Karlsruhe Institute of Technology

Softwaretechnik II

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Topic 5

Use Cases – Flipping the Classroom

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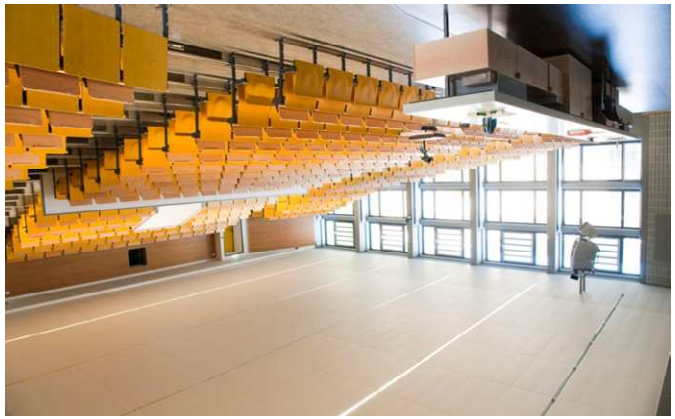
Idea: Flipped Classroom

- Merely going through a set of slides may sometimes seem like a waste of times
  - students could prepare the content on their own convenience
  - which would free the lecture time for interaction and discussing the real issues
    - such as those topics that were not well understood
- It also frees time for more hands on exercises
- *Let's try this with use cases today!*



Discussion Starters I

1. Describe the basic system model that can be seen as a prerequisite for applying use cases
2. As the term “use case” is somewhat overloaded, please explain at least two interpretations of it.
3. Why do we need use cases and what is the conceptual difference (resp. advantage) compared to functional decomposition that was used in the decades before?
4. What are the most common goal levels that can be found in the context of software development?

User Goal Use Cases

5. Define the concept of a “user goal use case”.

6. Which heuristics can be used to determine whether something is a good user goal use case?
   - ➔ Apply them to the following examples:
     1. process a claim in an insurance company
     2. create customer account in a video store
     3. book a flight ticket on an online platform
     4. login to your online banking account
     5. retrieve a list of customer accounts
     6. check credit card data in an ATM
     7. withdraw money from ATM

Let‘s practice a bit …

- *Identity the correct goal level for each activity*

1. process a claim in an insurance company
2. create customer account in a video store
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Summary Use Case User Goal Sub Use Case System Operation

Heuristics & more

7. Which heuristic is helpful to distinguish <<include>> and <<extend>> in a use case diagram?

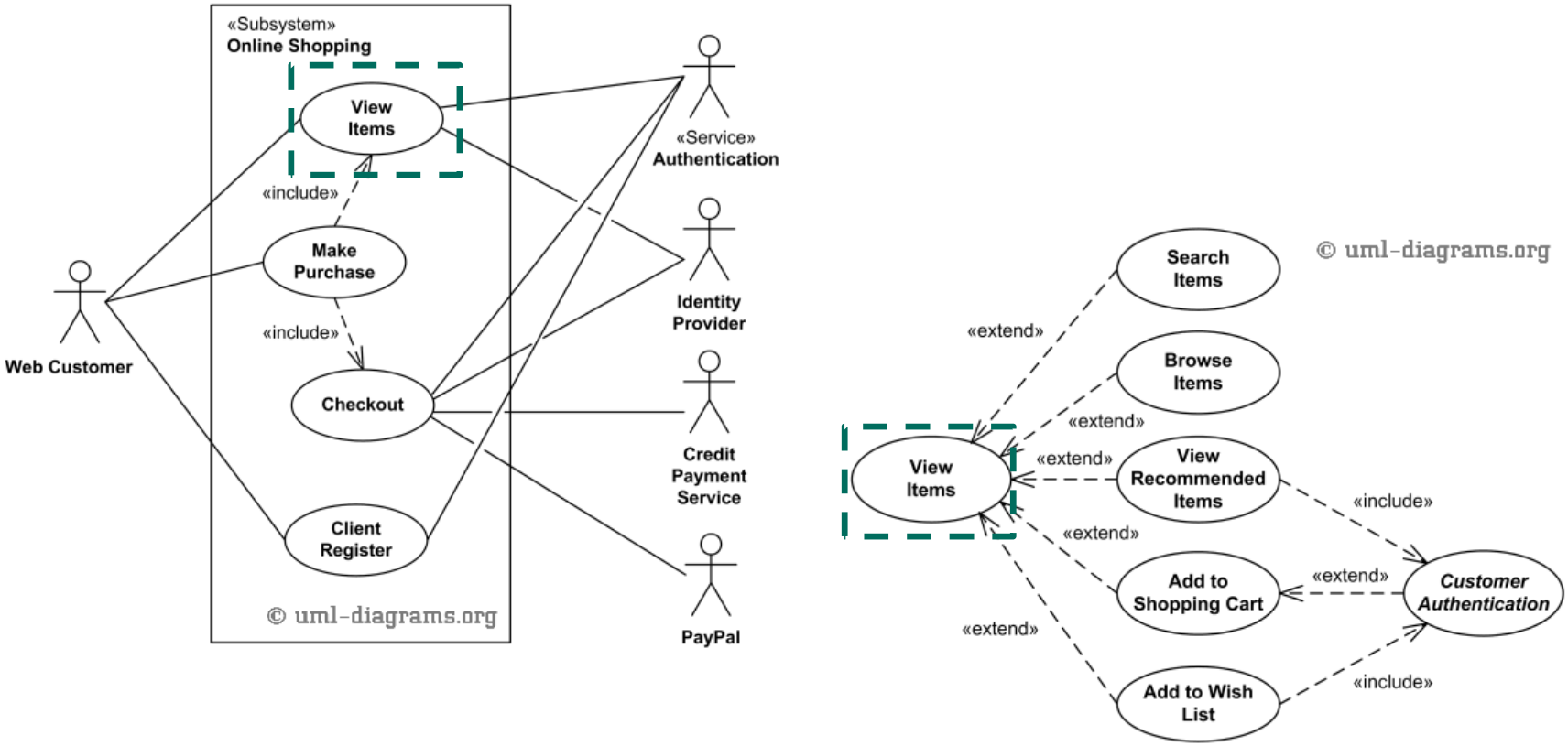
8. In practice you rarely see use cases and user stories used in conjunction. Any idea why? Discuss their relation and potential synergies.

9. What is the heuristic that helps to validate a valid use case step?

10. Explain the terms use case, scenario, actor, use case model and transaction in the context of use cases.

UC Example II

11. Which questions may arise from the UC diagrams shown below?



UC Example I

12. Analyze the following success scenario of a user goal use case for an online shop:

1) Customer starts his computer and logs into the internet. He goes to the website of the Online Shop system to order the goods.

2) He browses the catalogues of the various products that have been displayed for sale.

3) He chooses the product that needs to be purchased based on the information available and the sale decision.

4) He makes sure that the address where the product should be delivered is mentioned and chooses the relevant payment option.

5) He makes the payment and get the acknowledgements for the purchase along with some form of transaction log giving him proof of the purchase.

6) He receives the goods in is house via the delivery mechanism.

Hands on Writing…

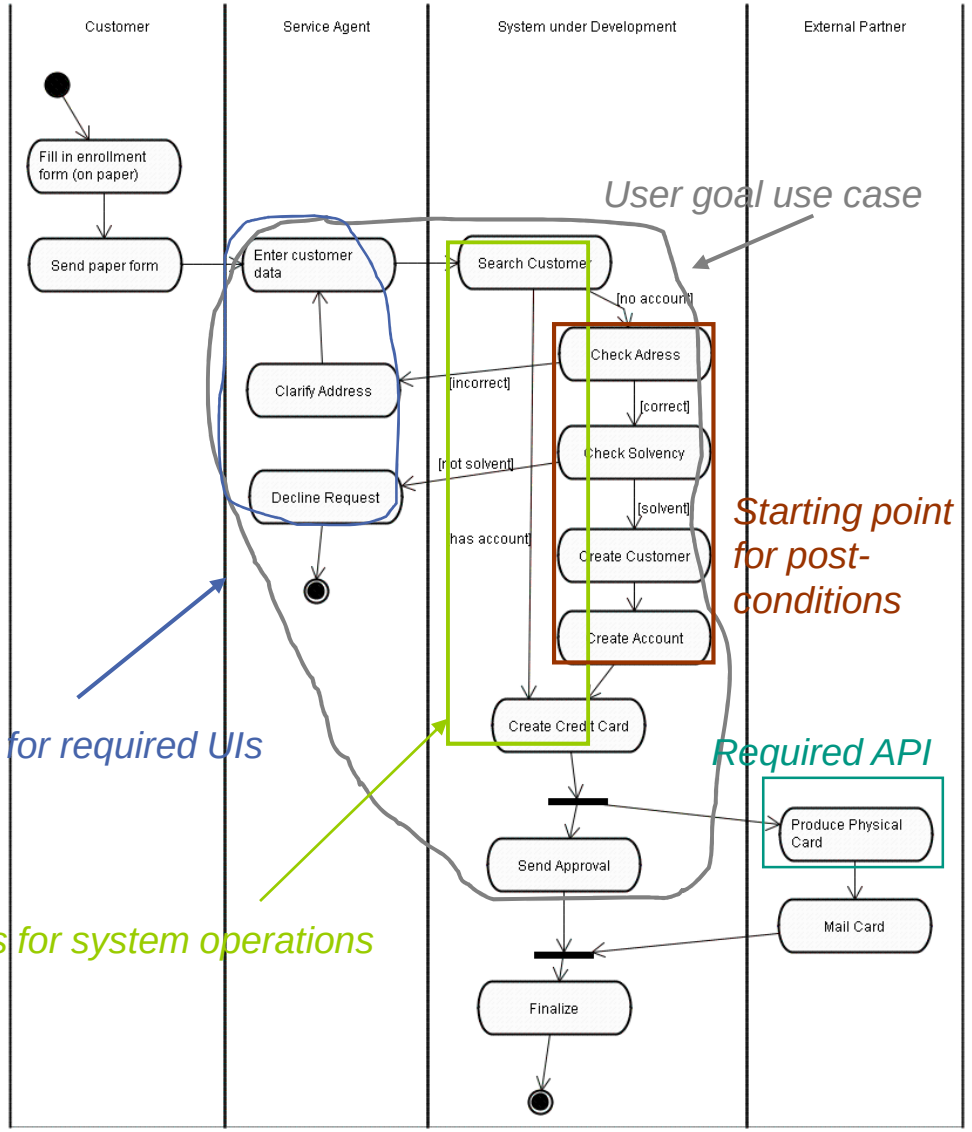
13. Explain the elements of the Fully Dressed Use Case template presented in the lecture slides.

14. Apply the use case notations presented in the lecture (brief, casual, fully dressed) on the following user story:

    As a customer I would like to withdraw money from the ATM in order to have cash at hand.

Example

- Domain experts find it often easier to think in “their” business processes
  - such as e.g. *Apply for Credit Card* process
  - these can provide valuable input software analysis and design
    - which is the job of analysts and designers of course



Winter Day 2013

Mi 4.12. 15:00–19:00

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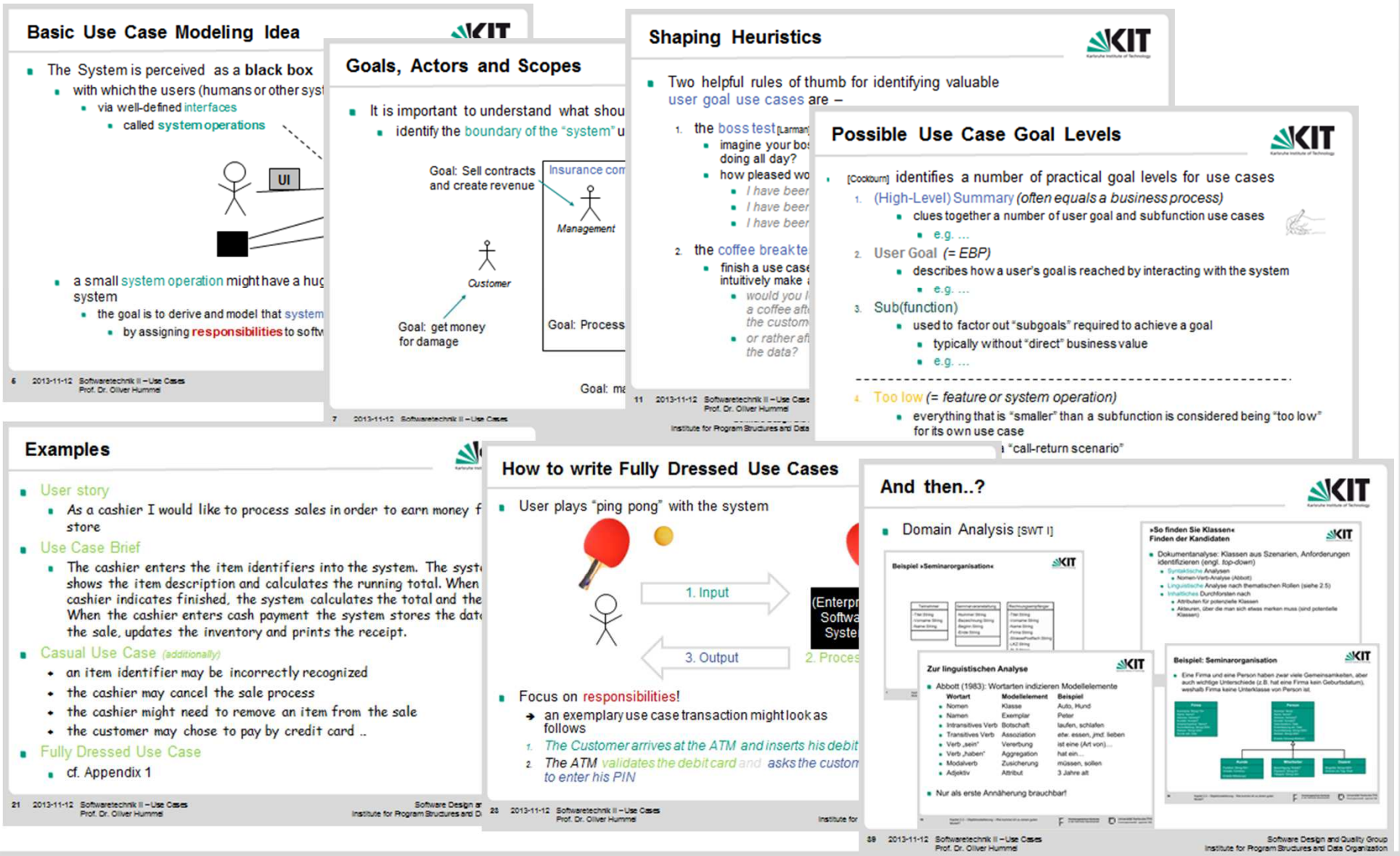
Summary


Basic Use Case Modeling Idea
The System is perceived as a black box
with which the users (humans or other syst
via well-defined interfaces
called system operations
UI
a small system operation might have a hug
system
the goal is to derive and model that system
by assigning responsibilities to softw
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Goals, Actors and Scopes
It is important to understand what shou
identify the boundary of the "system" u
Goal: Sell contracts and create revenue
Insurance com
Management
Customer
Goal: get money for damage
Goal: Process
Goal: ma
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Shaping Heuristics
Two helpful rules of thumb for identifying valuable user goal use cases are –
1. the boss test [Larman]
imagine your bos doing all day?
how pleased wo
I have beer
I have beer
I have beer
2. the coffee break te
finish a use case intuitively make
would you l a coffee aft the custom
or rather af the data?
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Possible Use Case Goal Levels
[Cockburn] identifies a number of practical goal levels for use cases
1. (High-Level) Summary (often equals a business process)
clues together a number of user goal and subfunction use cases
e.g. ...
2. User Goal (= EBP)
describes how a user's goal is reached by interacting with the system
e.g. ...
3. Sub(function)
used to factor out "subgoals" required to achieve a goal
typically without "direct" business value
e.g. ...
4. Too low (= feature or system operation)
everything that is "smaller" than a subfunction is considered being "too low" for its own use case
"call-return scenario"
Examples
User story
As a cashier I would like to process sales in order to earn money f store
Use Case Brief
The cashier enters the item identifiers into the system. The syst shows the item description and calculates the running total. When cashier indicates finished, the system calculates the total and the When the cashier enters cash payment the system stores the dat the sale, updates the inventory and prints the receipt.
Casual Use Case (additionally)
an item identifier may be incorrectly recognized
the cashier may cancel the sale process
the cashier might need to remove an item from the sale
the customer may chose to pay by credit card ..
Fully Dressed Use Case
cf. Appendix 1
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How to write Fully Dressed Use Cases
User plays "ping pong" with the system
1. Input
3. Output
(Enterpr Softwa Syste
2. Proces
Focus on responsibilities!
an exemplary use case transaction might look as follows
1. The Customer arrives at the ATM and inserts his debit
2. The ATM validates the debit card and asks the custom to enter his PIN
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And then..?
Domain Analysis [SWT I]
Beispiel »Seminarorganisation«
»So finden Sie Klassen« Finden der Kandidaten
Dokumentanalyse: Klassen aus Szenarien, Anforderungen identifizieren (engl. top-down)
Syntaktische Analysen
Nomen-Verb-Analyse (Abbott)
Linguistische Analyse nach thematischen Rollen (siehe 2.5)
Inhaltliches Durchforsten nach
Attributen für potenzielle Klassen
Akteuren, über die man sich etwas merken muss (sind potentielle Klassen)
Zur linguistischen Analyse
Abbott (1983): Wortarten indizieren Modellelemente
Wortart | Modellelement | Beispiel
Nomen | Klasse | Auto, Hund
Namen | Exemplar | Peter
Intransitives Verb | Botschaft | laufen, schlafen
Transitives Verb | Assoziation | etw. essen, jmd. lieben
Verb „sein" | Vererbung | ist eine (Art von)...
Verb „haben" | Aggregation | hat ein...
Modalverb | Zusicherung | müssen, sollen
Adjektiv | Attribut | 3 Jahre alt
Nur als erste Annäherung brauchbar!
Beispiel: Seminarorganisation
Eine Firma und eine Person haben zwar viele Gemeinsamkeiten, aber auch wichtige Unterschiede (z.B. hat eine Firma kein Geburtsdatum), weshalb Firma keine Unterklasse von Person ist.
Firma
Person
Kunde
Mitarbeiter
Dozent
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