

Knowledge Management for Competence Management

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Content

- Overview of the *CRAI approach and objectives*
- The process architecture for competence management
- Knowledge techniques and technologies for competence management
- Conclusions

CRAI approach

- The *CRAI model (Competency Resource Aspect Individual)* which provides a formal representation of individual competencies, both *acquired and required*;
- *A set of guidelines*
 - (i) to deploy the CRAI model into a specific organisation for building its competence management information system (**CMIS**)
 - (ii) to evolve the represented required and acquired competencies;
- *A set of enquiries* that can mainly be used for evaluating various differences, including the gap, between required and acquired competencies.

Types of competence and the CRAI approach

- Individual
- Group
- Strategic (core)

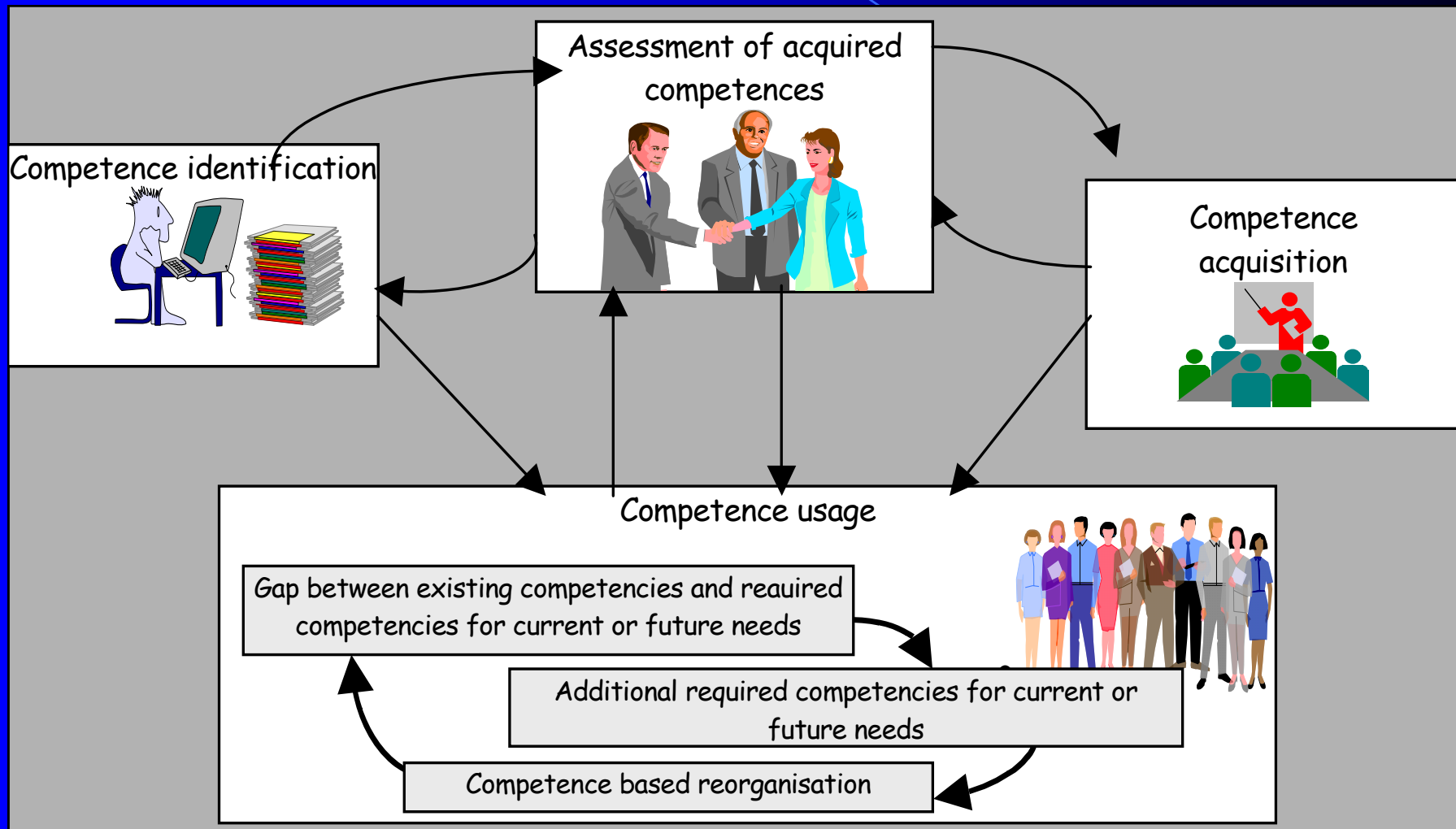
Extending the CRAI approach

- To move from the *set theory* used to formalise the CRAI model, to some *knowledge representation language*;
- To move from specific guidelines, to some *knowledge acquisition (elicitation), reasoning and extraction techniques*;
- To move from the enquiries formulated in the *set theory*, to enquiries over the represented knowledge;
- To move from database technologies to knowledge technologies.

The Objective and the Context

- **Objective:** to develop efficient and flexible computer based information systems for competence management (**CMIS**) using knowledge techniques and technologies:
 - Already applied for developing CMISs
 - Envisioned by the authors
 - Taking into account the experience gained with CRAI approach
- **Context:** It is required to understand better what the competence management is (should be); a process architecture of competence management has been specifically introduced

Proposed process architecture of the competence management



Benefits of knowledge techniques and technologies

- Knowledge techniques and technologies seem to be useful for improving *heavy tasks of competence processes*
- Knowledge techniques and technologies seem to be useful to *integrate much better the supporting CMIS* (reducing the need to perform several times the same or similar tasks).

Competence Identification

To provide the reason for requiring a competence: [CRAI]

To elicit the definition of competence:

Goal oriented modelling (exploring new competencies or relationships to tasks) [Yu, 99]
Interviews (competencies are implicitly related to employees activities) [Ley, 03] [CRAI]

Acquisition Reasoning

Do not include additional features: [CRAI]

To represent required competence:

Domain ontologies to complete the definition of a competence: [Posea, 04]
Competence and domain ontologies: [Vasconcelos, 03]
Description logics to represent ontologies: [Colucci, 03]

Competence Acquisition

To support the planning of learning inside the enterprise (enterprise and employees):

e-learning system



Learning resources
Employee's history

Extraction Reasoning

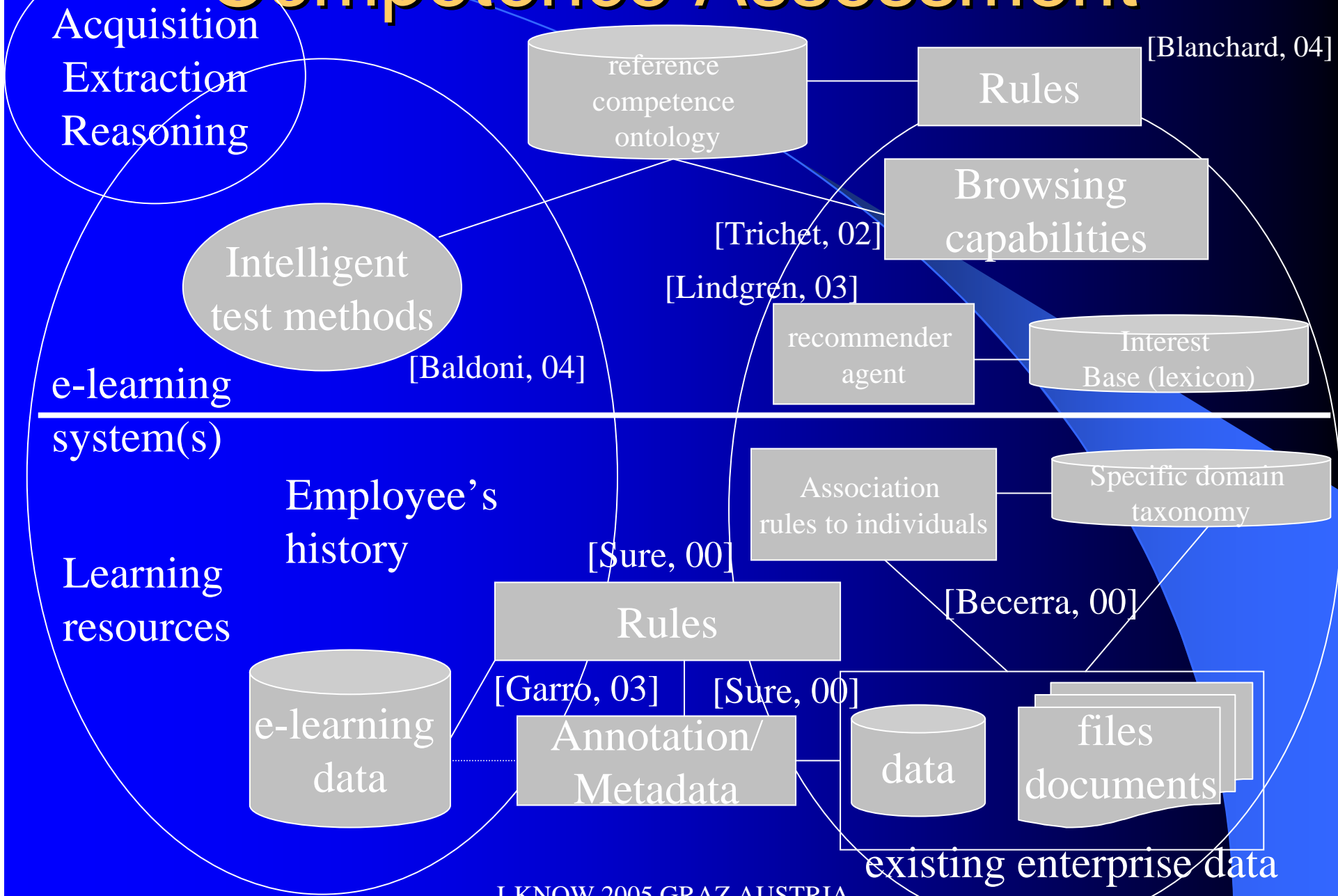
To support the recruitment of personnel:

recommender agent(s)



files
documents

Competence Assessment



Competence Assessment: Rules

- Rule on existing data: *“if an <individual> has participated to <several projects dealing with Java>, then this individual can be considered competent on Java”*
- Rule on competence reference ontology: *“ if an individual has got a <competence>, on the basis of the <competence definition>, the individual may have got <this other competence> “*
- Rule on learning objects: *“if an <individual> has a specific <learning history on programming in Java>, then can be considered <competent on Java> “*

Competence Usage

- The usage of competencies is closely related to the possibility to inquire the acquired and required competencies:
 - *similarity measures* [Colucci, 03] between competencies or
 - *approximate search* [Corby, 2004]

Conclusion: Proposed Architecture of CMIS

