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Introduction to i*-Modelling Language

Goal Oriented Requirements Engineering

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Goal Oriented Requirements Engineering – GORE

ISO on Requirements Engineering:

> *„Requirements engineering is concerned with discovering, eliciting, developing, analyzing, determining verification methods, validating, communicating, documenting, and managing requirements.“ [4, p.6]*

Goals – Van Lamsweerde

> *„an objective that the system under consideration should achive“ [9, p.250]*

Requirements – Van Lamsweerde

> *„A goal under the responsibility of a single agent […] becomes a requirement“ [9, p.250]*

Goal Oriented Requirements Engineering – GORE [7]

Goal = more general, aspirational, can be idealised

Requirements = define properties and behaviour of a system

https://twitter.com/rrenable/status/651395839340990464 (06.06.2021)

GORE – WHAT ARE GOALS GOOD FOR?

- to achieve requirements completeness
- to avoid irrelevant requirements
- to explain requirements to stakeholders
- to provide a natural mechanism to structure complex requirements
- to find alternative goal refinements
- to manage conflicts among multiple viewpoints
- to separate stable from unstable information
- to use goals as a driving force

Well known GORE modelling languages: KAOS [3] and i* [11]

AGENT ORIENTED REQUIREMENTS ENGINEERING [11, 12]

- Builds upon GORE
- Requirements engineering as improving relationships
  - Special emphasis on the involved social relations
- Applicable for the early phase of requirements engineering
  - Model the motivation for the system-to-be
- Can model dependencies, intentions, interests, reasons of actors
- Understands actors as (semi)-autonomously

I* – A SOCIAL MODELLING FRAMEWORK

- Modelling framework for requirements engineering
- Developed by Eric Yu in 1995 [11]
- Current version: i*2.0 [2]
- Domain specific extensions available [5]

HANDS ON INTRODUCTION TO I*

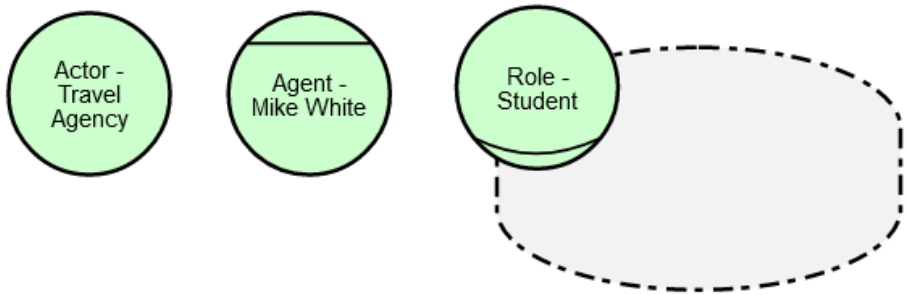
Online tool for i*: piStar-Tool

Scenario: Travel booking system of a university (for example conferences)

A student, Mike White, wants to go to a conference, because the student has a presentation there. For the student to be able to travel to the conference several goals and tasks must be met. The student can either book the trip (accommodation, and travel) him/herself, or book a complete bundle via a travel agency.

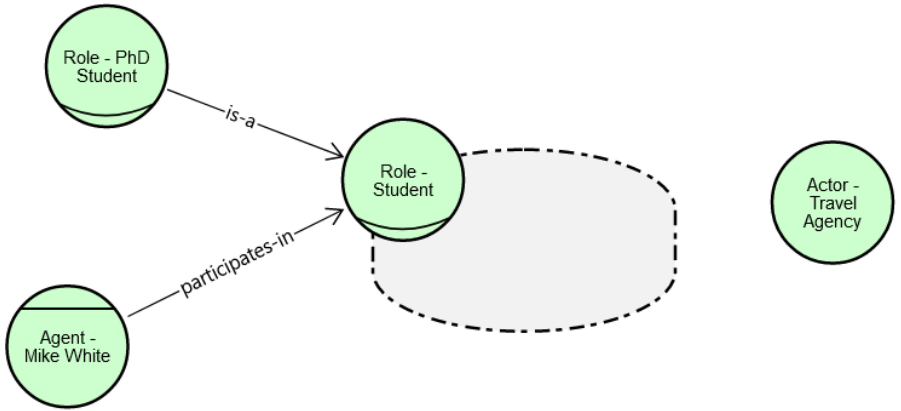
ACTOR, AGENT, ROLE, ACTOR BOUNDARY

- Student
- Mike White
- Travel Agency



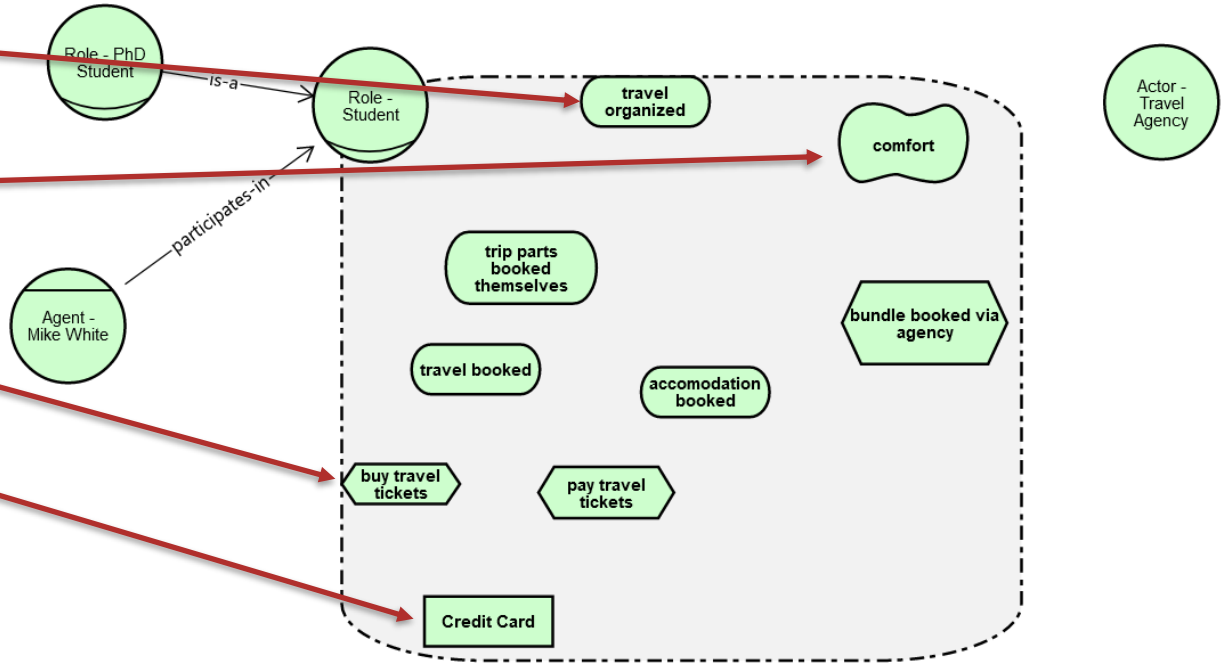
ACTOR ASSOCIATION LINKS

- Is a
  - Generalization/specialization
- Participates in
  - Any other association



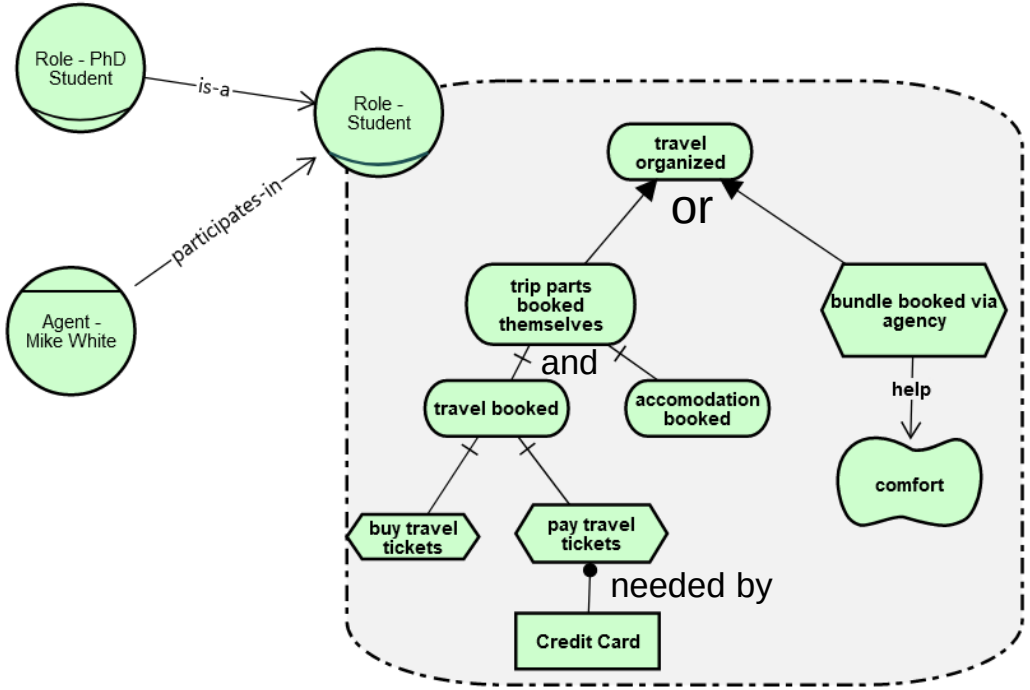
INTENTIONAL ELEMENTS

- Goal
- Quality
- Task
- Resource



INTENTIONAL ELEMENT LINKS

- Refinement
  - AND, OR (inclusive)
- Needed By
- Contribution
  - Make ++
  - Help +
  - Hurt -
  - Break --
- Qualification



SOCIAL DEPENDENCIES

- Depender
  - Who is dependent of someone?
- Depender element
  - Intentional element within the dependers actor‘s bounday
- Dependum
  - Intentional element that is the object of dependency
- Dependee
  - Actor that should provide the dependum
- Dependee element
  - Explains how the dependee intents to provide the dependum

- Student
- Travel Agency
- Bundle booked via agency
- Trip bundle booked
- Bundle booked with travel agency program

Depender

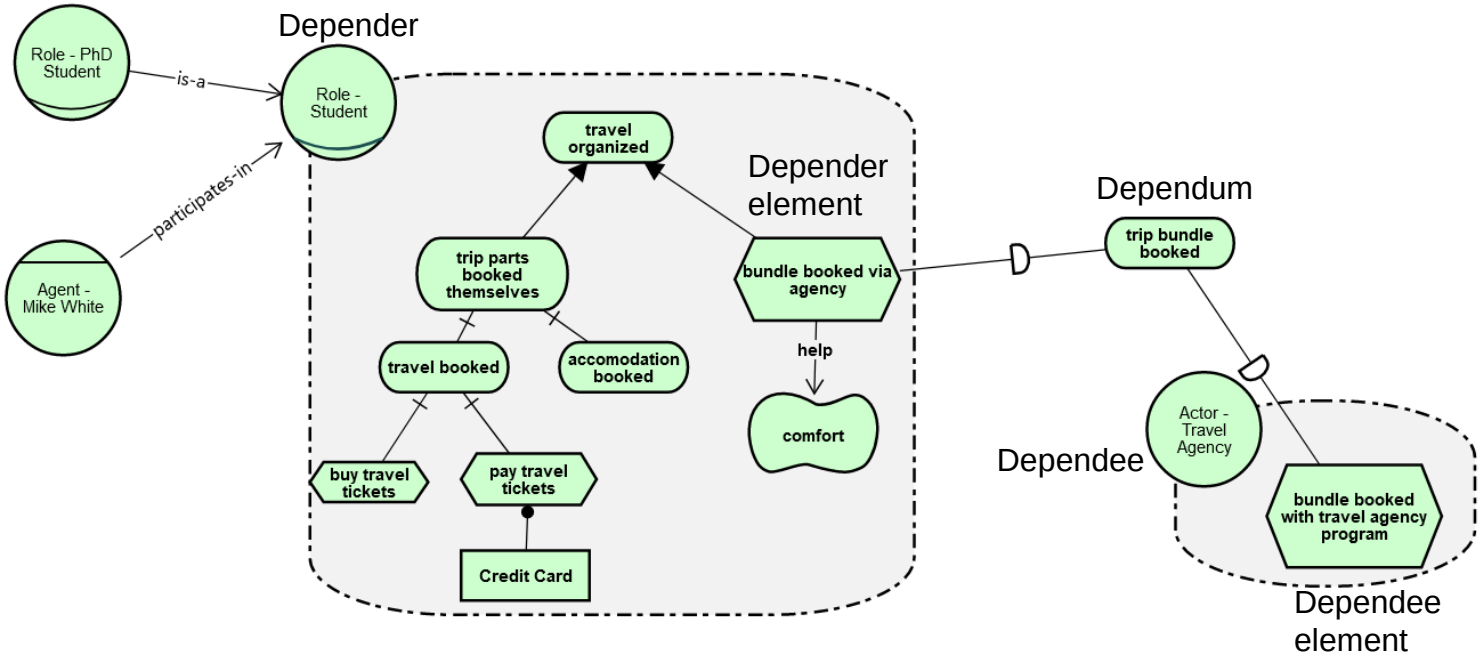
Dependee

Depender element

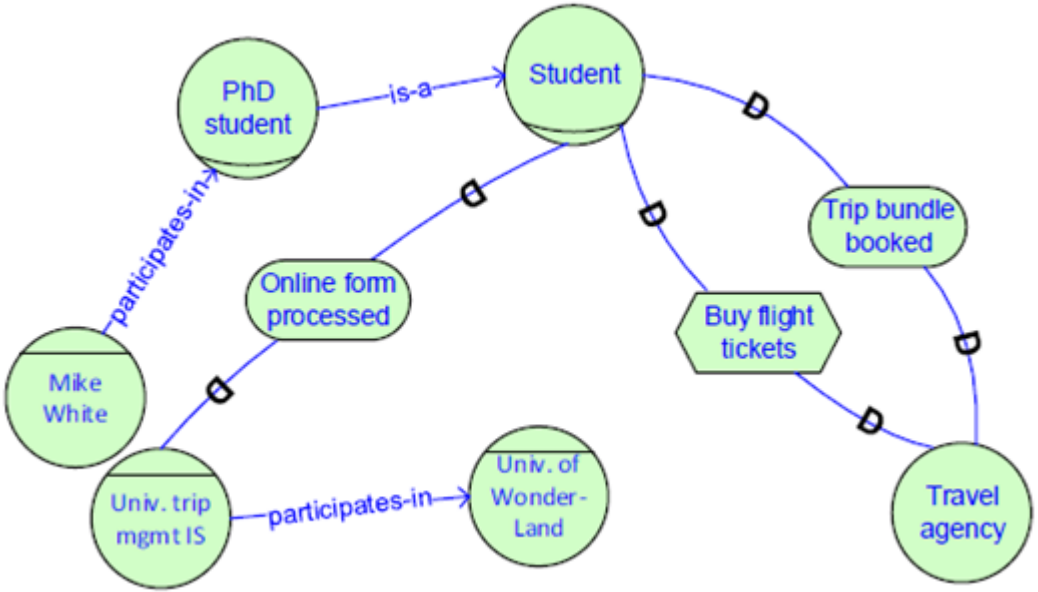
Dependum

Dependee element

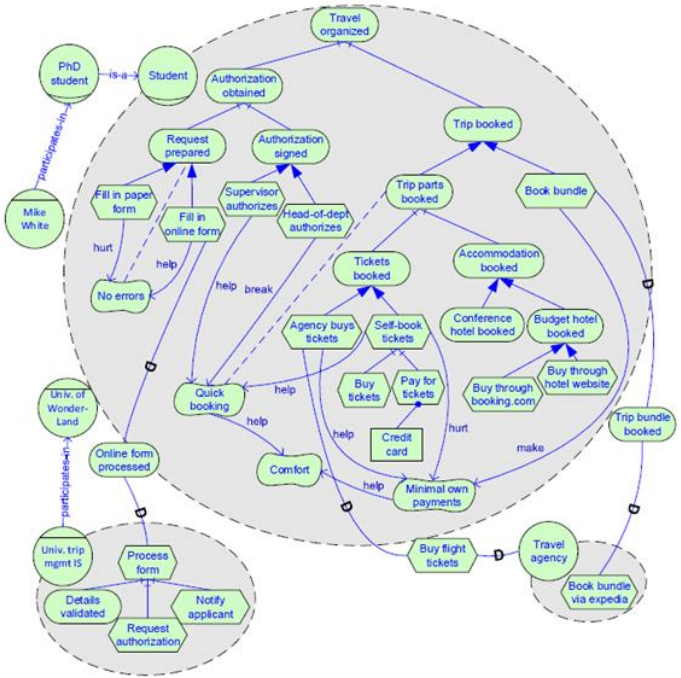
SOCIAL DEPENDENCIES



I* – STRATEGIC DEPENDENCY MODEL VIEW – SD [2]



I* – STRATEGIC RATIONALE MODEL VIEW – SR [2]



DISCUSSION ON I*

- Popular in research [6]
- Currently studied problems [10]:
  - Clarity
  - Combined use of i*
- Comparison with value@GRL [1]
  - Value@GRL more useful, better quality
  - Productivity comparable of vlaue@GRL to i*

DISCUSSION ON GORE [7]

- Gap between research-world and real-world application
- Publications without a lot of involvement of the industries
- Practitioners
  - Idea of goals applied, but in a general sense
  - Unaware of modelling frameworks

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THANK YOU FOR YOUR ATTENTION!

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