

My Personal Suggestion On 5G Strategy For Taiwan

By

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At SRB Meeting

Jan. 22, 2014

1/17/14

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Opening Remarks

- As a technical advisor,
- I have come up my points and suggestions in this presentation.

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Why is 5G

- The development of 4G has been dominated by European Community.
- LTE is still in an enhancing stage to meet the ITU's 4G requirement, but may not be achieved.
- 5G will open another business frontier in wireless communication for Asia countries.
- Because 5G will hurt LTE's business, will LTE standard body block 5G?

Source: "THINKING FROM ANOTHER DIRECTION AND HOW TO WIN 5G - Know yourself and enemy "
William C. Y. Lee, NSC 5G Panel Discussion Meeting, Nov. 2, 2013

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What Does 5G Suppose To Be?

- Will be a revolutionized technology or service, not an evolutionary one. It will not be opposed by 4G standard body.
- Will be an international standard.
- May have to be defined by ITU.

Source: "THINKING FROM ANOTHER DIRECTION AND HOW TO WIN 5G - Know yourself and enemy "
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What is 5G

- ITU may officially give a definition and a requirement for 5G.
- Many new technologies, new spectral bands, new networks or new service can be selected to be 5G.
- European countries will make a definition of 5G toward their advantages.
- We can start to promote 5G, but we have to participate in ITU standard body eventually.
- How to team with China and other potential countries to lead 5G in ITU is a key.

How to Win 5G

- It has to be based on the past experiences.
- Is it a right time?
- Is it a right technology, spectrum or network for the operators?
- Is ITU a right place to be started?
- If you believe the best technology will win 5G, you are the nice people to be defeated.
- All politics involved!!!

Strategy To Win 5G (One thought)

- Form a strong alliance with regional operators and manufacturers. No European vendors.
- Start a standard body outside ITU.
- To become a regional standard 5G.
- Afterward, to let ITU take it for international standard.

Source: "THINKING FROM ANOTHER DIRECTION AND HOW TO WIN 5G - Know yourself and enemy"
William C. Y. Lee, NSC 5G Panel Discussion Meeting, Nov. 2, 2013

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5G Focus Key Areas From Prof. Chen and Prof. Lin's Chart

Guiding from Industry, Followings can be next focus topics

- Wireless Access
- Smart Handheld Devices
- Mobile Internet
- Mobile Applications, [e.g. MTC (Machine Type Communication) and MCS (Mobile Cloud Service), etc.]

After read the presentation charts given by Prof. L. G. Chen and Prof. Y.B. Lin (NSC 5G Panel Discussion Meeting, Nov. 2, 2013), a very good chart listed four technological areas as shown here:

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World Situations

- * The worldwide manufacturers had promoted 2G and 3G, and forced the operators to accept them in the past. There is no difference for 4G.
- * LTE will delay or block 5G behind the scenes, at least try to slow down the 5G activity.

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Taiwan's Conditions

- * Taiwan needs to be a starter (if not a leader) to call for 5G.
- * We do not have a foreseeing picture to choose a particular new technology, network or service to be 5G. (or I am wrong with this statement)
- * Worldwide manufacturers will not let us to select any technology for 5G or to direct 5G.

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Taiwan's Conditions (Cont'd)

We need to answer the following questions:

- * What are our strengths?

Ans. Chips and Handsets.

- * Who are our partners?

Ans. Depends on our strategy.

- * Who are our unfriendly parties?

Ans. Depends on our strategy.

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How Should We Approach The Foreign Partners

- * Should Taiwan operators try to ally with the foreign partners?
- * Should Taiwan manufacturers try to ally with foreign partners?
- * Should Taiwan government try to ally with foreign partners?
- * The European country's governments did involve in 3G and 4G.

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My Personal Suggestions

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Select A Focus Key Area For 5G

- The first three focus key areas listed in the chart may be considered by LTE as the 4G technological areas. These three key areas will be hard to take for 5G.
- Only the fourth focus key area (Mobile Application Service) can be a future 5G. Because the worldwide manufacturers have not work this area in 4G and cannot claim this area to be 4G.

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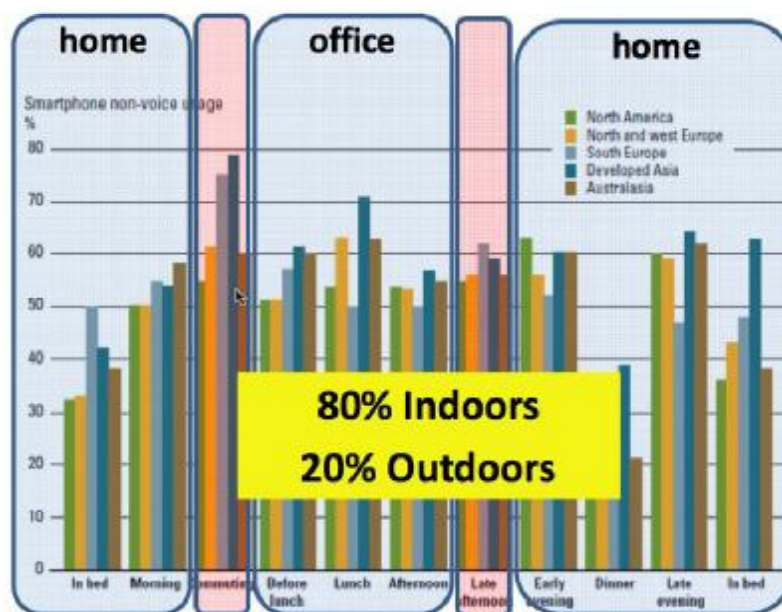
How To Push It To Be 5G?

- Start to create a requirement of 5G (just like the requirement was made for 4G).
- Let Taiwan wireless operators (can be led by Chunghwa Telecom 中華電信) ally with foreign operators to talk about the requirement of having the Mobile Application Service (MTC and MCS) for 5G.
- How to create a requirement? See next slide

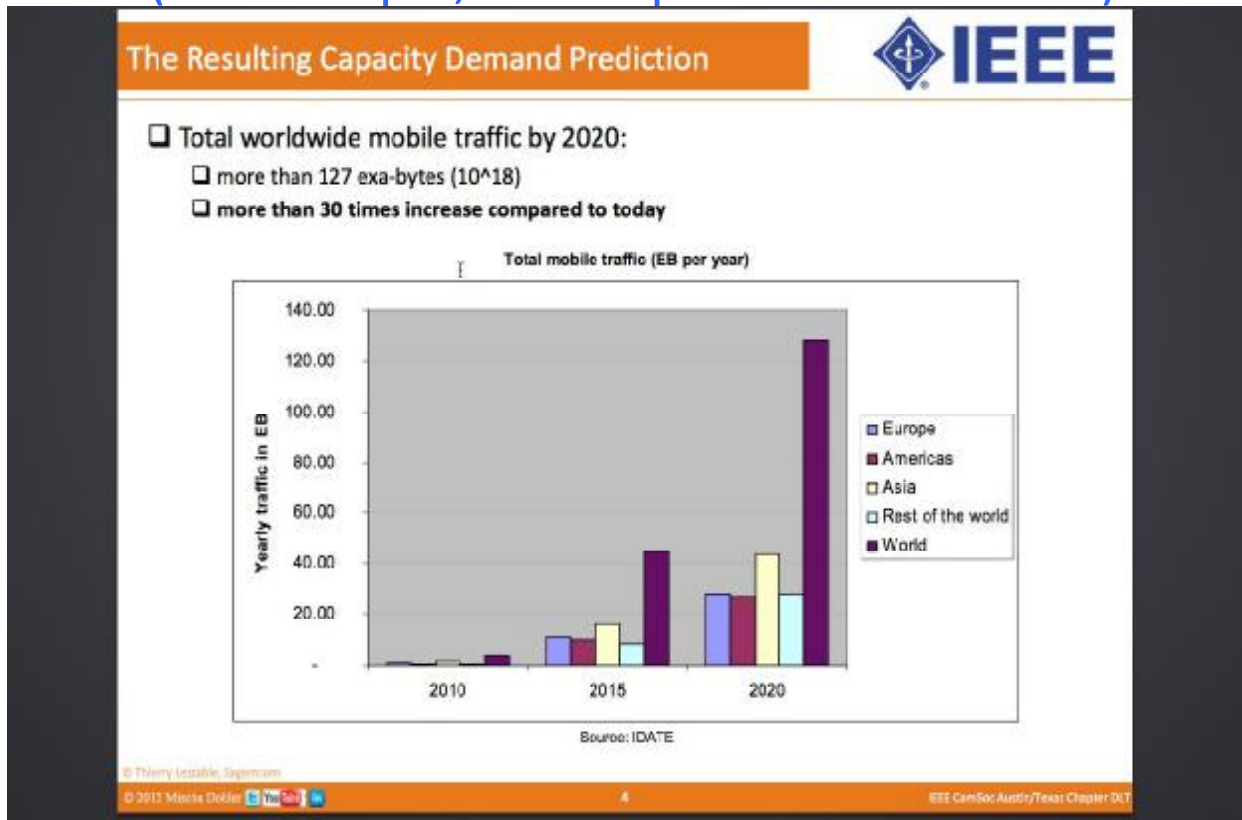
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Daily Traffic Map: Asia shows the highest, except the 4th line in blue

Smartphones Cause Capacity Crunch



One of 4G's Requirements from Operators (An Example, 40+ Ebps for Asia in 2020)



How To Push It To Be 5G? (cont'd)

- An international wireless operator group should be formed.
- Advantages:
 - 1) No IP issues will be involved among operators.
 - 2) Wireless Operators have a common interested goal to serve their customers.
 - 3) Chunghwa Telecom (CHT) can be a leader or starter.
 - 4) BOST/NSC/MOEA can be easier to give directions to CHT.

How To Push It To Be 5G? (Cont'd)

- To go to ITU for making a suggestion on a 5G requirement.
- If accepting, the international wireless operator's group will become the real master to direct 5G based on their needs.

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From My Past Experience

IP should be commonly shared when developing a new standard.

- GSM shared their IP.
- Qualcomm and Motorola could not make a successful CDMA system at the beginning because of IPR issues.
- Korean companies shared their IP and made CDMA successfully in 1996.
- Qualcomm could not make NB-CDMA a world standard because of IPR issues.
- Intel could not make WiMAX a 4G standard because of IPR issues.

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Taiwan's Actions on 5G

Once the requirement of 5G has been defined:

- 1) All invented technologies, which have to make 5G works covered in the first three listed focus key areas, will become 5G's technologies.
- 2) Taiwan universities and manufacturers should start early to work on 5G technologies as soon as the requirement of 5G is finalized.
- 3) The new chips for 5G handsets, base stations, and networks can be a big business for Taiwan.

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Good Luck to Taiwan
5G

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