Requirements Engineering

Understanding the process

Scenario Maps

Scenario Maps

- Brief stories about a person doing a task, which can be with the use of a technology or service
- Useful tool to help in ideation before producing requirements
- However, it is not a mandatory step

Step 1 – Write scenario and steps

Detailed Debbie is going on a business trip. She needs to book a hotel room that's affordable and has good reviews

Debbie browses the site to find a hotel for her upcoming trip.	She looks closely at the various hotels to find one that meets her needs.	She considers price and user-rating heavily as she shops.	She selects a hotel and books a room

Step 2 – Add relevant details

Design ideas

Questions

Comments & Considerations

Paul - the online student
Ordering flowers for his Mum's birthday

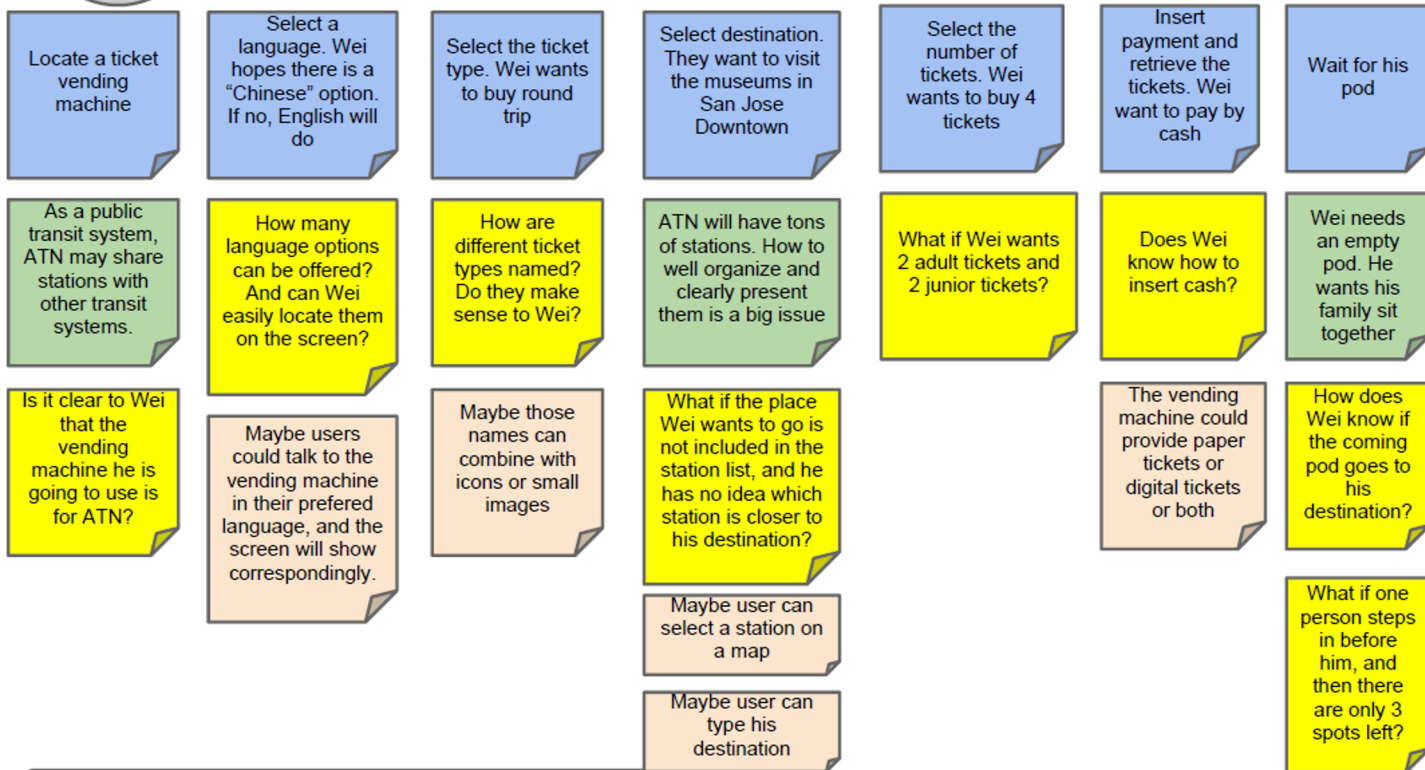|				
Paul navigates to **flowersrus.com**	Paul selects the birthday flowers option in the menu	Paul filters the flowers shown by price. He can't afford more than £25	Paul selects a bouquet of Freesias that he thinks his Mum will like	Paul takes a look at the information for the Freesias, including whether delivery is possible before his Mum's birthday
Will Paul know the URL or use a search engine?	We will want to show seasonal and most popular flowers on the homepage	How many flowers is Paul likely to be presented with? Will they fit on the one page?	Will want to show an image, price, title and perhaps short description for each set of flowers	What sort of information will Paul need to know? E.g. How long flowers will last?
	We will want to show delivery info on the homepage e.g. next day delivery, delivery costs	We will probably want to initially show flowers by popularity (i.e. best sellers first)	A quick guide to flowers in case there are flowers shown that Paul is unsure of (e.g. Lisianthus)	Will need to show delivery costs and available delivery slots
	We could provide Paul with a flower finder (like a gift finder but for flowers)			Show alternatives in case Paul feels these aren't right for his Mum

Key | Step | Question | Comment | Idea
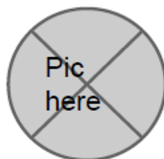
Wei - A visitor from China

Using ATN ticket vending machine to buy four tickets for his family

Pic here

Step	Step	Step	Step	Step	Step	Step
Locate a ticket vending machine	Select a language. Wei hopes there is a "Chinese" option. If no, English will do	Select the ticket type. Wei wants to buy round trip	Select destination. They want to visit the museums in San Jose Downtown	Select the number of tickets. Wei wants to buy 4 tickets	Insert payment and retrieve the tickets. Wei want to pay by cash	Wait for his pod

As a public transit system, ATN may share stations with other transit systems. *(Comment)*

How many language options can be offered? And can Wei easily locate them on the screen? *(Question)*

How are different ticket types named? Do they make sense to Wei? *(Question)*

ATN will have tons of stations. How to well organize and clearly present them is a big issue *(Comment)*

What if Wei wants 2 adult tickets and 2 junior tickets? *(Question)*

Does Wei know how to insert cash? *(Question)*

Wei needs an empty pod. He wants his family sit together *(Comment)*

Is it clear to Wei that the vending machine he is going to use is for ATN? *(Question)*

Maybe users could talk to the vending machine in their prefered language, and the screen will show correspondingly. *(Idea)*

Maybe those names can combine with icons or small images *(Idea)*

What if the place Wei wants to go is not included in the station list, and he has no idea which station is closer to his destination? *(Question)*

The vending machine could provide paper tickets or digital tickets or both *(Idea)*

How does Wei know if the coming pod goes to his destination? *(Question)*

Maybe user can select a station on a map *(Idea)*

Maybe user can type his destination *(Idea)*

What if one person steps in before him, and then there are only 3 spots left? *(Question)*

Key | Step | Question | Comment | Idea

Writing Requirements

Structured Natural Language

Structural Natural Language

In a structured format, the following information must be included:

1. A description of the function or entity being specified
2. A description of its inputs and the origin of these inputs
3. A description of its outputs and the destination of these outputs
4. Information about the information needed for the computation or other entities in the system that are required
5. A description of the action to be taken
6. A precondition setting out what must be true before the function is called, and a postcondition specifying what is true after the function is called
7. A description of the side effects (if any) of the operation

Example

Function	Compute insulin dose: Safe sugar level
Description	Compute the dose of insulin to be delivered when the current measured sugar level is in the safe zone between 3 and 7 units
Inputs	Current sugar reading (r2), the previous two readings (r0 and r1)
Source	Current sugar reading from sensor. Other readings from memory
Outputs	CompDose – the dose in insulin to be delivered
Destination	Main control loop
Action	CompDose is zero if the sugar level is stable or falling or if the level is increasing but the rate of increase is decreasing. If the level is increasing and the rate of increase is increasing, then CompDose is computed by dividing the difference between the current sugar level and the previous level by 4 and rounding the result. If the result, is rounded to zero then CompDose is set to the minimum dose that can be delivered
Requires	Two previous readings so that the rate of change of sugar level can be computed.
Precondition	The insulin reservoir contains at least the maximum allowed single dose of insulin.
Postcondition	r0 is replaced by r1 then r1 is replaced by r2.
Side effects	None.

Questions?