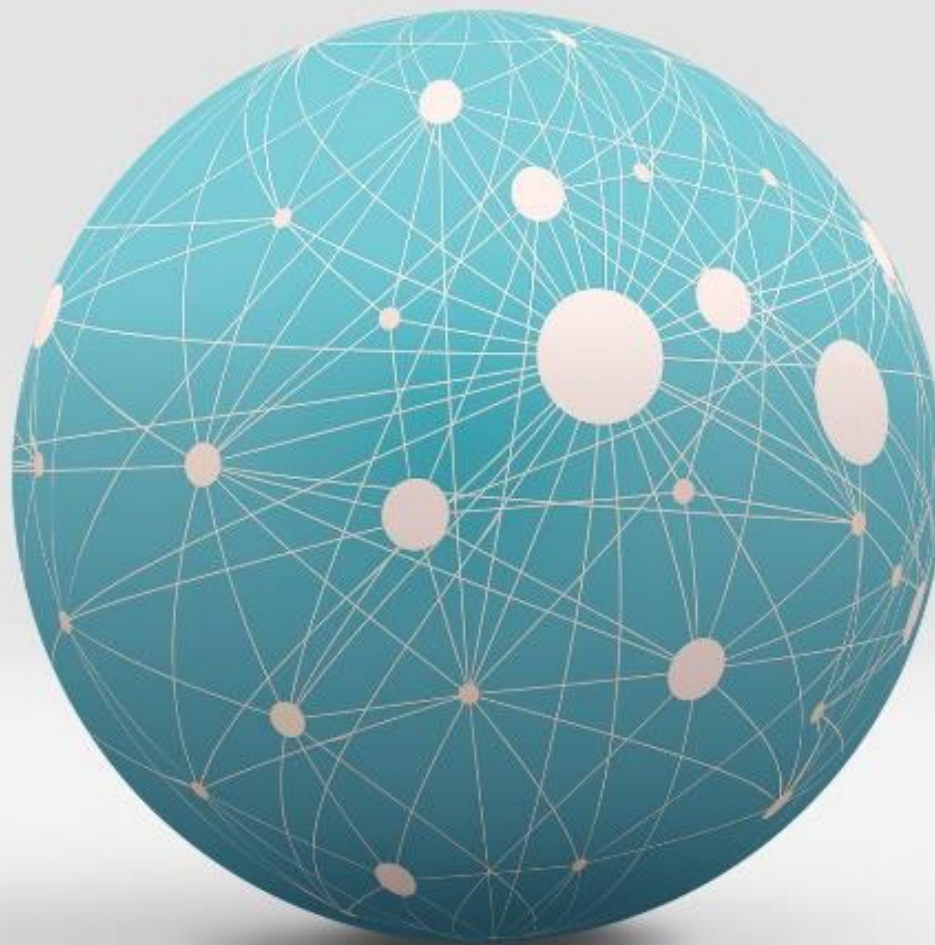


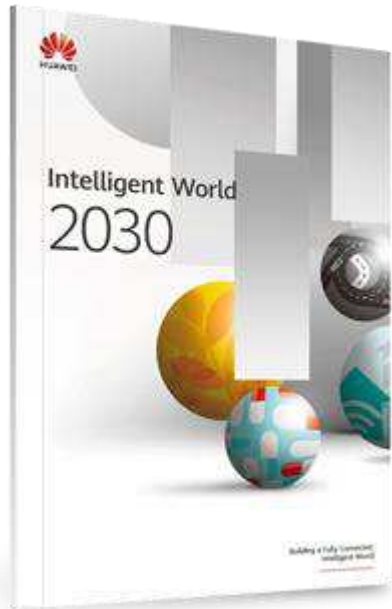
ICT Infrastructure 2030

Brandon Wu
CTO, Enterprise APAC

June 23, 2023



Intelligent World 2030



PDF (7.31 MB)

Communications Network 2030 Industry Report

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Computing 2030 Industry Report

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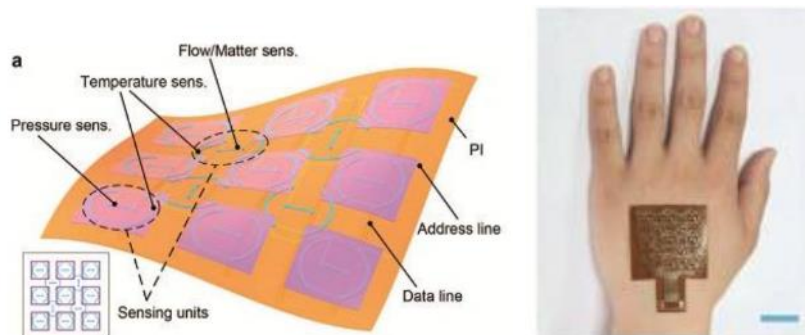
Intelligent Automotive Solution 2030 Industry Report

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<https://www.huawei.com/en/giv/download-the-reports>

Future innovations require future-looking ICT infrastructure

Next-gen Human-machine Interaction



Native AI Health Research and Expertise Sharing



Hyper-real User Experience



AI computing power (FP16): **105 ZFLOPS**, a **500x** increase over 2020



1YB of data will be generated annually worldwide, a **23x** increase over 2020



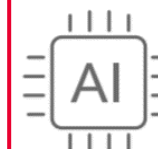
Every 10,000 workers will work with **390** robots.



Global general computing power (FP32): **3.3 ZFLOPS**, a **10x** increase over 2020

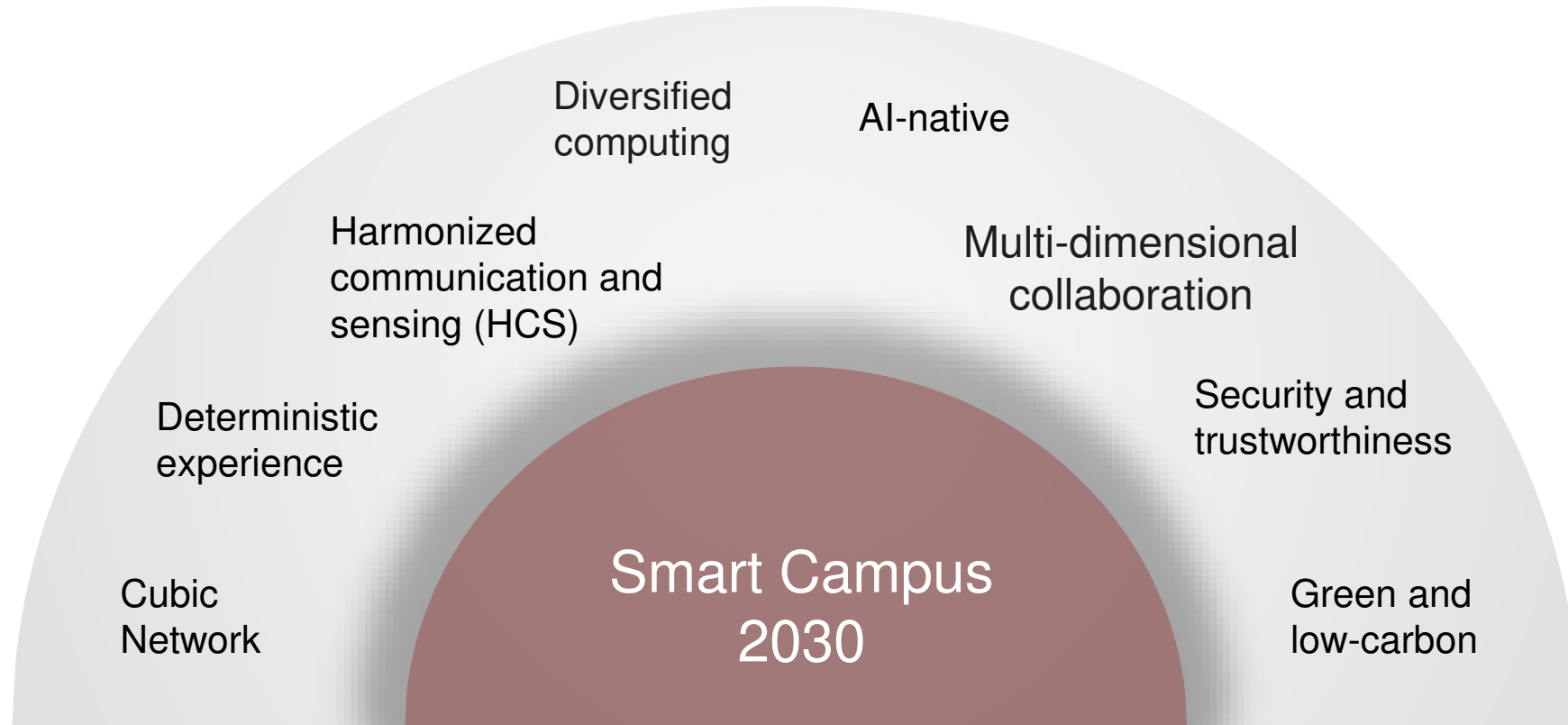


200 bn connections worldwide
IPv6 adoption: **90%**



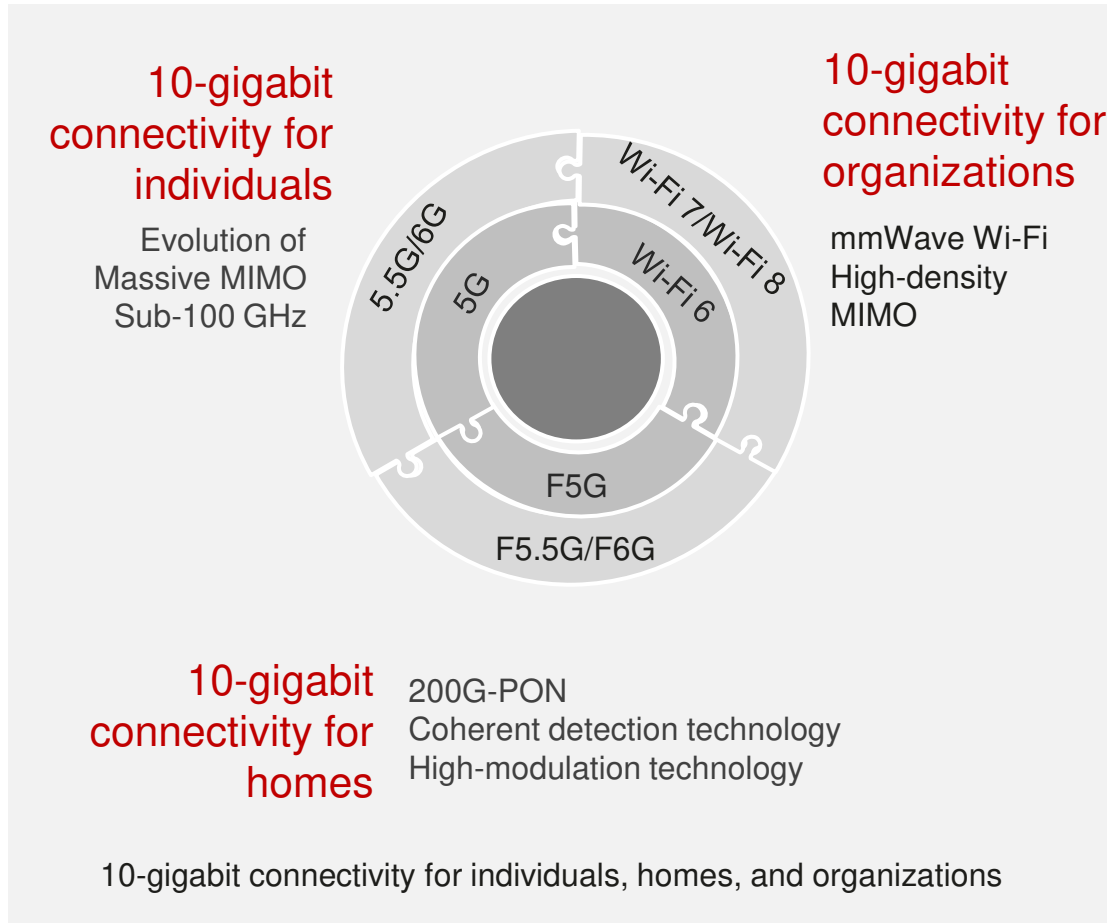
AI computing will account for **7%** of a company's total IT investment.

ICT Infrastructure 2030: 8 Critical Technology Factors

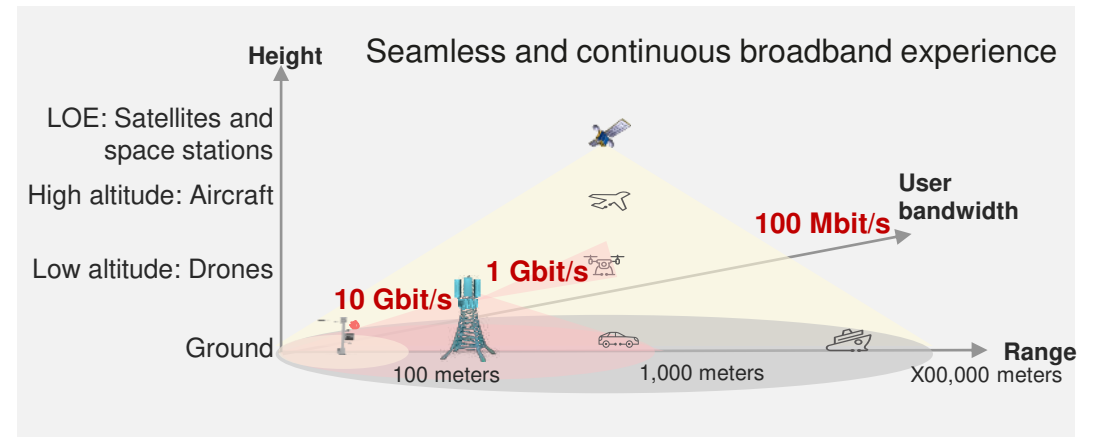


Cubic convergent broadband access technologies

10-gigabit connectivity



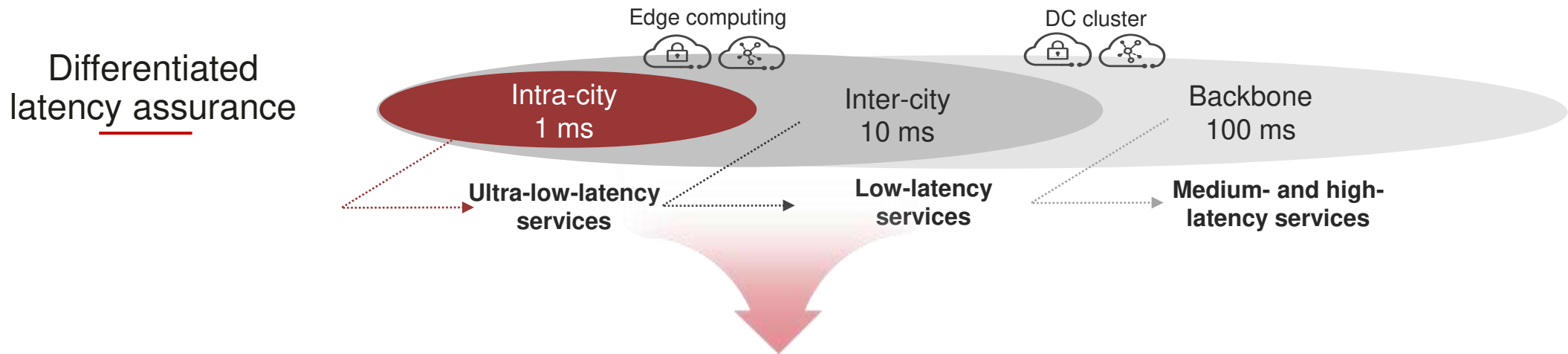
Space-air-ground integrated network



All-sensing objects



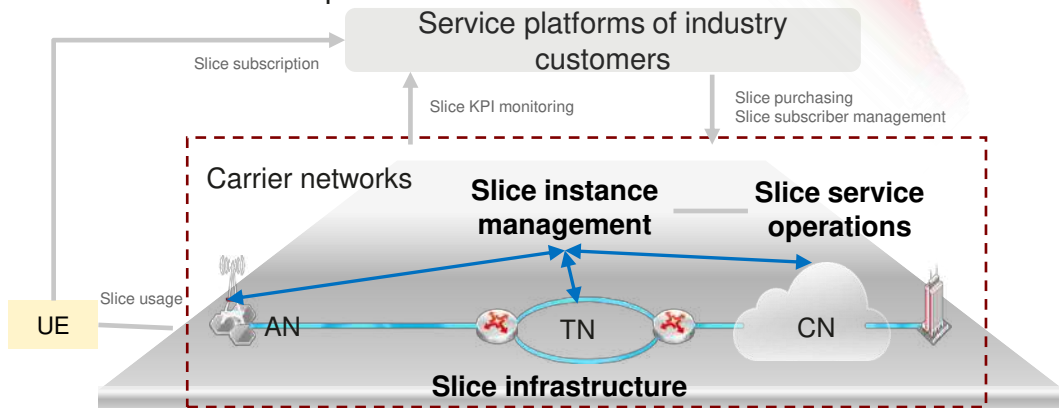
Deterministic service experience with deployment flexibility



Deterministic experience

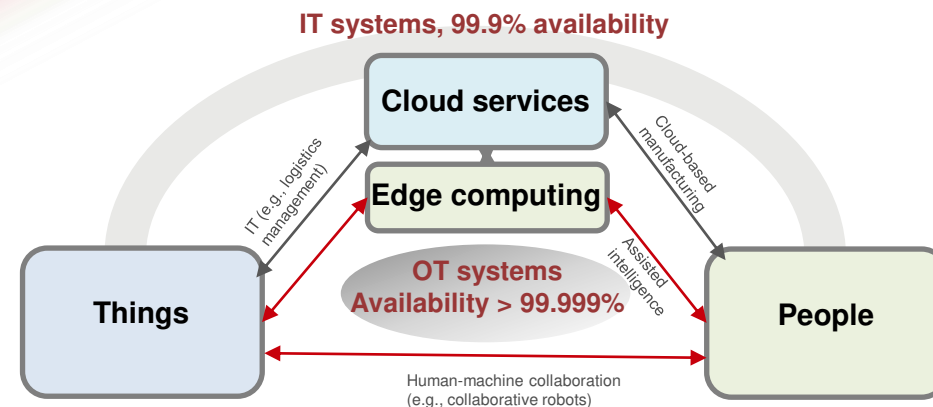
End-to-end slicing

Logical private networks and services that are more adaptable to vertical industries



99.999% availability

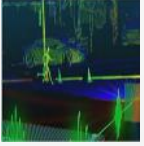
Designed for industry production control systems to enable enterprises to migrate all systems to the cloud




Harmonized communication and sensing (HCS)

Wireless sensing


Connected cars/drones



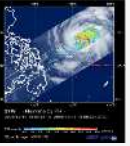
Unmanned security




Environment monitoring



Weather forecasts



Medical images, industrial inspections...



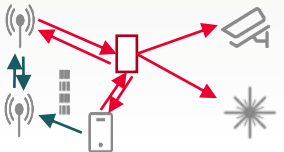
- Synchronization: 100 ps → 10 ps
- Accuracy errors: Centimeters → Millimeters

Super-resolution positioning algorithms
Accuracy < 0.1 meters

800 MHz+ molecular clock/optical clock synchronization

Super-sensitive, multi-source harmonized sensing

Collective intelligent sensing and positioning



Optical sensing

Converged optical communications and sensing networks

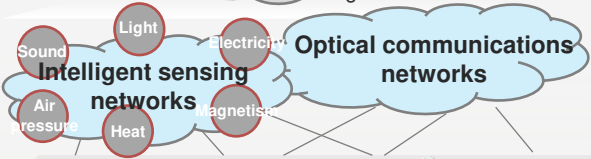
Smart city

Smart factory

Smart campus

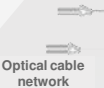
...

Accurate, AI-powered identification and decision-making




Optical communications networks

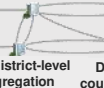
Intelligent sensing networks (Sound, Light, Electricity, Heat, Air pressure, Magnetism)



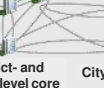
Optical cable network




Integrated access




Sub-district-level aggregation



District- and county-level core




City-level core



14-pin BTF


Low-cost, ultra-narrow linewidth laser



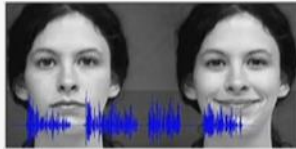
Cloud-based, accurate, AI-powered identification

Wi-Fi sensing

Health monitoring




Falls, breathing, heart rate, etc.




Emotion recognition


Interactive games



Posture and gesture recognition

Perimeter security





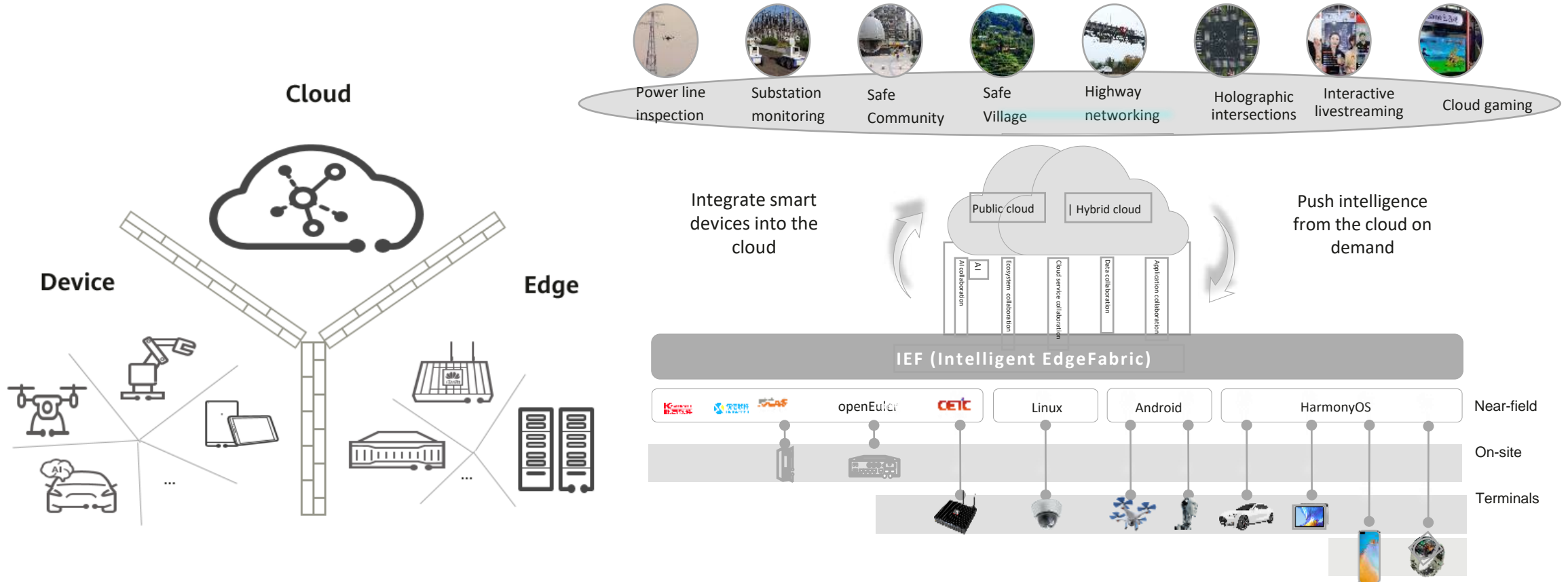
Single/Dual/Multi-site radars

Synchronization and coordination between nodes

Multi-protocol collaborative sensing mechanism

802.11az/be/ay

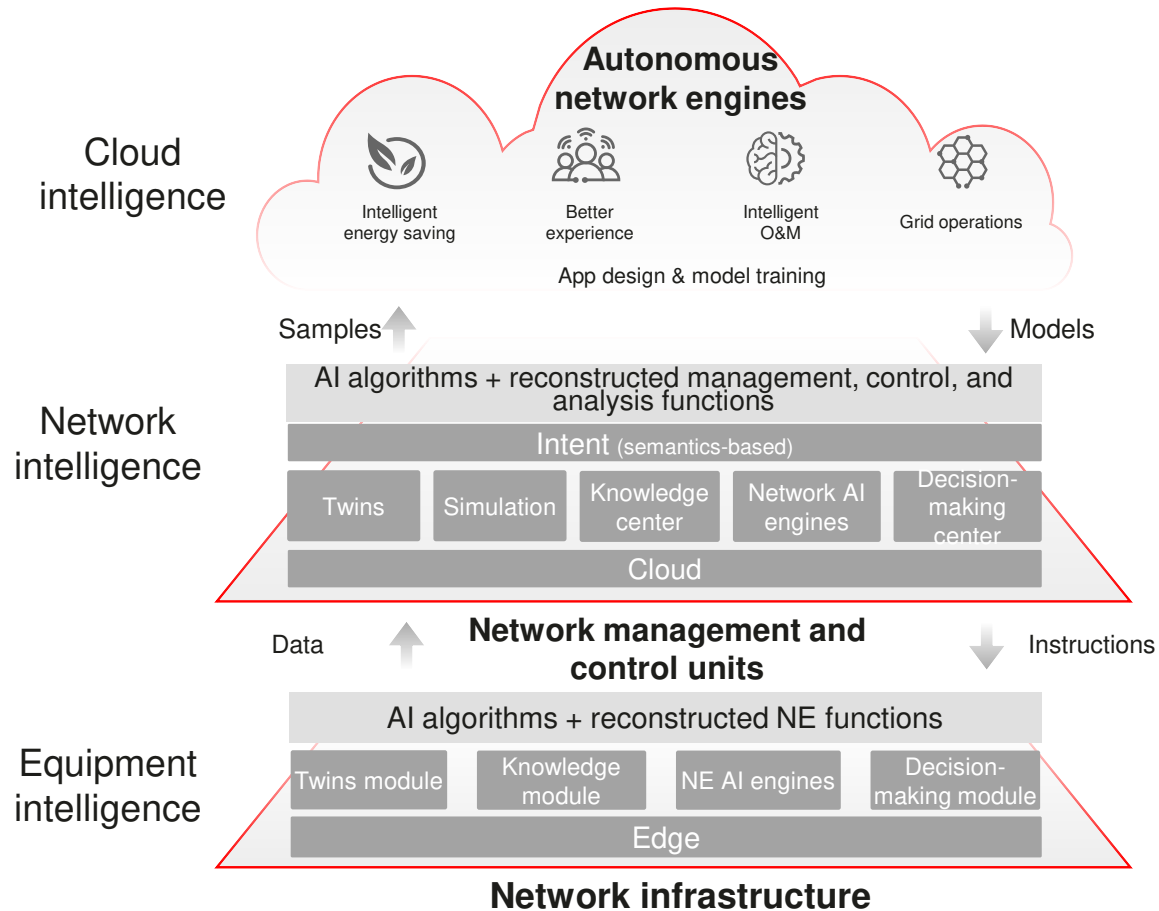
Multi-dimensional collaboration / Diversified computing



AI-native

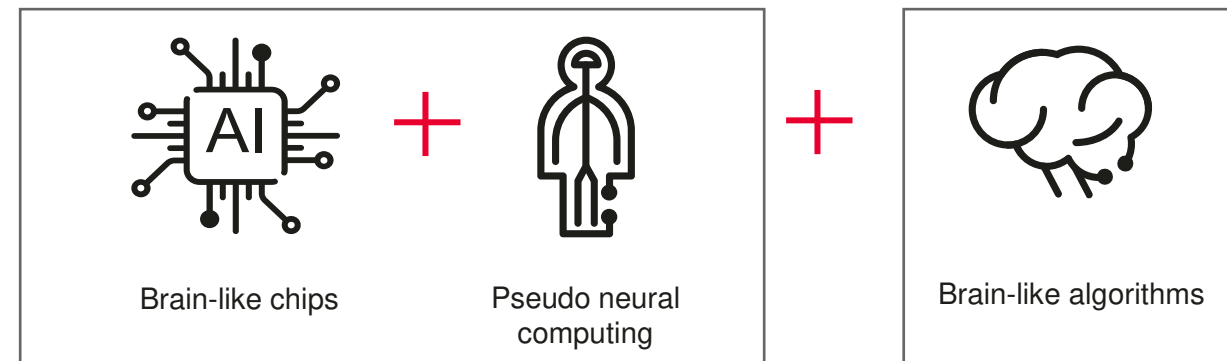
Autonomous Driving Network (ADN)+ AI Native Edge

Continuously evolving toward L4/L5 advanced intelligence



Brain-like AI Computing

Self-renewal, self-evolution, from cognition to creation



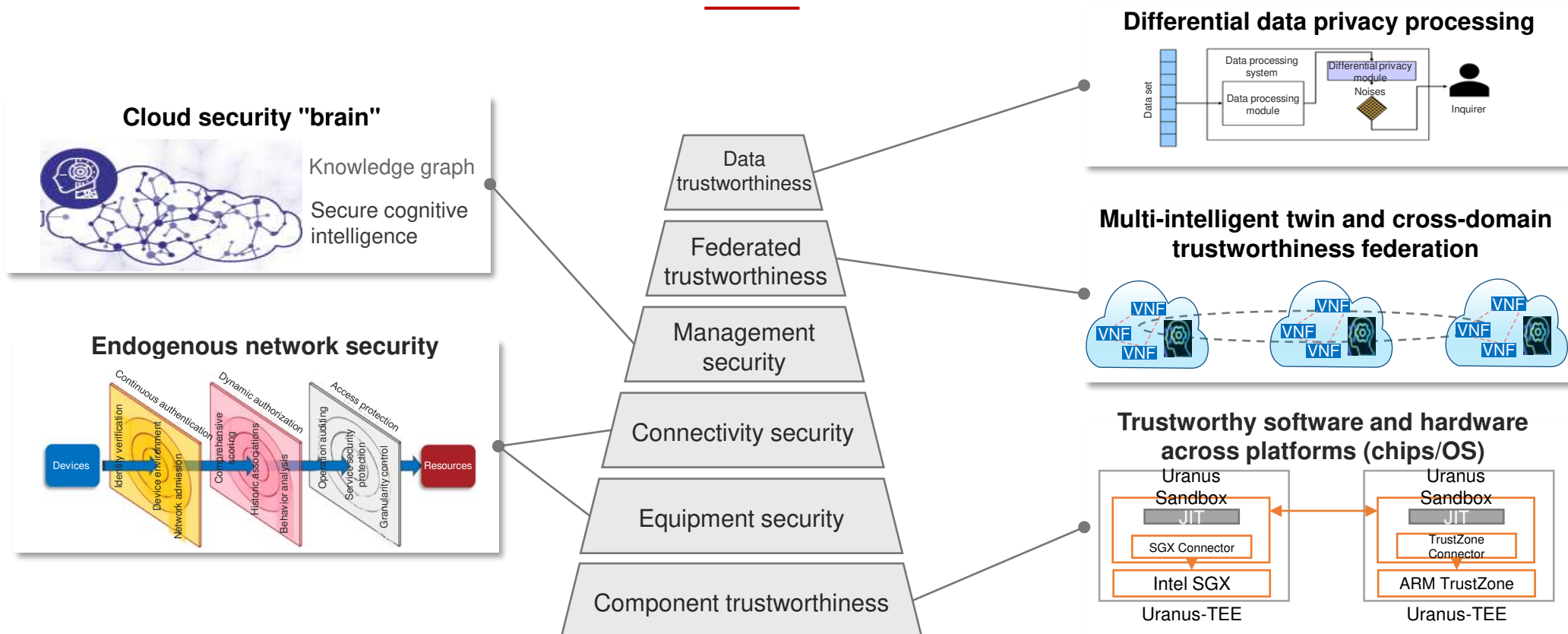
Two major areas:

- 1) **Simulated Brain Neural Network**, low power and low latency
- 2) **Theories of Neural Dynamics and Cognition** applied in combination with AI to achieve more robust and general intelligence

Maturity driven likely from the edge side (vision sensors on devices: voice/channel prediction; edge: 3D point cloud processing etc.) to DC/Cloud (replacing NPUs)

Security and trustworthiness

A six-layer framework for secure and trustworthy networks

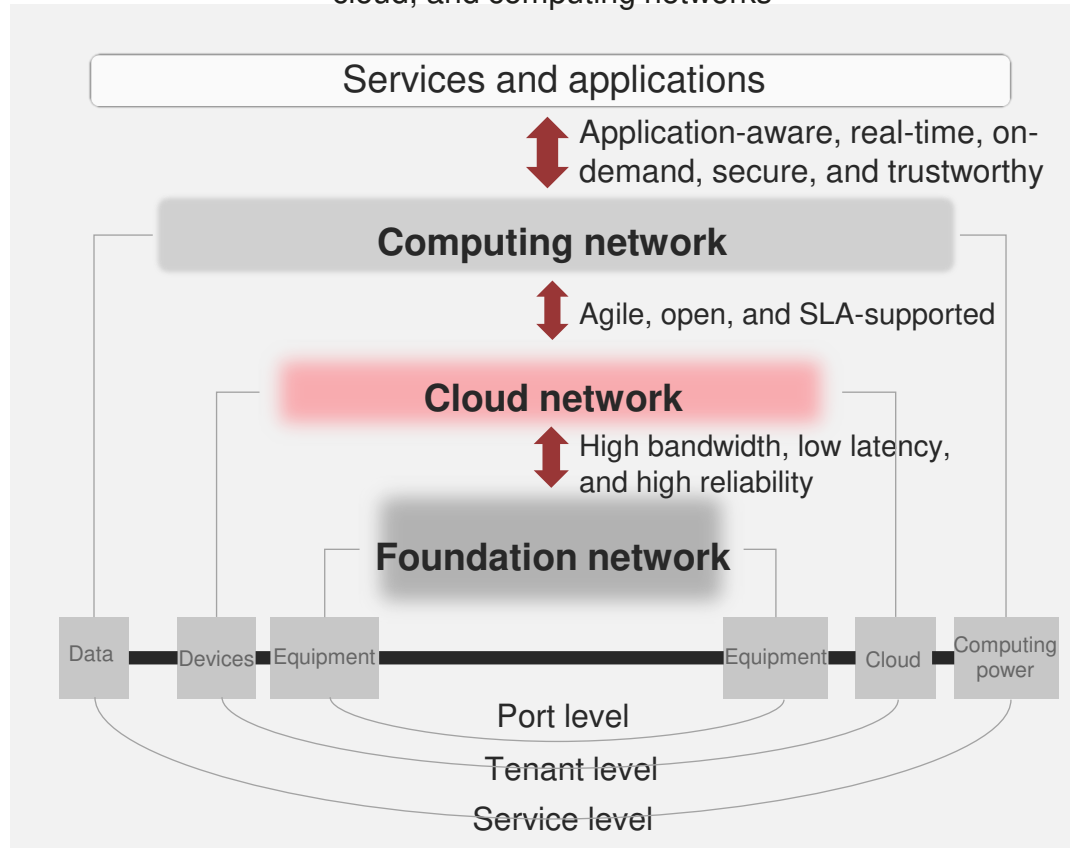


Six-layered secure and trustworthy networks

Green and low-carbon

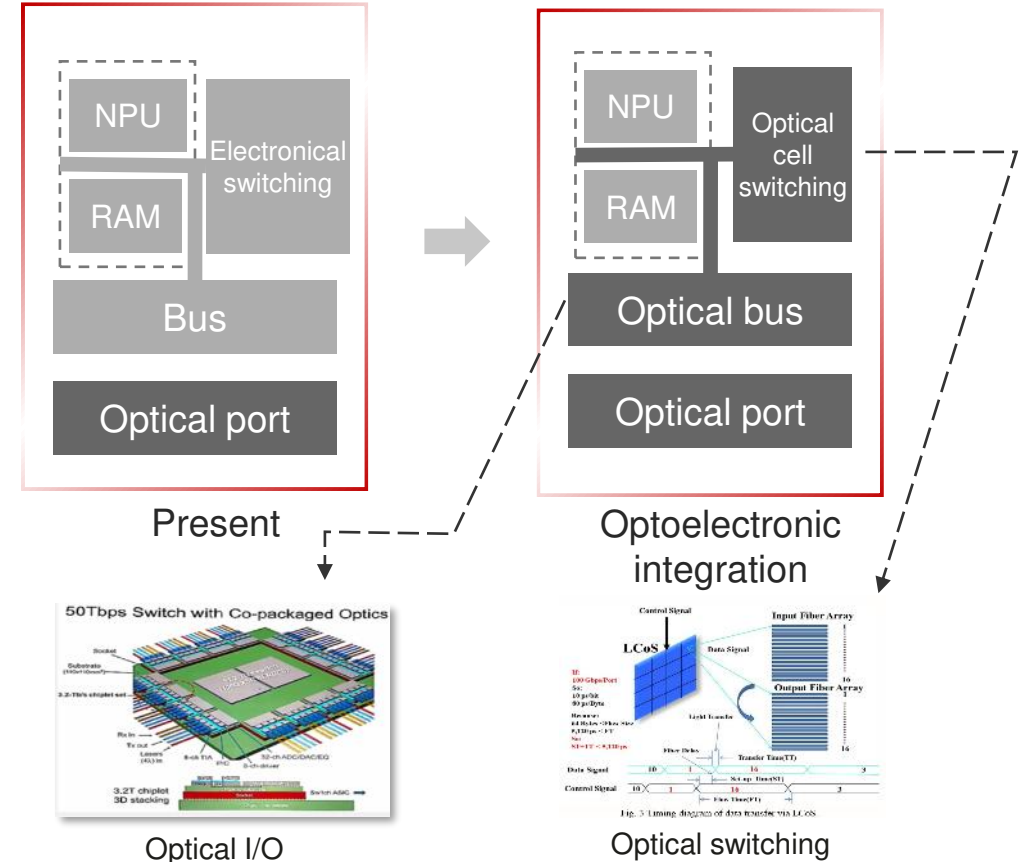
Simplified architecture

Low carbon realized by simplifying foundation, cloud, and computing networks

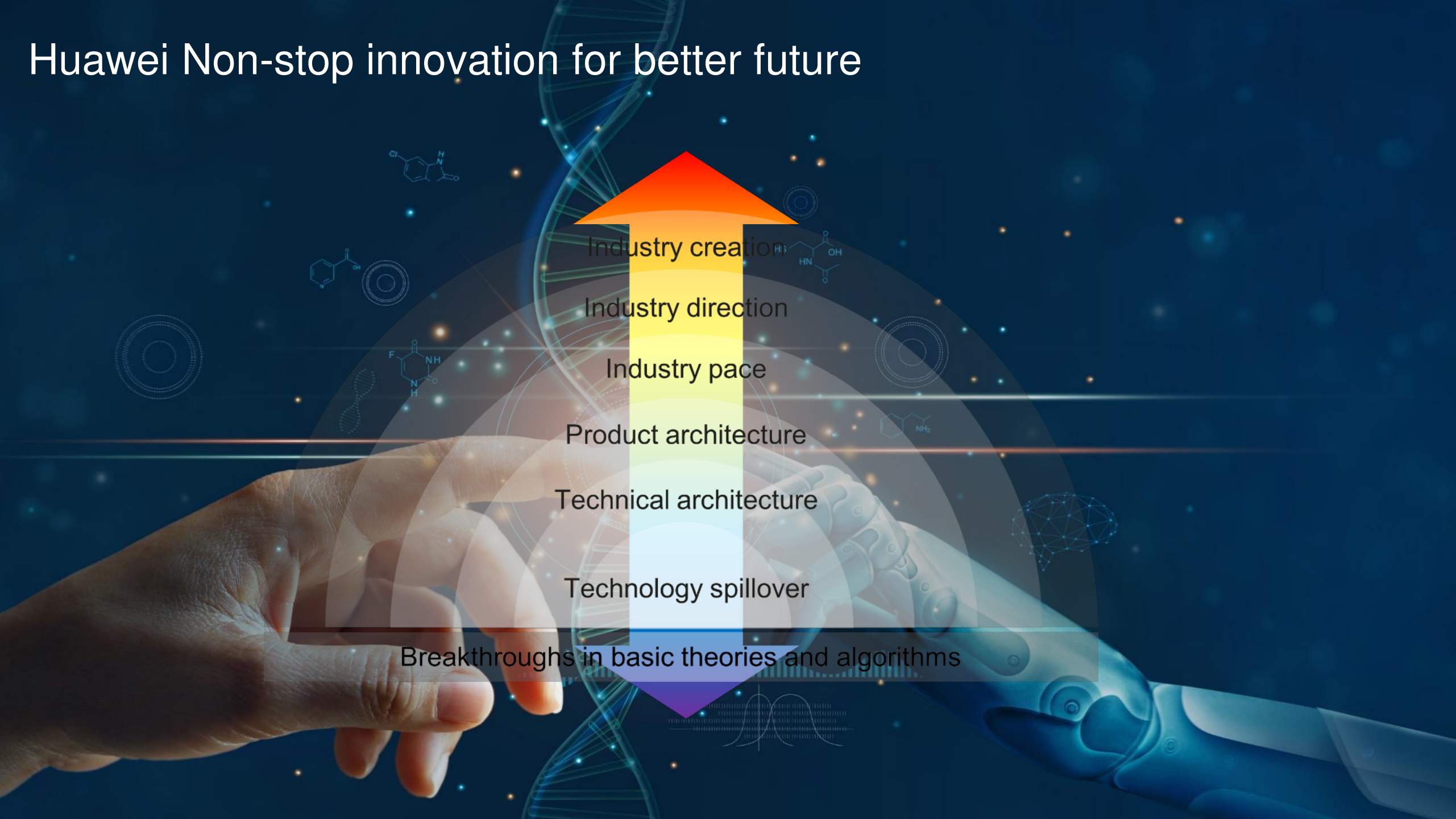


Optoelectronic integration

Profoundly changing the architecture and energy efficiency of communications network equipment



Huawei Non-stop innovation for better future



Industry creation

Industry direction

Industry pace

Product architecture

Technical architecture

Technology spillover

Breakthroughs in basic theories and algorithms

Thank you.

Bring digital to every person, home and organization for a fully connected, intelligent world.

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