

Interaction Design Research sharing data on Large-Screens

Alf Ove Braseth Dr.philos

What is Interaction Design Research?
Why large screens?

The research process, examples, contributions.
Value for Human Factors approaches



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Large-screen displays, what & why?



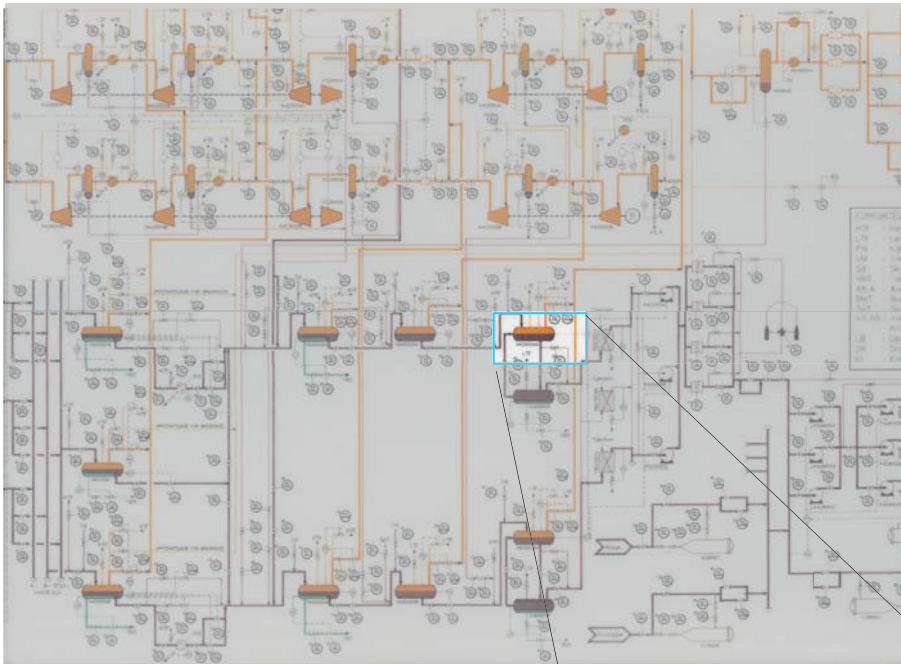
- Human scaled display
- Available through new technology
- A group-view display for shared Situation Awareness

Unfortunately often only up-scaled.....there is a need for design research

Limiting the scope: industrial processes



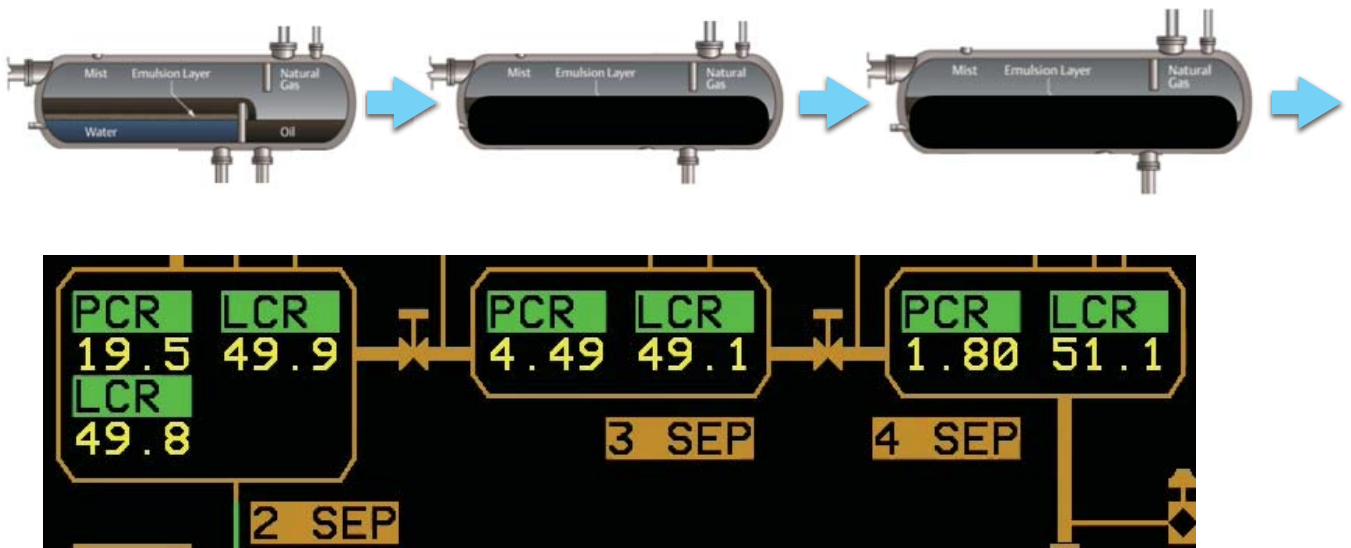
Research Question: how to design for the “keyhole” effect? Woods (1995)



- Fragmented view
- Loss of Awareness
- Tool induced activity



Research Question: How to design for rapid perception of data?

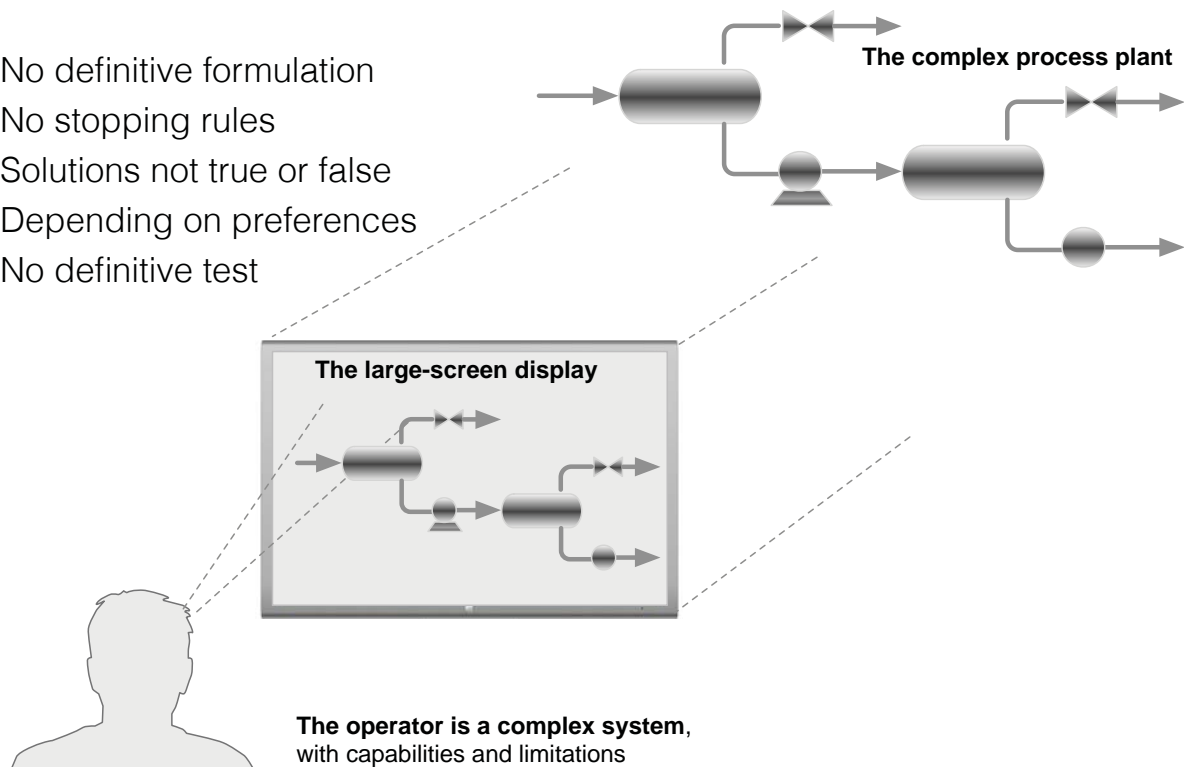


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Buchanan (1992); Rittel & Webber (1973)

“Wicked problem”

- No definitive formulation
- No stopping rules
- Solutions not true or false
- Depending on preferences
- No definitive test



Three different types of Interaction Design Research

Research **about** design

History of design, theory, defining and framing problems, how people do design

Research **through** design

Provide explanation or theory within a broader context, action reflection approach

Research **for** design

Construct something; action research; design practice; user testing

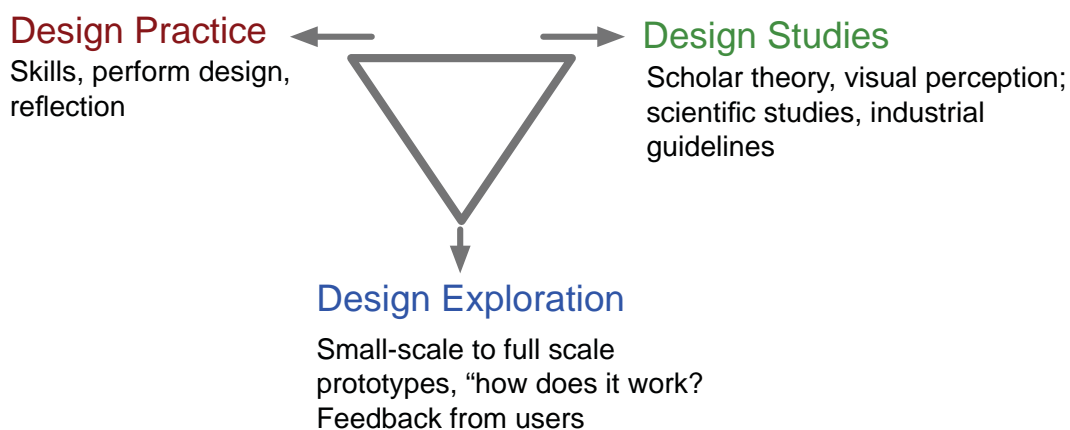
My contribution is “**research for design**”

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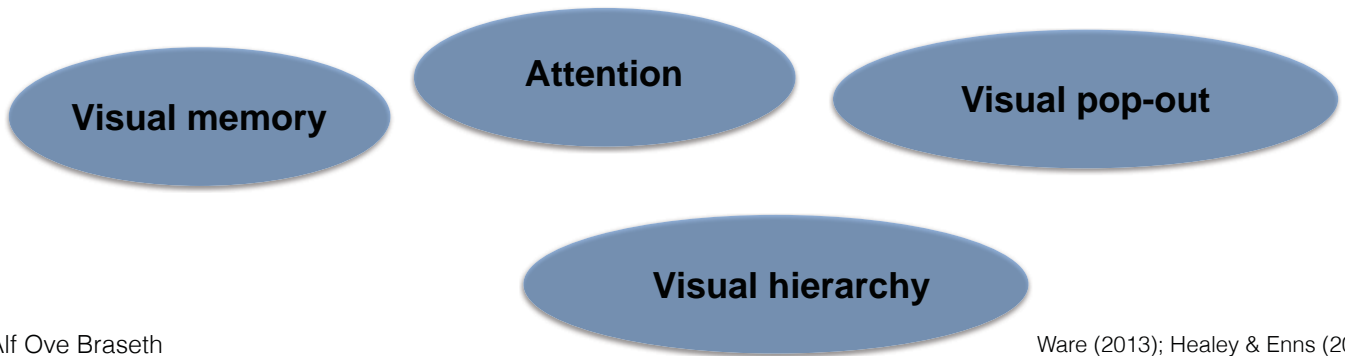
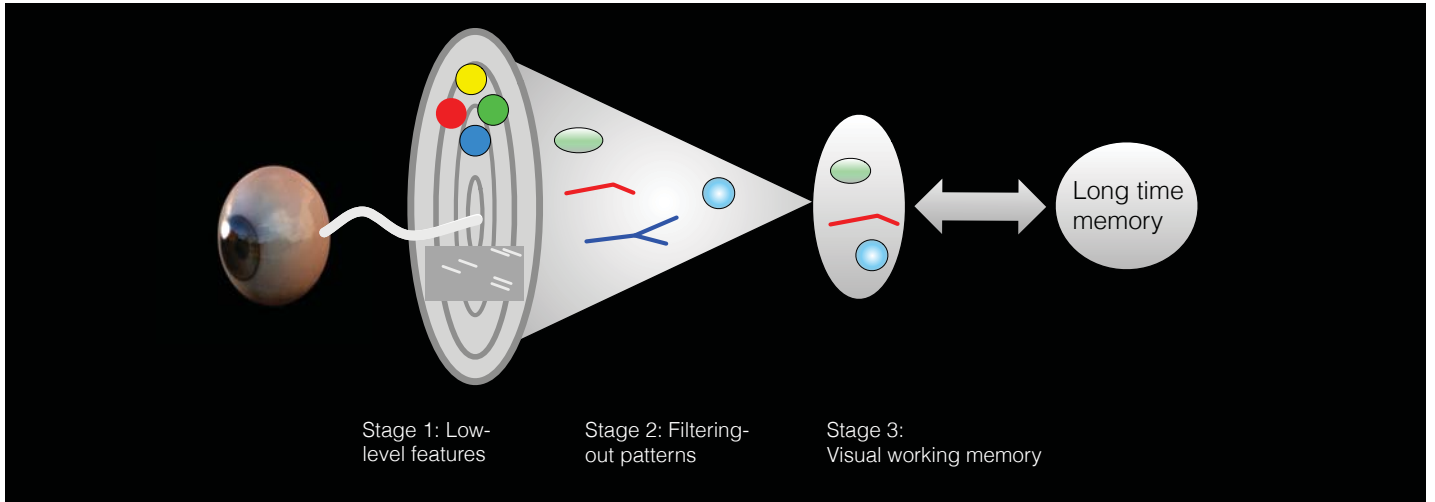
Fallman (2011, 2008)

What is Research **for** Design?

Interaction Design Research is **not** a method



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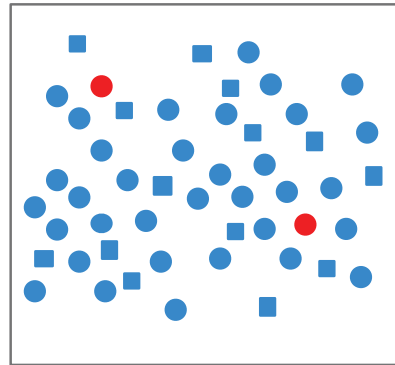
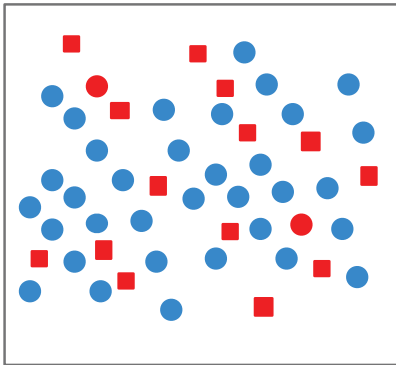
Visual memory



Design for "information in the world"

Visual pop-out

Find: ●

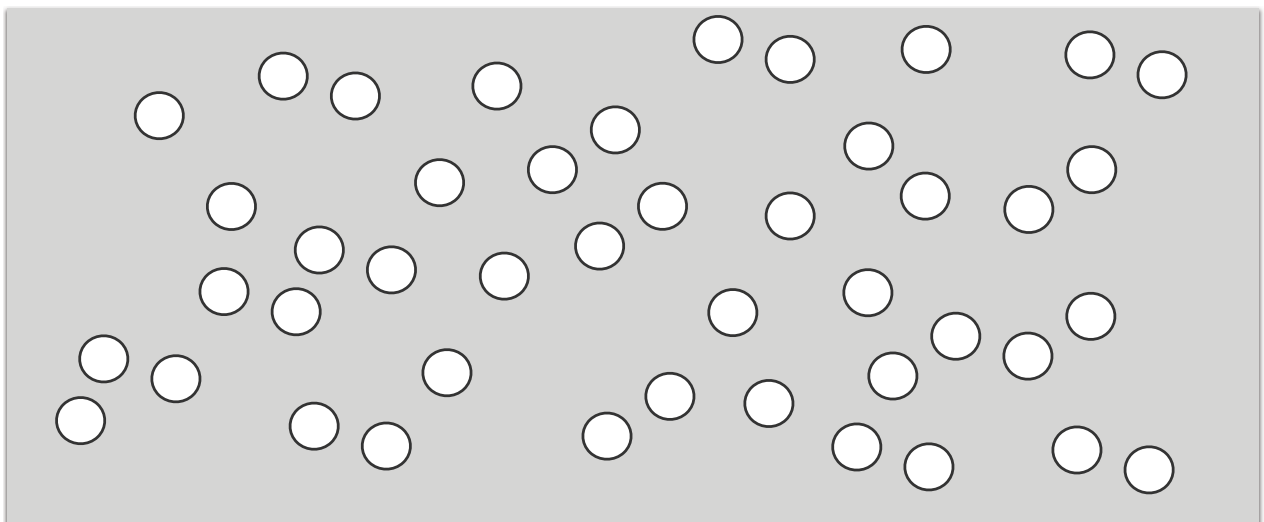


Design for distinct feature channels

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Ware (2013, pp. 157, 159)

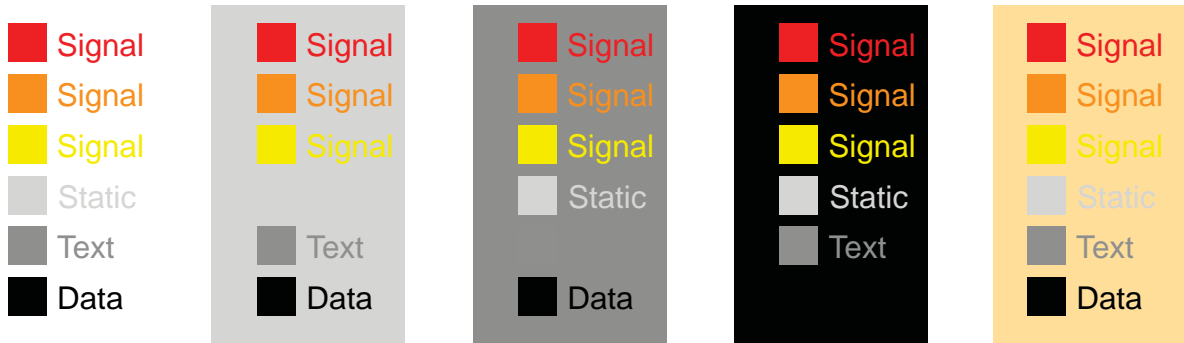
Attention



Movable graphics “grabs” attention

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Visual hierarchy

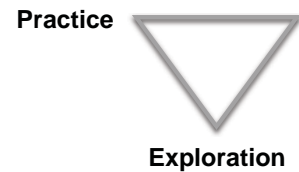


Designing for foreground - background

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based on: ASM-consortium guidelines (2013, p. 93)

Small-scale exploration of indicators



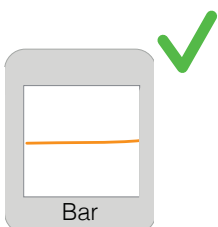
High accuracy



Direct perception



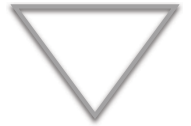
Direct perception, natural metaphor



Direct perception, natural metaphor, dynamic response

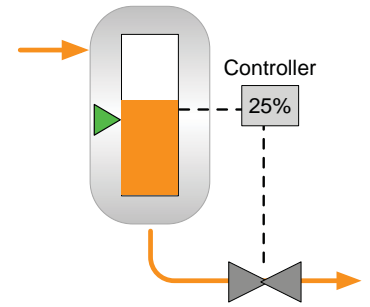
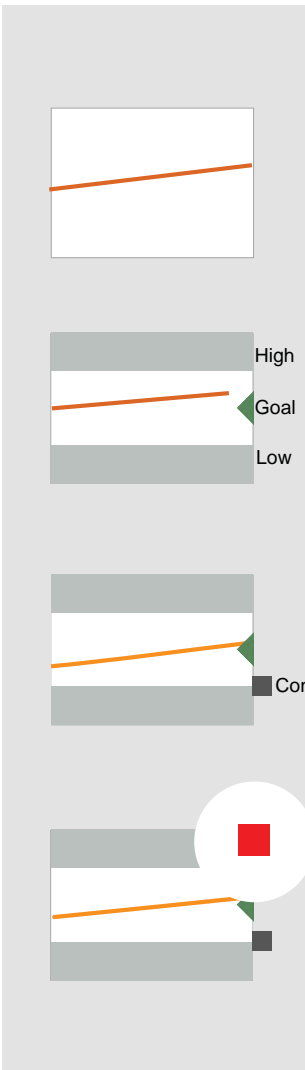
Information Rich Design

Practice



Exploration

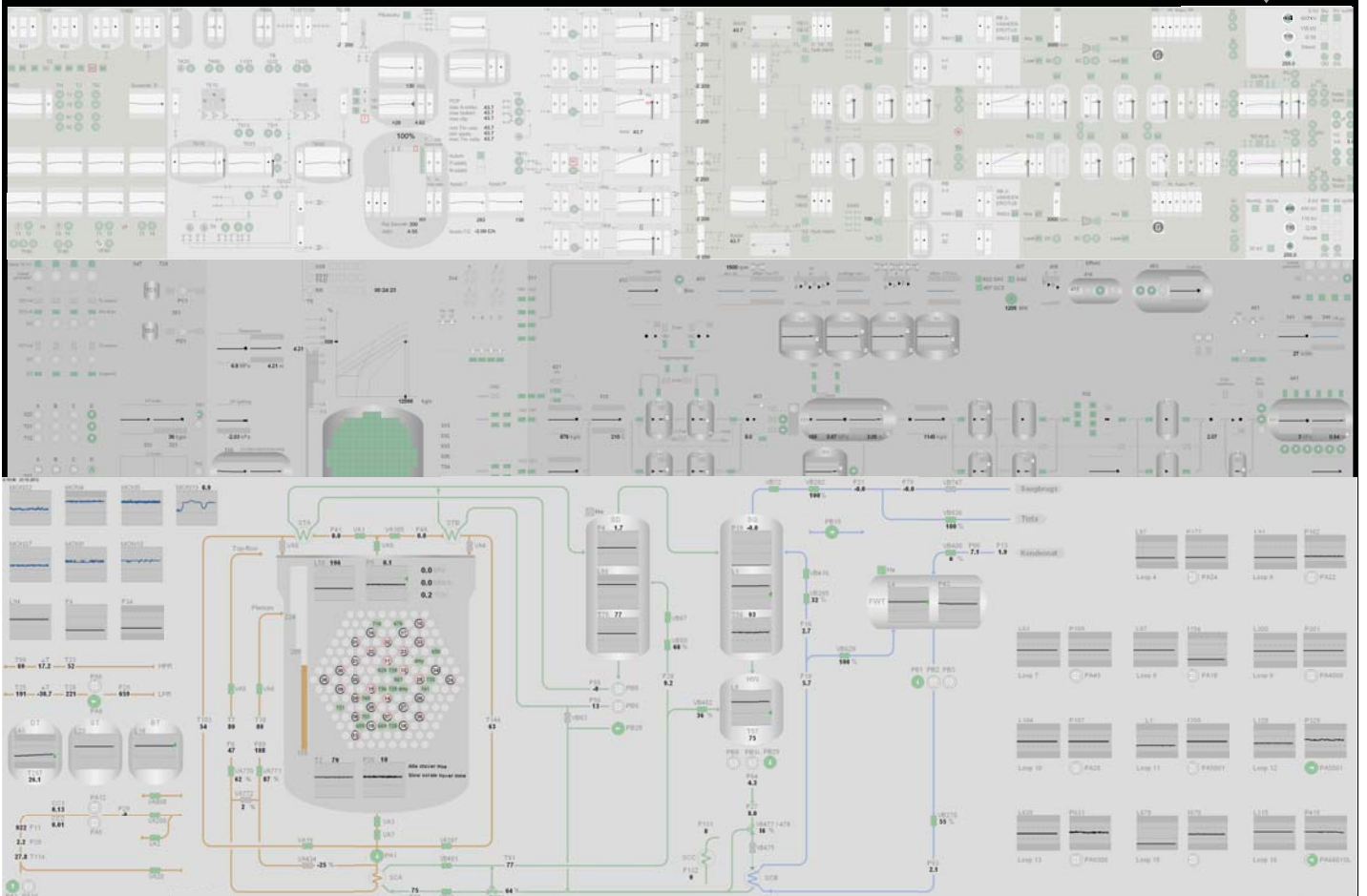
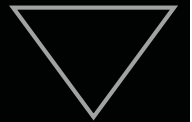
- 1 Trended graphics
- 2 Goal directed, set-point and alarm limits
- 3 Automation visualized qualitatively
- 4 Alarms, visual pop-out



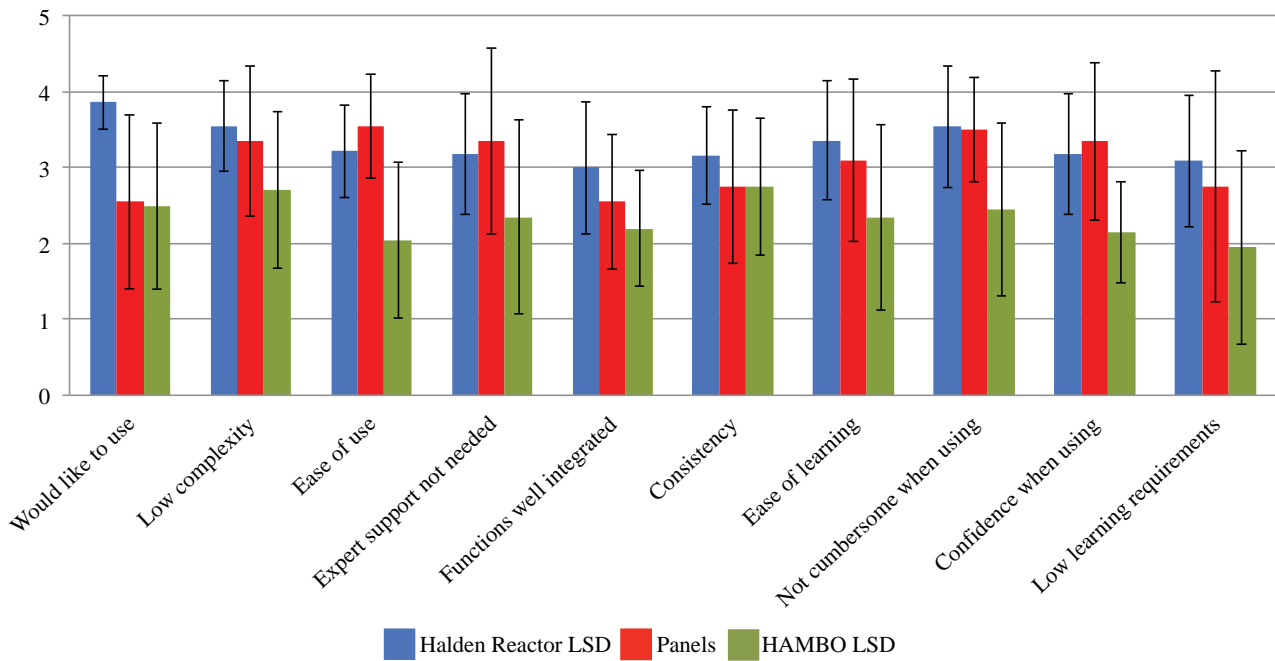
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Large-scale exploration of three whole designs

Practice



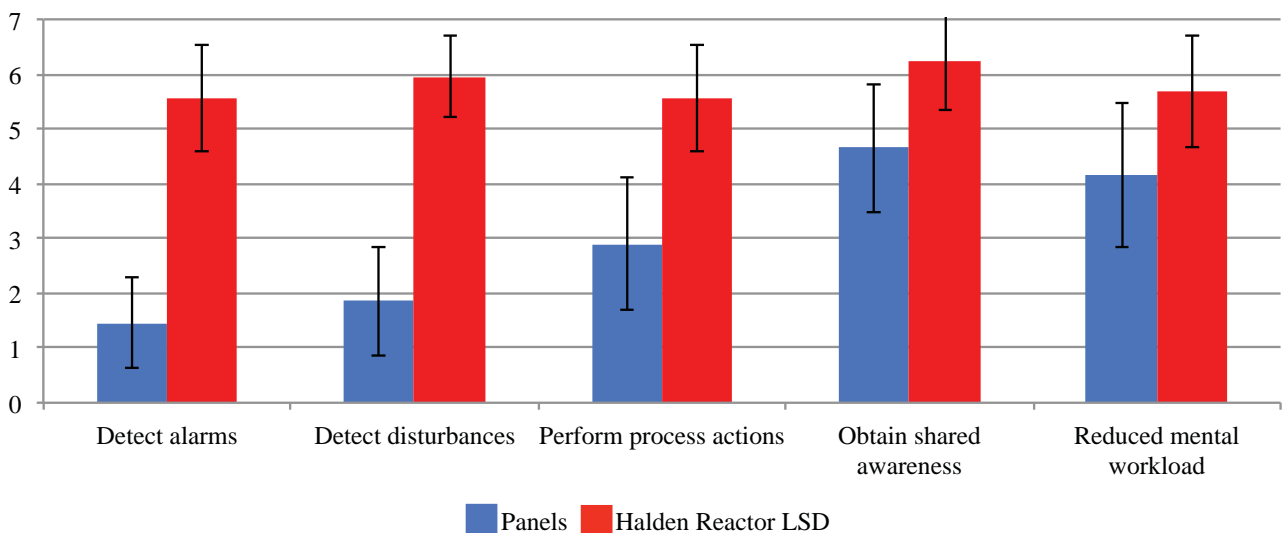
User feedback: SUS-scores



- Halden-Reactor LSD SUS: 83
- Replaced panels SUS: 77
- Previous HAMBO LSD SUS: 59

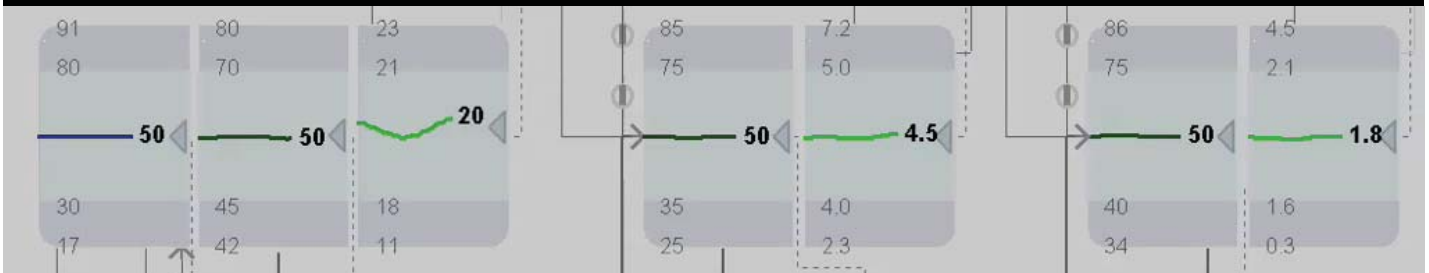
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User feedback: perceived awareness



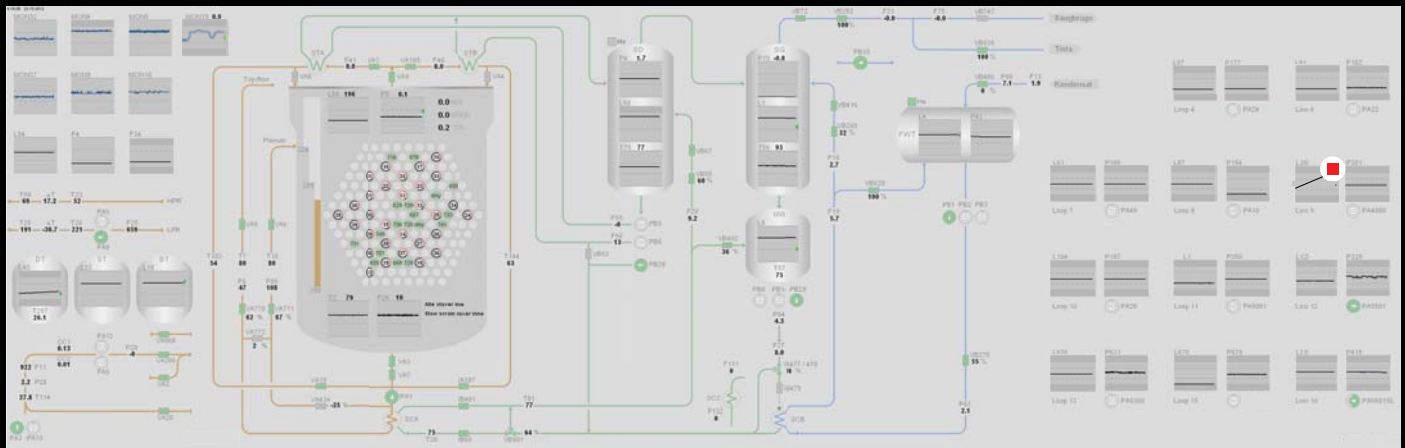
The design concept has matured, its is suitable for real-world installations

The rapid perception problem



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The keyhole effect



Visual memory

Bottom-up attention

Top-down search

Goal oriented

Stable, externalized graphics

Visual pop-outs

Open areas, scaled backgrounds, lines

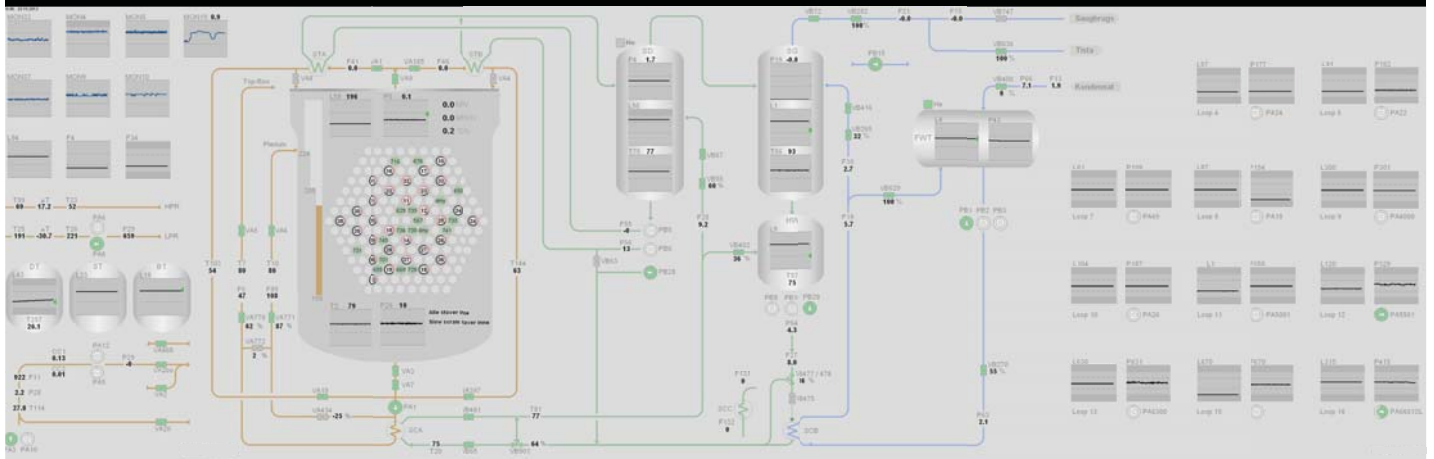
Automation, set-points, alarm constraints

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Contribution is research for design

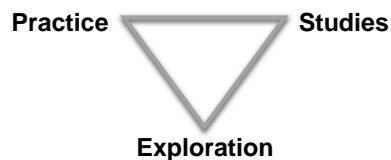
Graphics components and principles for their layout

Further work.....



Summary

- Complex real world “wicked” problems
- Approached through Interaction Design Research

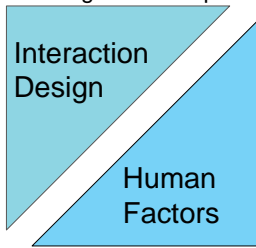


- Outcome is research “for, about, through” design

What about Human Factors?

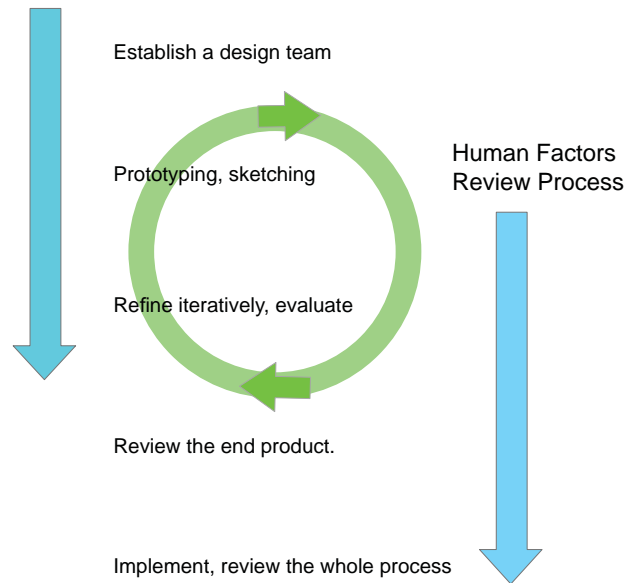
Projects focusing on creating designs

Creating design:
An integrative discipline



Analyzing design:
A reductionistic discipline

Interaction Design
Creative Process



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Human Factors and Interaction Design compliment each other

Discussion?