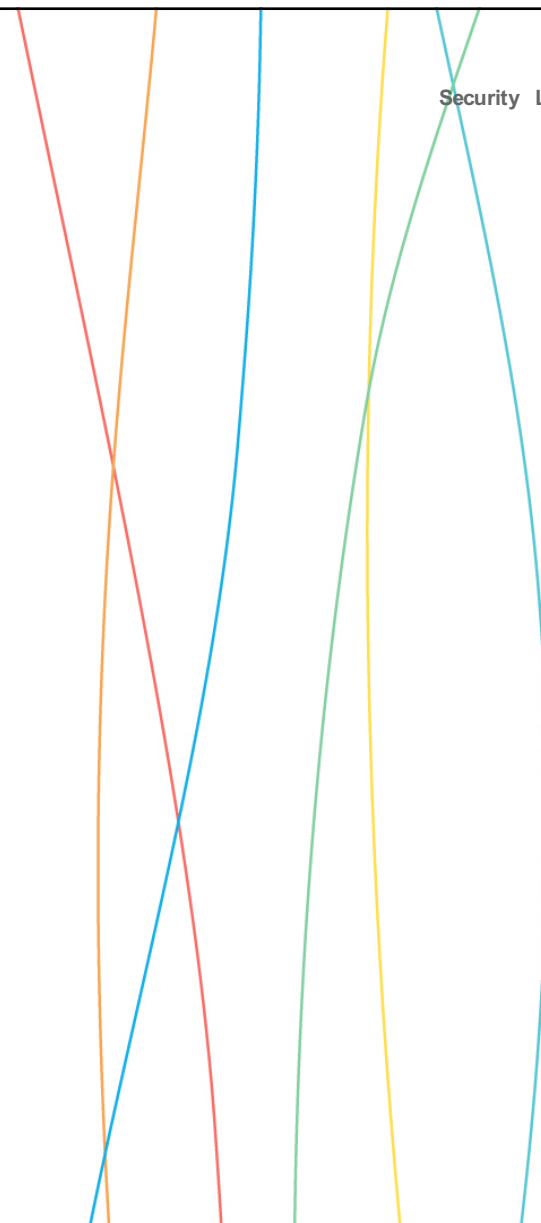# Building A Fully Connected World Together with NB-IoT

Mr. Cheng Zhu

President of Cellular IoT Product Line

NB-IoT Commercialization is on Fast Track

Expectations
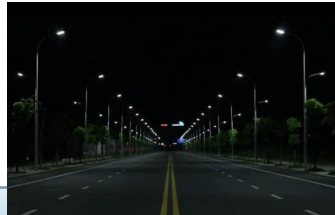
28 Networks , **20** countries by 2017

Belgium Netherlands Norway Finland Belarus
Ireland Germany Turkey Chech
Italy South Korea
Spain UAE China HongKong
Austria Sri Lanka Australia Singapore
South Africa

50000+   7000+
3000+   5000+
25000+   10000+

鹰潭 Rank 296 in Chinese Cities
1.3M population

IoT Connection **663K** > Phone User **≈600K**

R13 Frozen

Attraction of Media

Ecosystem Ready

Large Scale Commercialization

IoT Connections Explode in Yingtan

100 networks

vodafone HUAWEI
Proposal to 3GPP

Logistics Tracking
Agriculture
Smart Home
Health & Monitoring

Smart City

15 Million
Pcs Delivered

HUAWEI

QUALCOMM SEQUANS COMMUNICATIONS RDA NORDIC SEMICONDUCTOR

150 Million
Connections

2014-2015   2016   2017   2018   2019   Time

Innovation Phase   Hype Peak Phase   Waning Enthusiasm Phase   Wide Adoption Phase   Long-Term Profitability Phase

NB-IoT Use Cases Started Large Scale Deployments

50 thousand, pcs in contract

1 million, pcs in contract

2 million, pcs meters to be delivered in 2018

1 million, pcs meters to be delivered in 2018

More

. . .

Smart Parking
(Germany, Xi'an)

Street Lighting
(Shanghai, Yingtan)

Smart Water
(Fuzhou Yingtan…)

Smart Gas
(Korea, Shenzhen…)

1 million, pcs in 2018

1.5 million cows in contract

1 million, pcs in 2018

1 million, pcs in 2018

More

. . .

Smoke Detector
(Shanghai, Xiamen…)

Connected Cow
(Neimeng, Ningxia…)

Smart Lock
(Tsinghua, Changchun…)

Shared Bicycle
(Beijing, Yingtan)

Huawei Technologies Co., Ltd.

Proven Solution To Meet Typical LPWA Requirements

Remote Control

Smart Lighting

山东中微 AOD CO., LTD
泰华智慧
PHILIPS

WeiFang : 2K
NanJing : 1K
ShangHai : 1K
YingTan : 2K
HongKong : 100

99.26%   99.31%   <5s

Light On-Air SUC Rate   Light Control SUC Rate   Single Light Control Latency
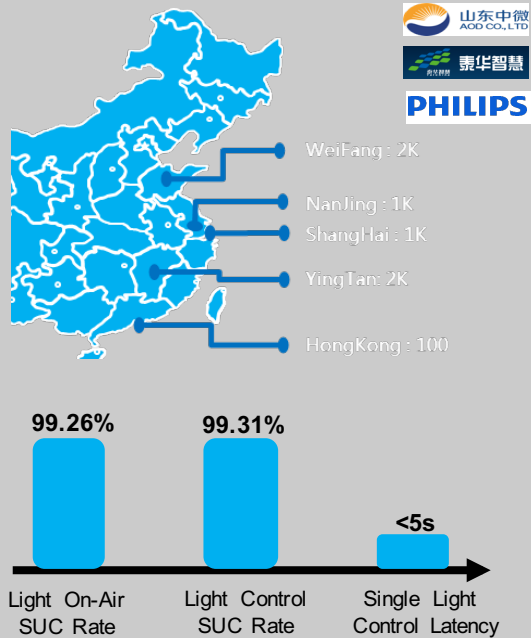
Performance

Asset Tracking

Sharing Bike

Power Consumption/Ride (mAh)

2,27   2.5x Battery Life   0,91

4
2
0

GPRS Bike   NB-IoT Bike

Lock Close Latency (s)

6,81   Better Experience   2,04

10
5
0

GPRS Bike   NB-IoT Bike

ofo
mobike 摩拜单车
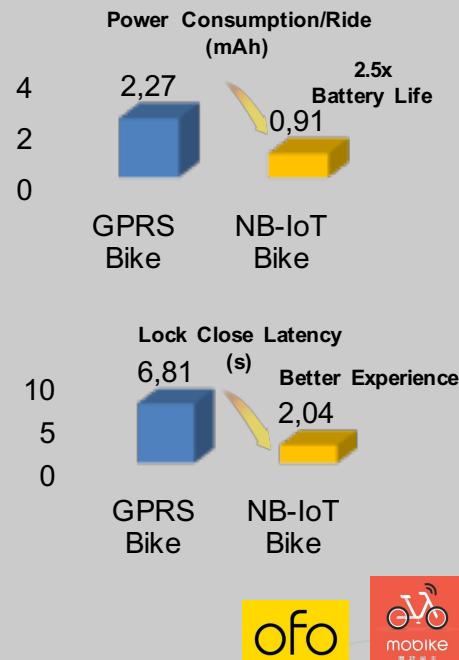
Sensor Information Upload

Smart Meter

99.9%   24   Safety
Metering Success Rate   Labor Reduced per 100K   No Security Risk

2017.10
100K Smart Water Meter Deployment in YingTan

2017.9
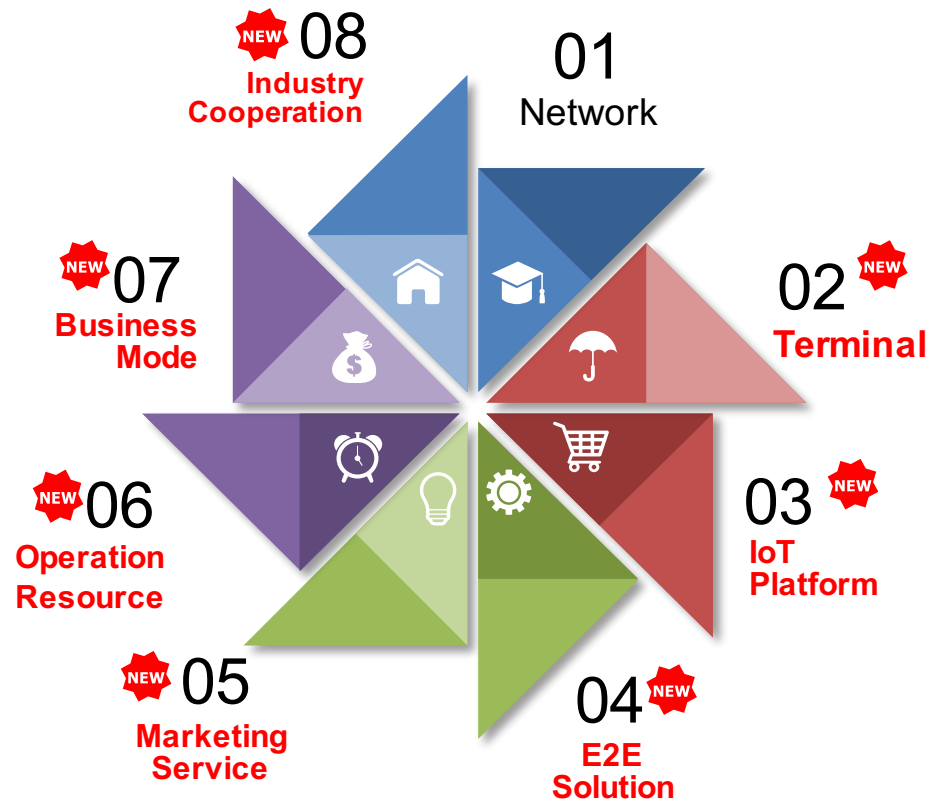**6K** Smart Gas Meter In Shenzhen

Cell Capacity Analysis when Several Types of Use Cases are Combined

No.	Use Case	Connection Times	Number /Cell	CC0	CC1	CC2	Start Time	End Time
1	Smart Water Metering	1	3000	50.0%	30.0%	20.0%	0	8
2	Smart Lighting: Attach	1	200	80.0%	15.0%	5.0%	17	18
	Smart Lighting: Heart Beating	48		80%	15%	5%	18	06
3	Sharing Bike: Lock, Location Update	2	800	60%	35%	5%	7	9
		2		60%	35%	5%	17	19
		1		60%	35%	5%	0	24
4	Smart Gas Metering	1	1000	50%	30%	20%	0	8
5	White Goods	96	500	40%	55%	5%	0	24
6	Smart Parking	24	200	50%	45%	5%	6	24
	Total		5700					

Based on the traffic model above, the number of connections per cell is predicted to be **5700**

NB-IoT: Not Just Selling SIM Cards

08 Industry Cooperation
01 Network
07 Business Mode
02 Terminal
06 Operation Resource
03 IoT Platform
05 Marketing Service
04 E2E Solution

Go beyond traditional service domain

Build new E2E service integration capability

Deploy Mature NB-IoT Network

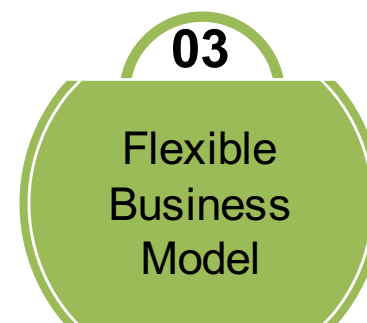Build Vertical Industry Ecosystem

Gain More Revenue

Three Key Methods Leading to NB-IoT Success
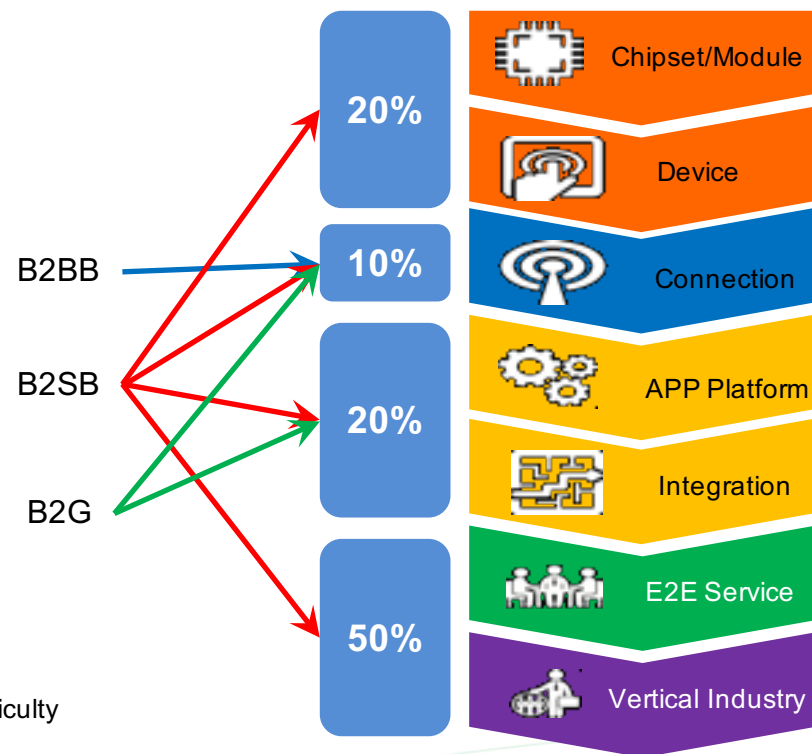
01
Full Coverage Network

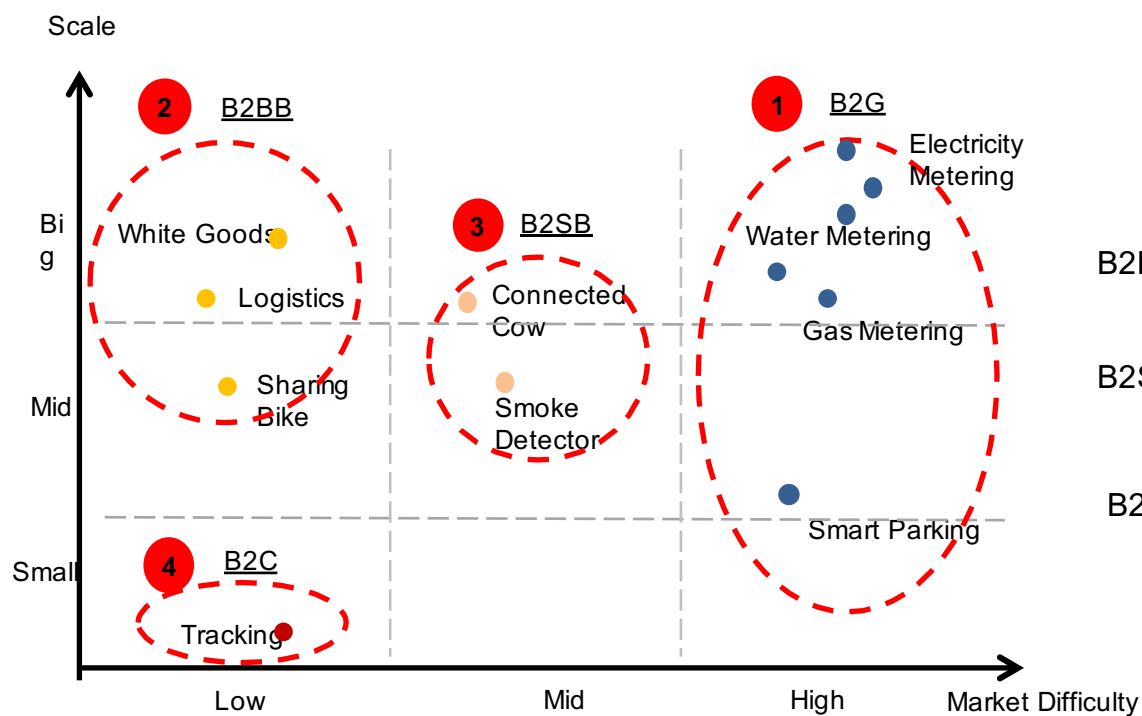Full Coverage Network is the **basis** of NB-IoT Success.

02
Mature Local Ecosystem

Create a variety of NB-IoT devices to satisfy different application scenarios. Incubate use cases through **local ecosystems**.
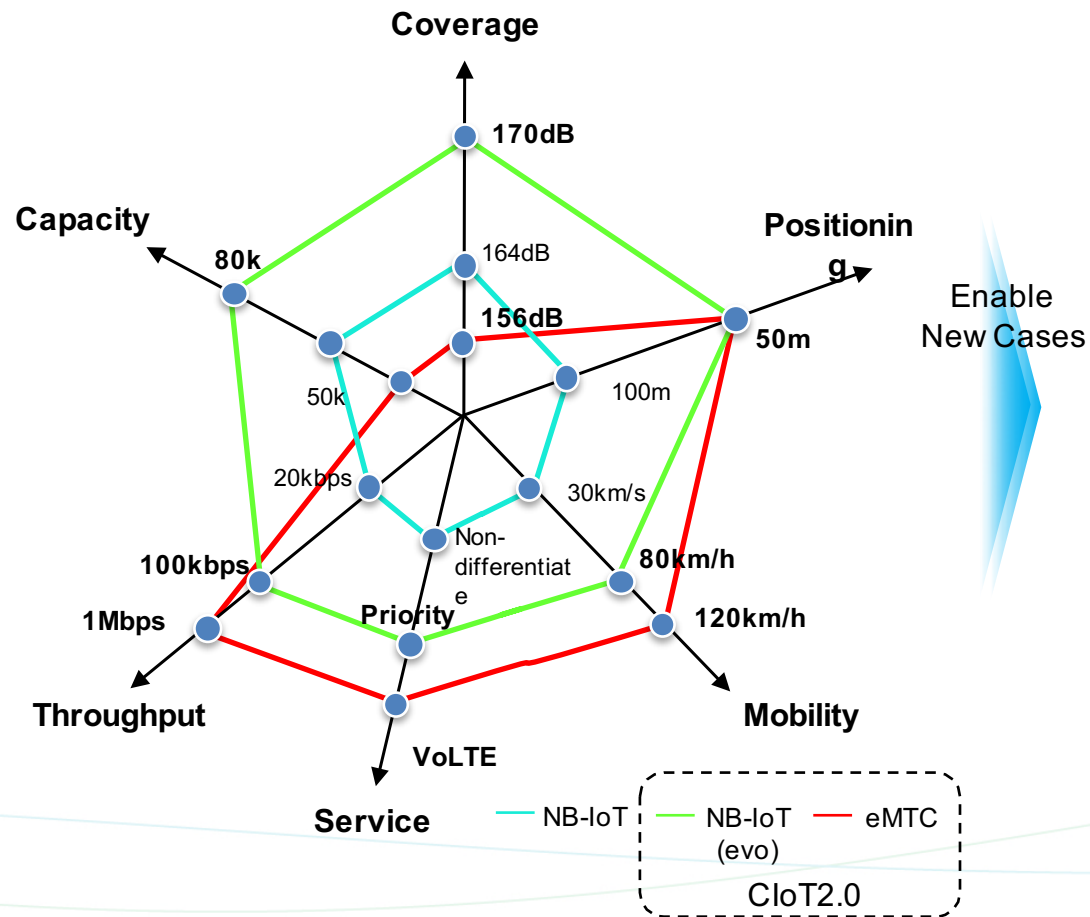
03
Flexible Business Model

Transform from **SIM selling to E2E integrated business solution,** gain more from NB-IoT.

Win-Win Cooperation Between Operators and Vertical Industry

Scale

Big
Mid
Small

② B2BB
White Goods
Logistics
Sharing Bike

③ B2SB
Connected Cow
Smoke Detector

① B2G
Electricity Metering
Water Metering
Gas Metering
Smart Parking

④ B2C
Tracking

Low   Mid   High   Market Difficulty

B2BB
B2SB
B2G

20%   Chipset/Module
         Device
10%   Connection
20%   APP Platform
         Integration
50%   E2E Service
         Vertical Industry

CIoT 2.0: Enhanced Performance For More Use Cases

Enhanced Performance to Enable New Use Cases

Radar chart axes: Coverage (170dB, 164dB, 156dB), Positioning (50m, 100m), Mobility (80km/h, 120km/h, 30km/s), Service (VoLTE, Non-differentiate), Priority, Throughput (1Mbps, 100kbps, 20kbps), Capacity (80k, 50k)

Legend:
— NB-IoT
— NB-IoT (evo)
— eMTC
CIoT2.0

Enable New Cases

Use Cases Need Higher Throughput

POS

Positioning Use Cases

Tracking Device

Phone with CIoT Module

Smart Phone

NB-IoT @2018: Unstoppable Growth, Everywhere in Life

More Commercial Networks

100

39

2017

2018
Prediction

Canada   US   Portugal   Japan

More Connections

150 Million

10 Million

2017

2018
Prediction

中国移动通信 CHINA MOBILE
50 Million
In 2018

China unicom中国联通
10 Million
In 2018

中国电信 CHINA TELECOM
40 Million
In 2018
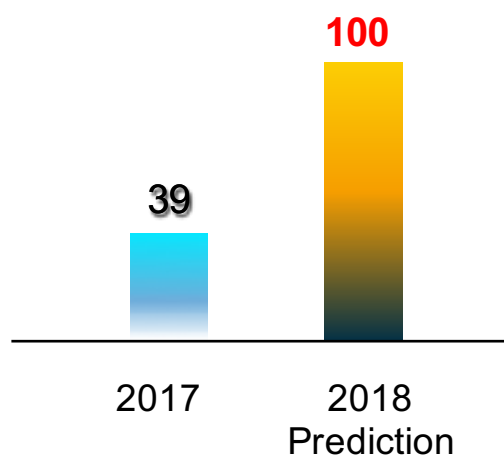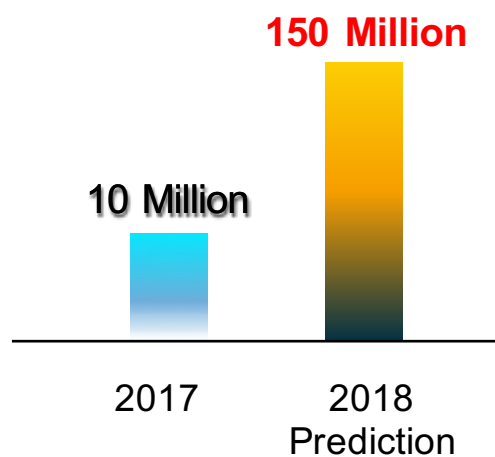
More Ecosystem Partners

3000+

1000+

2017

2018
Prediction

Pipe Monitoring   Pet Tracking   Environment Detector   POS Machine

Huawei Technologies Co., Ltd.

Thank you!!