Design Methods for Interactive TV: two empirical studies

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The actual product creation process of TV-based Graphical User Interfaces (UIs)

Phreesics Design
Phreesics Development

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The targeted product creation process of TV-based Graphical User Interfaces (UIs)

Research questions

-1- Annotation method for metadata
-2- Reliable and valid input for tool
   “Automatic layout & scaling”
“Automatic layout & scaling”

4 : 3 16 : 9

PAL

NTSC

Requirement Analysis: Interviews

SW engineer

Knowledge engineer

Designer

Designer

SW engineer
Results: Annotations needed?

- neg  pos +

1.6 (± 0.9)  3 (± 0.7)  3.8 (± 0.4)

- Current implementation is acceptable
- Current implementation should be improved
- Formal information additional to the demo would be helpful

Requirement Analysis: Annotation for Metadata

Designer_1  Designer_3
Designer_2  Designer_4
Designer_5
Annotation Forms

<table>
<thead>
<tr>
<th></th>
<th>Text</th>
<th>Text &amp; Graphics</th>
<th>Graphics</th>
<th>Vector Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rules &amp; constraints</td>
<td>no</td>
<td>text</td>
<td>symbols</td>
<td>symbols</td>
</tr>
<tr>
<td>Different screen properties</td>
<td>no</td>
<td>limited</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

EASY ➔ DIFFICULT

1. **Text** (Spreadsheet Method)

<table>
<thead>
<tr>
<th></th>
<th>width</th>
<th>height</th>
<th>color</th>
<th>transparency</th>
<th>Position x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal background</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical background</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label X_01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label x_02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label x_03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label y_01</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Label y_02</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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-2 – **Text & Graphics** (Screenshot Method)

-3 – **Graphics** (Director Method)
Vector Graphics (Construction Tool Method)
### Results: Annotation Method Comparison

- **Usefulness**
  - Text: 2.4 (±1.5)
  - Text & Graphics: 2.8 (±1.3)
  - Graphics: 3.8 (±0.4)
  - Vector Graphics: 3.3 (±0.5)

- **Sufficient Means**
  - Text: 1.4 (±1.1)
  - Text & Graphics: 1.8 (±0.8)
  - Graphics: 1.2 (±1.1)
  - Vector Graphics: 1.2 (±0.8)
CONCLUSIONS

• Creating metadata for a concrete UI concept works
• Graphics annotation seems to be the best
• Too early to apply automatic layout & scaling

Future work

• Better participation of user/designer
• Extend Graphics method to include automatic layout and scaling
Thank you for your attention.