University of Zurich^UZH

Department of Informatics

Requirements Engineering Research Group

Flexible Sketch-Based Requirements Modeling

Dustin Wüest & Martin Glinz

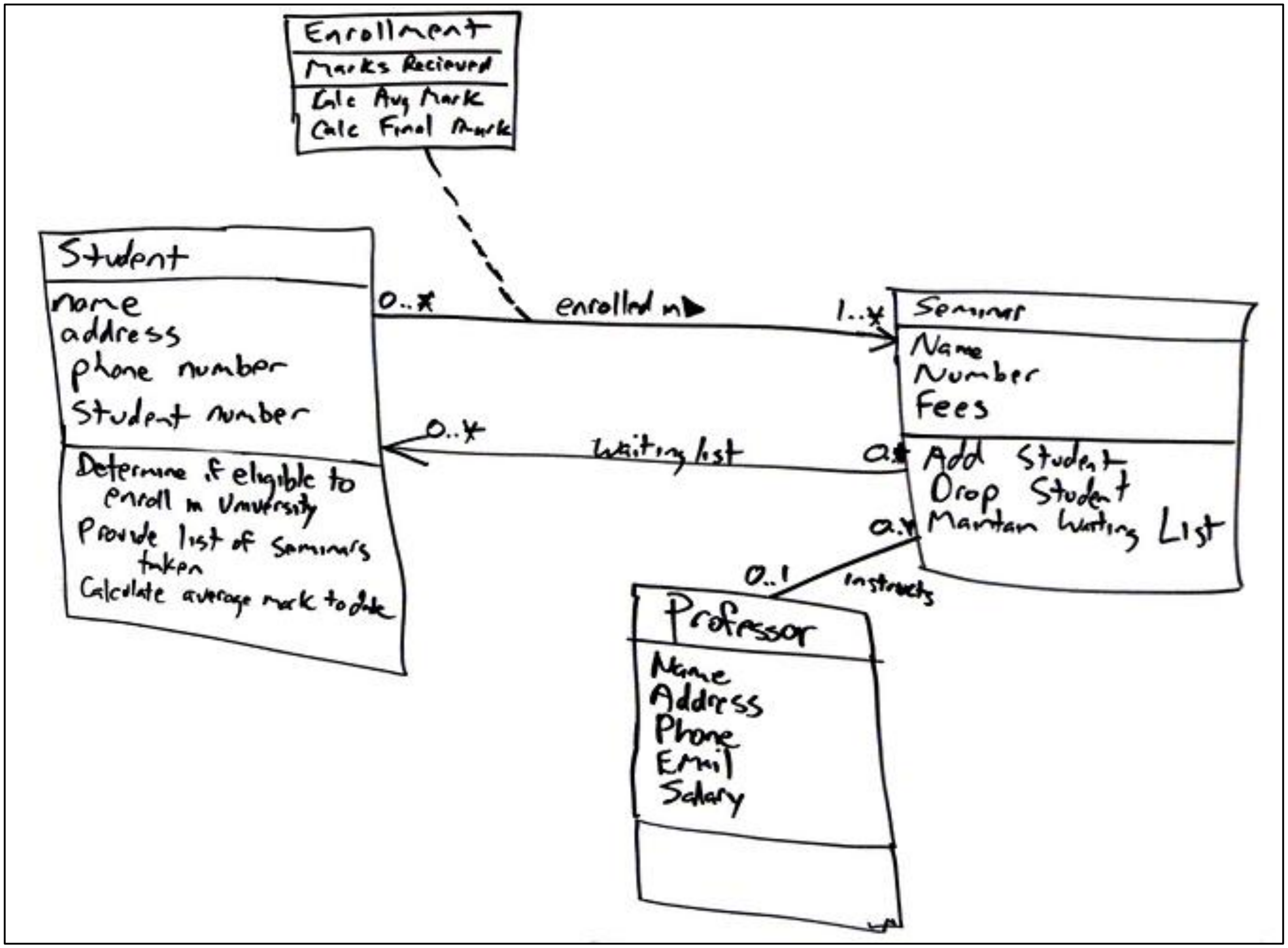
Open Models Initiative 2nd International Workshop 09/08/11

Goal

Bridging the gap between

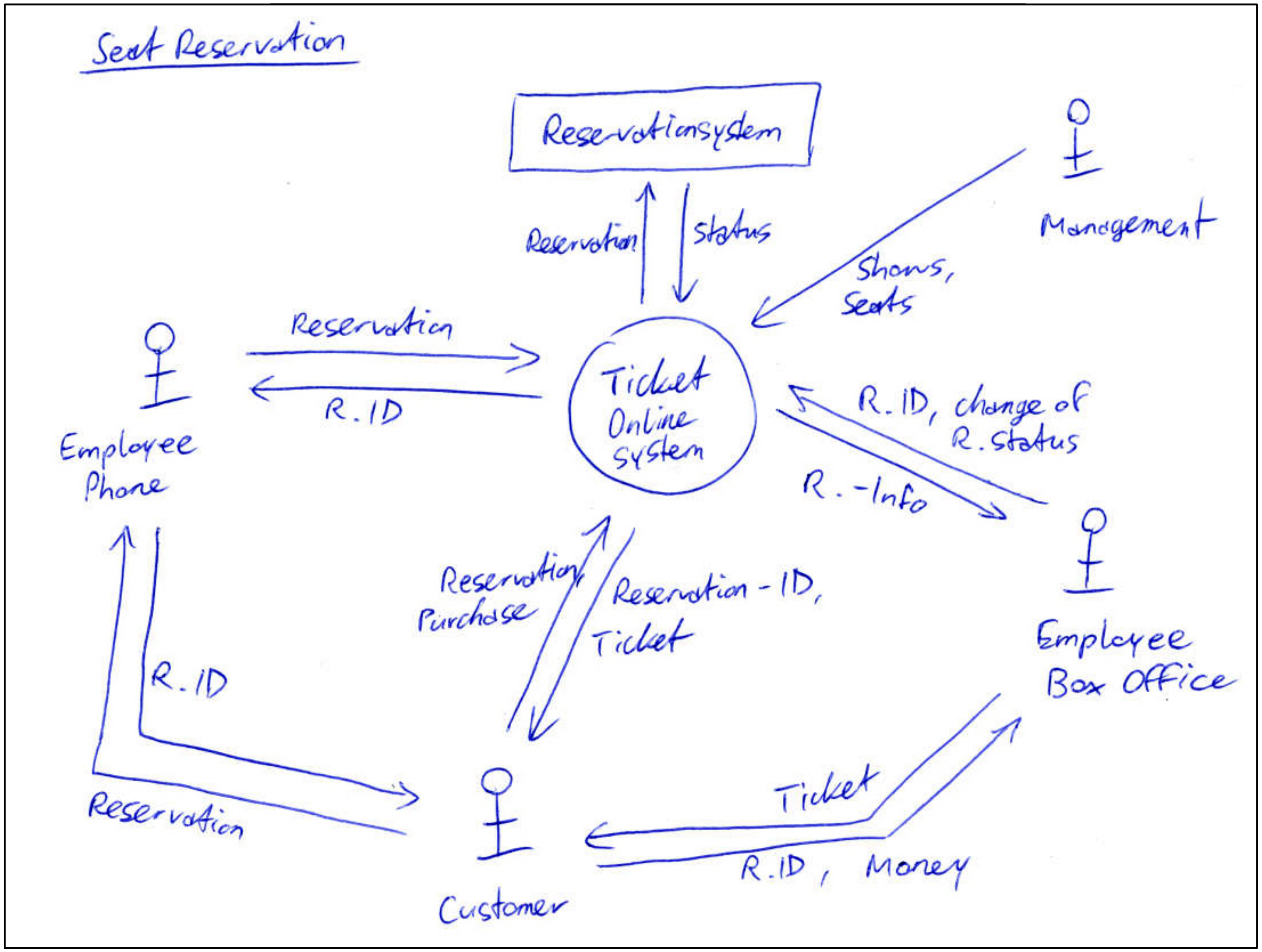
requirements sketches and semi-formal models

Requirements Sketches

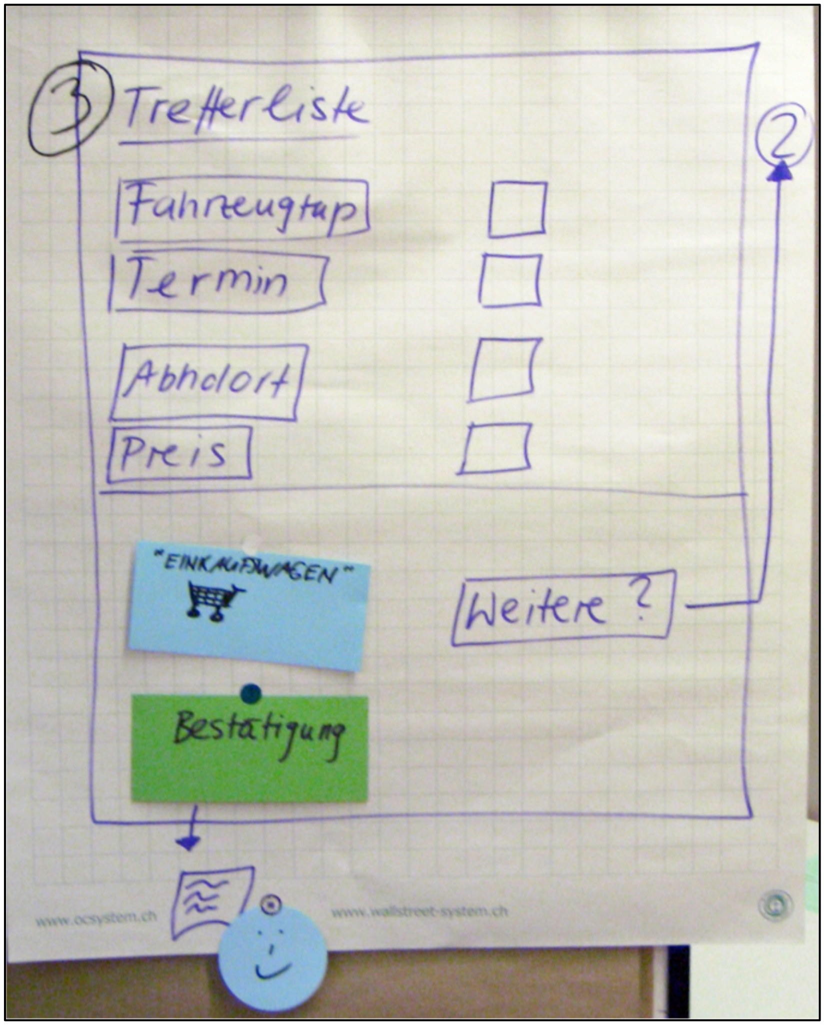


Source: http://www.agilemodeling.com/artifacts/classDiagram.htm

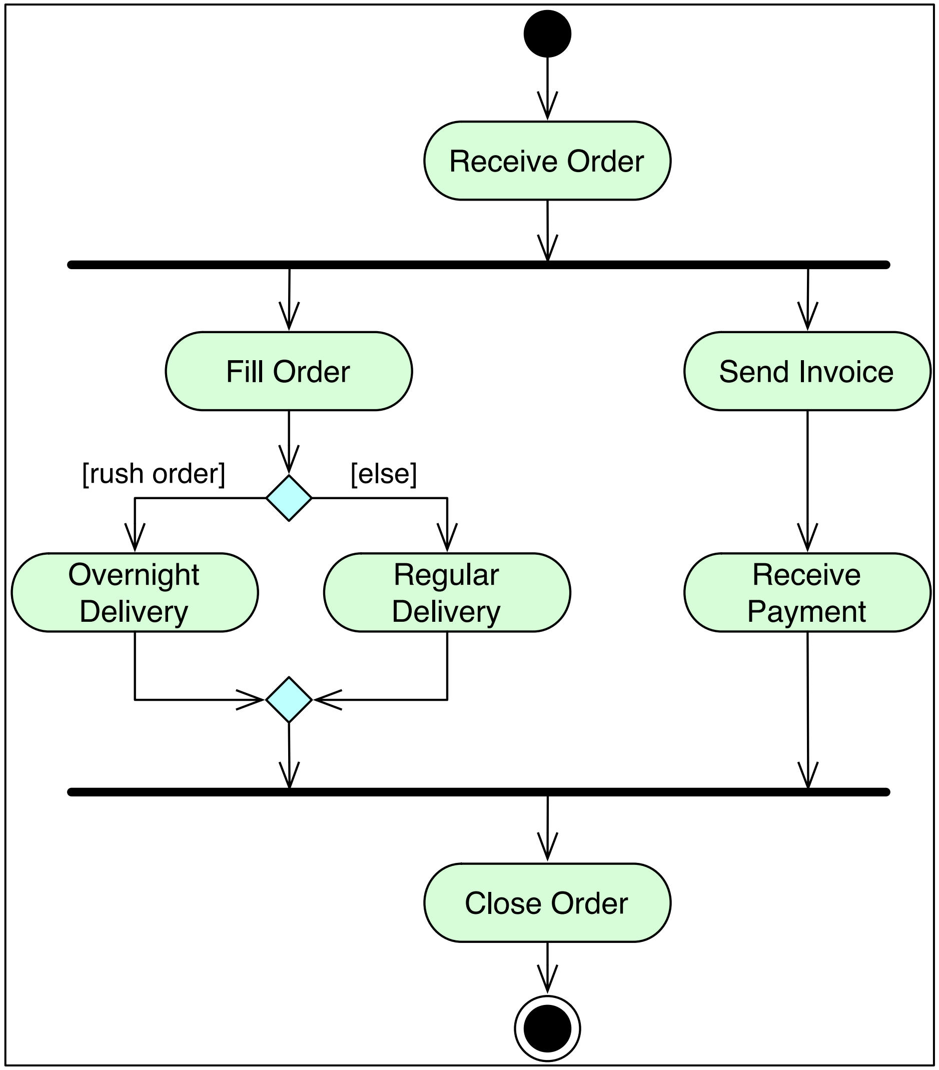
Requirements Sketches



Requirements Sketches

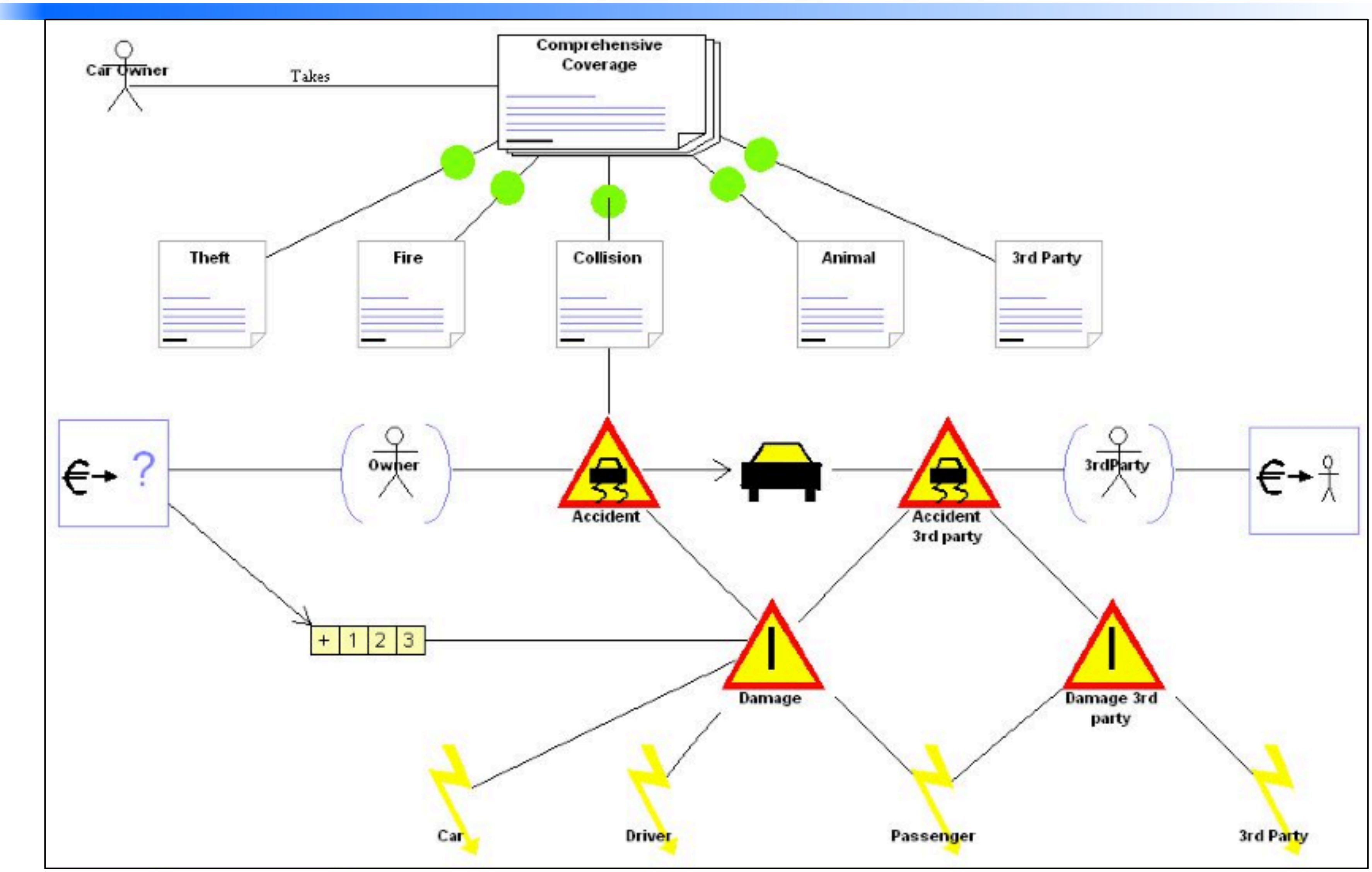


Semi-Formal Models



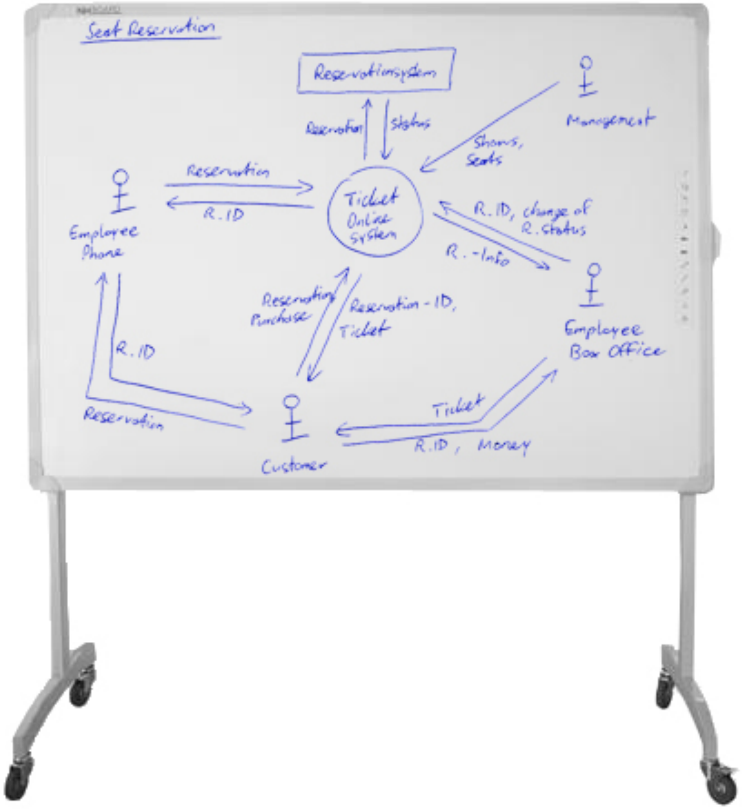
Source: http://atlas.kennesaw.edu/~dbraun/csis4650/A&D/

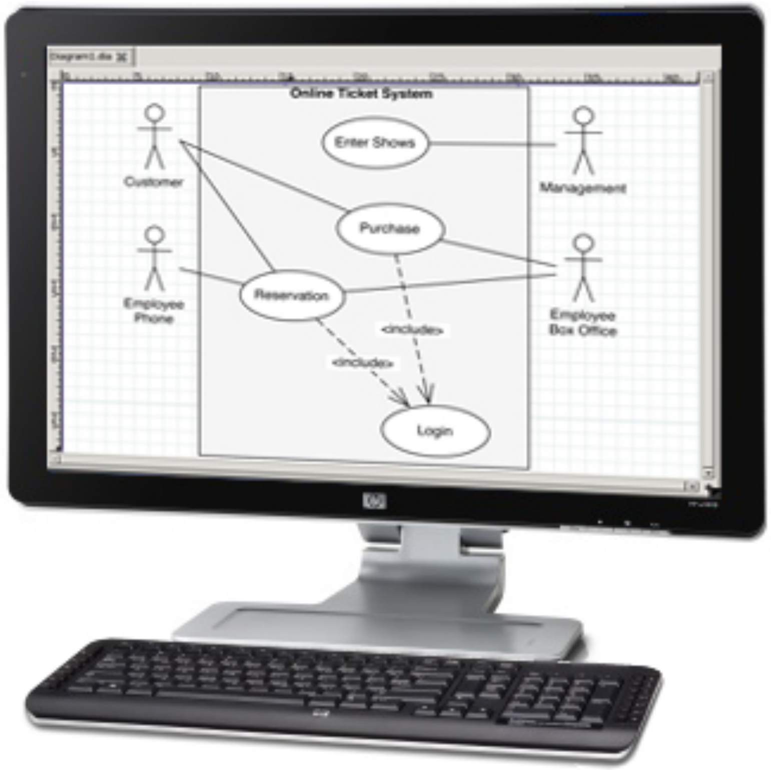
Semi-Formal Models



Source: http://www.metacase.com/

The Gap





- Reproduction problem: manual transformation
- Conceptual problem: assigning meaning

Objectives

Develop and evaluate a method that bridges the gap

- Allow for freeform sketching
- Allow to assign meanings to structured sketches, and to transform them into semi-formal models
- Allow for switching between sketching and metamodeling

→ Users are not confronted with a fixed modeling language, but can change it on the fly.

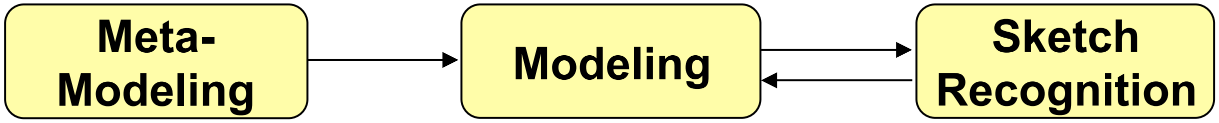
Existing Work

Modeling tools providing sketch recognition

- Require predefined notations

Sketching tools providing formalization capabilities

- Require upfront metamodeling
- Metamodel editor creates model editor

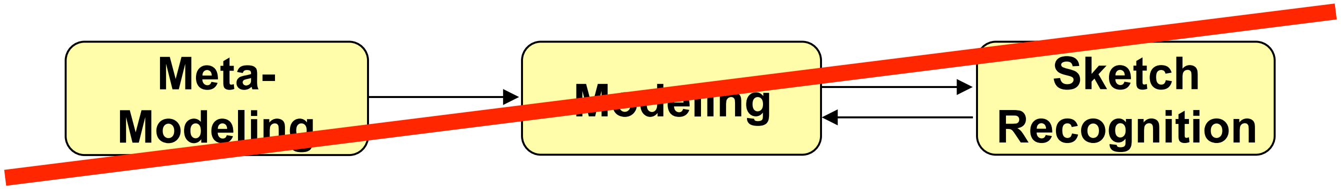


Meta-Modeling

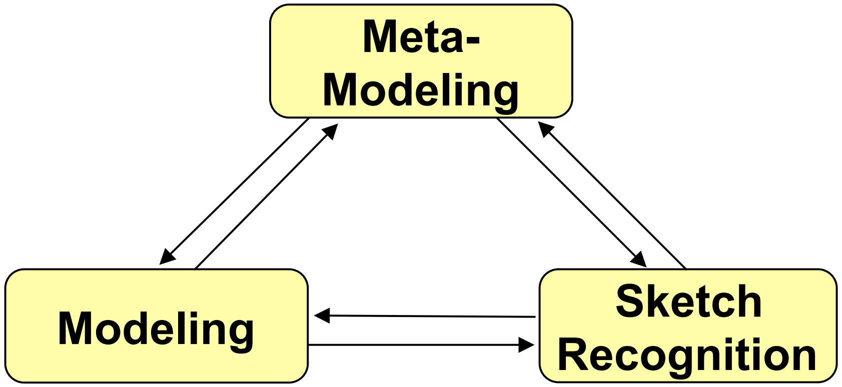
Modeling

Sketch Recognition

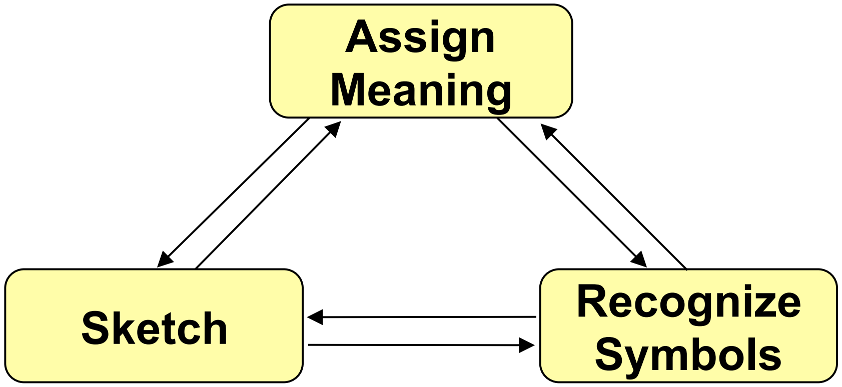
Research Idea



Technical perspective:



User perspective:



Illustrative Example

Illustrative Example – Sketching

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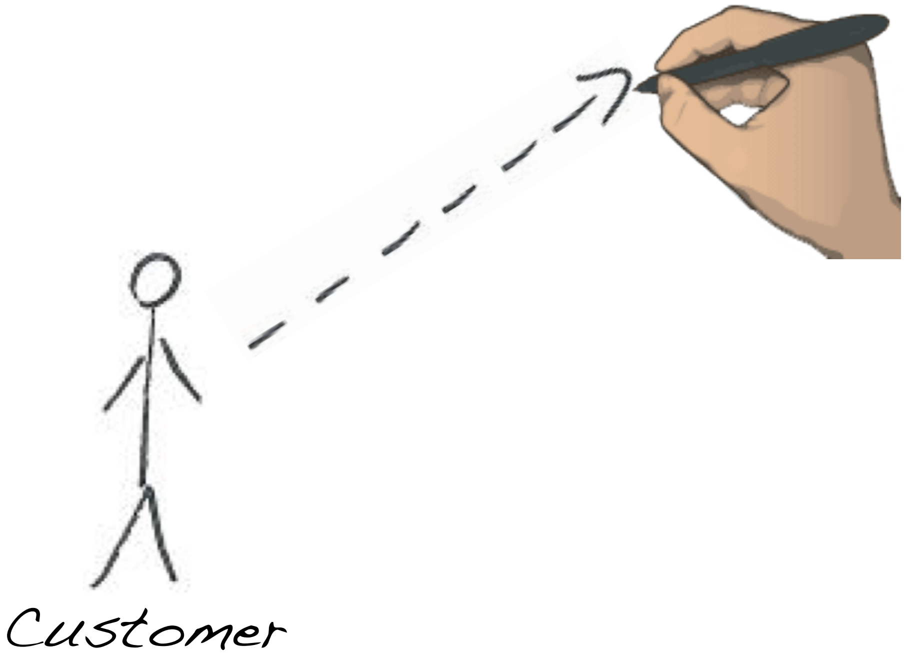
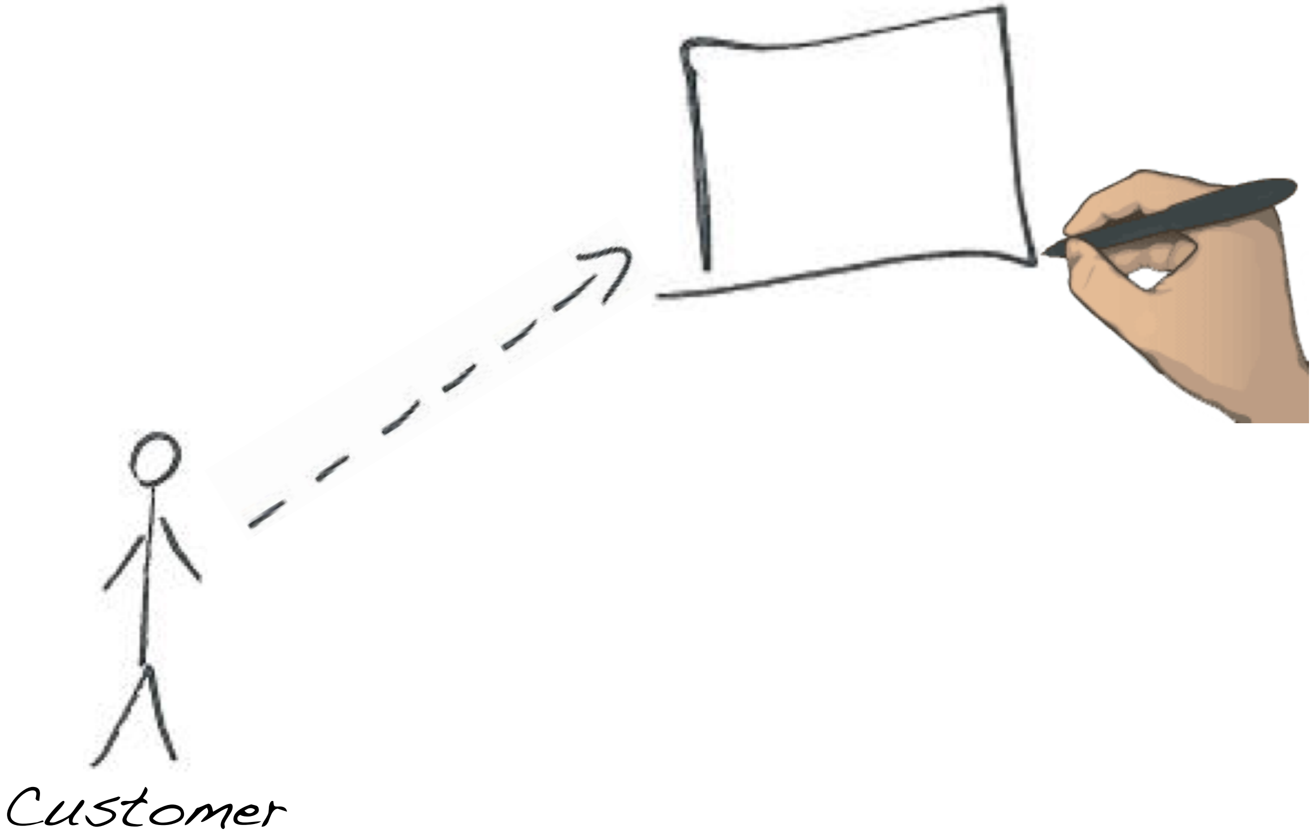
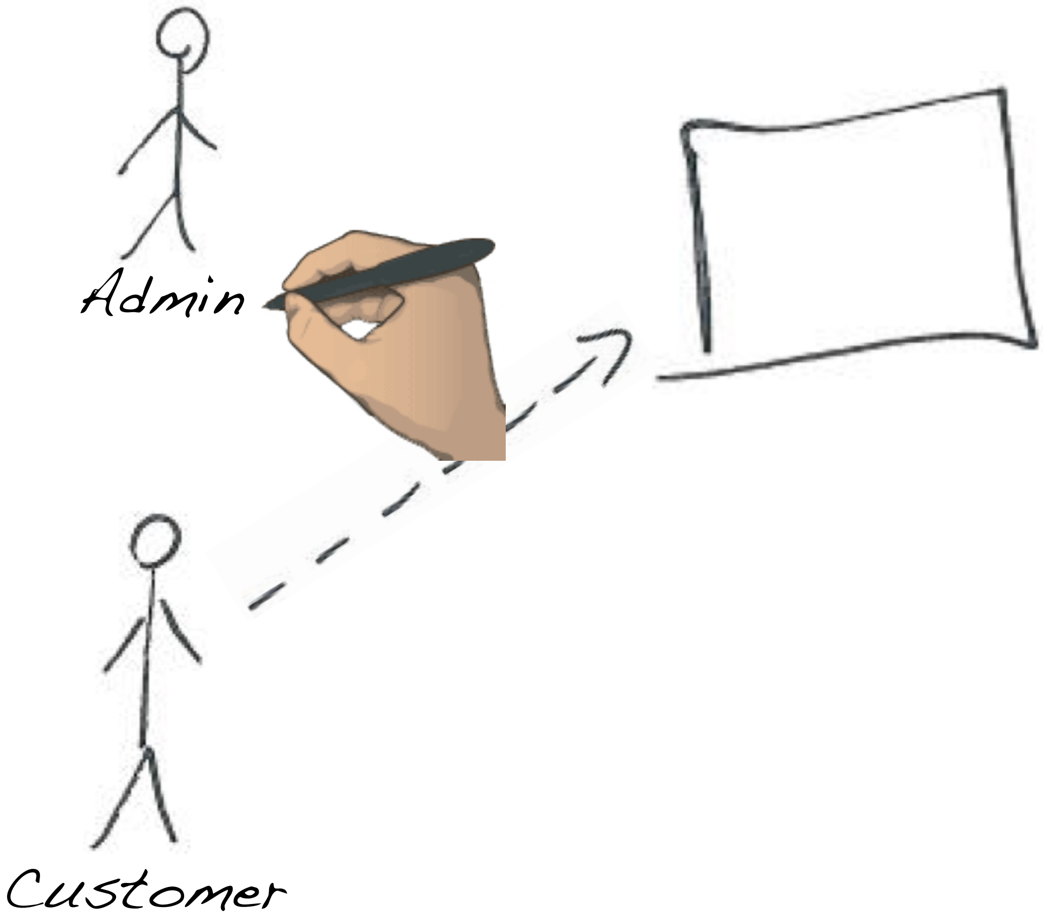


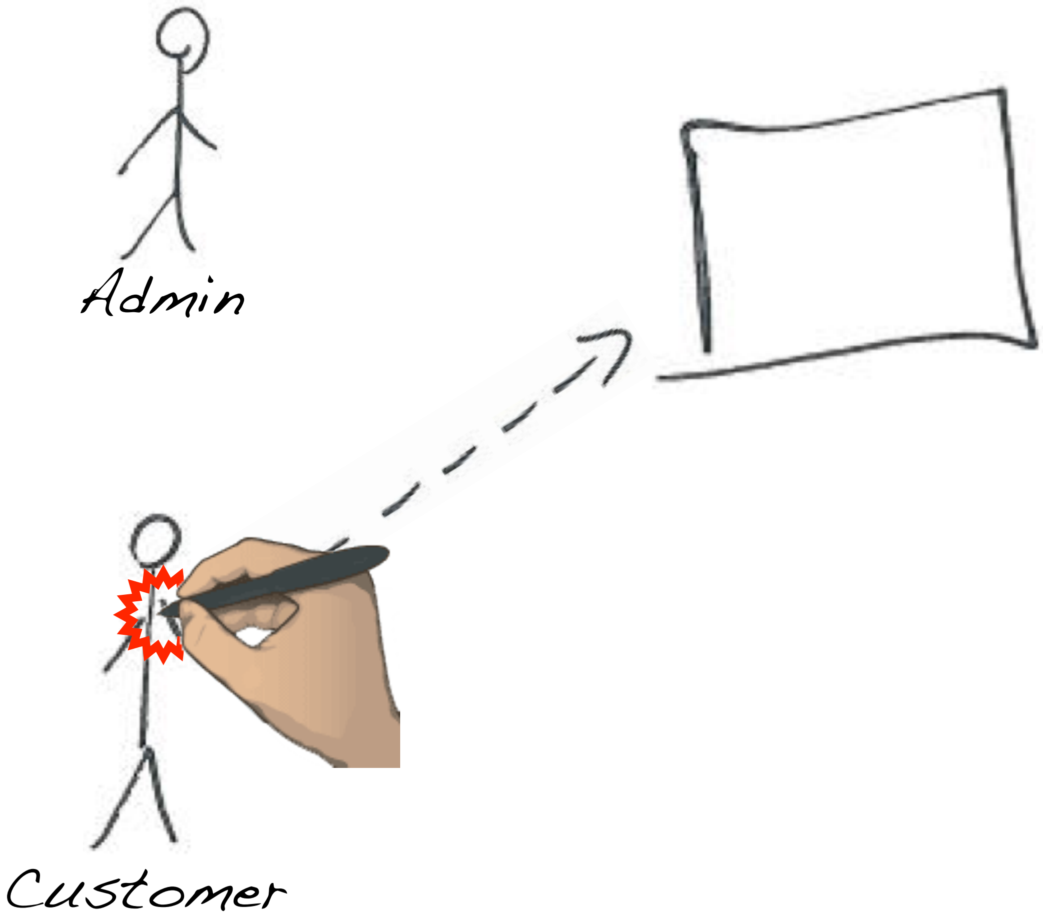
Illustrative Example – Sketching



Illustrative Example – Sketching



Illustrative Example – Assign Meaning



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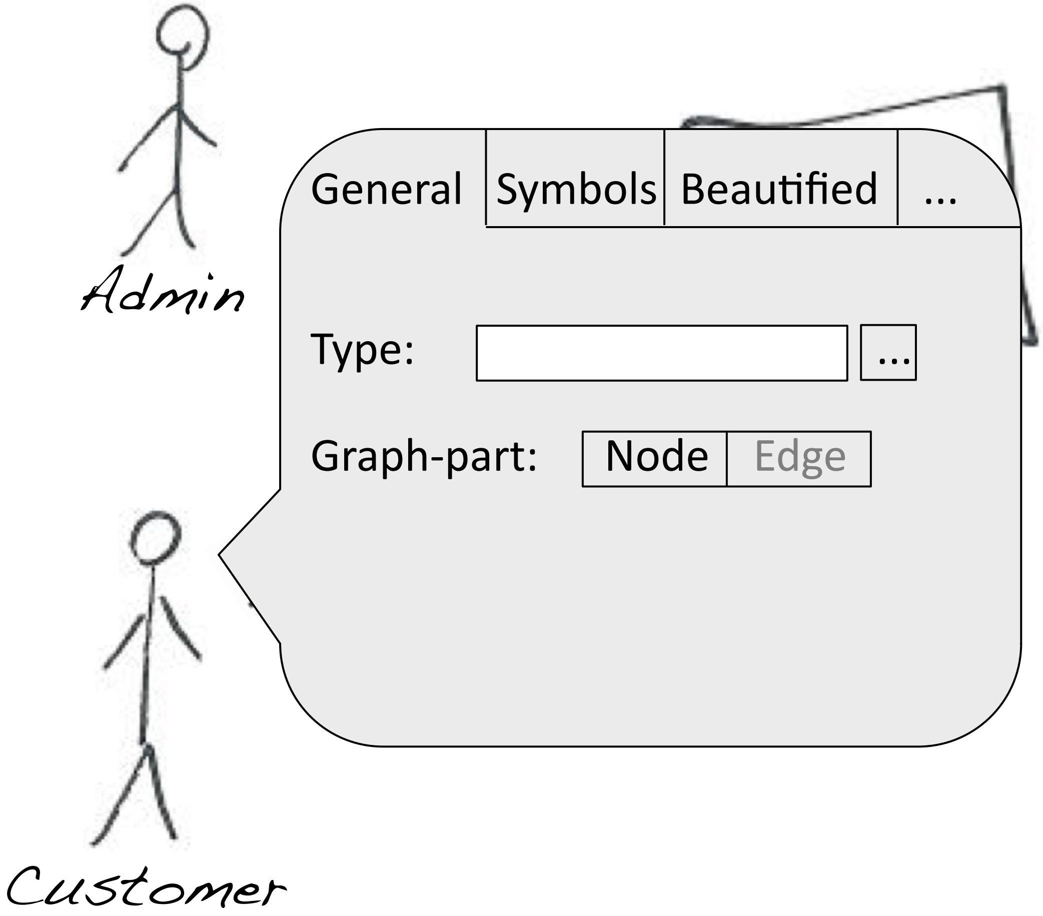

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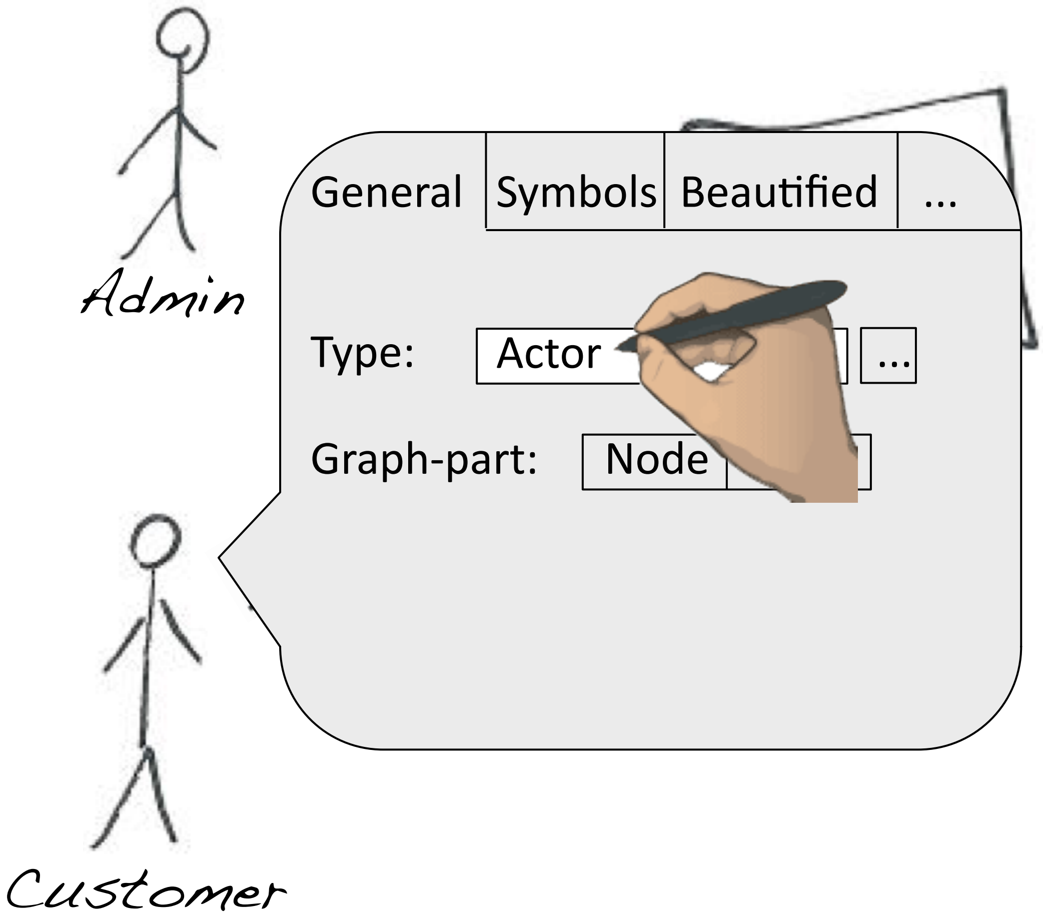
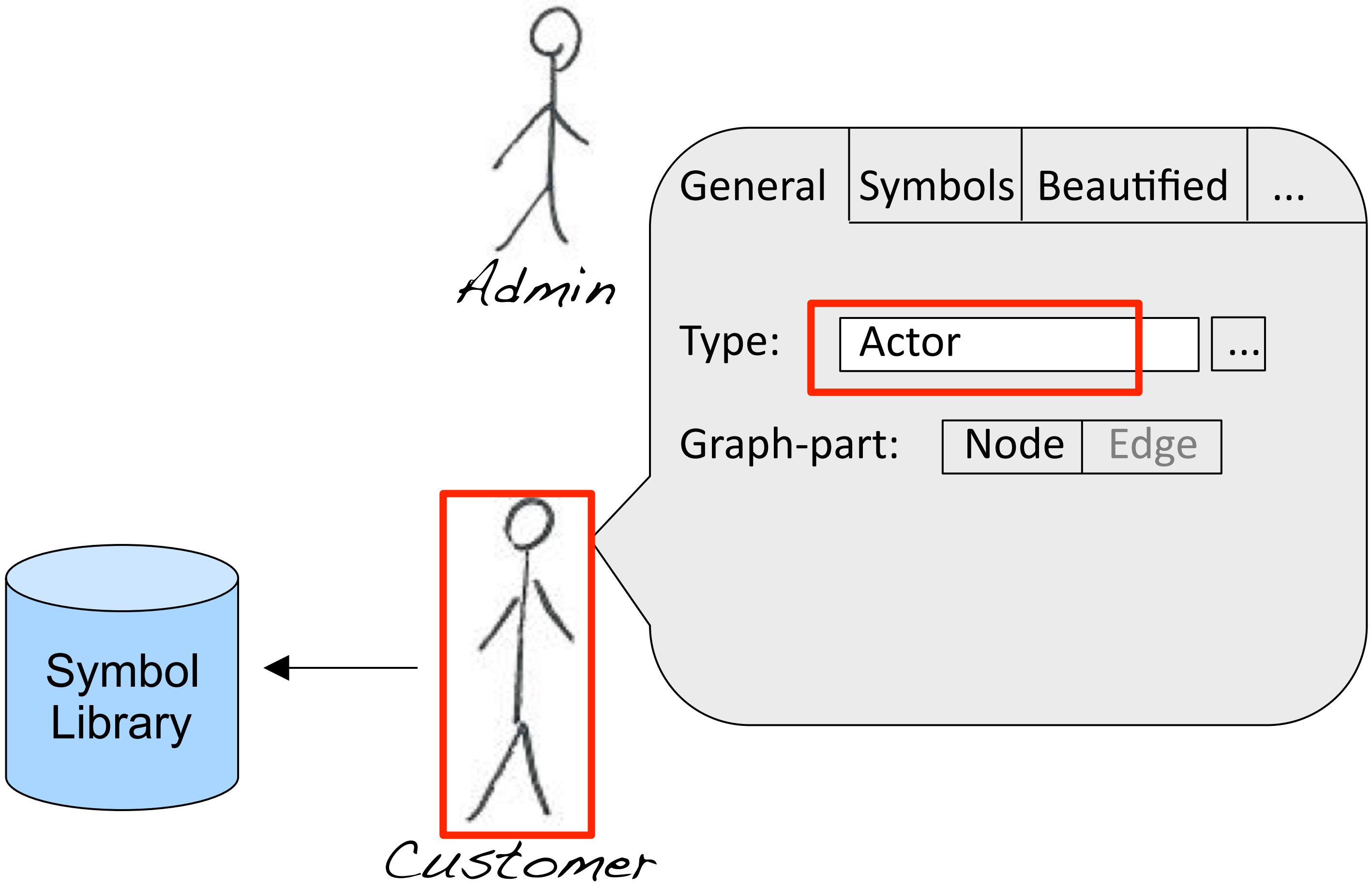


Type: Actor

Graph-part: Node

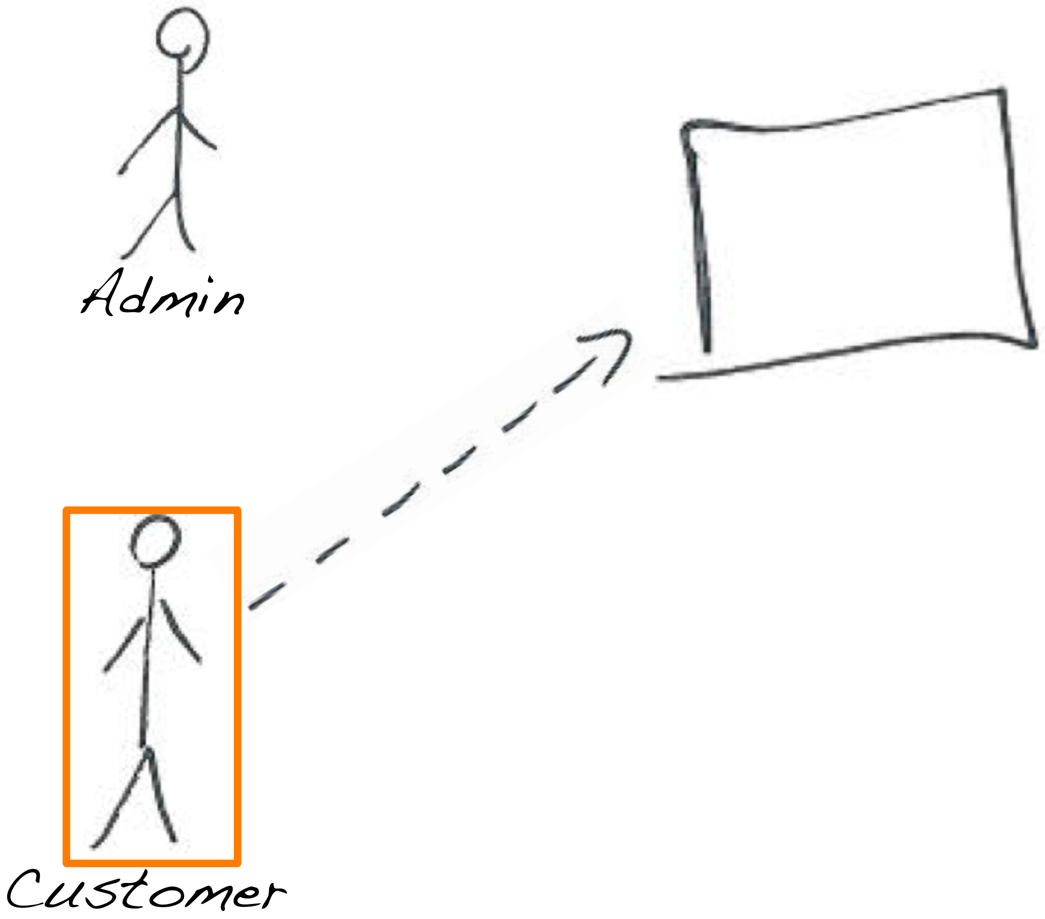
Illustrative Example – Assign Meaning



Type: Actor ...

Graph-part: Node Edge

Illustrative Example – Recognize Symbols



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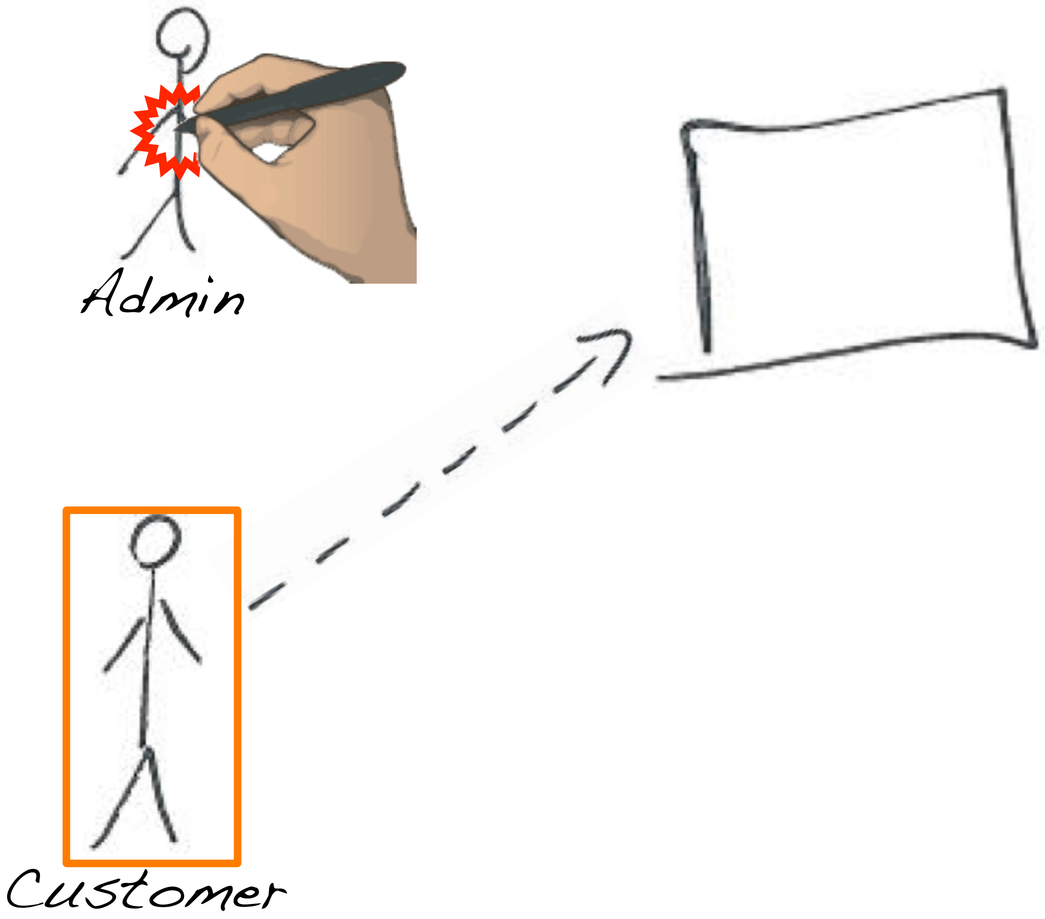

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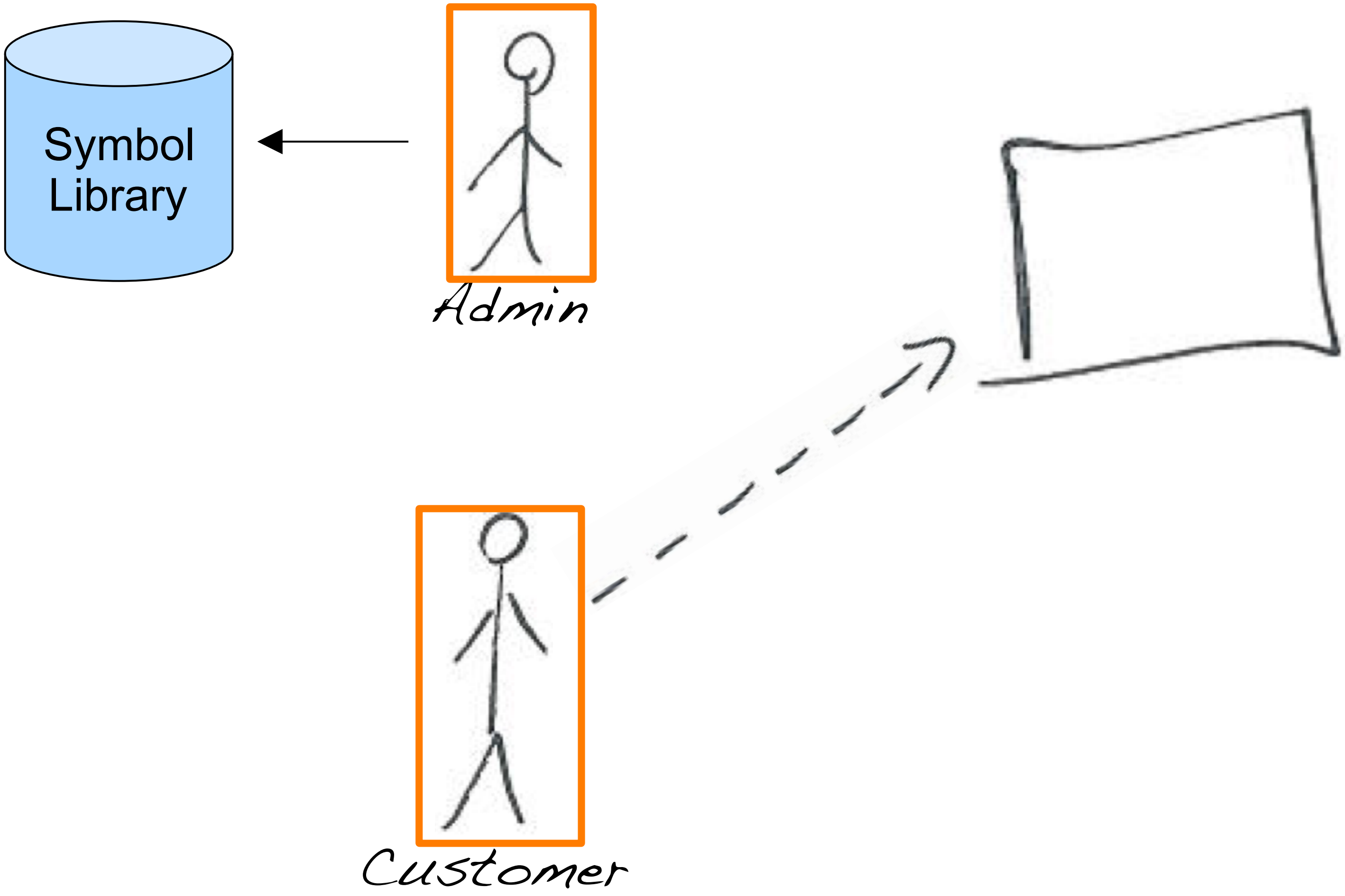
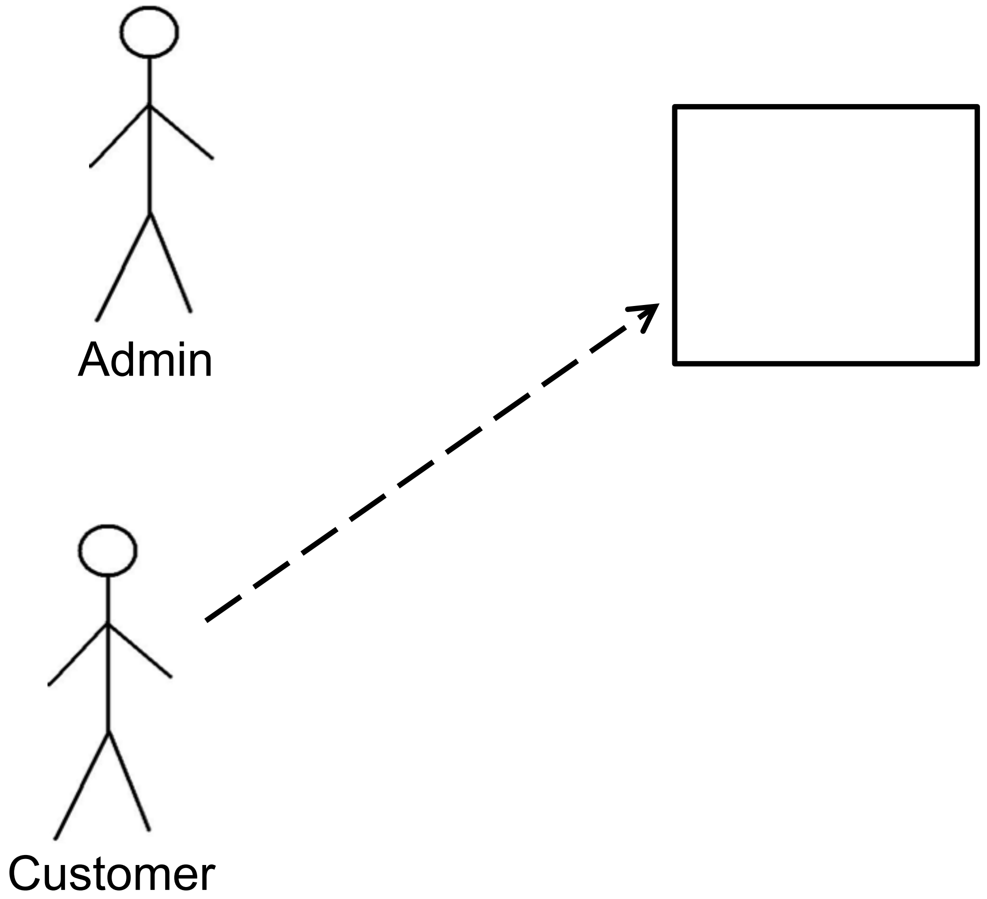


Illustrative Example – Beautification

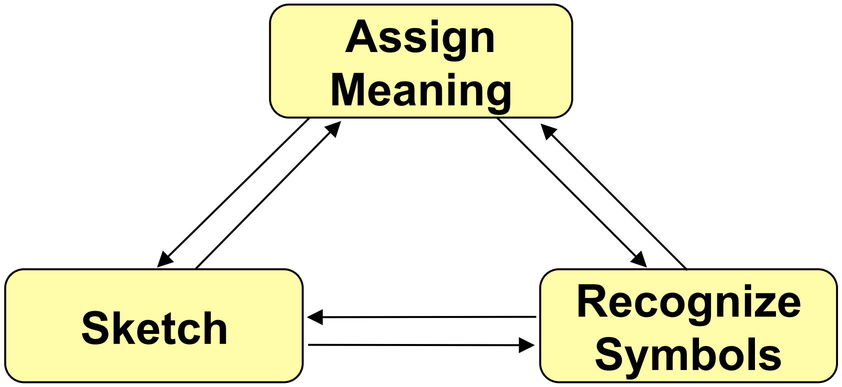


Expected Benefits

- Increased flexibility
- Designing DSLs on the fly (co-evolution of notation and its use)
- Better involvement of stakeholders
- Acceleration of the elicitation process, removing obstacles in the process
- Growth of sketches is remembered

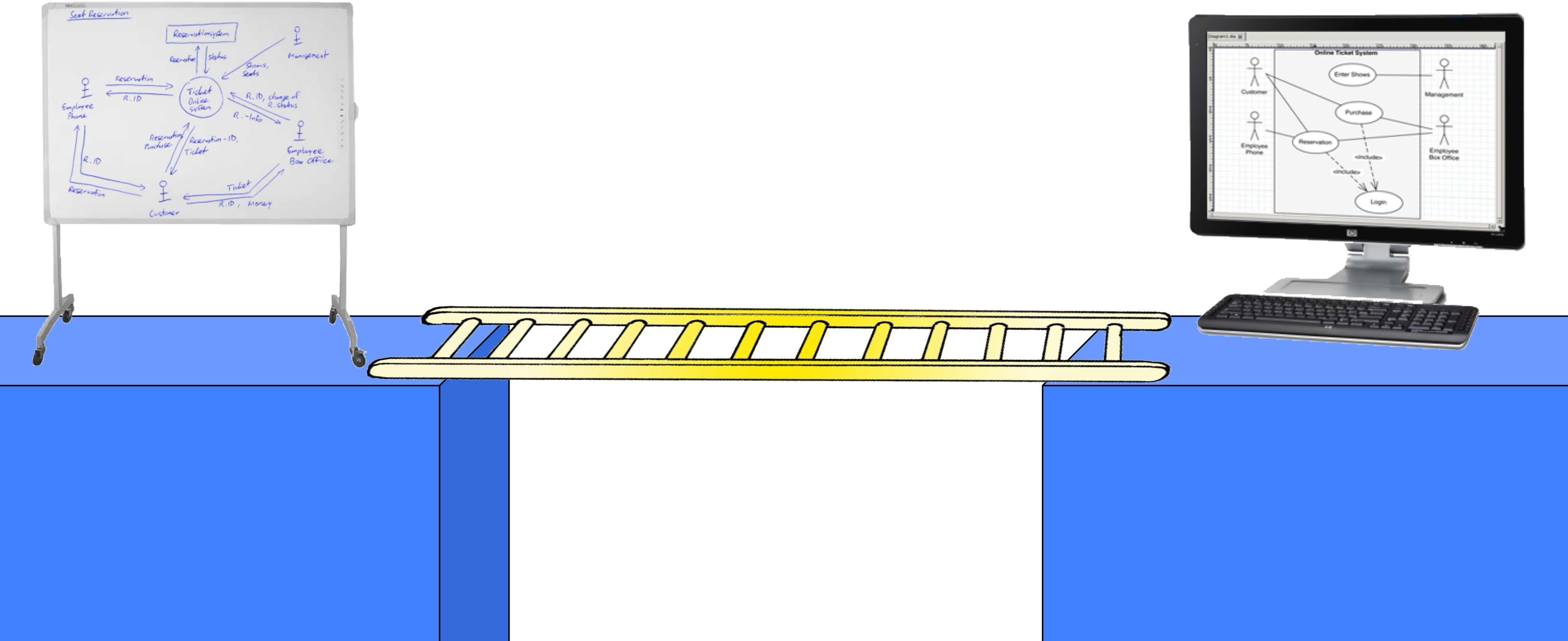
Challenges

- Space for freeform drawing
- Existing sketch recognition and symbol distinction algorithms
- Hardware/Input device
- **Guided metamodeling**
- **Dynamic symbol library**



Take-Away Message

Unite the flexibility of unconstrained sketching with the power of semi-formal requirements modeling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Reservationsystem
Reservation
Status
Management
Shows, Seats
Reservation
R. ID
Ticket Online System
R. ID, change of R. Status
R. -Info
Employee Phone
Reservation Purchase
Reservation - ID, Ticket
Employee Box Office
R. ID
Reservation
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