
LCT – European Masters Program in Language and Communication Technologies

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Erasmus Mundus



UNIVERSITÄT
DES
SAARLANDES

What is Language Technology

- Language Technology (LT): processing of spoken and written language, speech, gestures and facial expressions, digital texts, pictures and sounds, multimodal communication, multimedia documents
- LT: a truly interdisciplinary endeavour – computational and theoretical linguistics, computer science, mathematics, electrical engineering, psychology



LT in Europe

- Language and communication technologies: a central position in multilingual European education and research
- Key enabling technologies for applications: multilingual document production and management, intelligent web search and semantic web, voice control of electronic equipment, automated dialogue, language learning, e-learning, creation and maintenance of multilingual language resources



LT in Europe

- The market is growing rapidly
- Shortage of qualified researchers and developers is slowing down the speed of innovation in Europe
- Increase the competitiveness of European education in language and communication technologies



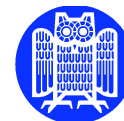
LT in Europe

- Increase at the same time the competitiveness of European IT industries
- Multilingual Information Society accessible for all
- Turn the „information overload“ into a wealth of accessible and useful knowledge



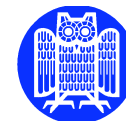
LT in Europe through LCT

- Consortium of 6 EU & 2 overseas Universities.
- Jointly developed curriculum making up a common, 2-year full-time Masters course.
- Study at a pair of universities in the consortium.
- 1 year at each University.
- Double degree.



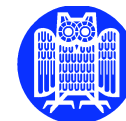
LCT Consortium

- Saarland University (Germany, coordinator)
- University of Malta (Malta)
- Charles University, Prague (Czech Republic)
- Free University of Bozen–Bolzano (Italy)
- University of Nancy 2 (France)
- University of Groningen (The Netherlands)
- Shanghai Jiao Tong University (China)
- University of Melbourne (Australia)



Main implementation issues

- **Choice of university pairs for students:** balance between CS and CL should be maintained.
- **Practical issues for the coordinator & partners:** grades, examination procedures, admission procedure, tuition fees, defense of the thesis, local specialties existing at some partner universities etc.
- **First attempt to create a comprehensive Masters degree** in this subject area that conforms to all the legalistic requirements of each participating University.
- **Students** completing the course **possess a Masters (M.Sc.) degree** delivered by **two** of the participant **Universities** & the **EM LCT Diploma Supplement** issued by the coordinator.



Computer Science Modules

- **Logic, Computability and Complexity (≥ 9)**

Courses: Logic & inference; Computability theory; Complexity theory; Discrete mathematics

- **Formal Languages and Algorithms (≥ 9)**

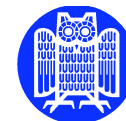
Courses: Formal grammars and languages hierarchy; Parsing and compiler design; Search techniques and constraint resolution; Automated Learning

- **Data Structures, Data Organization and Processing (≥ 6)**

Courses: Algebraic data types; Relational databases; Semi-structured data and XML; Information retrieval; Digital libraries

- **Advanced Modules and Applications (≥ 6)**

Courses: Artificial Intelligence, Knowledge Representation, Automated Reasoning, Semantic Web, Neural Networks, Machine Learning etc.



Language Technology Modules

- **Foundations of Language Technology (≥ 6)**

Courses: Statistical methods; Symbolic methods; Cognition; Corpus Linguistics; Text and speech; Foundations of Linguistics

- **Computational Syntax and Morphology (≥ 9)**

Courses: Finite state methods; Probabilistic approaches; Formal grammars; Tagging; Chunk-ing; Parsing

- **Computational Semantics, Pragmatics and Discourse (≥ 6)**

Courses: Syntax-semantics interface; Semantic construction; Dialogue; Formal semantics

- **Advanced Modules and Applications (≥ 6)**

Courses: Machine Translation, Information Retrieval, Speech Recognition, Question Answering, Psycholinguistics etc.



LCT in the real world

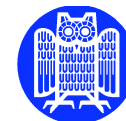
Strategic Advisory Board:

- CoLogNET
- Xerox Research Center Europe
- FoLLi
- Italian Association for Artificial Intelligence
- EACL
- Italian Association for Speech Science
- CELI
- ITC - irst
- IBM Denmark
- Scansoft Belgium
- Loria
- Center of Language Studies of FUB
- DFKI



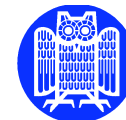
SAB & Other QA Mechanisms

- We address the evaluation and QA of LCT in 3 ways:
 - Local evaluation
 - Common evaluation
 - External evaluation



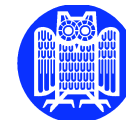
LCT QA: Local Evaluation

- Each partner performs local evaluation of the program in order to monitor each of the offered courses.
- All questionnaires are in English.
- Results are discussed at the annual meeting of the EM LCT Joint Steering and Examination Commission.



LCT QA: Common Evaluation

- Centralised evaluation & information about all partner universities is gathered by the coordinator.
- Global evaluation which aims at determining the proper evolution of each of the partner universities.



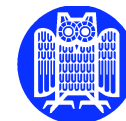
LCT QA: Common Evaluation

- Common questionnaire in electronic form which evaluates the general level of:
 - lectures, lecturers, teaching material
 - logistics and admin at each site
 - cultural integration facilities
 - accommodation
 - university services



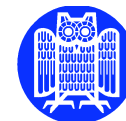
LCT QA: Common Evaluation

- Evaluation is published on the website of the coordinator for future reference.
- All the issues raised by the evaluation are treated by the EM LCT Joint Steering and Examination Commission.
- The Commission provides feedback to the partner universities and makes suggestions for improvements.



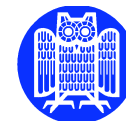
LCT QA: External Evaluation

- The Strategic Advisory Board (SAB) carries out the following tasks:
 - indicate market directions
 - monitor & supervise students during their courses, projects & thesis writing
 - participate in yearly discussions of the study plan with the Joint Commission
 - help the consortium evaluate the results of the QA mechanisms



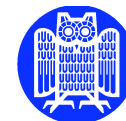
LCT QA: External Evaluation

- A general evaluation by external experts is planned in addition to all mentioned before.
- It will take place at the end of the 3rd year of the program, i.e., at the end of the academic year 2009-2010.
- External experts will be proposed by the Joint Commission and approved by the SAB.



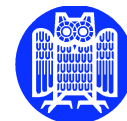
Sustainability & Employability

- The Strategic Advisory Board (SAB):
 - helps us develop study plans that provide students with competences required by the industry and for application-oriented research
 - this way it helps maintaining the high quality of our program
 - strengthens ties between European industry & academia
 - creates opportunities for joint research projects which helps Europe become a world quality reference in the IT education, training & research
 - guarantees the development of graduate profiles required by the market



Conclusion: LCT Impact

- The EM LCT Consortium
 - works towards creating standards and helping in the development of the LCT Body of Knowledge – see similar bodies in Computer Science:
<http://www.sigcse.org/cc2001/cs-overview-bok.html>
 - ensures that the courses taught under the various Language Technology & Computer Science modules are regularly updated with an eye to current academic & industrial needs



Conclusion: LCT Impact

- The EM LCT Consortium
 - will install procedures to trace the progress of its graduates after completing the masters course
 - the aim of this effort is to pinpoint the influence that the course is having over 5 years
 - publish the result of this study with the final project report



References

Kordoni, Valia, Hans Uszkoreit, Vladislav Kubon, Mike Rosner and Sabine Kirchmeier-Andersen. 2005. Language Technology from a European Perspective. In Chris Brew and Dragomir R. Radev (eds.), *Proceedings of the Second ACL Workshop on Effective Tools and Methodologies for Teaching NLP and CL*, pp. 43 - 48, University of Michigan - Ann Arbor, June 2005,

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