Tangible Bits & Augmented Reality

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Tangible Bits
Tangible Bits

- Interactive Surfaces
- Graspable Objects
- Ambient Media
- Prototypes
  - metaDESK
  - transBOARD
  - ambientROOM
metaDESK video
## Tangible Bits (activity)

<table>
<thead>
<tr>
<th></th>
<th>metaDESK</th>
<th>Paper</th>
<th>Google Earth</th>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
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<td></td>
<td></td>
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<tr>
<td><strong>Cons</strong></td>
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## Tangible Bits (activity)

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<tbody>
<tr>
<td></td>
<td>2D/3D Display</td>
<td>Portable</td>
<td>Search</td>
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<tr>
<td></td>
<td>Zooming</td>
<td>High-Res</td>
<td>Directions</td>
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<td></td>
<td>TUI</td>
<td>Holistic</td>
<td>Favorites</td>
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<tr>
<td>Cons</td>
<td>Search</td>
<td>Search</td>
<td>Virtual</td>
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<tr>
<td></td>
<td>Directions</td>
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<td>Screen size</td>
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<td></td>
<td>Ambiguities</td>
<td>Zooming</td>
<td>GUI</td>
</tr>
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</table>
Knowledge-Based Augmented Reality

- Head-mounted see-through display
Knowledge-Based Augmented Reality

- Head-mounted see-through display
- Augmented view of the world
Knowledge-Based Augmented Reality

- Head-mounted see-through display
- Augmented view of the world
- KARMA -- Knowledge-based Augmented Reality for Maintenance Assistance
Knowledge-Based Augmented Reality

• What are some other ways to help the user with this task? Pros / Cons?
Knowledge-Based Augmented Reality

- What are some other ways to help the user with this task? Pros / Cons?
- How else could this technology be applied?
Reinventing the familiar
Air Traffic Control

• Tactile vs Visual memory
Reinventing the familiar

Air Traffic Control

- Physical vs Verbal communication
Reinventing the familiar

Air Traffic Control

- Spatial reasoning
Reinventing the familiar

Air Traffic Control

• Spatial reasoning

1. Aircraft call sign.
2. Type of aircraft/type of equipment.
3. Actual speed across ground.
4. Number of amendments to original flight plan.
5. The previous fix. This denotes where the aircraft has been.
6. Time aircraft is estimated to cross LIT.
7. The altitude at which the aircraft is flying. This is measured in feet. Multiply this number by 100 to give the altitude.
8. Flight route. This must show departure and destination points. This can be abbreviated before entering your facility airspace.
9. Individual beacon code assigned to each aircraft
10. Computer generated number for identification within this facility.
11. Filed true air speed
12. The sector number. This identifies in which sector the aircraft is flying.
13. The strip number. The number of strips printed for this flight in this center.
14. Time aircraft crossed previous fix.
15. Coordination fix for this strip.
16. Remarks area (The only place where free text can be entered)
17. Coordination symbol to adjacent ATC facility.
Reinventing the familiar
Air Traffic Control

• Spatial reasoning
Examples of AR / TUI work