Finnish ICT Barometer 2007

• A quick web survey made for Tekes (Finnish Funding Agency for Technology and Innovation) by VTT (Technical Research Center of Finland)
• Questionnaire open January 2nd - 25th, 2007
  • Distributed by Tekes email exploder for AECO industry
  • Not a statistical sample, rather the upper quartile in technology adoption; companies interested in R&D
• 86 valid responses (= small sample)
  • Several replies from one company combined
  • Significantly incomplete replies removed
  • Architects, engineers, facility managers, owners, contractors, material and component industry and others
• In analysis: designers = architects and engineers
Respondents by Domain

Distribution of responses

- Architects: 14
- Engineers: 32
- FM: 3
- Owners: 5
- Contractors: 5
- Material and component industry: 3
- Others: 24

n=86
Basic ICT Tools

![ICT Tools Chart]

- Computer: 14.5%
- Email: 13.9%
- Internet-connection: 13.0%

[Office and Site categories shown in chart]
Use of ICT in Different Activities

- Accounting: 67%
- Invoicing: 67%
- Technical descriptions: 78%
- Technical calculations: 42%
- Bills of quantities: 39%
- Cost estimation: 41%
- Scheduling and planning: 40%
- Tendering: 62%
- Markkinoini: 39%
- Rental administration: 43%
- Facility management: 30%
- Other: 60%

Legend:
- 100%
- 60-99%
- 40-59%
- 1-39%
- Manual
Internet/Extranet Project Services

- All in total: 22% No, and no need, 36% No, but should have, 34% Yes, over 60%
- Others: 27% No, and no need, 30% No, but should have, 38% Yes, over 60%
- Designers in total: 17% No, and no need, 41% Yes, less than 10%, 30% Yes, over 60%
- Engineers: 22% No, and no need, 41% Yes, less than 10%, 25% Yes, over 60%
- Architects: 7% No, and no need, 43% Yes, less than 10%, 43% Yes, over 60%
Use of Design Techniques

Use of Design Techniques Based on the Number of Organizations

- Manual drafting
- 2D CAD (documents)
- Product models (BIM)

Percentages for different roles and categories:
- Architects
- Engineers
- Designers in total
- Others
- All in total
Comparison: Architects & BIM in USA

All firms: ~10% of firms using

1-19 employees: ~8% firms using

20-49 employees: ~17% firms using

50+ employees: ~60% firms using

In Finland 93% of the architect firms responding to the questionnaire were using BIM in their projects!

Volume of the Design Work

<table>
<thead>
<tr>
<th></th>
<th>Architects</th>
<th>Engineers</th>
<th>Designers in total</th>
<th>Others</th>
<th>All in total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product models (BIM)</td>
<td>64%</td>
<td>77%</td>
<td>75%</td>
<td>74%</td>
<td>75%</td>
</tr>
<tr>
<td>2D CAD (documents)</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>16%</td>
<td>9%</td>
</tr>
<tr>
<td>Manual drafting</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>17%</td>
<td></td>
</tr>
</tbody>
</table>

Volume of the Design Work
Use of Shared BIM

Use of Shared Product Models (BIM) on Project Level

- **All in total**: 24% No, and no need, 13% No, but should have, 44% Yes, less than 10%, 15% Yes, 10-60%, 63% Yes, over 60%
- **Others**: 39% No, and no need, 15% No, but should have, 33% Yes, less than 10%, 9% Yes, over 60%, 61% Yes, 10-60%
- **Designers in total**: 13% No, and no need, 11% No, but should have, 52% Yes, less than 10%, 20% Yes, over 60%, 71% Yes, 10-60%
- **Engineers**: 16% No, and no need, 13% No, but should have, 47% Yes, less than 10%, 22% Yes, over 60%, 86% Yes, 10-60%
- **Architects**: 7% No, and no need, 7% No, but should have, 64% Yes, less than 10%, 14% Yes, over 60%
## Utilization of BIM - Designers

<table>
<thead>
<tr>
<th>Application</th>
<th>0%</th>
<th>1-39%</th>
<th>40-59%</th>
<th>60-99%</th>
<th>100%</th>
<th>No need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other use</td>
<td>13%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facility management</td>
<td>25%</td>
<td>8%</td>
<td>20%</td>
<td>10%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Spatial management</td>
<td>18%</td>
<td>20%</td>
<td>5%</td>
<td>8%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>23%</td>
<td>13%</td>
<td>10%</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logistics planning</td>
<td>26%</td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurements</td>
<td>26%</td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tendering</td>
<td>38%</td>
<td>10%</td>
<td>5%</td>
<td></td>
<td>62%</td>
<td></td>
</tr>
<tr>
<td>Schedule planning</td>
<td>36%</td>
<td>10%</td>
<td>8%</td>
<td>4%</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>Cost estimations</td>
<td>26%</td>
<td>15%</td>
<td>8%</td>
<td></td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>Quantity take-off</td>
<td>22%</td>
<td>24%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
<td>24%</td>
</tr>
<tr>
<td>Other design or code checking</td>
<td>12%</td>
<td>48%</td>
<td>17%</td>
<td>10%</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>Clash detection</td>
<td>7%</td>
<td>60%</td>
<td>9%</td>
<td>12%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>External model as basis</td>
<td>24%</td>
<td>54%</td>
<td></td>
<td>5%</td>
<td>5%</td>
<td>12%</td>
</tr>
</tbody>
</table>

- **External model as basis**: 63%
- **Merging models**: 84%
- **Other checking**: 76%
- **Quantity take-off**: 54%
Development Trend

- **BIM**: 11% Decreasing, 84% Increasing, 7% Remaining
- **2D CAD**: 32% Decreasing, 45% Remaining, 16% Increasing, 7% No opinion
- **Drafting**: 55% Decreasing, 42% Remaining, 3% No opinion

- **Legend**:
  - Red: Decreasing
  - Yellow: Remaining
  - Green: Increasing
  - White: No opinion
Motives for ICT Investments - Designers

Motives for ICT Investments - Designers

<table>
<thead>
<tr>
<th>Motive</th>
<th>Not at all</th>
<th>Only little</th>
<th>Moderately</th>
<th>Much</th>
<th>Heavily</th>
<th>No opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other motives</td>
<td>7%</td>
<td>7%</td>
<td>86%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire to develop new products/business</td>
<td>20%</td>
<td>24%</td>
<td>28%</td>
<td>22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire to be a technical forerunner</td>
<td>9%</td>
<td>22%</td>
<td>22%</td>
<td>39%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Desire to boost administrative work</td>
<td>15%</td>
<td>15%</td>
<td>39%</td>
<td>22%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Desire to boost technical work</td>
<td>7%</td>
<td>35%</td>
<td>54%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining or improving competitiveness</td>
<td>11%</td>
<td>22%</td>
<td>63%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demands from employees</td>
<td>20%</td>
<td>22%</td>
<td>39%</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demands from customers</td>
<td>15%</td>
<td>33%</td>
<td>24%</td>
<td>20%</td>
<td>9%</td>
<td></td>
</tr>
</tbody>
</table>
Motives for ICT Investments - Others

- Other motives: 17% 6% 28% 28% 36% 83%
- Desire to develop new products/business: 14% 6% 36% 36% 8%
- Desire to be a technical forerunner: 8% 19% 8% 28% 31% 6%
- Desire to boost administrative work: 22% 33% 39% 6%
- Desire to boost technical work: 14% 22% 56% 8%
- Maintaining or improving competitiveness: 14% 14% 67% 6%
- Demands from employees: 11% 22% 28% 33% 6%
- Demands from customers: 17% 14% 28% 28% 14%

94% 92% 94%
ICT Use: Problems and Obstacles

Problems in and Obstacles for Increased Use of ICT

- Continuous demand to upgrade
- Not compatible software
- High investment costs
- Increasing education requirements
- Preference for the old way of working
- Overabundance of information
- Difficulties in measuring benefits
- Managers do not have the time for ICT
- Reduced security
- General attitude
- Risk that ICT leads to inefficiency
- Other problems or obstacles
- Insufficient interest of the management

Designers
Others
All
ICT Use: Advantages

Advantages of the Increased Use of ICT

- Improved information management and communication
- Improved possibilities to share information
- Improved quality of work
- Work done faster
- Faster access and utilization of information
- Possibility to develop new products or business
- Possibility of teleworking/telecommuting
- Improved financial control
- Easier to handle large amounts of data
- Greater flexibility for satisfying customer needs
- Makes the company more attractive when recruiting staff
- Possibility to reduce the staff
- Other benefits

Designers
Others
All
Planned Areas to Increase Use of ICT

- Product models (BIM)
- Document management
- Project services on the Internet
- Project management
- Technical calculations
- New business models and activities
- Management of facility information
- Mobile equipment and wireless systems
- 2D CAD
- Accounting systems
- Cost estimation or cost control
- Virtual Reality
- Electronic trade / eCommerce via Internet
- Information search via Internet
- Others
- No plans to increase ICT

85%
Planned Areas to Increase Use of ICT

- Internet-based project services: 85%
- Technical calculations: 60%
- New business models and activities: 45%
- Management of facility information: 30%
- BIM: 25%
- Document management: 15%
- Project management: 10%
- Internet-based project services: 5%
- Technical calculations: 0%