A NEW CDIO-BASED CROSS-CULTURE TRAINING PROGRAM FOR INTERNATIONAL SOFTWARE ENGINEERS

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CDIO:
The primary goal of the CDIO Initiative is to help schools develop engineers who "able to conceive-design-implement-operate complex value-added engineering systems in a modern team-based environment and are mature and thoughtful individuals".

TOPCARES – started in DNII since 2009
- Technical knowledge and reasoning
- Open minded and innovation
- Personal and professional skills
- Communication and teamwork
- Attitude & manner
- Responsibility
- Ethical values
- Social contribution by application practice
The Cross-culture Training Program for International Software Engineers (since 2010)

A Development Team = 2 Japanese IT engineers + 2 the fourth-year students

The following abilities are required to be enhanced by the training program

• Master the popular objective-oriented system analysis and design methods.
• Understand how to conceive-design-implement-operate a complex software system in the context of group work.
• Master management method of software project and use it in the real-world project.
• Communicate effectively in the cross-culture working environment.
• Write and present technology report in English.
Project: Recruitment management system

- Real customer requirements from outsourcing enterprise
- Direct communication with HR
- Business solution & Information system solution
- Project team with different roles
- Distinctly development process with evaluation for each stage
1 PROGRAM SOURCE AND CONTENT

Job Application
- Online application
- CA uploading.

Resume processing
- Resume standardization
- Candidate status labels

Recruitment management
- Custom Recruitment Flow
- Candidates state share

Data Statistics
- Common statements
- Custom statements

Personal workbench management
- Recruiting Process
- Work transfer

Authentication/Role Management
1. [Business Modeling]

2. [Function Requirements]

3. [Project planning]

4. [IT Solution]

5. [System Development]
PROJECT STRUCTURE

Team work - mutual aid and cooperation

- Discussion
- Role play
- Cooperation
- Presentation
PROJECT STRUCTURE

Team Leader (TL)
Chief Architect (CA)
Requirement Engineer (RE)
Quality Assurance Manager (QAM)
Configuration Manager (CM)
Test Engineer (TE)
HOW TO ORGANIZE TO DEVELOP THE PROJECT

A type of “soft system” proceeding “daily work” in team
- Real customer requirements from outsourcing enterprise
- Tool of “MIERUKA”: Task Board, Burn Down Chart, Timetable, etc. Activity: Weekly Planning, Standup Meeting, Retrospectives, etc.
### Task Board: Daily Tasks which have to be done

<table>
<thead>
<tr>
<th>To Do</th>
<th>Doing</th>
<th>Done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mr. B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms. C</td>
<td></td>
<td></td>
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<tr>
<td>Mr. D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms. E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms. F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms. G</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Stagnating tasks**
- **Planned tasks have been done.** or **No more tasks have been planned.**
3 HOW TO ORGANIZE TO DEVELOP THE PROJECT

An example of Task Board
3 PROJECT STRUCTURE

Tools: Burn Down Chart, Timetable, WBS, etc.
Weekly Planning: To share goal and tasks to do by all team members

- **objective**
  - to share “Task Goal” and tasks, and check tasks to do
- **explanation**
  - to specify “Task Goal” (what should achieve) and tasks to do (what and how should do to achieve the “Task Goal”) as “Task” at the beginning of team’s Management Cycle (usually 1 week)
  - to take 2 to 3 hours for the Weekly Planning
Standup Meeting: to check tasks of the day by all team members

✓ objective
  ➢ to check to proceed tasks without any problems
✓ explanation
  ➢ To conduct at the beginning of work in the morning is important!
  ➢ to report “tasks of the day”, “tasks done yesterday” and “problems” by all team members in front of the tool of “MIERUKA” such as Task Board
Retrospective: to check tasks of the day by all team members

- **Do**
- **Plan**
- **Check**
- **Act**

**Keep:**
- Keep: things to keep doing

**Problem:**
- Problem: things which are problem

**Try:**
- Try: things to try; do better; and be improved
ASSESSMENT AND EVALUATION

Individual Evaluation: self-evaluation and TL evaluation
- Taking Responsibility (30%)
- Problem Solving/Creativity (30%)
- Collaboration/Teamwork (20%)
- Communication/Interpersonal Skills (20%)

Team evaluation
- Quality of the oral presentation (20%)
- Quality of time management (10%)
- Documents (20%)
- Quality of phase work (30%)
- Management (20%)
A survey on the improvement of system analysis & design ability and project management ability of trainees.

Figure 6. Evaluation of Analysis & Design

Figure 7. Evaluation of Management
CONCLUSIONS

Practices show that students’ ability in project management and soft skills have been improved dramatically. As a result, they can achieve the expected results. The success of the program attributes to:

- the well designed training content and the implementation process based on the CDIO Initiative
- the organization of the development process
  - PDCA cycles built in the process
  - efficient team facilitation skills, such as activities and tools of “MIERUKA”
- excellent instructors
Thank you!