

【Industry-Academia-Government Collaboration Session on ISPlasma2011 】

**SEMICONDUCTOR MANUFACTURING
-FUTURE TECHNOLOGY-**

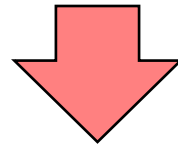
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The most important fundamental principle

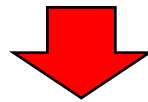
The less complex the expectations,
the better the chance for success.



Today this principle is under consideration of new business models or Operations using new business model in a few universities, IBM, GlobalFoundries, STMicroelectronics, TSMC, Intel, Qualcomm, Samsung.

Japanese situation about the advanced semiconductor research

Most, if not all, Japanese semiconductor companies have no plan at this time of erecting a fab to produce the next level of technology, a multi-billion dollar investment and further more they have not also invested heavily in R&D.



The manufacturing and the technology should be developed all together.

About U.S.A.

1. NASA, IBM have played a role in advanced manufacturing technology and U.S. defense efforts.
2. NASA broadened the concept of collaboration and share the IP also in a much broader bases. NASA was the lead partner and contracted with private industry. NASA worked with local universities and shared research results with both academia and industry.
3. IBM became the largest manufacturer of computers in the world. and uses different models for different situations. IBM funds and controls the research project. IBM recruits top talent from universities but does not share IP with them. The new technology is licensed for a fee. IBM will do custom research but will always keep the IP.

MANAGING IP

1. When researching advanced technologies, fund control is essential.
2. The essence of this model is taken from foundry pricing models.
3. Selantek recommends that a license to use the technology be sold in a manner similar to IBM.
4. All IP users pay the same amount.
5. Selantek believes that the simpler the model the more successful it will become.
6. Every technology buyer pays the same amount. Participants do not get automatic participation. Participants can not go out and start a new company and take the IP with them.
7. IP ownerships rests solely with the R&D center.
8. By establishing the rules of participation at an early date and not straying, a more cohesive group will evolve and better quality work should follow.

FUNDING R&D

1. Today it may be necessary to resort to some unconventional methods and sources in order to obtain funds and be successful.
2. It is necessary to work with foundries.
3. Government funding will cover some but not all expenses.
4. It is not common to receive funding without a specific goal in mind.
5. Selantek does believe that selling shares will be a lot more effective in obtaining funds and securing competent personnel.

AMOUNT OF FUNDING

1. The first step is to define the R&D project scope.
2. Funding is allocated based on projected results including project income stream.
3. The amount of funding is the most important element and requires a lot of analysis and research into the possible time to completion.

CURRENT U.S. MODEL- Austin cluster

1. There is no current U.S. model that successfully links government, academia and industry.
2. The only successful active model of a similar nature is IMEC in Europe.
3. The cluster concept is central to a successful venture of this nature.

CONCLUSION

1. The cluster effect is similar to (but not the same as) the network effect.
2. Cluster environments are now found all over the world so as to attract a specific type of industry.
3. The R&D venture must locate in an exciting and proven cluster environment to be successful. In the U.S.A. Silicon Valley would be first followed by Austin.
4. A plasma based R&D center should be located in an established technology cluster center.
5. To be successful a plasma R&D center must have access to money, a to-be ready foundry, Scientists that are local to the cluster, and management skilled in R&D management, fund raising and project management as well as IP sales. Legal counsel is also necessary and must include personnel skilled in the R&D Technology.
6. Selantek recommends selling technology shares to companies likely to need to use this technology.
7. IMEC is the best existing model for R&D that brings together government academia and industry.
8. The Plasma R&D venture must secure foundry capacity for when the product is ready to be manufactured.