HCI and Adaptivity

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The Netherlands

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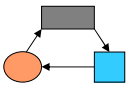
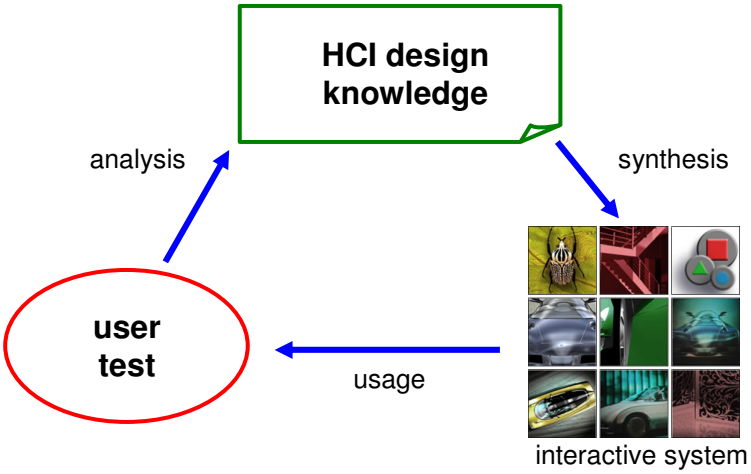
My research approach





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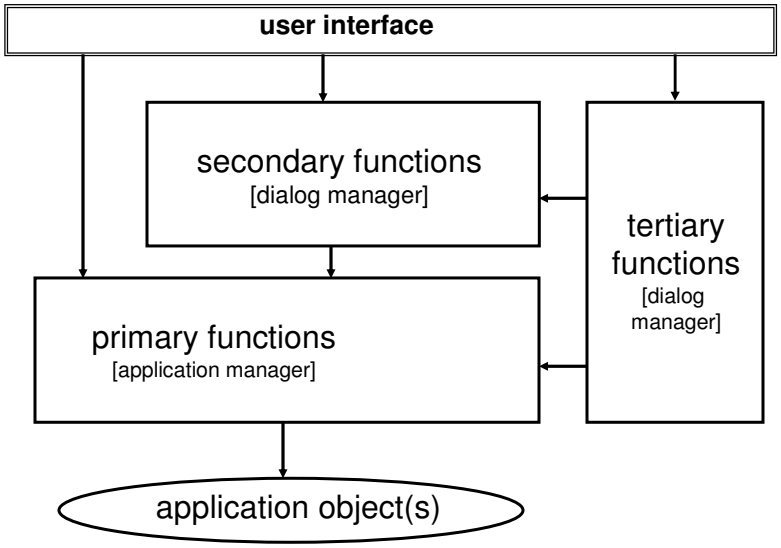
User interface customization



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At the beginning…

Participants of the Tenth Conference on Cybernetics, April 22-24, **1953**, Princeton, N.J.
[taken from http://www.naimark.net/writing/wales.html]
1st row: T.C. Schneirla, Y. Bar-Hillel, **Margaret Mead**, Warren S. McCulloch, Jan Droogleever-Fortuyn, Yuen Ren Chao, W. Grey-Walter, Vahe E. Amassian.
2nd row: Leonard J. Savage, Janet Freed Lynch, Gerhardt von Bonin, Lawrence S. Kubie, Lawrence K. Frank, Henry Quastler, Donald G. Marquis, Heinrich Kluver, F.S.C. Northrop.
3rd row: Peggy Kubie, Henry Brosin, **Gregory Bateson**, Frank Fremont-Smith, John R. Bowman, G.E. Hutchinson, Hans Lukas Teuber, Julian H. Bigelow, Claude Shannon, Walter Pitts, Heinz von Foerster

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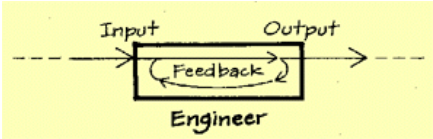
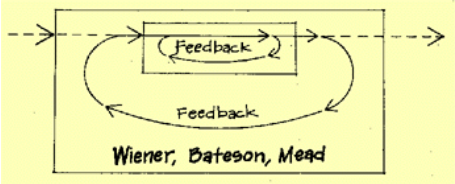
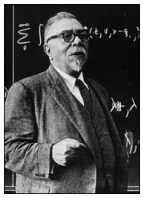
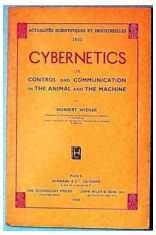
System boundaries







Norbert Wiener
1894 - 1964



Gregory Bateson
1904-1980

Margaret Mead
1901-1978

SOURCE: CoEvolutionary Quarterly, June 1976, Issue no. 10, pp. 32-44.

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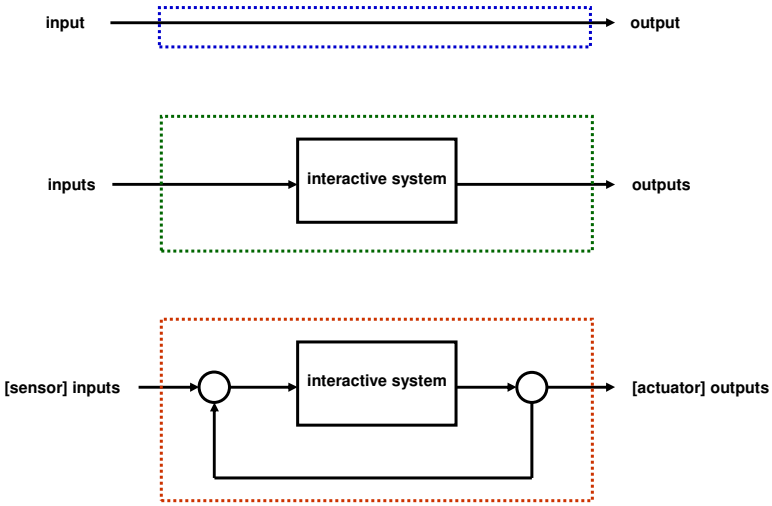
Electrical engineering



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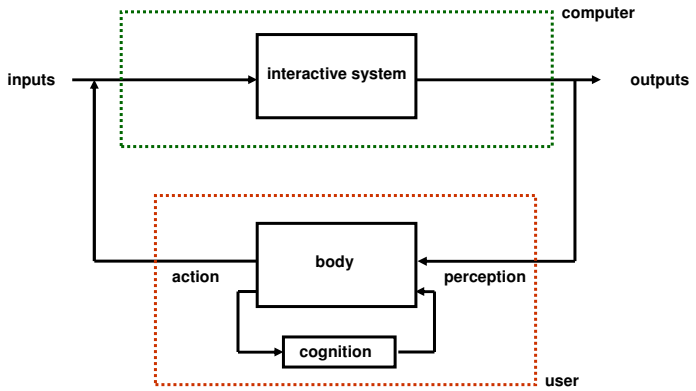
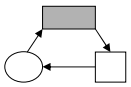
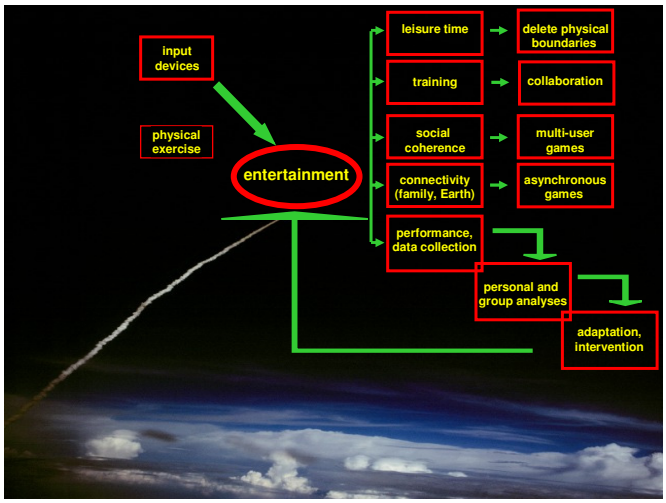
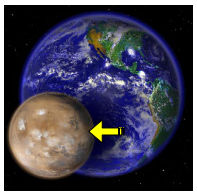
What do we have?



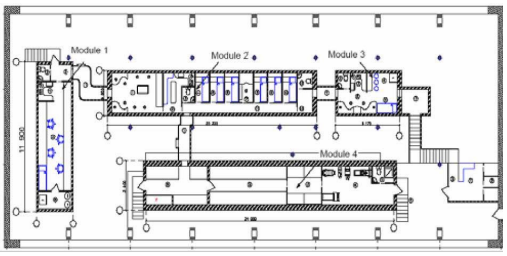
Adaptive Mental Health Assistant

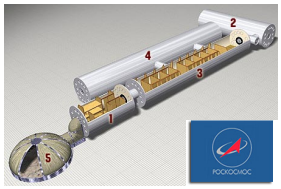




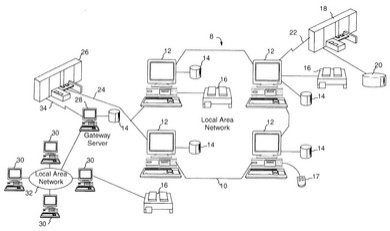


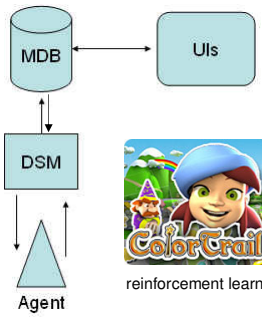
Ground-based experimental facility





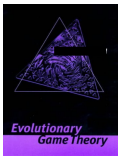
System architecture





Karl Tuyls

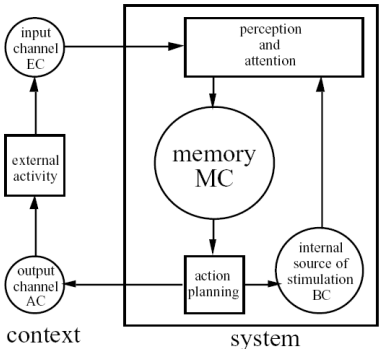
reinforcement learning

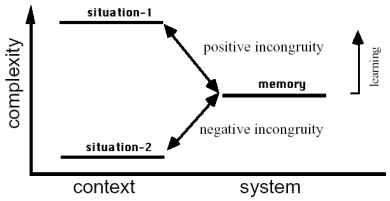


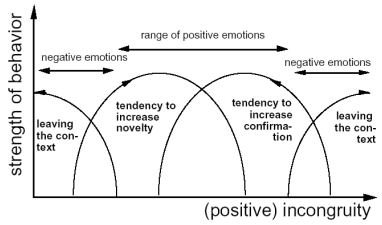
Astronaut Rick Sturckow uses a laptop on the International Space Station. Photograph: Nasa/EPA.

Jack van Loon, Gerhard Thiele, myself

Information processing and learning







Rauterberg M. (1995). About a framework for information and information processing of learning systems. In: E. Falkenberg, W. Hesse, A. Olive (eds.), Information System Concepts–Towards a consolidation of views (IFIP Working Group 8.1, pp. 54-69). London: Chapman&Hall.

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Adaptive gaming

Pieter Spronck

"Adaptive Game AI with Dynamic Scripting" (2005)

Experiment
Test conditions:
(1) Incongruity=low
(2) Incongruity=middle
(3) Incongruity=high

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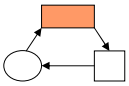
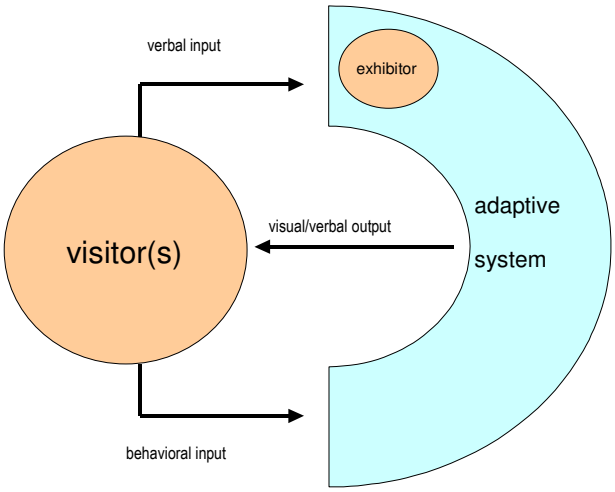
Adaptive exhibition booth





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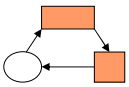
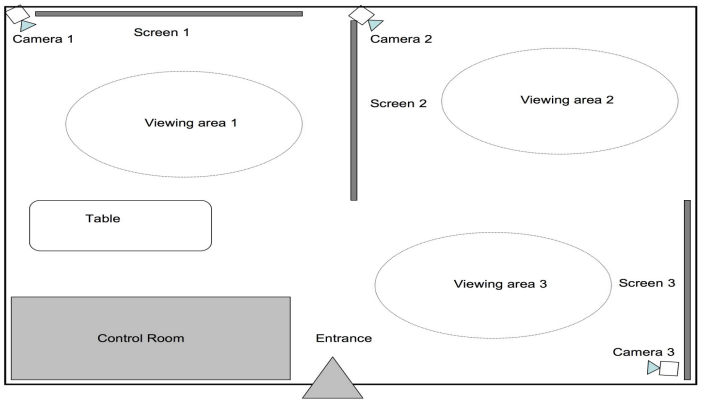
Experimental set-up



Ben Salem

Experiment
Test conditions are:
(1) non-profile, non-adaptive (2) profile, non-adaptive (3) profile, adaptive



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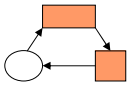
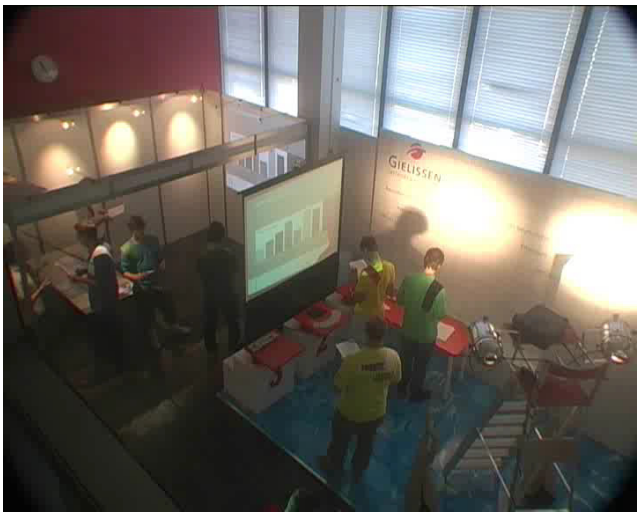
Experiment





Ben Salem

Display Profile:
- **Division Director**
- **Marketing Director**
- **Technical Director**
- **Design Director**

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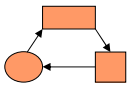
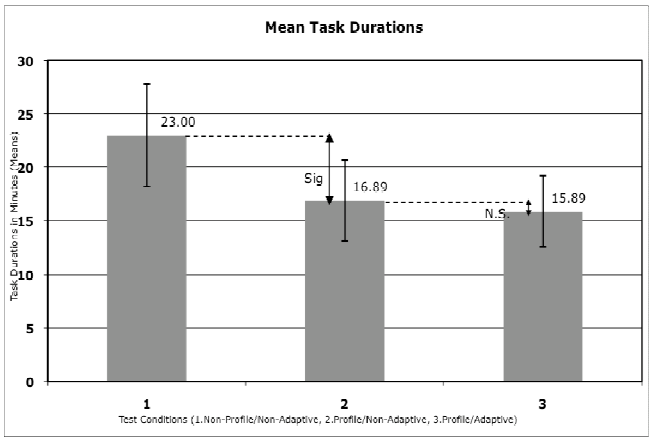
Experimental results





Test conditions:

1: Non-profile
Non-adaptive

2: Profile
Non-adaptive

3: Profile
Adaptive

Task duration: drops significantly from 23 min to 17 min

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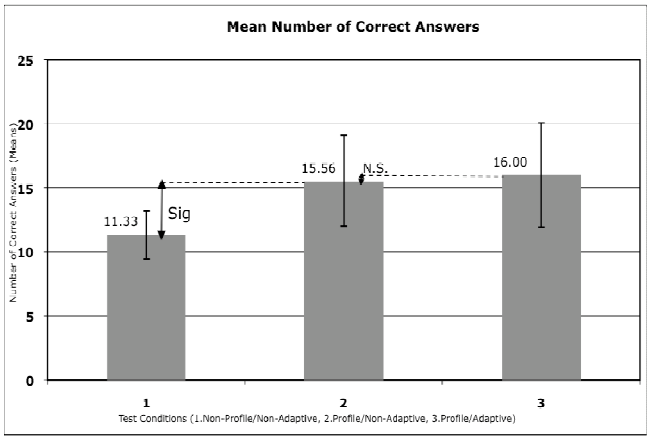
Experimental results



Test conditions:

1: Non-profile
Non-adaptive

2: Profile
Non-adaptive

3: Profile
Adaptive

Correct answers: increases significantly from 11 to 16

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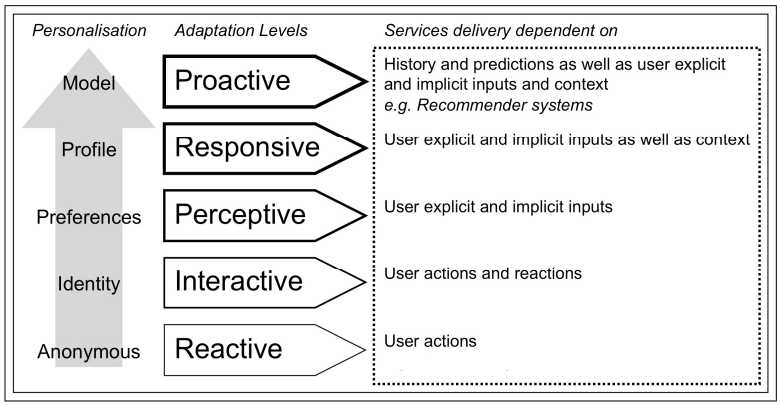
General conclusions



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Thank you for your attention.

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