eHealth and mHealth—
China Unicom’s experience and view

Dr. Xiongyan Tang
China Unicom Research Institute

25 June 2013, Shanghai
Contents

- China Unicom’s M2M services
- China Unicom’s activities in eHealth
- Challenges & Opportunities of eHealth
China Unicom: the largest WCDMA operator

China United Network Communications Group Co., Ltd ("China Unicom") was officially established on 15th October 2008.

- China Unicom had the largest 3G (WCDMA) network in the world.
- By May 2013, the number of China Unicom mobile subscribers had reached 258 million, among which the 3G (WCDMA) subscribers 96 million.

Prospective & Commitments:
China Unicom is committed to forging itself into a world-leading information service provider by offering innovative and superior services.

Information service
- Its the core sector of the company operation. Providing information-life services can reflect our custom-centralized service conceptual framework.

Innovation
- Its the original driving force and the requirement of differential competition to achieve solid development in a long-term.

Superior Services
- Its the basis of the company to become information service provider in the future. By offering the best information service to establish a leading service system in the industry.

Leadship
- Its the ultimate goal for the company, to obtain world-wide leadership in fields including: scale of the company, operating performance, operating efficiency, innovation ability and quality of service.
IoT creates new opportunities for telecom operators

Mobile phone services will gradually saturate. M2M is the new growth point

China population: 1.3 billion
China’s mobile subscribers: 1.165 billion (by May 2013)

IoT: strategic emerging industry in China. By the end of 2012, the total revenue of IoT industry in China reached RMB 365 billion, up 38.6%.

In Feb 2012, China MIIT (Ministry of Industry and Information Technology) released 《The national 12th five year plan for IoT industry》

In Feb 2013, the State Council of China released 《The guideline for promoting the healthy development of IoT industry》

Smart healthcare
- One of the 9 key application areas of IoT industry in China
- Major focuses in the coming years: in-Hospital informatization, drug management and logistics, remote health monitoring at home and community
### M2M Service Strategy

<table>
<thead>
<tr>
<th>Traditional Telecom Service</th>
<th>Dedicated M2M Service</th>
<th>Application Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Service</strong></td>
<td><strong>Network Enhancement</strong></td>
<td><strong>Cooperation</strong></td>
</tr>
<tr>
<td>Connectivity</td>
<td>M2M dedicated MSISDN</td>
<td>Deep cooperation with verticals</td>
</tr>
<tr>
<td></td>
<td>Embedded SIM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M2M dedicated NEs</td>
<td>Partnership &amp; Business model</td>
</tr>
</tbody>
</table>

- Involved in eHealth, etc. with lowest cost and risk
- To enable differential network services
- To enhance M2M management
- To enable easier M2M service provision

*China Unicom* has severed about 10 million M2M terminals in various industries including video surveillance, intelligent transportation, eAutomobile, smart grid, eHealth, etc. The market is vertical and diversified.
(1) Connectivity service

- Connectivity: China Unicom’s main M2M service provided to verticals

Other value-added services include:
- Dedicated tariff packages
- System integration and solutions

- Challenges
  - M2M ARPU is lower (1/10 of H2H ARPU)
  - Market requirements are fragmental.
  - Business model is premature.
(2) Data center and cloud services

Provide secure storage and transfer for EHR, Clinic data
(3) M2M dedicated network and service supporting platform

- E-health, ITS, others
- IoT service supporting platform
- Common Access Network (2G/3G)
- M-GGSN, M-SMSC, M-HLR
- SGSN, VMSC/VLR, UTRAN, GERAN
- IoT devices

- Simplifying IoT service provisioning
- Optimizing network utilization
- Providing network diagnosis

- Access control and security management
- Terminal and identification management
- Data mining and processing
- Developer community and partner portal
- Cloud service platform

- M2M dedicated MSISDN (10646...)
- Embedded SIM card

- Network Data Elements
- Network Control Elements

- IoT devices

- M2M dedicated MSISDN (10646...)
- Embedded SIM card
Collaborate closely with the medical/healthcare industry

(4) Application and Cooperation

Medical/healthcare domain

Operator domain

PLA General Hospital

Nanshao Community Centre

Changping Hospital

Medical/healthcare domain

Network

Data Center

PACS

LIS

HIS

PACS

LIS

HIS

Network management
Operations support

Data base
Service platform

PLA General Hospital

Nanshao Community Centre

Changping Hospital

Medical/healthcare domain

Operator domain

user domain
On-line appointment and health information services are the dominant eHealth business of today. Health monitoring service is new focus with great market potential.
(1) On-line appointment service

Beijing hospital on-line appointment platform

- *China Unicom* constructed the platform in partnership with Beijing Municipal Health Bureau
- Multiple access available: fixed phone, Internet, mobile phone
- Available for 141 hospitals in Beijing
- Register number over 100,000 per day
(2) Health monitoring for elderly

China Unicom cooperates with some elderly apartment developers to construct smart apartments for the aged, where health monitoring is the essential part.
China Unicom cooperates with some health device vendors to develop mobile health and sports monitoring terminals

- Integrated mobile module with SIM card
- Embedded SIM card
- Terminal management protocol
- Interoperability of different types of terminals with service platform
China Unicom cooperates with some 112 emergency medical centers and hospitals to develop smart ambulances based on ECG monitor embedded with 3G and video surveillance with 3G.

Data collected from ECG monitor can be sent to hospital through 3G network in real time. This will greatly benefit the pre-hospital emergency care.
(5) eHealth standardization activities

- CCSA (China’s communication standard body)
  - Ubiquitous ehealth application scenarios and technical requirements (Technical Specification)
    
    *Editor: China Unicom*

- ITU-T IoT GSI
  - Requirements and network capabilities for EHM-health monitoring services (ITU-T Recommendation)
    
    *Editor: China Unicom*

- OneM2M & GSMA
  - Involved in multiple activities and work items related to eHealth.
Challenges

- **Lack of expertise**
  - Due to the lack of expertise, it’s hard for operator to directly design and provide popular eHealth services for patients.
  - After-sale service is a big burden.

- **Premature business model**
  - For fragmentary market, it’s hard to copy the existing mature business model.
  - How to build a multi-win ecosystem?
  - How to develop cost-effective devices and services?

- **Consumption habits**
  - Patients only trust medical/health authority or experts, not telecom operator, when selecting medicine/health services.

- **Industry barriers**
  - Traditionally, medicine and telecom are two independent industries.
  - Lack of standard for cross of medicine/health and telecom industries

- **Potential risk**
  - The rule/law is absent for privacy protection and responsibilities division in case an accident occurs.
A healthy ecosystem is the key to growth of eHealth or mHealth industry.

China Unicom’s involvement in eHealth is still in the early stage. China Unicom will strengthen the effort in eHealth by providing reliable connectivity, flexible tariff packages and better service support for partners as well as deepening collaboration.
Thank You!

唐雄燕
Xiongyan Tang

tangxy@chinaunicom.cn