The smart city architecture and service practice in China

ITU-D SG2 panel session on Q1/2 thematic event

Chen CAI chencai@caict.ac.cn
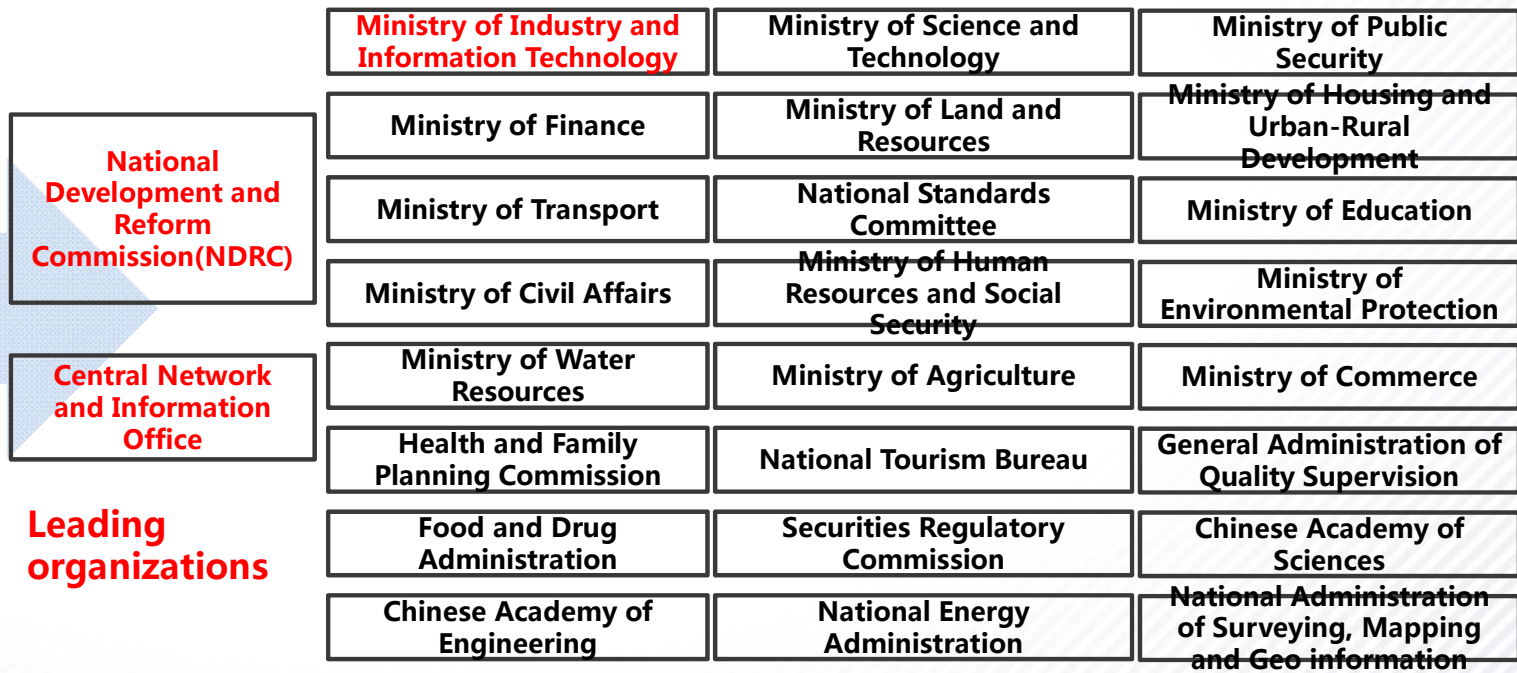
March 25. 2019

Smart city is transferring Ministries Promoting to Inter-Ministry Coordinated Promoting

Ministries promoting

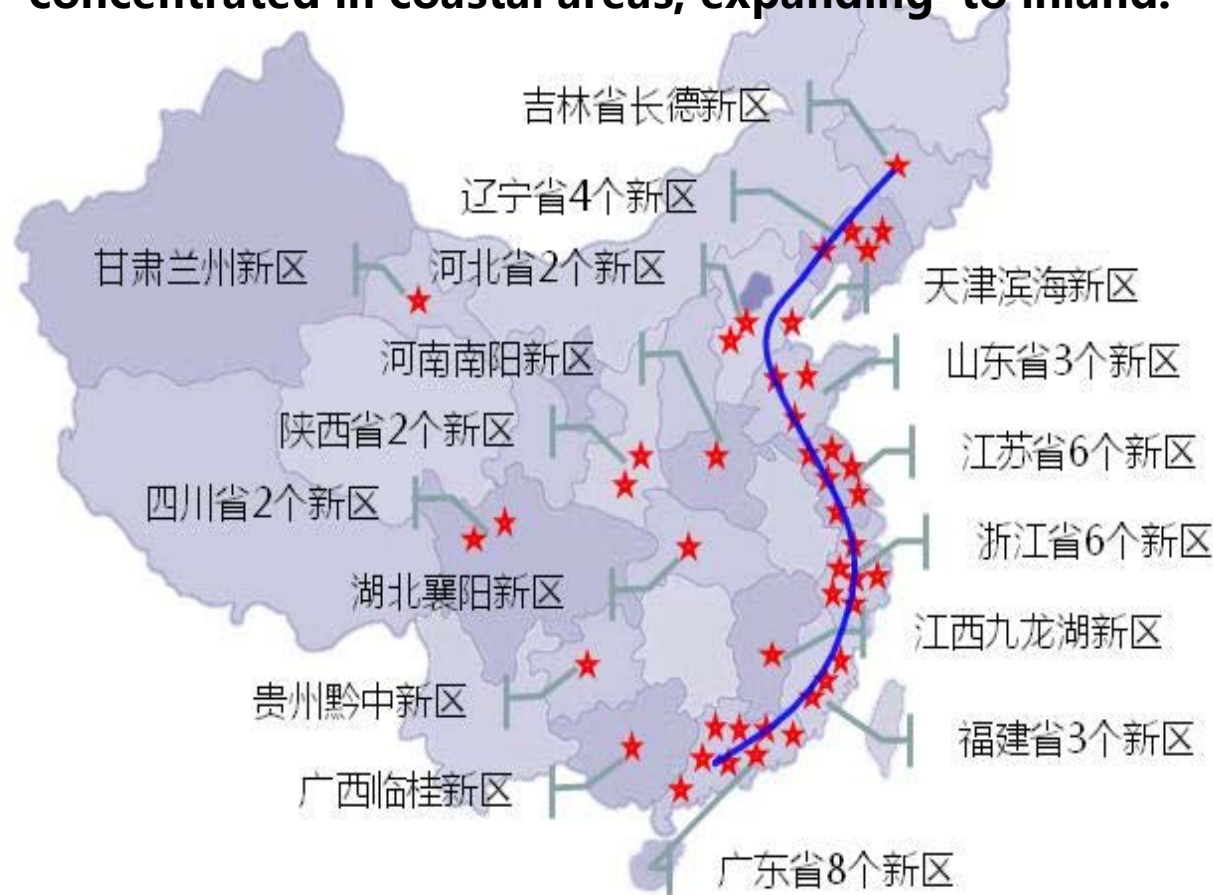| Development and Reform Commission |
| :---: |
| Ministry of Industry and Information Technology |
| Ministry of Civil Affairs |
| Ministry of Science and Technology |
| ... |

Leading organizations

National Development and Reform Commission(NDRC)
Central Network and Information Office

National level: set up the inter-ministerial coordination working group

Ministry of Industry and Information Technology	Ministry of Science and Technology	Ministry of Public Security
Ministry of Finance	Ministry of Land and Resources	~~Ministry of Housing and Urban-Rural Development~~
Ministry of Transport	National Standards Committee	Ministry of Education
Ministry of Civil Affairs	~~Ministry of Human Resources and Social Security~~	Ministry of Environmental Protection
Ministry of Water Resources	Ministry of Agriculture	Ministry of Commerce
Health and Family Planning Commission	National Tourism Bureau	General Administration of Quality Supervision
Food and Drug Administration	Securities Regulatory Commission	Chinese Academy of Sciences
Chinese Academy of Engineering	National Energy Administration	~~National Administration of Surveying, Mapping and Geo information~~

Participation organizations

Smart City is Sinking to Smart New City or New Town

The new town and new district of smart city are mainly concentrated in coastal areas, expanding to inland.

吉林省长德新区
辽宁省4个新区
甘肃兰州新区
河北省2个新区
河南南阳新区
天津滨海新区
陕西省2个新区
山东省3个新区
四川省2个新区
江苏省6个新区
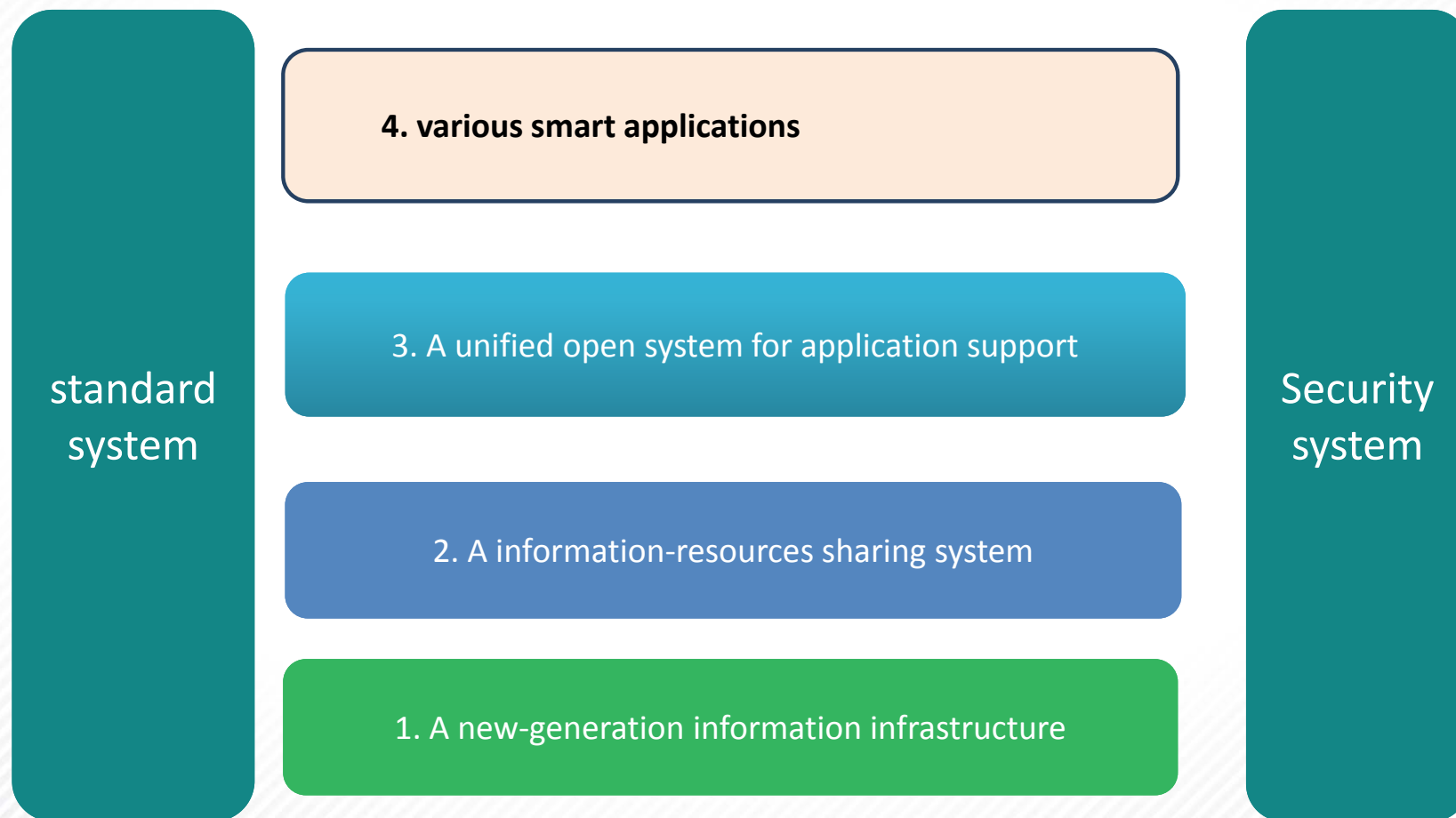湖北襄阳新区
浙江省6个新区
贵州黔中新区
江西九龙湖新区
广西临桂新区
福建省3个新区
广东省8个新区

Why green field?

- **Advanced economy—means they have money to do this**

- **Talented people----means they have technology to build this**

- **Open-minded----means they are easy and willing to accept kinds of new concepts, not only smart city**

What is Smart City : 4 layer model

Scientific decision-making and good life through **ubiquitous intelligent services**

Smart community Smart port Smart medical treatment

Smart grid

Smart Government Smart Tourism ...... Intelligent Transportation

Application Layer

Realizing **the accuracy and efficiency of management and service** through **aggregated big data and providing a develop eniveronment**

Smart brain develop Platform Information resource database Industry information resource database

Application and data support layer

Realizing information interconnection and sharing through **high speed network**

Satellite network Communication network Internet IOT

Network Layer

Promoting **the integration of physical space and cyberspace** through **comprehensive sensing**

Sensor equipment RFID/ QR code Smart Phone/ Smart terminal GPS/ RTLS

sensing layer

中国信息通信研究院 ∣ http://www.caict.ac.cn ∣

standard system

Security system

4. various smart applications

3. A unified open system for application support

2. A information-resources sharing system

1. A new-generation information infrastructure

CAICT 中国信通院

1. A new-generation information infrastructure

computing infrastructure

Cloud computing infrastructure
Edge computing equipment
Super computing infrastructure

transmission infrastructure

fixed network
mobile network
IoT network

Sensor infrastructure

Homogeneous Access
Heterogeneous Devices

1. facilitate cross-department and cross-sector information resources sharing

2. analysis and visualsation on aggregated big data

3. open data to society

2. A information-resources sharing system
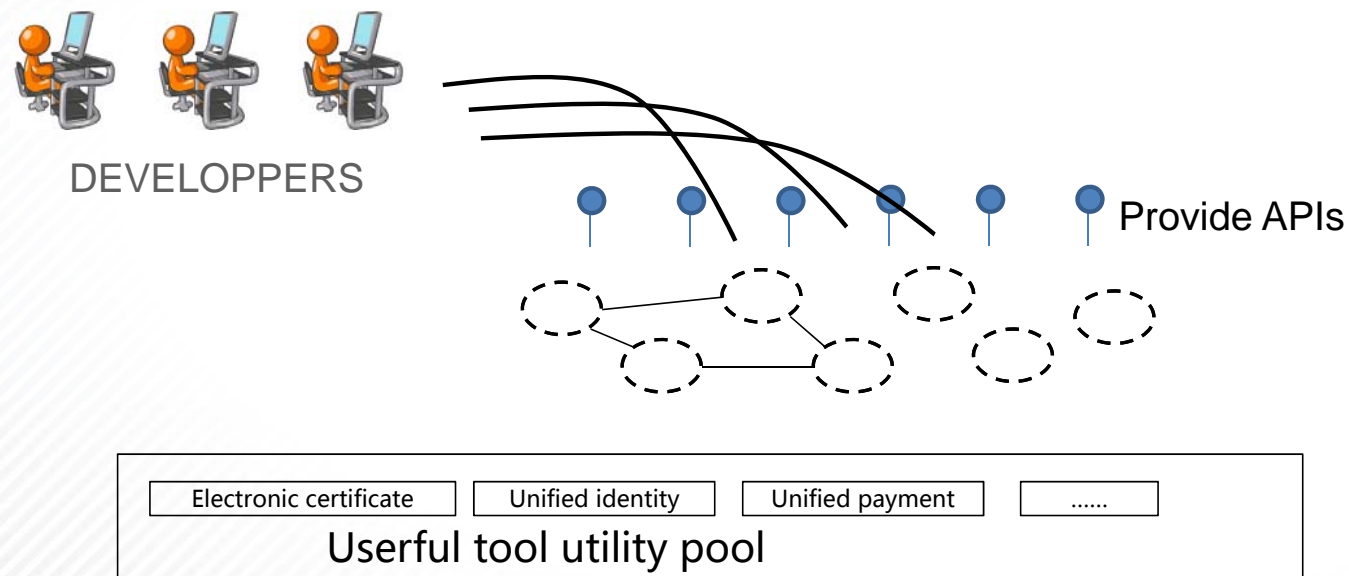
| Data shareing and analysis platform | Open Data platform |

| Data resource catalog | Basic data base | Thematic data base | department business data-base |
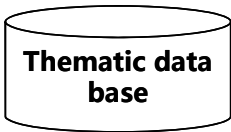
- attribute of data,
- the quaility and quantity of data;

- Population-base database
- Company-base database
- Geospatial database

- cross-different department
- e.g，Resident social security

- single department subject data

中国信息通信研究院 ｜ http://www.caict.ac.cn ｜

CAICT 中国信通院

1. provide a develop tool to easily deploy smart services;
2. monitor & manage resources;
3. mashup data to create a city dashboard

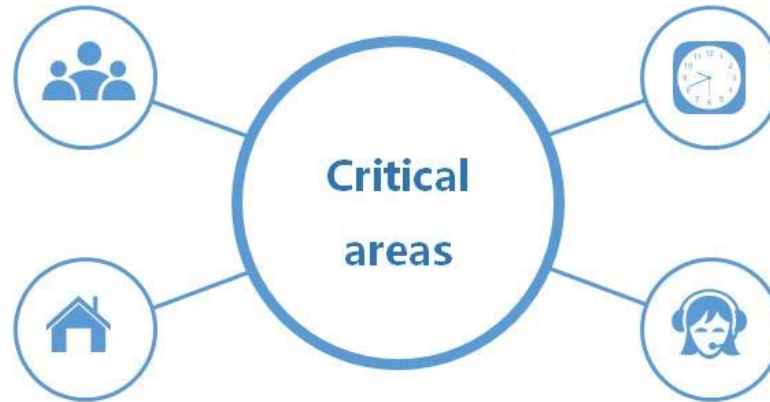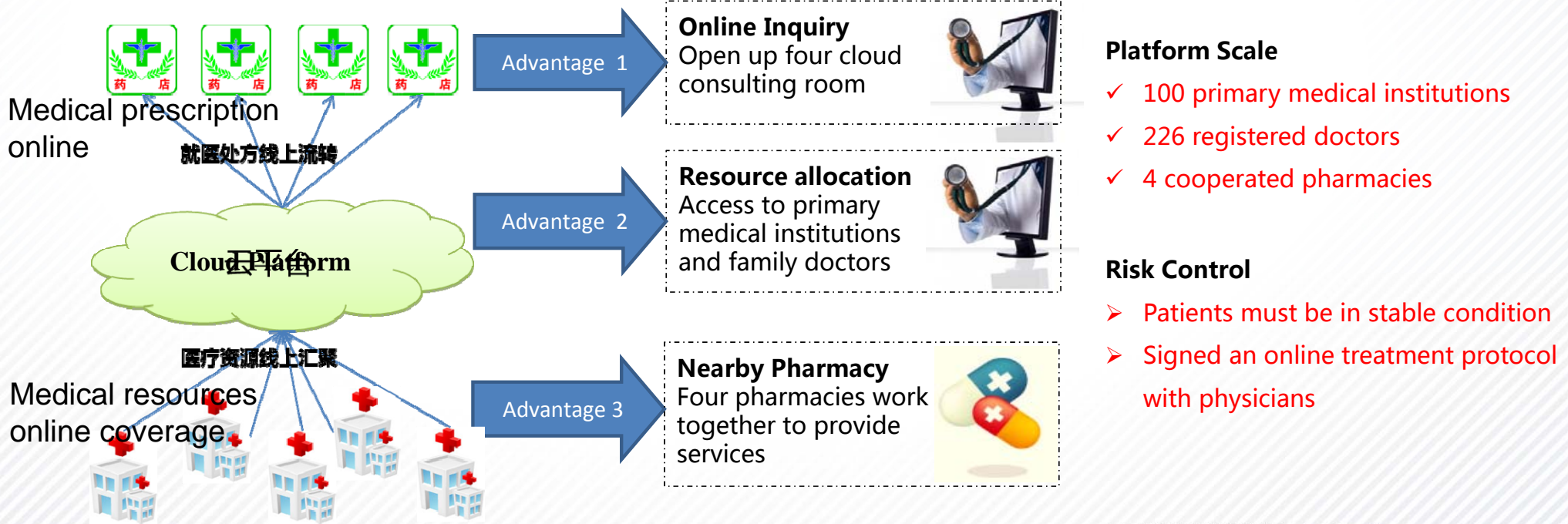3. A unified open system for application support

DEVELOPPERS

Provide APIs

| Electronic certificate | Unified identity | Unified payment | ...... |

Userful tool utility pool

service develop tool

city dashboard

中国信息通信研究院 ｜ http://www.caict.ac.cn ｜
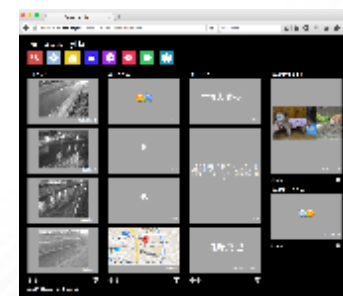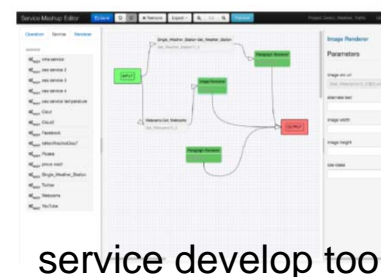
Citizen-centric services

various smart applications

Citizen Public Service

Governmental Service

Critical areas

Urban Management

Cloud Hospital： Ningbo Municipal Government take **the government-led, market-oriented operation mode**, and establish a online-medicine services and collaboration platform, called "Cloud Hospital".

Medical prescription online

就医处方线上流转

Cloud Platform
云平台

医疗资源线上汇聚

Medical resources online coverage

Advantage 1

Online Inquiry
Open up four cloud consulting room

Advantage 2

Resource allocation
Access to primary medical institutions and family doctors

Advantage 3

Nearby Pharmacy
Four pharmacies work together to provide services

Platform Scale

✓ 100 primary medical institutions

✓ 226 registered doctors

✓ 4 cooperated pharmacies

Risk Control

➤ Patients must be in stable condition

➤ Signed an online treatment protocol with physicians

中国信息通信研究院 | http://www.caict.ac.cn |

Gov service Case： One-stop Approval Service

Yinchuan City established **the Administrative Approval Service Bureau**. More than 500 approvals and public service items, which are under the responsibility of 26 municipal departments, including education, industry, and transportation, were transferred to the single Bureau(Administrative Approval Service Bureau),and this Bureau provide online and offline approval service, decreasingthe citizen approval time largely.

Different department accepte different Administrative approval

In the past, the citizen had to run many departments and cover many chapters.

227. 3 minutes

- **Foreground comprehensive reception**
- **Background classification approval**
- **Output via unified window or on Internet.**

By One-stop Approval Service, citizen only goto onedepartment, some approval even finished online

12 minutes

中国信息通信研究院 | http://www.caict.ac.cn |

Guangzhou Yuexiu District has taken the lead in exploring the smart grid management services. According to **the average 200 households**, Yuexiu district, including 222 communities in 18 streets, were devided into 2016 grids, realizing **grid coverage and information network sharing**.

Basic framework

- **In a basic grid, a grid team, in charge of grid data collection**
- **event reporting, and processing.**

Each "grid" covers 200 households.

A part-time grid worker team in charge of Grid with Smart device
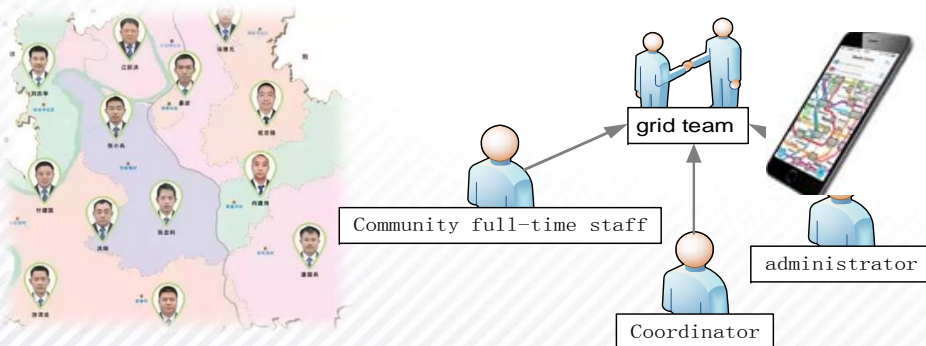
A grid involves many managemnt affaires, such as

- Medical management
- Traffic management
- Small and micro water management
- Environmental monitoring management

Benefit

Community full-time staff

grid team

administrator

Coordinator

➤ Broke the information barriers of various department，such as civil affairs, urban management, and comprehensive management.

➤ Make a transition from each special department management to gridded collaborative management.