



## Visions for Prococure 2

- Future of guideline development in medicine
- Computer-support for guideline development
- Role of formal methods in guideline development

# Future of Guidelines in Medicine

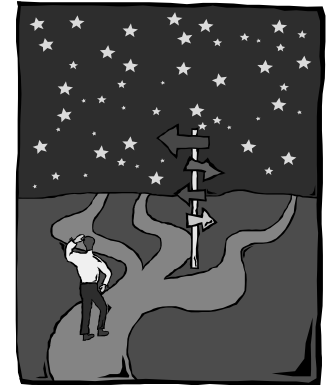
- Medicine is becoming more and more complicated:
  - Role of biological information is increasing (information overload)
  - Appropriate application of procedures and treatments is becoming harder
  - Superspecialisation will continue
- Greater need for guidelines to support the non-experts

# Role of Computer Science

- Search for literature which acts as a foundation for the guideline
- Combining different sources of information
- Structuring the guideline according to fixed rules
- Making guidelines interactive and adaptable to the individual
- Electronic availability

# Requirements for Computerisation

- Medical terminology with a well-defined semantics  $\Rightarrow$  ontologies (e.g. MeSH, Medical Subject Headings by the NLM)
- Abstract notions, describing the medical decision-making process:
  - Diagnosis (problem solving)
  - Treatment selection and planning
  - Follow up
- Empirical research into the usefulness of guidelines



# Use of Formal Methods

- Integrated into the process of design of guidelines
- Assistance in supplying precise, abstract definitions of core notions of medical management
- Assistance in structuring guidelines in terms of constructs (e.g. as offered by ASBRU)
- Formal verification of crucial fragments of guidelines



## Formal Methods are more Useful

- If an ontology is already available
- If the methods used in medicine are clearly defined
- If the intentions of medical management of a disease are clearly defined
- If good quality tools for the utilisation of formal methods are available
- If formal methods also can be used in the context of empirical research (data)

## Suggestions for Procure 2

- Focus on the design of guidelines (y/n)
- Investigate the role of ontologies (y/n)
- Formalise core methods in medicine (diagnosis, treatment) in the context of guidelines (y/n)
- Get access to background knowledge underlying guidelines (y/n)
- Verify crucial parts of guidelines, which are selected by experts (y/n)
- ...