DEWS2007
Industrial Session
Panel Discussion
July 26, 2007 @RCAST, The University of Tokyo

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Coordinated by:
Koichi Ohtomi
Q1
Is Design Engineering useful for practical product development?
16 Groups of Design Methods/Tools

- Conceptual Design
  - Design Theory
  - Idea Abstraction
  - Knowledge, Tech. Transfer
  - FOA-like CAE
  - CAD/CAM/CAE
  - Optimization
  - Statistic Tech.
  - Collaborative Design
  - Process & Modeling Methods
  - DfX, Module Design
  - Decision Making, Design Visualization
  - Kansei Design, Ergonomics
  - Organization & Project Management
  - Cost, Economy, Procurement
  - Risk Management
  - IT Technology
Upstream Design (Analog) vs. Downstream Design (Digital)
Relationship between Design Process and Design Information

Conceptual Design | Functional Design | Layout Design | Structural Design | Manufacturing Design

Upstream | Design Process | Downstream

Unclear information in designer’s head

Substantial design information

Great ——— Medium ——— Limited

DIGITAL

ANALOG
Q2

Is digital tool (CAD/CAE) sufficient for your product development?
Input vs. Output for Digital Tool

Digital tool: CAD, CAE, CAM, PDM, PLM, etc.
Q3
What kind of request do you have for Design Engineering in the coming ten years from industrial side?
INTRODUCTION

Design Engineering Roadmap toward 2030
Major Key Technologies of Design Engineering

“Delight” design tech.
Design Conception
Emotional products from here
Attractive requirements
- not expressed
- customer tailored
- cause delight

“Better” design tech.
Mass production & Mass consumption

“Must” design tech.
Design Assurance
Much troubles from here
Design Engineering Roadmap

<table>
<thead>
<tr>
<th>2005~</th>
<th>2010~</th>
<th>2015~</th>
<th>2030~</th>
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</thead>
<tbody>
<tr>
<td><strong>A) Trends of Social &amp; Technical Needs:</strong></td>
<td>“Delight” Design Technology for rich social and personal lives</td>
<td>“Must” Design Technology for design assurance</td>
<td>“Better” Design Technology for mass production &amp; mass consumption</td>
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<td>Limitations of local optimization, so will and choice of current design technology</td>
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<td><strong>B) “Better” Design Technology:</strong></td>
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<td>Realization of Systems Engineering applying full mechanical engineering</td>
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<td><strong>C) “Must” Design Technology:</strong></td>
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<td>Total design applying not only mechanical engineering but other engineering and science</td>
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JSME activity
Comparison of Major Emphasis on Design Engineering between Japan, Europe, and US

- “Must” Design Tech.
- “Delight” Design Tech.
- “Better” Design Tech.

Conference surveyed
CONCLUSION

No conclusion in this panel, but continuous collaboration with academia and industry is important for developing Design Engineering.
APPENDIX
# Western-Style vs. Japanese-Style

<table>
<thead>
<tr>
<th>Items</th>
<th>Western Style</th>
<th>Japanese Style</th>
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<tbody>
<tr>
<td>Culture</td>
<td>Hunting People</td>
<td>Agricultural People</td>
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<tr>
<td>Society</td>
<td>Competitive Society</td>
<td>Middle-class Consciousness</td>
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<td>Employment Systems</td>
<td>Annual Salary System</td>
<td>Lifetime Employment System</td>
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<td>Seniority Wage System</td>
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<td>Organization</td>
<td>Flat</td>
<td>Pyramid</td>
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<td>Decision</td>
<td>Top-Down System</td>
<td>Council System or Decision by Majority</td>
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<td>Measure</td>
<td>Originality</td>
<td>Class Curve</td>
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<tr>
<td>Product</td>
<td>Innovative Products by Strategic Policy</td>
<td>Better Products by Improvement</td>
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<td>Leading Products</td>
<td>Aerospace</td>
<td>Automobile</td>
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<td>Digital Consumer Products</td>
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<tr>
<td>Production Systems</td>
<td>Own Company</td>
<td>Keiretu System</td>
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<td>Companies’ Biggest Concern</td>
<td>Profit</td>
<td>Market Share</td>
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<tr>
<td>Advantage in Product Development</td>
<td>Design Technology</td>
<td>Product Technology</td>
</tr>
<tr>
<td>Research</td>
<td>Basic Research</td>
<td>Applied Research</td>
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<tr>
<td>Proverbial Truth</td>
<td>First come, first served.</td>
<td>The nail that sticks up gets hammered down.</td>
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<td>The end justifies the means.</td>
<td>Every body’s business is nobodies business.</td>
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<td></td>
<td>Time is money.</td>
<td>Speech is silver, silence is gold.</td>
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<td>Wall haves ears.</td>
<td>Too many cools spoil the broth.</td>
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<td>Work while you work, play while you play.</td>
<td>Two beard are better than one.</td>
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