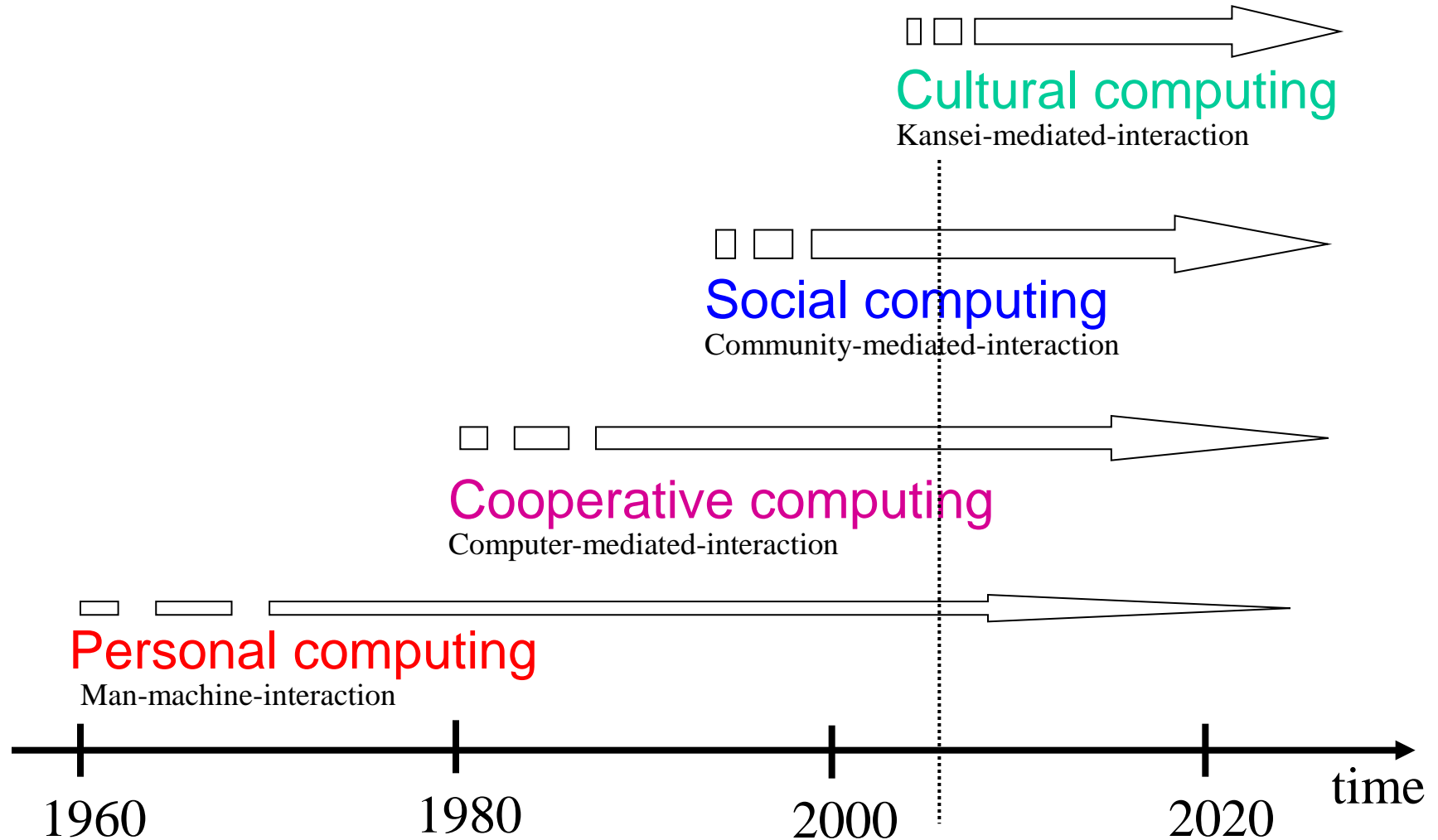# Cultural Dimensions in Computing: ALICE – a cyclotron for the mind

-- MSR meeting, May 24, 2007 ---

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Interaction Paradigms in Computing

Cultural computing
Kansei-mediated-interaction

Social computing
Community-mediated-interaction

Cooperative computing
Computer-mediated-interaction

Personal computing
Man-machine-interaction

1960   1980   2000   2020   time

Culture in the East and West

Cross-cultural psychologist's juxtapose
Eastern *holistic* and Western *analytic* reasoning.

Eastern reasoning embraces contradictions among objects in a yin–yang field of constant change.

Western reasoning tends to focus on objects and categories, and is driven by *formal logic.*

Nisbett RE., Peng K., Choi I. & Norenzayan A. (2001). Culture and Systems of Thought: Holistic versus Analytic Cognition. *Psychological Review*, 108(2), 291-310 .

What kind of interactive experience can address the Western culture?

Possible Answer:

- an interactive experience based on the story of **Alice in Wonderland**
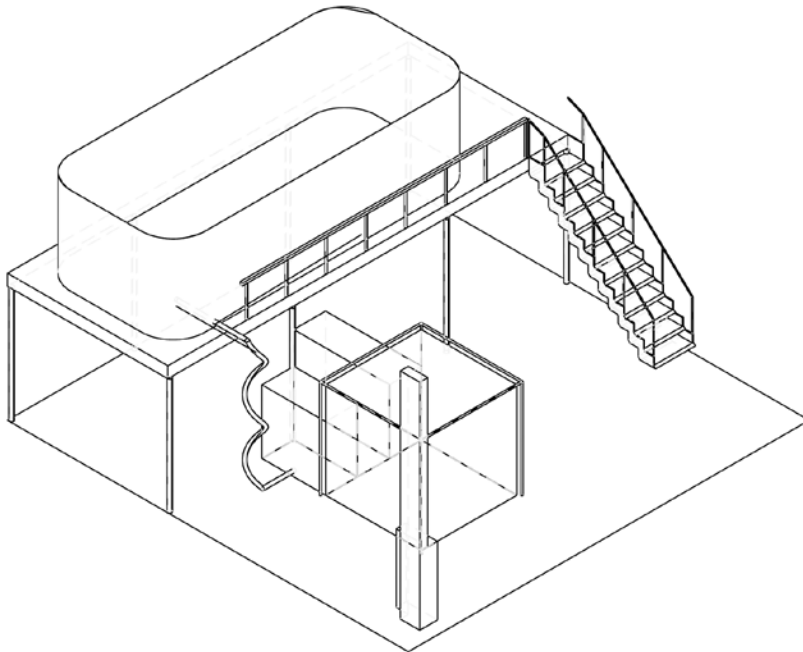

**Charles Lutwidge Dodgson
1832-1898**

Location: Lab-Space [12x12x7 m]
Theme: whole project
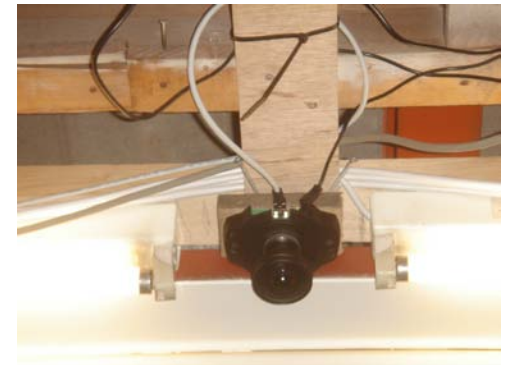**Challenge**: access to such big lab space

Location: inside ALICE-Lab
Theme: whole project
Challenge: overall layout

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Location: inside ALICE-Lab
Theme: whole project
Challenge: overall layout

Stage-1: in the park
Theme: time
Challenge: lure user to the rabbit hole

Stage-1: user experience
Theme: curiosity
Challenge: get user bored

[2.19]

Stage-2: down the rabbit hole
Theme: space
Challenge: feeling of "free fall"

Stage-2: user experience
Theme: orientation
Challenge: lost in space

[2.09]

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Stage-3: in a hall
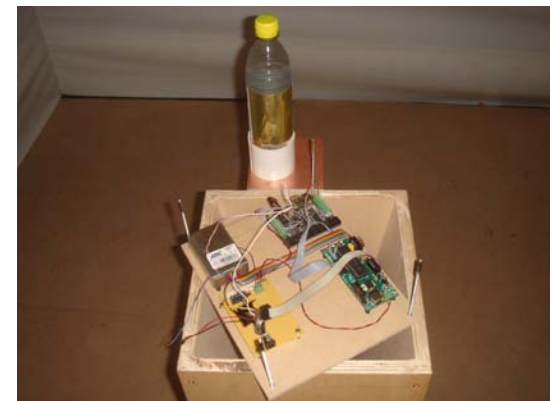**Theme**: 3D perception
Challenge: feeling of growing and shrinking
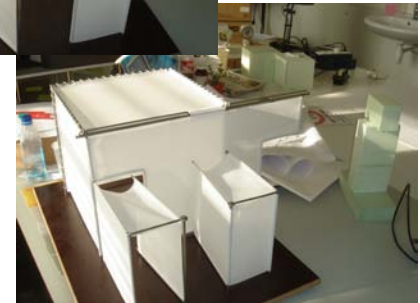
Stage-3:   drink-me & eat-me in a hall
Theme: body space
Challenge: feeling of growing and shrinking

Stage-3: user experience
Theme: unknown
Challenge: downsizing the body

[0.48]

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Stage-4:   the pool of tears
Theme: genesis
Challenge: synchronize animal with user

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Stage-4: user experience
Theme: reaching land
Challenge: swimming in water

[0.18]

Stage-5:   advice from the Caterpillar
Theme: self/ego
Challenge: speech based dialogue
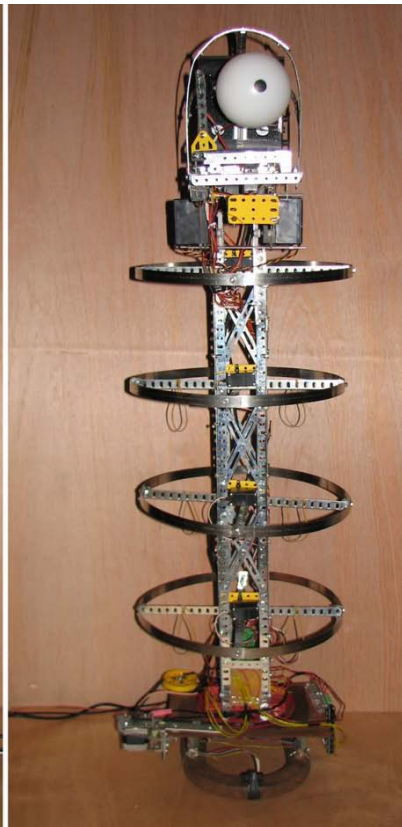
Stage-5: user experience
Theme: confusion
Challenge: questioning your own self

[0.52]

Stage-5: first empirical results
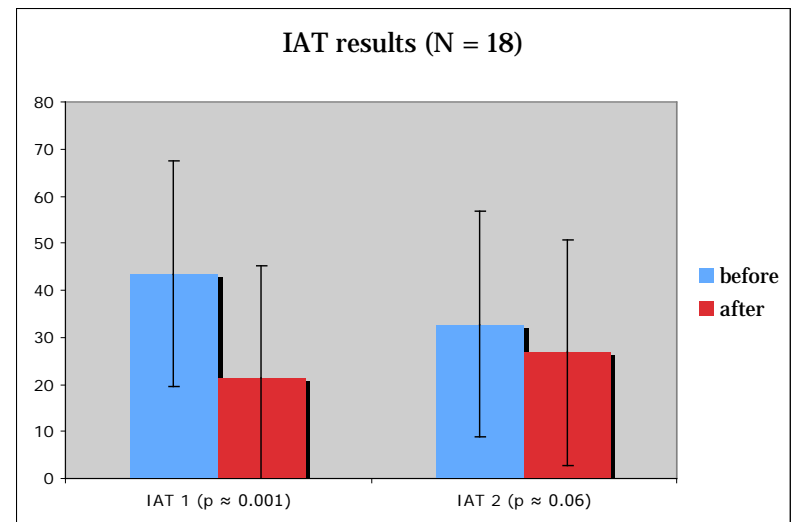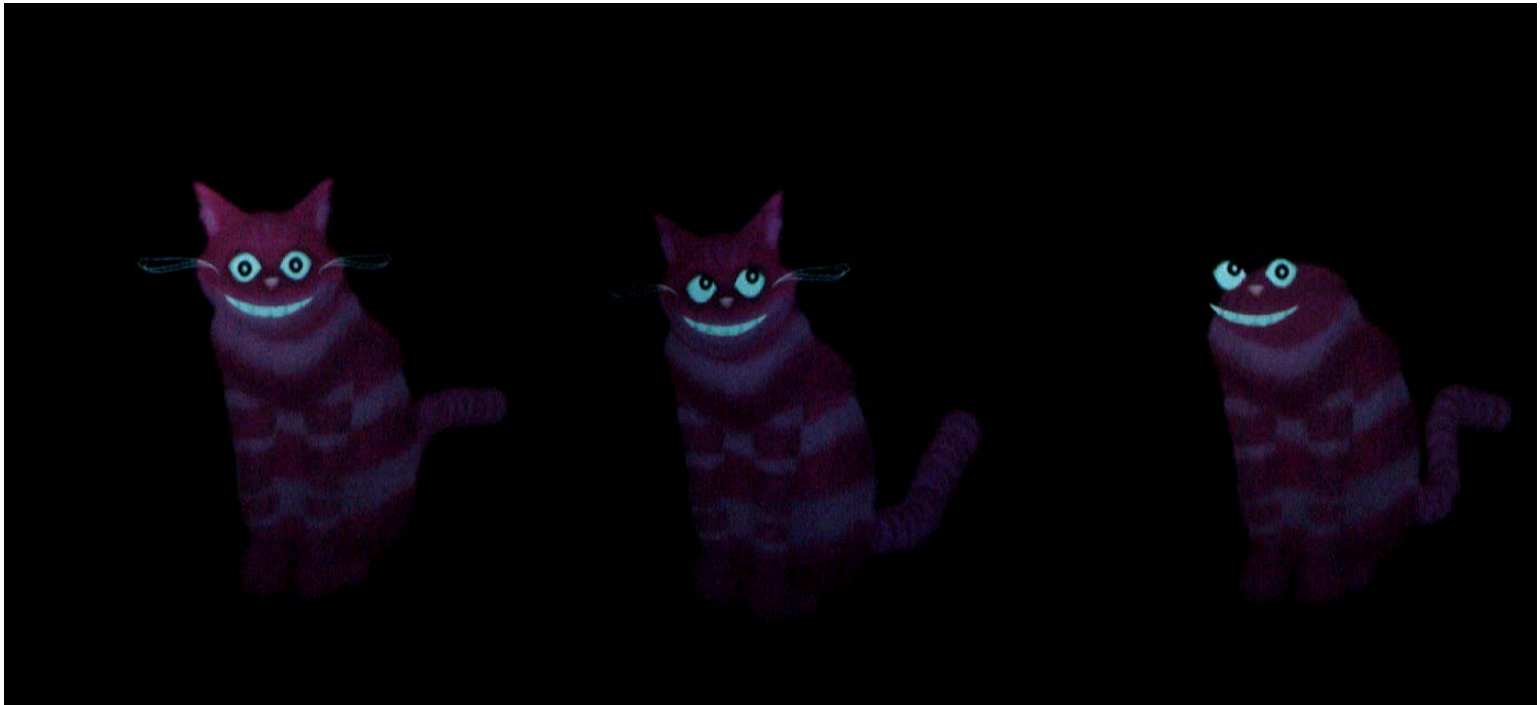# **Theme**: unconsciousness
Challenge: how to measure

Implicit Association Test Results
Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998).
Measuring individual differences in implicit cognition:
The Implicit Association Test.
Journal of Personality and Social Psychology, 74, 1464-1480

Stage-6:   encounter the Cheshire cat
Theme: logic
Challenge: discussion about madness

Stage-6: user experience
Theme: irrationality
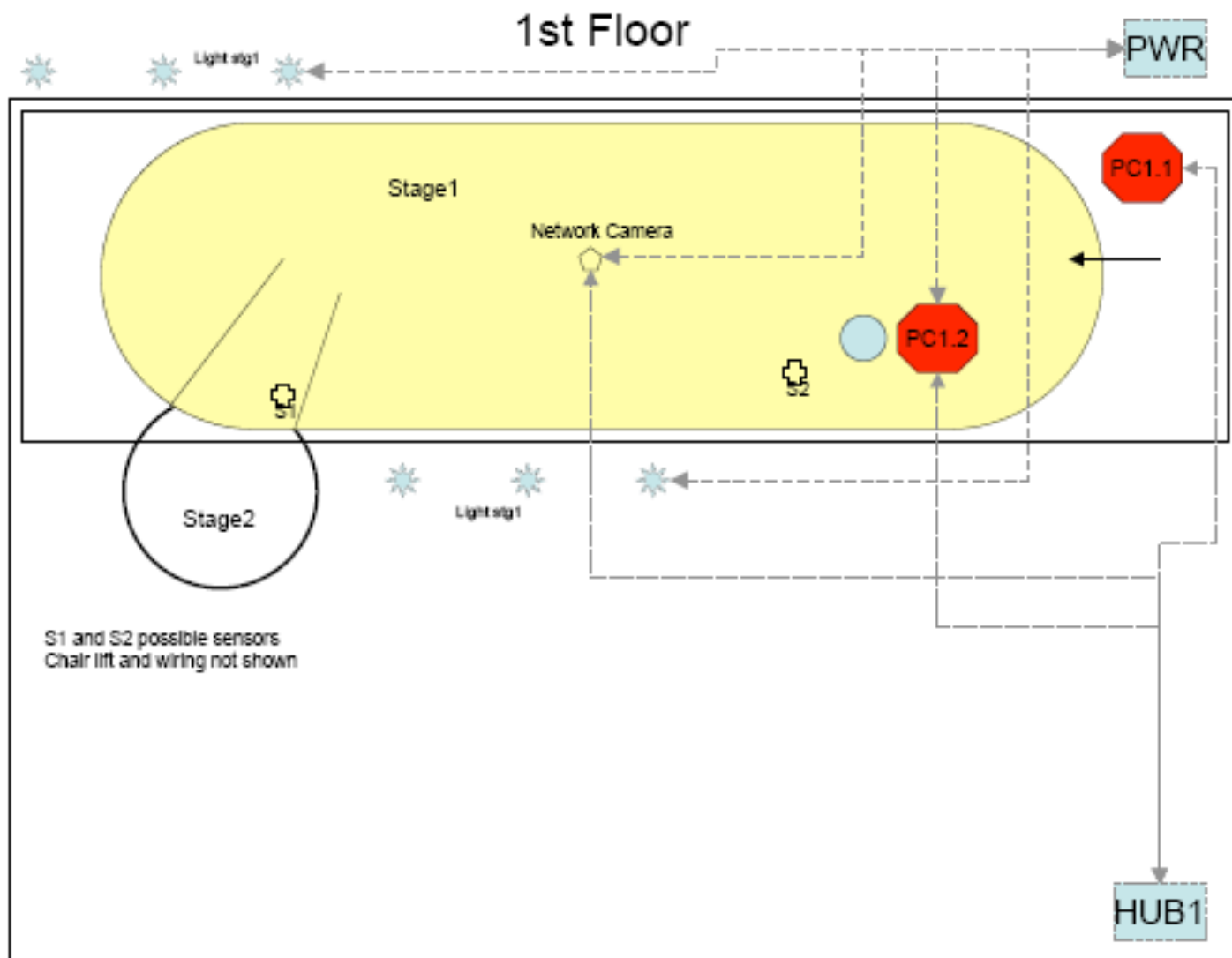**Challenge**: questioning logic

[0.52]

Thanks for your kind attention,
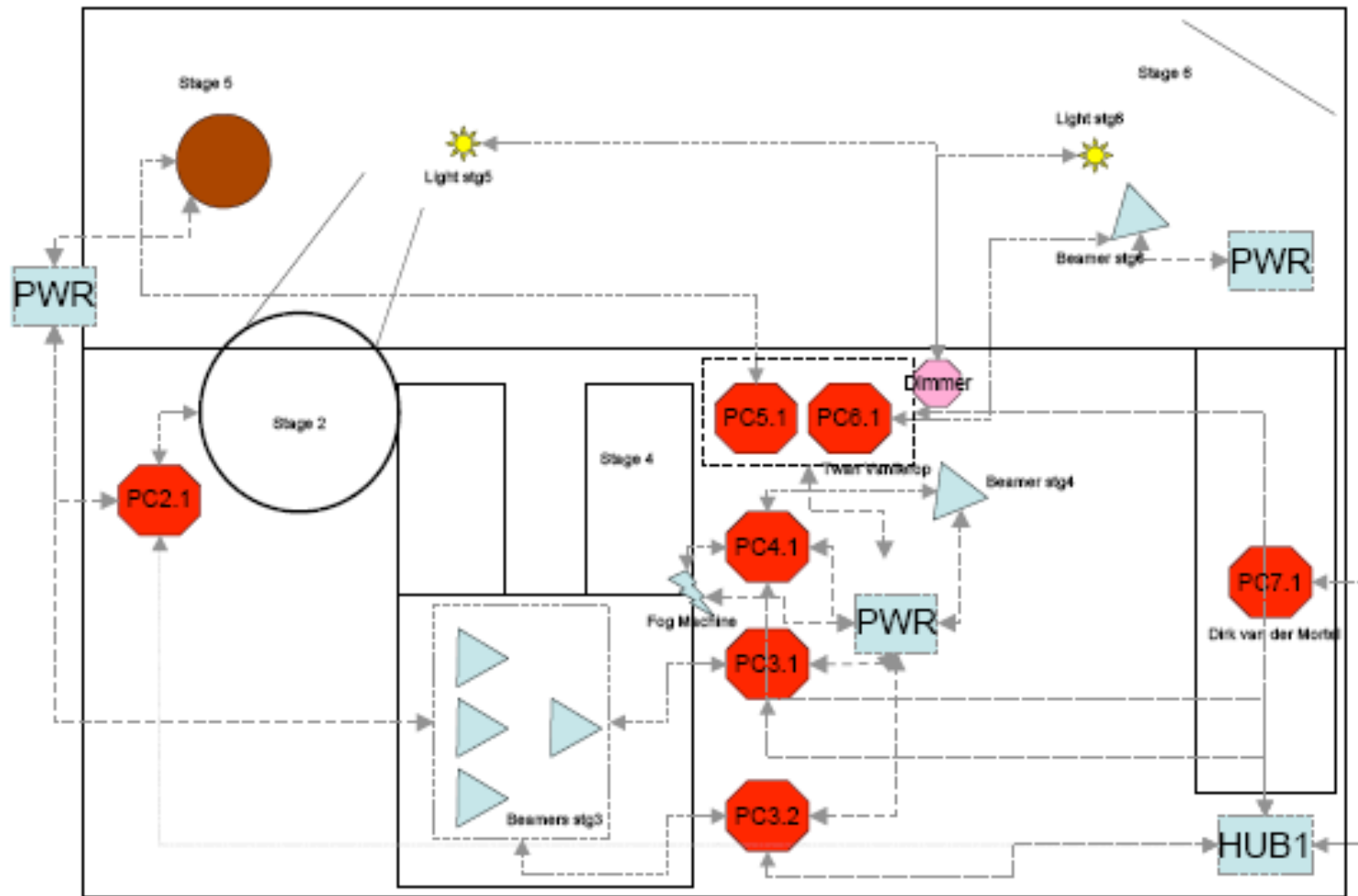and come to Eindhoven to get a free ride
to enhance your mind!

Team: S. Alers, D. Aliakseyeu, C. Bartneck, G. vd Boomen, R. Classens, T. vd Graft, A. v Herwijnen, J. Hu, T. Kooijmans, T. v Lierop, H. Liu, D. vd Mortel, J. Peerbolte, V. Peters, M. Rauterberg, B. Salem, V. Sawirjo, C. Seyferth, C. Tan

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1st Floor

Ground Floor

Message Format

All messages must have the following form:

```
<message name='msg-name' id='id' type='type' priority='priority'
timestamp='timestamp' version='version'>
        <param name='param-name' type='param-type'> para-value </param>
        <param name='param-name' type='param-type'> para-value </param>
        ...
        <param name='param-name' type='param-type'> para-value </param>
</message>
```

A message without any parameters can also be formed as follows:

```
<message name='msg-name' id='id' type='type' priority='priority'
timestamp='timestamp' version='version' />
```

All message keywords and values are case sensitive. A message SHOULD be included in one line of text without line breaks and carriage returns in between. A line of text MAY include multiple messages.

State transition commands

A stage SHOULD be in one of the following 4 states (see Figure 1):

prepared|opened|closed|stopped

When a stage is *prepared*, everything is ready so that the stage CAN be *opened* for a user to enter the stage. When the user leaves the stage, the stage SHOULD then be *closed*. At any time, the stage CAN be *stopped* because of emergency for example – which means all the ongoing activities are stopped immediately. A stage CAN be cleared and reset at any time to the initial state (*prepared*) so that it can be opened again for the user to enter.

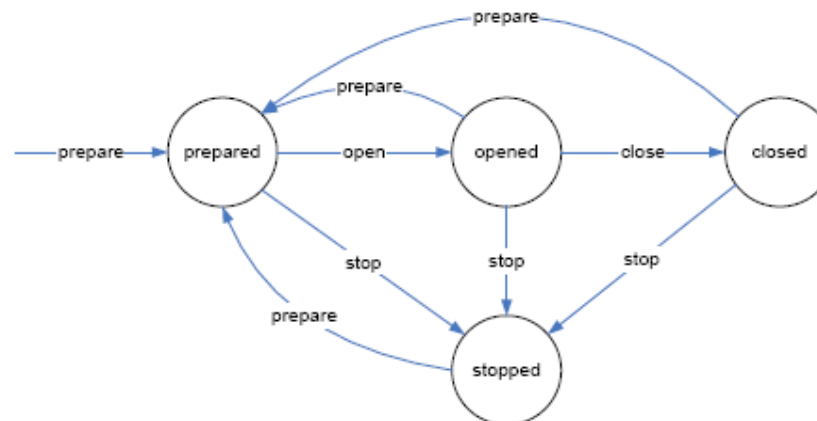The following commands SHOULD be implemented by the stage servers for the state transitions as shown in Figure 1.

Figure 1. stage states

Actuator interface

e.g. pipe, smoke, motors

position sensor

Sensor interface

Experience generator:
translation of user actions

Caterpillar control:
script for dialog (Eliza-based) behavior control

I/O control