AI-enabled 5G & 6G

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AI-enabled 5G & 6G

— **Why AI for 5G & 6G?**
  — more devices; new applications; better SLAs
  — effective resource utilization
  — adapt to changes in network
  — move from reactive to proactive automation and autonomy

— **Key AI enablers for 5G & 6G**
  — **Compute**:
    — HCPs, distributed compute (e.g., at the edge), MLOps, security (for and by AI) and Trustworthy AI
  — **Data**:
    — working with less but relevant data, Digital Twins, domain-compliant AI, Generative AI, security & privacy
  — **Autonomy**:
    — **AI-Native software design, Cognitive Networks, Intent-based Networks**, ML coupled with MR
  — **Applications**:
    — Connected intelligent machines, XR and the internet of senses, 5G and 6G to enable UN SDGs and the Enterprise.

Targets for new technology

6G @ Ericsson

AI-Native for 6G

— Has intrinsic trustworthy AI capabilities, where AI is a natural part of the functionality, in terms of design, deployment, operation, and maintenance.

— Leverages a data-driven and knowledge-based ecosystem,

— where data/knowledge is consumed and produced to realize new AI-based functionality or augment and replace static, rule-based mechanisms with learning and adaptive AI when needed.
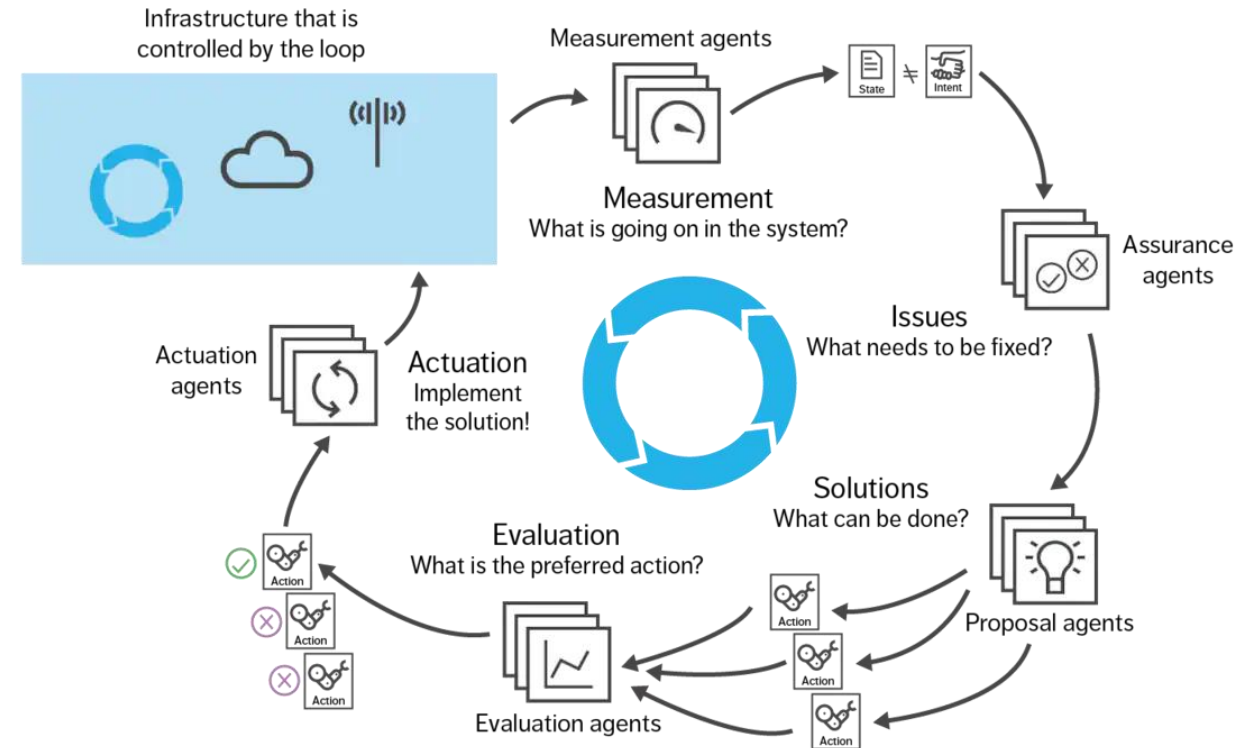
— [Reference article](#)

Rows are independent, a given application can be L2 for one aspect and L3 for another		Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
	Architecture	No AI architecture defined	A basic reference AI architecture	AI architecture with AI aware O&M and shared AI support services	AI architecture supporting streaming and distributed computing	Fully fledged AI architecture	AI managed AI architecture
	Collaboration	AI functions that do not collaborate	Some standalone AI functions that collaborate by sharing data	Several AI-based functions that integrate with a core AI infrastructure	Fully cooperative AI-based functions and core AI infrastructure, with AI capabilities throughout the architecture	Level 3 AI systems that collaborate	Federation capabilities to share insights/ models from distributed "crowds" of functions
	Data ingestion storage and processing	Manual and offline	Automatic data collection and online analysis	Partially adapted to data ingestion architecture	Fully adapted to data ingestion architecture	Fully adapted to data pipeline, data mesh and no copy data sharing	AI-driven universal data mesh
	Model LCM and security	No dedicated model LCM	Manual model deployment	Automated model deployment	Dynamic model adaptation to local conditions and data Basic model security	Automated model migration/ upgrade Advanced model security	Complete automated model LCM and security
	Self-*	Proprietary, non-standardized logging, FM, PM, CM	Self-aware, self-configuring, monitoring	Self-diagnosis, self-optimization and prediction	Self-healing remedies and preemptive behavior	Self-augmenting business management	Self-designing, AI-driven AI

Cognitive Network, Intent-based networks, Telco-Native AI (5G) vs AI-Native Telco (6G)

— A **cognitive network** is an AI-native implementation of an autonomous network.
  => capabilities of the autonomous network are developed using AI-Native design principles.

— An **autonomous network** is a network with self-* capabilities.
  self-configuration, self-healing, self-optimization, self-protection

— A **zero-touch network** is an autonomous network.

— **Intent-based network** is an approach to realizing AI-Native design of autonomous networks.

— In essence,
  Telco-native AI vs AI-Native Telco =
  AI for Telco vs AI-driven Telco

— [Reference article](#)

Infrastructure that is controlled by the loop

Measurement agents

State   Intent

Measurement
What is going on in the system?

Assurance agents

Issues
What needs to be fixed?

Actuation agents

Actuation
Implement the solution!

Solutions
What can be done?

Evaluation
What is the preferred action?

Proposal agents

Action

Evaluation agents