

The need for an open source infrastructure to support Lifelong Competence Development in Europe

Rob Koper

Director of Learning Technologies Research

Open University of the Netherlands

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Some background

Research into Technology Enhanced Learning at OUNL

- 5-year research programmes: in 2003 we started: 'Learning Networks for Lifelong Learning'
- Themes in our research:
 - a. Create, (re-)use learning activities & resources in LNs
 - b. Positioning/competence assessment in LNs
 - c. Navigation in LNs
 - d. Social Software in LNs
 - e. Ubiquitous access to LNs
 - f. Learning Networks Integrated
- Each theme has various internally/externally funded projects.



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Some highlights

- Educational Modelling Language, IMS Learning Design
- Tooling for IMS LD (CopperCore, etc.)
- Further research in learning design (see recent special issue journal Educational Technology & Society)
- Use of Language Technologies (LSA) for bottom-up analysis of competences
- Integration of bottom-up approaches (collaborative filtering) and top-down approaches (semantic web) to provide learner support
- Development of learning networks, methods & technologies for competence development



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In this keynote

Focus on the ambitions of the TENCompetence project:

- IST/TEL Integrated Project Dec. 2005 – Dec. 2009
- Aim: The development of an open source infrastructure for lifelong competence development
- 13 core partners and a network of associated partners
- 4 major experimental areas:
 1. Digital Cinema
 2. Health Care
 3. UNESCO Water Management (Indonesia)
 4. Lifelong Learning City (Antwerp)
- Additional pilots from associated partners



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The challenge

Individuals are permanently triggered to further develop their competences/abilities:

- Worldwide competitive economy places new demands on individual workers and organisations: new activities, new technologies, new markets, changing jobs, etc.
- Social and personal triggers to develop new competences related to personal growth, family, leisure time, etc.
- Lifelong competence development is the primary responsibility of individual persons (and not of organisations/universities/schools)
- Question: How can we use new technologies to support individuals in lifelong competence development?



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Three Core Issues

1. How can I get an overview?

- A person learns from many formal and informal sources during lifetime: formal education, training courses, knowledge exchange with colleagues/experts, learning from experience, reading, sources on the Internet, etc.
- Question: How does a person know what learning resources **are available** from different formal and informal sources that could possibly suit his/her needs?
- These learning sources can be of various kinds:
 - persons face to face - digital learning resources
 - persons online - non-digital learning resources



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Continued ...

2. *What is the most suitable solution?*

- When we are able to create lists of all the possible learning resources, a new problem comes in:
- How do you know what learning resources **best fits** your goals, background knowledge, preferences and local circumstances?
- And, especially (esp. with people): are they available?



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Continued ...

3. *What levels of competence levels do I have?*

- Learning from many formal and informal resources leaves us with the problem that we cannot provide **evidence** for (all) our competences (eg, when applying for a new job or when you want to reflect on your current competences), so:
- How do we assess the competences of persons who have acquired competences through a combination of formal and informal learning during lifetime?



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To summarize the core issues

1. How to get an overview?
2. How to know which learning facilities are most suitable?
3. How do you assess the competences acquired from multiple sources?



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The solution we are developing...

**Personal
Competence
Development
Systems**



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Personal

- **Owned** by a person (compare: Personal Computer), not by an organisation (company, school, university, etc.) to manage their personal competences during lifetime in many different institutions and informal learning events.
- Can be used **in conjunction** with organisational systems (eg the LMS of a university, HRM system of a company, knowledge management systems). These connections are loosely coupled.
- Just like the PC: can be used and provided by an organisation, but also acquired and used personally.
- Our PCDS system can be downloaded and used by anyone. When used they can share and connect to all others using the TENCompetence infrastructure



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By the way...

- Not one single application or system
- Connects to Web 2.0 services and integrates services into a Service Oriented Architecture (using REST)
- There are various possible clients possible using the various competence development services (e.g. fat clients, web clients, ...)
- In the first phase we start with a proof of concept developing a fat client (based on Eclipse RCP)



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Competence Development

- The concept of competence can bridge the world of education, training, knowledge management, human resource management & informal learning
- Many definitions... (and different from 'competency')
- Initial definition of 'competence' and 'competence development' in the project (next slides...)



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Definition of Competence

- **Competences** are bound an 'ecological niche' (the set of living and working environments a persons comes across during lifetime)

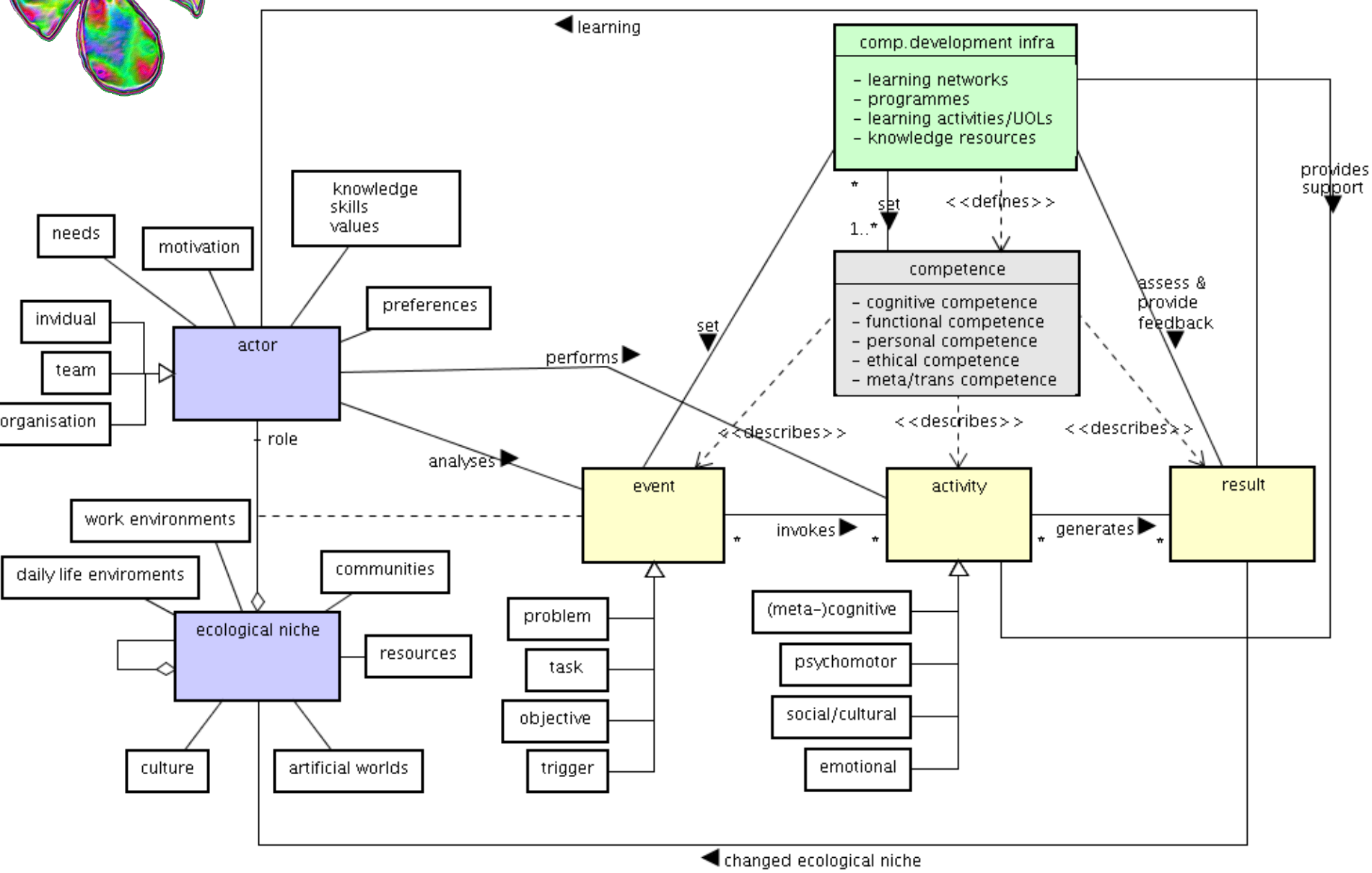
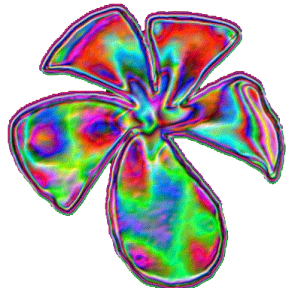
A competence is defined as the ability of an actor to act effectively and efficiently upon the events in an ecological niche (an occupation, a hobby, a market, a sport, etc.).

(short: effective performance in a domain)



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Essential aspects of the definition

- Competences are considered to be socially agreed upon abstract attributes of a person (eg, the definition of what a 'good drivers' exact abilities must be can vary from country to country).
- Competences always have proficiency levels (some drivers are better than others)
- There is not always a direct overt relationship between the objectives of a learning activity and the attainment of a competence (as is the objective of competency based learning)
- When the environment is changing: new competences have to be developed to cope with the new events



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Personal Competence Development Systems (PCDSS)

- A PCDS as is developed in the TENCompetence project is owned by a person to support his/her development of competences by managing personal 'action plans'
- The personal action plans can use learning facilities from multiple sources
- The system supports:
 - the formulation of personal learning goals
 - the provision of overviews of all the learning facilities connected to the goals
 - advise about the best solution to take
 - the planning and management of learning activities
 - assessment of competences



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Where are we in this agenda?

- Different parties developed a series of **grounding models, standards and tools** (knowledge sharing, learning design, social interaction, navigation, assessment).
- Identified some major **Use Cases**
- Developed an **Integrated Domain Model** of the Infrastructure that has to serve some critical Use Cases.
- Created some very **initial prototypes** to explore parts of the technology (Hecate, Plex) and are currently developing the TENCompetence client that is a more elaborated version



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First version

- Core Use Cases
- Domain Model (base for the data model in the system)
- Demonstration User Interface (in construction)



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Core Use Cases

1. Want to keep up-to-date in current job (or function)
2. Want to improve a specific competence
3. Want to study for a new job (or function)

Supporting Use Cases

- Want to explore the learning resources, courses, people, etc. in a new field
- Want to assess my competences for a certain job/function
- Want to reflect on my competences



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TENCC user-interface design

The screenshot shows the TENCC user interface for guitarists.net. The main window has a menu bar (File, Edit, View, Window, Help) and a title bar (guitarists.net - TENCC). The interface is divided into several panels:

- Goal:** A list of goals, including "Improve my Guitar playing" (checked) and "update web skills" (unchecked).
- Action Plan:** A table showing the progress of various activities. The "Basic chords" row is highlighted.
- Agent:** A profile for a user named Scott, featuring a cartoon avatar and a thought bubble. Below the avatar, there is a message: "A new competence was added for role Intermediate Guitar Player." with a link "Create an action plan." and another message: "User Scott joined the 'Guitar Playing Network'." with a link "Scott".
- Communities:** A section for community interaction, currently empty.
- Participants:** A list of users with their avatars: Scott, Ame, Ruud, Gizmo, and Phil.
- Forum:** A table showing forum topics, with one topic "Request for new Action Plan" by "scott" dated "9/11/2006".

Action	Status	Rating
Interactive Lesson: scales	In Progress	☆☆☆☆☆
Activity 3: Slide technique	Completed	★★★★☆
Activity 4: Rhythm	In Progress	★★★★★
Basic chords	Not Started	
Beginner scales and chords	Not Started	

Topic	Author	Date
Request for new Action Plan	scott	9/11/2006

Planning

- In the beginning of the process.....
- When you are interested to **participate** in development or in pilots, please contact me
- The **first release** is planned for beginning of next year (also the digital cinema pilot will start then in Barcelona)
- The **final release** is planned for December 2009, also the experiments and pilots in the other sectors will be finalized by then.
- When you are doing **Ph.D. research** that is related to this agenda: please participate in the Ph.D. network.

Next event: Winterschool January 2006; Innsbruck.



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Thanks!

References:

tencompetence.org

dSPACE.ou.nl



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