



智慧网络论坛
AI in Network Seminar –
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Keynote
主题演讲

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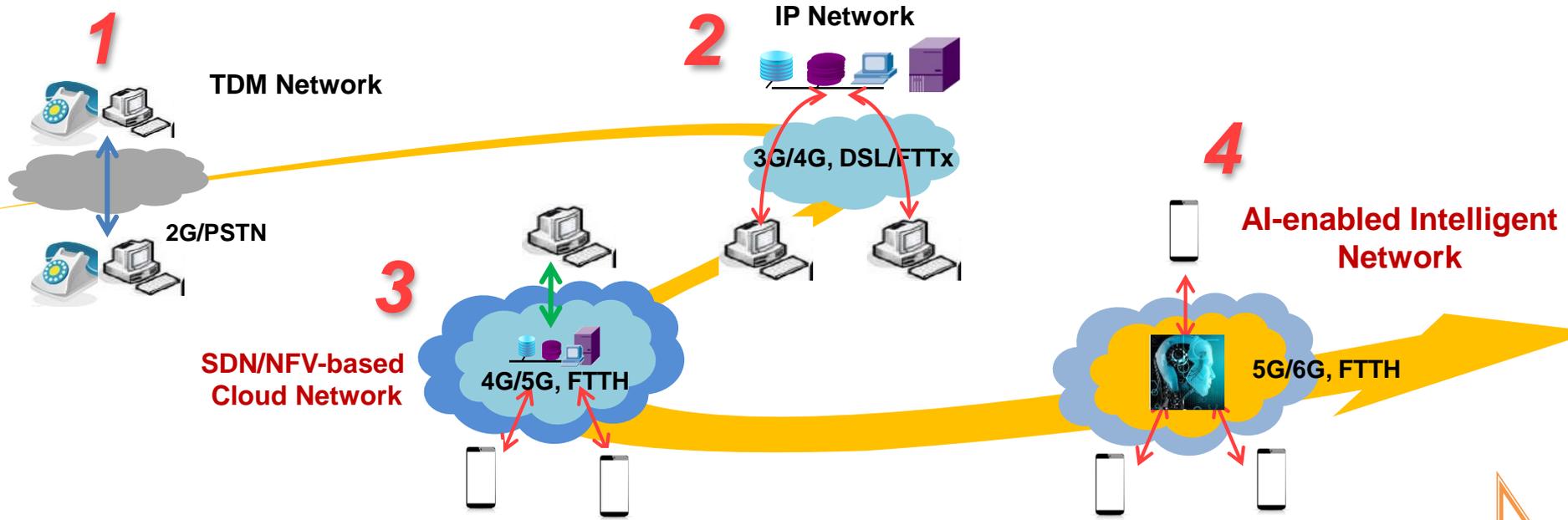
AI-enabled Network Transformation and Service Innovations

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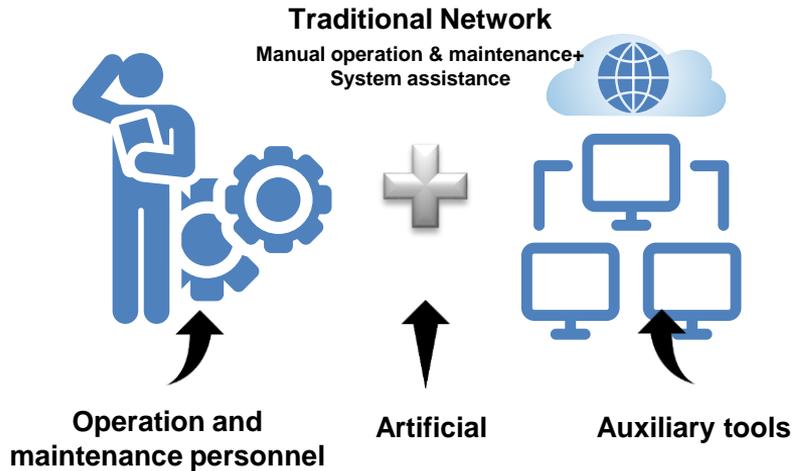
AI-enabled intelligent network is the future network



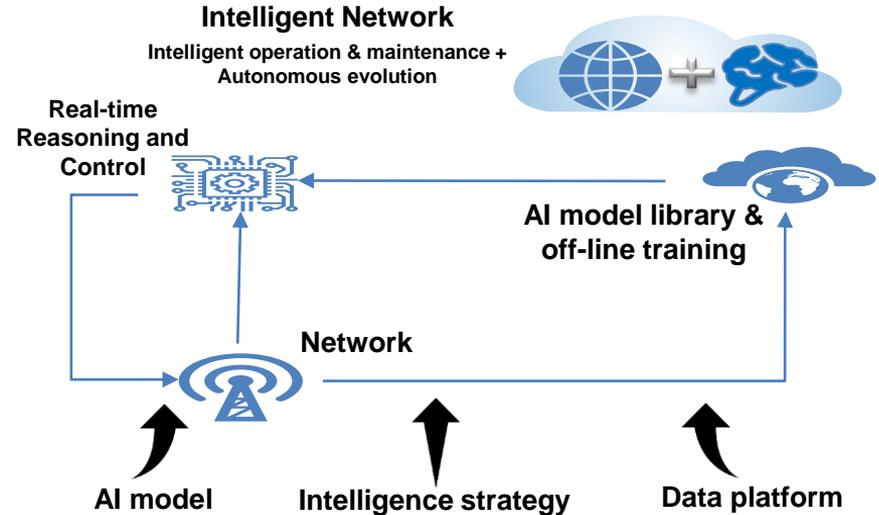
- 1** Voice Communications
- 2** Traditional Internet
- 3** Cloud Services
- 4** Intelligent Services

The core value of AI for telecom networks : Intelligent network operation

- Along with the expansion of the network and the increased number of connections, as well as the virtualization of the network, the network operation faces great challenges. It becomes essential to realize the intelligent network with AI and big data.
- SDN/NFV laid the foundation for applying AI in telecom networks.



- Artificial maintenance
- Post-optimization
- Open-loop of planning, construction and maintenance

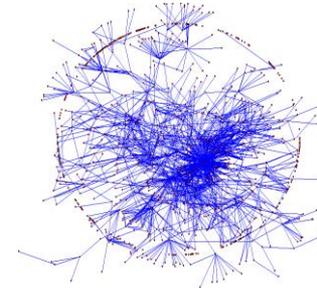


- Network self-operation
- Automatic inspection, self-evolution
- Closed-loop for planning, construction and maintenance

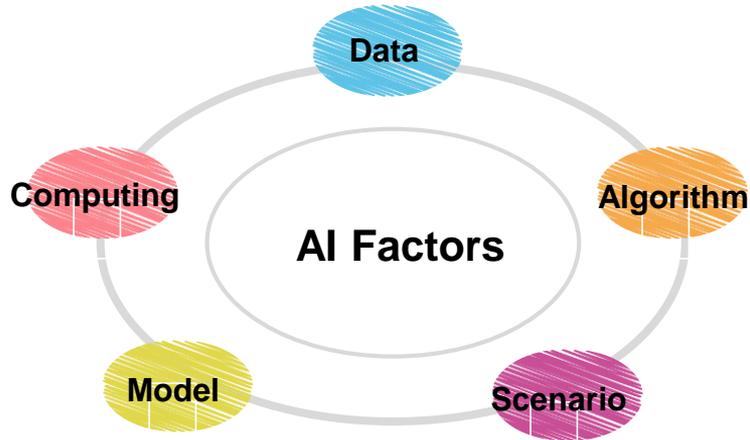
Network transformation and 5G development need AI

Challenges

- Increasing network traffic and connections make the size of network is greatly expanded. Network management and OPEX face challenges.
- **SDN/NFV/Cloud** greatly increases the complexity and difficulty of network management and operation.
- The flexibility and complexity of **5G** networks bring challenges to network planning, maintenance and optimization.
- **Service innovations** put forward higher requirements for automation and intelligence of network operation.



AI is a must for 5G and network transformation

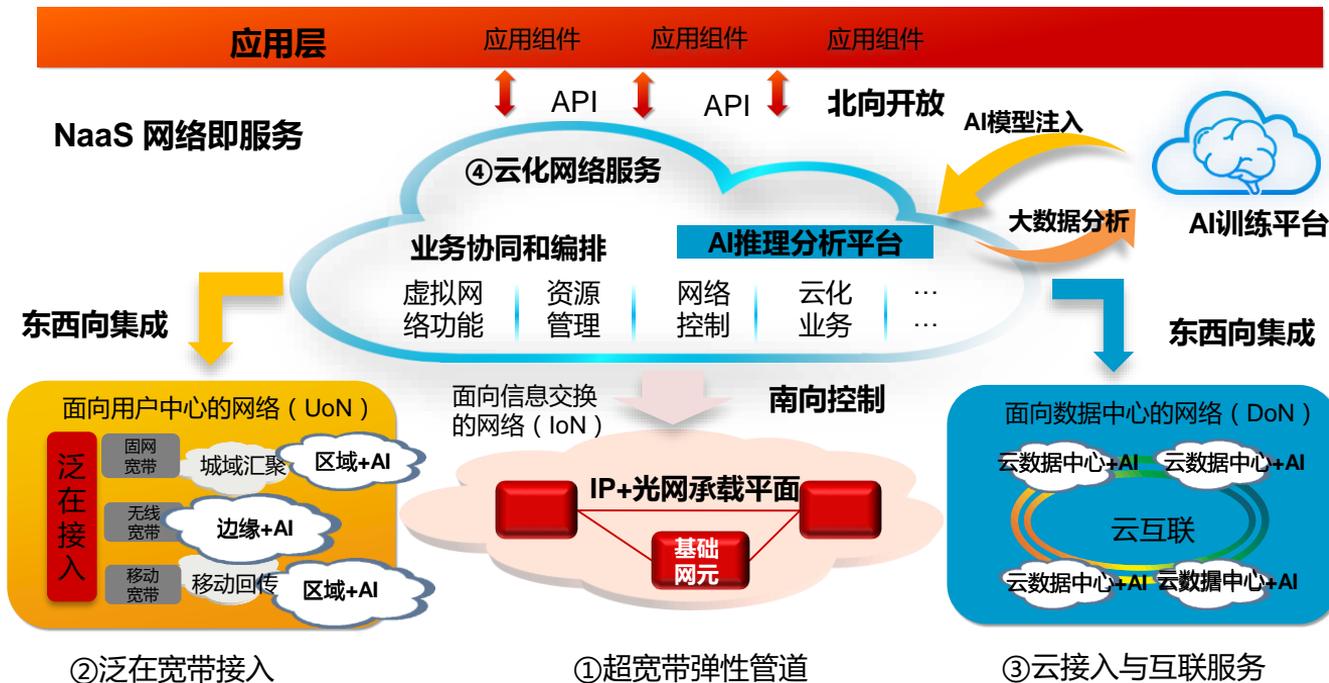


Opportunities

- **Data:** A large amount of data generated by network, terminals and services lay the foundation for AI mining and analyzing.
- **Computing Capability:** Operators have abundant computing resources for AI applications including DCs, edge computing, and network connectivity.
- **Algorithm:** Matured ML and DL algorithms provide convenient tools for network AI applications.
- **Scenario:** AI can be not only applied in network operational scenarios, but also applied to service innovations.

China Unicom's new generation intelligent network: CUBE-Net 2.0+

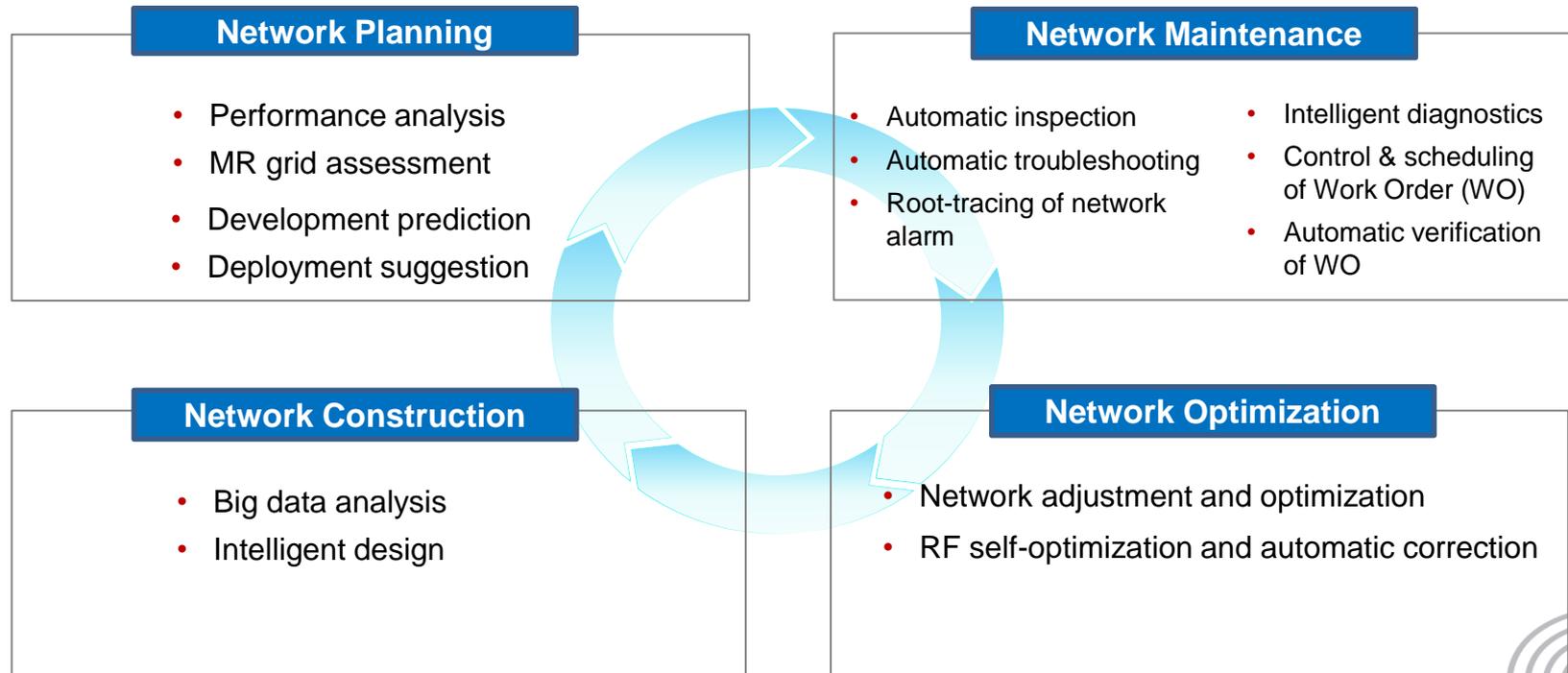
CUBE-Net 2.0+ : AI-powered Intelligent Network based on SDN/NFV/Cloud



Introducing AI+SDN/NFV/Cloud to build the next generation intelligent, agile, intensive and open network

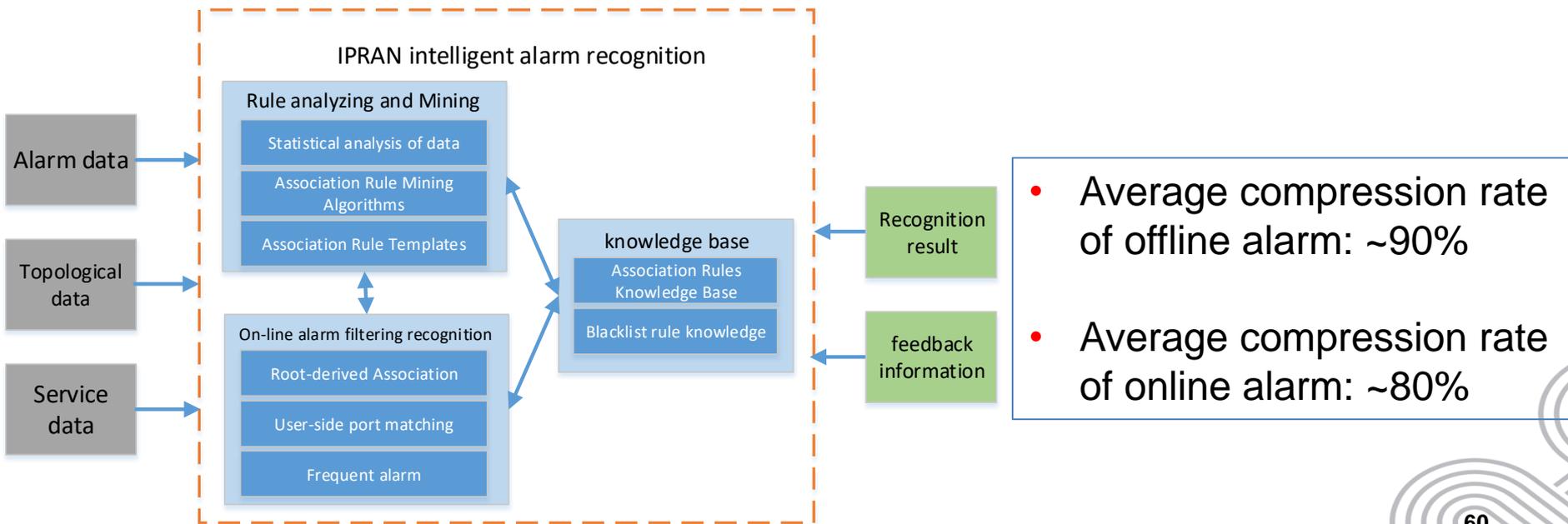
Today: AI Introduced into current network operation

Applying AI to network planning, construction, operation and optimization to accelerate network transformation and improve network intelligence.



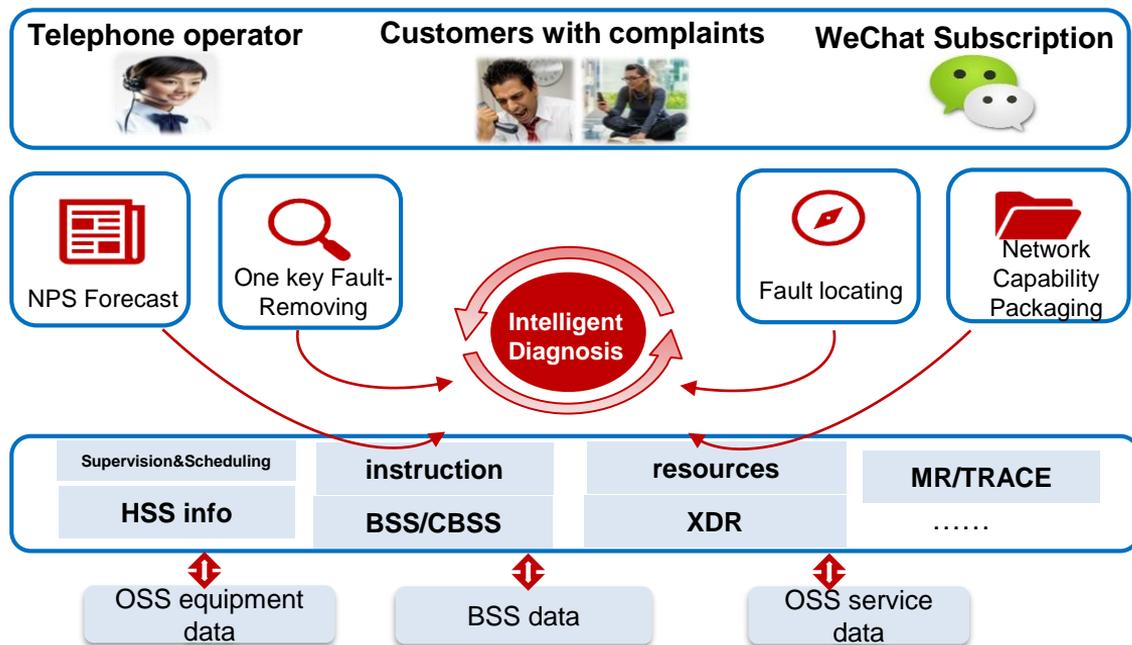
Use Case 1: IPRAN intelligent alarm recognition

- This system realizes the roots-tracing of network alarm and has been deployed in some provincial branches of China Unicom.
- It has a high accuracy of root-cause location, and plays a supporting and assistant role in the maintenance and planning of IPRAN network.

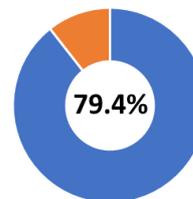


Use Case 2: Intelligent data analysis for customer care

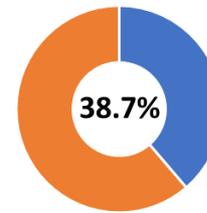
- This system integrates user's authentication and consumption information, terminal capability and service behaviors with network data to do collaborative intelligent analysis.
- It realizes the intelligent diagnosis of customer complaints and assists the maintenance engineer to solve the problem quickly.



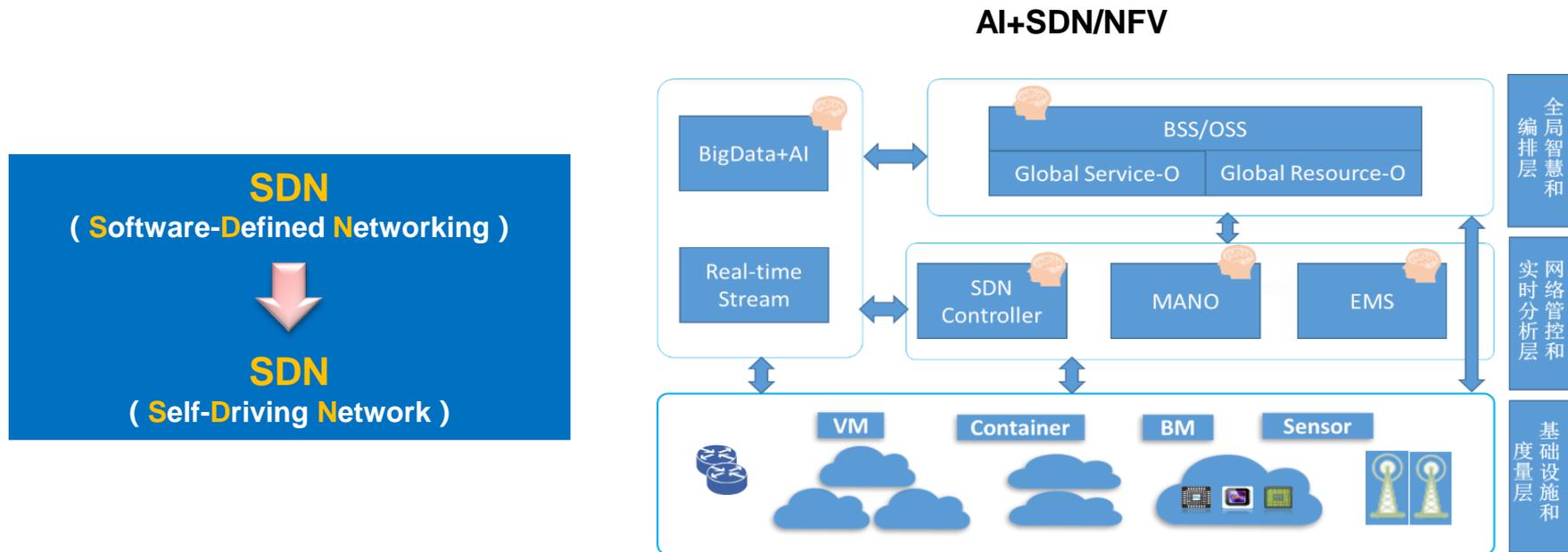
Mobile network first call resolution



Fixed network first call resolution



Tomorrow: AI-enabled network re-architecture



On different layers of the network (infrastructure and measurement, network control and real-time analysis, overall intelligence and orchestration), AI capability could be introduced step by step and embedded into the network system.

5G+AI : AI for 5G intelligence and 5G for AI applications

- AI promotes the intelligence of 5G network and improve the overall network performance, as well as maintenance and operation efficiency.

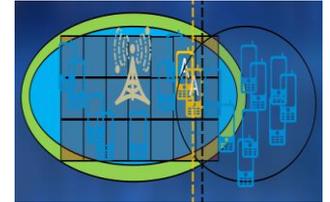
AI-powered beam management

AI-powered beam management enables quick adaptation to environment change, enhancing access experience



AI-based wireless network optimization

Optimize parameter adjustment; Improve the utilization rate of wireless resources and network capacity; Predict user trajectory/service requirements; Optimize content cache and enhance QoE of users.



AI and 5G MEC

Edge computing provides key capabilities for AI applications, and edge AI provides support for the edge computing applications.



Edge computing and AI

AI to manage network slicing

- Automatic network slice configuration
- Automatic network slice fault recovery
- Optimizing network slice performance



Intelligent network slicing

China Unicom is developing the Network AI platform CUBE-AI

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CubeAI based on the design concept of the Linux AI Foundation (FLAI) project Acumos

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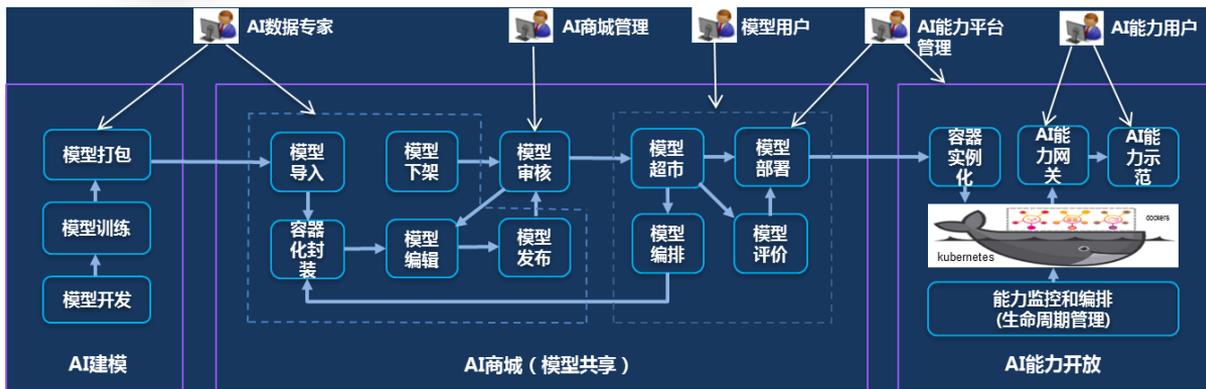
CubeAI platform integrates AI model development, model sharing and capability opening



Technical service platform to meet the needs of network AI applications and business innovation

Industry cooperation platform to create an multi-win AI ecosystem

Technology sharing platform for open source contributions, technology exchange, and application demo



Summary and Prospect: AI-enabled intelligent operators

- AI-enabled intelligent network is a new trend of telecom network development, which has far-reaching impact and great potential.
- The application of AI in telecom network is still in the early stage and needs continuous attention and exploration.
- China Unicom will actively conduct network AI applications and apply AI to improve network operation efficiency and service intelligence.
- China Unicom is looking forward to working with industry partners to promote the development of network AI and co-create the new era of network intelligence.



Thanks!