Extended Abstracts of the 1997 International Conference on Solid State Devices and Materials, Hamamatsu, 1997, pp. 264-265

Invited

From Experiences of Tri-Cultural DRAM Alliance Project

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1. Introduction

International alliance has recently been the talk of semiconductor industry. Huge investments of LSI development cost and the production line construction make the semiconductor makers loose the profit against rapid change of the price to down. The general motivation of the alliance in R&D area are to share the resources, to merge the different experiences of the technology and to select "Best of breed" technology. They result in making success story, reducing technology risk and getting higher business flexibility after alliance completed with partners.

TRiAD (nickname of IBM/Siemens/Toshiba (I/S/T) DRAM alliance program) project[1] was one which fulfilled the above purposes and results exactly. It was aiming the development of 0.25um technology and 256M DRAM product in the early stage.

The purpose of this paper is to introduce my experiences from the execution of TRiAD project in the terms of alliance structure, alliance management and topics happened in it.

2. Project Scenario

Objectives of TRiAD project was to develop 0.25um CMOS technology and an industry standard 256Mbit DRAM product by making use of synergy among three companies of I, S & T. Effective utilization of their background technologies, staff sharing with high level of technical expertise, development cost sharing and cooperative works of one joint development team made us achieve the objectives efficiently and competitively. The location of the development was settled by the consideration of adequate technical environment and acceptable social environment for long term delegates, where was IBM, Advanced Semiconductor Technology Center(ASTC) at East Fishkill, NY.

3. TRiAD team built from I, S & T

"TRiAD" means the harmony of three tones. The uniqueness of TRiAD project compared with other international alliances was to organize one commingle development team located at one development site, but three different types of cultures, languages and working styles got together nevertheless.

The TRiAD project was led by one project manager(T) and two assistant project managers(I,S) and the organization consists of two development departments and eight job oriented sections. The staffs of each section were equally shared and the manager's positions of total project were also occupied equally from three companies. Each company's management coordinator and technical coordinator supported the project and reviewed the progress of the project as a representative of parent company. Total about 200 engineers were working in the project.

Job assignment to individual project members was done with equal balance based on 3 companies' requests. No segregation of job assignment in the specific technical area by one company did make to realize.

4. Management of TRiAD project

Before project team started practically at East Fishkill, the thorough preparation works were carried out through frequent technical workshops in terms of management system, development plan, practical milestones, technical targets and those selection with three companies' experts.

Daily management were sometimes compromised by the proposal of three companies to keep good relationships and good communication. The English-written weekly report was useful for making up lack of English communication for Japanese, small group meeting on specific technical areas through project organization was also effective for sharing the common technical knowledge for new assignees. The communication within the project were executed by daily electronic mails, distribution of weekly reports electrically, weekly department and section meetings, weekly management meeting and quarterly all hands meeting. In addition to those meetings, quarterly

management coordinator meeting played an important roles to report project outcomes and issues to parent company management by project managers.

5. Cross cultural cooperation

Different strengths of three nations jointed in TRiAD project are well described as the following sentence, which was summarized from the simulated negotiation exercise in the three multinational workshop[2]. "While the Germans were already making concise statements about plans and priorities, the Americans were working creatively and the Japanese were still setting the stage for the actual work. The non-confrontational behavior of the Japanese was pleasant for the others on one hand, on the other hand, they couldn't wait for the "action to begin"."

Based on such generally accepted ideas, very uncomfortable event had been brought into the TRiAD project by the article of The Wall Street Journal[3], which stressed the issues of cultural merge among international alliance. The article was published after TRiAD members' interviews by the writer. Big shocks run through the project and parent company's management on the article because nobody felt such miscommunication and issues on TRiAD project and because progress of the project had been going well.

But TRiAD management had accepted the tendencies of the alliance modestly and had tried to improve the communication and relationship by organizing the tri-cultural workshop and by holding the tri-cultural lunch meeting periodically with project managers.

6. See-Think-Plan-Do development cycle

New discovery in the alliance team was found during the course of the TRiAD project execution. Development logistics generally consists of "See", "Think", "Plan" and "Do" actions. Each company in TRiAD joint development team had completely covered one of the elements of above development logistics.

In the introduced training program of newly hired engineers, Toshiba management stresses them to learn what we should do at first is to watch the phenomena and the situation of facing issues . That corresponds to the spirit of "See". The motto of IBM company is to "Think" the everything before they start R&D works. The tendency of Siemens engineers is to do making "Plan" and problem definition as the first tasks. It seems to be the nature of German.

This is very interesting discovery in TRiAD project. And successful results of the TRiAD project were achieved with such well organized teamwork.

7. Conclusions

What I have learned from the TRiAD alliance project are as follows;

(1) The decision whether the alliance program would execute or not should be made by top down approach based on the global aspects. The unbalance interests of individual aspects should overcome from the view point of overall profit by executing the alliance program.

(2) The cultural differences are rather fun as far as the alliance project is well managed. Key factors of cross cultural management are to select good people, to mutually trust and to keep good communication.

(3) The technology and product development are not affected by the culture difference, language barrier and working style difference. Obtaining collective results technically is only the final goal.

(4) A lot of situations and knowledge in the international R&D circumstances became very valuable experiences for the assignees. They will make good use of their experiences on the future jobs.

Acknowledgment

I greatly appreciate all members of TRiAD teams for doing hard jobs and parent companies' management, especially IBM ASTC management, for supporting us strongly.

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