02291 System Integration

Goal-oriented Requirements Engineering: Solutions to exercises

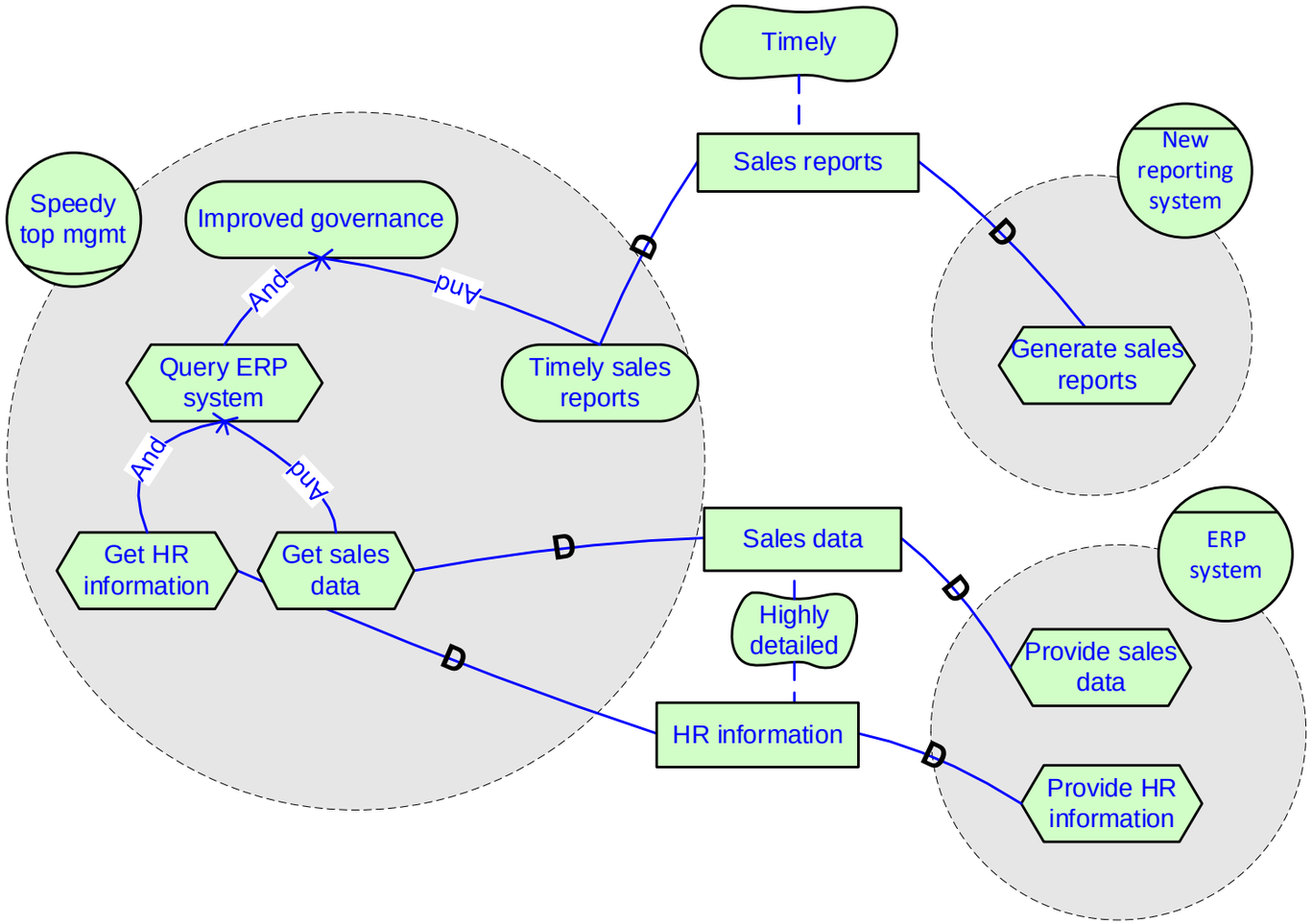
Exercise 1 – Speedy

Speedy is an international delivery company that needs to refocus on which markets it should operate. Indeed, Speedy lacks a clear understanding on which markets are the most profitable. Thus, to address this issue, Speedy's top management aims at improving their governance. To achieve this, the top management requires sales reports containing timely information. Thus, the top management decided to build a new reporting system to automatically produce such reports. After inspecting the sales reports, the top management may also need to query the existing ERP system to get detailed sales and HR information.

Prepare an ArchiMate and an I-star model that captures the formalizes Speedy's new architecture.

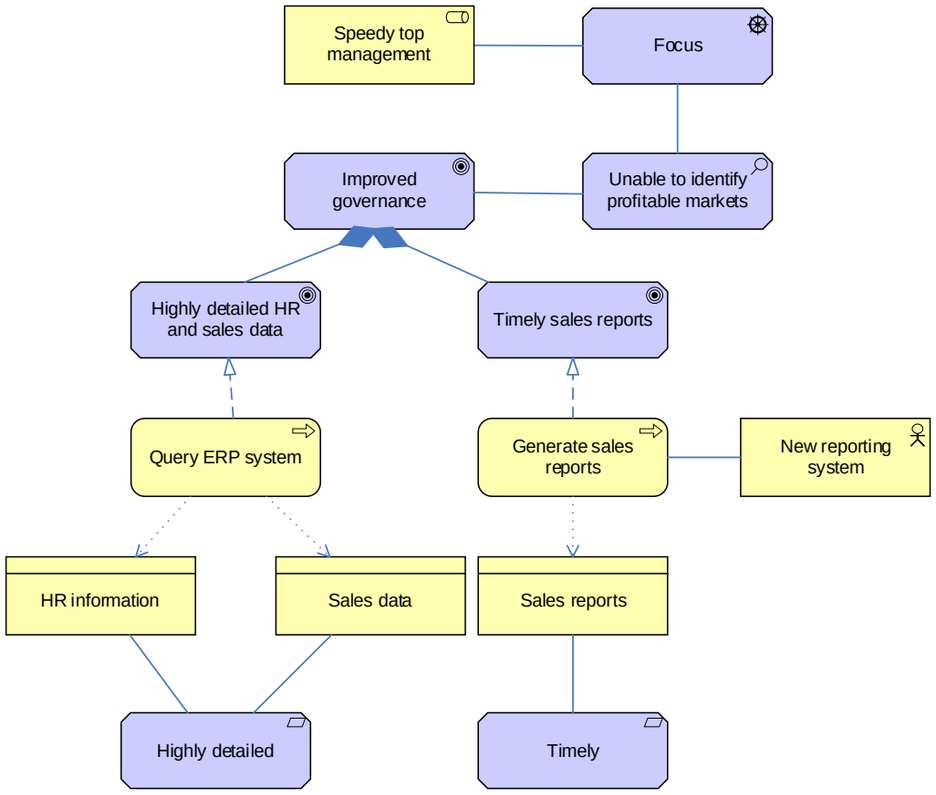
- Can you model all the elements and relations described in this exercise with both languages? If not, which elements can be captured only in ArchiMate? Which ones in I-star?

Exercise 1 – I-star model



We cannot model the driver and assessment concepts

Exercise 1 – ArchiMate model



We cannot explicitly model the social dependency between Speedy's top management and the new reporting systems

Exercise 2 – IC

IC is an insurance company which wants to offer a new insurance service for small assets (<2000$) managed completely online for reliable customers.

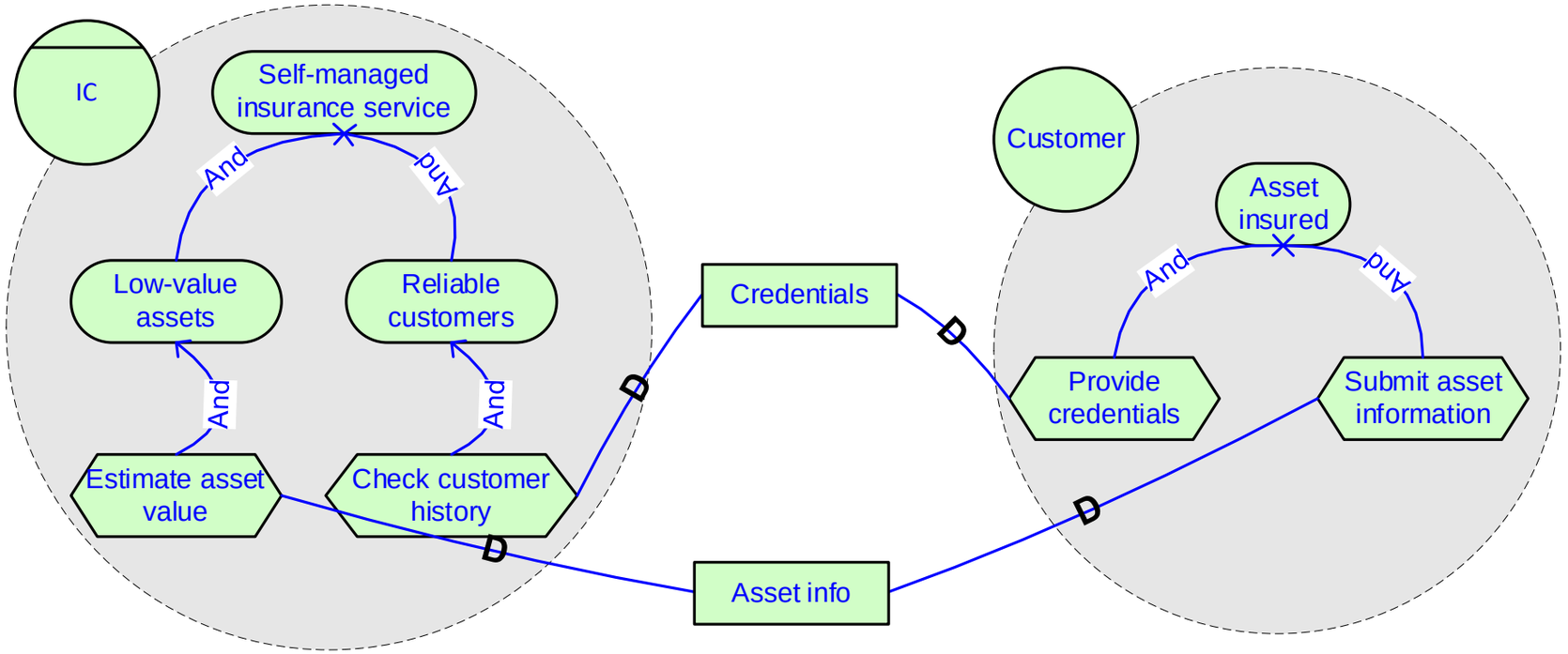
To achieve this, a customer who wants his assets to be insured has to provide its credentials and photo of the asset and its details (serial number, purchase date) to IC. To ensure that the customer is reliable and the asset inexpensive, IC will then check the customers credentials and past history and estimate the asset's price.

Prepare an ArchiMate and an I-star model that captures the formalizes IC's requirements.

- Can you model all the elements and relations described in this exercise with both languages? If not, which elements can be captured only in ArchiMate? Which ones in I-star?

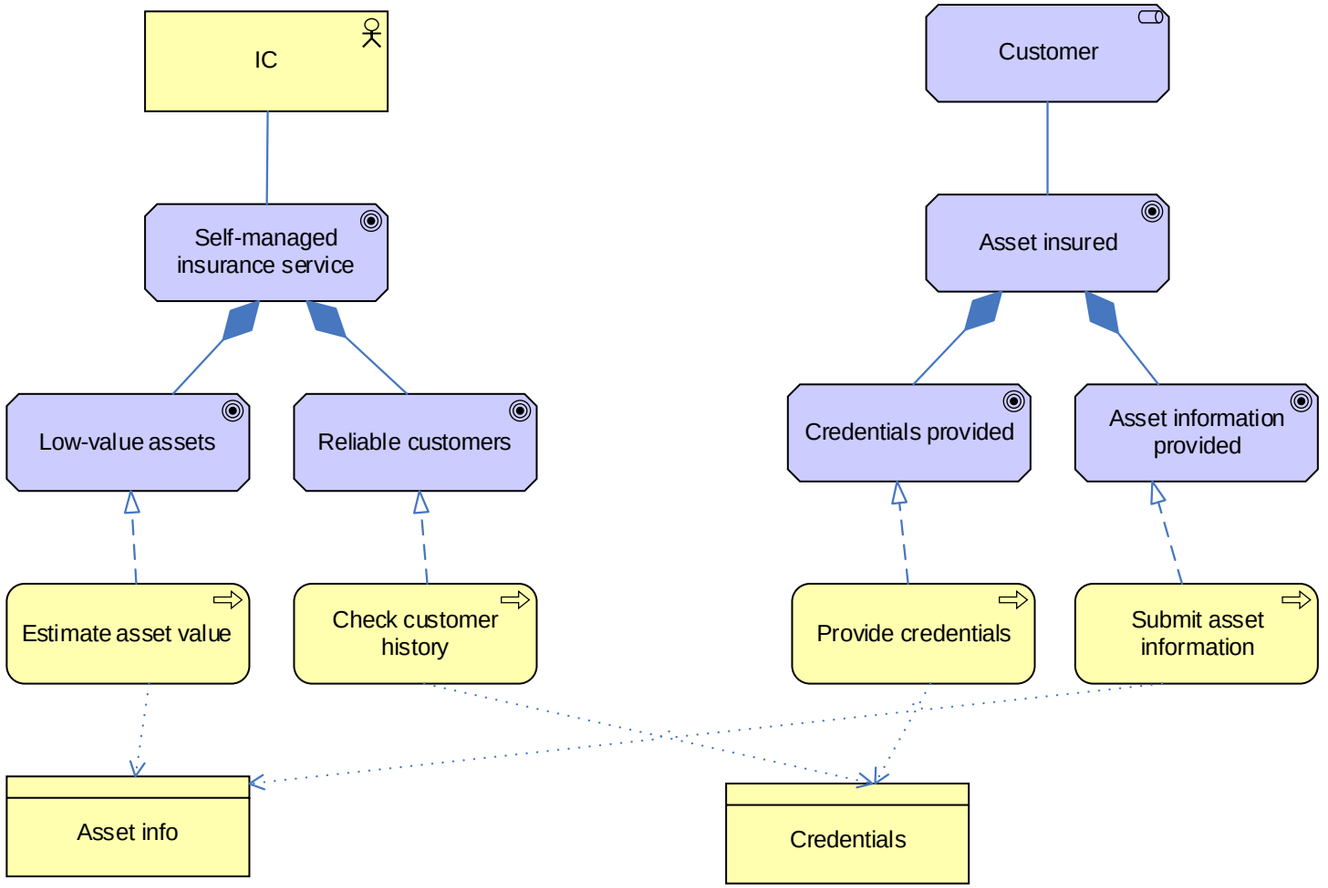
Exercise 2 – I-star model

The model captures all concepts and dependencies

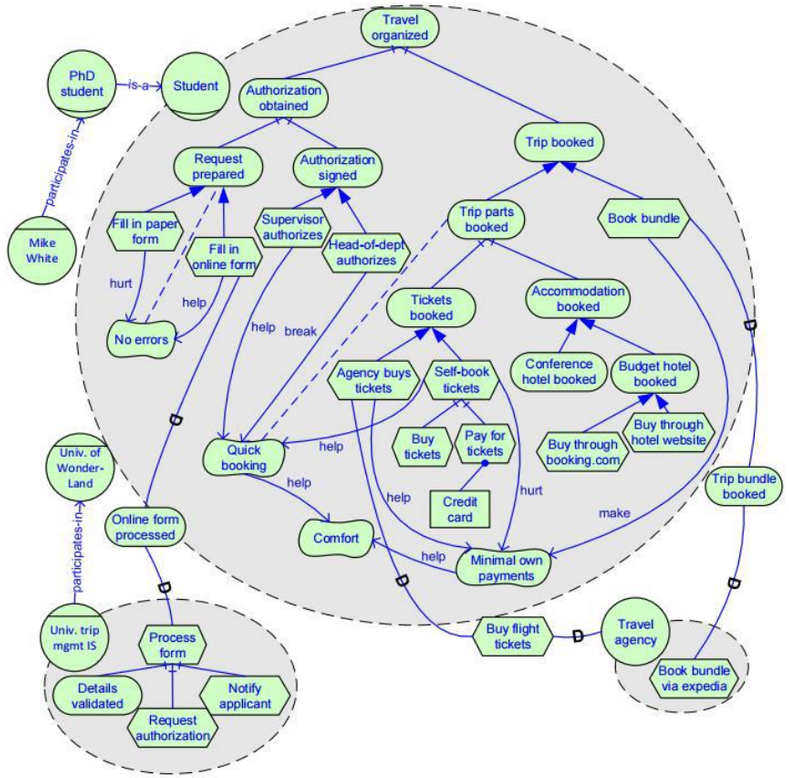


Exercise 2 – ArchiMate model

We cannot explicitly model the social dependencies between IC and the customer



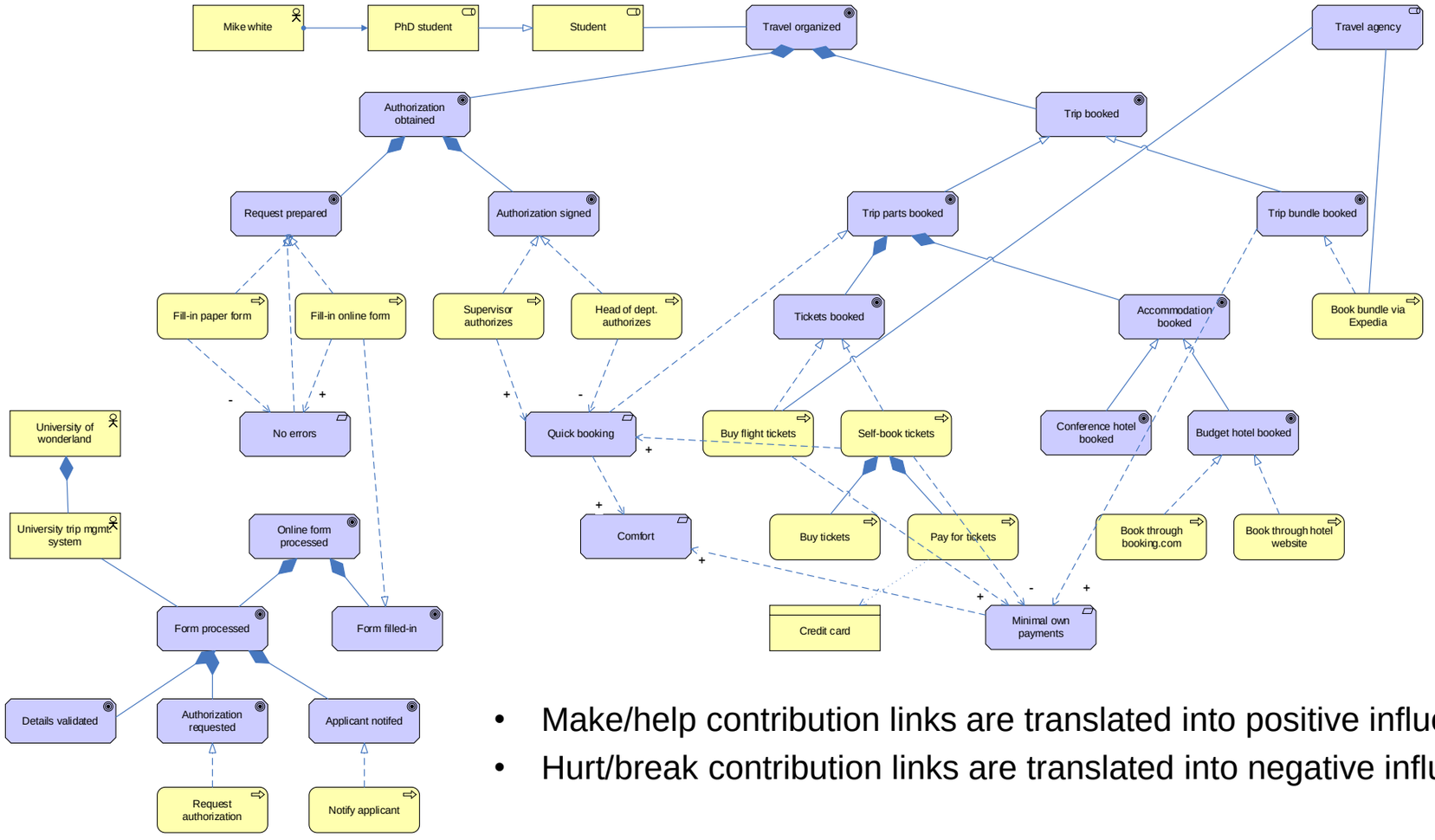
Exercise 3 – University travel reimbursement



Model from: F. Dalpiaz, X. Franch, and J. Horko – iStar 2.0 Language Guide
https://arxiv.org/abs/1605.07767

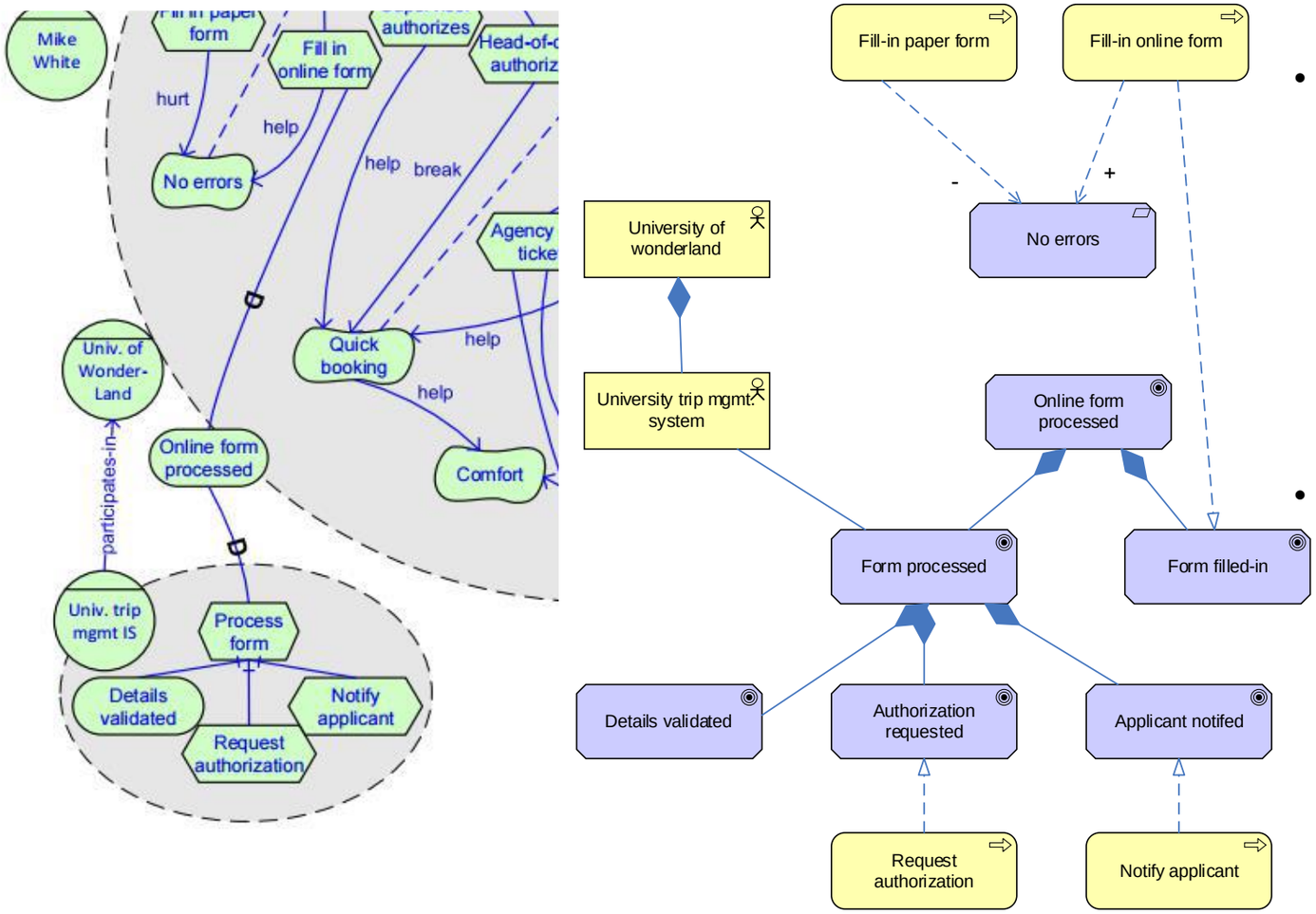
- This I-star model represents a university travel reimbursement system
- Prepare an ArchiMate model representing the same system
  - Can you model all the elements and relations in this I-star model?
  - If not, which elements and relations cannot be modeled?

Exercise 3 – ArchiMate model



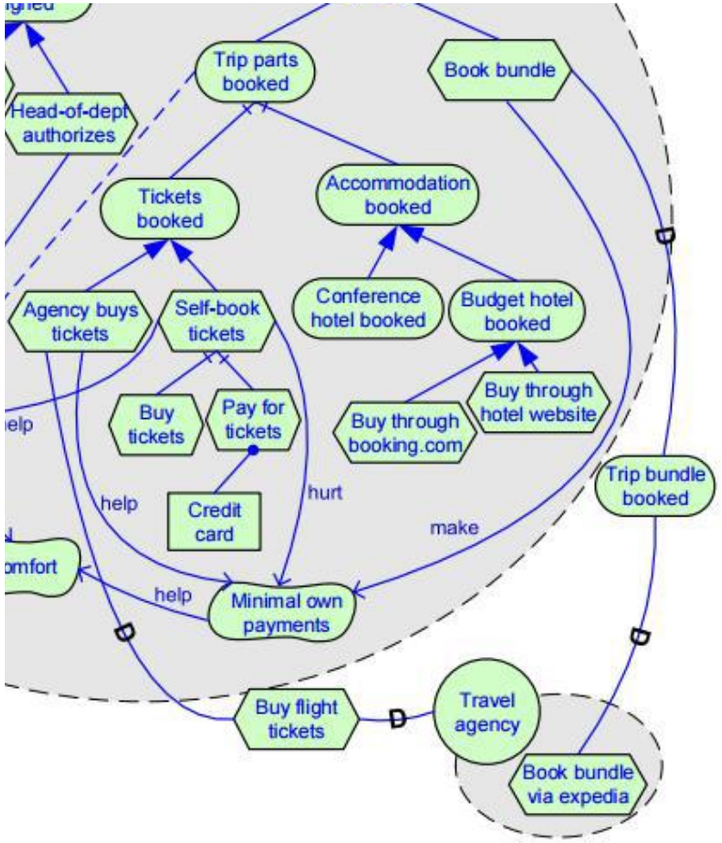
- Make/help contribution links are translated into positive influence relations
- Hurt/break contribution links are translated into negative influence relations

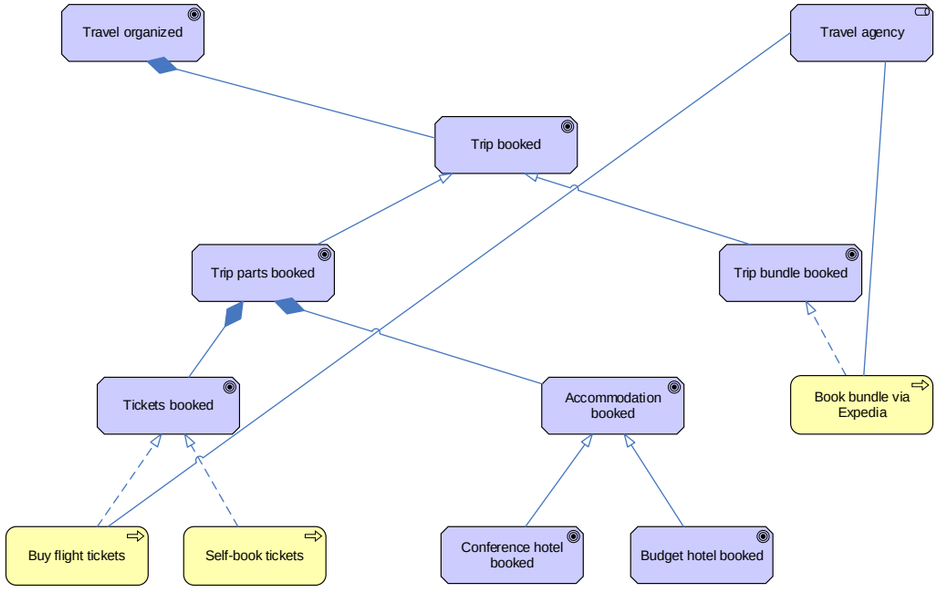
Exercise 3 – Comparison



- We cannot model the social dependency between IS and student
  - We can approximate it by breaking the dependum (Online form processed) into subgoals, which are inclusively realized by subgoals belonging to the two entities
- We cannot model that goals are refined from tasks:
  - We either turn Process form into a goal (as depicted), or turn Details validated into a task

Exercise 3 – Comparison





- We cannot model the social dependencies between travel agency and student
- We can approximate them:
  - We replace task Agency buys tickets with dependum Buy flight ticketst, and we assign it to the travel agency
  - We replace task Book bundle with dependum Trip bundle booked, which is realized by task Book bundle with Expedia