

This type of international scientific research project comes when I got acquainted with Lyee theory and with the inventor of this theory. It is a new challenge, which has affected my research and my carrier. I am happy that such an innovation been established and especially emitted from Japan. Now I am as a naturalize Japanese born in Canada, feel so proud that those innovation could led to this project from Japan, as a founder of new software science; in the same frame as Japan was a founder for new computer hardware technology around the 70's. I am proud of that to be part of such team, which I believe its achievement within the coming three years of the project initiates the establishment of the milestone on new software generation.

As part of my Lyee interest, on the early 2000, I have traveled world wide to see a lot of good scientist and researchers in major universities, specialized in software science, and, as a result, without surprise, I was happy to have a good and withstanding research team, who is following me in the same direction seeking a new IT software paradigm, under the foundation of Lyee theory.

This type of project is the a joint academic collaboration to bring new state of art in computer science into a new trends necessary for new IT demands needed for the 21<sup>st</sup> century. In such a project there are two main goal points which have been met and which are not available for other joint research project established so far on software science.

- (a) It is the 1<sup>st</sup> of its type to establish large scale joint activities from different world wide universities `scholars, who share the same interest to find a new integrated directions and trends in software science suitable to handle the problems which we are strugglingly, facing in the current software development. Those activities till this moment has been scattered due to (1) different research direction in the young software science, (2) non clear definition of software related topics, like software engineering, software analysis, requirement engineering and others. This led to different unrelated research direction that scattered the lines of research on software science, though those lines were well defined at its start. (3) This led to difficulty to have a suitable practical integration, for a practical software development procedure, with suitable capabilities of reasonable integration for many software-handling problems; necessary for development of many IT related issues. So many research projects that developed so far focus on certain type of problem domain, and accordingly specify the needed project or solution paradigm to handle it. This result to many case-by-case software development methodologies without any kind of attention for their integration, and accordingly a lot of budget has been used to establish them.
- (b) Collectively, this project brings new trends of theory and practice, which should be always together and not be separated. This type of theory and practice integration has been

successful so far because most of the academia believes that every sound and well-defined concept should be verified theoretically and conceptually before going to development stage. This project I believe is doing. But the research done so far in software science has been in scattered tracks that the theory has gone so far that the ideal assumption needed for good theoretical foundation, are far from being realistic, so when those theory practices for development their designed parameters and boundary solutions are far than those theories created which make them not any more as its was designed for, so their shift make them not any more in the frame of its original shape, so their objective for being in useful practice is not any more exist.

Those two visions were the main objective and goal to establish such project, especially when I was acquainted with Lyee software development approach. Lyee software development was a new creation of state of art, comes after Mr.Negoro`s discovery, which last about 30 years of his carrier. The output of Mr.Negoro`s research open a new windows for new generation of software science need for new software development cycles, which can make software life cycle longer or more flexible. The needed IT new software packages should be safe, robust, and evolvable, with certain type of intelligence needed to handle or change encountered environment not designed originally for, and others, these issues are lacking now in many software development cycles. In Lyee those issues can be handled but in conventional software development those problems are the major obstacles for new direction for software suitable for current or coming IT style business enterprises.

Lyee has been created by the deep wisdom and large experience of Mr. Negoro. It has appeared in a good time at the early start of the 21st century, *i.e.*, the IT century.

The other objective this project brings is the academic flavor for Lyee. Most of the research collaboration units in this project are from computer and information science fields, from the academia, which contribute to bring academic flavor and new society for software science suitable for the 21 century. This society will be the basic for new direction and foundation for software theory and practice science or intelligent software society, under the umbrella of Lyee.

In this project, we have till now around 13 units, each units has a unit leader. Those units all share the same objectives I mentioned above, and handling several problems through Lyee framework to see how who can reach integrated and sound practical theory, which handle the new IT world. Moreover, at the current state this project there has 10 ph.D students( two from UK, one from France, two from Sweden, one from Italy, and four from Japan) and 7 master students(Three from Japan, one from Denmark, one from Sweden, and two from Canada).

They do their thesis on several topics related to Lyee theory and practice foundation. In those units there are master and Ph.Ds or Doctor students, who are supported by project and their theses are part of project theme.

Japan unit mostly consists of my units, which would like to handle a flexible type of software process and re-engineering, (やわらかいソフトウェア), this unit consists of four professors in Iwate Prefectural University, faculty of software and Information Science, Waseda university, Tohoku University, and Tokyo University of Technology, Osaka university, and others.

There are two units from Sweden. (Stockholm university unit), and Karlstad university unit. Those units deals on Lyee from formal specification, intentional modeling, integrated on Lyee, and enterprise modeling to handle changes from Lyee prospective.

There two units from Denmark, (Technical university of Denmark unit, and Copenhagen University unit), those units deal a speech act investigation of electronic commerce as well as transport/freight logistics based on Lyee foundation, and Natural language processing using Lyee.

There are two units from France, (Paris-1 university, and Toulouse-1 university), These units deal with requirement engineering, and analysis.

There are two units from UK, (Loughbrough university unit (deals with Human computer interaction through Lyee theory, and user creative application and , and University of Central England unit, deals with medical applications expert system applications).

There are three units from Italy, (Terento university unit, (deals with Lyee ontology and philosophical foundation on Lyee theory), Pisa university unit, (deals with Lyee software development and its assessment for process engineering), Rome-CNRs(Central National Research institutes) unit (deals with Lyee ontology, and domain oriented software development process),

There are one unit from Germany, (Dortmund unit, which deals with software process and E-commerce application),

There are four units from Canada, Ottawa University unit (deals with formal methods and Distributed Lyee foundation), Carleton University unit (deals with a research comparison of Lyee foundation with Object oriented paradigm especially UML), Hamilton university unit (deals with real-time systems using Lyee foundation), Laval university (which deals with Legacy project of Lyee foundation),

There are one unit from USA, (Pennsylvania state university unit), which deals with Engineering management, and other engineering issues using Lyee foundation.

All these units have been started from this year after the June 2001, and continue their collaboration for three years. There works are done for the moment independently, but on 2002 autumn we will have the first joint work shop for this project. This workshop will exchange thought and results among all collaborators, for possible harmonization and synchronization for their research result for the coming followed stages.

On the last stage of this project, we will have an international conference in Kyoto, autumn 2003. In this activity, we would like to establish the milestone for new software science in such worldwide activity, and in which Lyee will be the main concern.