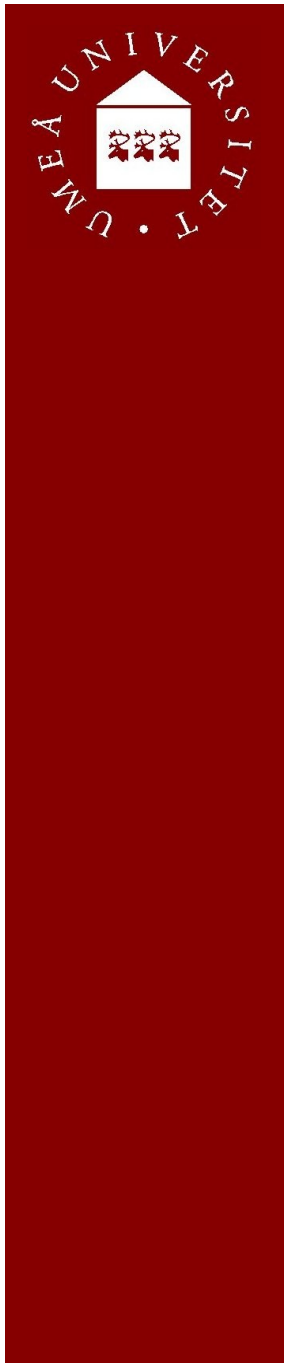

Requirements Engineering @ Umeå University

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CS @ UmU

- 5 Professors (none in SE)
- ~10 Senior Lecturers (one in SE)
- 4 study programs
  - Datavetenskap
  - Teknisk datavetenskap
  - Interaktion och Design
  - Kognitionsvetenskap
  - “International” Masters program in CS
- ~22 PhD students (3 in SE, ~5 in Cognitive Science/HCI)

RE Research

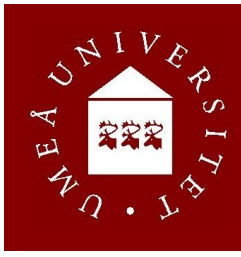
- SE and RE groups are roughly identical
- Research areas
  - (WGSEET, SWEBOK, CCSE)
  - SPI (all)
  - Reuse (JB + OÅ)
  - Tools for use case based development (JB)
  - Requirements management/ measurement (AL)
  - Software Product Lines (ME)
- Current research partners
  - Hägglunds Vehicle (Ö'vik)
  - Fujaba group

The RECORD Project

REquirements **CO**llection, **R**euse and **D**ocumentation

- Use case based requirements
- Tight collaboration with customers/end users
- Traceability between models
- Integration with common tools

- Linguistic analysis to generate initial design:
  - Noun phrases → objects / classes
  - Verb phrases → methods
  - Adjectives → attributes
  - ...



More Advanced Linguistic Analysis á la *KISS* ([Krist 94])

{Subject} {Predicate} {Direct object} [{Preposition} {Indirect object}]

- The subject carries out (controls) an action
- The direct object undergoes this action
- The action results in a state change in the direct object
- The indirect object collaborates to perform the action
- The predicate contains or describes the action
- The preposition indicates the type or kind of collaboration (relationship)

An Example Use Case

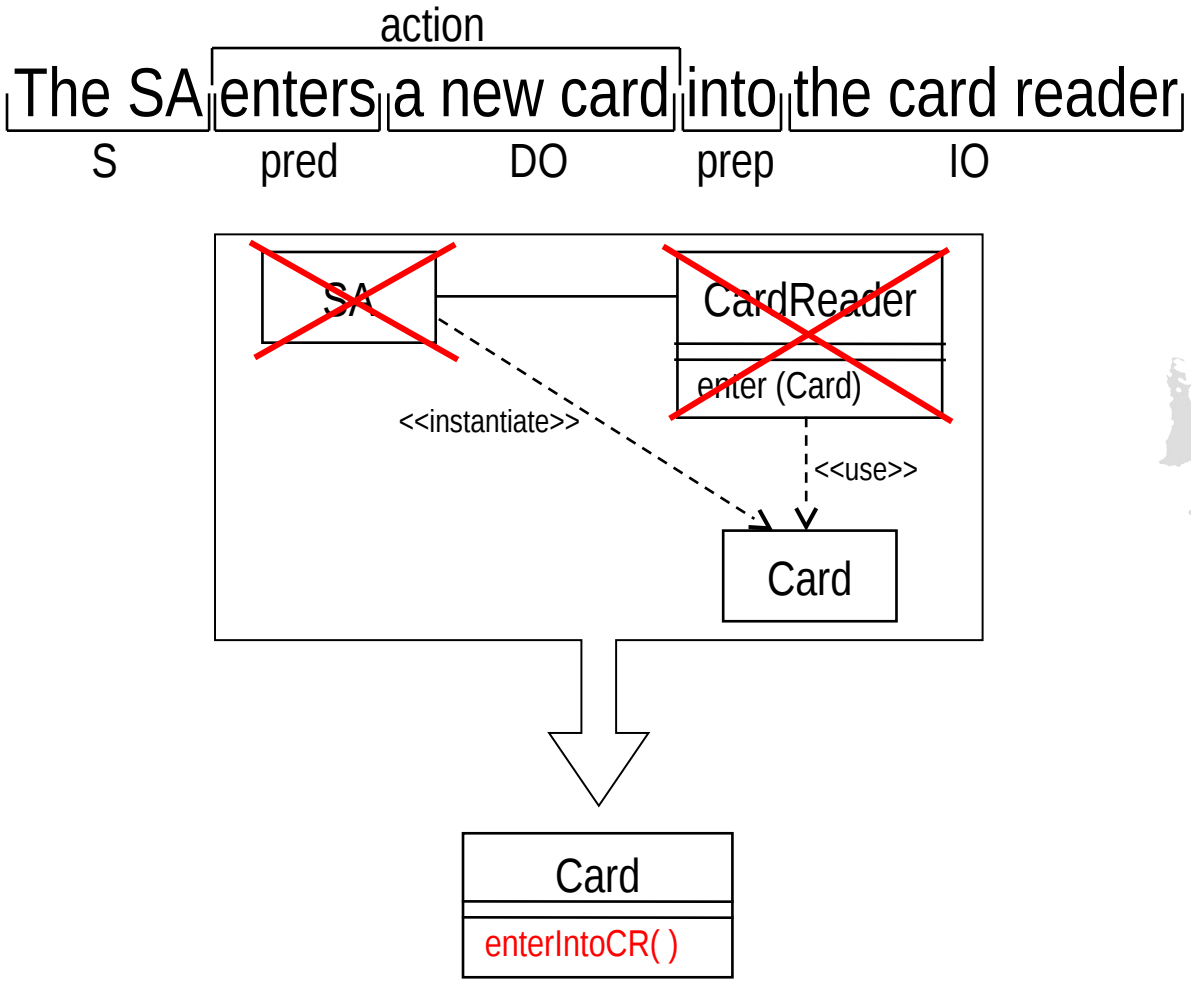
use case: Register New Card

actor: System administrator (SA)
summary: ...
preconditions: The system is idle
actions:

1. *Enter admin mode*
2. The SA enters a new card into the cardreader
3. The system validates the card
4. The system registers the card in the database
5. *Enter new code*

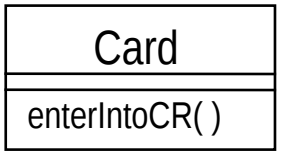
postconditions: The new card is registered in database
The new card has a valid code
exceptions: 3: Card invalid

Example Analysis 1

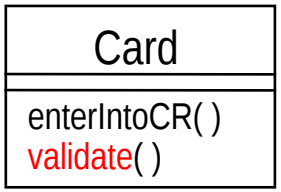


- The subject controls an action
- The direct object undergoes this action
- The action results in a state change in the direct object
- The predicate contains or describes the action
- The indirect object collaborates to perform the action
- The preposition indicates the type or kind of collaboration
- Actors are (usually) outside the scope of the system

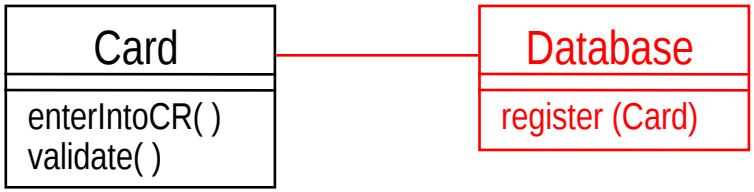
Example Analysis 2



The system validates the card



The system registers the card in the database



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Results

- Prototypes á la KISS method
- More recently using NLP tools (Link grammar, WordNet)
- Integrated into Fujaba together with an editor for sequence diagrams (almost)

- Goals:
  - Work with non-technical customers/end users to prove concept
  - Evaluate typical use case formats/writing guidelines/styles
  - Find use case “patterns”

- Needs:
  - “Real” use case models

RE Education

- No courses that focus on RE
- Basic SE course (5 cr)
- OO team project (10 cr)
- FU course on OOA&D using CRC cards (3 cr)
- CRC cards and sequence diagrams already in 1st course
- Quality/SPI course planned
- RE course planned

- Define SE track comprising 20 cr

Wish List

- Research
  - Exchange experiences
  - Find related projects
  - Find “real” use case examples for RECORD project (and other things)
  - Write research proposals together
- Education
  - Empirical SE/RE course
  - SPI course
  - ...
    - RE graduate school?