Syllabus and References for Knowledge Management Part B

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http://www.aiai.ed.ac.uk/~jessicac/project/KM-2005/schedule.doc

Syllabus:

Lecture 1: Introduction to KM

- Reading: [1] Chapter 1, 4; [2]; [3].

Lecture 2: Introduction to KM – 2: and Organisational Modelling and Planning

- Reading: [1] Chapter 5 and 3 (organisational modelling); [4] (organisational planning paper).

Lecture 3: Organisational Modelling and Planning – 2

- Reading: [1] Chapter 5 and 3 (organisational modelling); [4] (organisational planning paper).

Lecture 4: Case study of Organisational Modelling

- Case study based on organisational modelling techniques.

Lecture 5: Data/Domain Modelling and Knowledge Representation

- Reading [1] Chapter 5; 13-13.2.3 and Chapter 14 for UML Class Diagram; also refer to ontology creation techniques from Stuart's part of the lecture.

Lecture 6: Knowledge Modelling Creation

- Reading [1] mainly in section 6.1, chapter 7; additional reference, chapter 5 and 6.

Lecture 7: Process Modelling and Workflow

- Reading: [8] for an introduction to workflow; [5] and [6] for process modelling framework and fundamental concepts; [1] Chapter 14 (for UML notations in class, activity and state diagrams).
- Reading: [1] Chapter 14 (for UML class, activity and state diagrams); [5] and [6] for process modelling framework and fundamental concepts.

Lecture 8: Process Modelling and Workflow Enactment - 2

- [1] (section 6.1, chapter 7) in Knowledge Engineering and Management: The CommonKADS Methodology. Guus Schreiber, Robert de Hoog, Hans Akkermans, Anjo Anjewierden, Nigel Shadbolt, Walter Van de Velde. http://www.amazon.co.uk/exec/obidos/ASIN/0262193000/qid=1091803195/sr=1-1/ref=sr_1_2_1/026-4023131-7023627.
- [5] The IDEF3 Process description language: http://www.idef.com/, pp 21- pp 51 (process schematics only, not including object schematics.)
- [14a] Prolog program Library: http://www.aiai.ed.ac.uk/~jessicac/project/prolog/.
- [1b] For understanding Prolog and Clausal Logic: Peter Flach. Simply Logical: Intelligent Reasoning by Example. Wiley Professional Computing. 1994.
- [2b] For understanding Prolog: Ian Bratko, Prolog Programming for Artificial Intelligence (2nd edition), Addison Wesley, 1986.
- [13] List library, Prolog manual: http://www.dai.ed.ac.uk/dai/computing/software_manuals/sicstus/sicstus_18.html.

Lecture 9: A Semantic Web Workflow Language

- Reading: [7] (BPML as an example).

Lecture 10: Case Study: Housing Application

- Reading [1] Chapter 10 for an example application and Chapter 12 for methods for implementing a KBS.

Lecture 10: KB Evaluation Methods and Conclusion

- Reading: [9].
- Conclusion of the course,
- Related topics not covered in this part of the course:
    - Towards a (generic) method to quantify the value of knowledge – an open (or domain-dependant) issue;
    - Web portal, web services based knowledge management;
    - Agent-based technologies;
    - Collaborative tools for KM;
    - Visualisation techniques;
    - Distributed knowledge management [10];
    - Multi-context knowledge management;
    - Experience management;
    - Business change management;
    - Business process re-engineering;
    - More business process modelling "standards";

- More semantic web "standards".

Main References:

[1] Knowledge Engineering and Management: The CommonKADS Methodology. Guus Schreiber, Robert de Hoog, Hans Akkermans, Anjo Anjewierden, Nigel Shadbolt, Walter Van de Velde. http://www.amazon.co.uk/exec/obidos/ASIN/0262193000/qid=1091803195/sr=1-1/ref=sr_1_2_1/026-4023131-7023627

[2] Alun Preece, Alan Flett and Derek Sleeman. Better knowledge management through knowledge engineering: http://www.csd.abdn.ac.uk/~apreece/research/download/ieeeis2001.pdf (see notes)

[3] Jurgen Angele, Dieter Fensel and R. Studer. What could the knowledge engineer learn from the software engineer? In D. Ehrenberg u.a. (Hrsg.), *Wissensbasierte Systeme in der Betriebswirtschaft* , Reihe betriebliche Informations- und Kommunikationssysteme, Nr. 15, Erich Schmidt Verlag, Berlin, 1990. http://www.ontoprise.de/members/angele/pubs/Leipzig.pdf (see notes)

[4] Ann Macintosh, Ian Filby and Austin Tate. Knowledge Asset Road Maps. Practical Aspects of Knowledge Management, 1998. http://www.aiai.ed.ac.uk/~oplan/documents/1998/98-pakm98-roadmaps.pdf (see notes)

[5] IDEF3: Process Description Diagram and Object State Transition Network Diagram: http://www.idef.com/. (Available from the web.)

[6] Yun-Heh Chen-Burger, Jussi Stader, Formal Support for Adaptive Workflow Systems in a Distributed Environment , Section I, Chapter of book: Workflow Handbook 2003, Editor: Layna Fischer. Published in association with Workflow Management Coalition. Publisher: Future Strategies Inc., USA, April 2003. (see notes)

[7] BPML: http://www.ebpml.org/bpml_1_0_june_02.htm. (Available from the web)

[8] Charles Plesums. Introduction to Workflow. Workflow Handbook 2002. (see notes).

[9] Alun Preece. Evaluating Verification and Validation Methods in Knowledge Engineering:http://www.csd.abdn.ac.uk/~apreece/research/download/mkm2001.pdf (see notes)

[10] Matteo Bonifacio, Paolo Bouquet and Alberto Manzardo. A Distributed Intelligence Paradigm for Knowledge Management. http://eprints.biblio.unitn.it/archive/00000221/. (see notes)

[11] UML notation, class diagram: http://www.agilemodeling.com/artifacts/classDiagram.htm.

[12] John Sowa, Ontology: http://www.jfsowa.com/ontology/index.htm.

[13] List library, Prolog manual: http://www.dai.ed.ac.uk/dai/computing/software_manuals/sicstus/sicstus_18.html.

Additional References: (for advanced interests only)

Advanced Publications:

- [1a] Professor Jim Hendler: Mindswap: http://www.mindswap.org/papers/.
- [2a] Professor. Dr. Jurgen Angele's web page: http://www.ontoprise.de/members/angele/publications.htm
- [3a] SIGSEMIS: Semantic Web and Information Systems: http://www.sigsemis.org/
- [4a] Workflow standard languages: http://www.ebpml.org/bpml.htm
- [5a] Workflow standard body: WfMC: http://www.wfmc.org/.
- [6a] Workflow standard body. BPMI: http://www.bpmi.org/.
- [7a] Yun-Heh Chen-Burger and Dave Robertson. Automating Business Modelling. Book Series of Advanced Information and Knowledge Processing, Springer Ver-Lag, December 2004 .
- [8a] Dave Robertson and Jaume Agusti. Software Blueprints: Lightweight Uses of Logic in Conceptual Modelling. Addison Wesley, May, 1999.
- [9a] Pamela Zave and Michael Jackson, Four Dark Corners of Requirements Engineer, ACM Transactions on Software Engineering and Methodology, 6 (1), Jan 1997, pp. 1-30.
- [10a] notes on definitions by Norman Swartz: http://www.sfu.ca/philosophy/swartz/definitions.htm.
- [11a] OWL Overview: http://www.w3.org/TR/owl-features/.
- [12a] RDF: http://www.w3.org/RDF/.
- [13a] RDFS: http://www.w3.org/TR/rdf-schema/.
- [14a] Prolog Library: http://www.aiai.ed.ac.uk/~jessicac/project/prolog/.
- [15a] OWL Reference: http://www.w3.org/TR/2004/REC-owl-guide-20040210/#DisjointClasses.
- [16a] Yun-Heh Chen-Burger and Dave Robertson. Automating Business Modelling. Book Series of Advanced Information and Knowledge Processing, Springer Ver-Lag, December 2004.
- [17a] Tom Gruber: What is an ontology?. http://www-ksl.stanford.edu/kst/what-is-an-ontology.html.
- [18a] Violeta Damjanovic. The Semantic Web Trends in Brief. Semantic Web Technologies Column for the Bi-monthly Semantic Web and Information Systems: Cultivating The Semantic Web Vision in Information System Newsletter. AIS SIGSEMIS Bulletin 1(3) October 2004.

Additional Background Reading:

- [1b] For understanding Prolog and Clausal Logic: Peter Flach. Simply Logical: Intelligent Reasoning by Example. Wiley Professional Computing. 1994.
- [2b] For learning Prolog: Ian Bratko, Prolog Programming for Artificial Intelligence (2nd edition), Addison Wesley, 1986.

Tools and applications:

- DERI International: Dieter Fensel: http://www.deri.org/
- Mindswap: Jim Hendler: http://www.mindswap.org/demos/
- IBM Lotus: http://www-306.ibm.com/software/lotus/
- Knowledge Angels: an on-line community: http://www.knowledgeboard.com/index.html
- Star Gazer, a software for on-line community: http://www.stargazer.com/
- Yahoo Groups example: AI-Seminars: http://groups.yahoo.com/group/ai-seminars/.