

FRAMEWORK FOR THIRD GENERATION (3G) CELLULAR NETWORK DEPLOYMENT AND SERVICES OFFERING IN SINGAPORE

RESPONSE FROM NEC CORPORATION

In accordance with the rapid diffusion of PC, portable telephone, and internet, the need for multimedia service in the mobile environment is expected to arise.

Examples of required service:

- Integrated PC communication
- High speed wireless LAN
- Transmission of high definition still picture / moving picture
- Integrated information provider service
- Portable video phone, etc.

NEC believes that it is important to allocate enough spectrum for each operator to realize the broadband multimedia service. NEC feels that more than 2 x 15MHz should be allocated to each operator in order to accommodate the services. In Japan 2 x 20MHz will be allocated to each operator.

In regard to the treatment of existing operators of 2G systems, NEC believes that they are the most suitable candidates for the 3G licenses. Their existing 2G systems and expertise will enable them to make quick and smooth implementation of 3G systems.

Allowing new entrants is a way of activating competition. The number of new entrant, however, should be limited, maybe one (1), in considering the size of market in Singapore. In case of Japanese market the total of three (3) licenses will be issued, which are expected to be issued to the three (3) existing operators.

NEC feels that the timing for award of 3G licenses is "the earlier, the better". The chart in the next page shows the expected service-in schedule of 3G-active countries:

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<u>Country</u>	<u>Current Sub. Penetration</u>	<u>3G Service-In Schedule</u>
Finland	65%	1Q/2002
Sweden	52%	1Q/2002
UK	33%	1Q/2002
Germany	25%	1Q/2002
France	30%	1Q/2002
Spain	32%	3Q/2001
Hong Kong	53%	1Q/2002
S. Korea	41%	2Q/2002
Japan	40%	1Q/2001
Singapore	38%	?

According to the recent market status, the above service-in schedule is said to move up even further. Some 2G operators in the world have a plan of deploying 2.5G systems (eg. GPRS) before 3G system. In NEC's opinion, however, it is not wise to invest in 2.5G system in consideration of 3G deployment schedule in the world. The more sophisticated system of 3G will surpass 2.5G system eventually, and it will happen in the short period. The maximum speed of GPRS is 115kbps, which is not sufficient enough for multimedia services which the world is requesting. Furthermore, the speed of 115kbps is achieved through bundling 8 channels, which decreases the number of available communication paths. Therefore, if operators in Singapore are to go with the world trend in an efficient manner, they should consider the option of going directly to 3G.

The rapid expansion of mobile broadband multimedia service is an obvious world trend. Global seamless roaming is one of the important features of IMT-2000 and will be actively promoted. If Singapore is to join the world trend of mobile broadband multimedia, IDA should issue the 3G license soon. If the licenses are awarded earlier, each operator will have enough time for system deployment. In case of Japan, the licenses will be issued in April/May 2000 and expected service launch is March 2001.

NEC has been actively participating in the trial of 3G system in Japan, UK, Thailand, Singapore and South Korea. After showing remarkable performance and lead in the development, NEC has been selected as a vendor of whole system (Core Network, Radio Network Controller, Base Transceiver Station and Subscriber Terminal) by NTT DoCoMo of Japan, which will launch the world first 3G services.

(End of report)