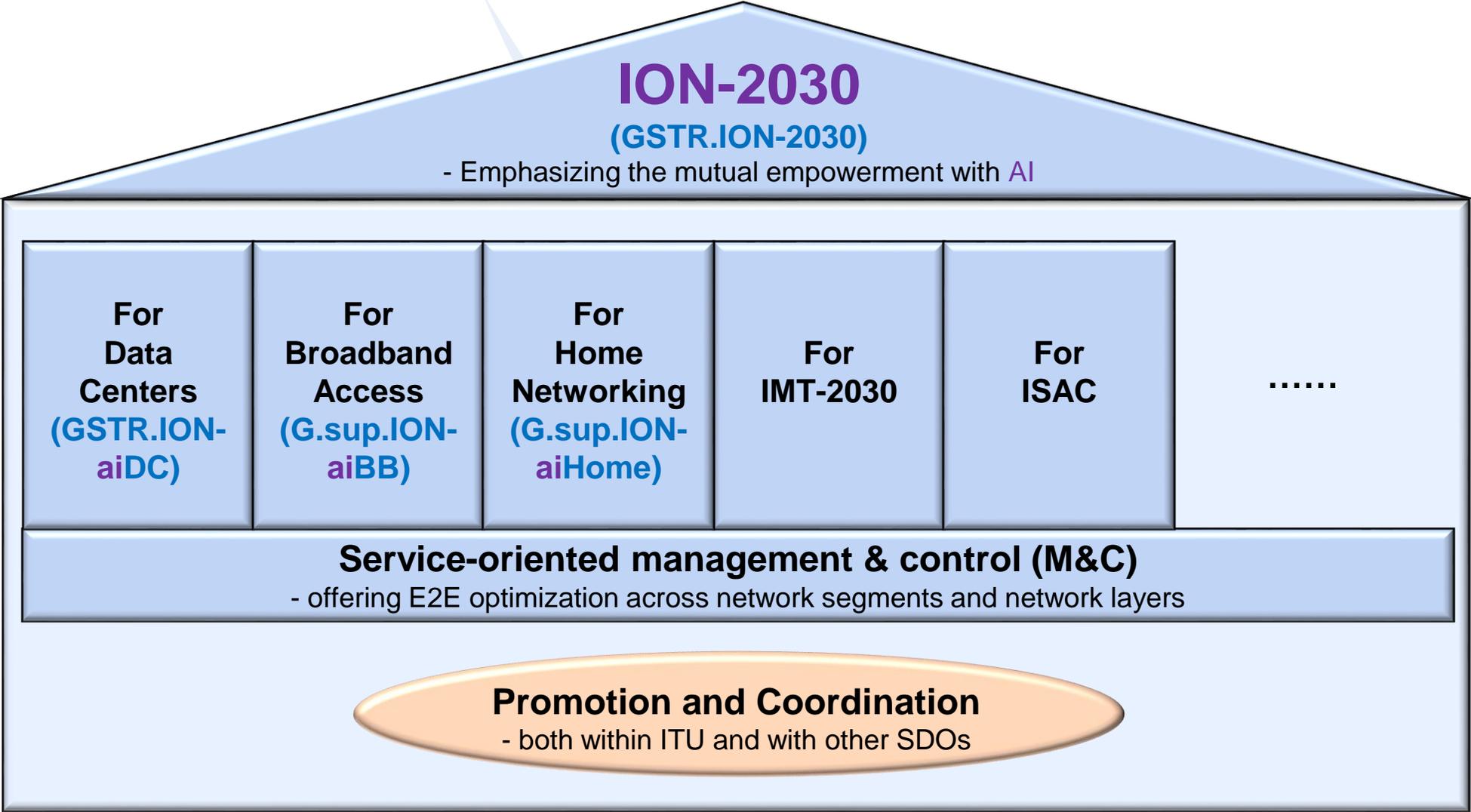


GSTR-ION-2030(25)

Reference: GSTR-ION-2030 (<https://www.itu.int/pub/T-TUT-HOME-2025-2>)



ION-2030 Framework: continues to grow and expand



Innovating & Cooperating on ION-2030 in the AI Era

- **Global cooperation and collaboration in international standards** are essential to the realization of the full value of ION-2030 for the common benefit of our global society.
- **Opportunity to jointly contribute to ION-2030 on the key topics of the mutual empowerment between AI and ION-2030, and ION-2030 for IMT-2030, data centers, broadband and more.**



Thank you all!





The Standards People

New Use Cases of Next- Generation Optical Networks in the Era of ION-2030 and F6G

Dr. Marcus Brunner

ETSI ISG F5G Vice-Chair

OFC'26, Los Angeles USA, March, 2026



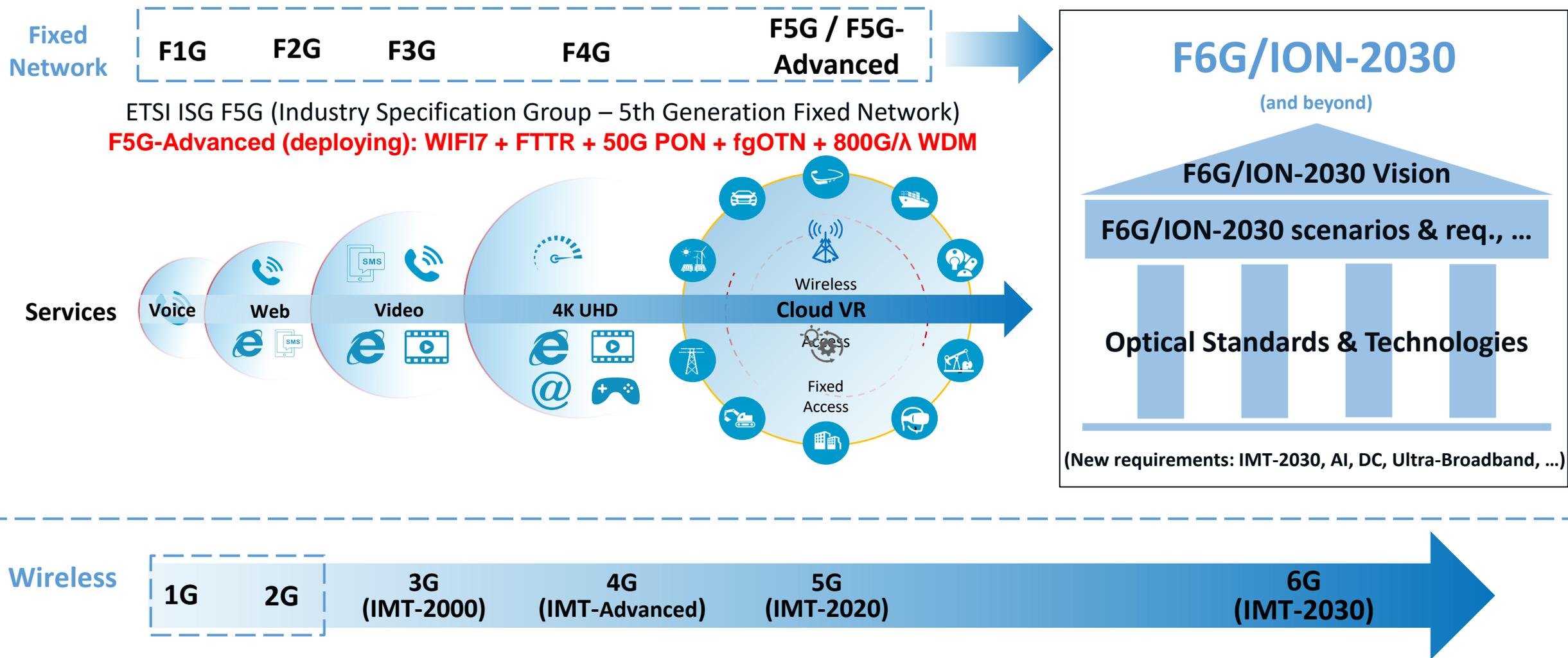
ETSI (European Telecom Standards Institute)

leading SDO in Europe influencing the world



- ✔ Founded in Nice, France
- ✔ **35** years in the ICT sector
- ✔ **3GPP** originated from ETSI
- ✔ More than **900+ members** worldwide
- ✔ Operators, Vendors, Verticals, Governments, Universities
- ✔ From **65 countries and 5 continents**

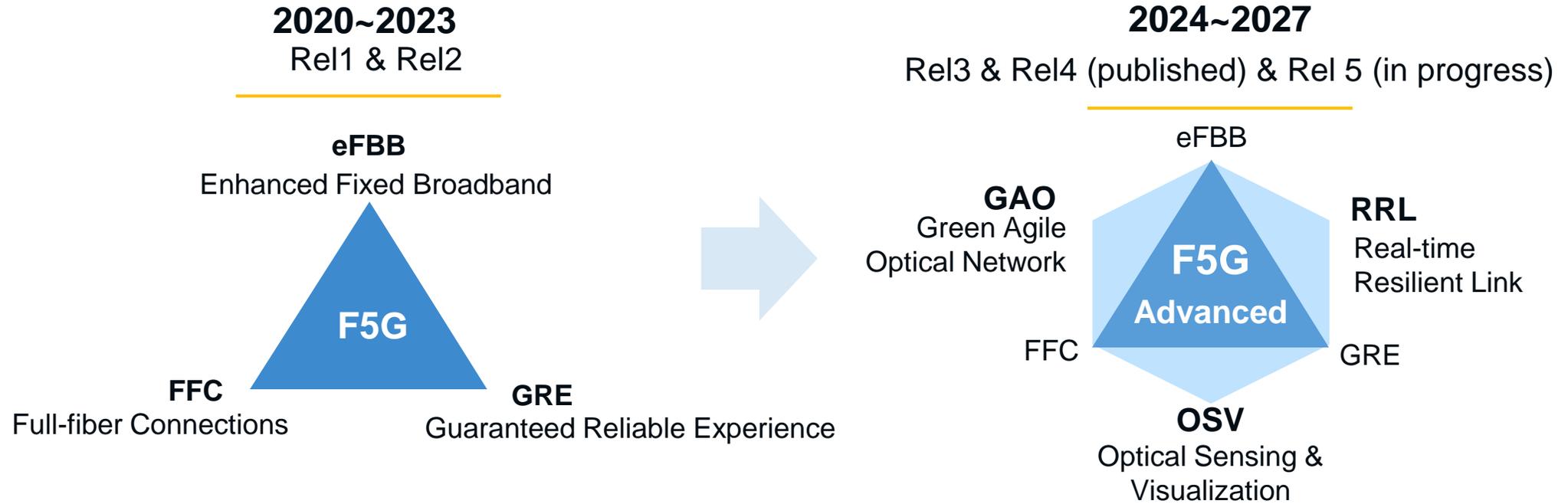
Evolution of Optical Networks towards 2030s (F6G/ION-2030)



Roadmap from F5G (1Gbps) to F5G-Advanced (10Gbps)



F5G -> F5G Advanced



F5G-A Use Case

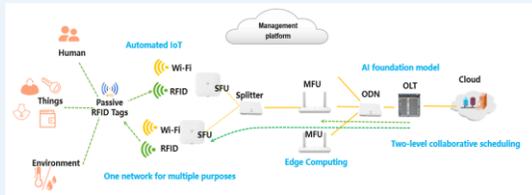
ETSI F5G-Advanced Releases 3&4 introduces 31 use cases for the 10Giga era



F5G-A Use Cases for Residential Applications

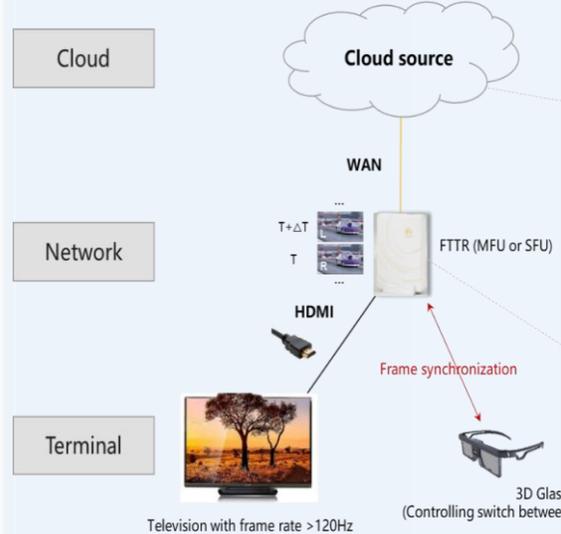


Integrated RFID over FTTR over FTTR



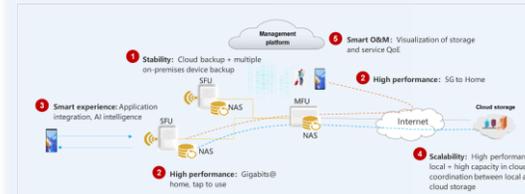
- Reading RFID Tags in the Room
- Enabling Various Applications

3D video enabling via Intelligent FTTR



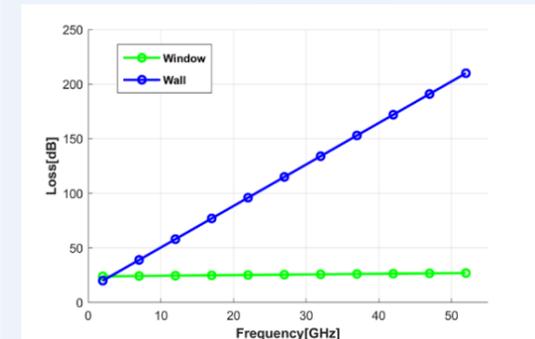
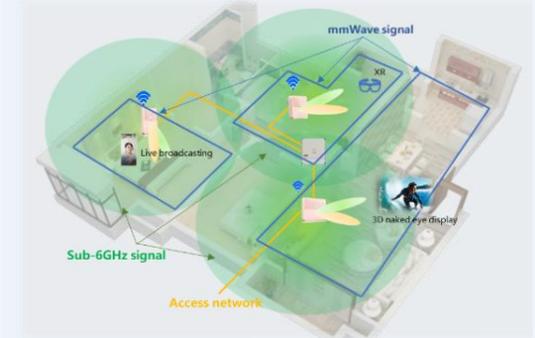
- 2D to 3D Content Converter
- Synchronized Glasses
- AI improved QoE and energy efficiency

Integrated Storage over FTTR



- Home Data Storage with Automatic Backup, Usage of AI in the Cloud

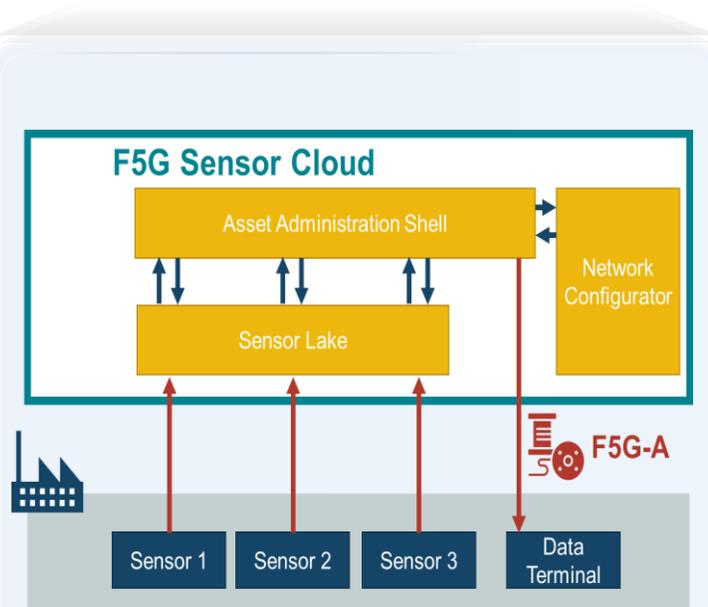
On-premises Millimetre Wave (mmWave) WLAN



F5G-A Use Cases for Enterprise Applications

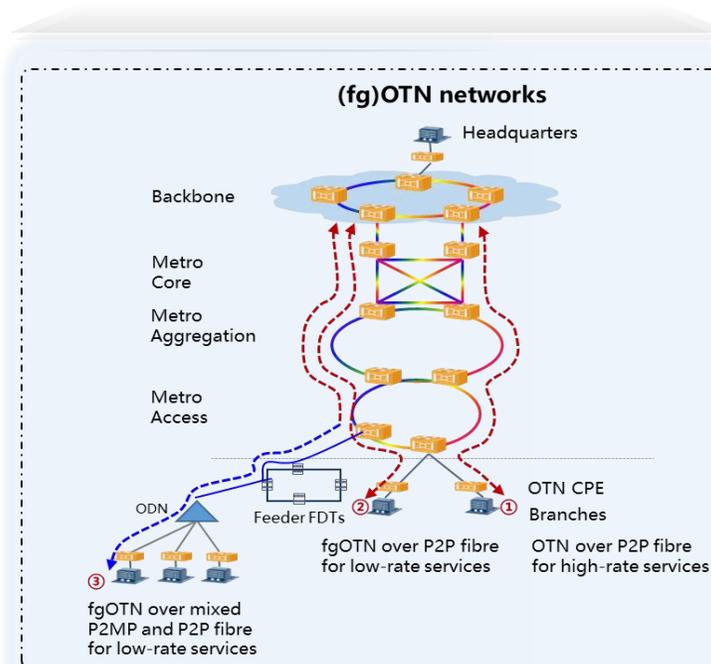


Smart Sensor Cloud for AI in Industrial Manufacturing



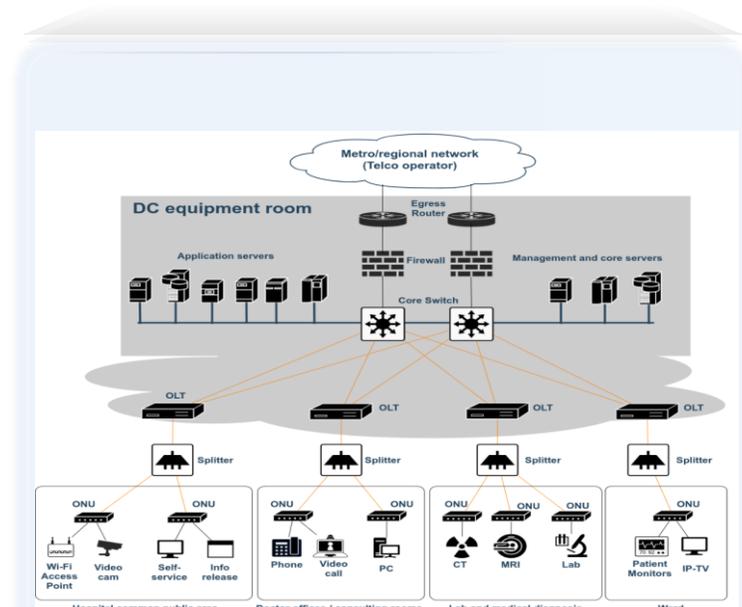
- Low latency
- High bandwidth
- High reliability
- High security

P2MP fgOTN for premium private lines



- Fine grain OTN over P2MP fibre fabric

Smart Hospitals/Offices



- High bandwidth, Reading films do not freeze
- High performance, Rounds don't drop the line

F5G-A Use Cases for Industrial Applications

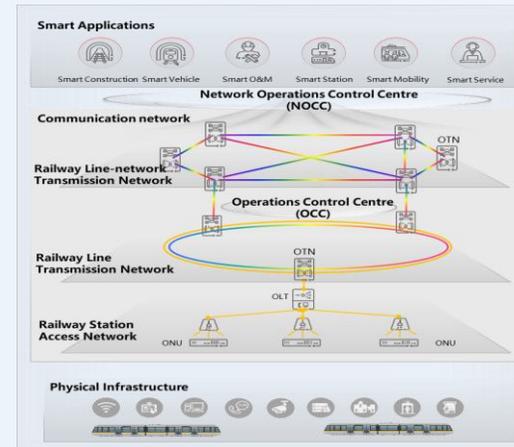


Railway Flat wheel detection



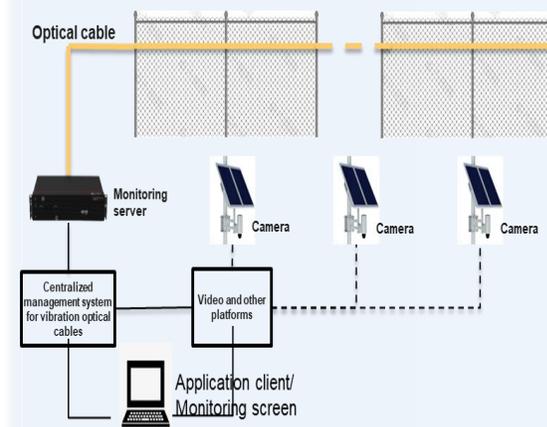
- Fibre Sensing
- Detection Train Flat Wheel
- Improved Train Safety

Urban Rail



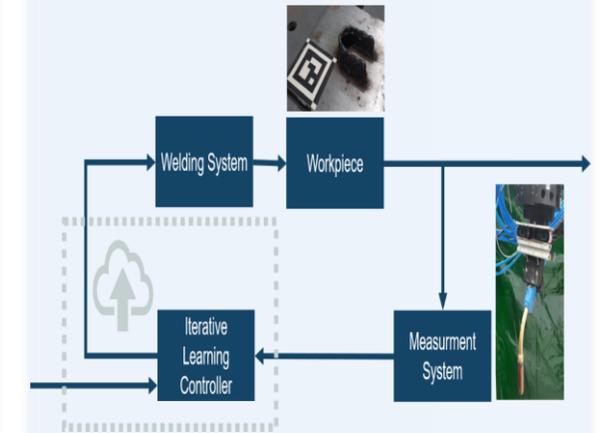
- Railway line-network transmission network
- Railway line transmission network
- Railway station access network

Perimeter Inspection



- Wide range > 10km; Inherent safety, electrical insulation; High sensitivity
- Detection accuracy > 99,9%, With the support of AI analysis

Robotics as a Service

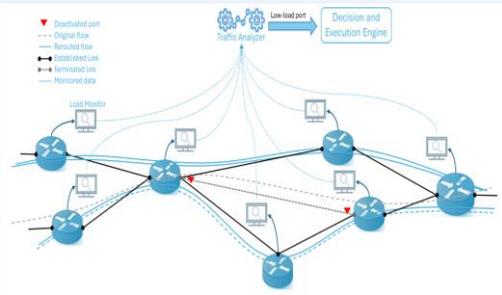


- Transfer of sensor data to the cloud
- Enable low-latency control of the robot from the cloud
- Use of AI in the cloud: training is to compute heavy

F5G-A Use Cases for Optical Network Operation

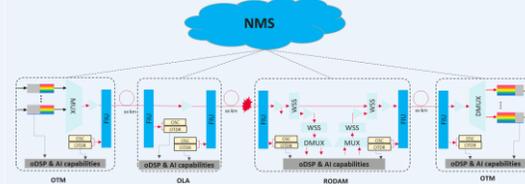


Energy-efficiency



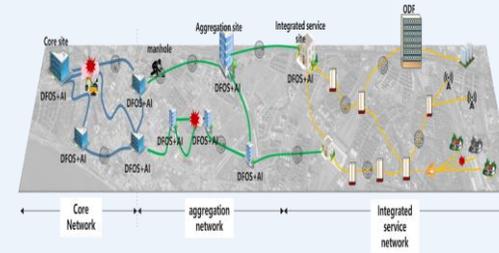
- Intelligent Port On/Off
- Energy-aware Re-routing

Flash Disconnection Localization



- AI-Powered Intelligent Flash Disconnection Fault Localization in Optical Network

Optical cable Co-route detection

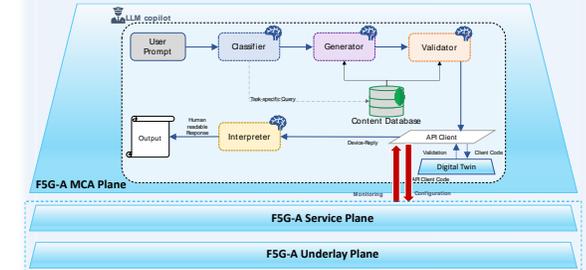


Optical cable 1 #
Optical cable 2 #



- Fibre Sensing
- Co-route detection through Environmental signals
- Co-cable and Co-trench

Generative AI for F5G-A Network Management

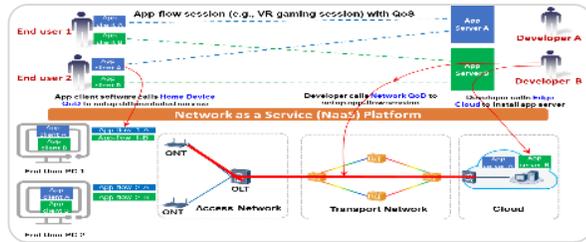


- Intent Classifier
- Digital Twin Sandbox
- Code Generator

F5G-A Proof of Concept Projects



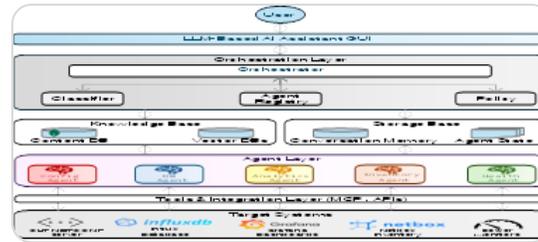
E2E M&C for Gaming



F5G-A end-to-end management and control for Building Cloud AR/VR Gaming Service (50G-PON, fgOTN, NFV/Cloud)

Shown at MWC'26

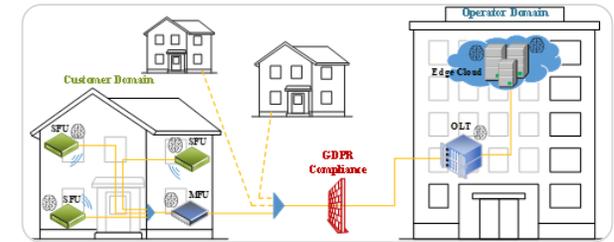
LLM for managing Optical Networks



Large Language Model based management of Optical Networks (telemetry, configuration, orchestration for optical networks)

Shown at OFC'26

Intelligence for Fibre to the Room



Intelligent FTTR for improved QoE, application identification, energy saving, multi-AP coordination, privacy preservation.

Shown at OFC'26

Industrial PON



Telemetry Streaming



Optical Service Networks



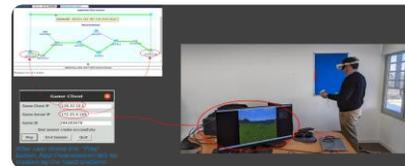
Cloud visual inspection



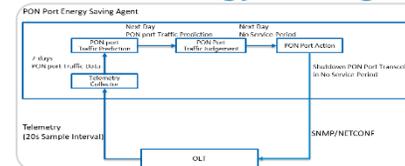
Cloud control of AGV



E2E M&C for VR service



PON energy saving



PoC Team Members



ETSI Whitepapers on AI for Fixed Networks



ETSI White Paper No. 69

AI in the evolution of Autonomous Networks

ETSI perspectives and major achievements

First edition – November 2025

Authors: Raymond Forbes (Forbes Ltd.), Luigi Licciardi, Yoshihiro Nakajima (NTTdocomo), Nick Sampson (Orange), Faraz Naim (Accenture), Benoit Radier (Orange), Aldo Artigiani (Huawei), Olivier Ferveur (Post Luxembourg); Marcus Brunner (Huawei), Yuan Xie (Huawei), Fernando Camacho (Huawei), Yu Zeng (China Telecom), Ricard Vilalta (CTIC), Massimo Banzì (TIM), Christos Tranoris (University of Patras), Kostas Trantzias (University of Patras), Muslim Elkotob (Vodafone), Scott Cadzow (Cadzow Consulting), Shahar Steiff (Esthertech), Giulio Maggiore (Fibercop), Xueli An (Huawei), Haitao Xia (Huawei), Dongjin Lee (SK Telecom).



ETSI-White-Paper-No.-xx

Strategies for AI Adoption in Fixed Networks: Challenges, Use Cases, and Future Directions

xx-2026

1

Author(s):

Behnam Shariati (editor) with contributions from Fraunhofer HHI, China Telecom, Dacoso, Deutsche Telekom, Huawei Paris Research Center, Infosim, Lune, MTN Nigeria, NOKIA, POST Luxembourg, RISE, Savantic, Telefonica, UC3M and Waystream.



ETSI-White-Paper-No.-xx

1

AI-enhanced Intelligent FTTR for New Services, Applications, and Experiences

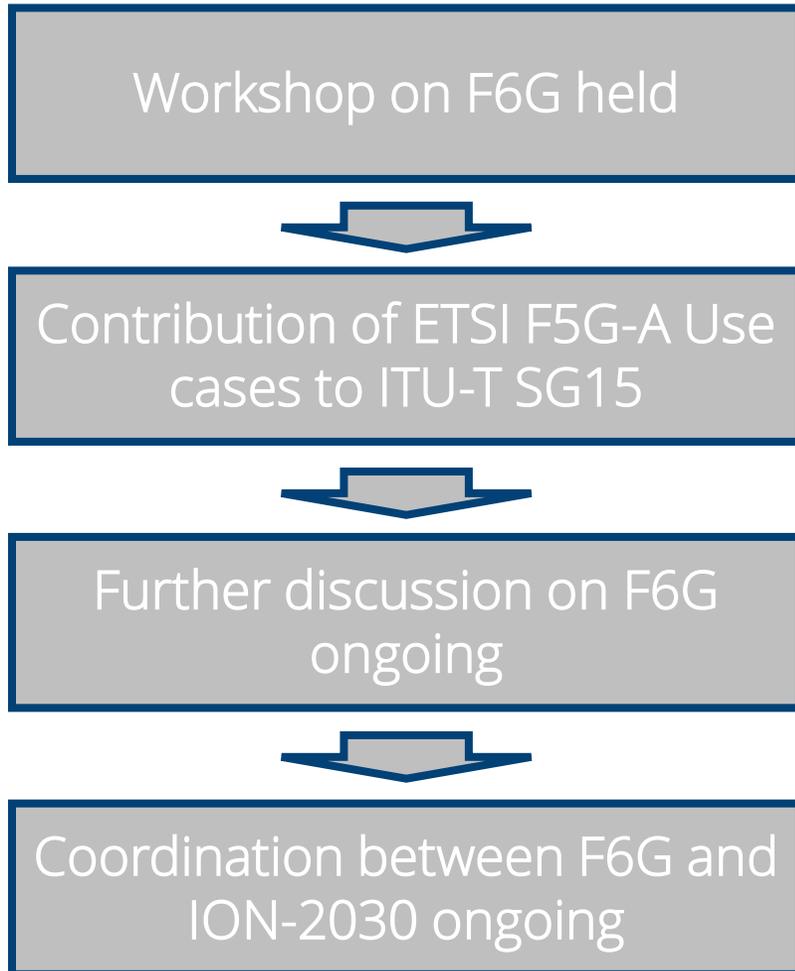
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xx-2026

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Author: Hang Shi, CAICT (rapporteur) with contributions from ART-Fi, BBF, CAICT, CCSA, China Telecom, China mobile, China Unicom, CICT, CTIC, Fraunhofer HHI, Huawei, ITU-T, STAR-NET, ZTE

The Road to F6G



ETSI logo | STANDARDS | TECHNOLOGIES | COMMITTEES | MORE | Search

F6G Defining the foundation of the next optical network generation

Blog-F5G | Marcus Brunner, Vice-Chair of ETSI ISG F5G | Tuesday, 18 November 2025 | 3146 Hits

ETSI ISG F5G has brought together industry, academia, and research experts to start shaping the vision for F6G: the next generation of fixed optical networks. The workshop included visions and priorities for F6G from different perspectives, use cases, scenarios, and business needs, research and technologies currently in development for F6G, key challenges on the path to F6G.

[Summary](#)

[Presentations](#)

Summary: F5G Advanced for 10Gbps Everywhere

Industry Trend: Move to 10Gbit/s

- Improving quality and performance (application-specific)
- Addition of AI capabilities everywhere
- 10Gbit/s everywhere for everybody

F5G Advanced Key Technologies

- Wi-Fi 7
- FTTR, FTTO, FTTM
- 50G-PON
- fgOTN and 800G
- Intelligent and autonomous E2E management
- Energy-efficiency through all-optical networking

Outlook

- F5G-A Release 5 in progress
- New Use Cases in preparation
- Enhancing the F5G-A Architecture (AI, All-optical, Integrated Computing)
- Further Discussion on the F6G/ION-2030 Vision

F5G Advanced Boosts Industrial Intelligence





Thank you for your attention

OFC

ETSI and ITU Present Advances in International Optical
Networks Towards 2030 and Beyond (ION-2030)



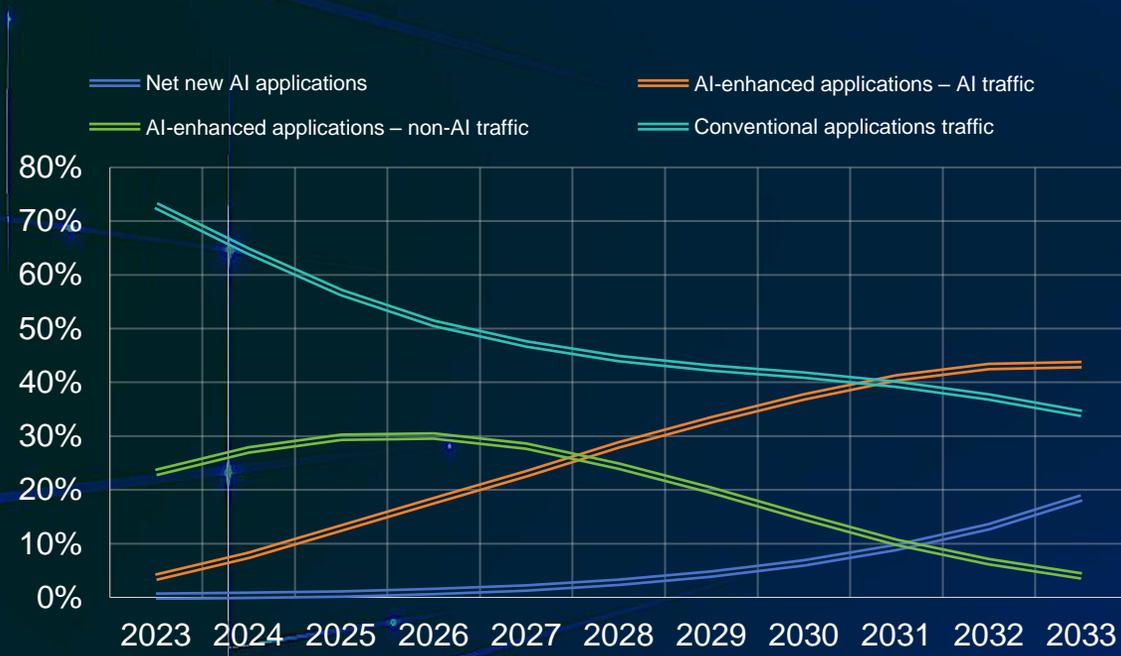
Progress on AI-OTN and ION-2030 for Datacenters Optimized for AI

China Telecom Research Institute
Dr. Yuyang Liu, Editor of GSTR.ION-aiDC
March 2026



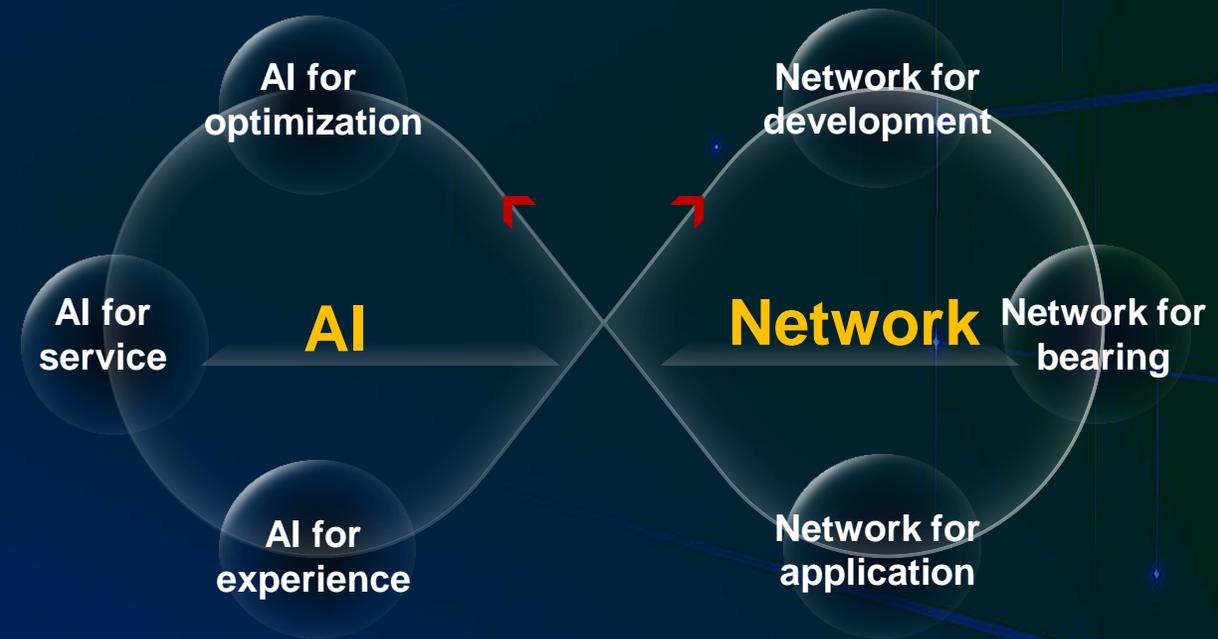
Development of optical network

The explosive growth in business demand brought about by **AI technology** will result in AI traffic accounting for **62%** of the total global network traffic by 2033. AI and network technology are gradually evolving from independent to collaborative.



Source: Omdia, AI Network Traffic Forecast 2023-33

AI traffic trends



AI and Network

All optical network 3.0 for AI era



China Telecom AON 3.0: Center around “**All-Optical Intelligent Connectivity**”, commit to building an **all-optical intelligent connection system** with the following three visions, lay a solid foundation for the network infrastructure **in the AI era**

Optical-Sensing-Service Convergence

By deeply coupling optical communication with **optical sensing**, the transition from a “connection channel” to a “**perception hub**” can be realized, driving the shift of optical networks from a passive transmission model to a paradigm that combines **active sensing** and **differentiated services**.

Optical-Cloud-Intelligence Convergence

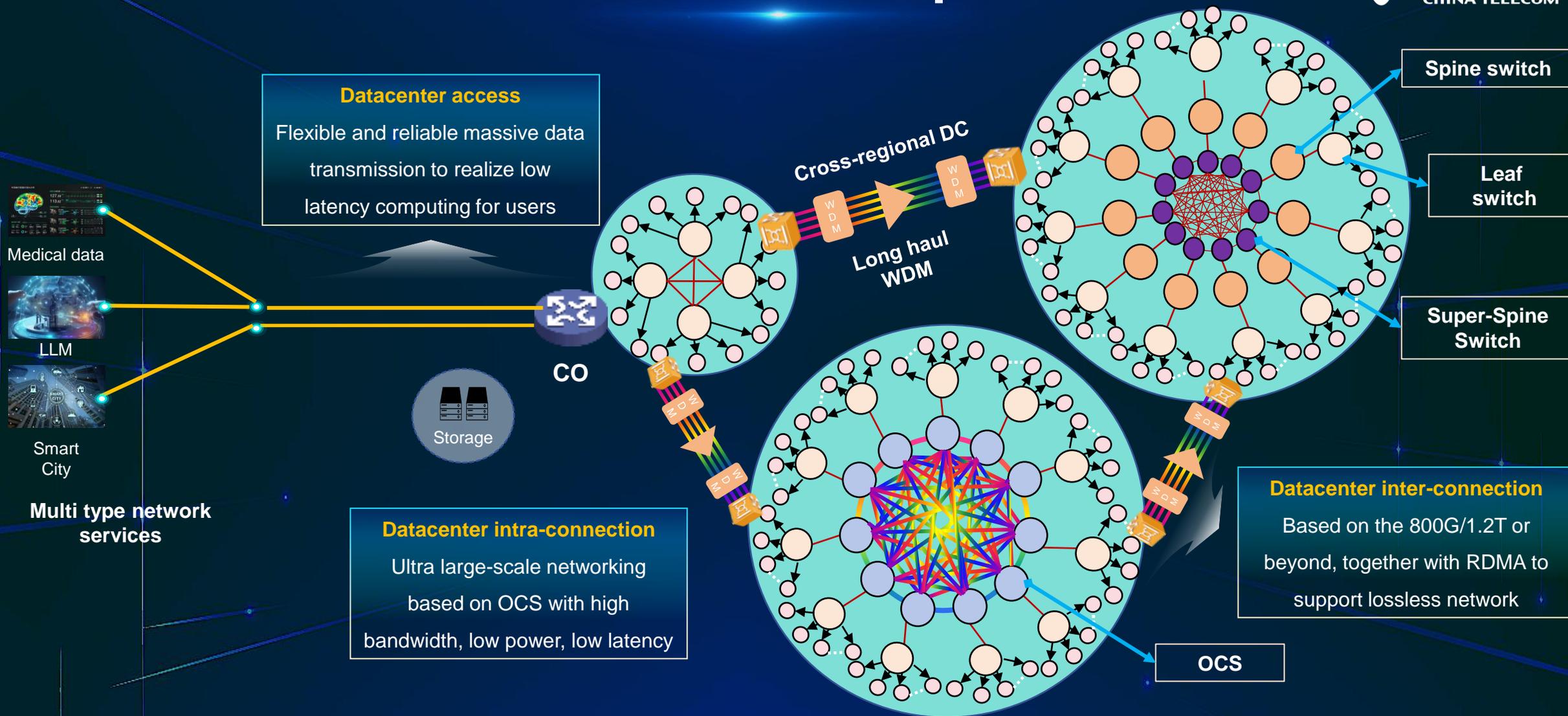
Optical networks support the efficient connectivity of **massive amounts of data**, and enable deep integration with cloud resources through **intelligent** upgrades.

AON 3.0

Space-Ground-Sea Convergence

Through multi-dimensional network integration technologies, **space-based** optical networks (satellite communication), **airborne** optical networks (aerial platforms), **ground** optical networks, and **submarine** optical networks can be organically coordinated.

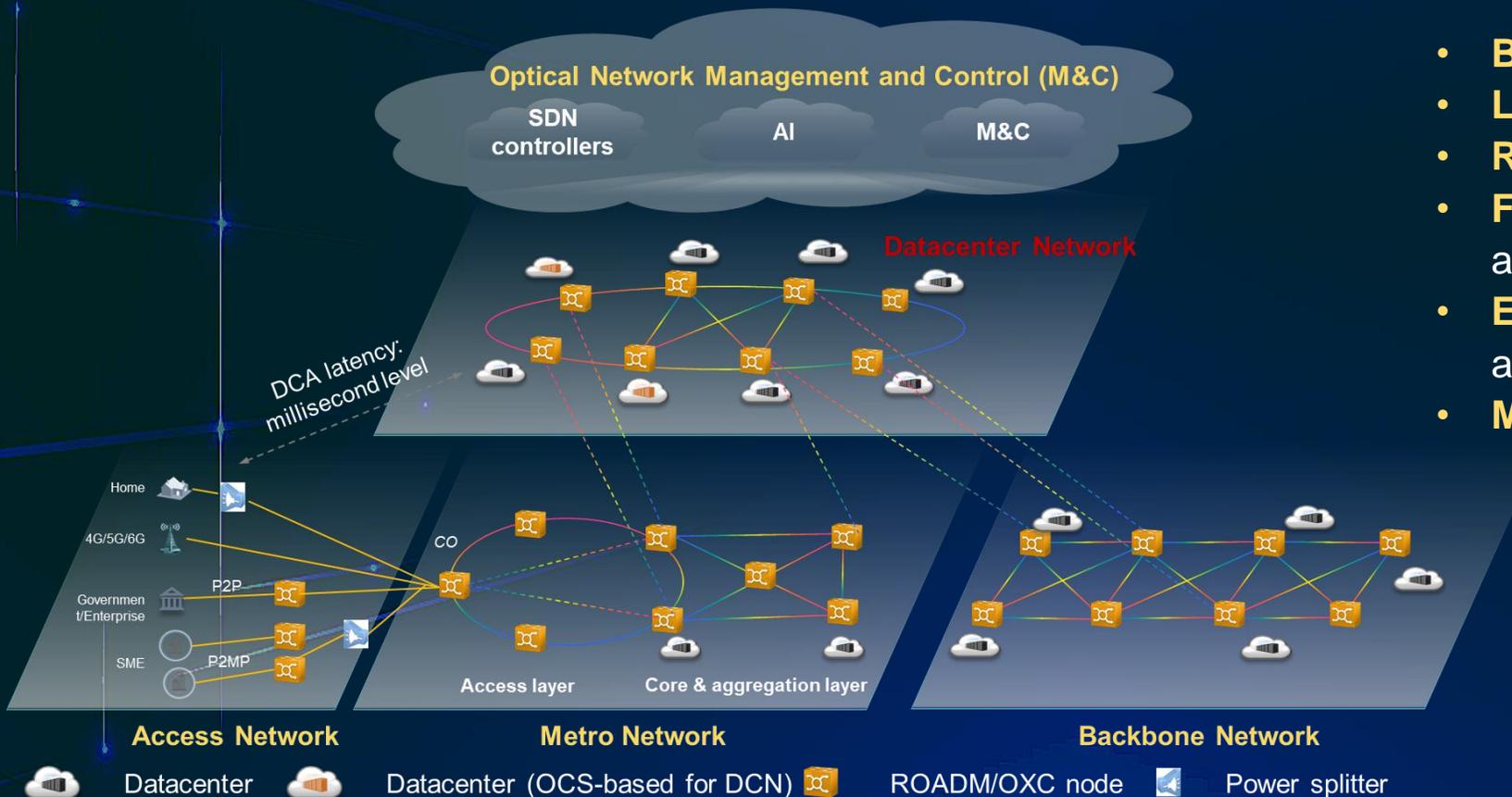
Core: build a DC-centric optical network



Network empowers computing, to build high quality DC networks

Architecture of DC-centric optical network

ION-2030 for DC (GSTR.ION-aiDC): Build an intelligent optical network spanning access, within, and across data centers, integrating DCA, DCN, and DCI to support large-scale AI training, real-time inference, and cloud workloads.



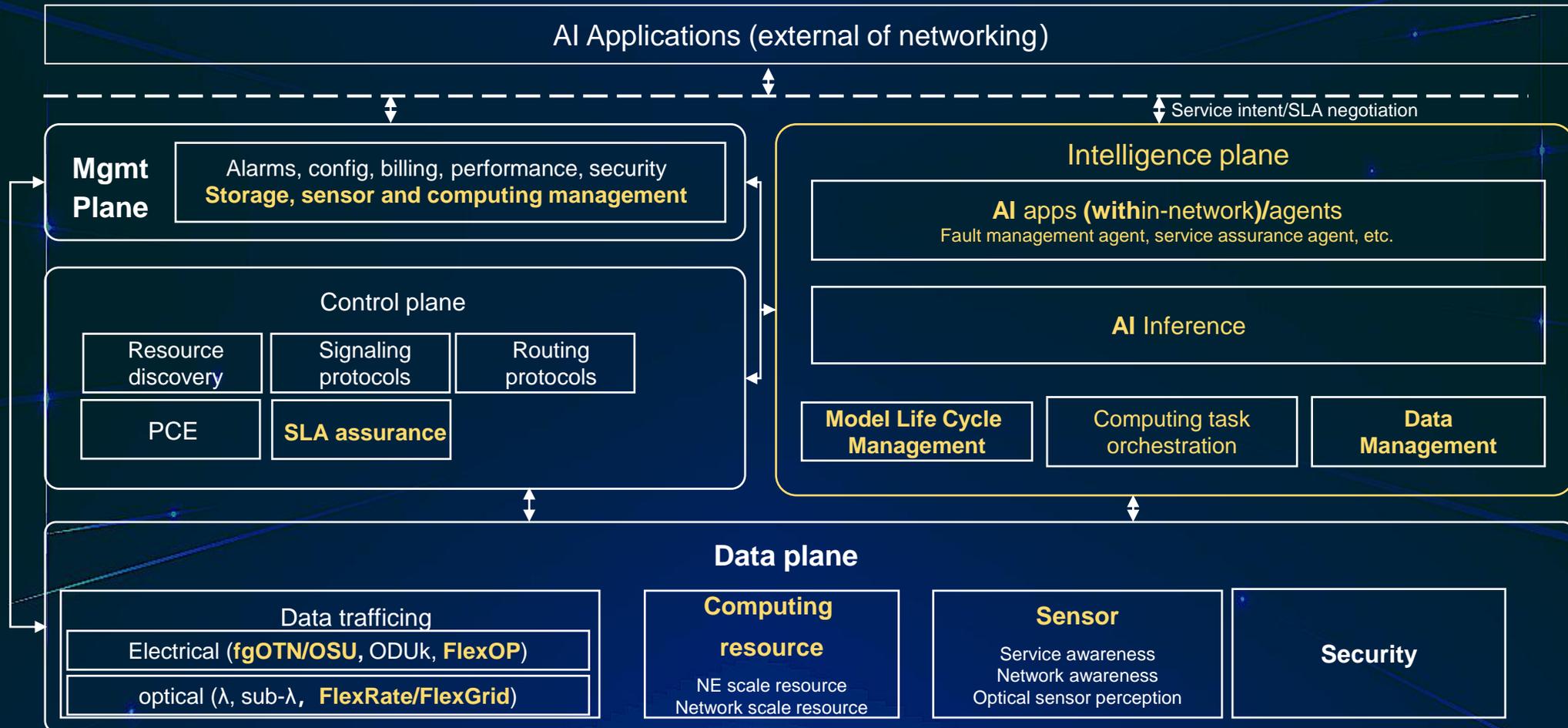
KPIs

- **Bandwidth:** 800Gb/s/λ between DCs
- **Latency:** millisecond connections to DCs
- **Reliability:** Lossless restoration/protection
- **Flexibility:** ROADM/OXC/WSS enabled all-optical routing
- **Efficiency:** Energy-and-resource-efficient architectures (OCS-based DCN)
- **M&C:** AI-assisted intelligent M&C

Provided by China Telecom
 Source 1: ITU-T GSTR.ION-2030, 2025.10
 Source 2: ITU-T GSTR.ION-aiDC, under study
 (Yuyang Liu and Raul Muñoz)

AI-OTN: empowering future optical network 中国电信 CHINA TELECOM

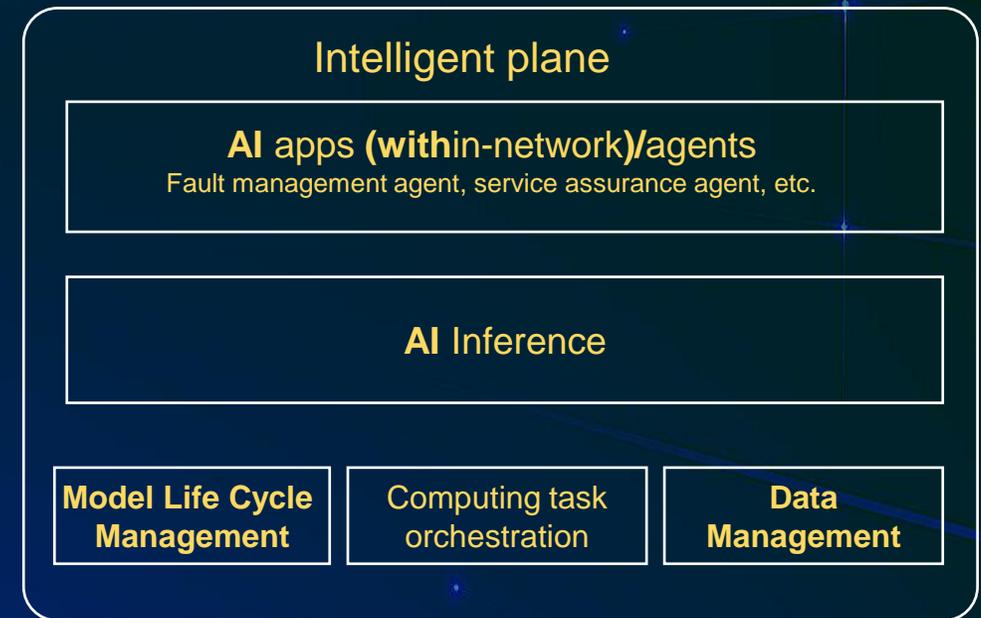
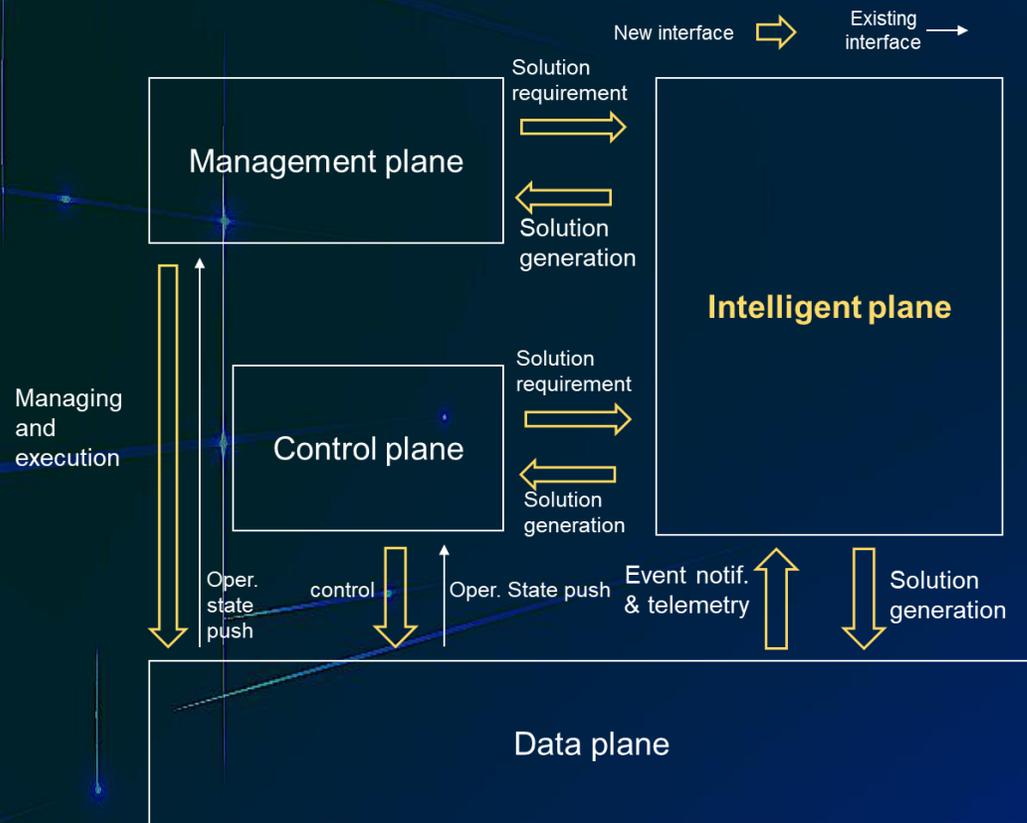
AI-OTN: Aims to build an intelligent optical transport network that efficiently carries AI workloads (N4AI) while using AI to optimize and automate network operation (AI4N).



New feature: Intelligent plane is introduced



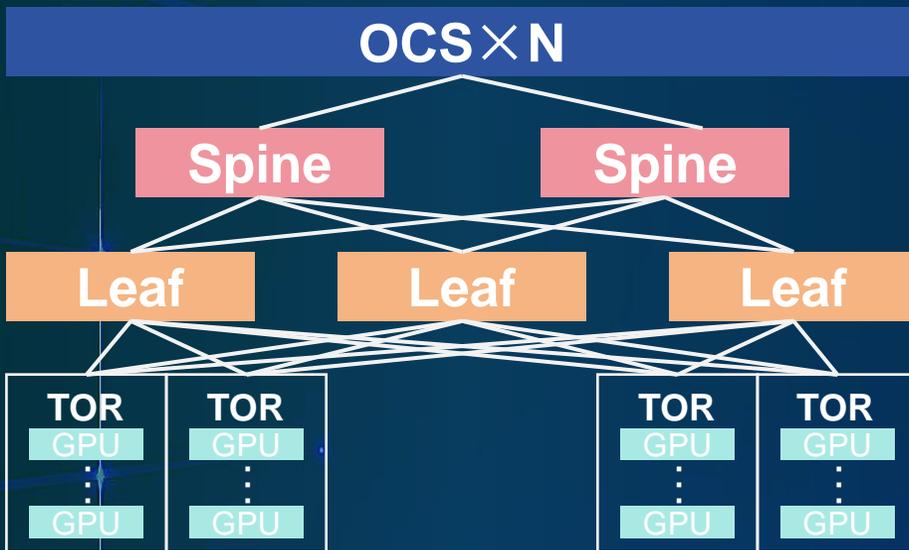
Intelligent plane of AI-OTN: Responsible for AI apps (agents), network state perception, intelligent analysis, and policy generation, enabling AI-driven optimization, decision-making, and closed-loop control of the network.



Practice@DCN: OCS for DC

China Telecom has completed the world's first operator DCN architecture based on optical circuit switching (OCS)

OCS-based DCN



- **Large scale:** Network scale can reach millions of GPUs in the future
- **Easy Evolution:** Rate independent, support 400G, 800G, 1.6T, etc
- **High reliability:** no optical module, reduced failure rate by 17%+
- **Low power consumption:** all-optical switching, saving about 20% of network power compared to three-layer fat trees

Field and lab results

GPU P2P latency reduced by 14%



Power consumption reduced by 19%



Reduce optical modules
Reliability up by 17%↑



Rate independent
Supporting 400G/800G/1.6T



Practice@DCI: Distributed AI tasks

Ultra-low latency

- All optical direct communication and all optical exchange between intelligent computing clusters.

Ultra-high reliability

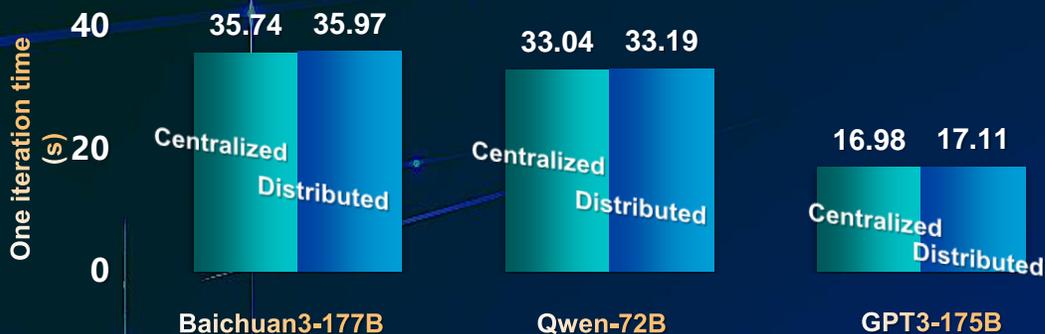
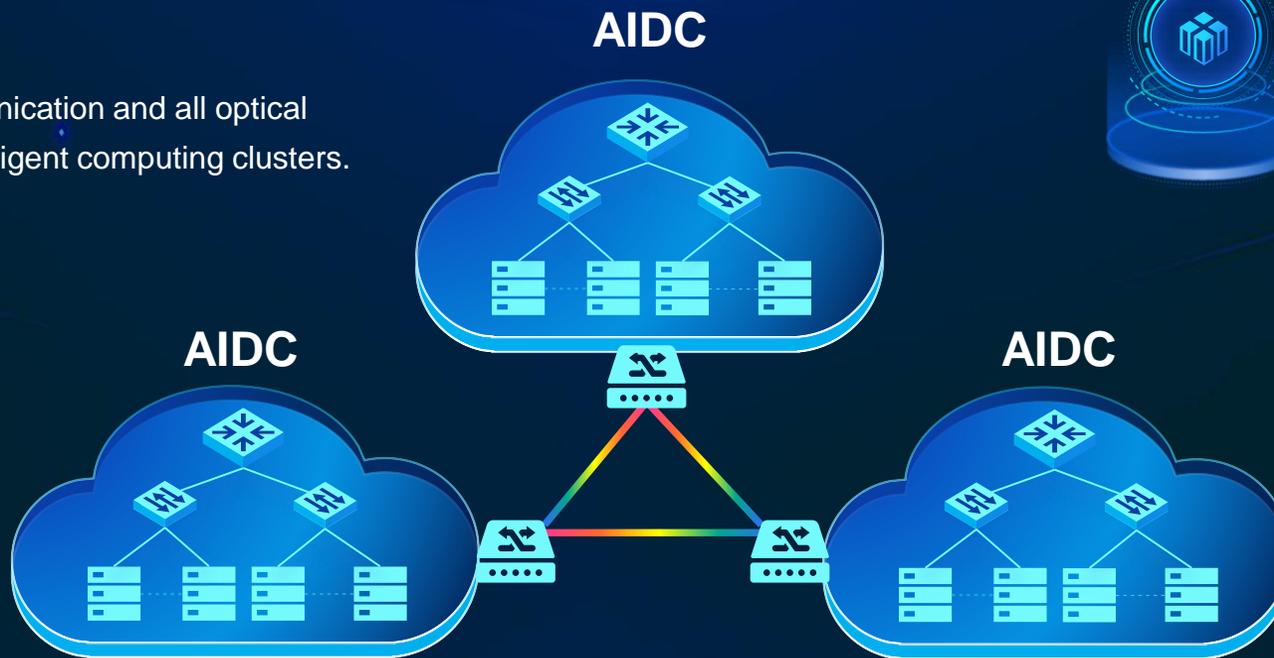
- Full stream packet loss monitoring
- Precise flow control of switches
- 50ms WSON

Ultra-high bandwidth

- 800G/λ
- C+L spectrum
- 96T/fiber

Agile Intelligence

- Intelligent M&C
- Agile network resilience, automatic business building and dismantling



The performance can reach over 97% of that of single data center training

New equipment for distributed network, 8%

Electromechanical support, 9%

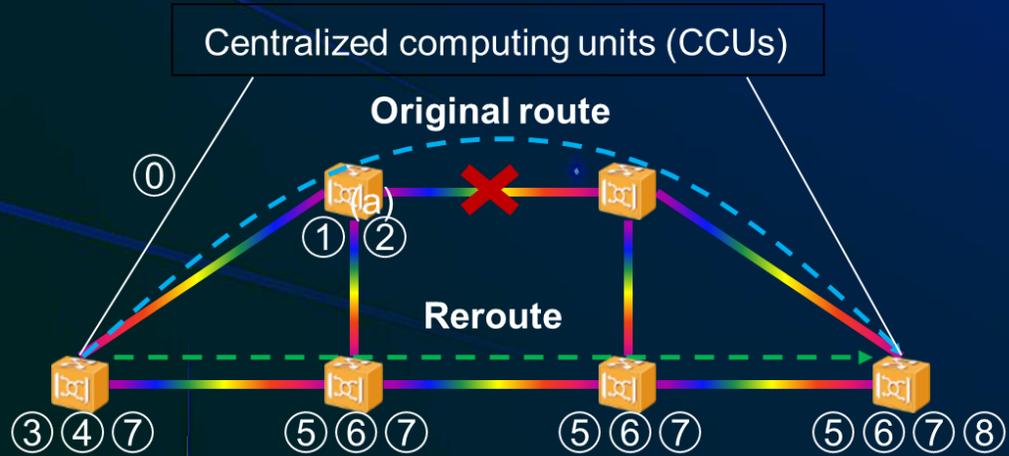
Liquid - cooled intelligent computing server & liquid - cooled cabinet 73%

Intra - DC networking equipment, 10%

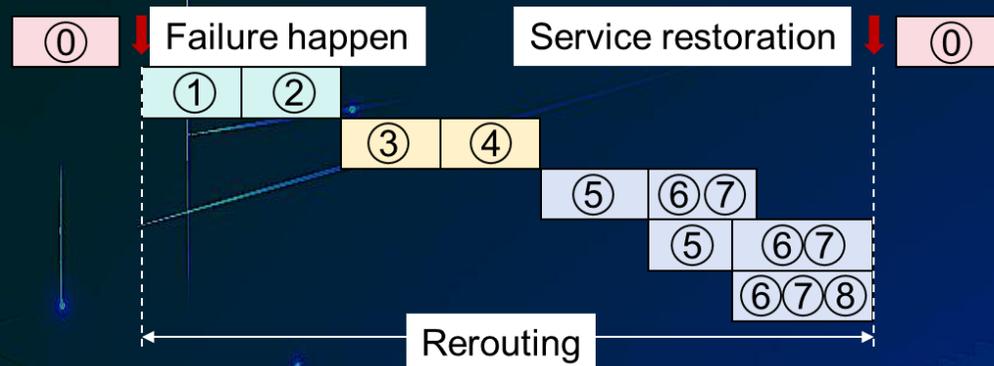
Economically Viable

Offering a low-cost solution for intelligent computing infrastructure construction

Practice@DCI: 50ms WSON



- ① Detecting fault
 - ② Notifying the first node
 - ③ Finding restoration path
 - ④ Sending activation packets
 - ⑤ Forwarding activation packets
 - ⑥ Processing activation packets
 - ⑦ Switching signal using WSS
 - ⑧ DSP reconstruction
- Transmission node



Channel	Wavelength (nm)	Time (ms)
CH1	1524.46	43.21
CH7	1531.47	43.24
CH20	1546.89	43.33
CH40	1571.22	44.42

➤ We have further conducted a four-site field trial (with training and inference), and the results have been submitted to JOCN as an invited paper.

Summary and Outlook



- **(AON 3.0)** AI workloads are reshaping datacenter traffic patterns and driving the evolution of network infrastructures, so an all-optical intelligent connection system is introduced.
- **(ITU-T GSTR.ION-aiDC)** Future optical networks are becoming datacenter-centric, integrating DCA, DCN, and DCI to support large-scale AI computing.
- **AI-OTN** provides the key transport capabilities—high capacity, deterministic performance, and intelligent operation—to enable this architecture.
- Continuous innovation and deployment of AI-OTN will accelerate the evolution toward intelligent optical networks for AI-era all optical network (AON 3.0).
- **GSTR.ION-aiDC** is now conducting a correspondence activity (15 Mar 2026 - 31 May 2026, ITU-T SG15 Q6) led by Co-Editor Raul Muñoz of CTTC. Contributions Welcome!

OFC

ETSI and ITU Present Advances in International Optical
Networks Towards 2030 and Beyond (ION-2030)



Thanks!

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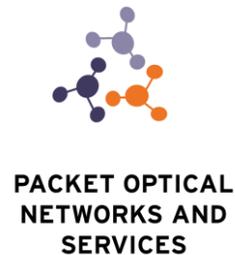
Mutual Empowerment between ION-2030 and AI: ION-2030 for AI & AI for ION-2030

Raul Muñoz, PhD

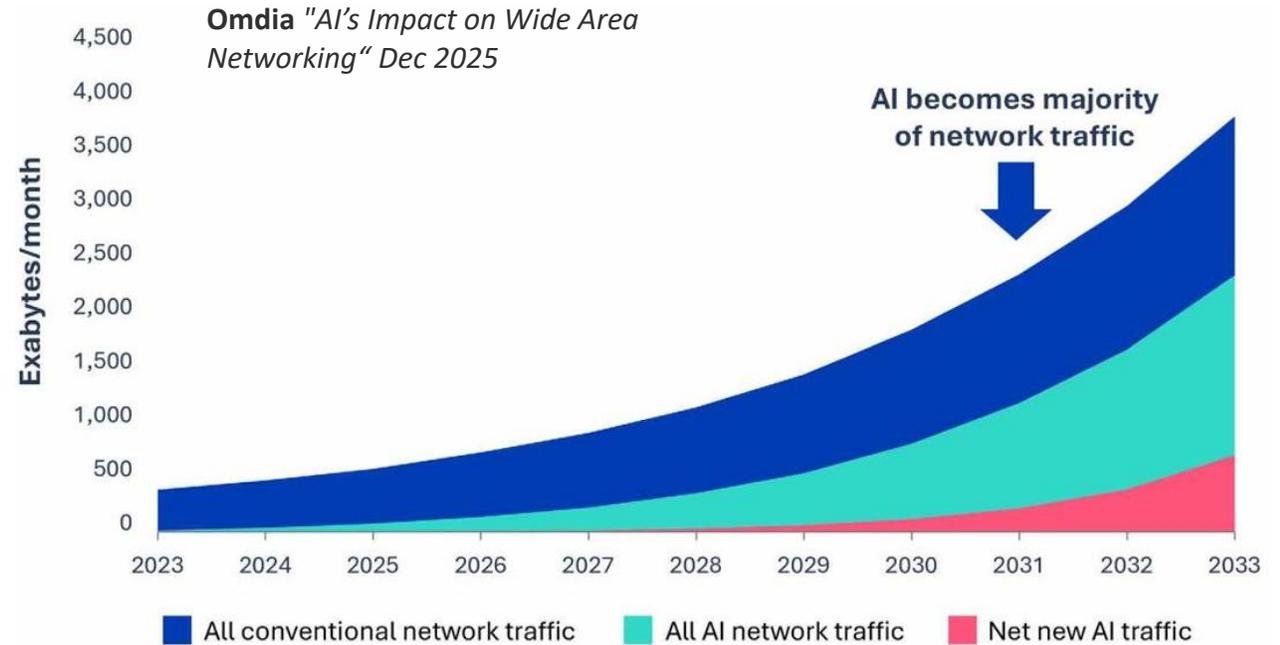
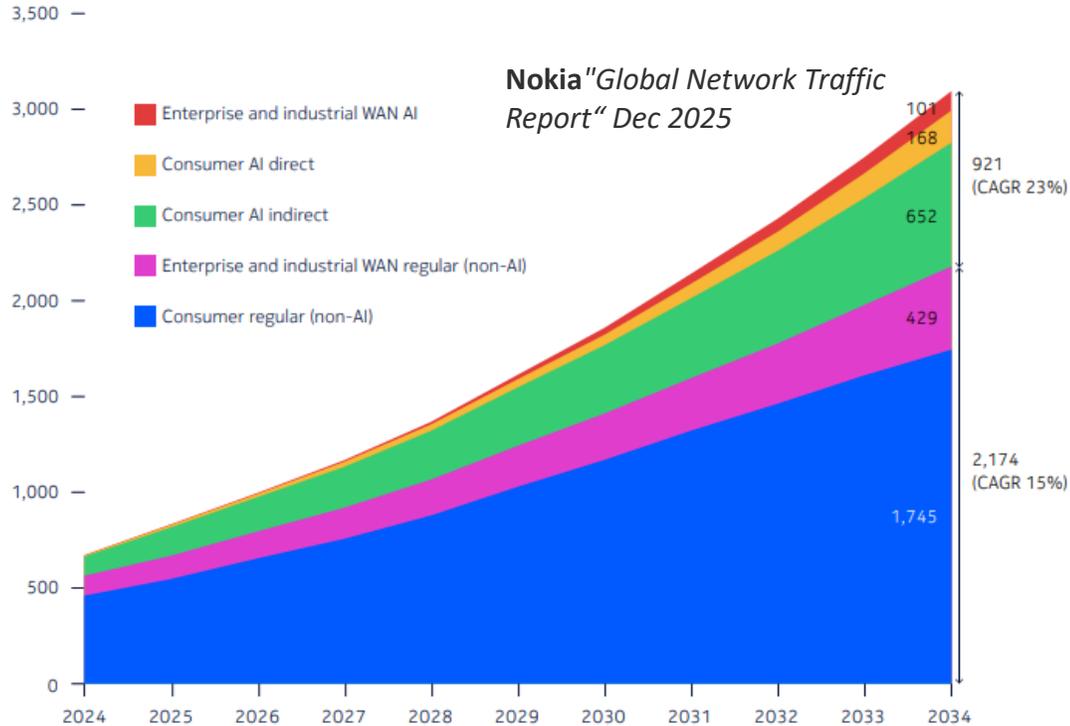
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Centre Tecnològic de Telecomunicacions de Catalunya (CTTC)

Barcelona (Spain)



PROJECTED TOTAL GLOBAL NETWORK TRAFFIC: NETWORK PARADIGM SHIFT IN THE AI ERA

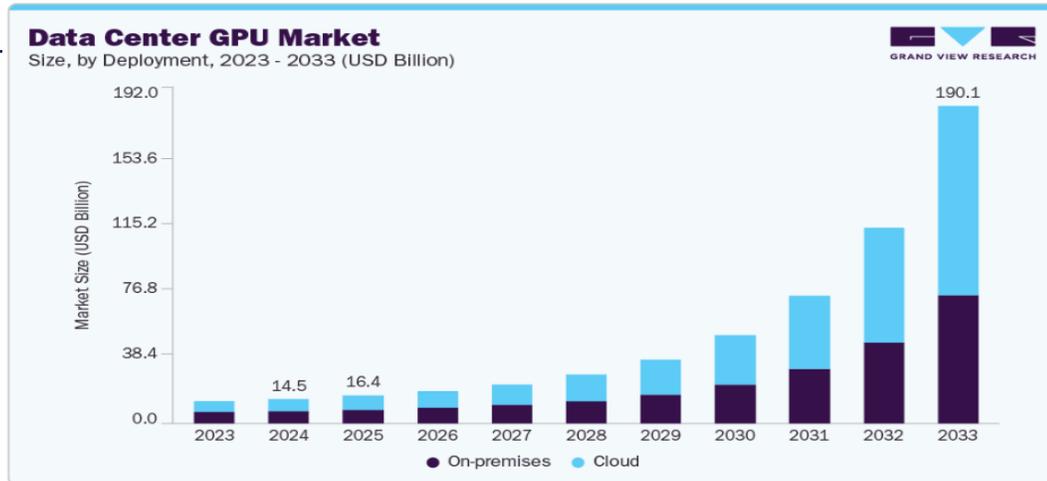


Conservative/Moderate projection:

- AI traffic represents 30% of total global traffic in 2034.
- AI-related traffic becoming the primary growth engine (CAGR 23% vs 15%)

Aggressive projection:

- The big flip: AI is projected to eclipse conventional traffic around 2031.
- AI traffic will account for 79% of total global traffic in 2035




Runaway energy demand

- Data center electricity use is projected to grow **15% per year through 2030**
- Over **4x faster** than the rest of the economy.



Cooling + water crisis

- AI heat densities are outpacing air cooling;
- The shift to liquid cooling could push global data center water use to **450M gallons/day by 2030**—equivalent to the needs of **5 million people**.

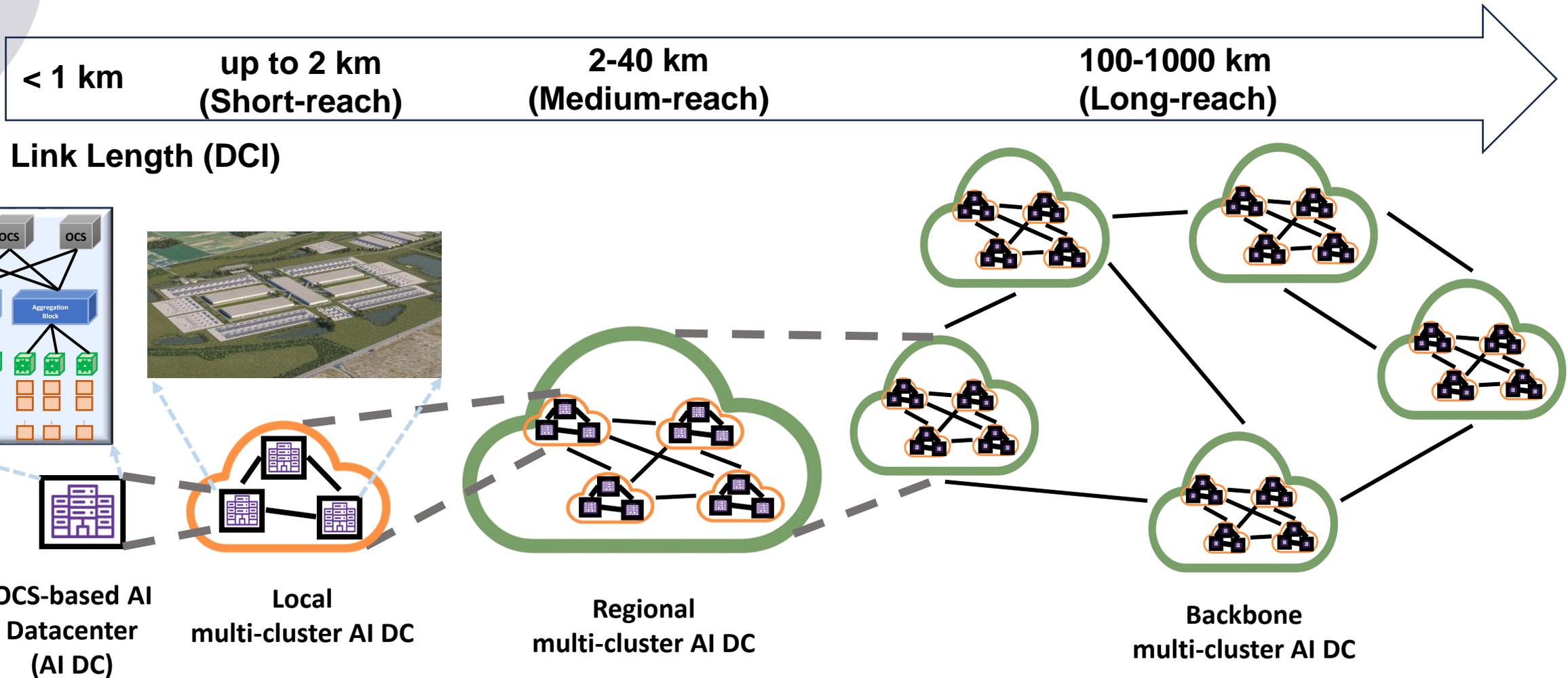
IEA "Energy demand from AI" Apr 2025

WEForum, "The AI-energy nexus will determine AI's impact", Dec 2025

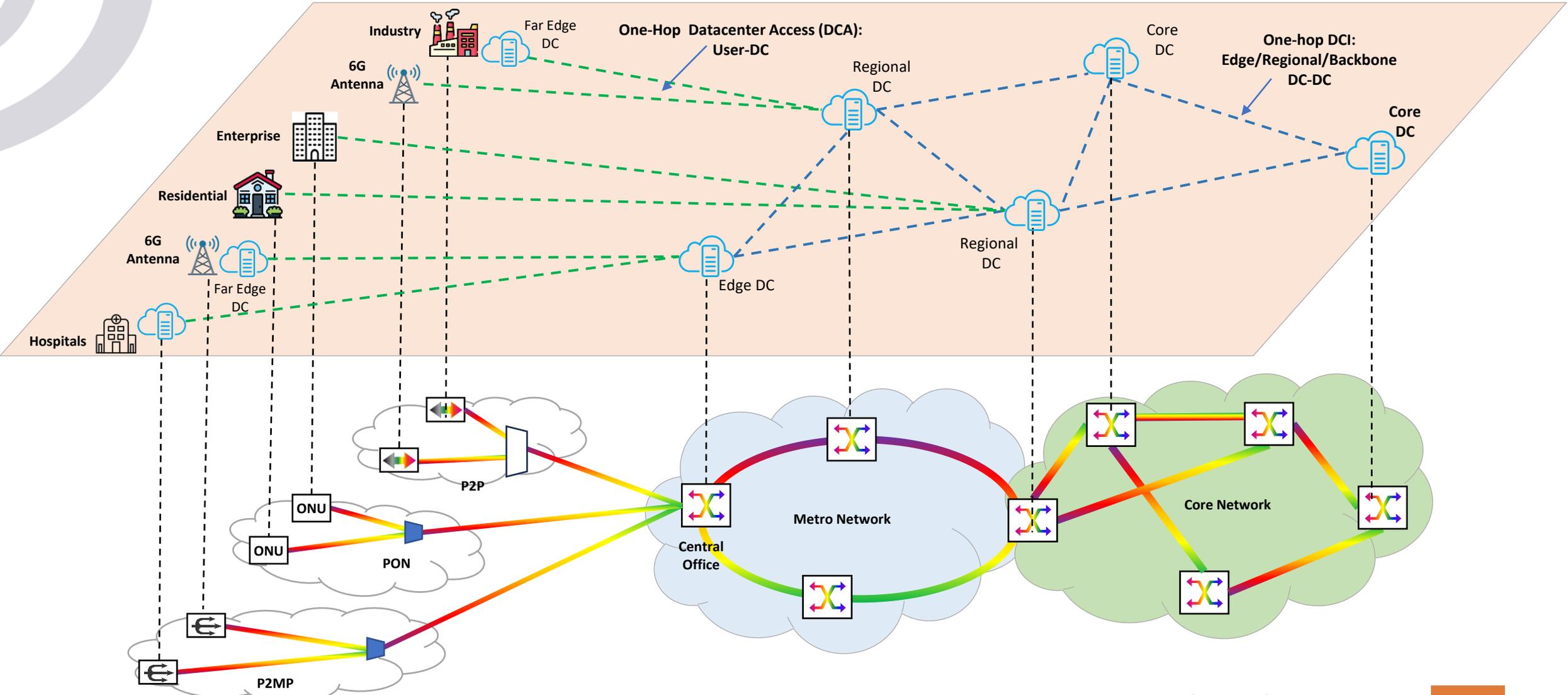
Nuclear Power Deals

-  signed its largest-ever 20-year PPA with Constellation Energy to restart the Three Mile Island Unit 1 reactor (renamed Crane Clean Energy Center), securing 835 MW of nuclear power. **September 20, 2024**
-  entered the world's first corporate deal to buy electricity from multiple small modular reactors (SMRs) developed by Kairos Power, aiming for 500 MW of new carbon-free baseload power by 2030-2035. **October 14, 2024**
-  (AWS) expanded its partnership with Talen Energy, signing a long-term PPA for 1,920 MW from the Susquehanna nuclear plant through 2042, and will explore developing new SMRs. **June 11, 2025**
-  announced agreements with Vistra, TerraPower, and Oklo to support up to 6.6 GW of nuclear capacity by 2035, including purchasing energy from existing plants and investing in next-generation reactors. **January 9, 2025**

TOWARDS A SUSTAINABLE AI: DISTRIBUTED AI WITH GEO-DISTRIBUTED DCs



SUSTAINABLE AI: DISTRIBUTED DCs WITH ONE-HOP OPTICAL DC ACCESS CONNECTION (DCA) AND DC INTERCONNECTION (DCI)



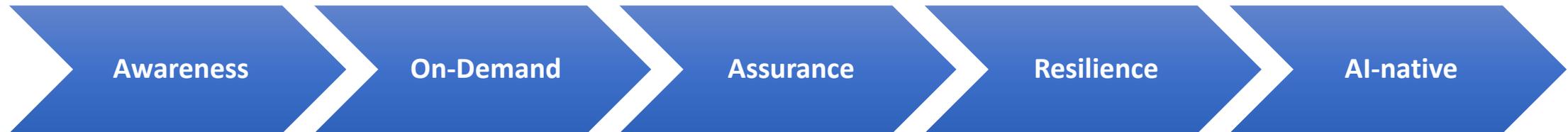
TRAFFIC REQUIREMENTS DRIVEN BY DISTRIBUTED AI/LLM WORKLOAD

Scenario	Traffic Type	Latency Sensitivity	Bandwidth Requirements	Resiliency Impact	Traffic Dynamism
Training (Intra-DC and multi-cluster GPU Parallelism)	GPU-to-GPU synchronization (all-reduce, tensor/pipeline parallel flows across GPUs and nodes)	Ultra-Critical — sub- μ s latency needed to avoid GPU idle time	Ultra-High — 400–800+ Gbps/GPU for large-scale LLMs	Very High — loss of gradient/state sync corrupts training and forces restart	Structured Dynamic — deterministic, iteration-driven communication patterns
Training (Cross-DC Checkpoint & State Sync)	Checkpoint transfers, model-state replication across datacenters	Important — high latency slows training recovery and increases RPO/RTO	High — large periodic bursts (tens–hundreds of GB)	Very High — missing/corrupted checkpoints require rollback or retraining	Structured Dynamic — predictable scheduled bursts
Inference (Client–Server North–South Traffic)	User prompts, context retrieval (RAG/KV), token streaming	Ultra-Critical — directly impacts end-user latency (<100 ms typical target)	Low → Moderate — depends on prompt size, request rate, cold starts	High — timeouts or dropped responses degrade user experience	User-Driven Dynamic — shaped by QPS spikes and human-driven request patterns
Inference (Intra-DC Multi-GPU East–West Traffic)	KV-cache sharing, model sharding, inter-GPU coordination	Critical — affects token generation speed and throughput	Moderate — lower than training but rising with multi-GPU inference	Moderate — impacts performance but not model correctness	Structured Dynamic — stable intra-session sync patterns



The AI era requires deterministic, high-performance, and autonomous optical networks.

- Optical networks are **not just pipes, but intelligent, adaptive infrastructures** enabling the AI era.



- Evolve from a best-effort pipe to a **service- and application-aware fabric**. Understand SLAs (bandwidth, latency, jitter, loss, availability), learn **traffic requirements and map them** to appropriate paths, priorities, and slices.

- Connectivity and capacity are **instantiated, scaled, and released on demand** via intent-based APIs for DC operators, OTTs, verticals, and orchestrators.

- **Deterministic provisioning guarantees:** bandwidth, latency/jitter. Once a connection is established, **performance should be stable and measurable** end-to-end to keep SLA.

- **Anticipate** degradations, **reconfigure** paths in near real time, and **sustain service continuity** without eroding performance

- AI/ML is **embedded across the stack** to predict demand, anticipate risk, and optimize resources.

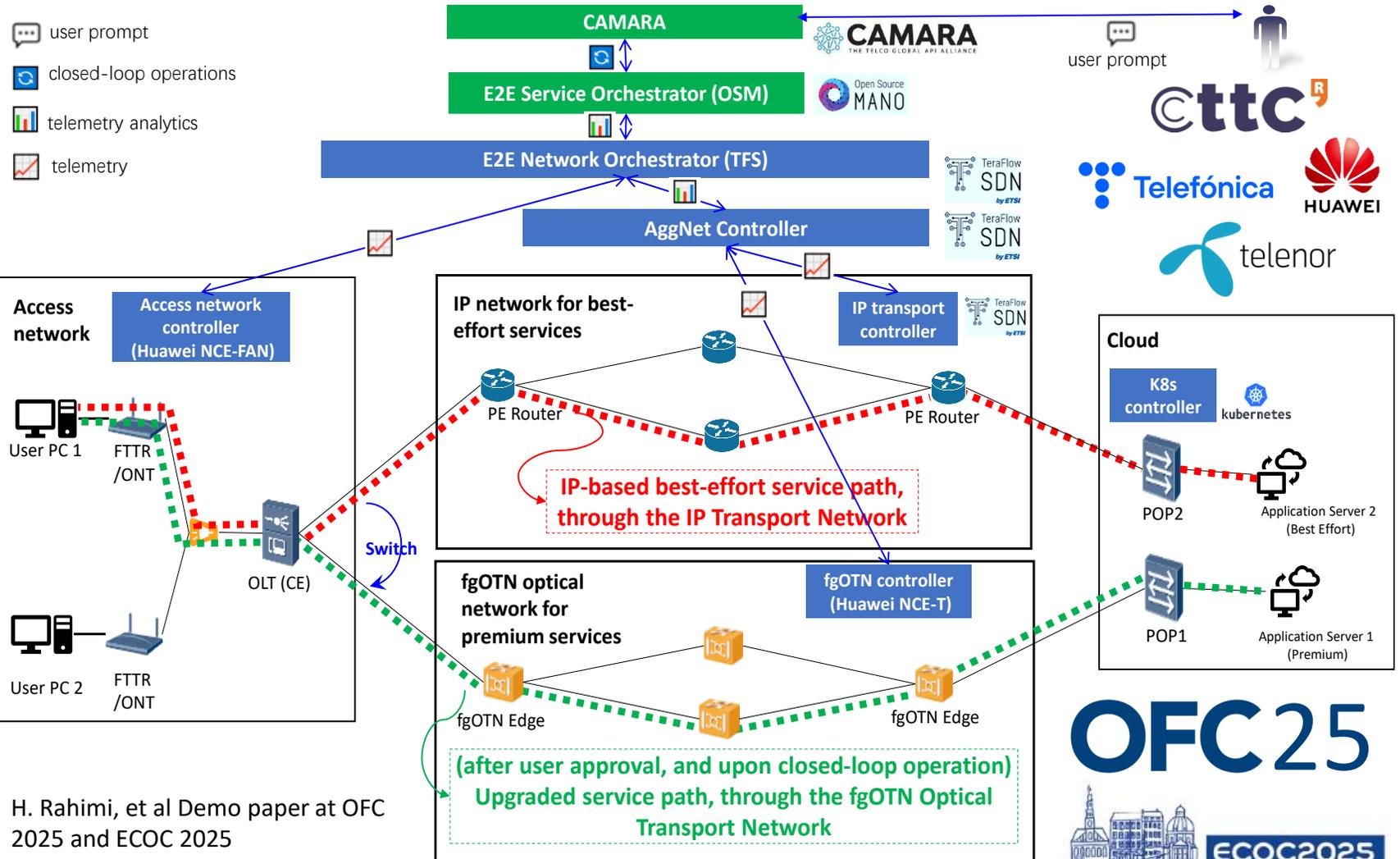
ETSI F5G PoC OPEN-SOURCE AND STANDARD-BASED NaaS PLATFORM FOR F5G-A NETWORKS WITH CLOUD IMMERSIVE APPLICATIONS

On-demand user provisioning of QoS VR-gaming services through CAMARA (Premium and Best-Effort).

End-to-end network slice provisioning with guaranteed QoS, integrating both access and transport slicing.

Real-time service telemetry with AI-driven analytics for traffic prediction and early SLA-violation detection.

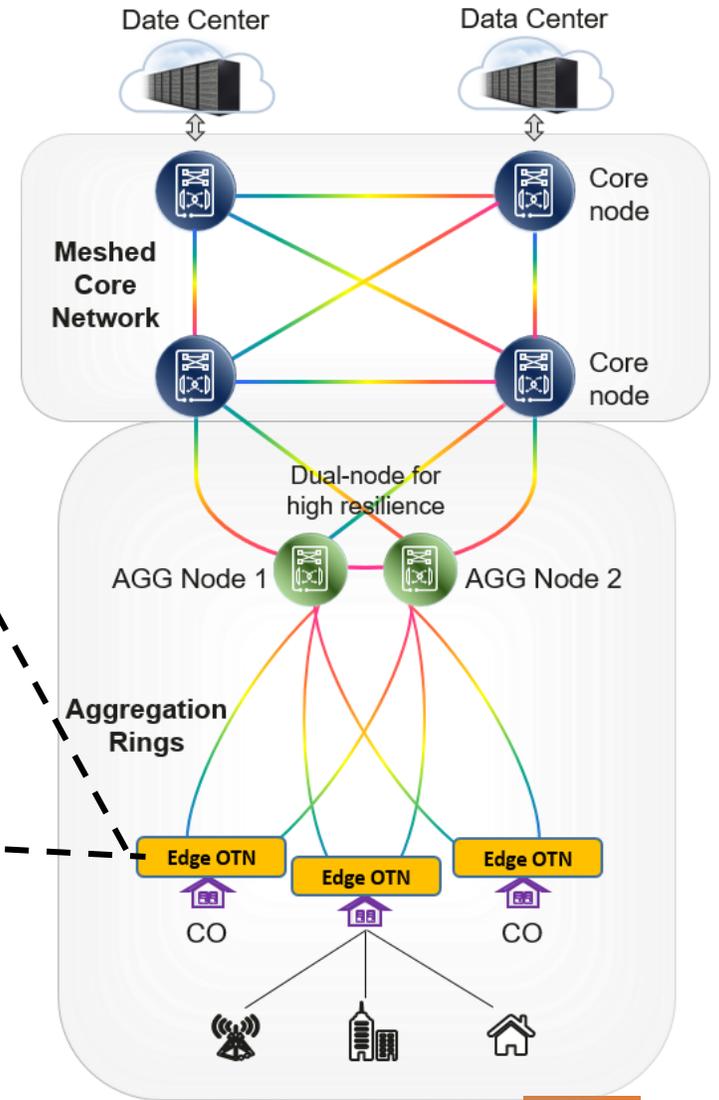
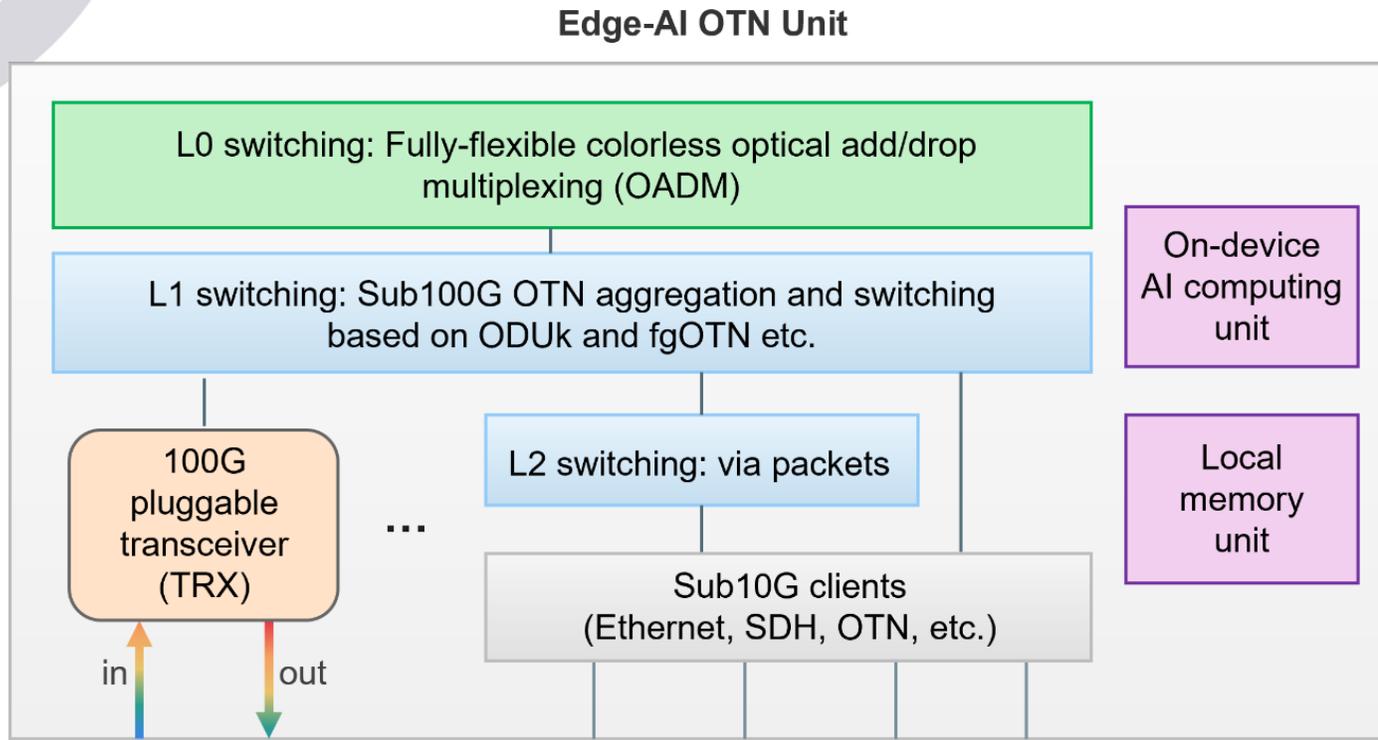
Fully autonomous closed-loop control enabling SLA assurance with adaptive, optimized service management.



H. Rahimi, et al Demo paper at OFC 2025 and ECOC 2025

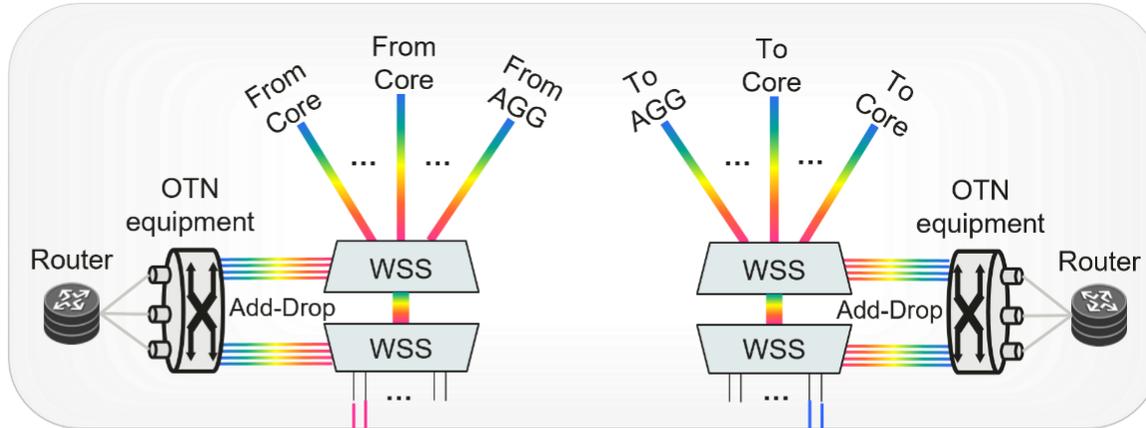


ION-2030 TR.ION-aiDC EDGE-AI OTN UNIT FOR SUPPORTING DISTRIBUTED AI AT THE NETWORK EDGE

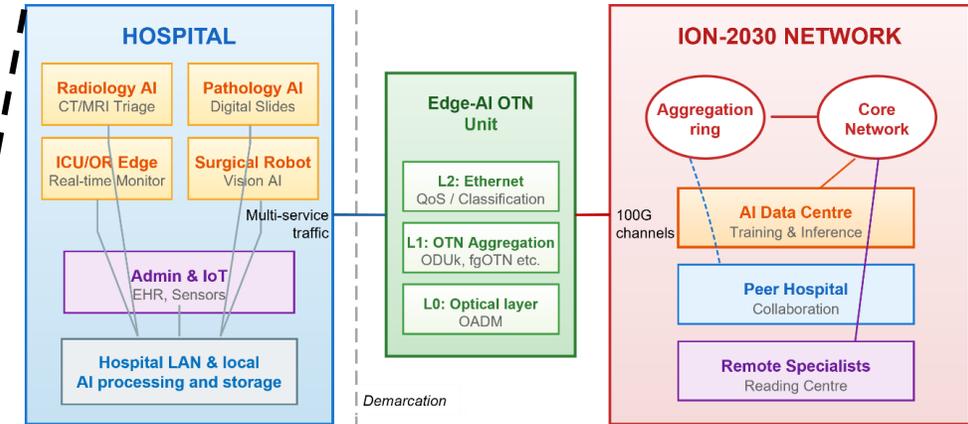
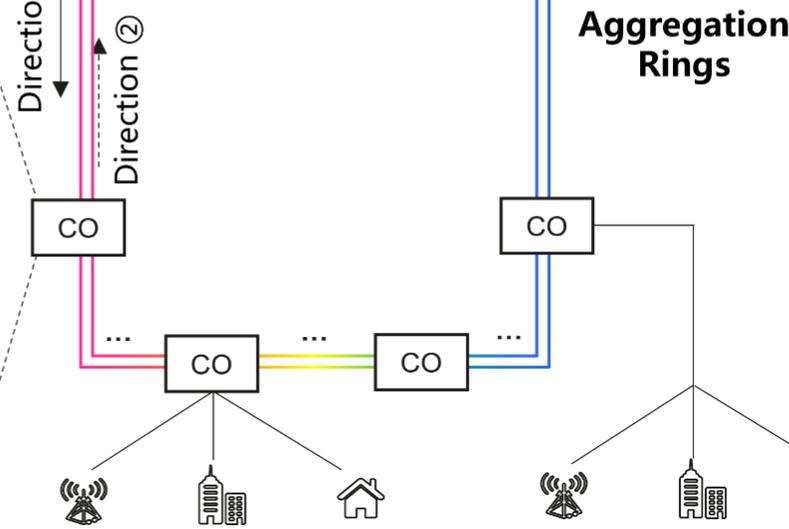
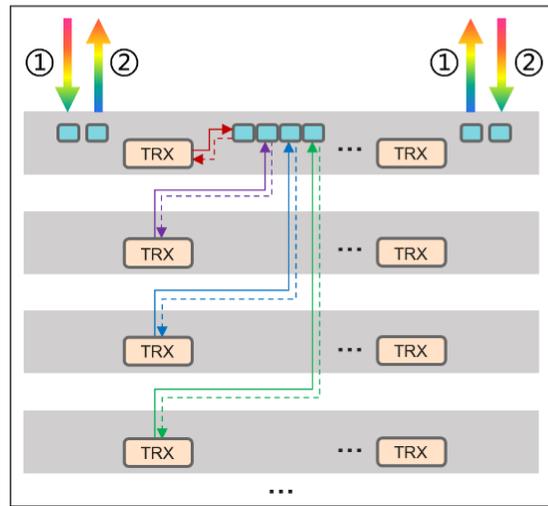


Reference: Raul Muñoz, Juan Pedro Fernández-Palacios, and Xiang Liu, “Edge-AI architecture with scalable OTN for the distributed intelligence vision of ION-2030”, ITU-T Q6/15 interim meeting contribution WD06-49 (Feb. 2026).

SCALING EDGE-AI OTN TO SUPPORT Nx100G SERVICE EXPANSION AND HOSPITAL USE CASE



This architecture aligns with ION-2030 objectives such as full flexibility, distributed intelligence, service-oriented transport with guaranteed SLA, and high energy efficiency (demand-driven allocation)



Reference: "Edge-AI architecture with scalable OTN for the distributed intelligence vision of ION-2030", ITU-T Q6/15 interim meeting contribution WD06-49 (Feb. 2026).

- **AI is redefining network requirements**, shifting global traffic patterns, accelerating East–West flows, and driving unprecedented pressure on optical transport.
- **LLM workloads create heterogeneous traffic classes**, from sub- μ s structured GPU synchronization to bursty user-driven inference, requiring differentiated, SLA-aware transport.
- **Best-effort networking is no longer viable**; AI/LLM workloads demand deterministic, high-performance, and autonomous optical connectivity end-to-end.
- **Next-generation optical networks must be AI-native**, integrating real-time awareness, closed-loop assurance, predictive control, and intent-based automation.
- **ION-2030 provides the blueprint** for sustainable, scalable, and service-oriented optical infrastructure enabling the global AI expansion.

Thank you! Questions?

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