Brief Introduction to Application of IMS

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Course Objectives:

This course introduces the application of IMS in China Mobile network, including both fixed network and mobile network. It aims to provide the audience with the following information:

- IMS use cases in China Mobile

- Key functionalities of IMS

- Status of the commercial IMS networks and further considerations
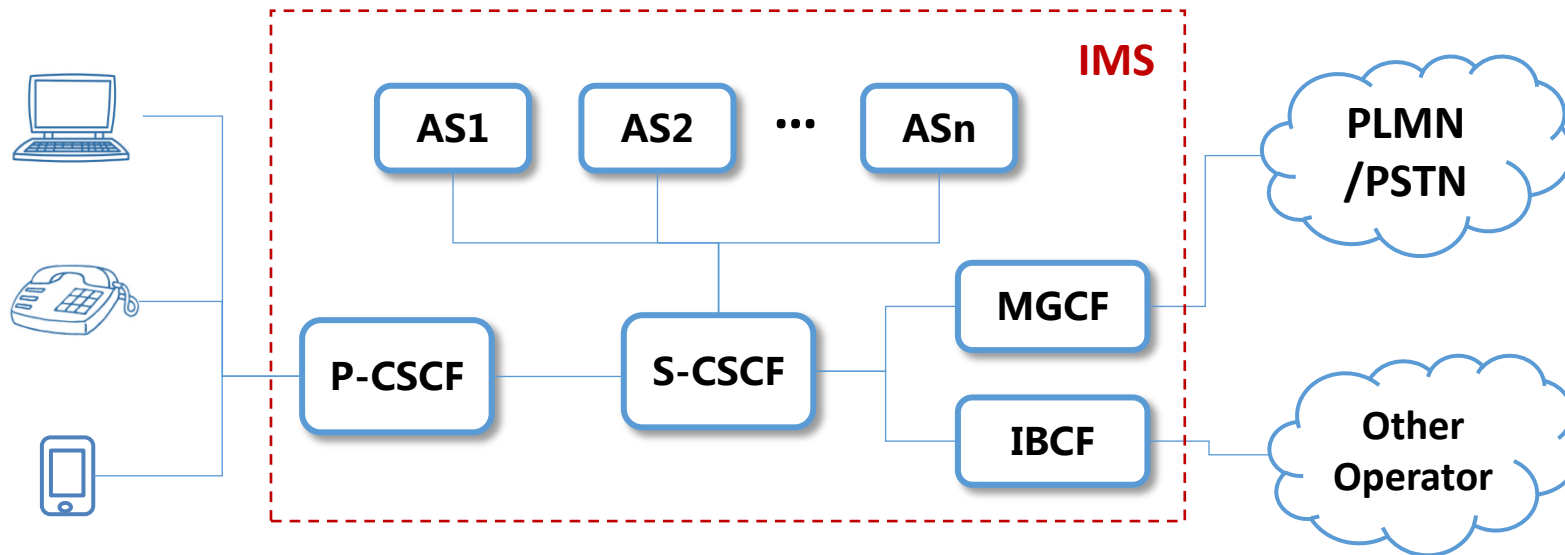
Agenda

- **IMS use cases**
- Key functionalities of IMS
- Status and vision for the future

IMS Overview

3. Multiple service logics can be installed and executed independently. Third party services can also be integrated.

1. IMS facilitates multi-kind of terminals to access operator's network

IMS

AS1 AS2 ··· ASn

P-CSCF — S-CSCF — MGCF — IBCF

PLMN /PSTN

Other Operator

4. Interworking with PLMN/PSTN and other operators' IMS networks is supported.

2. IMS provides functionalities of Authentication, Authorization, Call Control, Session Routing, Service Triggering

IMS in Fixed Network

Various Industries

- **Enterprise**
  - Internal communication
  - Hot line
- **Government**
  - Internal communication
  - Hot line
  - Emergency
- **College**
  - Toll saving for students
- **Home**
  - Package with Broadband
  - Toll saving for families

Various Terminals

- **Software**
  - Client installed on PC
  - APP on cellphone
- **New Type Terminals**
  - SIP enabled telephone
- **Legacy Terminals**
  - POTS connected to IAD
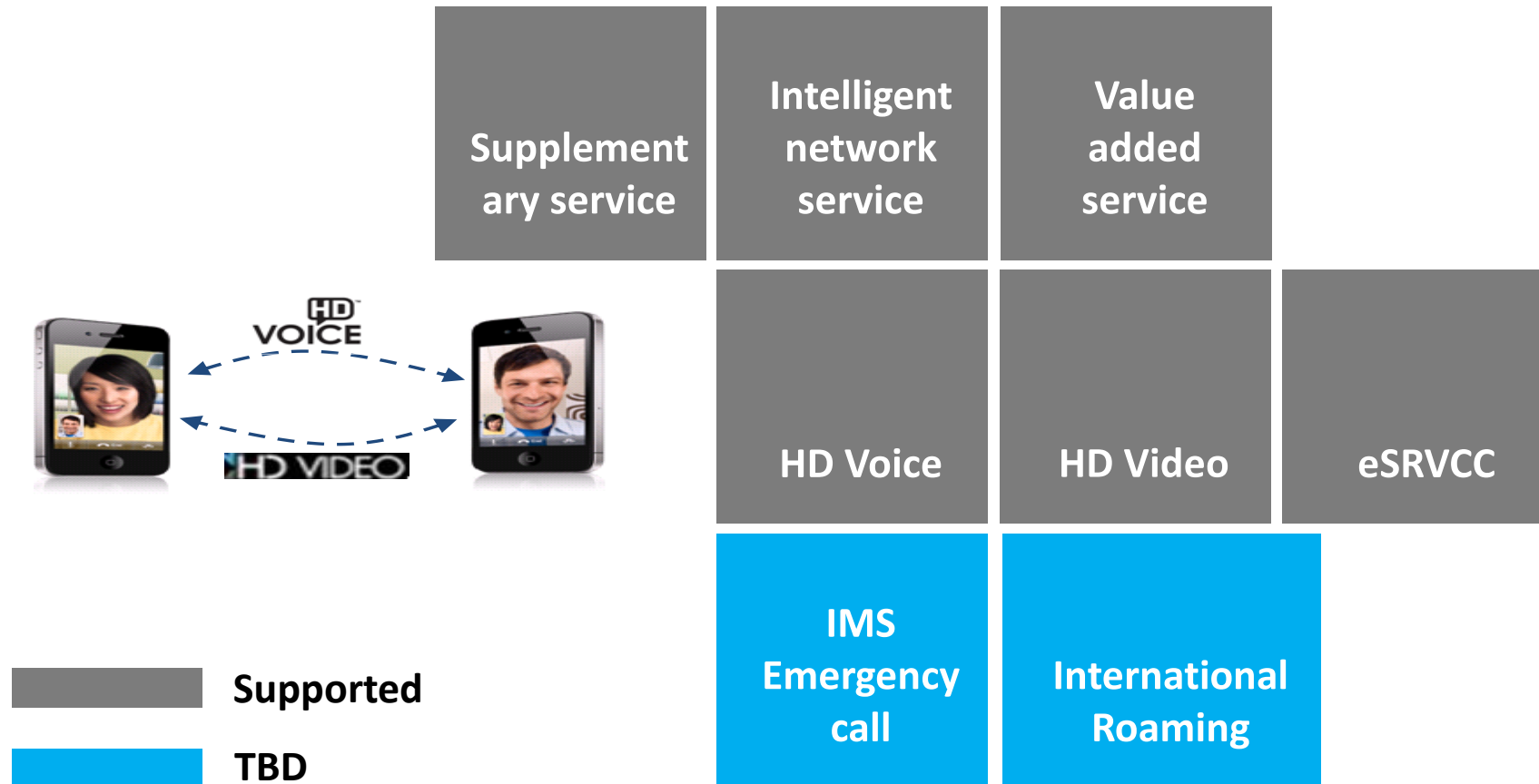 - POTS connected to IP-PBX

Various Services

- **Centrex**
  - Internal communication of enterprise
- **MMTel**
  - Multi-media telephony for individual customers
- **Conference**
  - Multi-media conference call
- **Click to Dial**
  - Integrated with web services

IMS in Mobile Network

The main application of IMS in mobile network is VoLTE (Voice over LTE)

|		
Supplementary service	Intelligent network service	Value added service
HD Voice	HD Video	eSRVCC
IMS Emergency call	International Roaming	

Supported

TBD

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General IMS Network Architecture in CMCC

Semi-Converged IMS for Fixed and Mobile

Dedicated IMS Domain for Each Province

Legend:
- VoLTE Dedicate (blue)
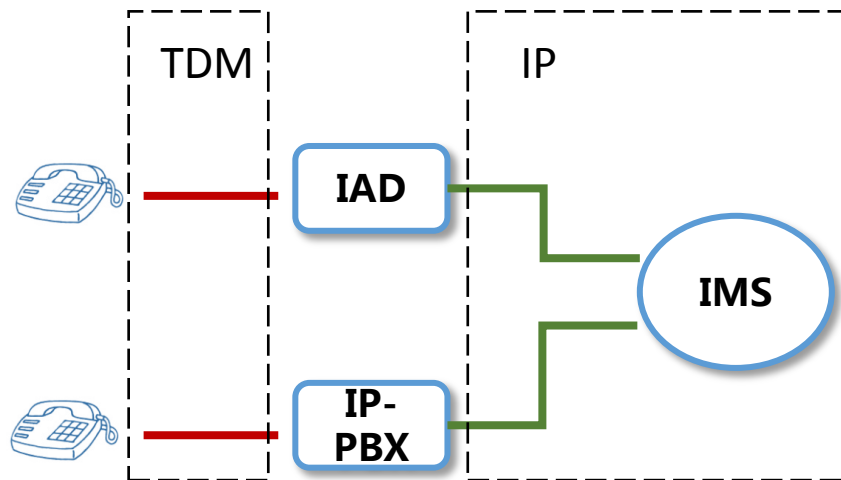- Fixed NW Dedicate (grey)
- Converged (red)
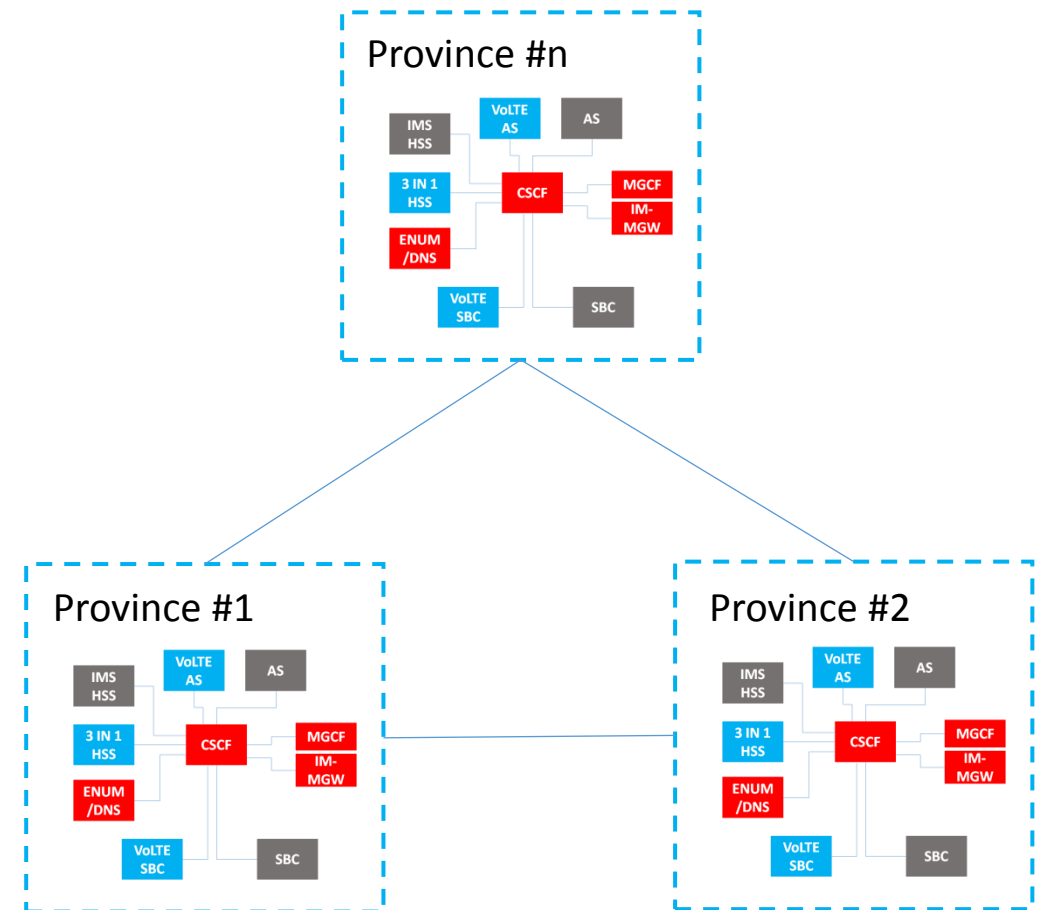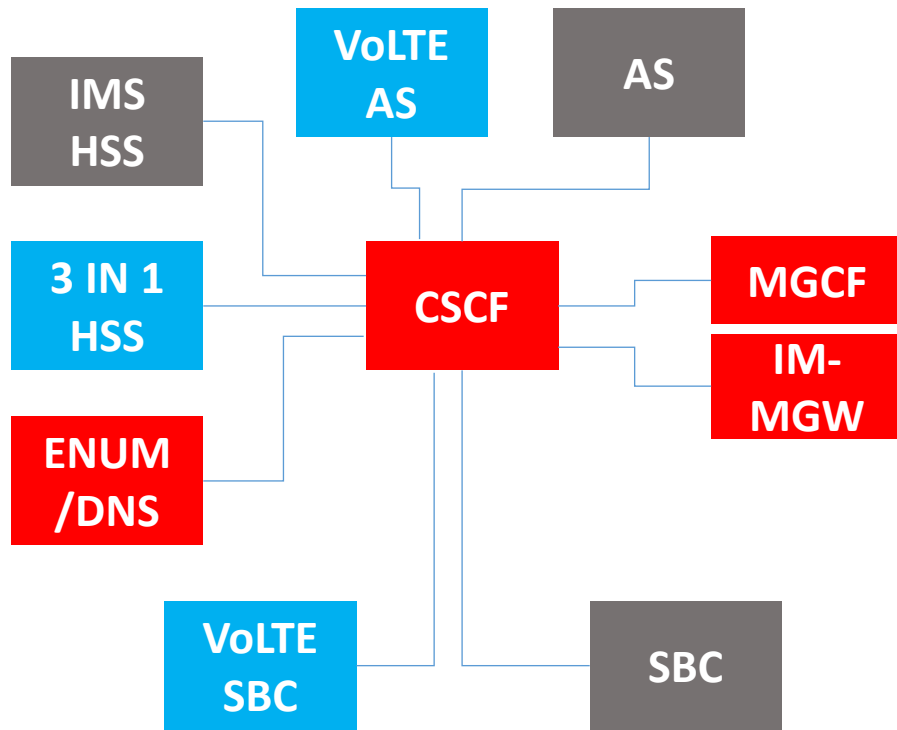
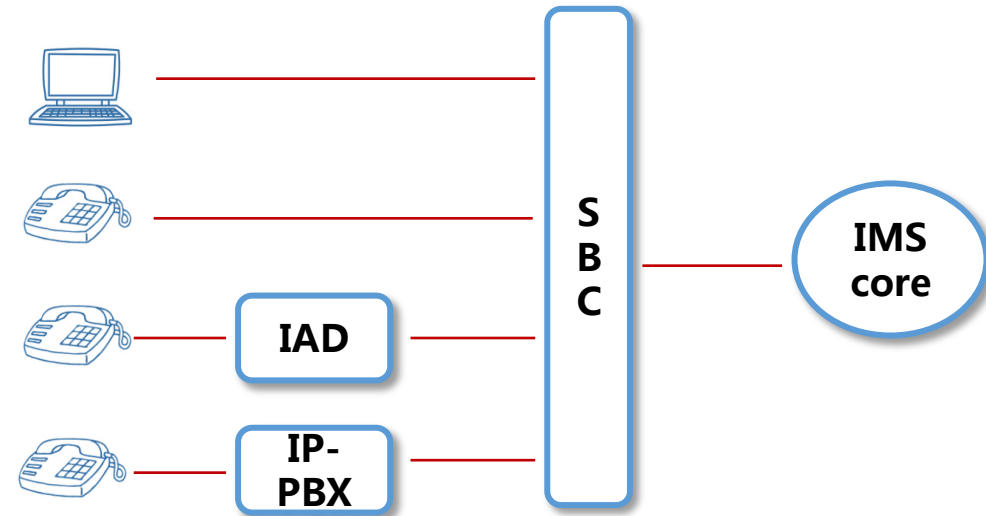# IMS Functionalities for Fixed Line Services

#1 TDM to IP Converting

When the legacy terminals access IMS the TDM transport is converted into IP transport, so as to save transport cost.

#2 Access Aggregating

Different kinds of terminals are aggregated in the SBC, and thus transparent to the IMS core network, unified treatment can apply.
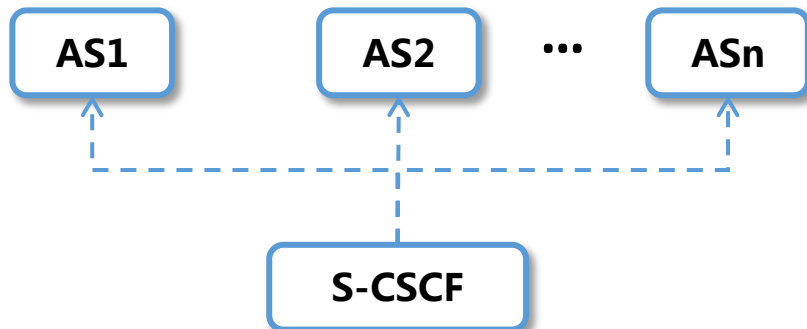
IMS Functionalities for Fixed Line Services (cont.)

#3 Flexible Service Logics

Comparing to legacy fixed network, IMS provides more flexible service logics:

- More service logics can be provided
- Different service logics can be deployed independently
- Different service chains can be executed subject to different call scenarios

#4 Interworking with other NWs

An IMS user can easily make a phone call to reach different kinds of users.
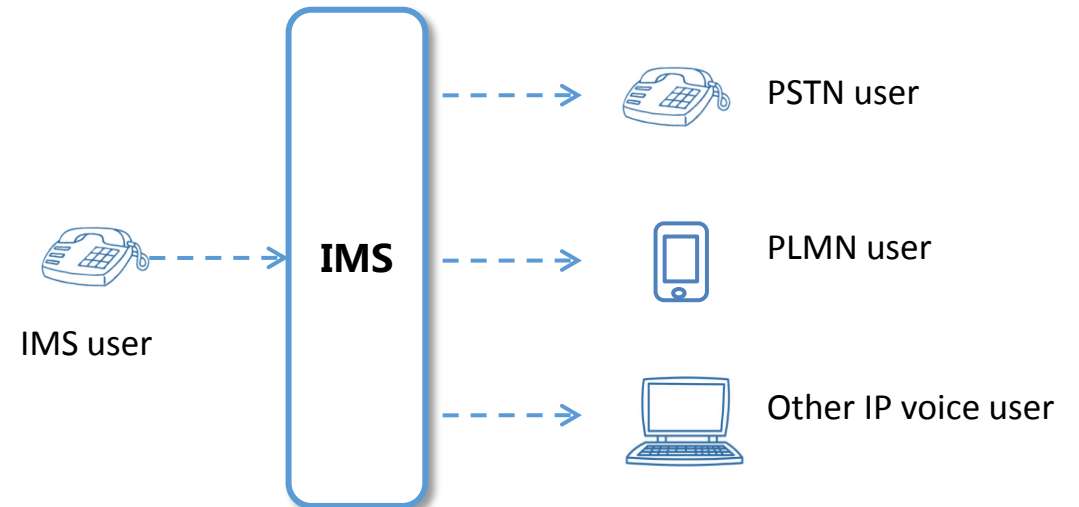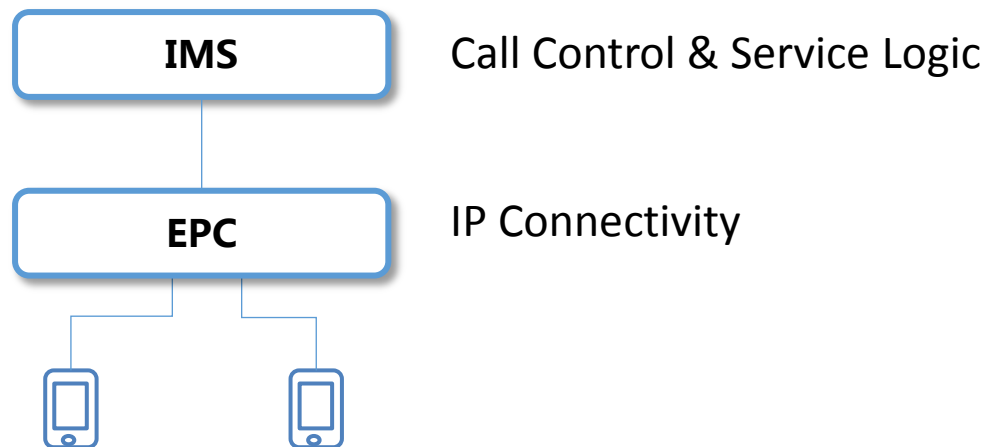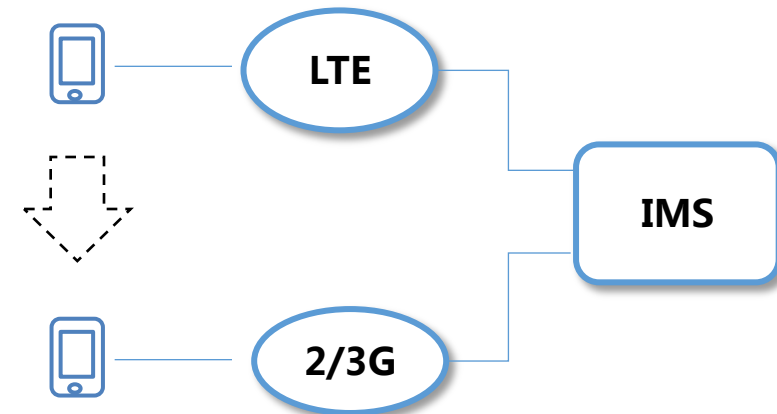
IMS Functionalities for VoLTE

#1 Call Control and Service Logic

Since LTE core (EPC) only provides IP connectivity, there needs to be an overlay to provide call control and service logic for telephony service. IMS then is on top of EPC to provide above functionalities.

IMS — Call Control & Service Logic

EPC — IP Connectivity

#2 Session Continuity

When the user having an ongoing VoLTE call moves out of the coverage of LTE, the IMS provides the session continuity while the UE connecting to the 2/3G (SRVCC).
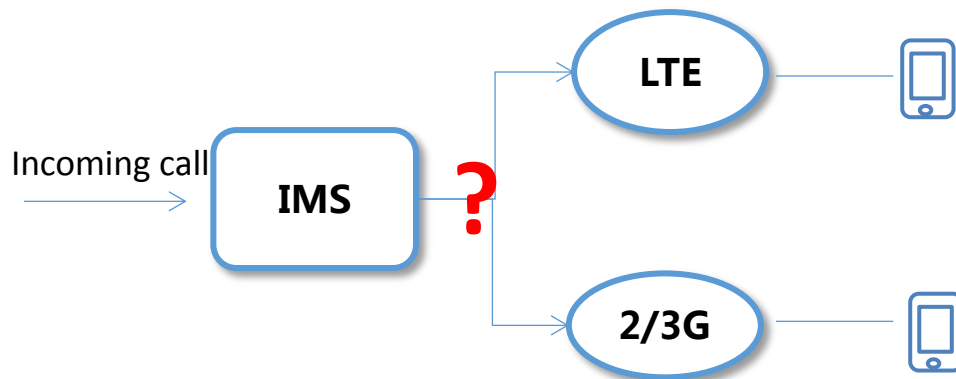
IMS Functionalities for VoLTE (cont.)
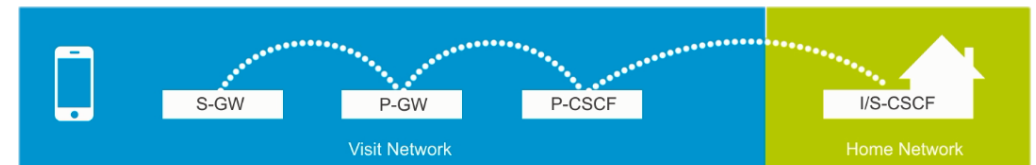
#3 Terminating Domain Selection

A VoLTE terminal may camp on LTE or 2/3G subject to the coverage condition, the IMS makes the decision on how to conduct an incoming call, i.e. via CS or via IMS.

#4 Roaming Function

IMS provides the roaming function to the VoLTE users. Currently there are two roaming model for VoLTE, i.e. LBO and S8HR

LBO Roaming model

S8HR Roaming model

Agenda

- IMS use cases
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Fixed IMS Status

- ### Network Platform Status

  - Except 4 provinces which share one IMS platform, all other provinces have dedicated IMS platform.
  - The total capacity of the IMS platform for fixed line service is 22 milion.
  - Multiple platform vendors : Huawei, ZTE, Ericsson, Nokia, Alcatel-Lucent

- ### Services Status

  - Common services: Centrex, MMTel, Fetion, CAT, etc. are deployed
  - Different provinces also deployed various province specific services

VoLTE Network Status

- More than **300 cities** have commercially launched VoLTE service, with totally **16.46 million** VoLTE subscribers
- More than **80 brands** of VoLTE handsets are available in China market

16.46 million VoLTE subscribers so far

30 millon **VoLTE Subscribers is expected by the end of 2016**

Iphone 6/6S 6+/6S+

Samsung S6

Huawei Mate8

ZTE Q529T

CMCC M821

CMCC M623C

CMCC M823

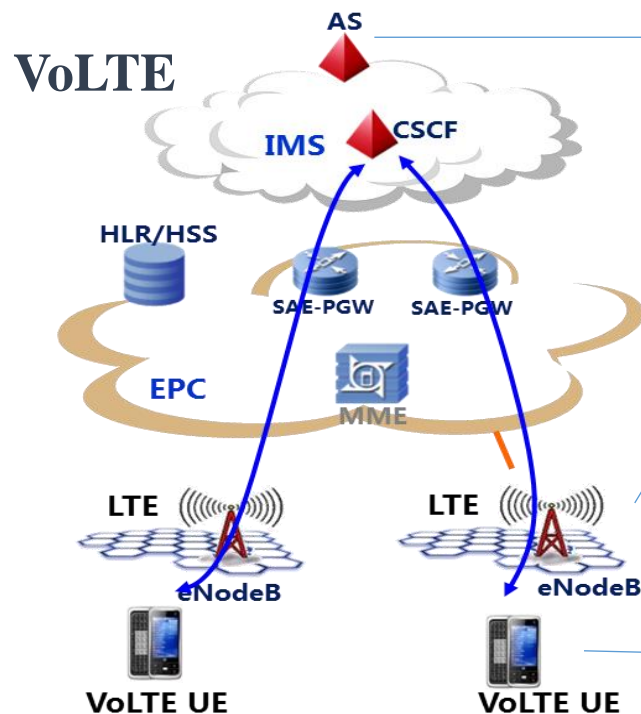Coolpad A8

Hisense E51-M

Vivo X6Plus L

Gionee G9010L

LG V10

...

China Mobile "VoLTE+" Project
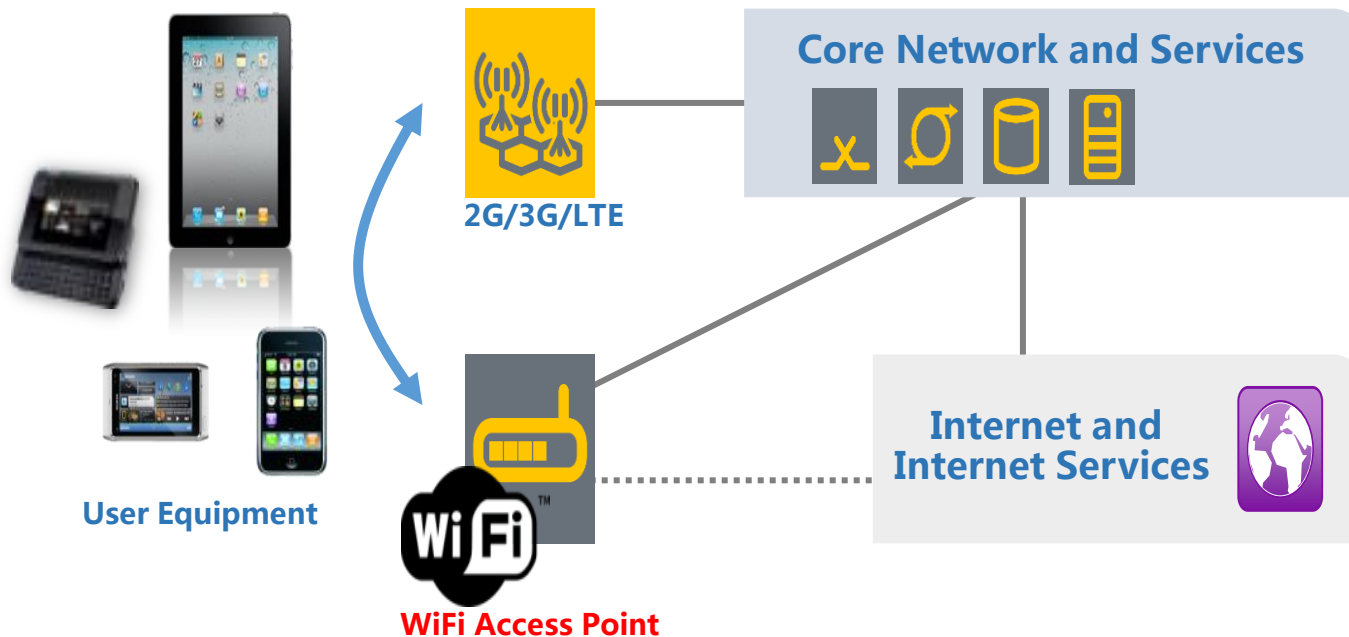
+ : **Improvement of user experience**

+ new access types (VoWiFi…)

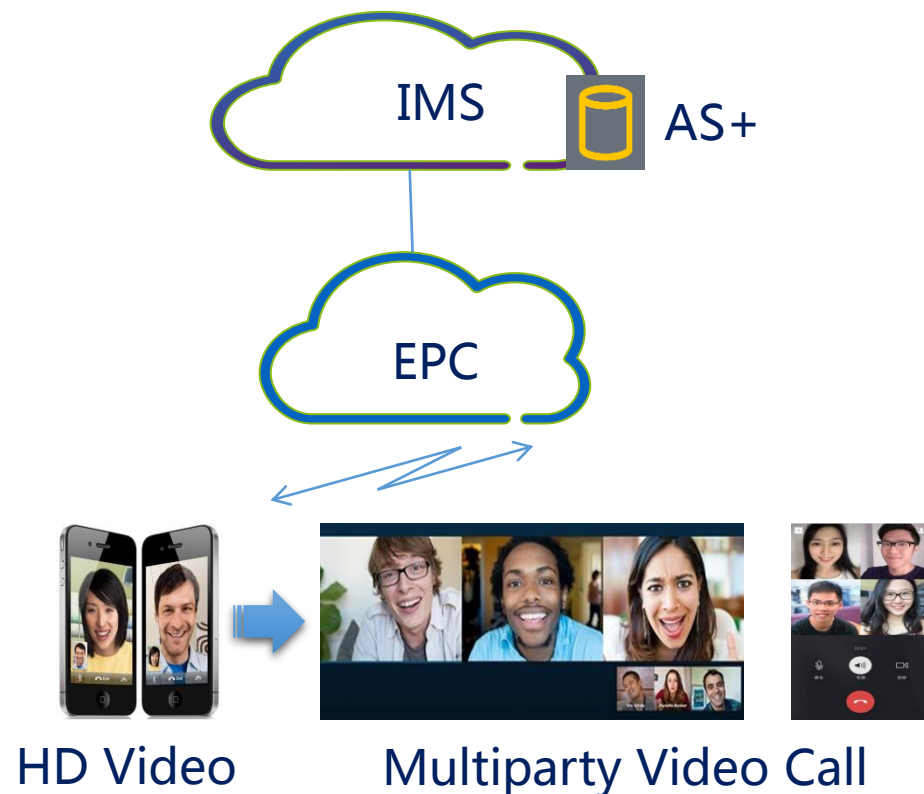**+** new services/features (multi-party Video call…)

+ new type of terminals (WebRTC terminal…)

1. VoWiFi (VoLTE Wifi offload)

User Equipment

2G/3G/LTE

Core Network and Services

Internet and Internet Services

WiFi Access Point

- **Voice continuity between LTE and Wifi**
- **Better indoor coverage when higher LTE frequency bands are used.**
- **Widely available and supported by UEs/handsets, tablets, laptops.**
- **Lower charging strategy especially when roaming.**

2. Multi-party video call

HD Video   Multiparty Video Call

- **Expansion of VoLTE services**
- **HD multiparty video call compared with OTT**
- **Without installing APP**

3. WebRTC & VoLTE capability exposure
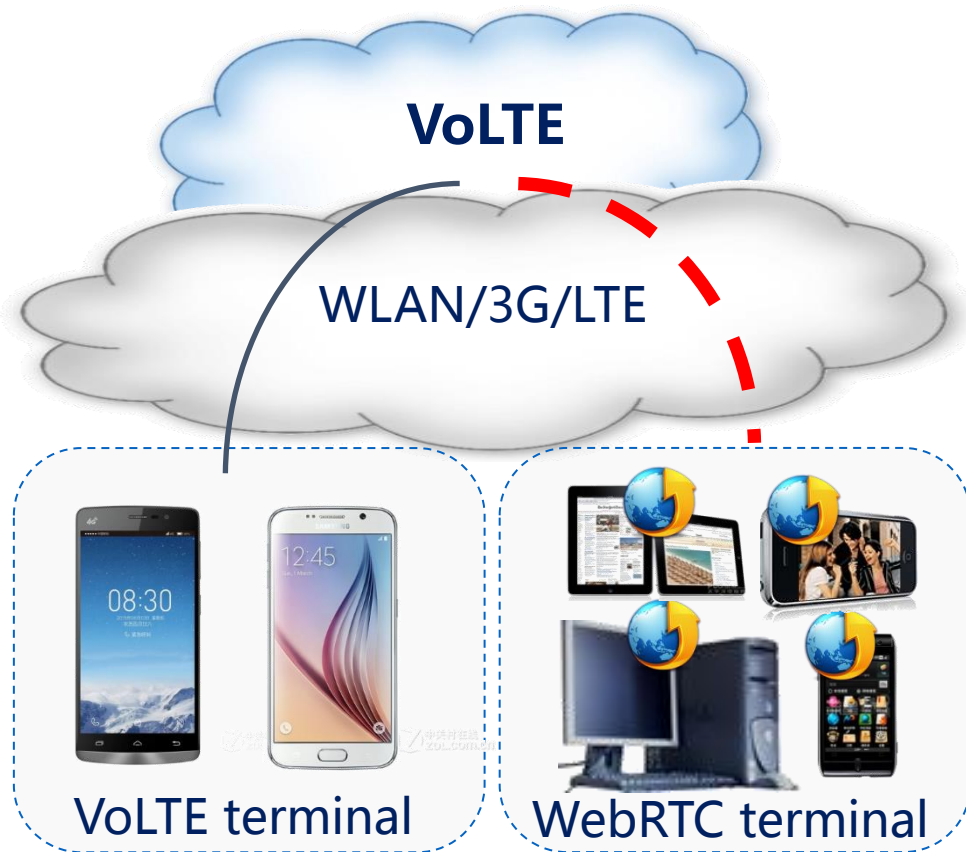
Expansion of telecom capability

- New type of terminals access to IMS
- New experience for browser users
- New mode for service capability exposure
- New features introduced from OTT service

Thank You!

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