

Spatial interface can facilitate target acquisition

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User Interface Styles

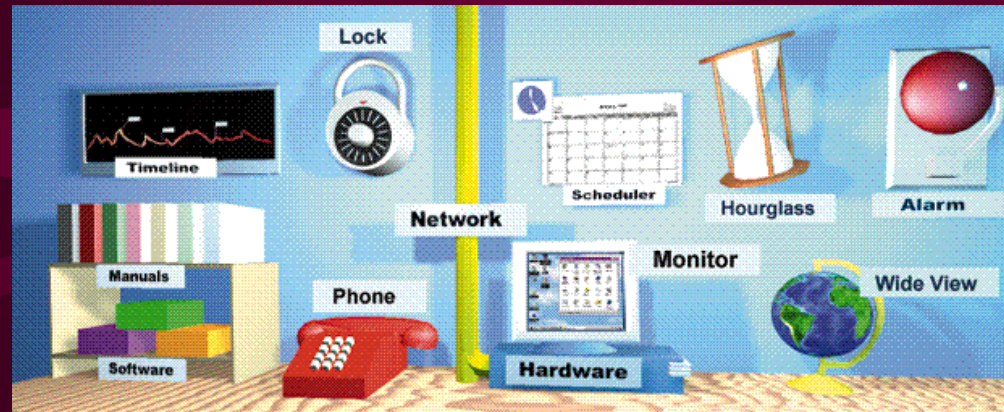
- Command line
- GUI-WIMP (Windows, Icons, Menus, Pointer)
 - Memory load: easier to recognize than recall



- What is next?

Spatial Interfaces

- VRML: a vehicle for spatial interface



- “3D” - preserving real world structure
- Physicality: places and artifacts
- Spatial: location, relation among objects

Possible benefits of Spatial Interfaces

- Redundant information coding: location, shape, texture, color ...
- Richer affordances, stronger memory cues
- Knowledge transfer from everyday life

An Experimental Study

- Two styles of representation:
iconic vs. spatial
- Balanced within-subject experiment
- Target acquisition - pointing to 6 targets in
random sequence
- 4 trials with each interface, repeated on 2nd
day

Condition 1: Iconic Style



Alarm



Screen View



Scheduler



Phone



Network



Software



Lock



Wide View



Hardware



Manuals



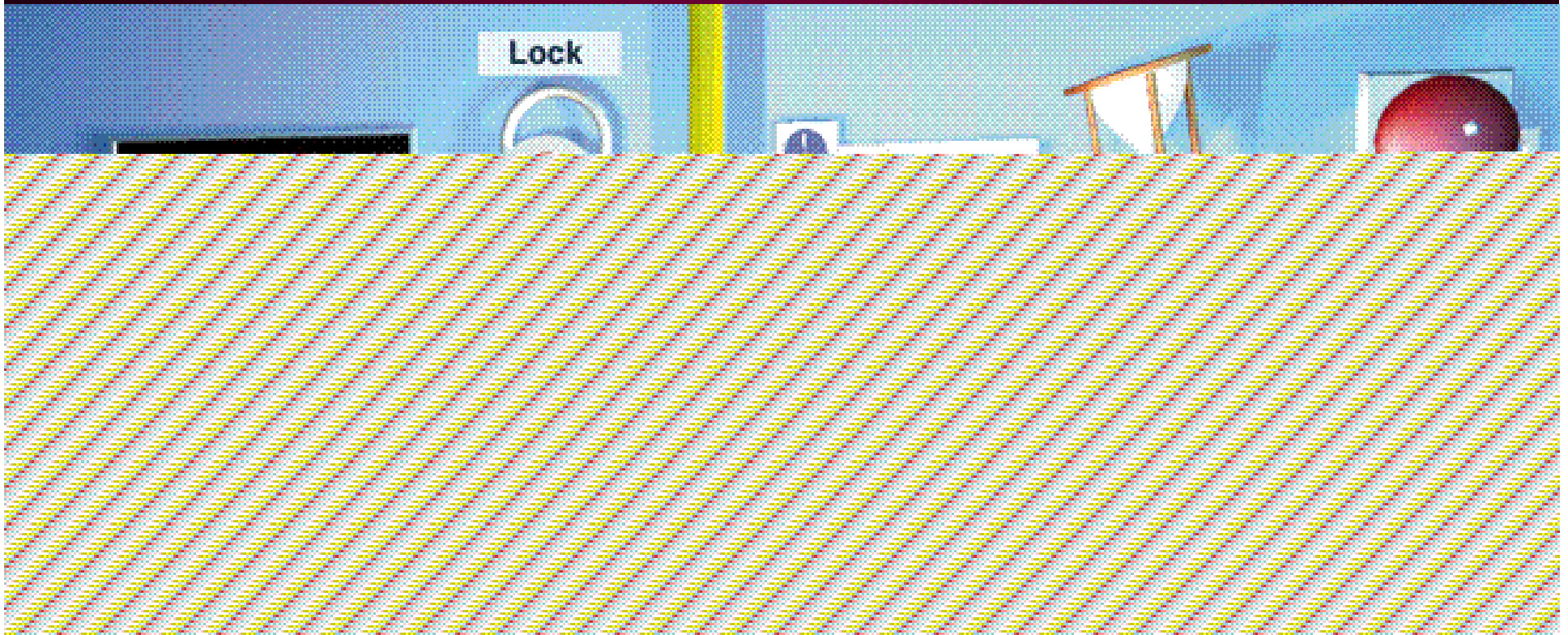
Hourglass



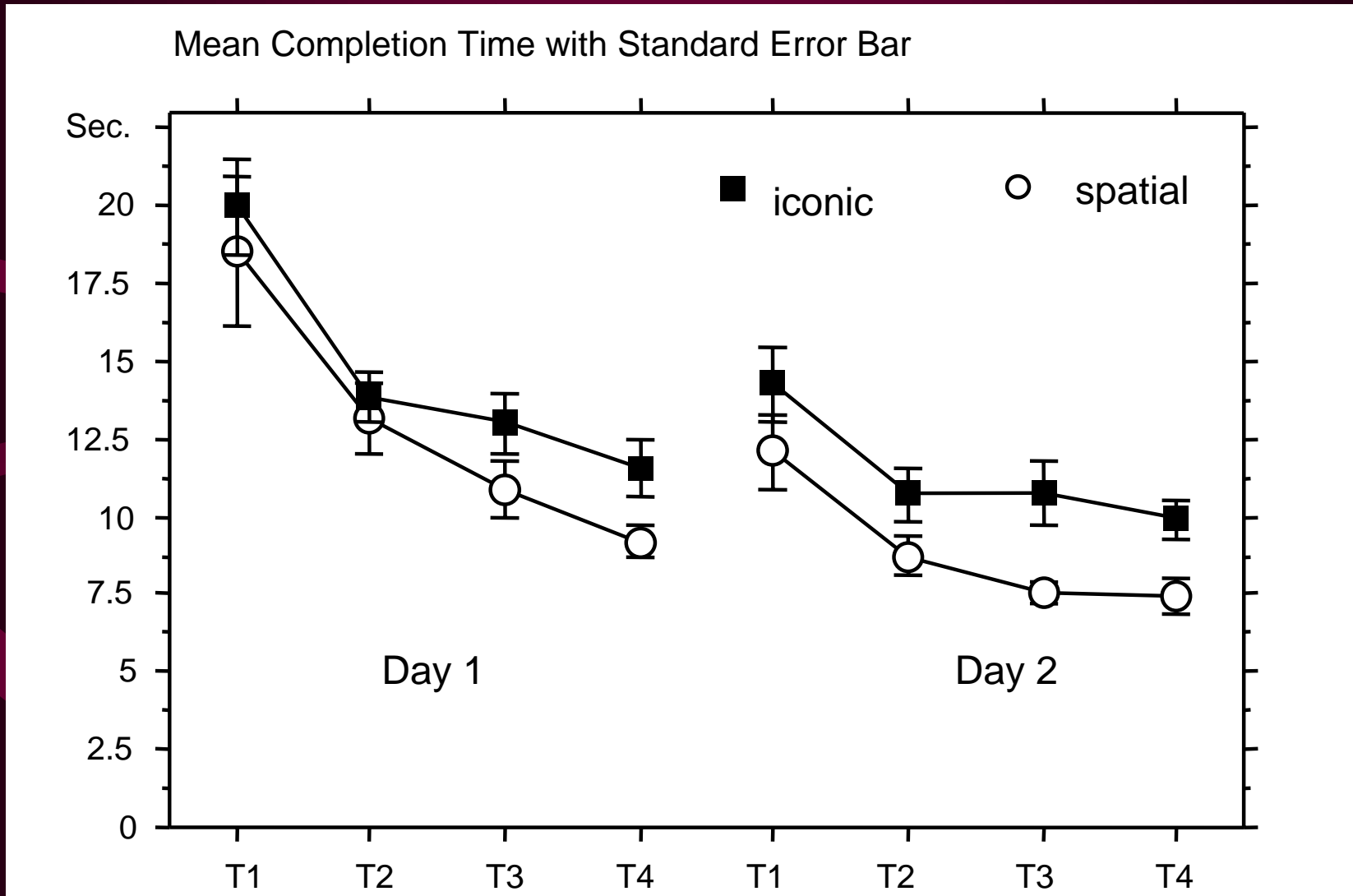
Timeline

- Modified from an existing GUI for system management

Condition 2: Spatial Style



Results

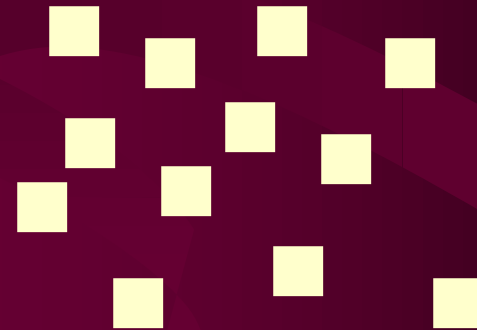
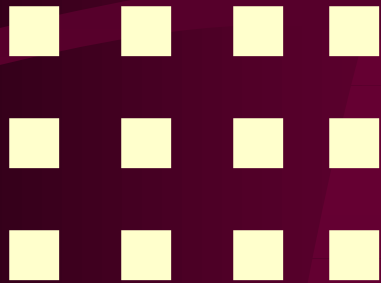


Statistics and Conclusions

- Spatial interface significantly faster ($p < .05$)
- Performance difference larger in Day 2
- Spatial interface can facilitate target acquisition

Future Research Issues

- Contributing factors:
 - Non-uniform layout?
 - Physical metaphor?
 - 3D?



- Affordance: what can be clicked?