CCSA Standardization Progress on Wireless Communication

CCSA TC5

2012.10

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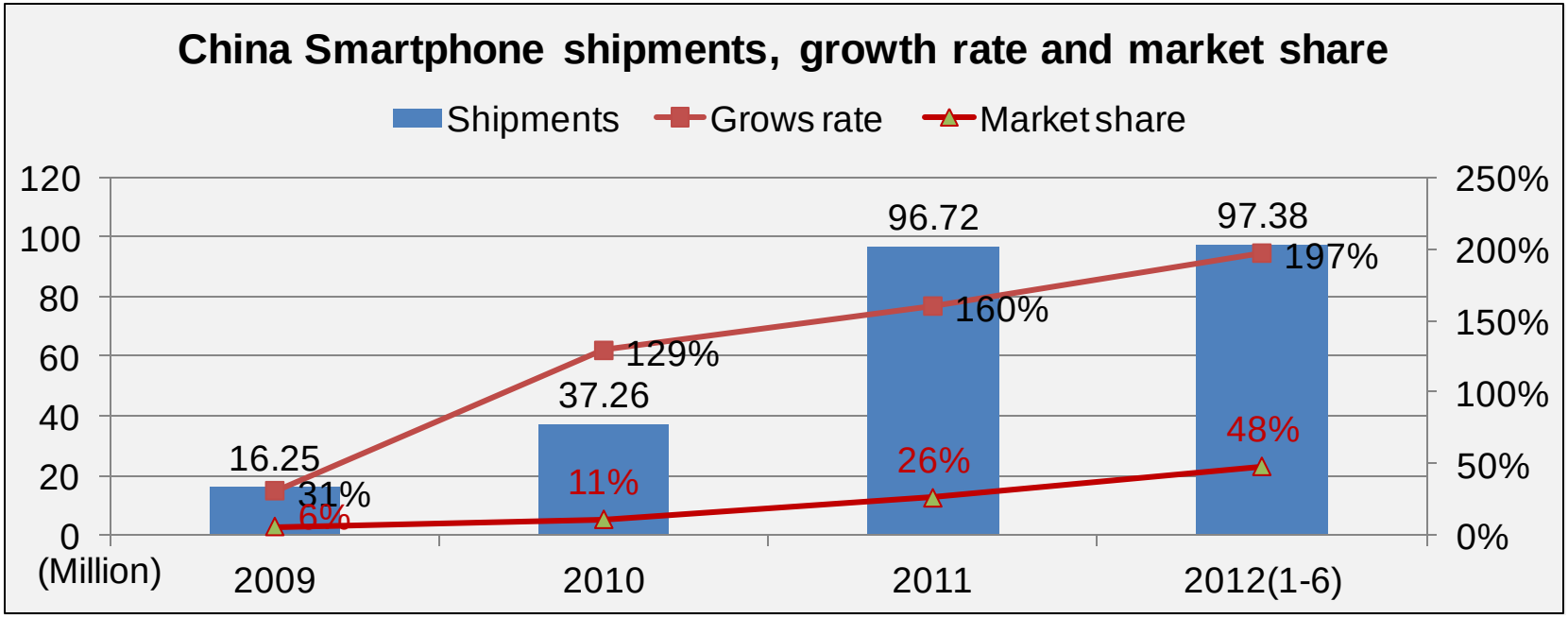
Growth of Mobile Broadband in China

- **The shipments of Smartphone is increasing**
  - 97 million in 1st half of 2012, increase 197% compared to 1st half of 2011
  - Representing 48% of total mobile phone market
- **Accordingly，Mobile data traffic is increasing dramatically**
  - CMCC's data traffic increase 60 times in past 5 years

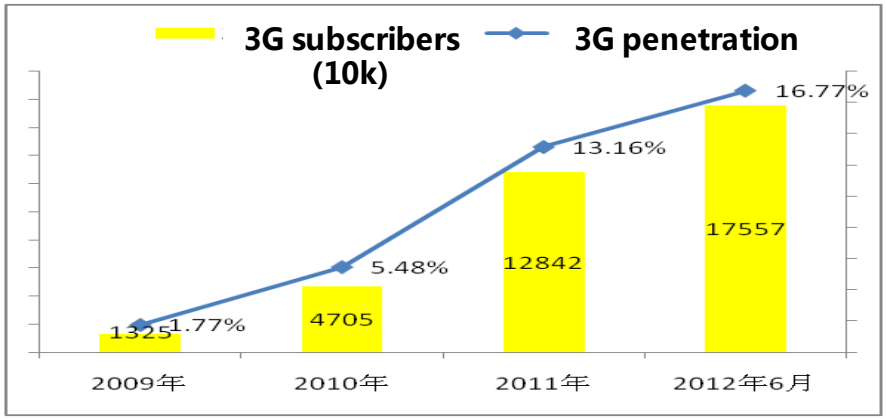


Development of 3G market in China

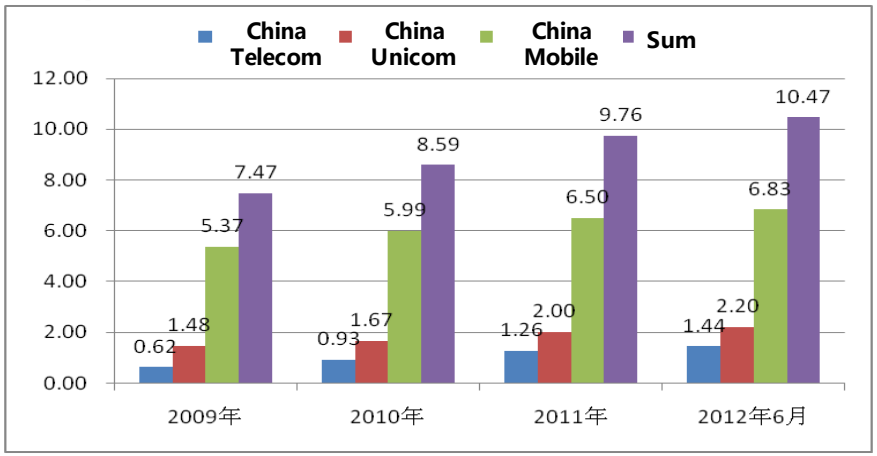
After 3.5-year development, China's 3G market has entered a healthy-development period. Growth speeds up.

- By 2012/06, China's 3G population reaches 175 million, with penetration rate 16.7%.
- More balance competition in 3G market. Share of China Unicom, China Mobile and China Telecom: 33%，38% and 29%

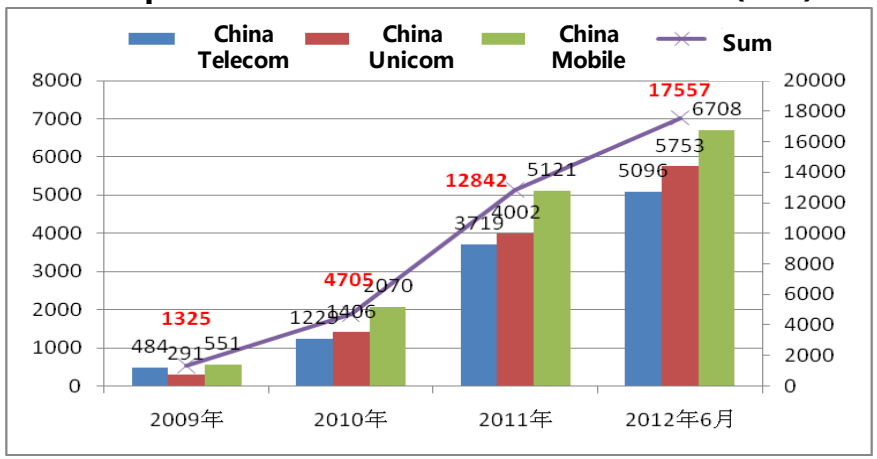
China's 3G subscribers 2009~2012



3 operators' mobile subscribers 2009~2012 (100M)



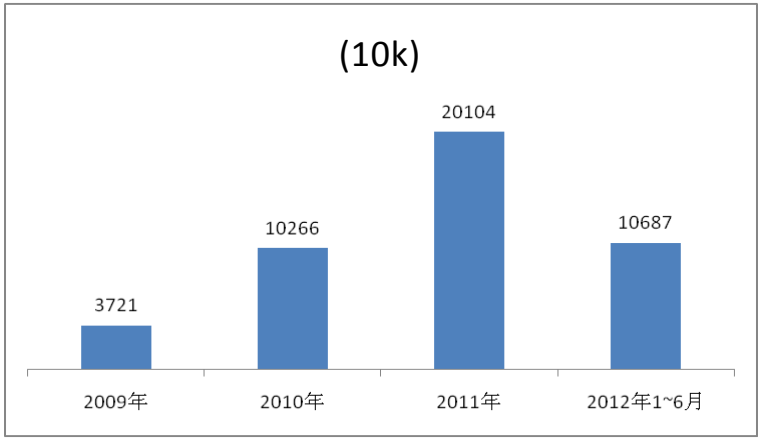
3 operators' 3G subscribers 2009~2012 (10k)



Development of 3G devices in China

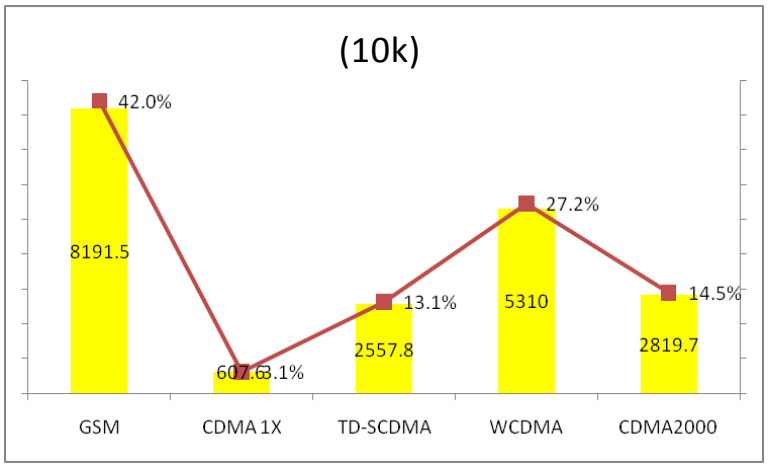
- **Shipment of 3G devices has exceeded 2G from 2011/10**
  - 2012H1, shipment of 3G devices >100 million. ---- 54.8%
  - 2012/06, 166 3G devices to market. Exceeds 2G.

Shipment of 3G devices 2009~2012



- **Percentage of 3G devices in 2012H1**
  - TD-SCDMA：13.13%;
  - WCDMA：27.25%;
  - cdma2000：14.47%

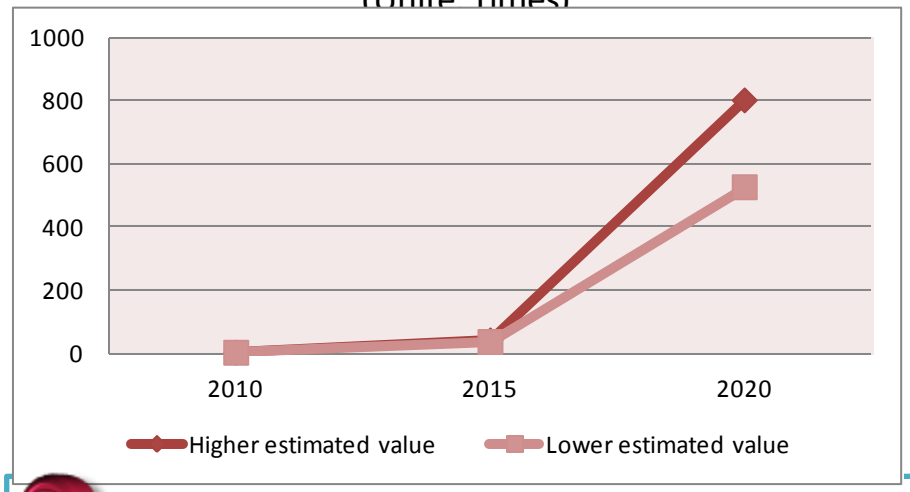
Percentage of different types of devices 2012H1



数据来源：CATR

Spectrum Estimate

Increment of mobile data traffic in next decade in China (Unite: Times)



- Spectrum requirement estimate for IMT has been commenced from 2011 in order to assist spectrum regulation
- M.1768 is adopted as a primary method. Other methods also have been utilized during the estimate in order to inter-comparision and proofing
- The preliminary results for spectrum estimate are 580-760 MHz for 2015, 1600-1960 MHz for 2020.
- The further improvement on parameter values is still ongoing based on method in M.1768

Cisco's forecast on global mobile data traffic[1]

- CAGR of globe mobile data traffic will be 78% from 2011 to 2016.
  China will exceed 10% of global mobile data traffic in 2016.
  CAGR of Asian mobile data traffic will be 84%.

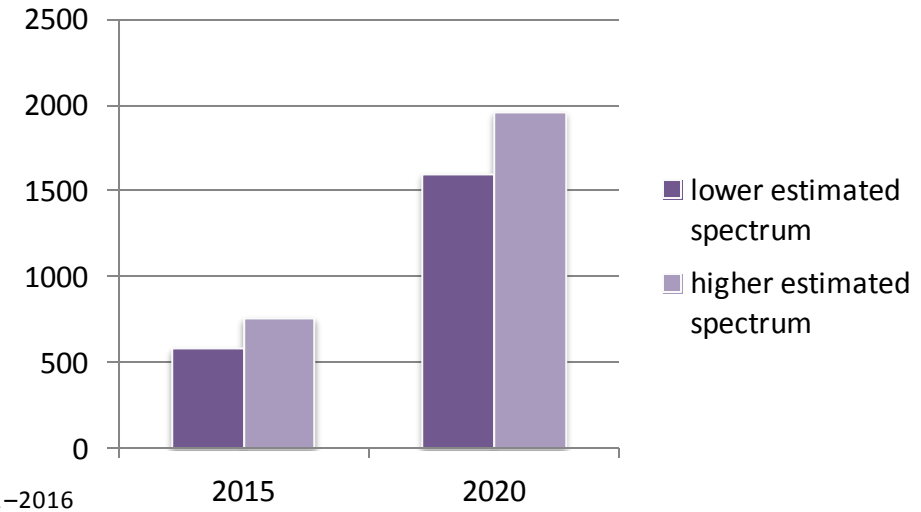
CCSA's forecast on Chinese mobile data traffic

- 35-40 times mobile data growth from 2010 to 2015 in China.
  15-20 times mobile data growth from 2015 to 2020 in China.

Mobile internet is still in its earlier stages in China

- There had been 388 million mobile internet users till June 2012.
- The growth rate of mobile internet users was 17.5% in 2011
- The fast development of mobile internet will be a powerful driver of increasing of mobile data traffic

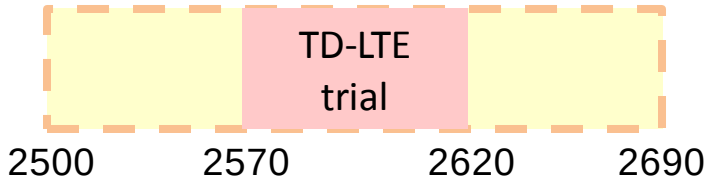
Spectrum requirements of China(Unite: MHz)



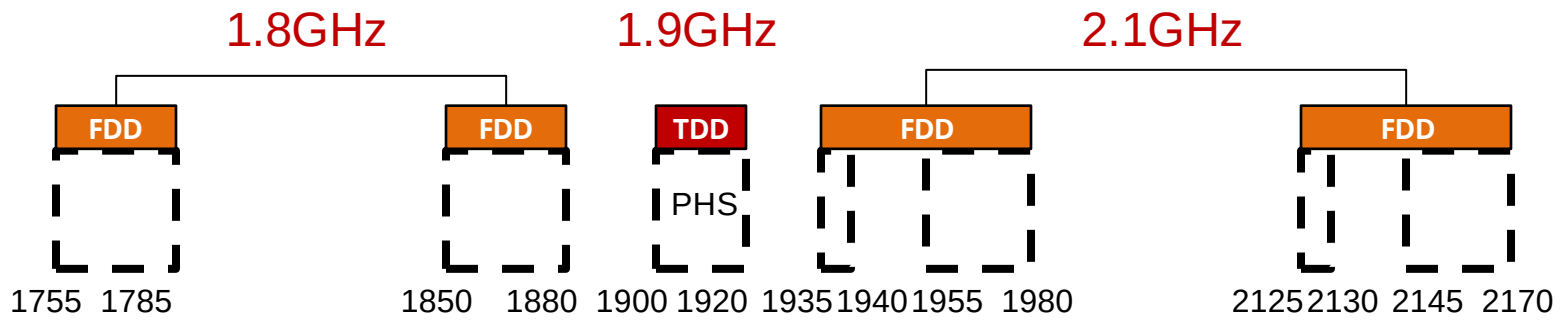
Note 1: Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011–2016

Candidate bands for LTE deployment

- **New band: 2.6GHz for TDD use**
  - 2570~2620MHz has been signed for TD-LTE trial



- Unsigned resources in 2G/3G bands



- Refarming of assigned 2G/3G bands can also be considered

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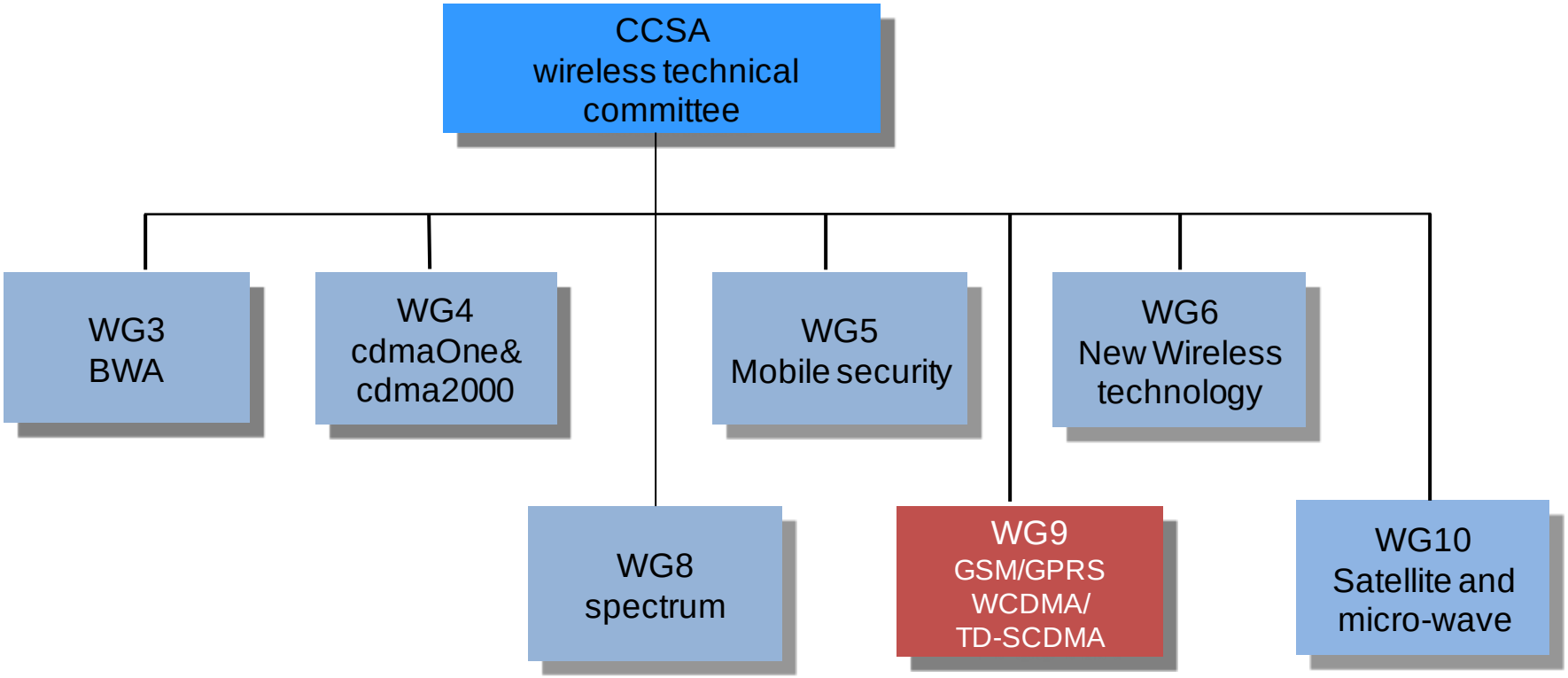
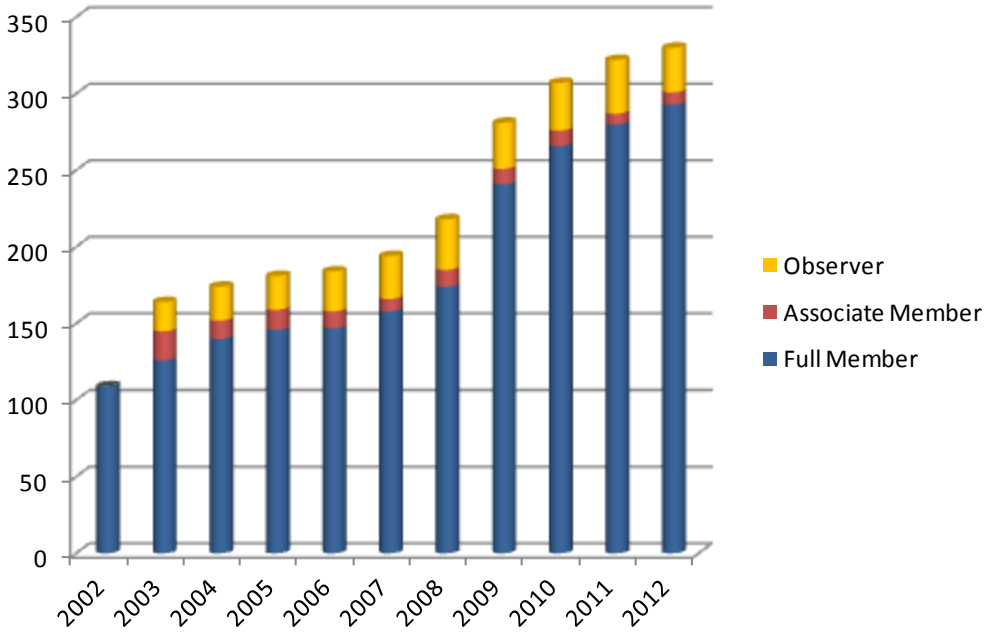
CCSA TC5 organization Structure

TC5 covers cellular technology, BWA, Satellite, spectrum & security etc.



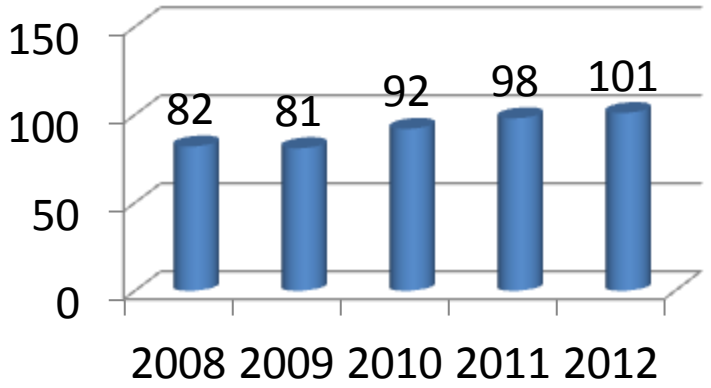
TC5, with The Most Work Items and Participants

- The total number of members and observers of CCSA increased from **322** in 2011 to **330** in 2012;
- So far, there are **293** full members, **8** associate members and **29** observers.



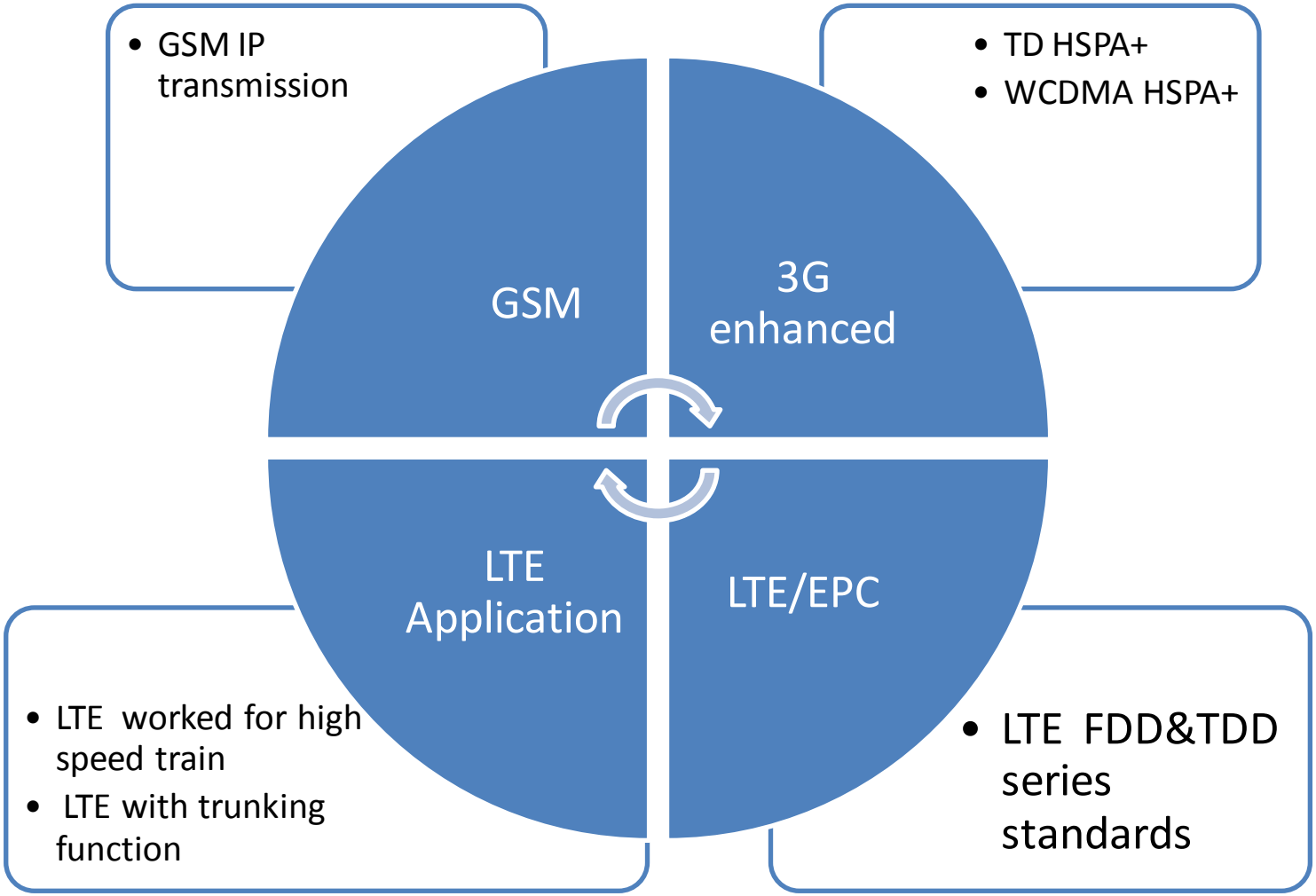
- More than 400 work Items ongoing in CCSA TC5 every year.
- More than 400 participants in every Plenary.

TC5 Members and Observers



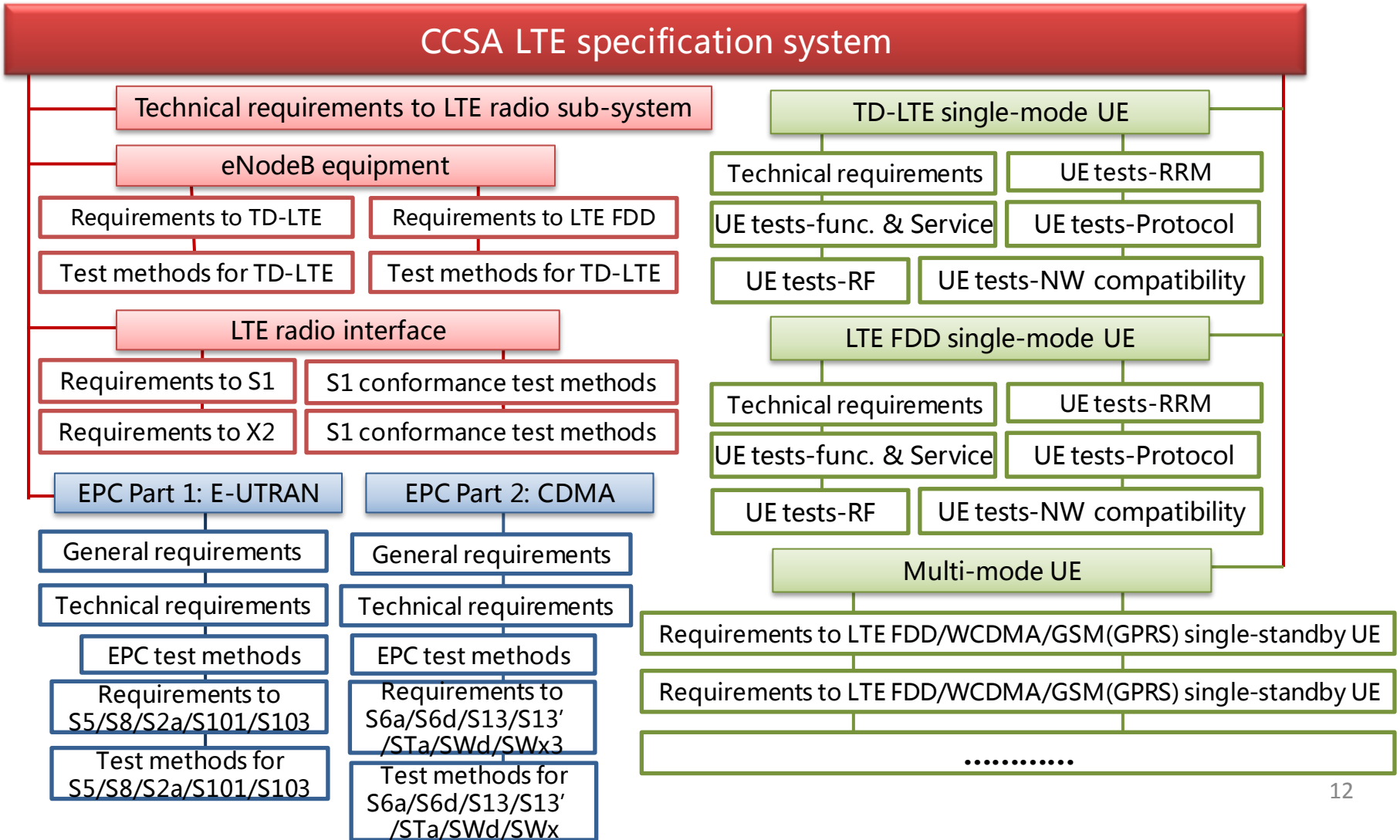
TC5: 81 Full Members;
3 Associate Members;
17 Observers

WG9 :GSM/TD-SCDMA /WCDMA /LTE



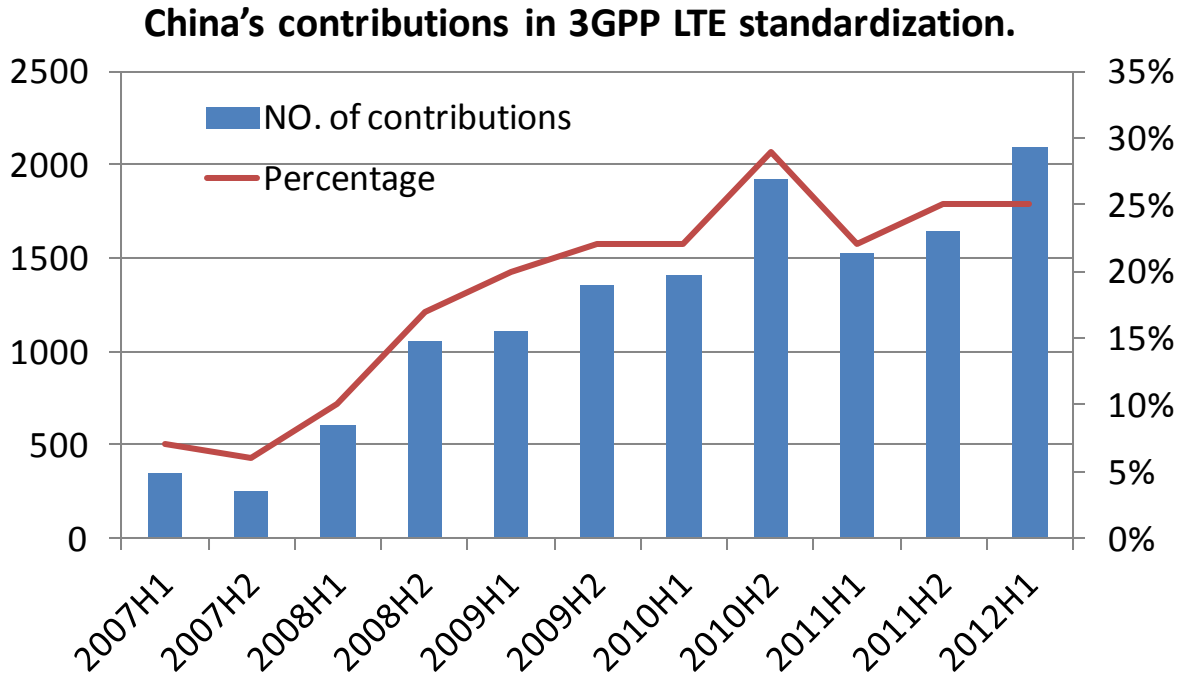
CCSA standardization: LTE standard system

- Standardization of LTE eNodeB and EPC based on 3GPP R9 specifications. Terminals will support R8 as well as R9.

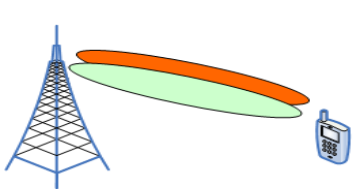


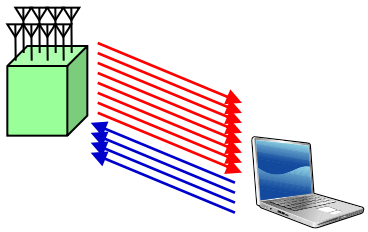
China's contribution in 3GPP LTE standardization

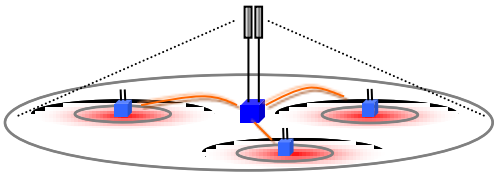
- China has become an active participant in 3GPP LTE standardization, with a continuous increasing number of contributions.

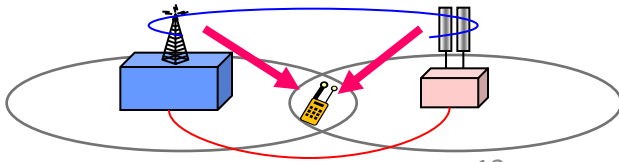


*** China submit 45% TD-LTE contributions.**









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The other WGs

WG3
- BWA ,trunking(SCDMA,TD-LTE, smart transportation）
- WLAN （interworking, new tech.)

WG4
- cdma 1X enhanced、 eHRPD 、Femto-cell、 interworking with LTE， SI on EV-DO R.C

WG5
- Technical specification for ZUC
- MBMS security

WG6
- Research study on Beyond IMT， requirement and market ,new technologies research

WG10
- Satellite on Ku spectrum
- Digital microwave

WG8 Spectrum:
- Spectrum planning and technical research
- Interference coordination and co-exist

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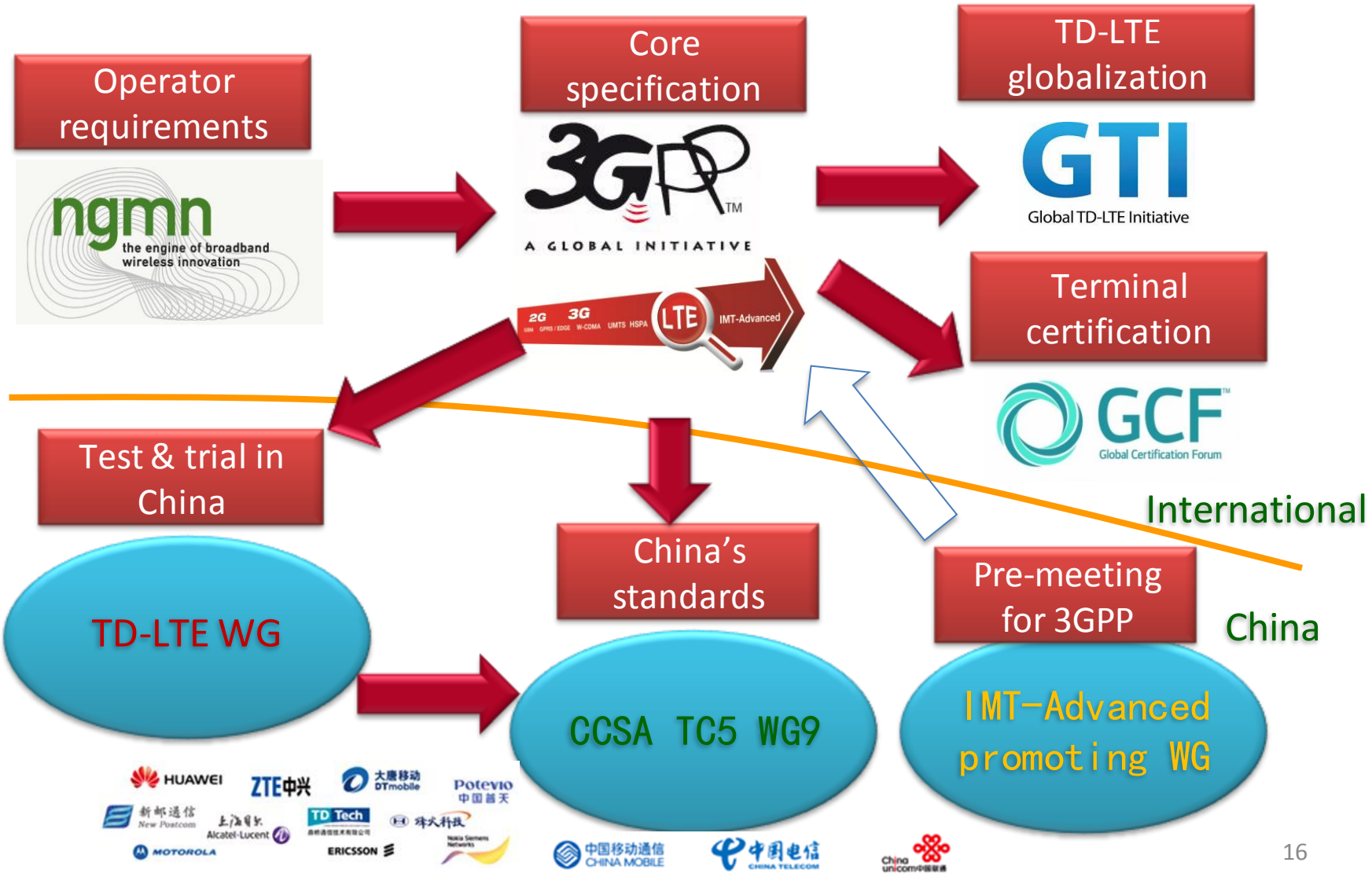
Promote TD-LTE development via China-World interaction



Construction of TD-LTE ecosystem

TD-LTE WG of MIIT

- Top design
- Organization
- Test/Verification
- Industrialization

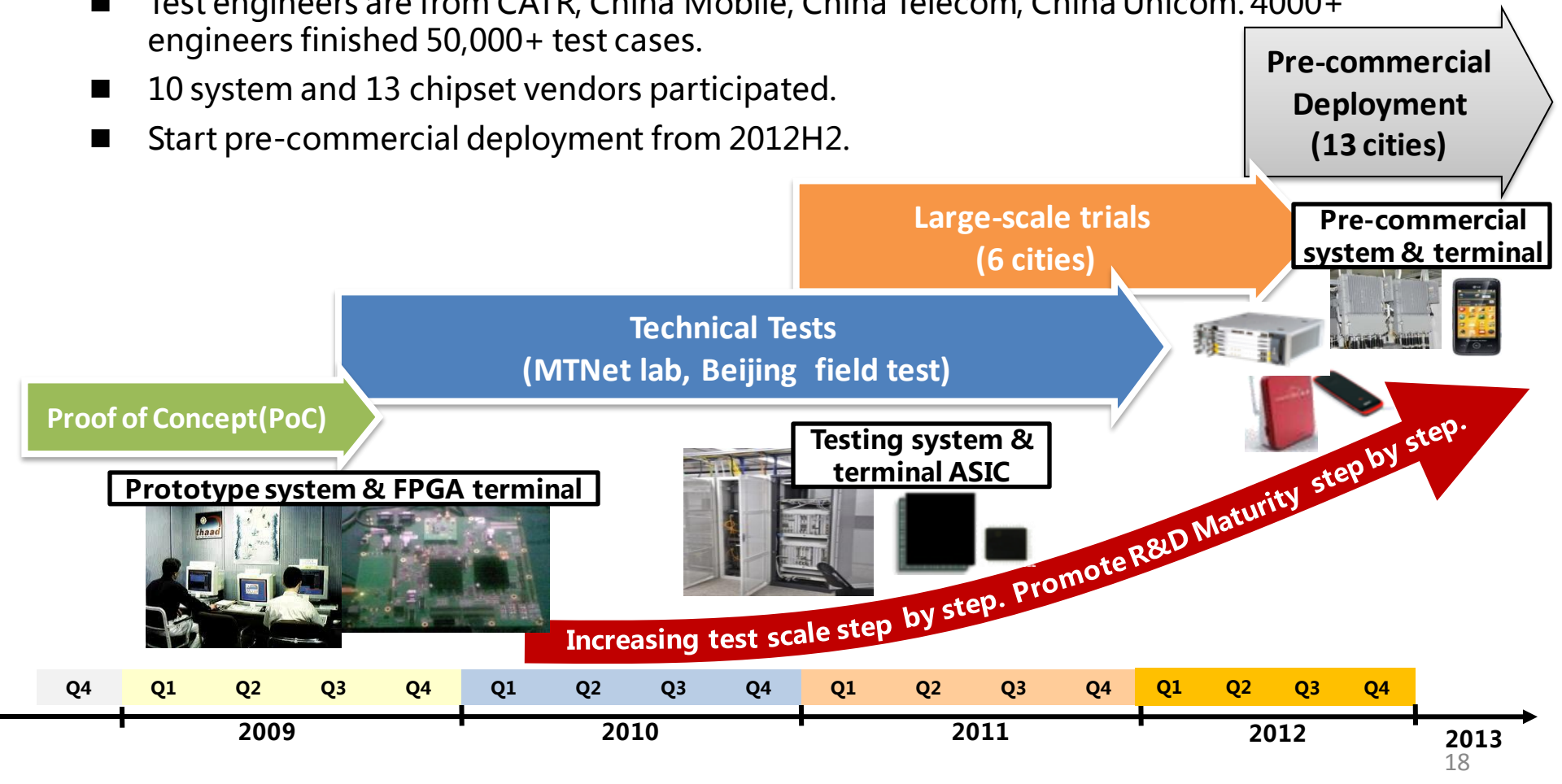
TD-LTE public test platform

>50 members including operators, vendors, institutes and academy.
10 network vendors and 13 chipset vendors.

Operators & Research Organizations (6)	Network Vendors (10)	Chipset (13) & Terminal Vendors	Tester Vendors (10)	Universities
工业和信息化部电信研究院 China Academy of Telecommunication Research of MIIT	HUAWEI	HISILICON	星河亮点 StarPoint	BUPT
中国移动通信 CHINA MOBILE	大唐移动 DTmobile	QUALCOMM	大唐移动 DTmobile	Southeast Univ.
中国电信 CHINA TELECOM	ZTE中兴	INNOFIDEI	ROHDE&SCHWARZ	Tsinghua Univ.
China unicom中国联通	上海贝尔 Alcatel·Lucent	altair semiconductor	CETC	Peking Univ.
SRTC	Nokia Siemens Networks	SEQUANS COMMUNICATIONS	Anite	Xidian Univ.
TDIA TD Industry Alliance	ERICSSON	ZTE中兴	惠捷朗科技 Hugeland.com	UESTC
	Potevio 中国普天	CYIT	世紀鼎利	Fudan Univ.
	新邮通信 POSTCOM	ST ERICSSON	Anritsu	HUST
	SAMSUNG	SPREADTRUM MARVELL	AEROFLEX	.....
	烽火科技	联想 lenovo intel MOTOROLA	创远仪器	
		NOKIA Connecting People	Agilent Technologies	
		Hisense	Tektronix Communications	
		Coolpad酷派 MEDIATEK		
		联芯科技有限公司 Leadcore Technology Co.,Ltd.		

TD-LTE tests & trials in China

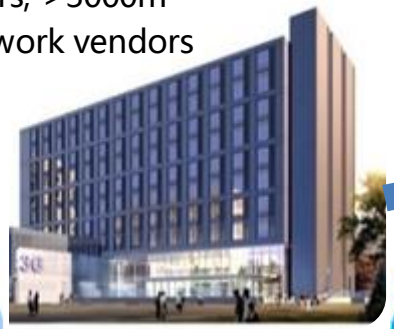
- After 4 years' tests (from lab to field, from single to multi-mode), TD-LTE technical test and large-scale trial have completed.
- 93 technical specifications.
- Test engineers are from CATR, China Mobile, China Telecom, China Unicom. 4000+ engineers finished 50,000+ test cases.
- 10 system and 13 chipset vendors participated.
- Start pre-commercial deployment from 2012H2.

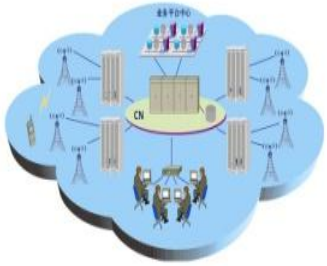


TD-LTE technical test: MTNet test platform

Lab test environment

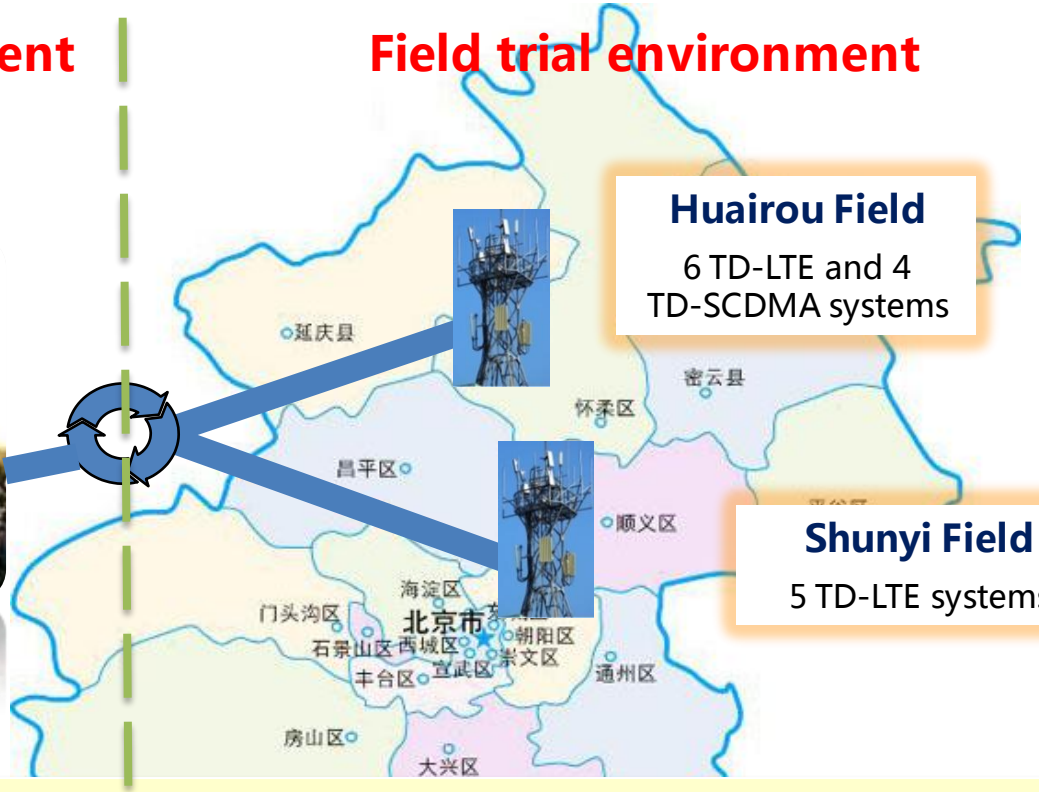
20,000m^2 building
2 floors, >3000m^2
11 network vendors





MTNet实验室

Field trial environment



Huairou Field
6 TD-LTE and 4 TD-SCDMA systems

Shunyi Field
5 TD-LTE systems

Unified lab/field test platform for TD-LTE and TD-SCDMA:
15 networks, >100 BSs, 52km^2

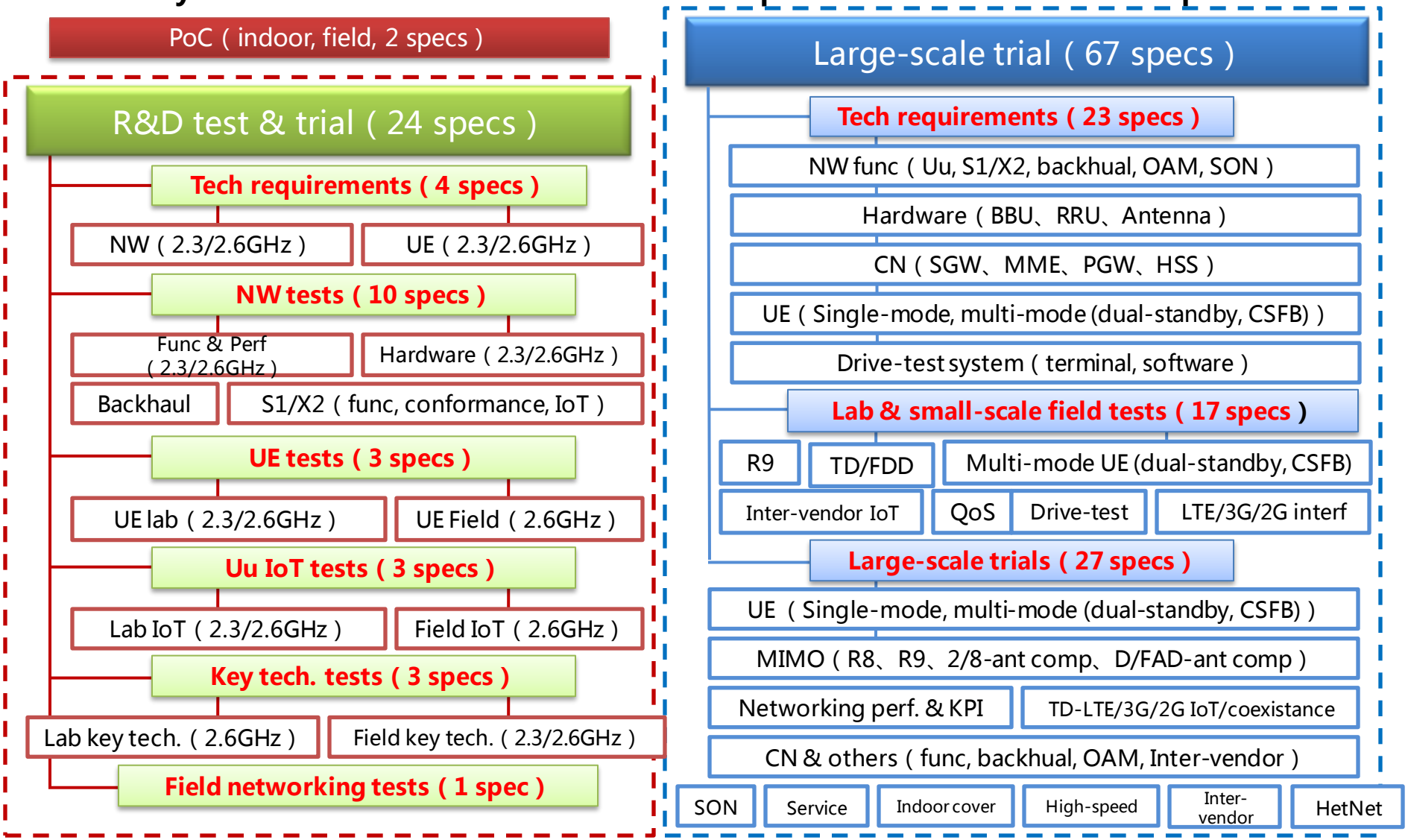






Specification system for TD-LTE test and trials

- **93 specifications, >2,000 cases. Guiding key R&D direction. Covering all types of tests.**
- **Used by 10 network vendors and 13 terminal chipset vendor. Used for >50 IoT pairs.**



Thanks for your attention.