DEVELOPMENT OF THE PM-SUPPORTING TOOL IN THE JAPANESE BUILDING CONSTRUCTION MARKET

-IMPROVEMENT OF AN APPLICATION SOFTWARE FOR SCHEDULING-

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Part I  BACKGROUND

1. History

2. Needs for PM or PM-Supporting Tools

3. CAMES
1. *History*
2. Needs of Japan’s construction industry for PM or PM-Supporting Tools

1. Drop in Productivity
2. Heightened Response to Client’s needs
3. Increased Competition -> Reduced costs -> Skilled engineer made redundant
4. Greater appreciation by customers for PM
5. Internationalization
6. Increased use of IT in the industry
7. Improvement in PM tools
3. CAMES

CAMES: Collaborative A/E/C Management Enhanced Supports
Part II  DEVELOPMENT OF CAMES

1. Scope of Development

2. Concepts of Development
## 1. Scope of Development

### Table 1: Development Scope of CAMES ver1.0

<table>
<thead>
<tr>
<th>Use</th>
<th>Structure</th>
<th>Number of Floors</th>
<th>Typical Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>Office</td>
<td>Steel</td>
<td>20 or less</td>
</tr>
<tr>
<td>Category 2</td>
<td>Residential</td>
<td>Reinforced Concrete</td>
<td>14 or less</td>
</tr>
</tbody>
</table>

Construction work phase
2. Concepts of Development

1) Smooth Introduction to the Real Project

2) Correspondence to the Needs of the Maker Side

3) Correspondence to the Needs of the Client Side
Part III ACTUAL UTILIZATION OF CAMES

1. Building Outline

2. User Group

3. Applying the System

4. Work Breakdown Structure (WBS)

5. System Environment
1. Building Outline

Use: office

Floors: 9 Floors, 1B floor

Height: 42 m

Total floor area: 10,000m²

Structure: Steel Structure

Foundation: Cast in place pile

Outer Wall: Pre-Cast curtain wall

Contract Method: Lump sum contract
2. User Group

<table>
<thead>
<tr>
<th>User Group</th>
<th>Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>Perusal of summary of schedule and documents.</td>
</tr>
<tr>
<td>Architect/Engineer/Supervisor</td>
<td><strong>Schedule (Perusal and progress report)</strong></td>
</tr>
<tr>
<td></td>
<td>Document (Perusal, Registration, Approval)</td>
</tr>
<tr>
<td>General Contractor (PMr)</td>
<td><strong>Schedule (Plan, Manage progress)</strong></td>
</tr>
<tr>
<td></td>
<td>Document (Perusal, Registration, Approval)</td>
</tr>
<tr>
<td>General Contractor (others)</td>
<td><strong>Schedule (Perusal and progress report)</strong></td>
</tr>
<tr>
<td></td>
<td>Document (Perusal, Registration, Approval)</td>
</tr>
<tr>
<td>Sub Contractor</td>
<td><strong>Schedule (Perusal and progress report)</strong></td>
</tr>
<tr>
<td></td>
<td>Document (Perusal, Registration, Approval)</td>
</tr>
<tr>
<td>System Manager</td>
<td>Executes control of the whole system</td>
</tr>
<tr>
<td>System Maintainer</td>
<td>Executes support at the time of problem occurrence</td>
</tr>
</tbody>
</table>
3. Applying the System

- PMBOK
  *(Project Management Body of Knowledge)*

- CAMES’s system
4. Work Breakdown Structure (WBS)

- **Summary Task (Level 1)**
  - **Sub Tasks (Level 2)**
    - 6F Floor Structure
      - Steel Deck
      - Re-Bar
      - Form
      - Concrete
5. System Environment
Part IV FUNCTIONS AND EFFECTS

1. Schedule Planning and Task Setting Functions
2. Arrow Network style Schedule Display Function
3. Task Filtering Functions
4. Other Functions on MS-Project for PMr
5. Function on Web for User Group
1. Schedule Planning and Task Setting Functions
2. Arrow Network Style Schedule Display Function

- Time axis
- Vertical axis direction means building altitude
- Ex. 6th Floor's tasks
- Ground Line
- Skeleton of task's order

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3. Task Filtering Functions

- schedule kind
- Floor /Position
- Construction work
- User group
4. Other Functions on MS-Project for PMr

1) **Tool bar** Arrangement Function (additional function) for easy use

2) **Printing Support** Function (additional function) for labor reduction

3) **Progress Control** Function (additional function) for easy use

4) **PMr Report Preparation** Functions (original function) for labor reduction

5) **Resource Control** Function (original function) for building construction use

6) **Cost Control** Function (original function) for building construction use
5. Function on Web for User Group

1) Task Inspections/Achievement Report Functions (original function) for collaborative use

2) Progress Report Functions (original function) for collaborative use

3) Documents Preparation Support Functions (additional function) for labor reduction

4) Task Link to File or Folder Functions (additional function) for improvement of productivity

5) Workflow Functions (original function) for building construction use
Part V  EVALUATION AND PROBLEMS

1. Evaluation of CAMES

2. Other Problems of CAMES

3. Improvements
1. Evaluation of CAMES

- **Response of Real estate company’s members**

- **Response GC’s members**
2. Other Problems of CAMES

1) Standards & Document Templates (Original, ISO9000s, ISO14000)

2) Management Construction Manuals, Supervisor’s manuals

3) Special methods of construction or technology

4) Knowledge documents & data (Safety, Quality, Cost, Schedule, Resource)

5) Existing backbone system or sub system
3. Improvements

1) *Refine* the developed ver1.0’s functions

2) Functions for the *Client’s needs*

3) *Value Engineering* function

4) *Guidance* function

5) *Internet function* under *DB server*
Part VI  CONCLUSION

1. **Needs** of PM or PM-supporting tools

2. **Difficulties** of adopting in Japan’s culture

3. Development of **CAMES** using MS-Project

4. **Next phase**