

Etat des lieux des travaux de standardisation et perspectives d'évolution vers des réseaux 6G intégrant nativement l'IA



Laurent CIAVAGLIA
Nokia Mobile Infrastructure
Technology and Standard

La 6G à l'ère de l'IA : avancées de la standardisation et perspectives

Conférence IA & 6G
Construire le monde intelligent de demain

Paris, Octobre 2026



Architecting
tomorrow

The Nokia logo, consisting of the word 'NOKIA' in a bold, sans-serif font, positioned within a large white arrow pointing left.

Today AI is everywhere

Is a standard really needed?

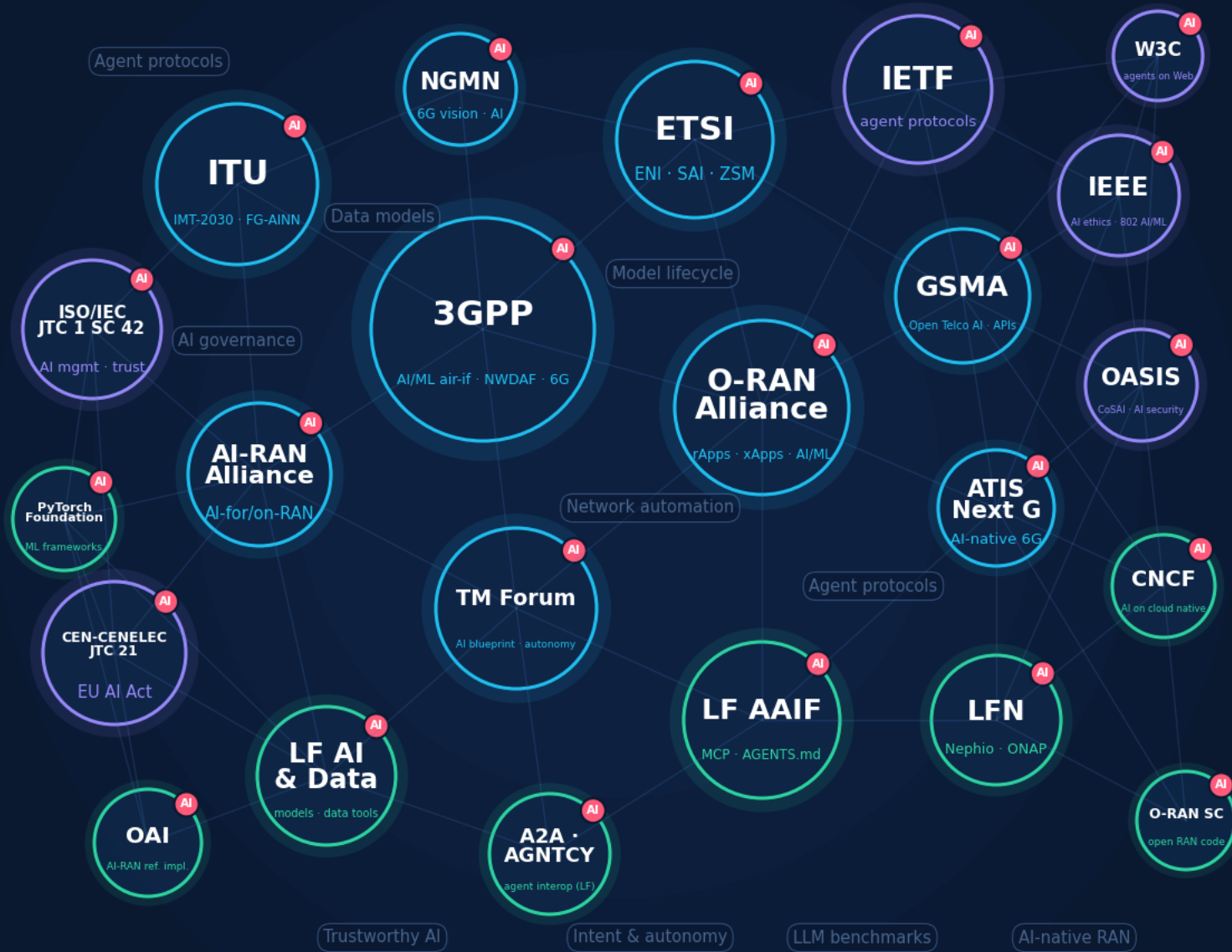
STANDARDS ENABLER	NO STANDARD NEEDED
✓ Multi-vendor interfaces	✗ Algorithms & AI models
✓ Protocols & exposure APIs	✗ Implementation choices
✓ Data models & semantics	✗ Product differentiation
✓ Trust, identity, conformance	✗ Topics already solved

Who will become the reference?

ADOPTION SIGNALS	WARNING SIGNS
✓ Operator & market pull	✗ Paper-only output
✓ Running code / ecosystem	✗ Single-vendor push
✓ Regulatory recognition	✗ Duplicated scope
✓ Cross-SDO alignment	✗ No adoption path

TODAY: AI IS EVERYWHERE

Every SDO, alliance and open-source foundation runs AI work items — overlapping scopes, duplicated topics



From connectivity to intelligence

AI redefines network needs



Humans



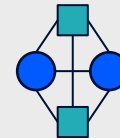
Machines/IoTs



AI agents/tokens

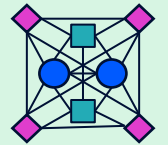
Today's networks

- Excel at connecting people and devices reliably and efficiently, optimizing speed, coverage and capacity
- They are still predominantly data transport systems



Tomorrow's networks

- Evolve from connecting data to understanding and processing intelligence
- They will provide perception, coordination, and governed autonomy.



2G & 3G

Built mainly for human communications

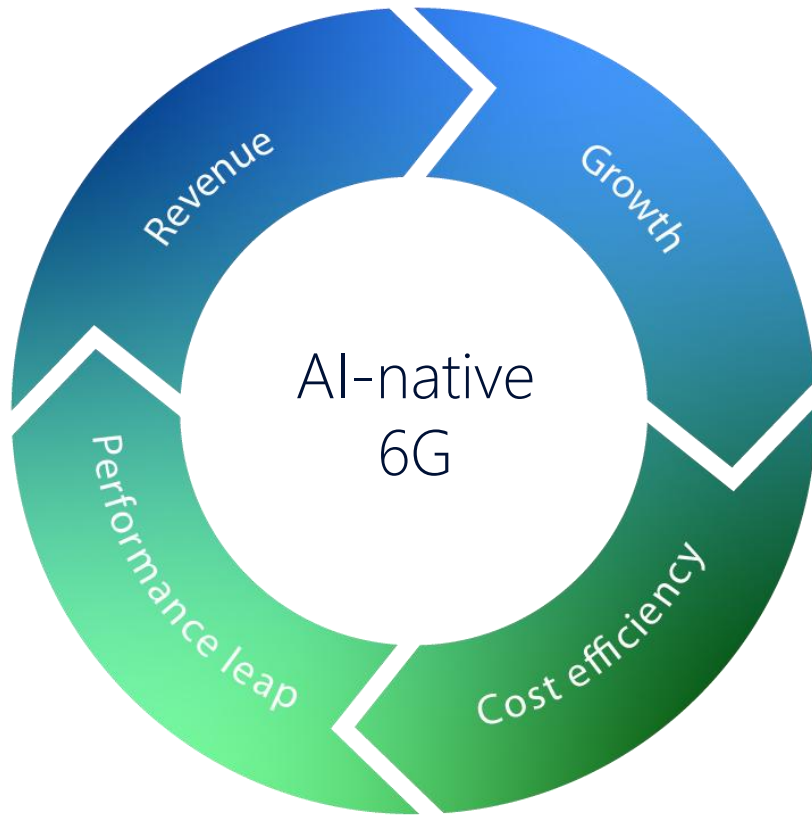
4G & 5G

Expanded to support machine and IoT connectivity

6G

Extend further to connect AI agents and intelligence

The value-creation potential of AI-powered networks



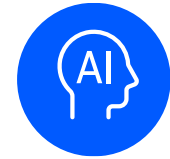
Distributed Intelligence and Automation

Supporting the embedding of intelligence into all network components



AI as a service

Hosting/inferencing, training/fine-tuning services for AI workloads



Agentic AI systems

AI agents for end customers and network operations



Compute and communication convergence

Support latency critical and/or compute heavy services



Security and trust

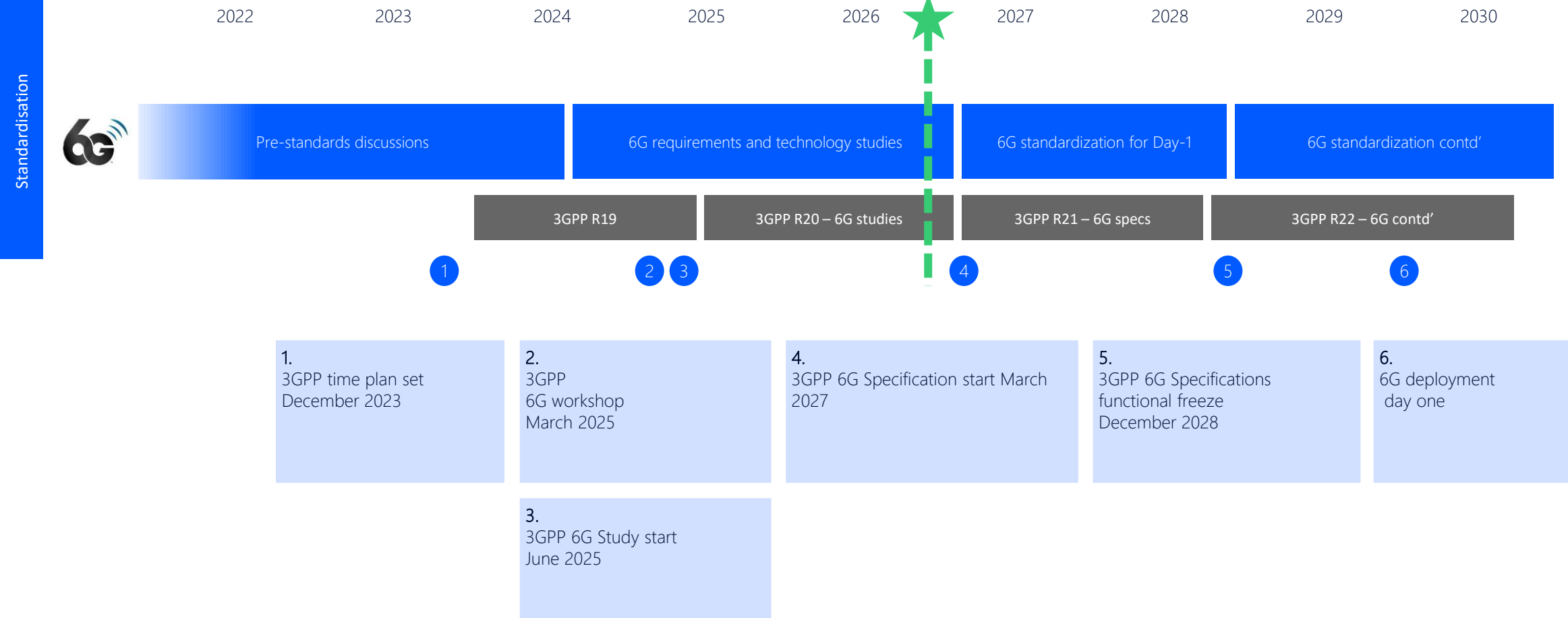
AI services for threat detection and mitigation



Sustainability and energy efficiency

AI-based optimizations for sustainable network operations

3GPP 6G Timeline



The role of standards

Ensure interoperability, foster innovation

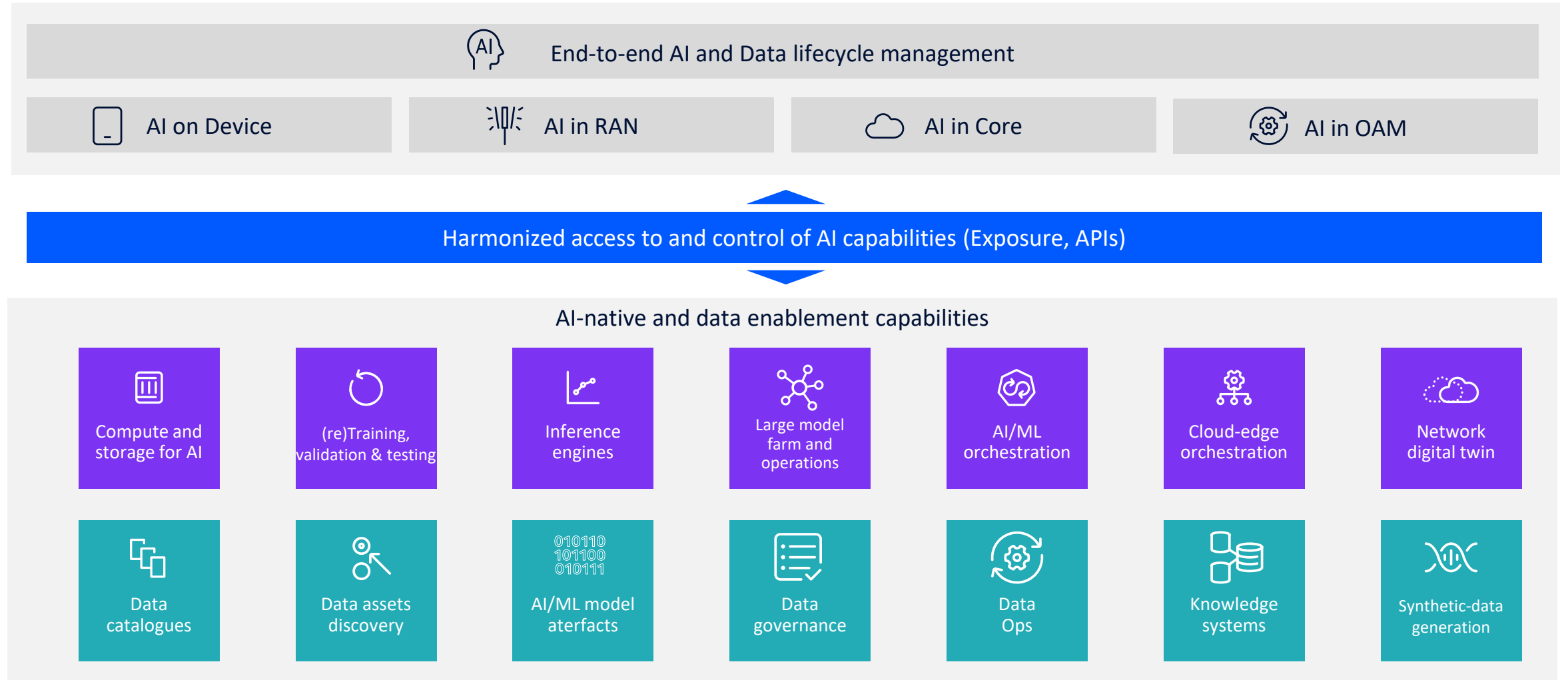


- Ensure testability and **consistent** device behavior
- Enable **interoperable** data sharing, control and performance monitoring
- Support **sustainable, trustworthy** and **secure** AI-enabled functions
- **E2E reference architecture** with enablers for pervasive AI presence
- Unlock **new value** creation opportunities
- Preserve **flexibility** to accelerate **innovation** cycles



- Avoid **over standardization** ensuring flexibility of implementation to accelerate innovation cycles
- Avoid **inconsistent specifications and capabilities** that would lead to market fragmentation and reduced adoption
- Avoid **standardized AI models or formats**, that would limit innovation and implementation flexibility and reduce healthy competition

AI-native 6G requires a holistic end-to-end framework



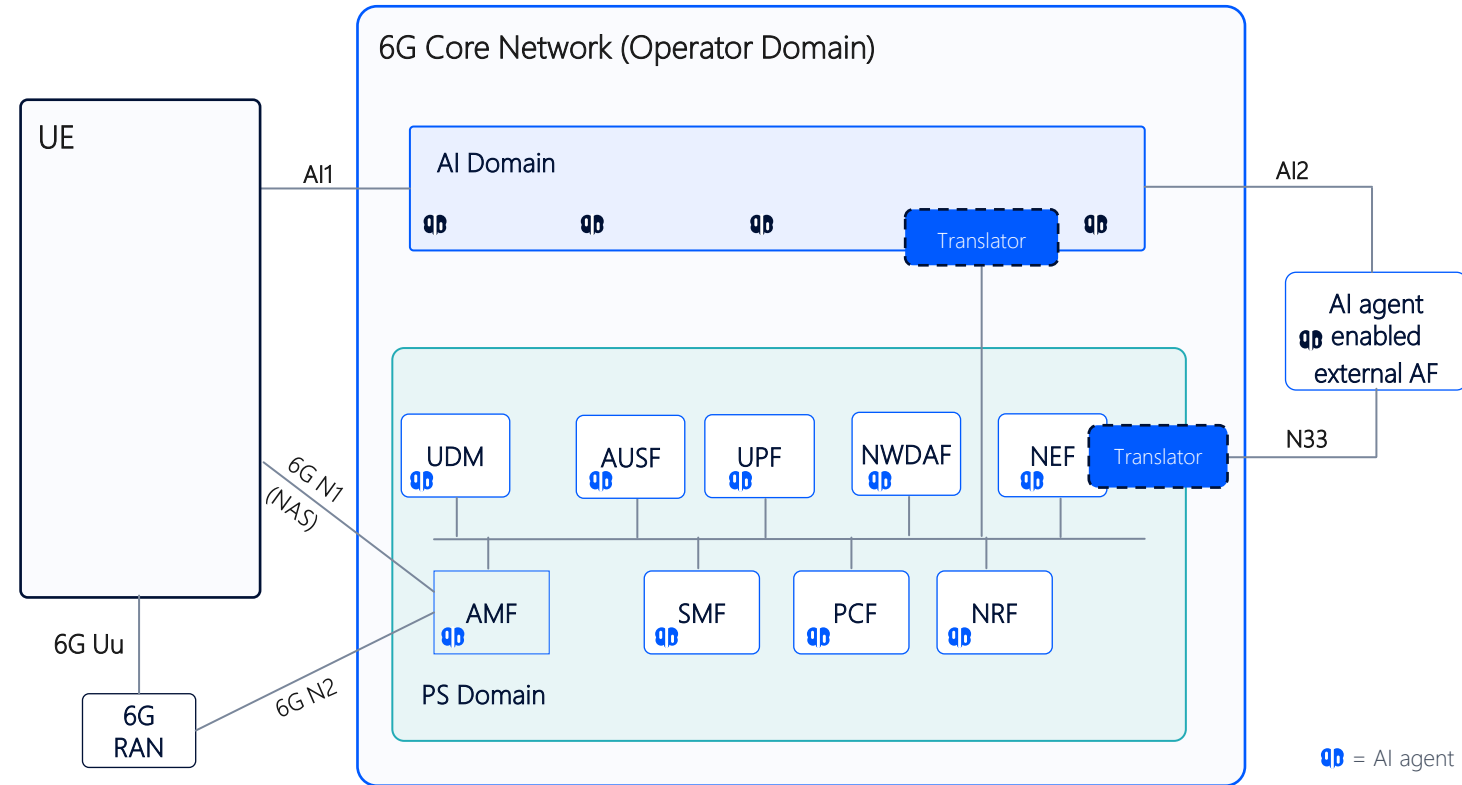
6G System with Agentic 6G Core

Motivation

- Enable operators to develop and monetize AI (agentic) capabilities and skills
- Offer skills to UE based and external agents for personalized experience and advanced operator services
- Maintaining reliable, deterministic and efficient 3GPP services (mobile broadband, voice)

Technology enablers

- Separate the 6G core network into two domains, PS and AI domain, both can evolve independently
- AI domain is to be accessed by UE and external AF via user plane, using IETF specified protocols on AI1 and AI2
- 3GPP connectivity services using fully standardized 6G NAS protocol and SBI services within the 6G Core



3GPP and AI worlds

AI brings speed and adaptability, 3GPP brings determinism and global trust

AI world: speed and adaptability

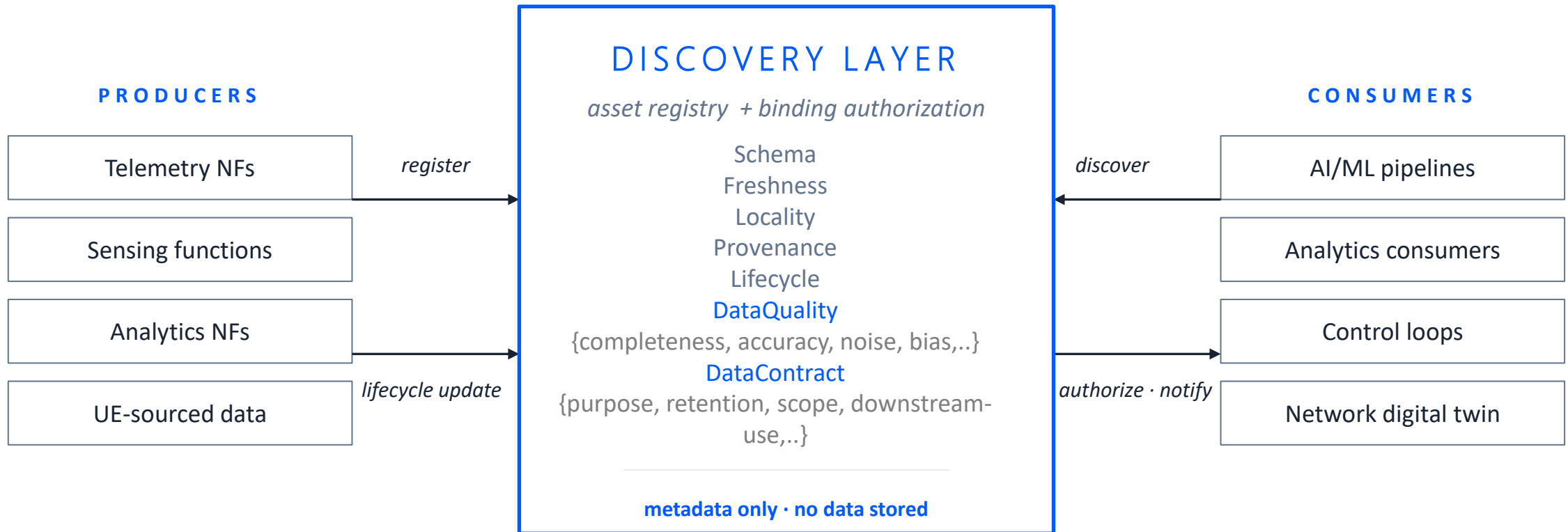
- Flexibility: models and agents adapt to changing context and intents
- Fast technology evolution
- Easy to create and deploy new solutions and skills

3GPP world: determinism and trust

- Determinism: predictable, repeatable network behavior
- Guaranteed performance for critical connectivity services
- Ensured interoperability across vendors and across the globe
- Built-in security, privacy and regulatory compliance
- Carrier-grade reliability and availability at scale

Way to go: Enable flexibility and innovations at pace, on top of deterministic and interoperable connectivity

6G Data discovery and governance semantics



Without these in the record, the 6G network entities or agents acts on assumptions
With them, decisions are traceable, verifiable, auditable