

# World's first demonstration of '4G mobile communications system' for 3D-TV viewing on the move

- ETRI hosts the 4G mobile communications technology development briefing and demonstration -

- On January 25 (Tue), Korea Communications Commission (KCC) and the Ministry of Knowledge Economy hosted the world's first demonstration of the super high-speed 4G mobile communications (LTE-advanced) system of the maximum speed of 600Mbps\* developed by Electronics and Telecommunications Research Institute (ETRI) at the ETRI building in Daejeon with over 20 attendants including the Prime Minister Kim Hwang-Sik and the KCC standing committee member Hyeong Tae-Geun.

\* 600Mbps: Speed at which a CD of 700MB is transmitted in 9.3 seconds

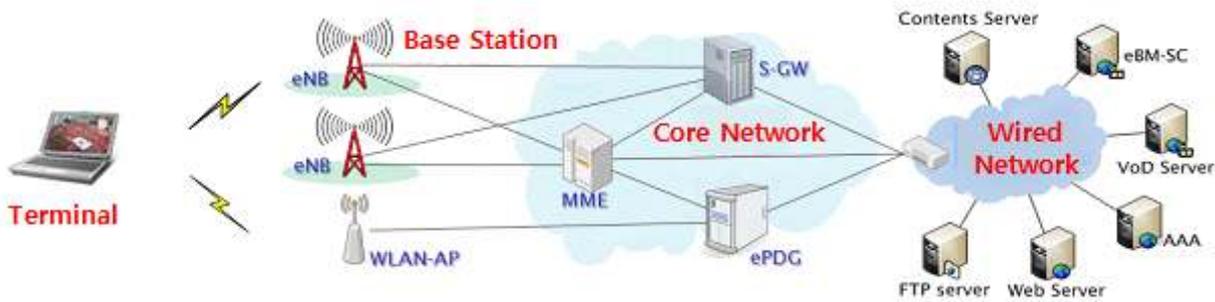
- Competition over development of the LTE-advanced system, the 4G mobile communications technology, is fierce over the world. As much as so, this event was very significant for being the world's first demonstration of a large-capacity super high-speed mobile communications service enabling users to view the 3D full HD broadcasting through a TV even while on the move in a vehicle.

< **What is LTE-advanced ?** >

- This is a 4G mobile communications technology of WCDMA system, which represents 70 ~ 80% of the global mobile communications market. The name implies that it is an 'advanced technology of the 3.9G LTE (long-term evolution)'.
- Competition for development is fierce among global vendors including Qualcomm (U.S.), Huawei (China), Nokia (Finland), Ericsson (Sweden), Samsung and LG. LTE-advanced will be officially announced as an international standard (ITU) in April 2011.
- In terms of speed, LTE-advanced produces the maximum of 600Mbps (based on 40MHz bandwidth). As for the effective data transfer rate in actual application, the speed is as high as 440Mbps. Compared to the 3G mobile communications currently in use (Max. 14.4Mbps), the speed is faster by approx. 40 times. In comparison to the 3.9G LTE (Max. 100Mbps), which will be commenced of service in Korea in July this year, the speed is faster by 6 times.

□ In the development performance report, ETRI reported development of the basic wireless communications technique (L1), communication technique between control signal and data devices (L2) and communication technique between networks (L3)\* that are necessary in implementation of the 4G (LTE-advanced) mobile communications system (terminal, base station and core network) by using 470 man-days and a total of KRW 64.4 billion (KRW 52.2 billion from the government and KRW 9.2 billion from private sector) over the last 5 years based on technological power built in the process of the world's first CDMA commercialization in 1995 and WiBro development in 2005, etc.

\* Development has been completed up to 95% of the international standard required for the 4G mobile communications to be announced in April this year. The remaining 5% is for sleep mode and exception handling functions, etc., which can be developed after the standard is finalized in the future.



- In the process of development, 24 standard patents have been secured so far together with approval of 202 standard contributions and approx. 500 patent applications. Therefore, it is forecasted that a significant revenue will be obtained from technological fees\*.

\* With CDMA technology development in 1995, ETRI has earned a revenue of KRW 318.2 billion in technological fees so far from Qualcomm. In addition, it is forecasted to earn an approximately \$300 million of revenue from technological fees based on the 7 WCDMA standard patents secured in 2001.

- For the LTE-advanced development and standardization, it is forecasted that Korea's share in standard patents\* will be more than 24% due to the active support from Samsung, LG and ETRI, etc. As such, the share is expected to be significantly higher than those of WCDMA, the 3G technology (estimated to be approx. 10%), and of the 3.9G LTE (19%).

\* In communications fields where the importance of international standards is high, share in standard patents is used as an index of the competitiveness of source technology.

- In order to launch the system developed as a commercial product, it will be necessary to optimize it into a single chip and to administer a test on compatibility between terminal and base station. In addition, it is reported that the process to additionally develop detailed functions, such as handling of a variety of errors, will be necessary.

- ETRI forecasts that development and demonstration of actual services using the 4G mobile communications technology will be enabled, which will in turn accelerate development of commercial products by Korean companies and therefore will contribute to market dominance in the future.
  
- At this, the government announced 'strategies to secure the next-generation mobile initiative', which cover implementation of the 4G wireless network in the earlier phase, establishment of open mobile ecosystem, technological development for the vulnerable fields of system, parts and SW and securing of source technologies in preparation for the phases after 4G, in order for Korea to securely build competitive power amid the recent shift of mobile industry paradigm that is summed up with smart phone and the 4G mobile communications.
  - \* Details of the 'strategies to secure the next-generation mobile initiative' will be disclosed after the Economic Policy Mediation Conference to convene in the morning of Jan. 26 (Wed).
  
- The indoor demonstration inside a lab showed operation processes of the developed system and terminal followed by a variety of mobile communications services to be realized in the future, such as eMBMS\* using high-speed wireless transmission of the 4G mobile communications system and personal broadcasting service, which requires high-speed uploading function.
  - \* eMBMS : evolved Multimedia Broadcast and Multicast Service



< eMBMS Screen Capture >

- It was followed by an outdoor demonstration that took place inside a moving vehicle. The demonstration showed how 3D full HD broadcasting was wirelessly transmitted using the 4G mobile communications technology and viewed seamlessly through a large-screen TV installed in the vehicle. In addition, high-resolution video calls were made to researchers in other locations.



< Viewing 3D full HD Broadcasting inside a Vehicle >



< Diverse Mobile Communications Services  
Simultaneously Displayed on a Large TV Screen >

- At this event, Prime Minister Kim Hwang-Sik congratulated and thanked researchers and staffs of participating companies, the R&D leaders, by shaking hands with every one of them.
- Through a congratulatory speech, Prime Minister Kim urged the attendants to contribute to creating jobs and achieving joint growth by actively transferring the research outcomes of ETRI to small businesses developing the related devices and parts.