Overview

- R&D at OUNL’s Educational Technology Expertise Centre
  - The benefits of using & producing of open source software, open specifications, open content in our R&D
- (Open) Learning Networks
- What can be opened up a little more?
# Open UNL: some facts & figures

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>staff members</td>
<td>791</td>
</tr>
<tr>
<td>active students</td>
<td>21,004</td>
</tr>
<tr>
<td>student profile</td>
<td>49% female - 51% male</td>
</tr>
<tr>
<td></td>
<td>age 18-26: 10% - age 26-35: 36% - age 36-45: 33% - above 45: 21%</td>
</tr>
<tr>
<td></td>
<td>44% has a paid job of 35 to 40 hours per week</td>
</tr>
<tr>
<td>study centres</td>
<td>12 study centres in the Netherlands</td>
</tr>
<tr>
<td></td>
<td>6 study centres in Belgium</td>
</tr>
<tr>
<td>electronic learning environment</td>
<td>20,539 students and alumni make use of Studienet (98%)</td>
</tr>
<tr>
<td>bachelor programmes</td>
<td>6</td>
</tr>
<tr>
<td>master programmes</td>
<td>13</td>
</tr>
<tr>
<td>academic courses</td>
<td>416</td>
</tr>
<tr>
<td>course enrolments</td>
<td>52,961</td>
</tr>
<tr>
<td>course certificates in 2003</td>
<td>26,611</td>
</tr>
</tbody>
</table>
Open UNL: what do we do?

- Goal: to make higher education accessible to anyone with the necessary aptitudes and interests, regardless of formal qualifications.
- And:
  - to create a cost-effective form of higher education,
  - to encourage innovation in Dutch higher education, in terms of both curriculum and teaching methods,
  - to reduce the teacher shortage in Dutch primary and secondary schools, and
  - to be a recognized player in (commercial) distance and e-learning training programmes and consultancy.
Educational Technology Expertise Centre

- R&D covering the use of innovative methods and technologies at OUNL and other institutions of higher education.

- Technology Development Programme (Prof. Rob Koper)
  - 1997 - 2002: Electronic Learning Environments
  - 2003 - 2008: Learning Networks

- Improving the quality of e-learning in an interoperable way with user-friendly tools
1997-2002

- Lots of Electronic Learning Environments (VLEs)
- Lots of different approaches to teaching
  - (though not always available in VLEs)
- A notation to describe learning scenarios which could be used by different VLEs would be handy
  - EML: the Educational Modelling Language
- Edubox
  - An EML player
  - Version 3, commercial, closed software
  - Used in education at OUNL

- Strategy of opening up ……
  - EML made public on OUNL web site in Dec. 2000
  - Valkenburg Group formed
Open technical specification

- IMS develops and promotes the adoption of open technical specifications for interoperable learning technology
- OUNL is contributing member (voting rights)
  - Also Apple, Blackboard, Microsoft, WebCT, Cisco, Sun, Texas Instruments, …+/- 60 members
- EML formed the basis for the open, technical specification, IMS Learning Design, released in 2003
  - More downloads of IMS LD than EML
Open source tooling for IMSLD

- LD without a player is like HTML without a browser
- How to stimulate IMSLD tool development?
  - Try to take away some of the complexity of playing IMSLD

- CopperCore (2004)
  - Handles complex synchronizing and personalizing of e-learning modelled in LD;
Here you see Dizzy Gillespie playing with his Dizzy Gillespie Quintet: *Salt Peanuts*. This is a typical example of Bebop, in which melodic improvisation plays the main role in the Jazz.

Listen to the next music fragment.
A growing community

- Others build on efforts
  - SLED player
    - http://sled.open.ac.uk/web/
  - RELOAD LD player
    - http://www.reload.ac.uk/
- Other editors
  - RELOAD LD editor
  - CopperAuthor
Here you see Dizzy Gillespie playing with his Dizzy Gillespie Quintet: "Salt Peanuts". This is a typical example of Bebop, in which melodic improvisation plays the main role in the Jazz.

Listen to the next music fragment.

music clip
Open content for IMSLD

- Documents
- IMSLD examples
- DSpace repository of articles, presentations
  - dspace.learningnetworks.org
- Courses, running in Moodle
  - moodle.learningnetworks.org
- UNFOLD project (2004-2005) has played an important role
Opening up further

- Technology development programme 2003 - 2008: Learning Networks
- Not only products (software, specifications, content) becoming open …

- Opening e-learning up to:
  - lifelong learning
  - different forms of assessment
  - blurred boundaries (who’s the teacher/learner?)
  - decreased institutional control
  - scrutiny of technology claims through experimentation
Learning Networks

- A learning network is a group of people who create, share, support and study learning resources ('units of learning') in a specific knowledge domain.
  - connected to each other in a social sense
  - connected to each other in a technical sense
  - connected to relevant learning resources
  - connected to each other in order to learn from & with each other (also producing new learning resources)

- Fluid, dynamic, less ‘designed’, not only formal learning, …
R&D Themes

1. How to make & use pedagogical well designed, interoperable and reusable units of learning in the LN?
   - Helping people contribute
2. How to position learners in a LN?
   - Recognizing prior, and different types of, learning
3. How to help learners to navigate in the LN?
   - Supporting learners in achieving their lifelong learning goals without recourse to traditional design approaches (‘follow this curriculum’)

© 2004 OpenUniversiteitNederland
“I’ve completed a4, a8 and a10. What should I do next *en route* to my goal?”
Navigational support
Social Navigation

- “Navigation is a social and frequently a collaborative process” (Hutchins 1995)

- **Social Navigation**: Use of information from/about others during the navigation process
Direct Social Navigation

- Asking others directly:
  - “how do I reach Heerlen?”
  - “should I go that way to Valkenburg?”
- Synchronous communication
Indirect Social Navigation

- The use of traces left by others: good paths emerge

- Related to recommender systems: Amazon, MovieLens

© 2004 OpenUniversiteit Nederland
Your Recommendations

Hello, Colin Tattersall. Explore today's featured recommendations. (If you're not Colin Tattersall, click here.)

**DVD Recommendations**

**Harry Potter and the Prisoner of Azkaban (Two Disc Edition) [2004]**

Amazon.co.uk Review

Some movie-loving wizards must have cast a magic spell on *Harry Potter and the Prisoner of Azkaban*, because it's another grand slam for the Harry Potter franchise. Demonstrating remarkable versatility after the achromatic success of *Y Tu Mamá También*, director Alfonso Cuáron... [Read more]

More DVD Recommendations

**Toys & Kids! Recommendations**

**LEGO Harry Potter 4755: Knight Bus**

Manufacturer's Description

*Build and recreate your favourite scenes from the latest Harry Potter movie, The Prisoner of Azkaban, with LEGO.* Authentic details and features from the movie carefully designed to provide hours of building and role-play fun.

Harry is in danger - the Grim is after him. Can the purple triple-decker... [Read more]

More Toys & Kids! Recommendations
Self-organised navigational support

- If we can’t, or don’t want to, control the order in which people learn, could we somehow use self-organisation principles and let navigational support ‘emerge’?
  - Could traces of successful predecessors help learners make navigational choices in Learning Networks?

- Look to ant trail laying
  - with thanks to Vincent Chevrier of INRIA and NetLogo
Ant’s in search of food, faced with choice: left or right?
50:50 left vs right, leave pheromone trail
Still no food!
Now, back to the nest, but which way, left or right? Follow the trail ... the more pheromone, the more likely to be followed
And as a result, more pheromone deposited
Some time later, the ants taking the long way round arrive, also face a choice, and tend to follow the short route
More and more ants take the short route, leaving more and more pheromone although some ants do opt for the long route (prevents sub-optimalization)
First ants arrive back, having left a trail and influencing the 50:50 rule for ants just starting ...
... so that fewer ants now opt for the longer route
And so through self-organisation, the ants figure out the best route.
Self-organising navigational support

- Trails are left behind in learning environments by learners like the pheromones left behind by ants (Learning Tracks)
- Feed these trails back to other learners; the intensity of the trail can reflect aspects of the learning process we’d like to stimulate
  - stronger pheromone for faster path, more highly rated path, path followed by most successful learners, path followed by people like you, …
Goal setter  

LN interaction functionality  

Positioner  

Feedback presenter  

Logging  

Filter 1  

Filter 2  

Transition Matrix  

Bachelor Psychology  

<table>
<thead>
<tr>
<th>L1</th>
<th>a8</th>
<th>19-07-99</th>
<th>PASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>a13</td>
<td>22-08-99</td>
<td>PASS</td>
</tr>
<tr>
<td>L3</td>
<td>a4</td>
<td>25-09-99</td>
<td>FAIL</td>
</tr>
<tr>
<td>L9</td>
<td>a9</td>
<td>04-11-99</td>
<td>PASS</td>
</tr>
<tr>
<td>L100</td>
<td>a2</td>
<td>12-02-00</td>
<td>FAIL</td>
</tr>
</tbody>
</table>
# Transition Matrix

<table>
<thead>
<tr>
<th></th>
<th>AN1</th>
<th>AN2</th>
<th>AN3</th>
<th>AN4</th>
<th>AN5</th>
</tr>
</thead>
<tbody>
<tr>
<td>{}</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>AN1</td>
<td></td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>AN2</td>
<td>2</td>
<td></td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>AN3</td>
<td>3</td>
<td>4</td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>AN4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>AN5</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
But will this really work?

- E-learning experiment using Moodle
  - 11 modules; completing all 11 leads to certificate
  - Recruited 1011 people interested in learning about the internet
- Two groups
  - One group received a recommendation based on successful predecessors
  - The other group didn’t
- Examined how many reached the goal in a given timeframe (3 months).
**Completed:**
- Do more with Internet Explorer
- Dealing with inappropriate web content
- Beating spam en spyware
- The many roads to the internet
- Web searching
- Worms and Horses
- Chatting
- Watching and listening on the internet
- Secure payments on the internet

**To be completed:**
- Making a personal web page
- Interesting and pleasant sites

**Continue with:**
- Making a personal web page

You are logged in as User 2013 (Log uit)

Course overview

© 2004 Open Universiteit Nederland
What can be opened up a little more?

- Mostly following traditional publication route for these results
  - Although see the Journal of Interactive Media in Education (jime.open.ac.uk)

- Would be nice if we could plug new learning technologies into (simulated?) experimental settings and see if they work
Summary

- Learning Technology R&D at OUNL is increasingly using and producing open source software, open technical specifications, open content
  - Benefits for the visibility of our work, opportunities for cooperation, the speed with which we can tackle our R&D questions, funding, …
  - Broader link to openness in our R&D work on e-learning
- We will continue this trend in our new major European project, TENCompetence (2006-2010):
  “Building the European Network for Lifelong Competence Development”