Software Product Management: Preliminary Results of a Pilot Survey

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A Quiz
About the Software Industry

• What costs $50M to build and $5 to copy?
• Name a product that uses electricity, costs more than $100, and doesn’t have a microprocessor.
• Name the top five software companies (in terms of revenues from software).
SCIP Software Industry Study

• Phase 1: Spring - Winter 1993
  Study of the Japanese Software Industry
  Prof. Edward A. Feigenbaum
  Subsequent interviews with US firms
  Focus on the software products segment
Why Does the US Dominate the Global Software Products Industry?

Worldwide Market Share

**Products & Services**

- **US**: 57%
- **Europe**: 26%
- **Japan**: 16%
- **Other**: 1%

**Software Products Only**

- **US**: 74%
- **Europe**: 26%
- **Japan**: 1%
- **Other**: 1%

US Industrial Outlook for 1993, 1994
The Reasons for US Dominance Are Neither Superficial Nor Transient

• Long-term funding of basic computer research
  > Faculty, graduates at the cutting edge
• Software is “real”
  > Unbundling, piracy, high-prestige profession
• Regulatory & cultural support of entrepreneurs
  > Status of self-employed vs. employee of big firm
  > Venture capital: Profits from high-risk
  > Strategic diversity and acceptance of failure
• Youth accepted in business management
• Tolerance of “good enough” quality
Phase 1: Conclusions

- The US software products industry is a model of adaptation to extremely rapid change in the underlying technology, which constantly creates new markets for computers (applications).
- The rate of change is speeding up.
SCIP Software Industry Study

• Phase 1: Spring - Winter 1993
  Study of the Japanese Software Industry

• Phase 2: Winter 1993 - Spring 1995
  Interviews with 50 US Industry “Insiders”
  Determine industry structure and trends
  Identify issues that will shape its future

CS290/IE210: The Software Industry
The Software Products Segment is Changing: Recent M&A Activity

• 1994
  > Adobe acquires Aldus ($.2B)
  > Novell acquires WordPerfect ($.7B)

• 1995
  > Sybase acquires PowerSoft ($.9B)
  > Computer Associates acquires Legent ($1.8B)
  > Microsoft acquires Intuit ($2.1B, denied by US)
  > IBM acquires Lotus ($3.5B)

• Over 200 transactions in the first half of 1995, up 54%
The “Form” of the Software Products Segment Will Change

- No software products industry before 1960’s
  - Created when IBM “opened” its architecture
  - Started as services, “solutions providers”
  - Remained direct sales, high-touch, high-price
- Went retail with PC platform — a new “form”
  - PC software is maturing and consolidating
  - Open platforms, ISV support wins
- Expect another form with the next “platform”
  - Pay-per-use applications and “components”
  - “Mediated” access to distributed resources
Results of the Interviews

• Some concerns we expected to hear were not considered serious issues:
  > Piracy
  > Foreign competition
  > Consolidation of vendors, channel access
  > Lack of talented, educated labor force
  > Lack of capital
  > Quality (for now)
Results of the Interviews

• But some serious concerns about the future of the software industry were expressed:
  > The patent system is broken
  > Fundamental research must continue
  > No “Charlie Chaplin” of the new medium, yet
  > SW production is still a “craft” and we do not know how to manage it effectively to balance innovation, time, quality, and cost
SCIP Software Industry Study

• Phase 1: Spring - Winter 1993
  Study of the Japanese Software Industry

• Phase 2: Winter 1993 - Spring 1995
  Interviews with 50 US Industry “Insiders”

• Phase 3: Spring 1995 -
  Survey on Software Product Management
  Establish benchmarks
  Identify “best practices”
Software Product Management

• Difficult products to manage
  > It’s all R&D, no manufacturing
  > Total plasticity of product
  > Very small literature on products segment

• Very obviously, a source of pain
  > Time-to-market pressure
  > Friction on product teams
  > Planning & budgeting are largely imaginary
## Companies Surveyed

<table>
<thead>
<tr>
<th>Size</th>
<th>RDBMS</th>
<th>Call Center</th>
<th>Firms</th>
</tr>
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<tbody>
<tr>
<td>Very Small</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>&lt; $10M</td>
<td></td>
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<tr>
<td>Small</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>$10-50M</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>&gt; $100M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>5</td>
<td>11</td>
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</tbody>
</table>
Software Product Management Survey: Issues Investigated

- Software Development Practices
  - Engineering effort, technologies, quality
- Product Management Practices
  - Release/project management
  - Planning: formality, participants, horizon
  - Time-to-market tradeoffs
- Corporate Style
  - Decision-making, communication, outsourcing
  - Balance between engineering and marketing
Generic Organization Chart

CEO or GM

Marketing
  - Product Mgmt.
  - Market Res.
  - MarComm

Engineering
  - Development
  - Release Mgmt.
  - QA
  - Documentation

Cust. Service
  - Tech. Support
  - Consulting
  - Training
Who Does Release Management?

- CEO
  - Marketing
    - Release Mgmt.
      - Product Mgmt.
        - Market Research
        - MarComm
      - Release Mgmt.
    - Release Mgmt.
  - Engineering
    - Release Mgmt.
      - Development
      - QA
    - Release Mgmt.
  - Cust. Service
    - Release Mgmt.
      - Tech. Support
      - Consulting
      - Training
    - Release Mgmt.
Where to Put QA?

- Marketing
  - Product Mgmt.
  - Market Res.
  - MarComm

- Engineering
  - Development
    - QA
    - Release Mgmt.
    - QA
    - Documentation

- Cust. Service
  - QA
  - Tech. Support
    - QA
    - Training
    - Consulting

CEO
Product Requirements Formulation?

• Which of the following best characterizes the formulation of the product requirements for this release?
  > Most of the requirements were part of a long-term plan for the product.
  > A formal Marketing Requirements Analysis document was written.
  > A small group developed the requirements before the programming started.
  > Product requirements were continuously revised during the project.
Product Requirements Formulation

Requirements Formulation - Overall

- Long-Term Plan
- Formal Mkt. Analysis
- Small Group
- Continuous Revision
Product Requirements Formulation: Similar Across Market Segments

- Call Center (10)
  - Long-Term Plan
  - Formal Mkt. Analysis
  - Small Group
  - Continuous Revision

- RDBMS (9)
Product Requirements Formulation: Different Perceptions

Engineering (11)
- Long-Term Plan
- Small Group

Marketing (8)
- Formal Mkt. Analysis
- Continuous Revision
Influence on Decision Making

Relative Influence of QA and Engineering (According to Engineering)

- High influence
- Moderate influence
- Little influence
- No influence

- Influence of QA
- Influence of Engineering
What department made the final decisions on the following items?

<table>
<thead>
<tr>
<th>Decision</th>
<th>Senior Management</th>
<th>Marketing</th>
<th>Engineering</th>
<th>Release/Proj. Management</th>
<th>Other (Please Specify)</th>
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</thead>
<tbody>
<tr>
<td>Project organization</td>
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<td>Timetable/milestones</td>
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<tr>
<td>Team composition</td>
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<td>Budget</td>
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<td>Features included</td>
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<tr>
<td>Design</td>
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<tr>
<td>Phase transition (e.g., to test)</td>
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<tr>
<td>Production release</td>
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<tr>
<td>Resource allocation</td>
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<tr>
<td>Project priority</td>
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</table>
Decision-Making Style

- Consensus Mgmt: 18%
- Senior Mgmt Dominated: 27%
- Engineering Dominated: 55%
Last Minute Changes

Last Stage When a Feature Can Be Added

- Before Alpha
- Before Beta

Last Stage When Feature Can Be Dropped

- Before Alpha
- Before GM
- Other
Percentage of Time Spent in Planning, Development & Testing

- Testing
- Development
- Planning
What would you do with 3 more weeks? A Tradeoffs Indicator

- Sales training & marketing
- Involve tech support
- Performance metrics
- More/improved features
- Fix known bugs
- Better documentation
- More QA/Testing

![Graph showing tradeoffs between marketing and engineering](chart)

- Marketing
- Engineering
Hypothetical Question #1

- You are the CEO. You announced a ship date of 12/95 on a major new operating system. A design flaw is suddenly found that inhibits performance when over 25 files are in the same directory. What would you do?
  > Fix the problem & let schedule slip to 3/96.
  > Revert to existing file system & fix bug in later “dot release.”
  > Document bug and ship as is. Fix bug in next upgrade scheduled for 6/96.
  > Restrict number of files per directory. Fix bug in next upgrade (which is not yet scheduled).
Hypothetical Question #1

Most Likely Response

- Fix problem/Slip schedule: 31%
- Use old code/Fix later: 23%
- Document bug/Ship now: 23%
- Restrict files/Fix later: 23%