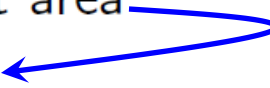# Part 4

- *Sources of information for what to study*
- *Choosing a project*
- *Preparing a project proposal*

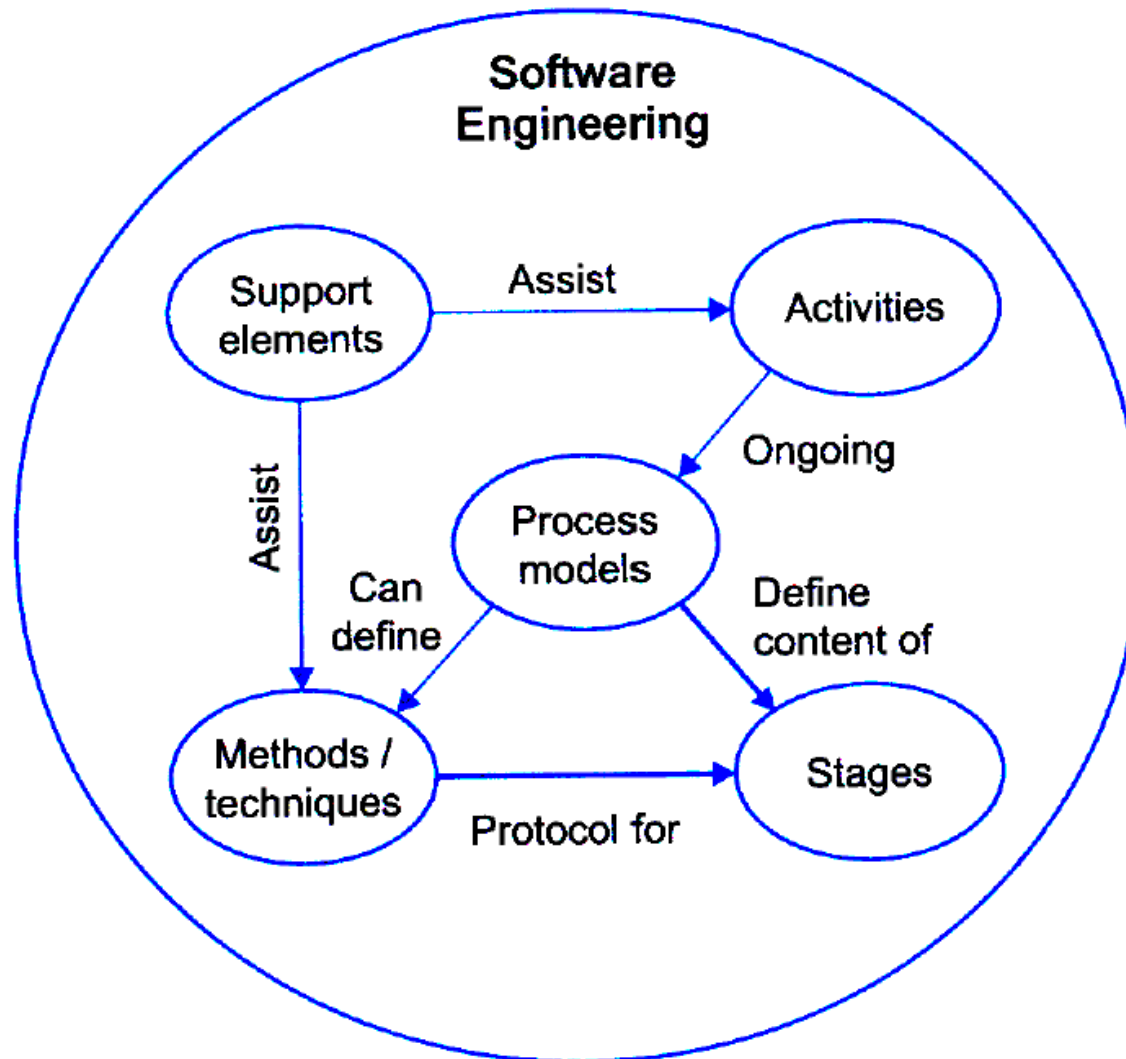**Research Methods in Computer Science**

Ullrich Hustadt

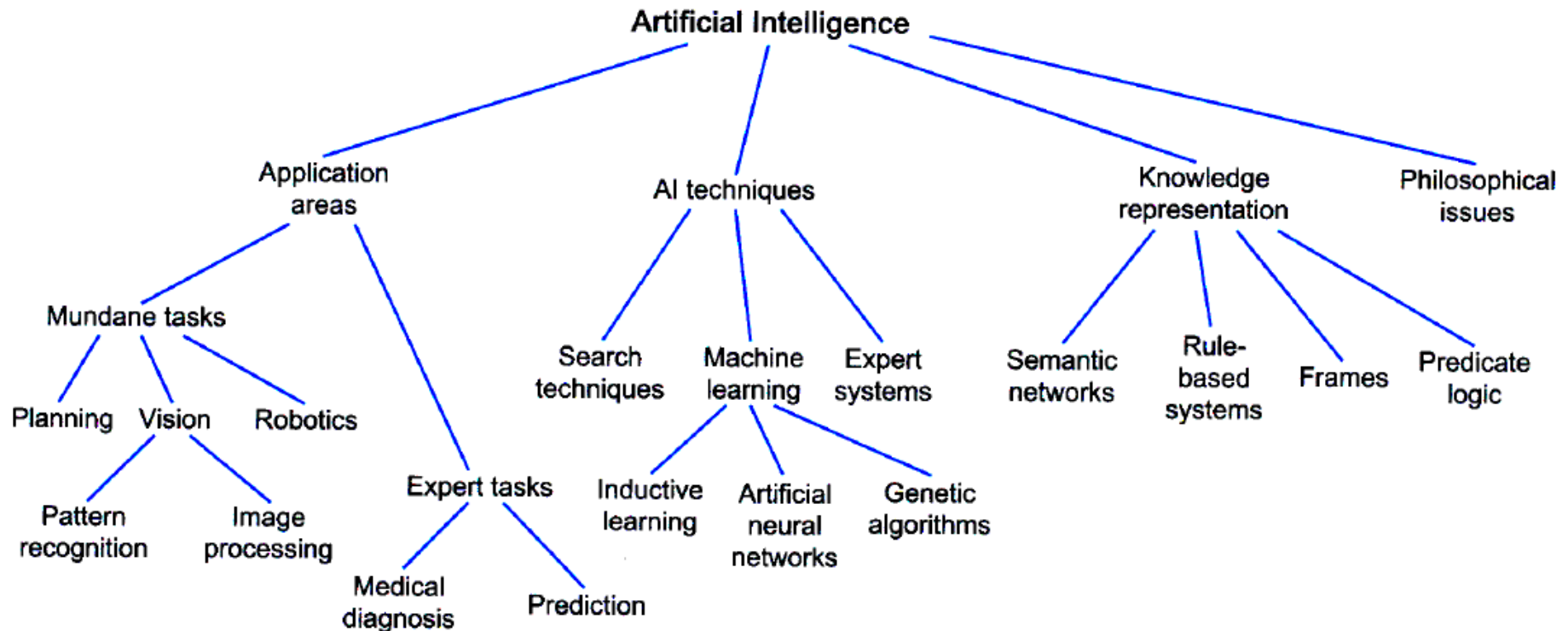Department of Computer Science
University of Liverpool

Sources of information

- Proposals by academic staff or departments
- Past projects
- Brainstorming
- Your own goals and learning objectives
- Reading about / working in the subject area
- Systematic analysis of the subject area
    - Research Territory Maps
      Show how topics related to each other
    - Relevance Trees
      Break down a particular subject or research question into lower and lower levels of detail
    - Spider Diagrams
      Combines features of Research Territory Maps with those of Relevance Trees
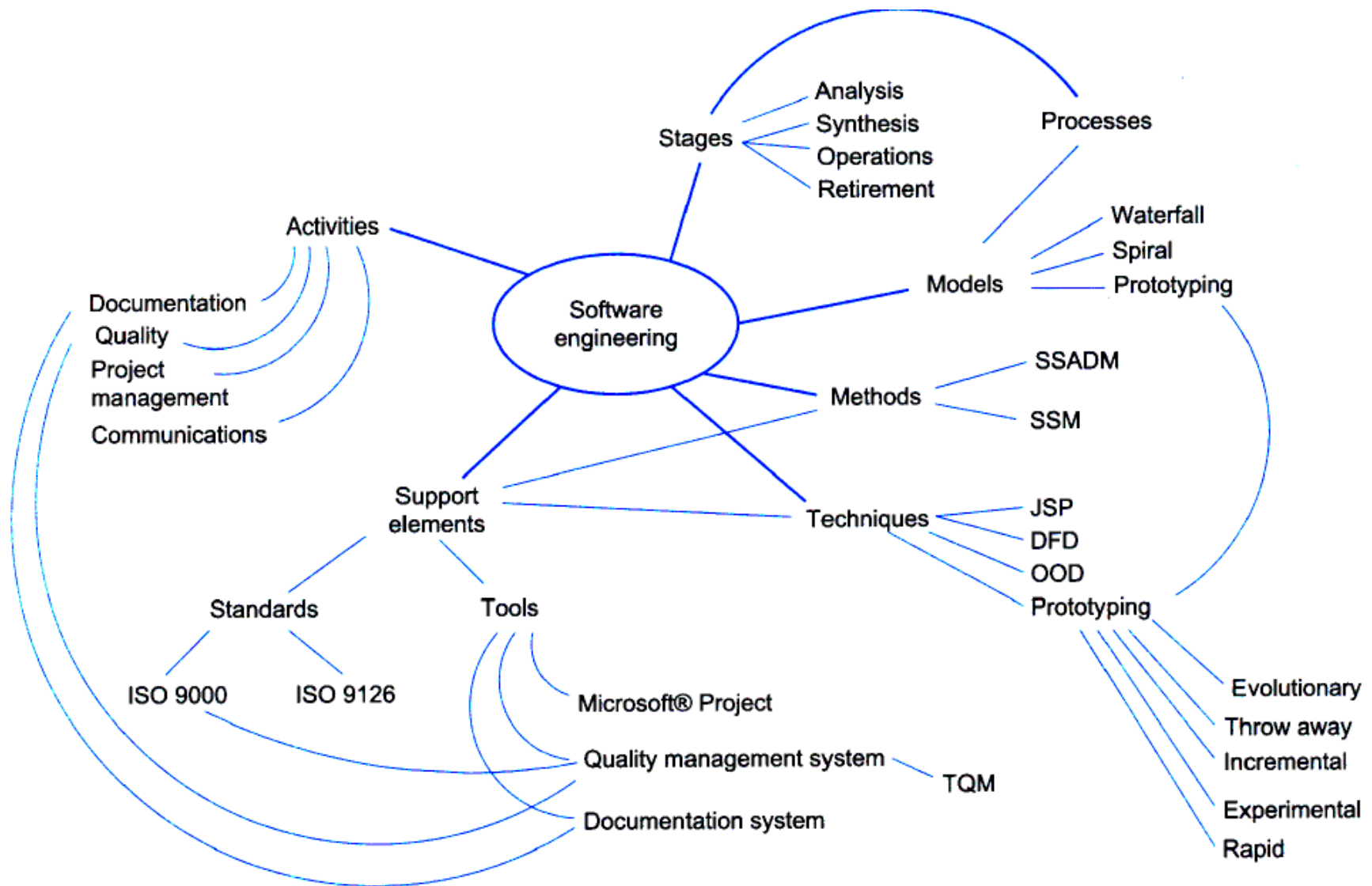
Territory maps: an example

Relevance trees: an example

Spider diagrams: an example

Choosing a project

- The project needs to be within your capabilities
- The project needs to have sufficient scope
- The project needs to interest you
- The project needs to have a serious purpose
- The project needs to have a clear outcome
- The project needs to be related to your degree programme
- The resources required for the project are available or can be obtained

Suitability tests for projects

- 'So what?' test
  Is the topic meaningful?
  Will it be of value for anyone?
  What contribution will it make?

- Justification
  Can you explain your project and justify it in simple terms?

- Estimating your understanding
  Can you put a figure on what you know about your chosen subject?

- Contacts
  Are the contacts you require for your project (including your supervisor) available, accessible, and willing to help?

- Project proposal
  Can you write a substantive proposal for your project?

Preparing a project proposal: Implicit content

- Introduction to the subject area
  - Sets the context for the project
  - Should motivate the relevance of the subject area
- Overview of current research in the area
  - Demonstrates current activities in the subject area
  - Shows your understanding of current research
- Identify a gap
  - Identify a need for further investigation or re-interpretation
- Identify how your work fills the gap
  - Explain how your project fills the gap
- Identify risks and solutions
  - Highlight the benefits that can be derived from your project
  - Account for the risks to your project

Preparing a project proposal: Explicit structure

- **Title**

  Clear, Concise, Preferably no acronyms

- **Aims and Objectives**

  Aims: Broad statement(s) of intent

                 Identify the project's purpose

  Objectives: Identify specific, measurable achievements

                 Quantitative and qualitative measures by which completion

                 of the project can be judged

- **Expected outcomes/deliverables**

  Identify what will be produced/submitted in the project

- **Keywords**

  Identify the topic areas that the project draws on

Preparing a project proposal: Explicit structure

- Introduction/Background/Overview
  - Overview of the project (Identification of research questions and hypotheses, elaboration of aims)
  - Motivation for the project
  - Motivation for you conducting the project
- Related Research
  Identifies other work, publications, and related to the same/similar topic
- Methods
  Identifies the research methods and project methods that will be used (e.g. theoretical investigation, case study)
- Research Requirements
  Identifies the resources that will be needed for the project (e.g. hardware, software, data, personnel)
- Project Plan
  - More or less detailed 'timetable' for the project
  - Deadlines for deliverables

Conclusion

- Choosing the right project is an important stage in any project
- There are a number of techniques that can assist you with choosing the right project
- In a project proposal or project specification
  - stick to the required structure and
  - address all the guiding questions as precisely as possible

End of Part 4

- *Sources of information for what to study*
- *Choosing a project*
- *Preparing a project proposal*

Research Methods in Computer Science

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