

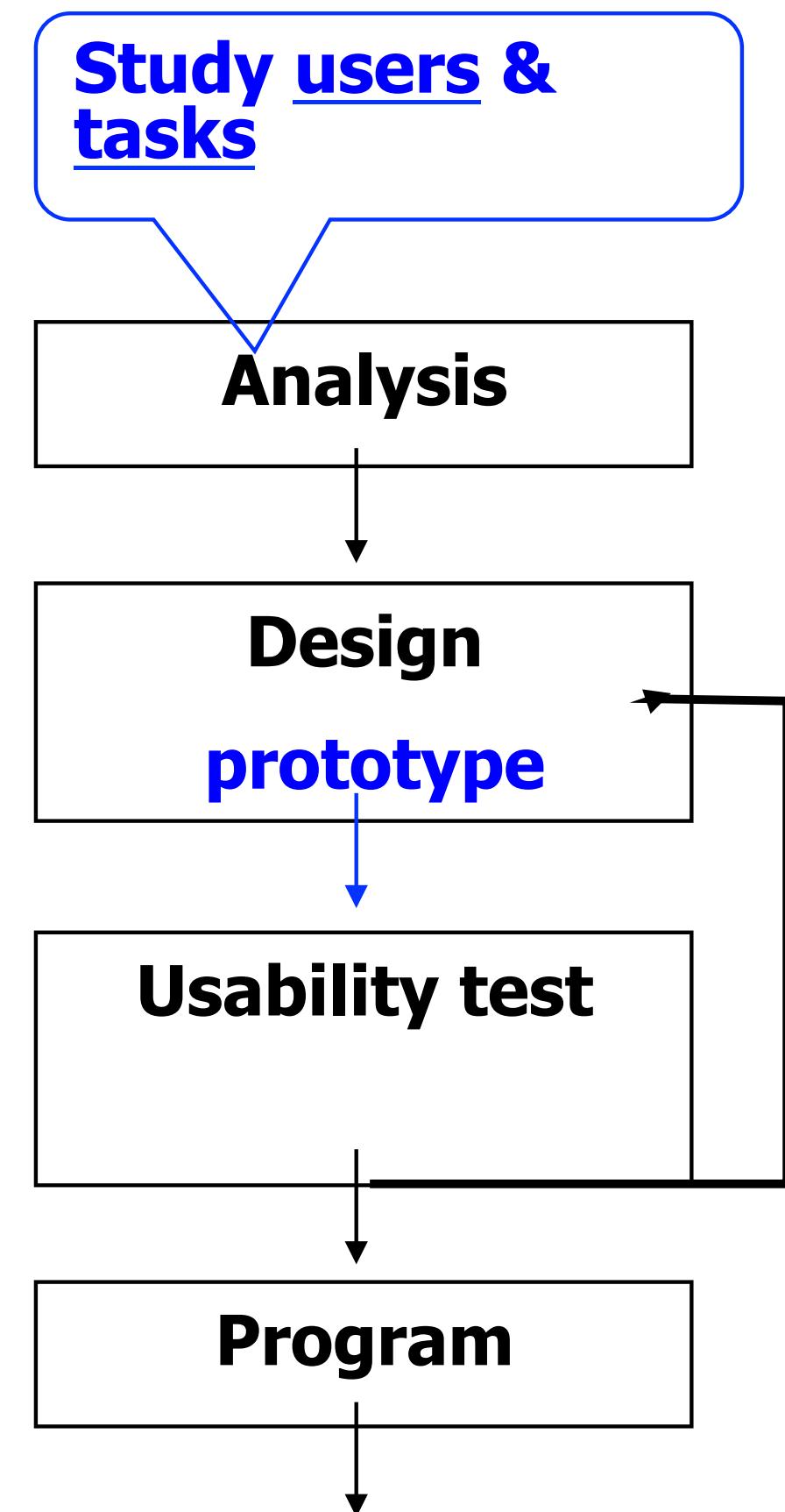
User Analysis & Task Analysis

Chapter 2



User Analysis

- To design an effective system, it is necessary to know the answers to the following 3 questions
 - Who are the users?
 - What are the tasks?
 - What is the environment in which the system will operate?



Example:

Task: reading news on apps

User: Elderly vs teenager

Environment: Inside MRT/LRT, day/night time



User Types

Novice users: Users who attempt to use a system for the first time

Novice users are generally unfamiliar with the system but may well understand the goals to be accomplished

E.g.1: a new lecturer who wants to upload notes, tut Q and assignment Q to Google Classroom.

E.g.2: a person who attempts to buy a train ticket online for the first time

Knowledgeable intermittent users:

Irregular users of many systems

- They have a stable knowledge of the task, but have difficulty in remembering details of system operations because of not using systems regularly. (e.g. Using e-filing for income tax once a year)

Expert/Frequent users:

Users who are very familiar with the systems and tasks

- They are well versed in computer terminologies and syntax

Design for Novice Users

1) All initiatives should come from the computer

- The designer of a system should consider the novice user to be like a shy visitor who needs prompting.

Examples:

Date : _____ (use dd/mm/yy)

Name: _____ (last, first, middle)

Tel : _____ (area code - phone no)

- For novice users, system should be designed to tell them what to do and they simply respond to instructions

2) Each required input should be brief

- Designers should NOT assume that novice users are proficient keyboard operators.

3)No special training should be necessary

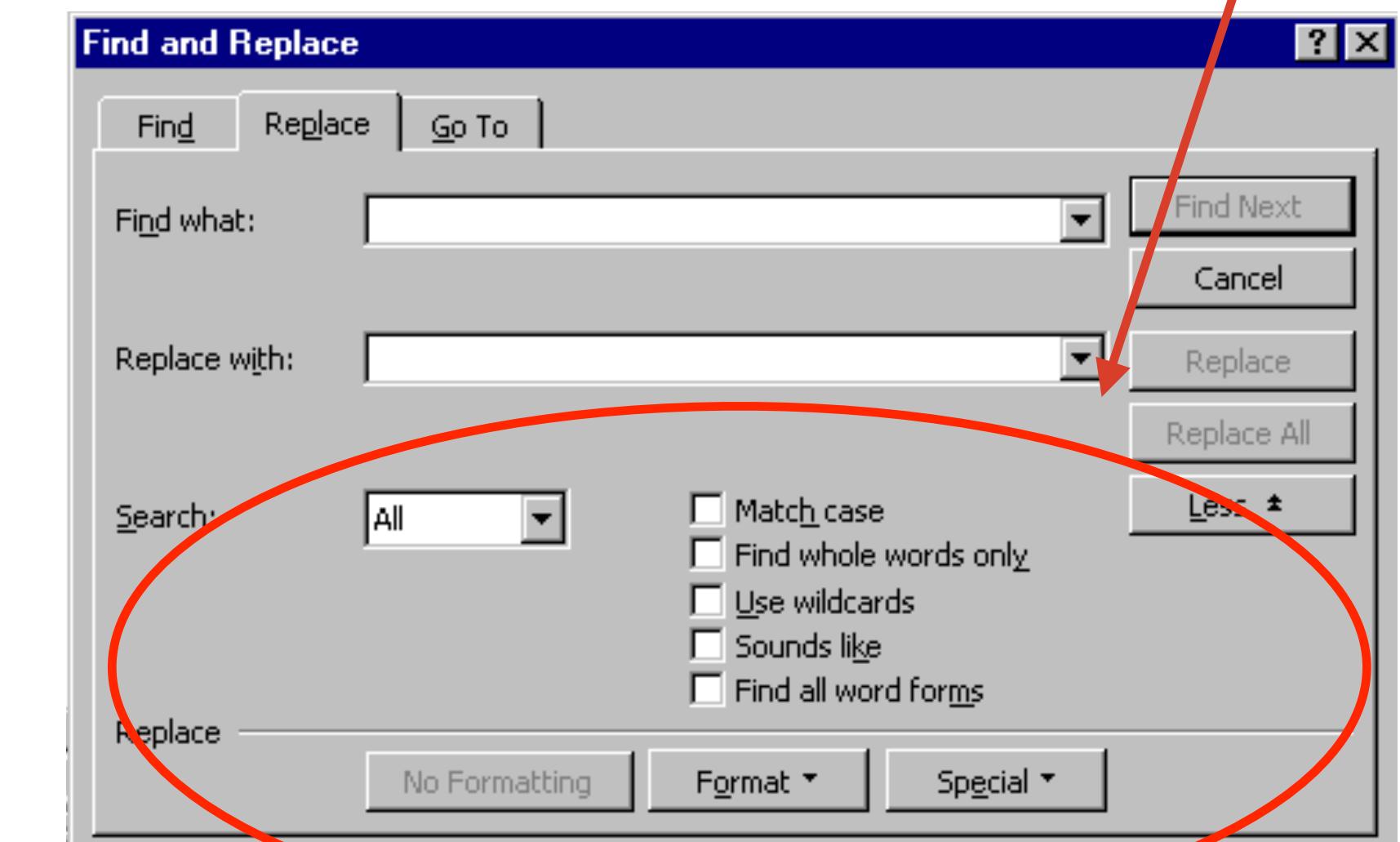
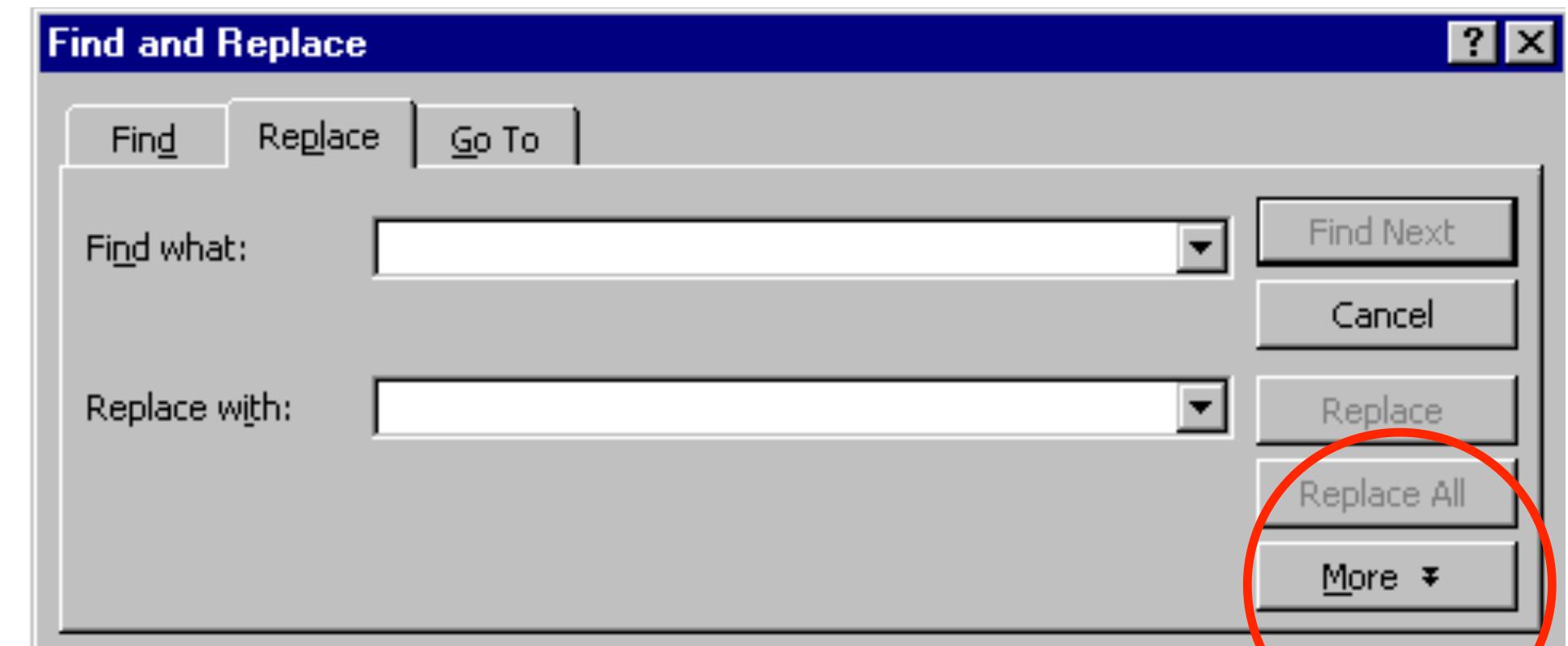
- All info needed to operate the system should be provided by the system
- The system should make it clear what has to be done

4)All system messages should be clear and unambiguous

5) User decisions should be made from a small set of options

- Novice users need to make choices from a small number of options available since it makes them feel that the system is limited in size and it avoids feelings of being overwhelmed by the enormity of the system

6) There should be sufficient feedback help.



Design for Knowledgeable Intermittent Users

- 1) System should be consistent
- 2) System should provide good help facilities and good documentation

Design For Expert Users

- 1) Feedback should be brief
- 2) Command sequences should be offered in abbreviated and meaningful form,
e.g. copy command in Unix: cp
- 3) Where possible, keyboard shortcuts should be provided

Understanding Users :Requirements

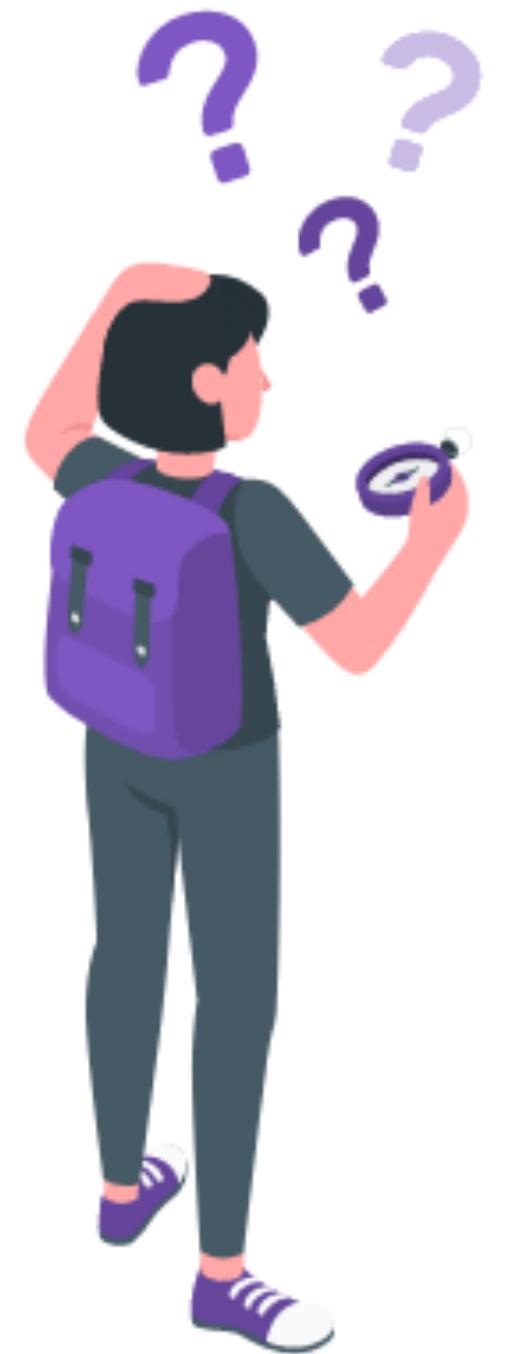
Type of requirements:

Functional Requirements

- What the system should do.E.g. save Historical data

Non-functional Requirements

- Usability goals, response time...
- Non-functional requirements describe how the system works, while functional requirements describe what the system should do



How to Understand Users?

Gathering Data for Requirements

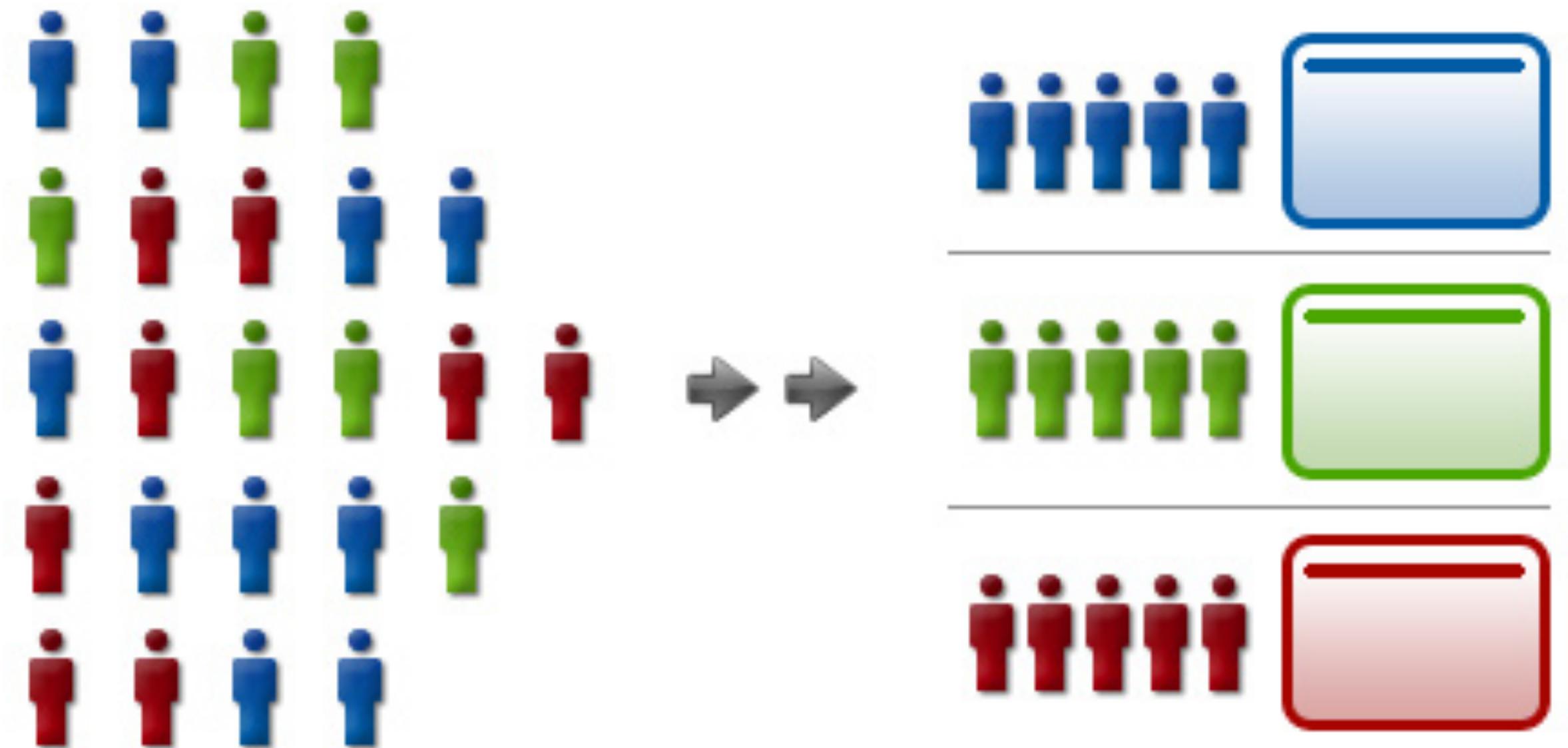
1) Interviews

- Users of a product should be the main focus of the design effort. They are the people who are personally utilizing the product to accomplish a goal (not their managers or support team).
- Interviewing both current and potential users illuminates the effect that experience with the current version of a product may have on how the user behaves and thinks about things.
-

- Information we are interested in learning from users includes:
 - The context of how the product (or analogous system, if no current product exists) fits into their lives or workflow: when, why, and how the product is or will be used
 - Domain knowledge from a user perspective: What do users need to know to do their jobs?
 - Goals and motivations for using their product
 - Mental model: how users think about their jobs and activities, as well as what expectations users have about the product
 - Problems and frustrations with current products (or an analogous system if no current product exists)

2) Focus groups

- is representative users, usually chosen to match previously identified demographic segments of the target market, are gathered together in a room and asked a structured set of questions and provided a structured set of choices.



3) Card Sorting

- is a technique to understand how users organize information and concepts.
- performed by asking users to sort a deck of cards, each containing a piece of functionality or information related to the product or Web site.
- to uncover one aspect of a user's mental model.

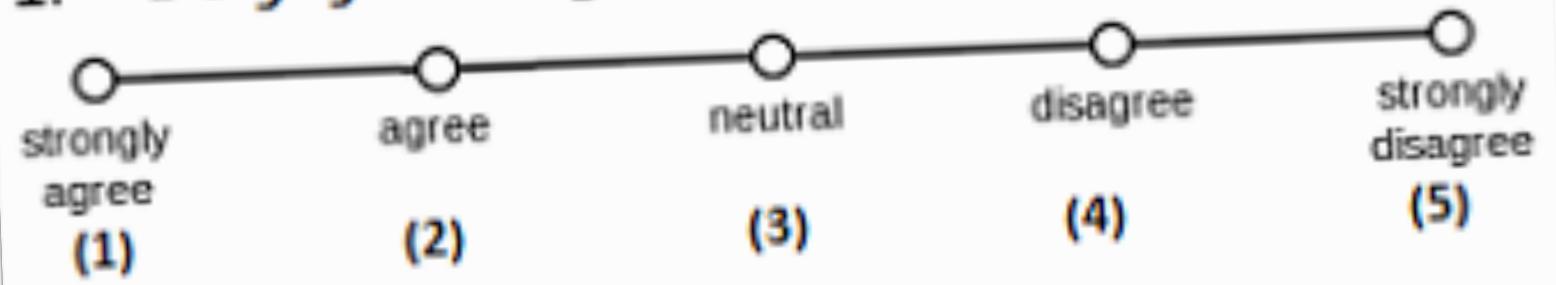


3) Questionnaires

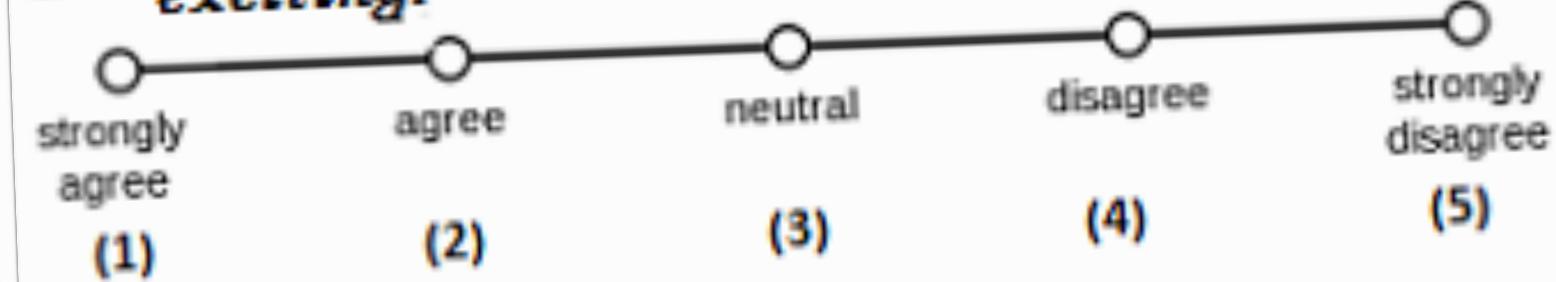
- Advantage:
 - a usability questionnaire gives you feedback from the point of view of the user.
 - If the questionnaire is reliable, and you have used it according to the instructions, then this feedback is a trustworthy sample of what you get from your whole user population.
- disadvantage :
 - Need time and afford in setting realiable questionnaire.

*reliability is the ability of the questionnaire to give the same results when filled out by like-minded people in similar circumstances.

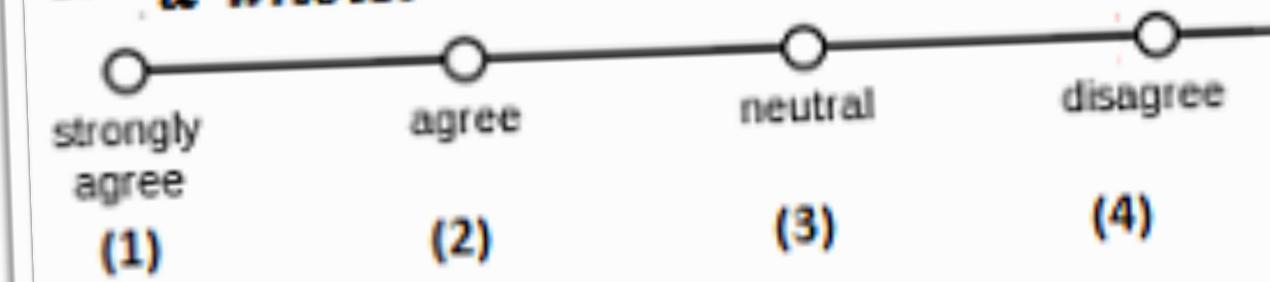
1. *I enjoy coming into work each day.*



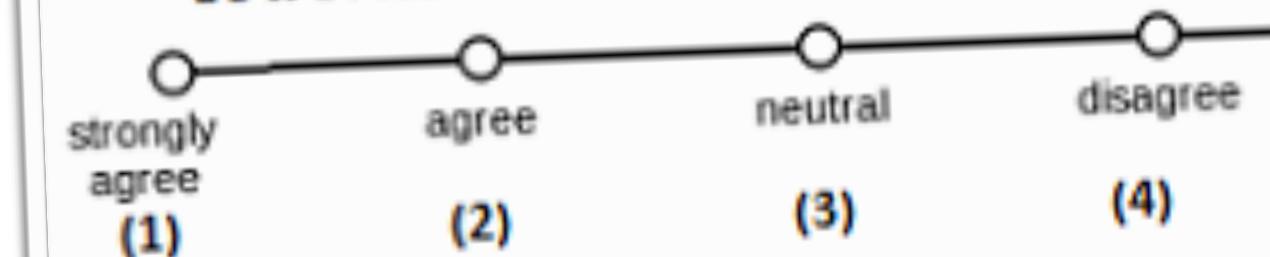
2. *I find what I do at work interesting and/or exciting.*



3. *What I do at work contributes to society as a whole.*



4. *I have positive relationships with my coworkers.*



5. *I am compensated fairly for the amount of work that I do.*



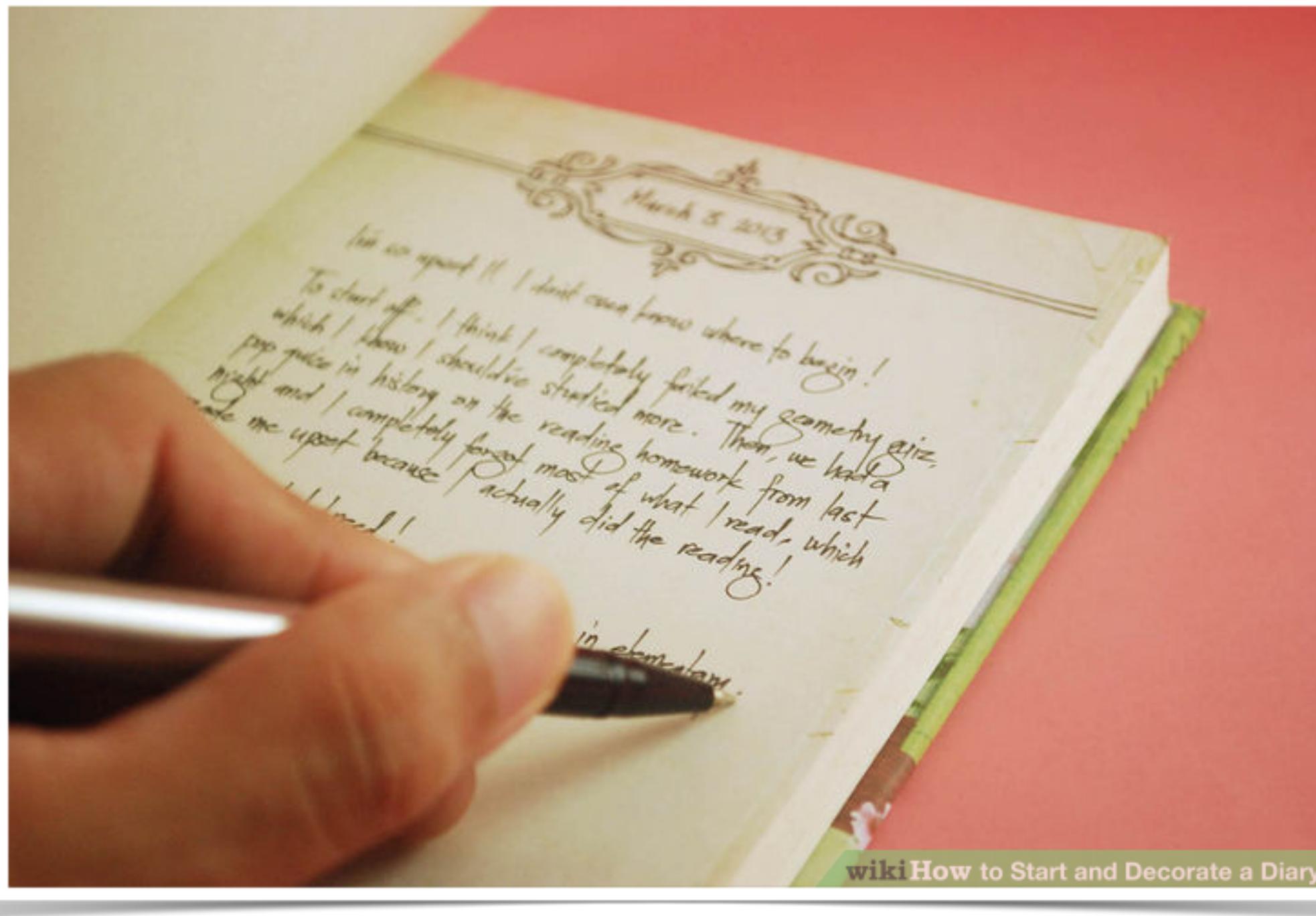
Check boxes



Liker scale

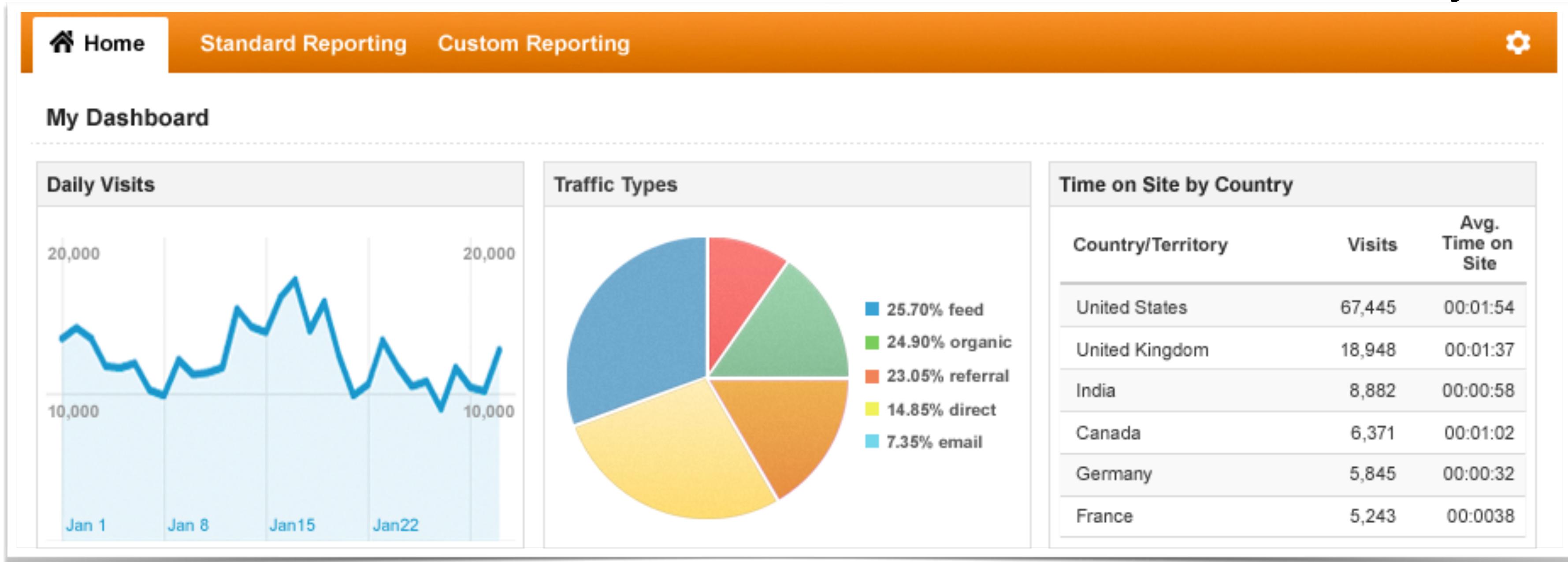
4) Observation

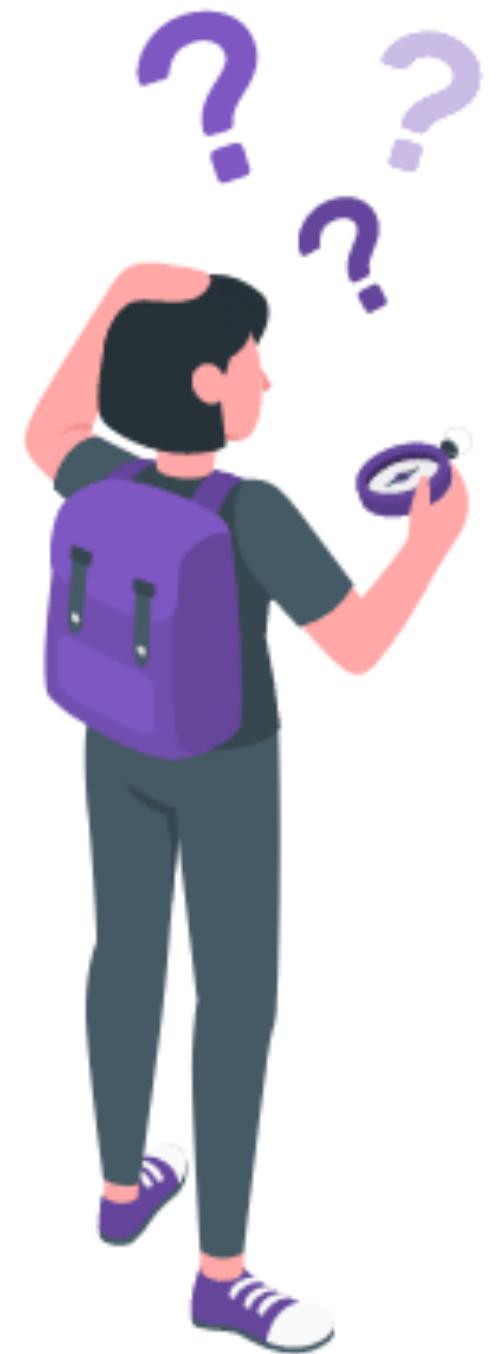
- Most people are incapable of accurately assessing their own behaviours especially when they are removed from the context of their activities.
- Observational methods involve an investigator viewing users as they work in a field study, and taking notes on the activity that takes place.
- Direct : investigator is actually present during the task.
- Indirect: the task is viewed by some other ways such as through use of a video recorder.
- It is also useful for studying currently executed tasks and processes.
- It should be noted that observation can be obtrusive and subjects may alter their behaviour due to the presence of an observer.



Diary

web traffic analytics





After Data Gathering, What's Next?

User needs analysis

- Users can be classified according to their
 - Demographics (e.g. age, gender)
 - Occupational experience (e.g. job title, years of experience)
 - Educational level
 - Experience, etc.

- Why model the user?
 - They are powerful tools for representing complex structures and relationships for the purpose of better understanding, discussing, or visualizing them.
 - Without models, we are left to make sense of unstructured, raw data, without the benefit of any organizing principle.
 - **Personas** are models for users that represent their relationships with physical world, environment and product.



TOBI DAY



PERSONA TEMPLATE

AGE 26

OCCUPATION Record Store Manager

STATUS Single

LOCATION New York, NY

TIER Enthusiast

ARCHETYPE The Maestro

Ambitious

Admired

Focused



"If I had a way to share projects and collaborate in real time, that would make my workload so much easier to manage."

MOTIVATIONS



GOALS

- To grow a strong industry reputation
- To build an audio-pro portfolio
- To keep track of everything

FRUSTRATIONS

- Slow download times
- Data crashes
- Poor communication

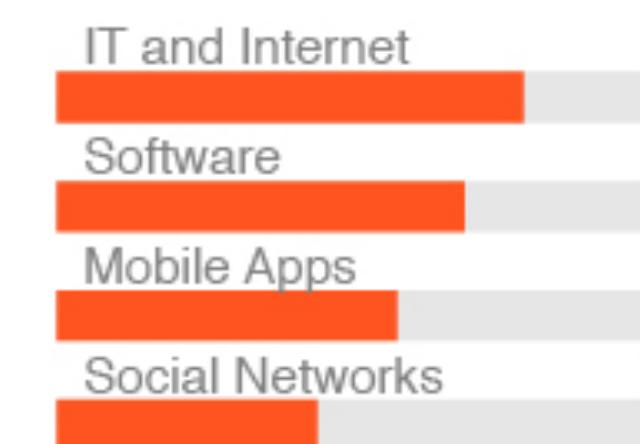
BIO

Tobi has a day job at a record store, but on the side she does all kinds of production work for up-and-coming artists. She never hesitates to learn something new and she often acts as tech support for her friends and clients. She is usually working on a dozen projects at a time and is trying to establish herself in the industry, so she hates data crashes or anything that makes her look bad. Because she works alone and in her home, collaboration is everything.

PERSONALITY



TECHNOLOGY



Audi

Coca-Cola

SONY

PreSonus

Persona

- Personas are user models that are represented as specific, individual human beings. They are not actual people but are synthesized directly from observations of real people.
- Personas must be based on real-world observation.

- Data that can support and supplement the creation of personas include:
 - Interviews
 - Market research data such as focus groups and surveys
 - Market-segmentation models
 - Data gathered from literature reviews and previous studies

Persona are NOT	Persona are
What people tell you about themselves	what you observe
About customer likes or dislikes	about what frustrate or satisfy a customer
A job description or a documentary about a person	About skills, attitude, motivation, environment and goals
job description	presenting behaviour patterns

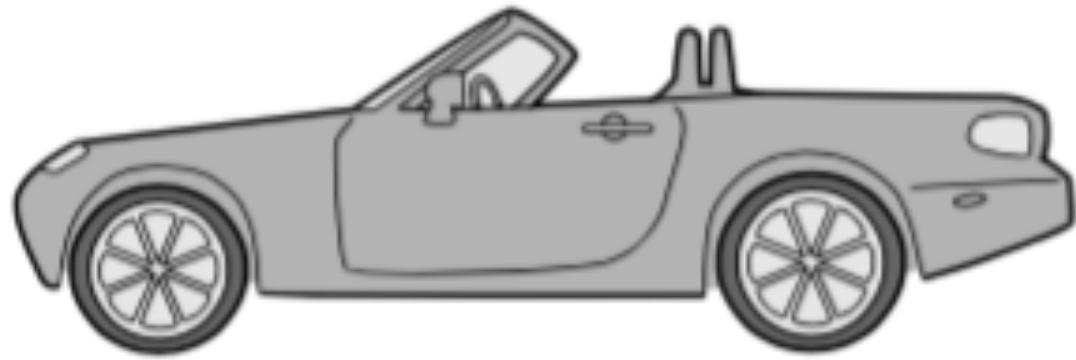
If you try to design a car that pleases every possible driver, you end up with a car with every possible feature, but that pleases nobody.





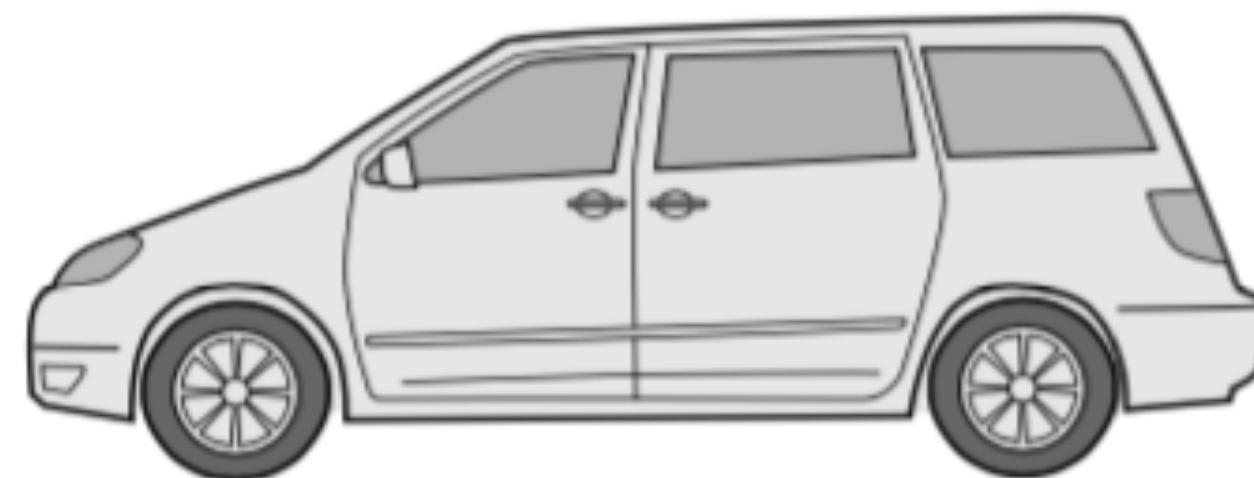
Alesandro's goals

- ▶ Go fast
- ▶ Have fun



Marge's goals

- ▶ Be safe
- ▶ Be comfortable



Dale's goals

- ▶ Haul big loads
- ▶ Be reliable



Types of Personas

Marketing personas:

- focus on demographic information, buying motivations and concerns, shopping or buying preferences, marketing message, media habits.
- Marketing personas are good for determining what types of customers will be receptive to certain products or messages, or for evaluating potential ROI of a product.

Proto–personas:

used when there is no money or time to create true research–based personas – they are based on secondary research. (mostly based on assumptions)

Design personas:

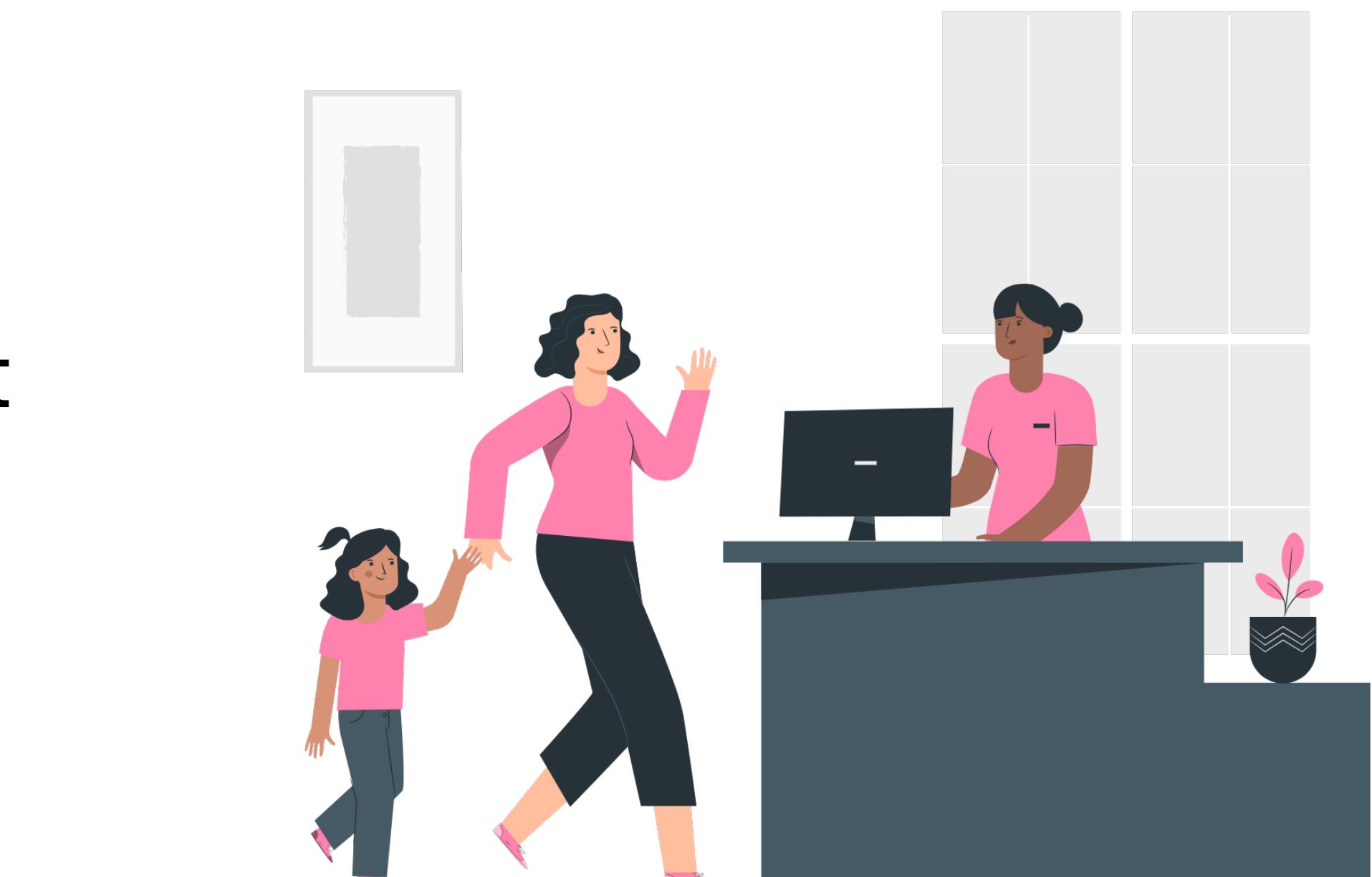
- focus on user goals, current behaviour, and pain points as opposed to their buying or media preferences and behaviours.
- They are based on field research and real people.

Creating Persona

- **Bring persona to life** by adding following minimum details:
 - First and last name
 - Picture
 - Demographics (age, location, gender, job title, etc.)
 - etc..

Identify behaviour variables .

- Focus on the following variable types:
 - Activities – What user does; frequency and volume
 - Attitudes – How user thinks about product domain and technology
 - Motivations/Goals – Why user is engaged in product domain
 - Skills – User's capabilities related to product domain and technology
 - Pain points/ frustrations



Persona examples

Globalchange.gov

Scientist Steve

Works as: Gov Researcher

My themes: Evaluate,
Research, Advise, Analyze



His role

- Expert in climate change
- Engages deeply with USGCRP

Goals

- Advance his work through collaboration with other researchers
- Evaluate and provide feedback on the work of other scientists
- Identify gaps in existing climate research & explore new research topics
- Showcase & promote their contributions to federal climate research



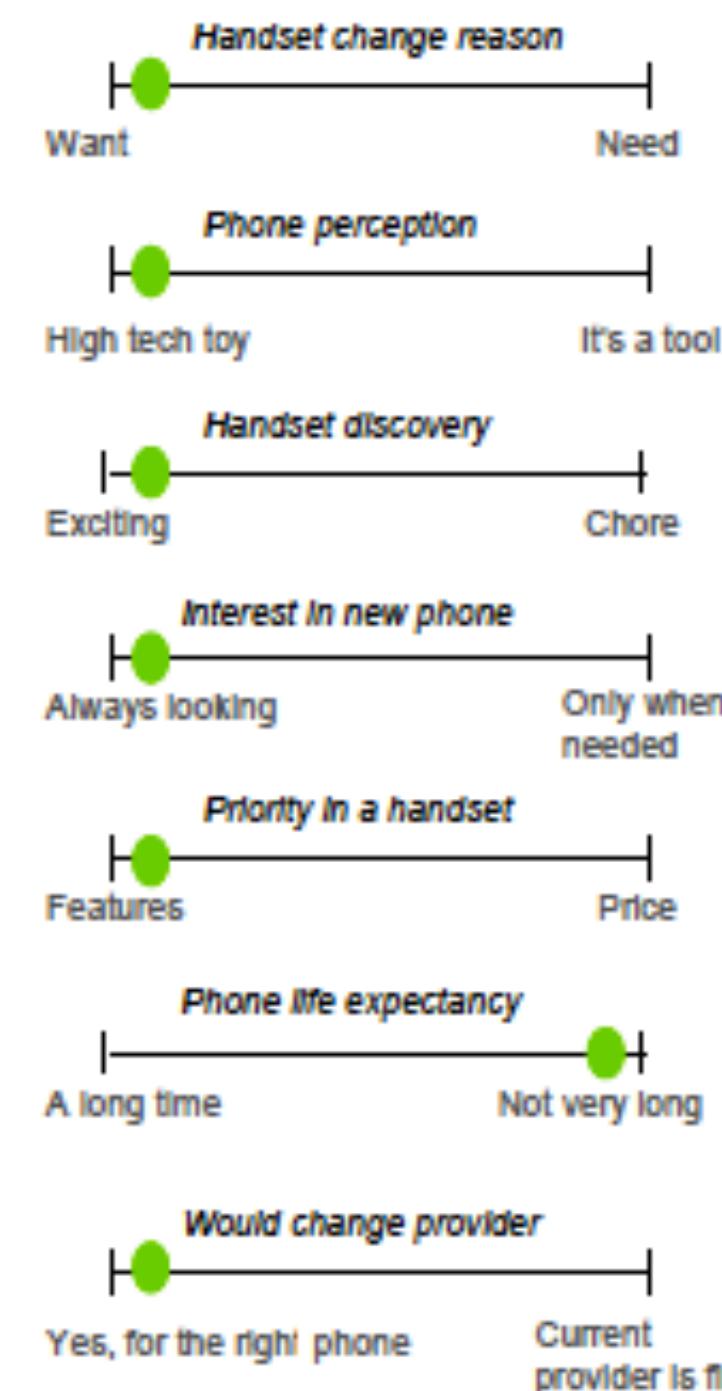
Needs

- Searchable repositories of info & data (dashboards)
- Streamlined access to resources, data, and tools from other agencies
- Traceable references & citations, consistent across organizations
- Visibility into other areas of climate research that may be related to their work
- Instructions & tutorials on how to access & analyze federal climate data

Toby – “Fashion Phone Upgrader”



Behaviours



“One year in phones is a long time”

Toby loves technology and has to be seen with the newest and coolest digital gadgets. His phone is not just about making calls; he loves using its wealth of features for everything he can: surfing the web, writing emails, social networking and using it as a personal organiser.

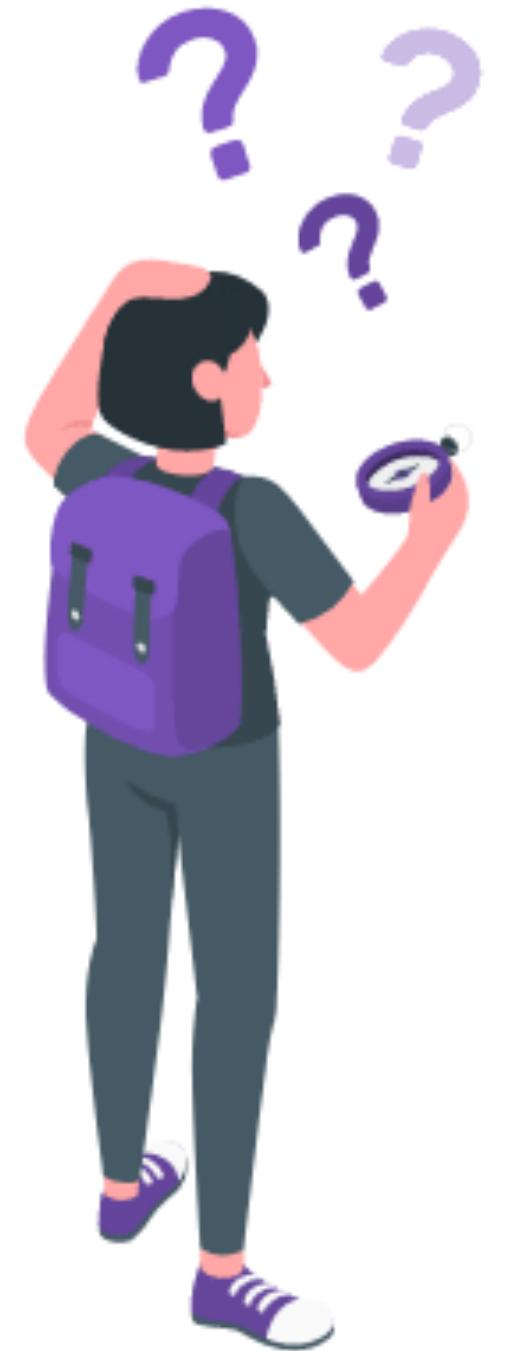
Because he gets bored quickly with his phones, Toby is always looking for the latest toy and pays attention to new releases. He frequently upgrades part way through his contract and is willing to pay the upgrade fee to get the best phone. To him, a contract is a mere inconvenience, but something he endures to get a bigger discount off his new phone

Key Characteristics

- Age 20-35
- Is tech savvy
- Loves showing off his new phone to friends
- Would find a way to get out of his current contract for the latest phone
- Keeps up to date with the latest phones online
- Gets bored with phones quickly

Goals

- Have the latest, coolest phone
- Be up to date with the newest phones on the market
- Use as many features on his phone as possible



After User Analysis, What's Next?

After persona.....

- Uses personas to create stories that point to design.
- Developing stories or scenarios as a means of imagining user interactions.
- using those scenarios to define requirements.
- Using these requirements in turn to design the product.

Scenario

- use scenario to represent the task.
- focuses on describing how users accomplish tasks. It consists of an environmental setting and includes agents or actors (persona).
- A persona provides a tangible representation of the user to act as a believable agent in the setting of a scenario
- Scenario content and context are derived from information gathered during the Research phase and analyzed during the Modelling phase.
- A scenario is an informal narrative description of a specific interaction, usually with a real-world setting.

Scenario Example 1

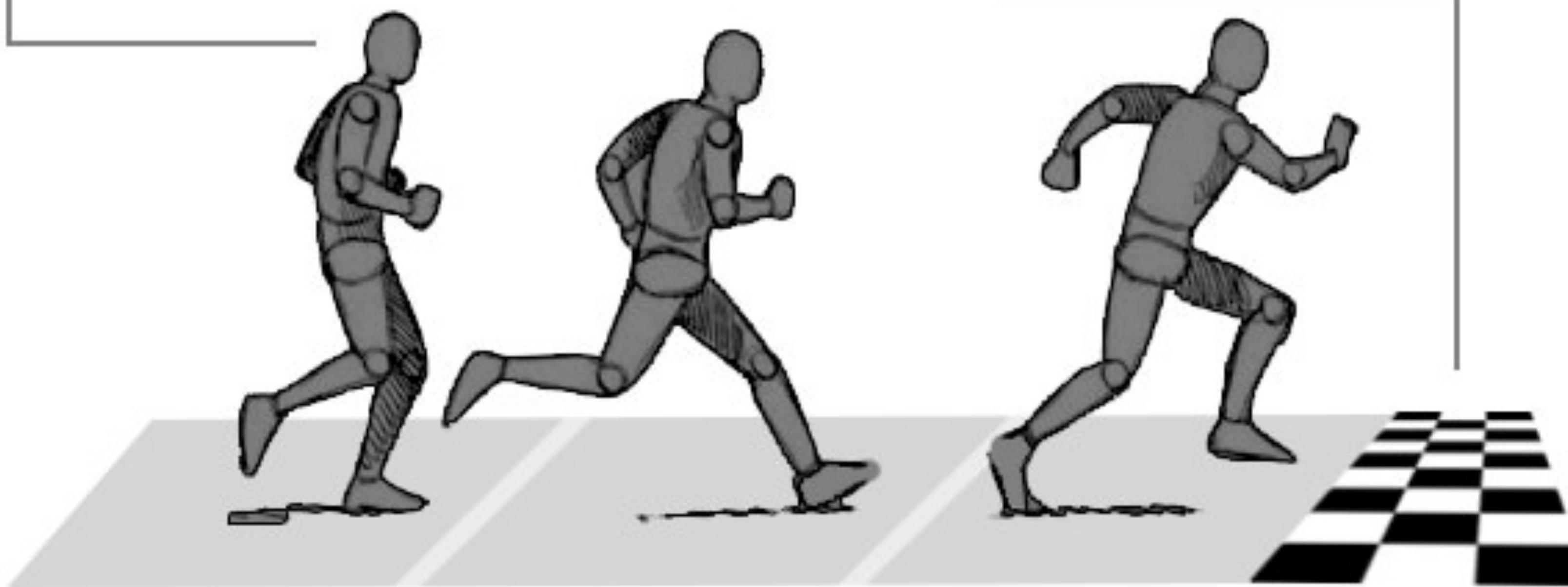
“The Thomson family enjoy outdoor activity holidays and want to go sailing. While out shopping they call at the travel agents in their local town to start exploring the possibilities ... The travel organizer is located in a quiet corner of the agents’ office, where there are comfortable seats and play things for young children. They all gather around the organizer and enter their initial set of requirements—a sailing holiday for four novices. The stand-alone console is designed so that all members of the family can interact easily and comfortably with it. The system’s initial suggestion is that they should consider a flotilla holiday, where several novice crews go sailing together and provide mutual support for first-time sailors...” (Preece, Rogers & Sharp, 2011)

Scenario Example 2

Brian would like to see the new film “Moments of Significance” and wants to invite Alison, but he knows she doesn’t like “arty” films. He decides to take a look at it to see if she would like it and so connects to one of the movie sharing networks. He uses his work machine as it has a higher bandwidth connection, but feels a bit guilty. He knows he will be getting an illegal copy of the film, but decides it is OK as he is intending to go to the cinema to watch it. After it downloads to his machine he takes out his new personal movie player. He presses the menu button and on the small LCD screen he scrolls using the arrow keys to bluetooth connect and presses the select button. On his computer the movie download program now has an icon showing that it has recognised a compatible device and he drags the icon of the film over the icon for the player. . . .”

1. Persona

Defines who the story is about. This main character has attitudes, motivations, goals, and pain points, etc.

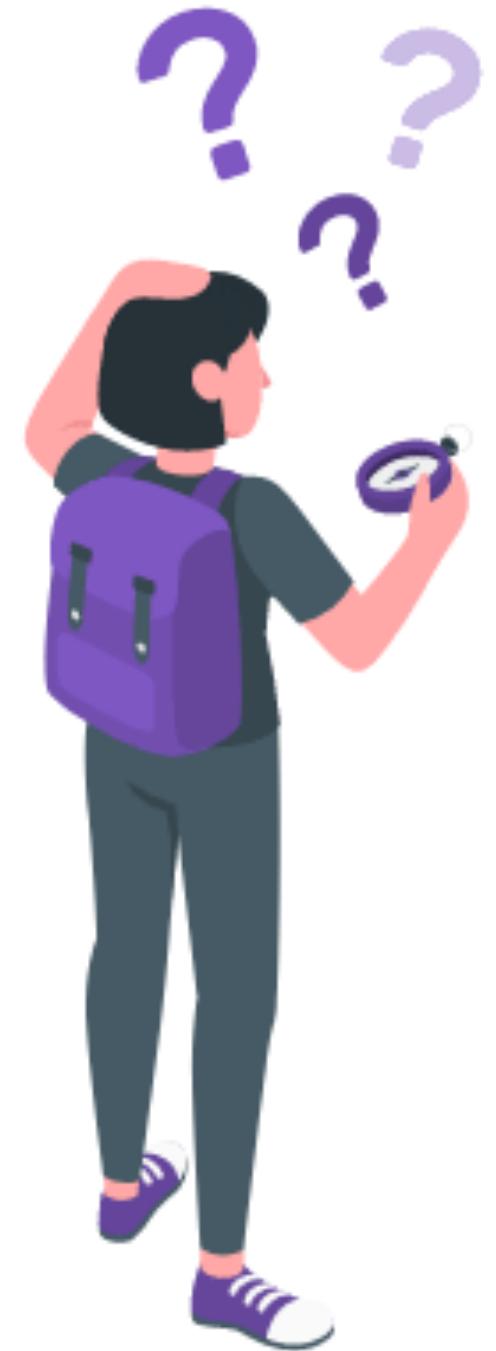


3. Goal

Defines what the persona wants or needs to fulfill. The goal is the motivation of why the persona is taking action. When that goal is reached, the scenario ends.

2. Scenario

Defines when, where, and how the story of the persona takes place. The scenario is the narrative that describes how the persona behaves as a sequence of events.

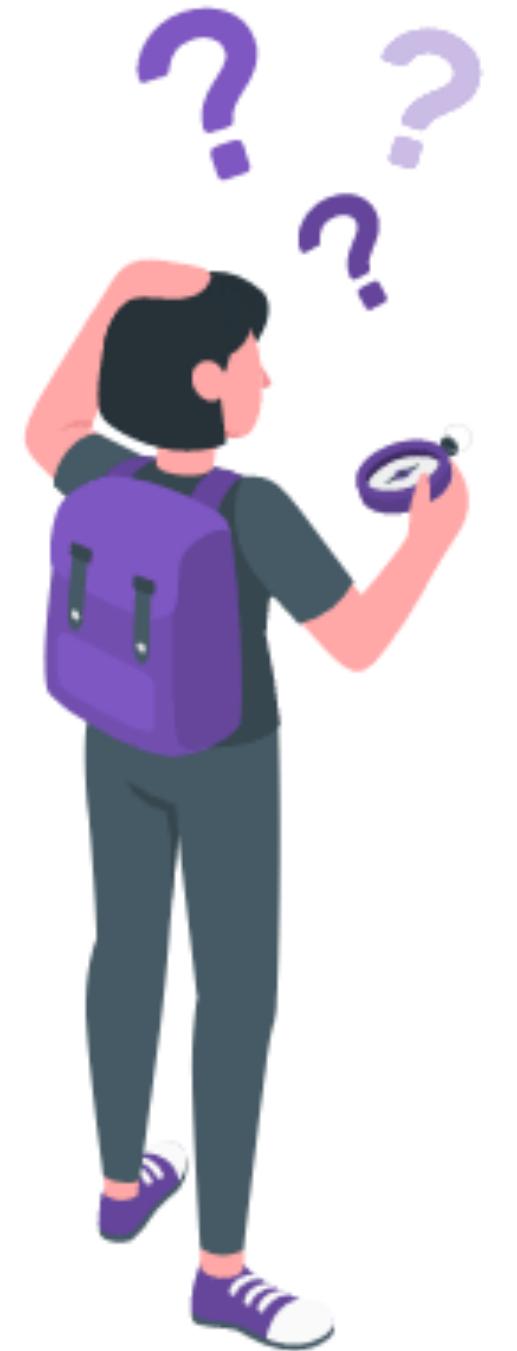


After Scenario, What's Next?

Environment Analysis

- scenarios describe the broad context in which usage patterns and include environmental considerations.
- should focus on high-level actions from the user's perspective. It is important to map out the big picture first so that we can systematically identify user requirements. Only then will we be able to design appropriate interactions and interfaces.

- Environment analysis address questions such as the following:
 - In what setting (environment) will the product be used? (indoor,outdoor,public, private,noisy,quiet...)
 - Will it be used for extended amounts of time?
 - Is the persona frequently interrupted?
 - Are there multiple users on a single workstation or device?
 - With what other products will it be used?



After Environment Analysis, What's Next?

Task Analysis

- Task analysis is used mainly to investigate an existing situation
- Focus on important activities (tasks)
 - What are people trying to achieve?
 - How are they going about it?
- most popular modelling technique is Hierarchical Task Analysis (HTA)
- focus on physical and observable actions.

0.
make a
cup of tea

plan 0.
do 1
at the same time, if the pot is full 2
then 3 – 4
after four or five minutes do 6

1.
boil water

2.
empty pot

3.
put tea leaves
in pot

4.
pour in
boiling water

5.
wait 4 or 5
minutes

6.
pour tea

plan 1.
1.1 – 1.2 – 1.3
when kettle boils 1.4

1.1.
fill kettle

1.2.
put kettle
on hob

1.3.
wait for kettle
to boil

1.4.
turn off gas

Hierarchical Task Analysis

- Involves breaking a task down into subtasks, then sub-sub-tasks and so on.
- HTA focuses on physical and observable actions, and includes looking at actions not related to software or an interaction device
- Start with a user goal which is examined and the main tasks for achieving it are identified

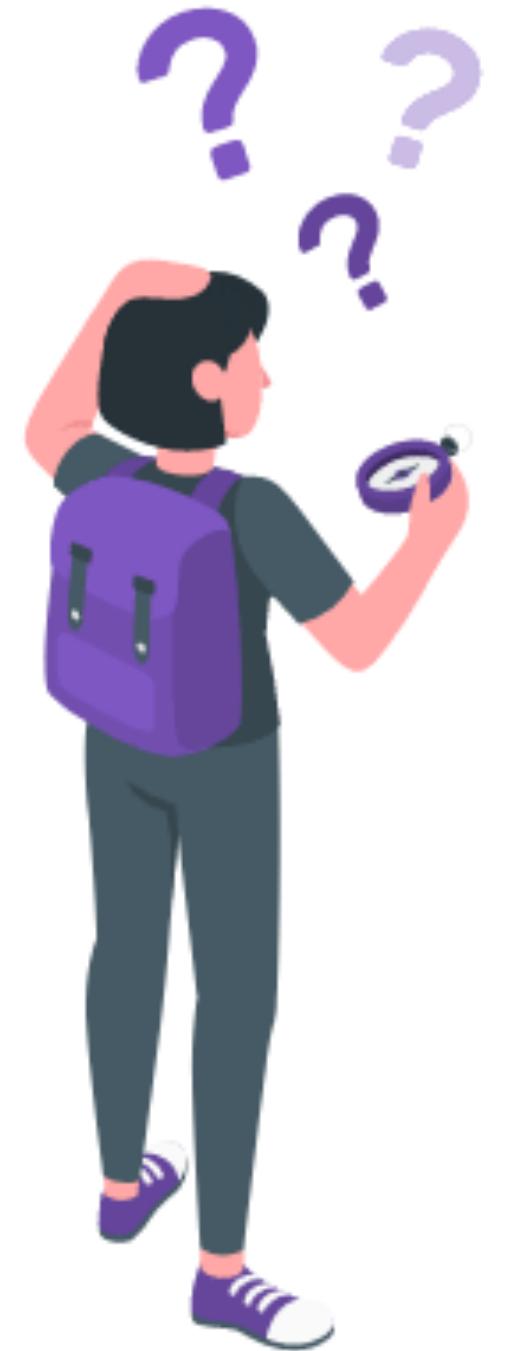
1. Identify the task to be analysed.
2. Break this down into subtasks. These subtasks should be specified in terms of objectives and, between them, should cover the whole area of interest.
3. Draw the subtasks as a layered diagram ensuring that it is complete.
4. Decide upon the level of detail into which to decompose.
5. Continue the decomposition process, ensuring that the decompositions and numbering are consistent.

HTA in list form:

0. in order to clean the house
 1. get the vacuum cleaner out
 2. get the appropriate attachment
 3. clean the rooms
 - 3.1. clean the hall
 - 3.2. clean the living rooms
 - 3.3. clean the bedrooms
 4. empty the dust bag
 5. put vacuum cleaner and attachments away

Plan 0: do 1 - 2 - 3 - 5 in that order. when the dust bag gets full do 4

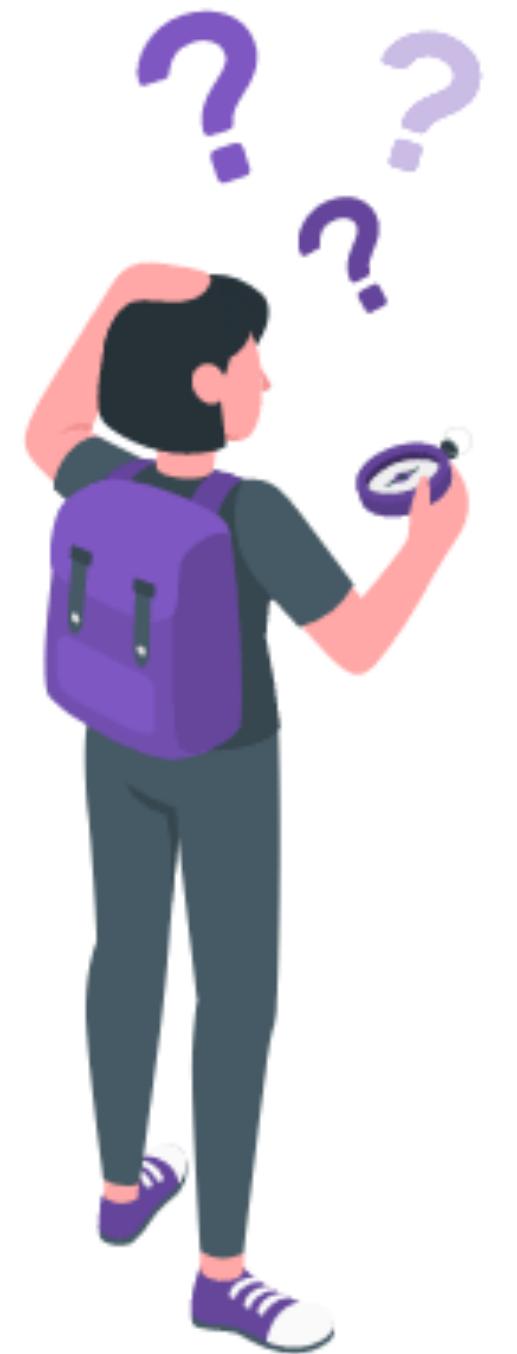
Plan 3: do any of 3.1, 3.2 or 3.3 in any order depending
on which rooms need cleaning



Why we need HTA?

Uses of Task Analysis in HCI

- To understand the way user perform their CURRENT JOB with an existing system (manual or computerised system)
- By understanding what the user has been doing, a new system can then be arranged in a way that is compatible with the user's accustomed behaviours i.e. **to make the new system compatible with what the user already does**
- Advantages:
 - Skill learned from the old system can be transferred to the new system
 - User need not alter his/her approach significantly when using the new system
- In addition, task analysis can also be used for producing documentations & training materials

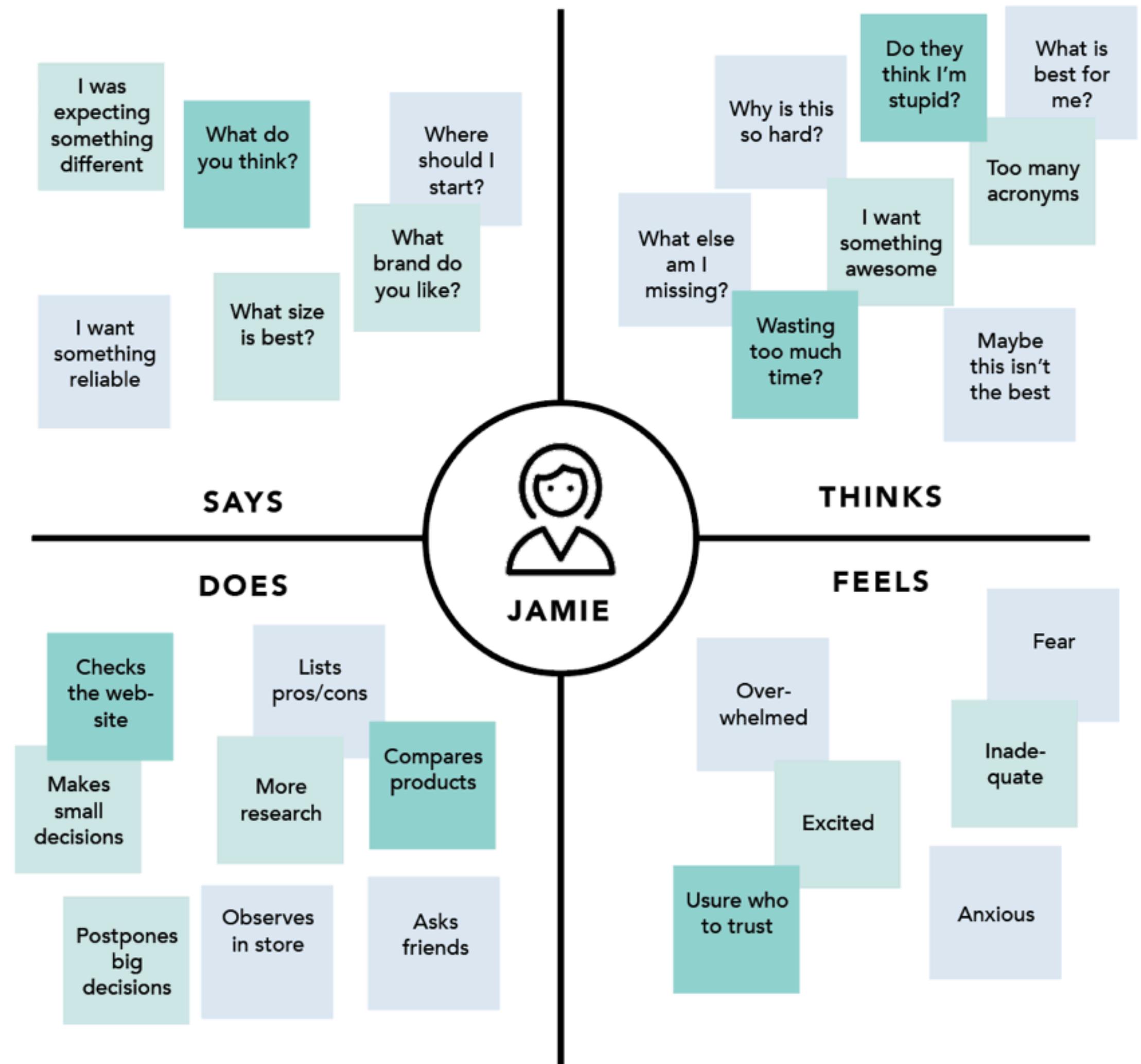


Any other analysis tools?

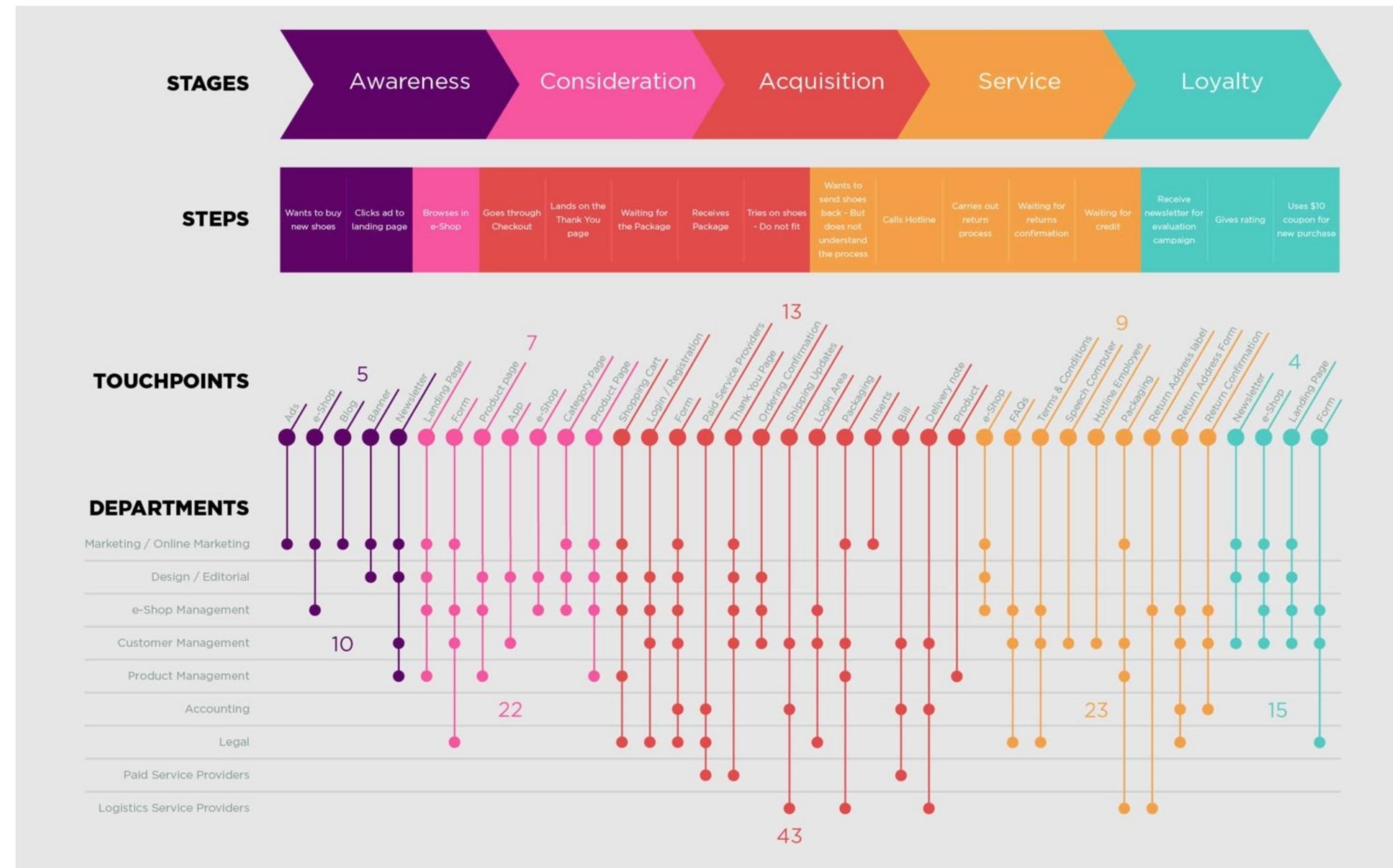
Other Analysis Tools

- Empathy mapping
- Customer journey mapping
- Experience mapping
- Service blueprinting
- Job-To-Be-Done
- etc...

EMPATHY MAP Example (*Buying a TV*)

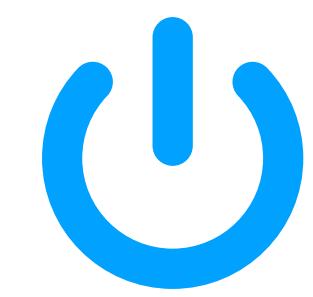


Customer journey mapping





See more eye catching examples on Pintrest

 **Thank you**