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# Thesis Meeting Content and Knowledge Engineering

1 October 2008

## Program

- 13.00 - Welcome  
Thesis process and regulations
- 14.00 - Thesis projects
  - External possibilities
  - Robbert-Jan Beun / Rogier van Eijk / Huub Prüst
  - Herre van Oostendorp
  - Hermi Schijf
  - Hans Voorbij / Leen Breure
  - Mari Carmen Puerta
  - Frans Wiering
  - Anita de Waard
  - Joske Houtkamp
  - Virginia Dignum

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## Thesis process



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## General setup

- Duration: 3 periods (45 erts) = 9 months
- Location: internal, external
- Supervision – Thesis committee:
  - 1st supervisor (always a lecturer CKE)
  - 2nd supervisor
  - External supervisor
  - Expert advisor



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## Starting Thesis

### ■ Admission

- max 2 open optional courses (15 ects)
  - not compulsory courses
- subject to approval of proposal
- **Do not sign any contracts before acceptance of your proposal!!**



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## Getting to a Proposal - 1

- Informal contacts
  - Contact CKE lecturers/researchers in the topic of your interest
  - Check external possibilities
  - If you plan to go abroad, start planning at least 6 months before you want to start
- Draft proposal discussed with supervisor
  - **In agreement** of your supervisor, you can start fixing issues(start date, contract...) with external party
- **Note: the order is:**
  - **1<sup>st</sup> internal agreement**
  - **2<sup>nd</sup> external contract**



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## Getting to a Proposal - 2

- Submit proposal to Thesis Approval Committee (TAC)
  - Herre van Oostendorp, Frans Wiering
- Upon approval by TAC
  - Official appointment of Thesis Committee (TC): supervisors
  - Fill in registration form (<http://www.cs.uu.nl/education/stage/registrationform.doc>)
- **Start!**



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## Thesis Proposal

- Contents
  - Problem definition / research question (WHAT)
  - Scientific and social relevance of project (WHY)
  - Research method (HOW)
  - Host organization (WHERE)
  - Literature
  - Project plan (timeline) and deliverables
- **Maximal** 800 words (+ - 2 pages)
- Personal and Supervisor(s) information
- start permit = "Masoud's form"
  - (attach Osiris list of grades)



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## Thesis projects

### ■ Suggested projects:

- <http://www.cs.uu.nl/cke/thesis/openth.html>
- <http://www.cs.uu.nl/education/vak/afst45>
- Ask lecturers of courses that you find interesting
- In all cases: also contact your student advisor (me!)

### ■ Language: English

- Unless otherwise demanded by host organization

### ■ Content: check Thesis guidelines

### ■ Scientific paper

- Depending on relevance and quality
- Always in collaboration with supervisors

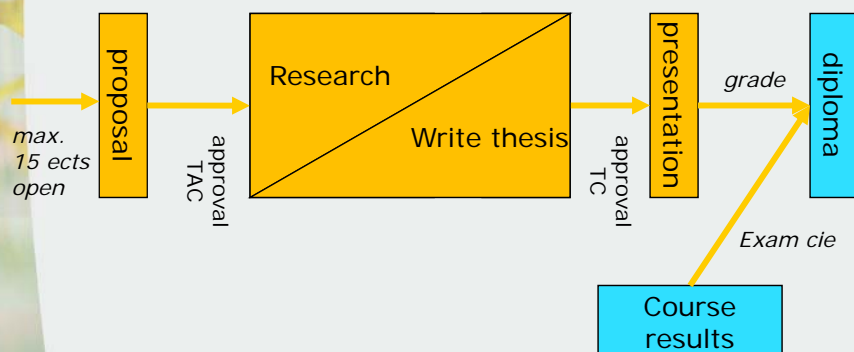


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## Thesis project process



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## Thesis

- Contents:
  - Title
  - Summary, (plus Dutch Summary)
    1. Introduction/motivation
    2. Problem definition
    3. Related work/ literature study
    4. Research methodology
    5. Results
    6. Discussion
    7. Conclusions
  - Bibliography and references
  - Appendices
    - Data / Code
    - Questionnaires
    - ...



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## Finishing your thesis

- Approval of thesis by supervisors
- Fix presentation date
- Prepare slides for presentation
- Submit thesis



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## Presentation: Examination meeting

- Public meeting
- Date
  - Request date with student-administration
  - Reserve room, beamer, laptop at balie
  - Mail abstract of thesis to student-administration
- Presentation
  - 30-45 minutes, followed by 15 minutes questions
- Evaluation
  - supervisors leave room for decision on grade
- After
  - Inform BOS grade (signed form by TC)
  - Hand in digital copy of thesis (BOS, TC)
  - Diploma will be presented in the following ICS graduation meeting, after also all course work is finished



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## Evaluation

- Issues taken in account:
  - Research Process
  - Thesis quality
  - Presentation
  - Q&A
- Determined by 1<sup>st</sup> and 2<sup>nd</sup> supervisors
- Consultation of external supervisor
- First supervisor informs BOS of the grade directly after meeting



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## Graduation

- Register for the final exam at Dean's Office
  - All info: <http://www.cs.uu.nl/education/advies/master.html>
  - You'll need your final study plan signed by the program coordinator! (me)
  
- Public meeting in the Boothzaal, Library
- After completion of whole master program
  - Courses
  - Thesis
- Make sure your thesis presentation is at least 3 weeks before the planned graduation date
- Possible graduation dates 2008/2009:
  - 11 December 2008
  - 22 January 2009
  - 9 April 2009
  - 25 June 2009
  - 3 September 2009
  - 22 October 2009



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## Do's and don'ts

By: Katharina Schwarz



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## Do's and don'ts

- Start writing ASAP
  - Make an abstract
  - Start by making a table of contents, even if it will change (and it will)
- Use often the feedback of your supervisors, even if you think you have nothing to ask
- Use 'old' thesis as example for form and layout
- Don't keep trying when it does not work
- Try to present your work often
  
- After graduation:
  - Don't forget to return your OV, end your student insurance, and if you are also finishing your bijbaantje check the consequences for the health insurance



## Questions?



## Thesis projects



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## External possibilities

- Companies in NL
  - Current thesis at TNO, Elsevier, V-step, Funda, ...
- Abroad
  - Current contacts: Uni Melbourne, UT Lisboa, UPC Barcelona, Uni Cardiff, Uni Trento, NASA, Uni Florida, ...
- BYO ☺
  - If you initiate contacts yourself, make sure that you get approval and interested supervisor early in the process
  - Don't sign any contracts before you are sure topic is relevant and someone at CKE will supervise you!



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## Thesis Project

■ Robbert-Jan Beun



■ Rogier van Eijk



■ Huub Prüst



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### ■ Topics:

- Virtual coaching/teaching.
- Non-verbal communication in HCI
- Natural dialogue in HCI
- User modeling

### ■ Concrete projects:

- Experiment on alignment and eye behavior in iCat
- Modeling non verbal behavior in relation to contextual aspects such as emotion, physical conditions and speech acts. (in cooperation with Logica, Nieuwegein, abstract included).
- Modeling dialogue behavior from helpdesk dialogues.



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# Thesis Project

■ Herre van Oostendorp



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## 1. Visit to and thesis at University of Granada

Cooperation projects and possible  
topics for thesis

- **Hypertext comprehension**
  - Navigation strategies
- **Mental models in human computer interaction**
- **Augmentative communication systems**
  - Assisting communication of people with learning disabilities



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## 2. Animation

- Animated diagrams versus static pictures representing dynamic systems
- Empirical literature: often no benefit of animated diagrams over static pictures
- Why?
  - Attitude: overconfidence in understanding with animation
  - Information overload: role of focus
  - Further experimentation:
    - Adaptability of presentation to cognitive needs by interactivity
    - Spatial ability
    - Role of mental animation

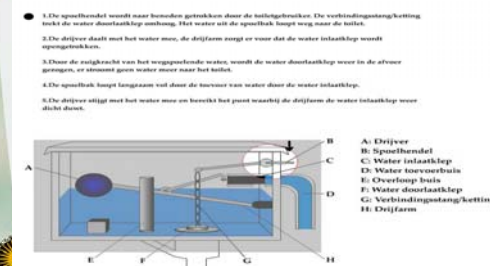
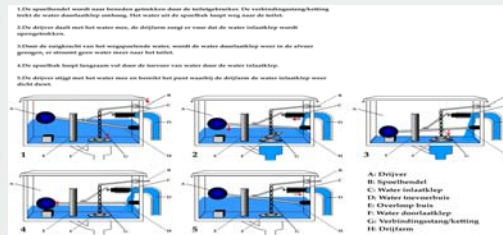


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## Example of static versus focus animation of the 'toilet flush'



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### 3. Projects in cooperation with Elsevier


- Multimedia Inclusions
  - Usefulness of including animations in scientific online journals
- Guidelines for Digital Book Authors
  - Development and evaluation of the usefulness of guidelines for authors helping them to write E-books
- Plagiarism
  - Empirical evaluation of the usefulness and usability of software programs to detect plagiarism
- Contacts: Herre van Oostendorp, Hans Voorbij & Rik Bos



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### 4. Cognition-based Learning Principles in Serious Games

- **In context of GATE project, with Erik van der Spek and Mark Neerincx (TNO)**
- Learning with serious games (in developmental stage!)
  - How do persons learn by playing a (serious) game, and how should crucial information be presented?
  - How do they construct a dynamic mental model of a task?
    - 1. Prevention of information load by regulating rate of information presentation, focusing of attention, activation of relevant domain knowledge
    - 2. Maintaining and induction of cognitive interest and motivation by introducing informational gaps.



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## Thesis Project

Hans Voorbij



Leen Breure



# *Venster op de Vecht*

Information problems of  
a cultural landscape



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## Cultural Landscape Explorer

- Project's aim an scope:
  - research on a generic architecture for high-quality multimedia visualization of cultural landscapes
- Test case:
  - The region of the river Vecht (Utrecht) → portal: *Venster op de Vecht*
- Products:
  - Visual narratives, development strategies, usability studies
- Main techniques: Flash, GIS, XML, JavaScript, 3D-modeling



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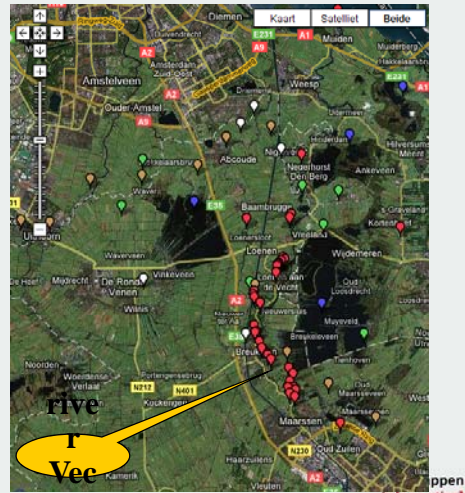
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## The project: **architecture** for a portal

■ *Venster op de Vecht*: portal for the cultural landscape of the river Vecht in Utrecht →

■ **Challenge**: integrated presentation of

- landscape
- points of interest (castles, stately homes, locations,...)
- historical processes



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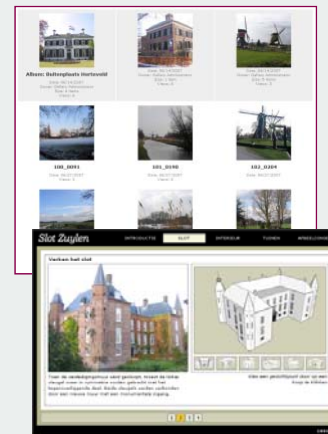
## Problem category 1: **Data modeling**

■ Managing images

- relational database or XML
  - data structures
  - queries
  - semantics: ontology (Topic maps / RDF)

■ Content management for the entire portal

- a great variety of content: what kind of CMS is most suitable?



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## Problem category 2: Usability

■ How to create a 'unified experience'?  
[ an almost seamless integration between maps, pictures, descriptions of locations, processes ] → **problems:**

- visual narrative
- overview vs. detail
- scrolling vs. paging
- advanced navigators (e.g. interactive timelines)
- we feel some parts are 'good' and others 'bad':  
Can you *prove* and *explain* why? (experiment)



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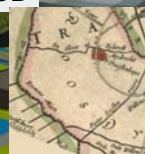
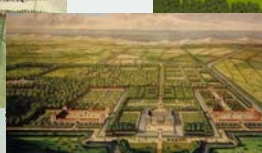
## Problem category 3: 3D landscapes

### ■ 3D virtual worlds from historic maps

- 'How good is good enough?': realistic, reliable and valid
- 'Cookbook': edutainment, archeology & spatial planning

### ■ Research challenges

- Spatio-temporal uncertainties in historic data
- Vegetation & water rendering techn
- Rendering cues for historic sensatio
- Interaction and modification of 3D

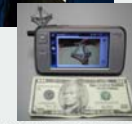


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## Problem category 4: Mobile devices

- Portal info will be made available also outdoors (walking, biking)
- Multimedia on mobile devices:
  - user interface and usage
  - platform: XML, Flash (AIR, Flex), AJAX
- Digital story telling on a mobile device: text and/or audio? animations?



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## More information...



### Contact:

- Leen Breure
- Hans Voorbij

<http://www.vensteropdevecht.nl> (Dutch)

<http://www.cs.uu.nl/research/projects/i-cult/CLE/>

(English) Universiteit Utrecht

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# Thesis Projects

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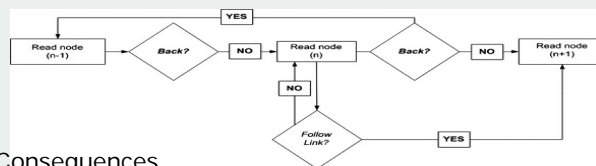


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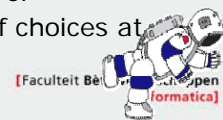
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## 1. Disorientation and Comprehension in Hypertext

- Reading in Hypertext means to decide what links to follow



- Consequences
  - Increasing demands of decision making
  - Affects comprehension and success in finding information
  - **Lost in Hyperspace**: not knowing where you are and where to go
- Effects of different links structures
  - Depth: number of levels
  - Breadth: number of choices at each level
  - Topology: e.g. an increasing number of choices at each level as depth increases
- Types: semantic, hierarchical...



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## 2. Task Demands and Memory in Web Interaction

- ❑ Memory for location of web elements (i.e. links) is worse than memory for finding information in a page of a web site (i.e. text)?
  - ❑ The way information is processed and remembered depends on the task demands
  - ❑ The use of visual information and widgets
- ❑ Different web tasks have different impacts on memory
  - ❑ Locating links
  - ❑ Finding specific facts
  - ❑ Finding dispersed information in a web site
- ❑ Effects on
  - ❑ Task performance and memory for location and content
  - ❑ User's mental model



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## Thesis Projects

Frans Wiering



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# Content-based music retrieval

- Verschillende projecten rondom Yahmuugle search engine
- Veel ruimte voor afstudeerprojecten, b.v.:
  - query interfaces voor muziek
  - muzikaal geheugen (en het Eurovisie Songfestival)
  - Nederlandse volksmuziek (WITCHCRAFT project)
  - audio retrieval van populaire muziek
  - evaluatie retrievalsystemen



yahmuugle.cs.uu.nl [Faculty of Science]

## Thesis Projects

Virginia Dignum



## Topic 1: Human-agent networks

### ■ Background

- Prediction: By 2020, every Korean household will have a robot  
(De Volkskrant, 31-03-2007)
- Artificial systems already pay our bills, keep our appointments, search for information... what about childcare, elderly care, surgery...?
- Cooperation between humans and agents is particularly well suited in situations where reaction speed is important, where knowledge is diffuse, where a high level of connectivity is necessary, or where operation in constantly changing environments is needed.
- Nevertheless, the reach and consequences of coordinated activity between people and agents is not well understood.

### ■ How do (teams of) people and artificial agents work together?

- Delegation to/from agents
- Decision making



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## Topic 1: Human-agent networks

### ■ Thesis Projects:

#### ■ Behavior of mixed groups

- Simulation of group process (e.g. serious games)
- How should systems be designed to improve human performance/enjoyment?

#### ■ How to adapt agent behavior to human preferences

- Personality type and interaction characteristics
- Agent characteristics
- Through simulation/empirical experiment check effect of adaptation vs. non-adaptation



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## Topic 2: Support Knowledge Sharing

### ■ SKS NWO-project

- Developing formal models for organizational structures, their performance properties and congruence.
- Analysing the performance of companies and its relation to organizational structures, (informal) communication forms, and knowledge sharing channels.



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## Topic 2: Support Knowledge Sharing

### ■ Thesis Project I: measure organizational performance.

- knowledge sharing in relation to organizational structure and strategy
- link between organizational structures, knowledge sharing and performance.
- case study and/or questionnaire

### ■ Thesis Project II: Knowledge transfer by organizational changes

- From norms and values to workflows and operations
- Sharing role related knowledge
- Scenario: crises management after flood



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