



Solutions to respond to the pandemic

*Huawei capabilities
and key experiences from China
relevant for Europe*

Content

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The challenge

2

Huawei solutions

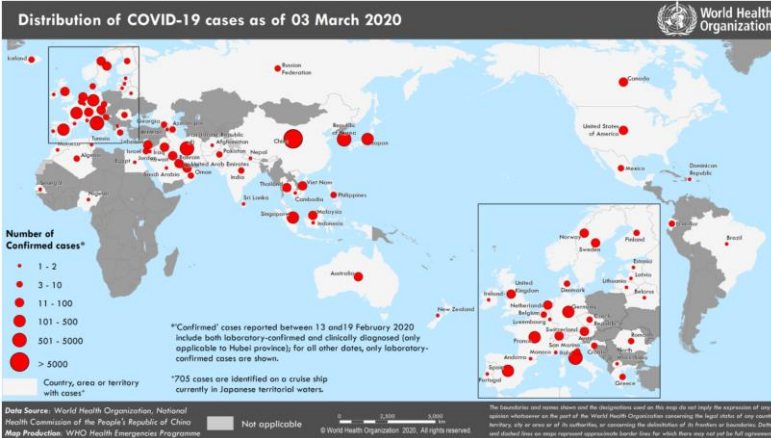
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Discussion

Covid-19, a potential “once-in-a-century pathogen”

--Bill Gates

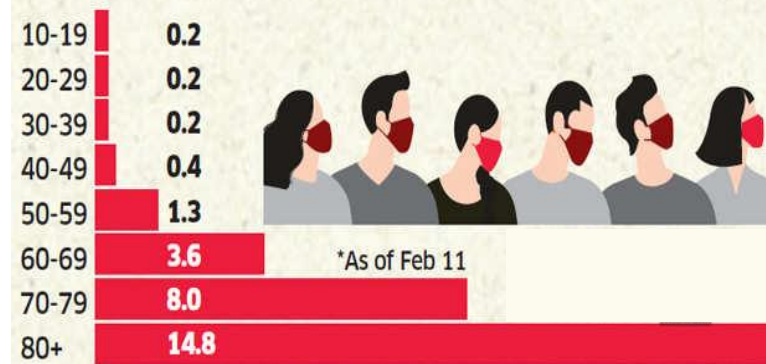
Out-of-Control Spreading



- Person-to-person spreading
- Infected within 15s
- Affects the entire population

High Risk

COVID-19 FATALITY RATE BY AGE * (In %)



- High Fatality Rate, more than 5%
- No specific medicine, no vaccine
- Irreversible sequelae

Silent & Covert

Incubation period: 1 - 14 days

This means it may take two to 14 days for the first symptoms of the infection to show up in a person who has been exposed to the virus



Outside the UAE there have been reports of asymptomatic cases i.e. infected patients didn't show any symptoms at all or showed symptoms as late as 28 days.

Gulf News

- 1~28 days incubation period
- 50% of patients are asymptomatic
- Contagious, already 2 days before the onset of illness

Covid-19 prevention and control has two key points

External: prevent the import



- Airport, train station, ferry terminals, cross-border shuttle services, etc.
- Customs, immigration, transfer desks, quarantine stations at ports etc.

Internal: prevent the spreading

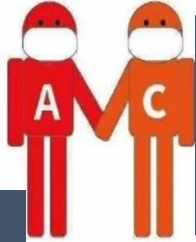
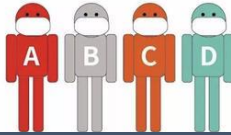


- Discover
- Detect
- Isolate
- Treat

ICT can help cope with the systemic challenges

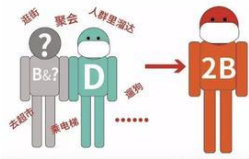
Discover

We identify people into 4 groups as A, B, C, and D.



Family members
Friends
Colleagues
Neighbors
.....

A and B may have contact in public place, but they don't even realize each other.



A: Infected person, must find A ASAP

B: A's possible contacts, should find all possible Bs ASAP, make them aware and order self-isolation

C: A's Close contacts, should be isolated during the whole incubation duration

Detect



- Check point:** efficient & full coverage
- Community management:** Closed management & efficient services
- Omni-Channel event report and management efficiency**
- AI-assisted call center and AI-enabled diagnosis**

Isolate



- Self-isolation:** large scale, minimize going out, work remotely, remote education, etc.
- Telemedicine:** protect experts and realize remote consultation for hazardous and critical patients
- Temporary isolation points:** manage C & suspected patients

Treat



- Temporary hospital:** admit A, the confirmed patients as many as possible
- Drug R&D :** Computer-Assisted Large-scale Drug Screening
- Remote visit**
- Remote training**
- Remote support**

Risks, beyond the disease

Medical resource shortage



- Personnel, medication, treatment and quarantine locations,
- Protective materials, lab-test facilities, etc.

Information transparency



- Fast spreading of rumors
- Out of context news
- False information

Potential risk of riots



- Public anxiety
- Abnormal behavior under high stress
- Other forms of violence

Content

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Challenge

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Solutions provided by Huawei

3

Discussion



Solutions in healthcare

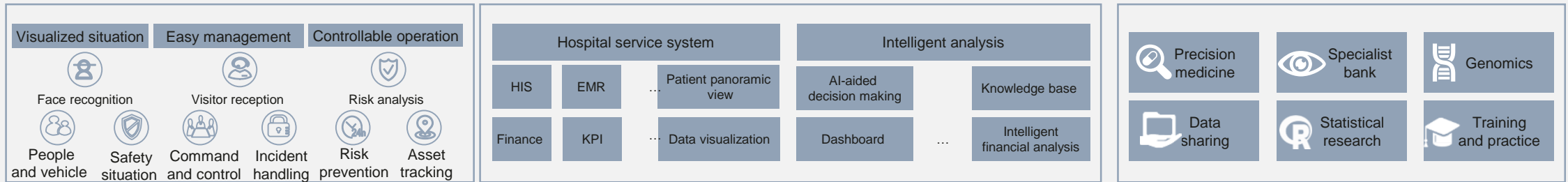
Building a hospital in 10 days: Huoshenshan Hospital practice

Service and experience focused

Data based platform

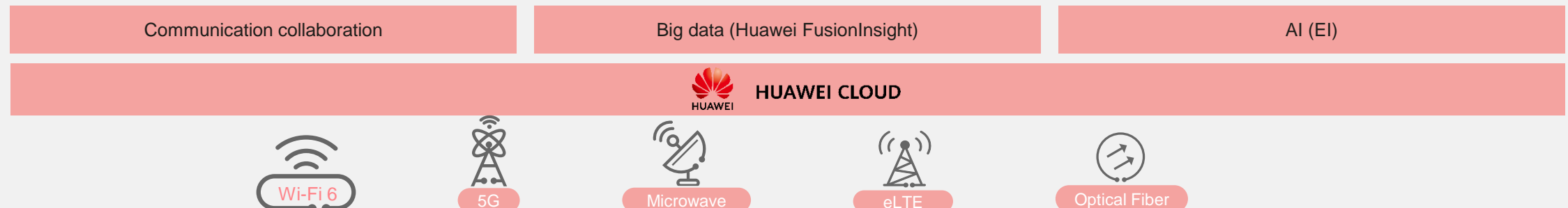
Open ecosystem

Services

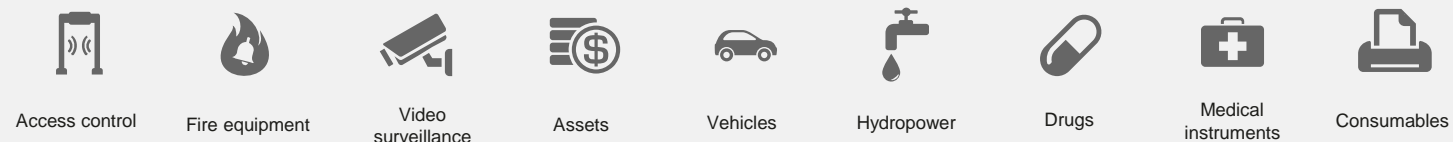


Digital foundation of smart hospital

Digital Foundation

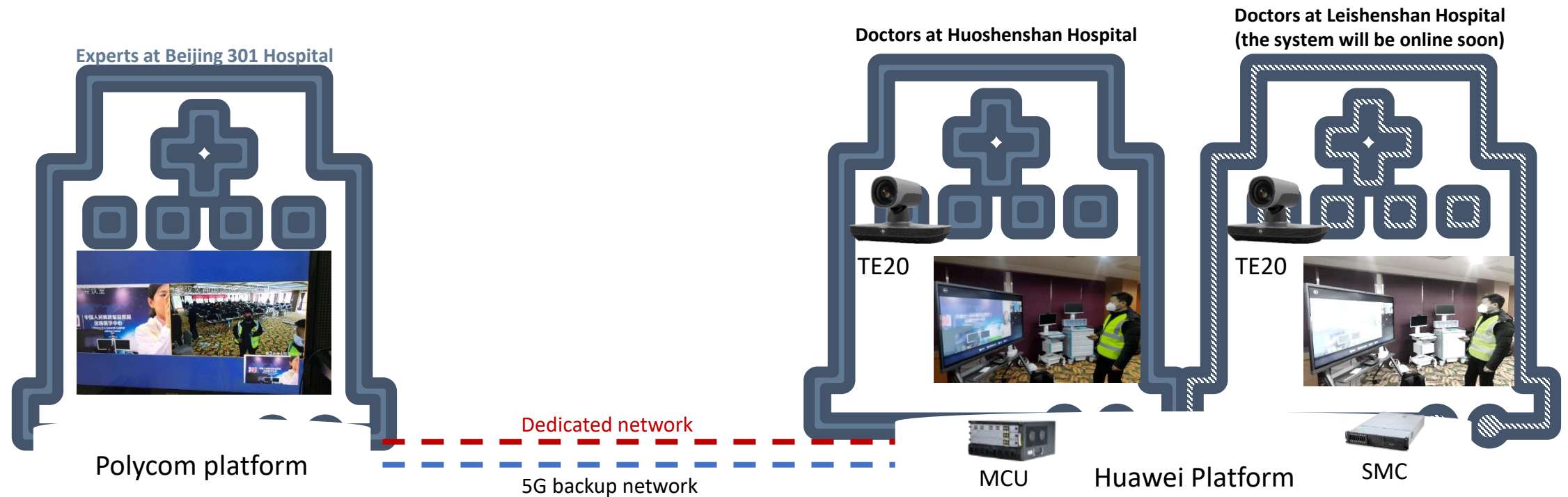


Assets at hospital



Telemedicine practice at Huoshenshan Hospital*

- The **first** remote consultation platform in Huoshenshan Hospital;
- The platform used **gigabit network** and backup with **5G** network;
- Huawei solution ensured doctors in **Wuhan** Huoshenshan Hospital consulted experts in **Beijing** smoothly, who was using **Polycom** platform.



**Huoshenshan Hospital (Chinese: 火神山医院; pinyin: Huǒshénshān Yīyuàn; literally: 'Mount Fire God Hospital') is an emergency specialty field hospital constructed from 23 January 2020 to 2 February 2020 in response to the 2019–20 coronavirus outbreak*

In-depth research of customer requirements for the hospital



Efficient collaboration

A large number of collaborative work is required, and joint prevention and control are required to ensure efficient communication anytime and anywhere.



Protection of medical staff

Medical staff are at high risk of infection. The time for doctors stay in the red zone is limited.



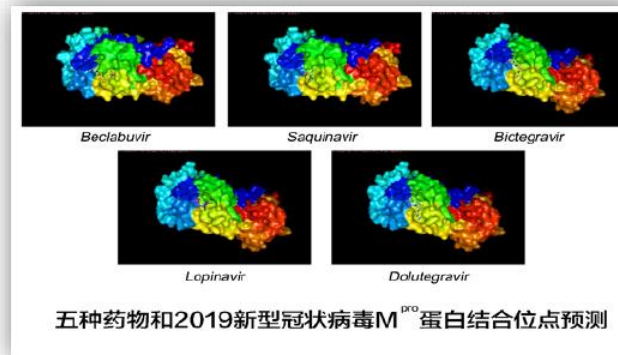
Expert resource sharing

Uneven distribution of medical resources, remote consultation, and remote support



Quarantine ward automation

Work in quarantine wards is assisted by the automation solution to reduce personnel requirements



Improved Detection methods

AI-based method, gene sequencing and AI-assisted examination



Hospital Hygiene Maintenance

Infrared thermometry, sterilization, and supplies transportation

5G+WeLink remote video psychological counseling/remote visit

One-on-one

Remote psychological counseling



For patients or medical staff with high pressure and emotional instability, they can connect the psychologist from other hospital for one-on-one counseling to relieve pressure and avoid the risks that the psychologist's on-premise arrival will involve.

Remote Video Visitation and leaders' visit to the red zone



For special patients whose family members require remote video visitation or leaders who will visit the patients in the red zone, a remote visitation system can be set up to enable two-way communication.

Scenario Description	Remote video inspection of the quarantine area and remote psychological counseling
Customer Benefits	<ul style="list-style-type: none"> For hospitals: psychological counseling for medical staff, alleviate psychological problems For patients: remote video visitation for isolated patients in quarantine area
Implementation	<ul style="list-style-type: none"> Huoshenshan Hospital (in coordination)
5G Features	High bandwidth
Network Requirements	20–30 Mbit/s in the uplink and downlink;

Self-check/Guidance on wearing protective clothing for better self-protection of medical staff

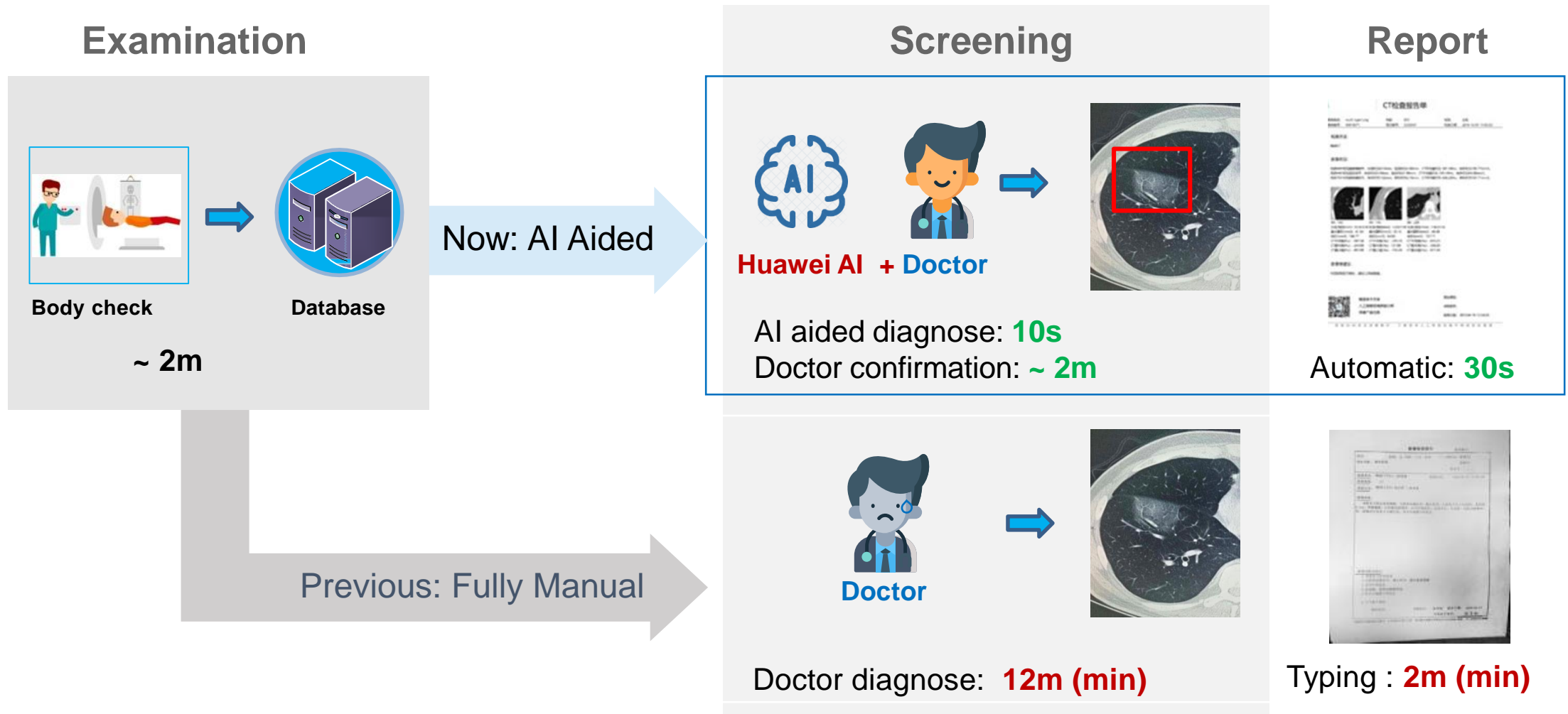
- **Major customer:** hospital, medical staff wearing self-check, remote workers double check, preventing infection due to improper wearing of protective clothing.
- **Key Solution:** The extended application is based on remote conference, Huawei Cloud WeLink + 5G CPE converted Wi-Fi signals + Large Screen/Camera for the communication of enterprises
- **Deployment:** It has been deployed for the Huoshenshan Hospital.

When medical staff put on the full set of protective equipment, it is difficult to find out whether the equipment is worn properly or damaged accidentally due to limited vision. With the help of the front and rear ultra-HD cameras and split display screen , medical staff can check the front and rear of equipment at the same time, enable them to check themselves quickly. Or they can access the support staff 's screen and two-way call system so that the support staff can assist them with checking.



Scenario Description	At hospital, medical staff wearing self-check, remote workers double check, preventing infection due to improper wearing of protective clothing.
Customer Benefits	<ul style="list-style-type: none"> • Reduce the risk of infection for medical staff
Implementation	<ul style="list-style-type: none"> • The fitting rooms of the Huoshenshan Hospital are located at both ends of the corridor. Because there is no network port or power port in this area, the smart screen cannot be used. In this solution, the Clairvoyance camera (provided by China Mobile, with a speaker),Huawei AP and portable charger have been applied.
5G Features	High bandwidth and low latency
Network Requirements	The uplink and downlink bandwidths are about 20 Mbit/s.

AI assisted diagnosis 6 times faster to identify a patient



By 26th Feb, Huawei AI assisted diagnosis solution was deployed in 20 hospitals in China.

AI enabled call center, faster screening, less labor

3 core technologies: ASR, NLP, TTS



Manual Dialing

vs.

Call center Robot

150 calls per day and person
High calling cost
Low manual transfer rate, without follow-up delays
Unstable manual information transfer
Manual result sorting and statistics

1200 calls per day and robot
10,000-minute free calls
Allows **multiple concurrent** outbound calls of sync access within a short period of time
Ensures standard information transfer
Automatic result statistics



Floating population investigation

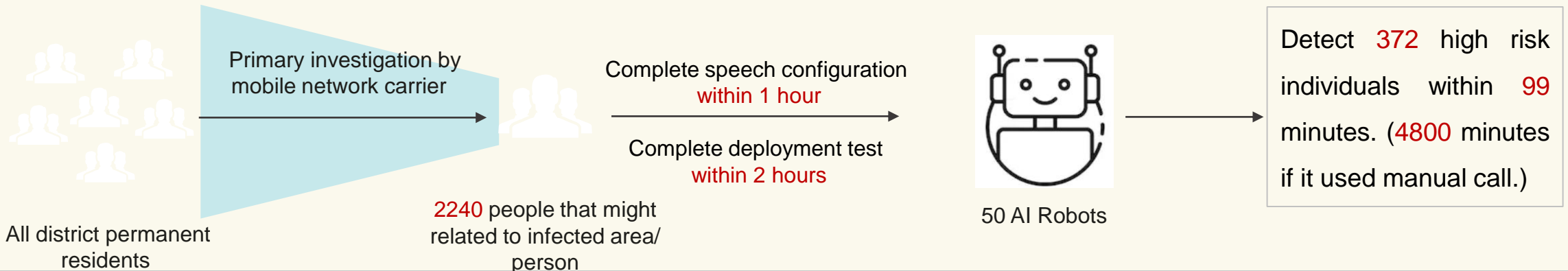


Local residents investigation and feedback

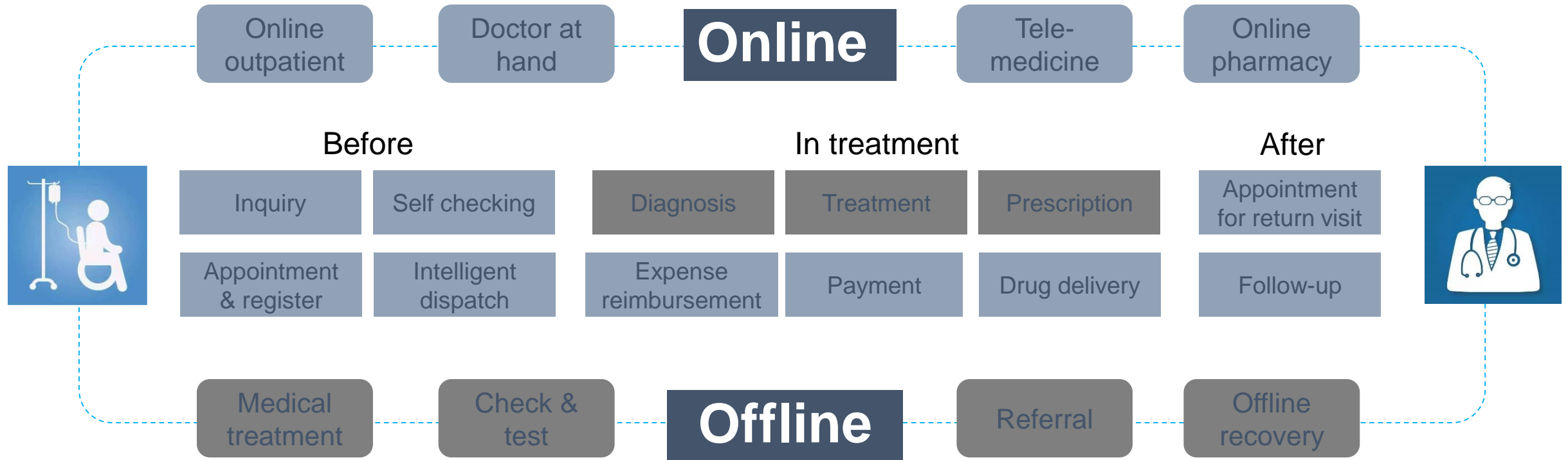


Specific personnel notification

Case in one district:

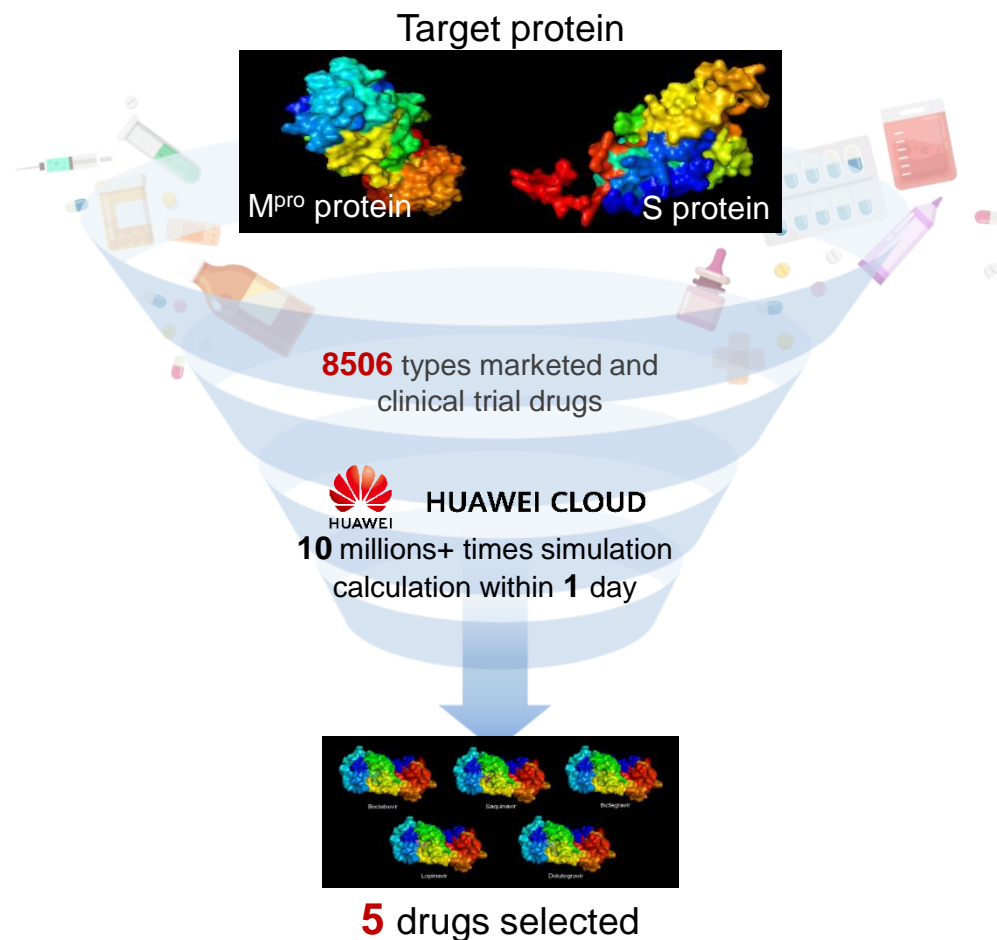


Internet hospital reduces massive crowding in hospitals



- Put most of the activities online to reduce patients' stay time in hospital, in turn reduces the chance of infection
- Link the online and offline activates so that treatment and status of patient can be follow-up with accurate information

AI-assisted drug screening accelerates new drug development



Joint research team formed by **Tongji Medical College of HUST of Huazhong University of Science and Technology**, **First Affiliated Hospital of Xi'an Jiaotong University**, **Beijing Genomics Institute of Chinese Academy of Science** and **Huawei Cloud**

- On 3rd Feb, **5** antivirus drug that may be effective against COVID-19 were found out by a large medicine screening from **8,506** existing drugs of DrugBank, and a much larger screening from more than **160 million** compound molecules in UniChem's small molecular library for only **one week**.
- This very large scale computer-aided drug screening is based on the powerful AI capabilities of the **HUAWEI CLOUD AI Ascend cluster** service and **ModelArts** one-stop AI development and management platform. It integrates many algorithms, tools, AI models, and automatic pipelines in the pharmaceutical field.



Solutions in eGovernment

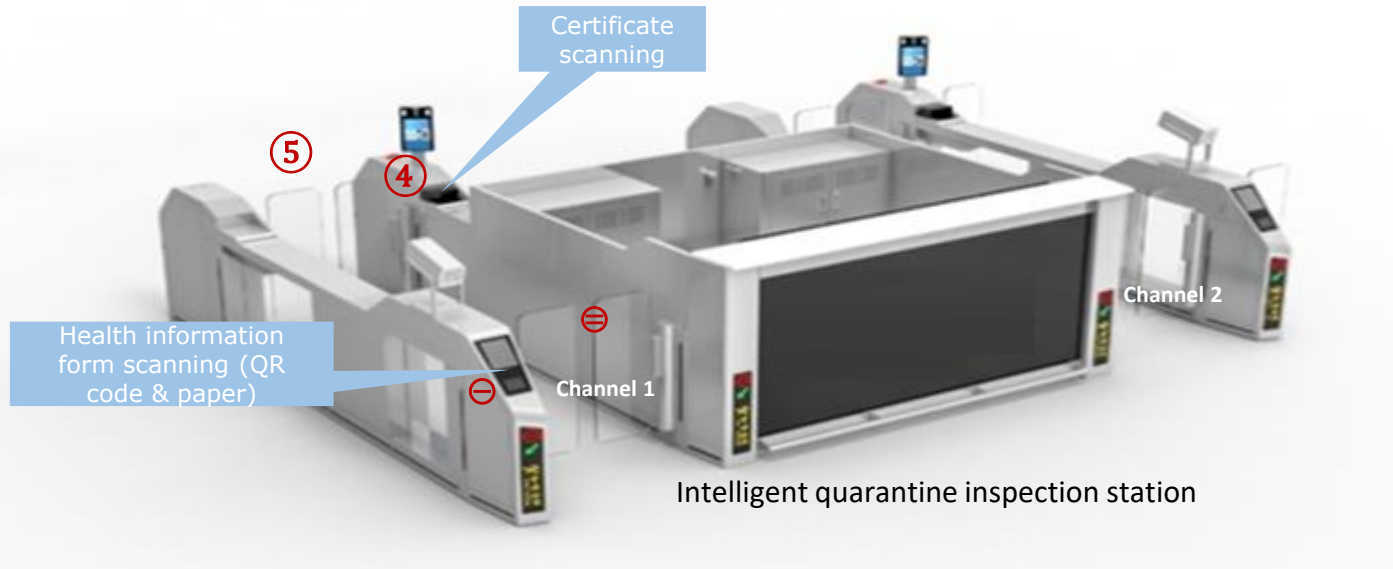
Intelligent quarantine process



⑥



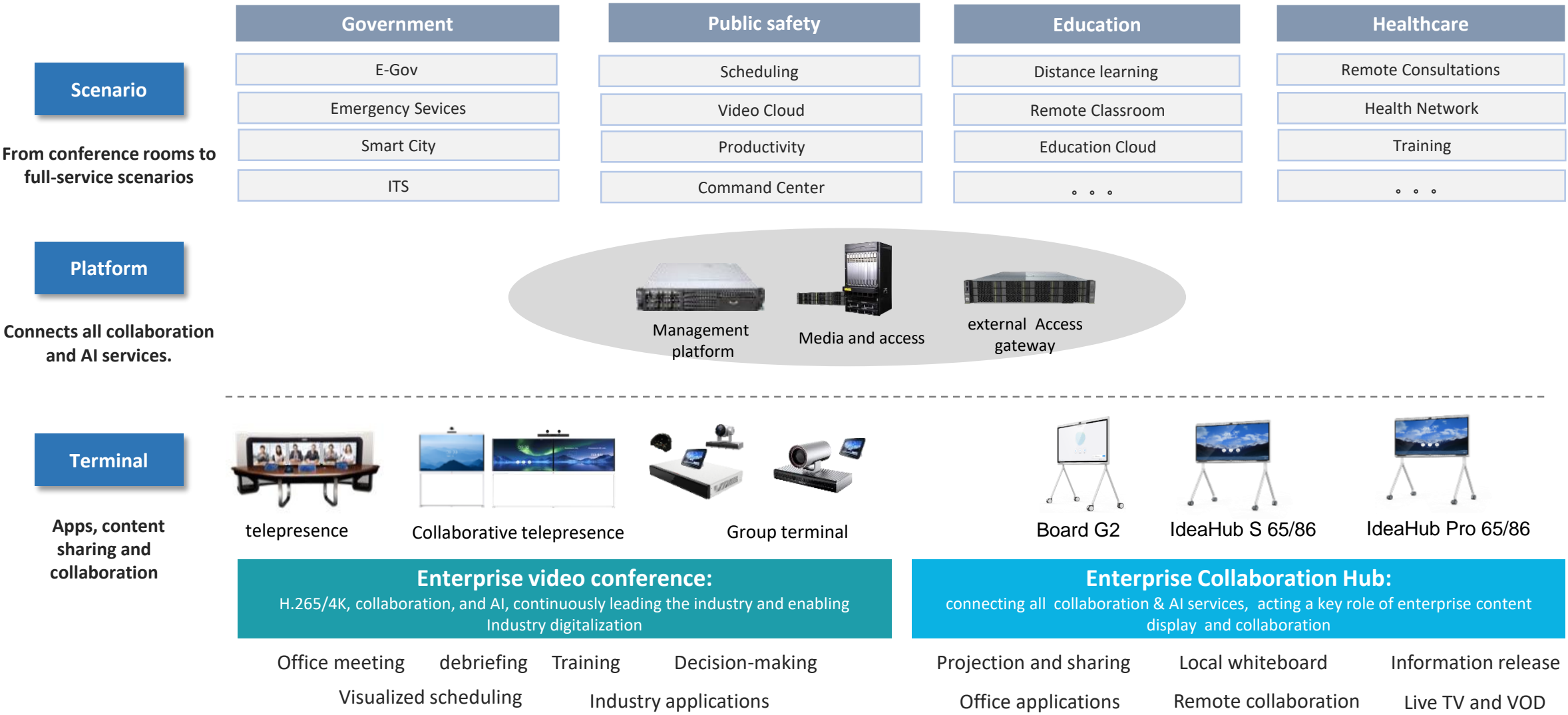
Port quarantine room



Quarantine Process

- ⊖ Scan the QR code of online health information declaration or insert a paper declaration form for scanning
- ⊖ The channel is open. Enter the channel
- ⊗ Detects the body temperature and takes photos of faces, and sends alarm information to the background
- ④ Prompt certificate scanning
- ⑤ Passengers leave the channel
- ⑥ Abnormal passengers are taken to the quarantine room for further inspection

Isolate-online office



Discussion

*Huawei capabilities
and key experiences from China
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Thank you

*Huawei capabilities
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