

## Knowledge Based Systems

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## Goal of this Slides

- Short introduction of FAW
- Some statements to the knowledge based decision support module
  - in context of the SAMCO network
  - and possible proposals for EU funded projects

➔ **The slides should form a starting basis  
for a constructive discussion at the workshop**

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## Introduction of FAW



### Portrait

**1990 Foundation** by Univ. Prof. Dr. Roland Wagner

since **1993 Site** at Softwarepark Hagenberg

since **1997 Integration** at the University of Linz

since **1999 Academic Partner of the SCCH**  
(Software Competence Center Hagenberg )

#### 4 Locations

University of Linz, SWP Hagenberg  
Techn. University of Prague and Vienna



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## Introduction of FAW



### Fields of Activity

#### Research

- Projects
- Publicationens
- Dissertations
- Conferences



#### Transfer of Technology

- R&D Projects
- Concepts
- Consulting
- Seminars
- Conferences



#### Teaching

- Information Systems
- Data Modeling
- Information Retrieval und Hypermedia Techniques
- Web Engineering
- Knowledge Based Systems



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## Introduction of FAW



### FAW – open to industry

- Besides research and teaching - the main tasks of an University Institute - FAW is co-operating intensively with industrial partners since its beginning.
- More than 80 projects with national and international partners from industry, economy and public administration have been implemented successfully. The project domains are Information Systems, Knowledge Based Systems and E-Commerce.
- Three samples:
  - **Tiscover** – A tourism information system on the web with online booking
  - **SAVE** – Security training in knowledge based virtual reality
  - **DOKAB** - Medical documentation, management of therapies and settlement of medical services



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## Knowledge Based Decision Support supporting operational and structural health monitoring of Buildings



### Objectives

- Development of an open and dynamic knowledge based decision support system which supports engineers in diagnostic- and risk assessment tasks
- Development of new concepts of knowledge acquisition and decision support for that specific application domain
- Integrating internal data from several sources (e.g. sensor data) and external data (e.g. weather data)
- Test and evaluation of several artificial intelligence techniques

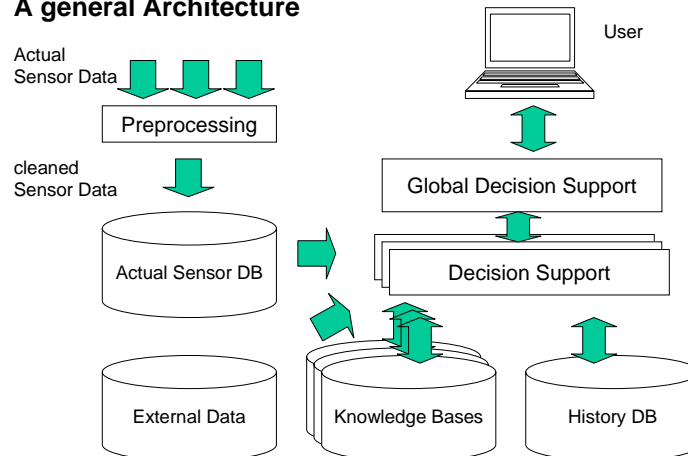
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## Knowledge Based Decision Support

supporting operational and structural health monitoring of Buildings



### A general Architecture



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## Knowledge Based Decision Support

supporting operational and structural health monitoring of Buildings



### Main Challenges

- Come into the domain knowledge (for FAW)
- Manage the huge amount of data
- Deal with meta data in the right way
- Enrich the system with external data
- Knowledge representation
- Knowledge acquisition
- Autonomous learning
- User Interface

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## Knowledge Based Decision Support

supporting operational and structural health monitoring of Buildings



### Possible Techniques

- Signal Processing and Pattern Recognition
- Neural Networks
- Fuzzy Logic and Fuzzy Control
- Case Based Reasoning
- Rule Based Reasoning
- Traditional logic based approaches

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## Knowledge Based Decision Support

supporting operational and structural health monitoring of Buildings



### Work Packages

- Current Practice
- Requirements analysis
- First evaluation of general methods and techniques  
(knowledge acquisition, representation, processing and discovery)
- Modeling and setting up the knowledge bases
- Implementing the decision support algorithms
- System assembly
- Verification

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