Identifying needs and establishing requirements

BTH745 – Human-Computer Interaction

What, how and why?

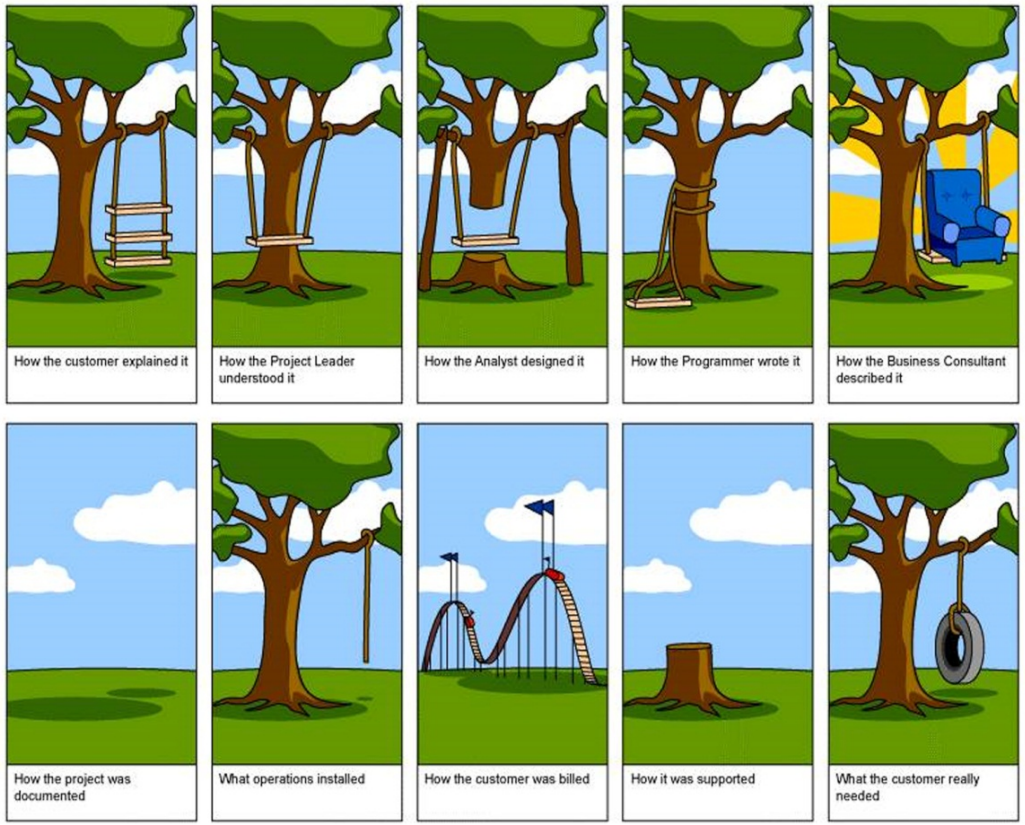
- What needs to be achieved?
  - Understand as much as possible about users, task, context
  - Produce a stable set of requirements

- How:
  - Data gathering activities
  - Data analysis activities
  - Expression as ‘requirements’
  - All of this is iterative

What, how and why?

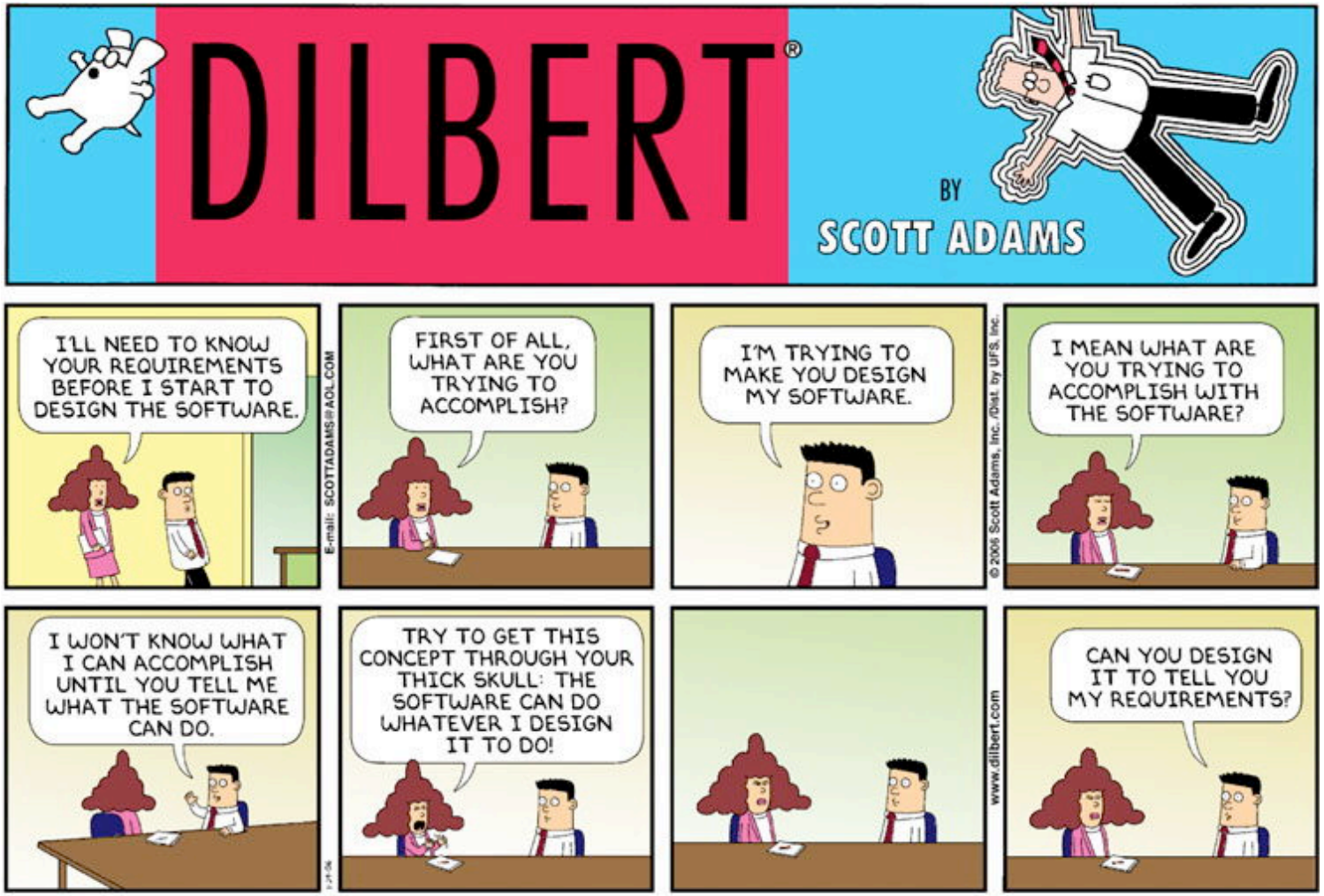
- Why:

  Requirements definition: the stage where failure occurs most commonly



Getting requirements right is <u>crucial</u>

What, how and why?



Establishing requirements

- What do users want? What do users 'need'?
  - Requirements need clarification, refinement, completion, re-scoping
- **Input**: requirements document (maybe)
- **Output**: stable requirements
- Why 'establish'?
  - Requirements arise from understanding users' needs
  - Requirements can be justified & related to data

Volere shell

Requirement #: **75** Requirement Type: **9** Event/use case #: **6**

Description: **The product shall issue an alert if a weather station fails to transmit readings.**

Rationale: **Failure to transmit readings might indicate that the weather station is faulty and needs maintenance, and that the data used to predict freezing roads may be incomplete.**

Source: **Road Engineers**
Fit Criterion: **For each weather station the product shall communicate to the user when the recorded number of each type of reading per hour is not within the manufacturer's specified range of the expected number of readings per hour.**

Customer Satisfaction: **3** Customer Dissatisfaction: **5**

Dependencies: **None** Conflicts: **None**

Supporting Materials: **Specification of Rosa Weather Station**

History: **Raised by GBS, 28 July 99**

Volere

User Story

As a **WHO** I want
WHAT because **WHY**.

Different kinds of requirements

- Functional:
  - What the system should do
  - Historically the main focus of requirements activities
- Non-functional:
  - Memory size, response time...
- Data:
  - What kinds of data need to be stored?
  - How will they be stored (e.g. database)?

Different kinds of requirements

- Environment or context of use:
  - Physical: dusty? noisy? vibration? light? heat? humidity? …. (e.g. ATM)
  - Social: sharing of files, of displays, in paper, across great distances, work individually, privacy for clients
  - Organizational: hierarchy, IT department's attitude and remit, user support, communications structure and infrastructure, availability of training

Different kinds of requirements

- Users: Who are they?
  - Characteristics: ability, background, attitude to computers
  - System use: novice, expert, casual, frequent
  - Novice: prompted, constrained, clear
  - Expert: flexibility, access/power
  - Frequent: short cuts
  - Casual/infrequent: clear menu paths

Personas

- Capture a set of user characteristics (user profile)
- Not real people, but synthesised from real user
- Should not be idealised
- Bring them to life with a name, characteristics, goals, personal background
- Develop a small set of personas with one primary

Design example

Parking Angel

Can you imagine a world in which parking doesn't have to be a hassle? We can.

The problem

You're driving in an area you don't know, you're running late, and you have no idea where to park. Sound familiar? We think this is a frustration technology could help solve, so we decided to design a solution.

As usual, we based our design on a persona. Christine and her husband live in an urban Chicago neighborhood. Like most city drivers, Christine has a number of frustrations related to parking:

- Hunting for parking spaces
- Paying for an expensive garage only to find an empty metered spot around the corner
- Getting tickets when she can't remember which streets in her neighborhood get cleaned on which nights
- Having to remember when her meter expires
- Not being able to find a spot that feels safe when she's alone at night
- Stockpiling quarters in her cup holder

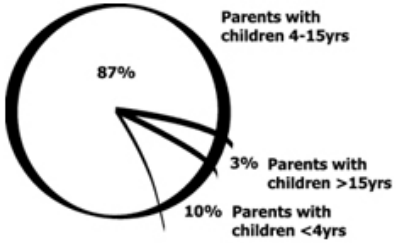
Christine's Goals:

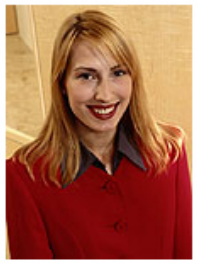
- Save time and money
- Avoid "stupid" tickets
- Minimize stress

http://www.cooper.com/insights/concept_projects/parking_angel.html

Personas

In a survey of 150 people, participants were asked about Rear Seat Entertainment (RSE) systems. It was found that most respondents believed it was a "lifestyle" purchase for parents trying to entertain or distract their kids while driving. Most felt that the system was appropriate for children between the ages of 4-15yrs, as children needed to be old enough to use headsets as well as some form of remote control. Among the high quality brand names mentioned were Sony, Hitachi, Magnavox and Nintendo. High system prices were cited as a barrier to purchase in the next two years. However, many expected prices to fall significantly over the next five years.





Kathleen is 33yrs old and lives in Seattle. She's a stay-at-home mom with two children: Katie, 7, and Andrew, 4. She drives the kids to school (usually carpooling with 2-3 other kids) in her Volvo wagon. Kathleen is thinking about buying the Sony rear-seat entertainment system she saw last weekend at Best Buy to keep the children occupied on the upcoming trip to see family in Canada. She doesn't want to be distracted by the noise from the videos or games so wants to make sure she can set the sound to be heard only in the back seat. Kathleen also wants to make sure her kids are watching appropriate programs; therefore she wants some channel controls close at hand, but she thinks Katie should be able to control the system most of the time so she won't be distracted.

http://www.cooper.com/insights/journal_of_design/articles/reconciling_market_segments_an_1.html

Personas

Ginnie

CAPLIN

BACKGROUND

- 15, Female
- Ongoing Private Education
- Ambitious
- Comfortable using technology to communicate

MOTIVATIONS

- Keeping in touch with her network
- Fashion/street cred
- Keeping up with peers.

FRUSTRATIONS

- Sad people trying to be 'friends' on Facebook
- Having to be in bed @ 11pm
- Being swamped in friends updates
- Missing important status updates

Receives private tutoring in Maths and English as these are not her strong subjects. Enjoys playing for the school's 2nd teams for netball and Lacrosse and is good at art.

She loves recording her favourite shows: ER and Sun Valley High on Sky+ and spends some of her time on her Laptop that Daddy bought her watching videos on YouTube, downloading music, keeping up to date with her friends on Facebook and chatting via MS IM to her cousin who is at University in Leeds.

She loves Ugg boots and Abercrombie & Fitch and uses the Internet to shop and find the cheapest prices.

"I want to easily hook up with my friends whilst watching TV"

Task descriptions

- Scenarios
  - An informal narrative story, simple, ‘natural’, personal, not generalizable
- Use cases
  - Assume interaction with a system
  - Assume detailed understanding of the interaction
- Essential use cases
  - Abstract away from the details
  - Does not have the same assumptions as use cases

Scenario for travel organizer

"The Thomson family enjoy outdoor activities and want to try their hand at sailing this year. There are four family members: Sky (10 years old), Eamonn (15 years old), Claire (35), and Will (40). One evening after dinner they decide to start exploring the possibilities. They all gather around the travel organizer and enter their initial set of requirements – a sailing trip for four novices in the Mediterranean. The console is designed so that all members of the family can interact easily and comfortably with it. The system's initial suggestion is a flotilla, where several crews (with various levels of experience) sail together on separate boats. Sky and Eamonn aren't very happy at the idea of going on vacation with a group of other people, even though the Thomsons would have their own boat. The travel organizer shows them descriptions of flotillas from other children their ages and they are all very positive, so eventually, everyone agrees to explore flotilla opportunities. Will confirms this recommendation and asks for detailed options. As it's getting late, he asks for the details to be printed so everyone can consider them tomorrow. The travel organizer prints out a summary of the different options available."

Scenarios and Personas

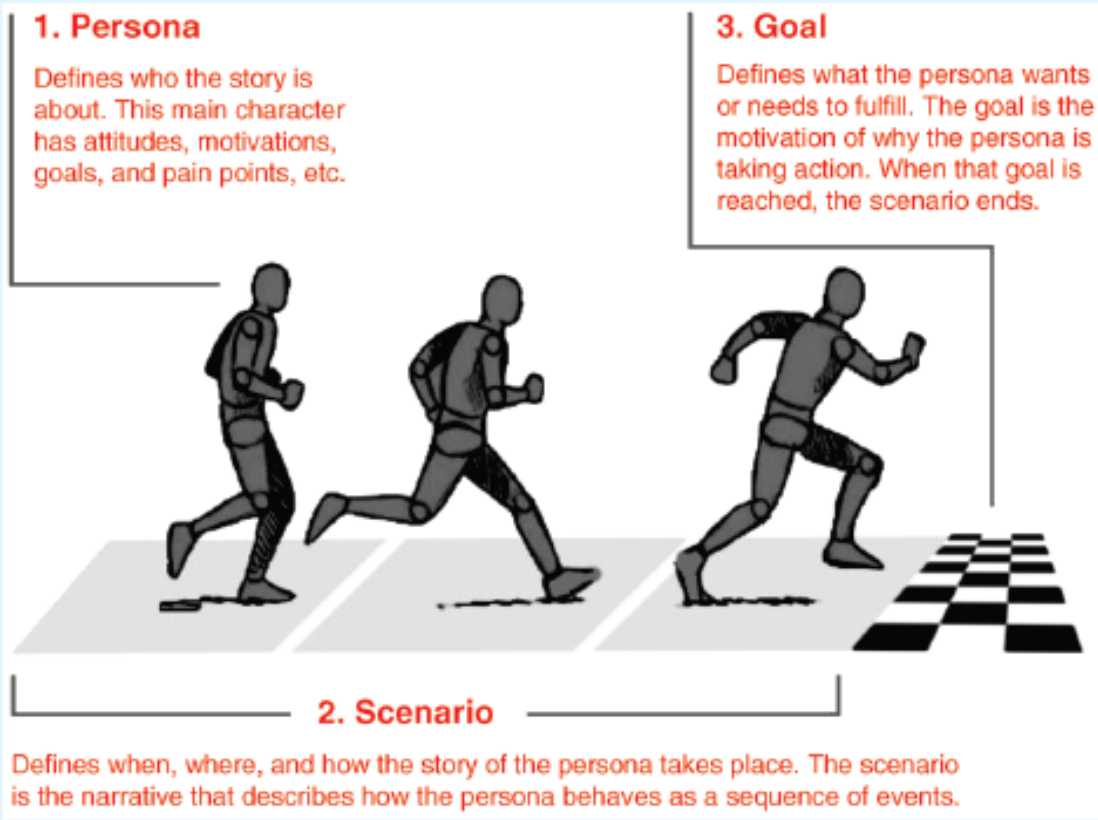


Figure 10.10 The relationship between a scenario and its associated persona

Source: http://www.smashingmagazine.com/2014/08/06/a-closer-look-at-personas-part-1/