

IoT Development History & Overview

Lecture 1

IoT Security

Prepared by
Dr. Abdelrhman Ahmed

Foreword

Internet of Things (IoT) is an important part of the new generation of information technologies and an important development phase in the information era.

IoT is widely used in network convergence using communications and sensing technologies, such as intelligent sensing, identification, and pervasive computing. Therefore, IoT is called the third wave of global information industry development after computers and the Internet.

Objectives

On completion of this chapter, you will have an understanding of:

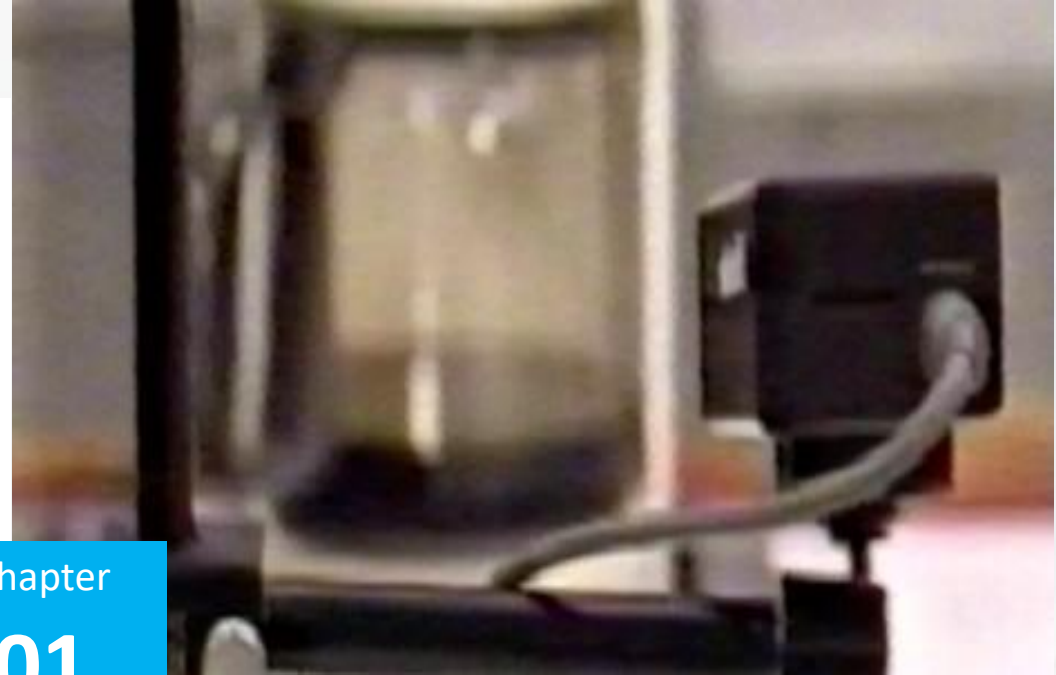
- IoT development history
- Basic IoT concepts
- Layers of the IoT architecture

- **Trojan Room coffee pot** in 1991: At the Trojan Room of the Computer Laboratory in Cambridge University, scientists went downstairs to see if the coffee was cooked, but often returned empty-handed.
- **To solve this problem**, they wrote a set of programs and installed a portable camera next to the coffee pot. The camera was aimed at the coffee pot. Computer image capture technology was used to check at any time whether the coffee was cooked, eliminating the need to go up and down the stairs.

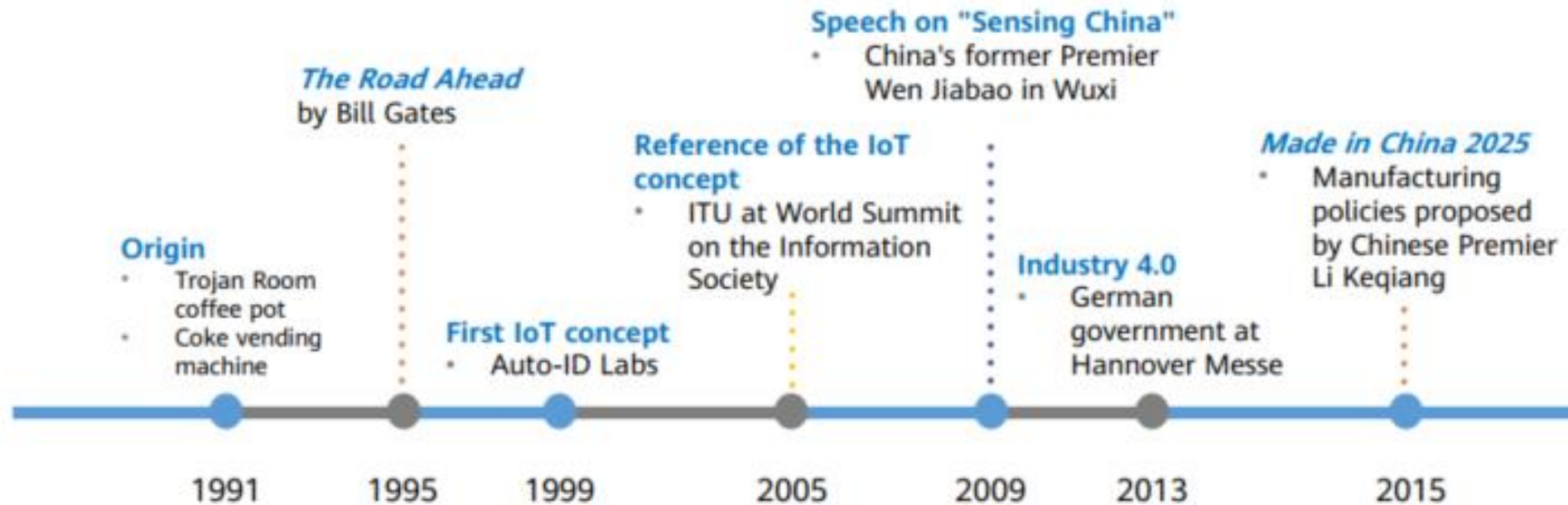
Chapter

01

Origin of the IoT



Development of the IoT

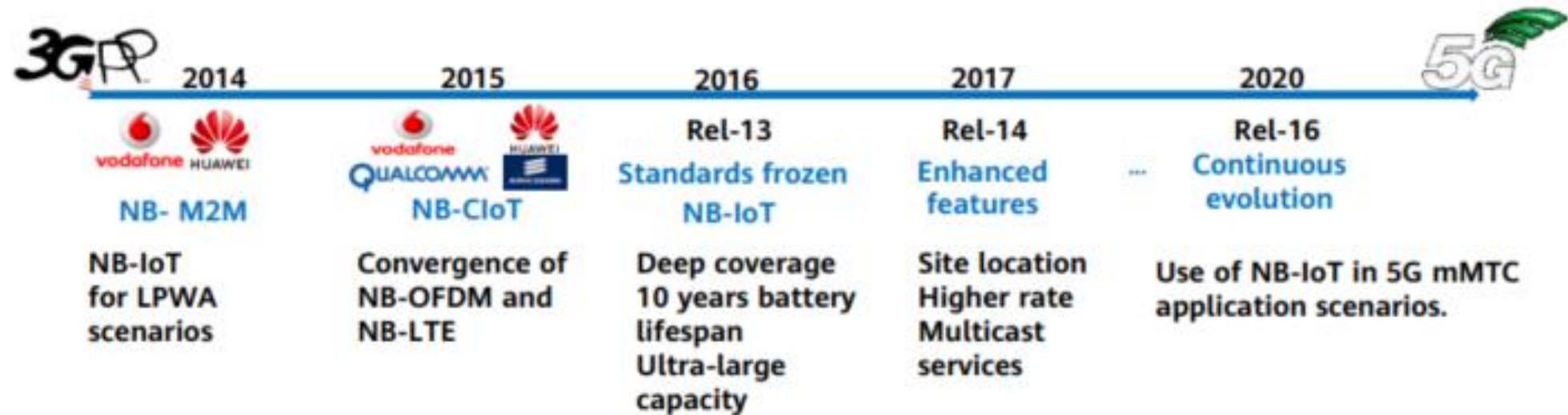


Penetration & Development of IoT in Industries



IoT Key Events: Evolution of NB-IoT Standards

The standards of the narrowband cellular IoT (NB-IoT) communications technology NB-IoT were officially initiated in September 2015, and the core standards were frozen in June 2016.



After two convergences, NB-M2M evolved to NB-IoT.

On October 31, 2019, China Telecom, China Mobile, and China Unicom jointly announced the launch of 5G commercial services and released corresponding packages at the opening ceremony of the China International Information Communication Technology Exhibition. 5G will bring diversified and comprehensive benefits to IoT, and will also promote new solutions and industry chains.

Chapter

01



IoT Key Events: Commercial Use of 5G

Consumer IoT is directly applied to consumers' IoT products and services. Consumer-related IoT products and services include smart bands, VR and AR glasses, body fat scales, smart locks, smart speakers, shared bicycles and trams, and automated driving vehicles. According to a report released by Markets and Markets, the global consumer IoT market scale in 2018 was \$46.8 billion USD. It is expected to reach \$104.4 billion USD by 2023 with a compound annual growth rate of 17.39% from 2018 to 2023.

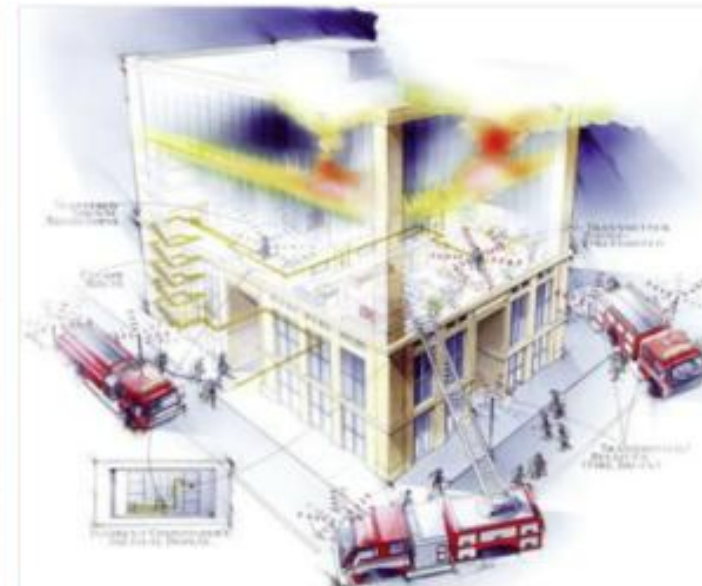
Chapter
01

Development Status of the IoT Industry: Consumption-Driven



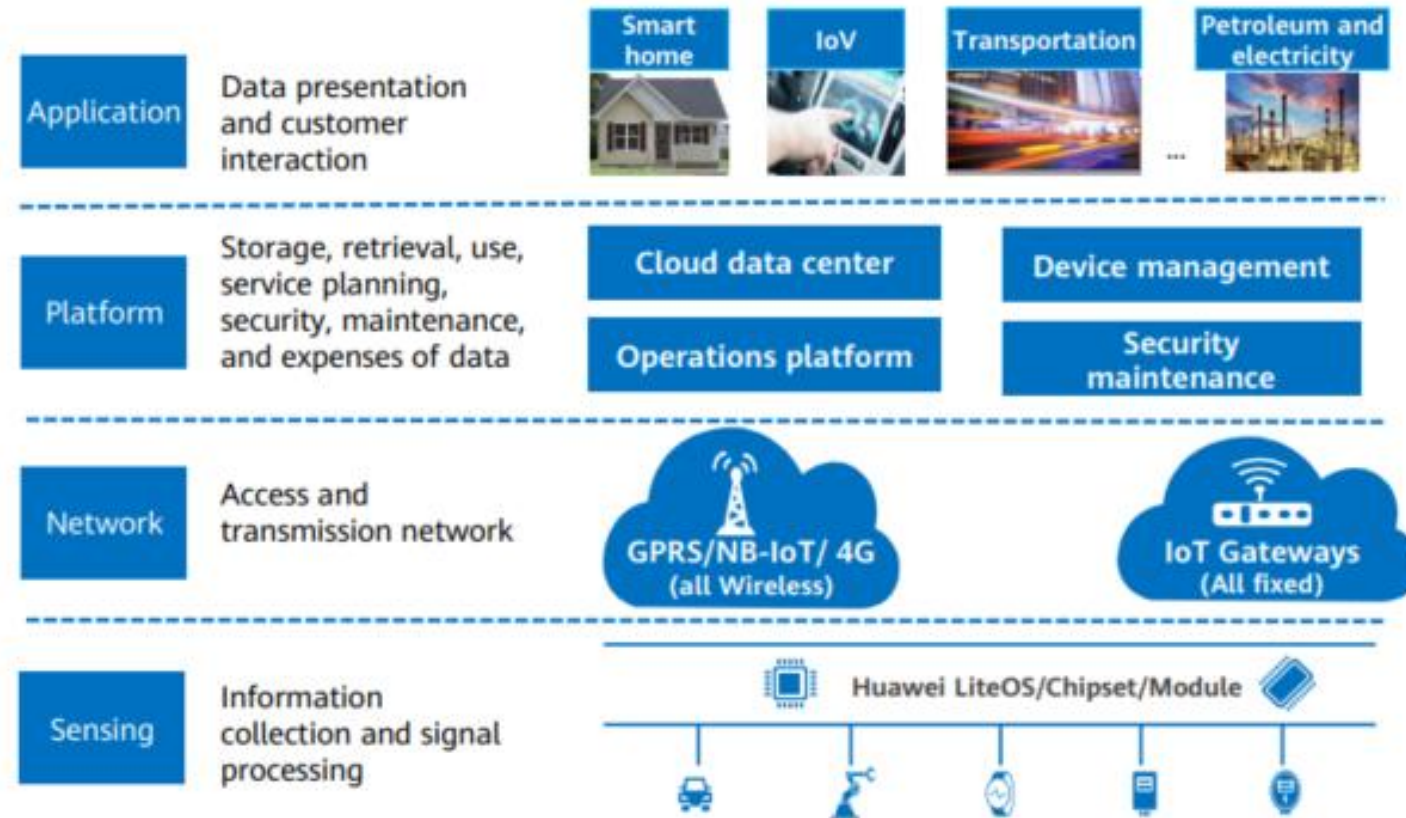
IoT Key Events: Evolution of NB-IoT Standards

Policy-driven applications mainly cover city management scenarios, such as firefighting, security, system integration, public utilities, lighting, and parking.

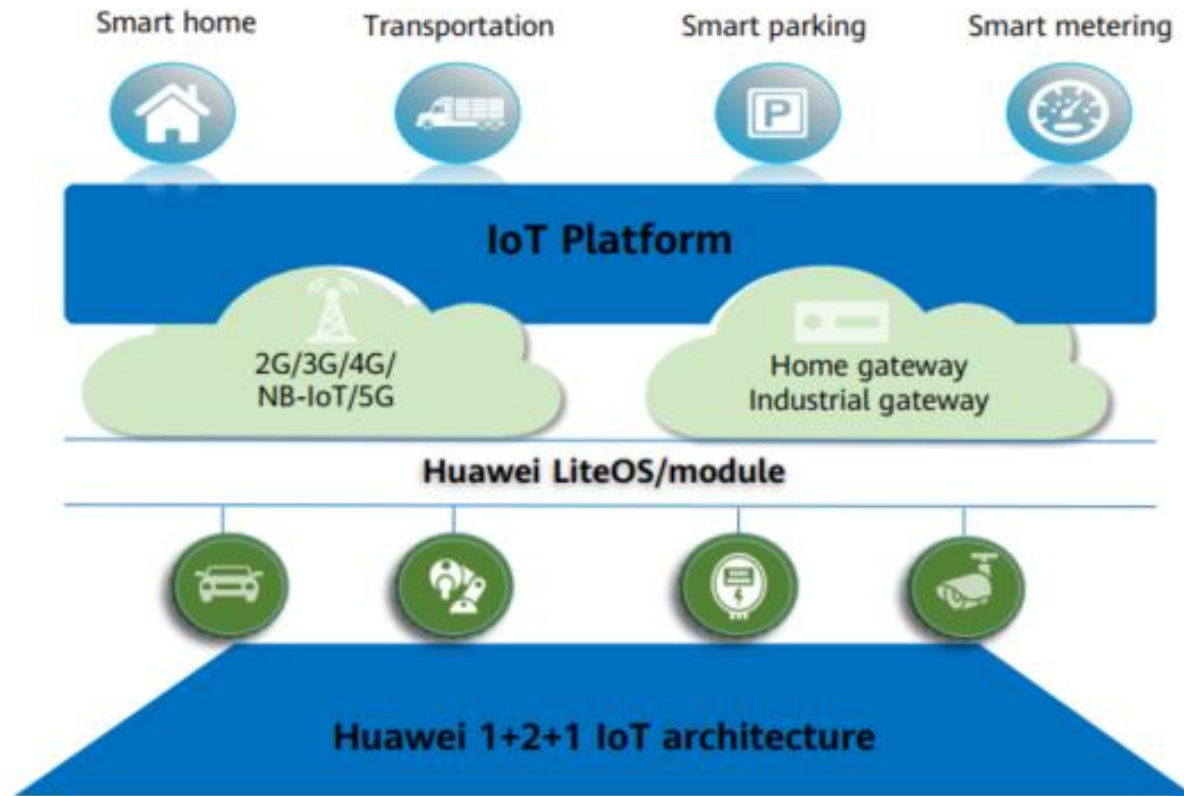


Chapter
01

Layers of the IoT

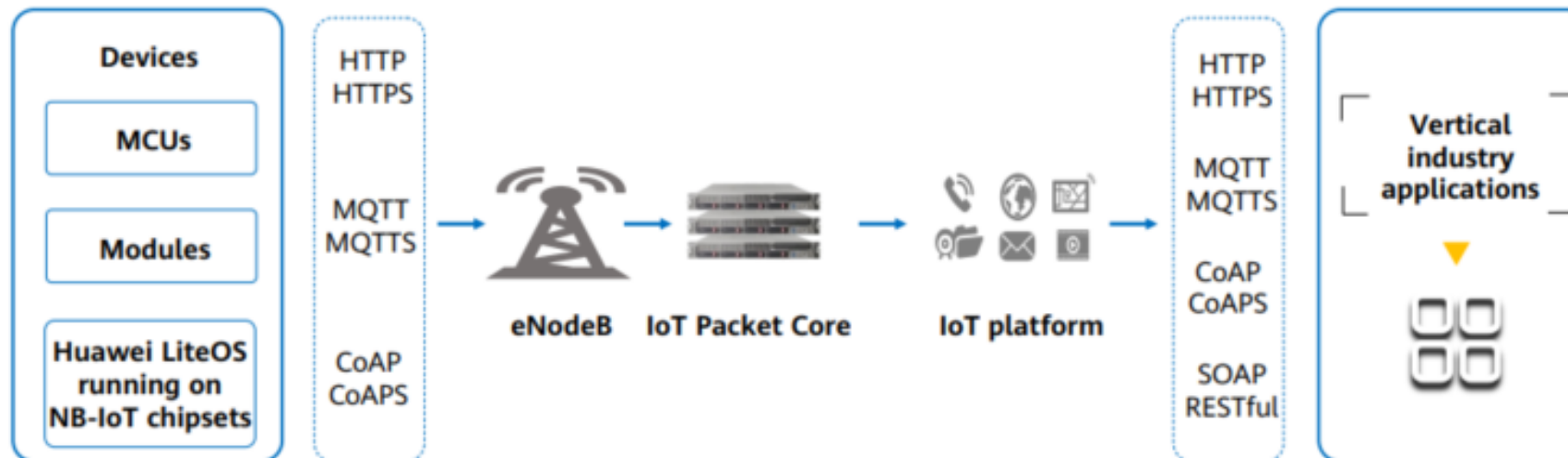


Huawei 1+2+1 IoT Solution Architecture



NB-IoT: Connecting Device Fleets Using Cellular Networks

- NB-IoT end-to-end solution



Industrial IoT Gateway



....



Agile AR

Industrial switching/Industrial routing/Built-in computing

Industrial-grade design



Shockproof/Waterproof/Dust proof/Anti-electromagnetic

+

Various interface support



ZigBee/RF/Bluetooth/RS-485/RS-232/DI/DO/more

+

Complex protocol adaptation

CAN/Modbus/IEC 62056/IEC 104/more

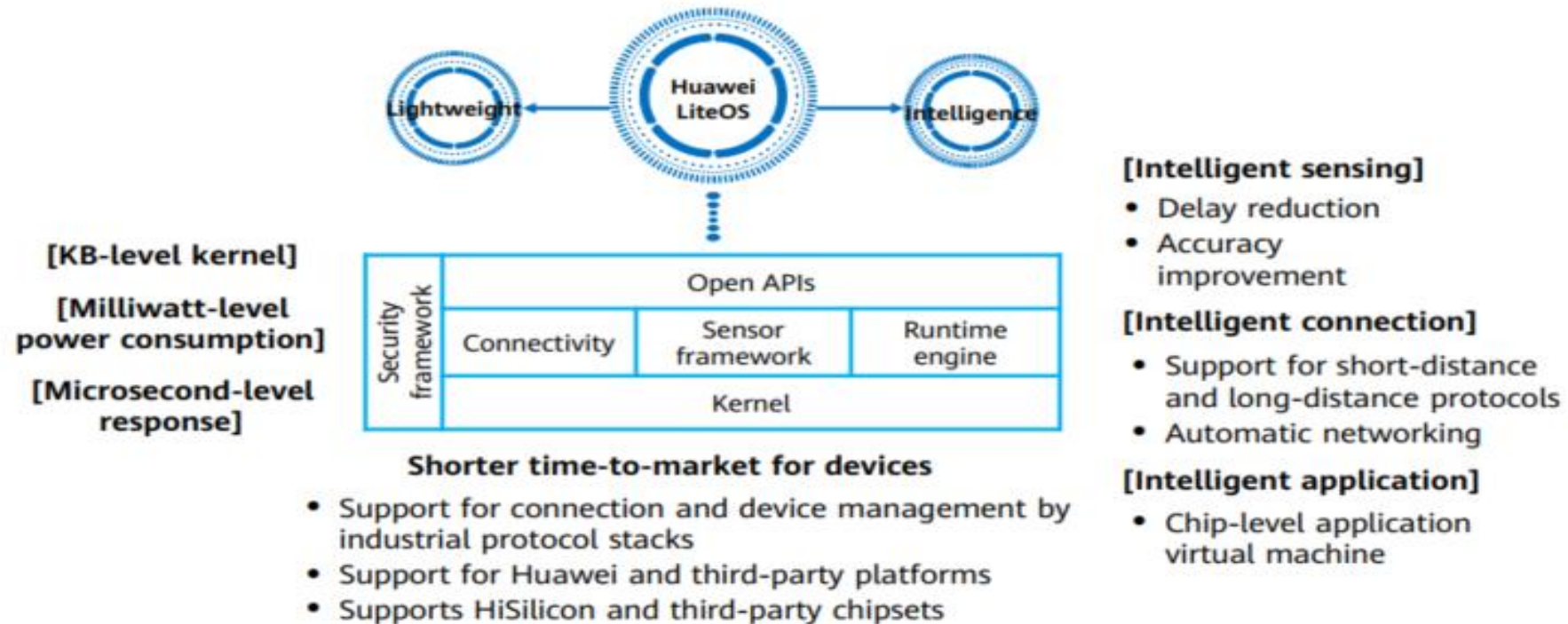
+

Local intelligence



Local computing and storage

Lightweight, Intelligent Huawei LiteOS





Thank You