



Contextual Design

Advanced Decision Support Systems



Contextual Design

Today's goal: teach you how to observe and interview people

And teach you how to interpret/model the interview data

Structure:

- Intro to Contextual Design
- Contextual Inquiry
- Interpretation, modeling and consolidation



Contextual Design

A brief introduction



Contextual Design

The goal is to answer the question:

“What should we build to help people do a task **better**?”

Understand your users before you design a product

Acknowledges that software is more than a list of requirements/features



Contextual Design

Contextual Design consists of:

- Contextual Inquiry: Gather data from users while they do the task
- Experience modeling: Use data to build models of the context of the task that are explicit and sharable

The focus is on the **task**, not on the **technology**

The user experience should be central



Contextual Inquiry

How to interview people about a task



Contextual Inquiry

This is **not** a regular interview

- There is no list of questions

- It mainly consists of observation and explanation, plus clarifying questions

- Think of it as “learning from the user”

This is **not** about the app / Web site

- You are not doing “usability testing”

- Your main goal is to find out how and why users do the task, and everything around it



Contextual Inquiry

To obtain data from users in their context

- insights about the users' **identities** and their **daily lives**
- insights about **relationships** and how the task involves **collaborations** with others
- insights about how the task influences (and is influenced by) users' **emotions**
- insights about the users' physical **environment**
- insights about the **steps** and **decisions** involved in the task

Understanding of **breakdowns** in current processes



How it works:

Directly **observe** how people do the task

- People are bad at saying what they want (the user is not the designer!)
- People are bad at telling you how they do the work (tacit knowledge)

What if direct observation is not possible?

Re-creation of experience

Cued recall of past experience

Don't settle for what they “usually” do!



4 Principles of CI

1. Context:

Understand users' **real** needs in their environment

2. Partnership:

Work with users as co-investigators

3. Interpretation:

Assign meaning to the observations

4. Focus:

Listen and probe from a clearly defined set of concerns



The interview

A note about participants:

- Identify users (primary, secondary)
- Make appointments to interview them (individually) for ~1 hour
- Meet them at a time and place where/when they do the real task
- Explain that this is not a normal interview, but an observation study



The interview

Preparation:

- Voice recorder
- Pen and notebook

Ask them to use the device they normally do the task on!



The interview

Introduction

Get permission to record, explain your goal, explain CI, let them give you an overview of what they do

Transition

Now have them do the task in front of you

Observation and Interpretation

Ask them to think aloud; you will interrupt to ask questions; avoid “summary information”



Observation and interpretation

Understand people's underlying **goals**

- What are people trying to accomplish? Why?

Understand their current **behavior**

- What are they doing? Why?
- What are their priorities?
- What problems do they currently have?
- What inefficiencies or costs are they putting up with?
- How do they feel about the things they do?



Observation and interpretation

What, exactly, should I pay attention to?

- “life context” of the task (how it reflects their identity how it interferes with their daily life)
- others involved in the task (the nature of their relationships with these others, and how they collaborate)
- how the task makes them feel (latent needs, delighters)
- physical environment in which the task takes place (location, artifacts)
- the steps and decisions involved (flow of the work)

You need this to model the work in contextual design



Wrap-up

Summarize understandings

Ask any “pet” questions

Give tips on system use

Thank the user

Leave door open for future explorations

Important for contextual design, in case you discover things you should have asked but didn't



Questions

Any questions about Contextual Inquiry?



Interpretation session

Interpreting your contextual interviews



Interpretation session

Goal: Create a shared understanding of the user's world

Learn multiple perspectives

Method: an immersive experience (not just a report)

One interview at a time, about 1.5–2 hours per session

Interviewer talks through the interview line-by-line

Do not summarize! It must be immersive

Others interview the interviewer

Multiple perspectives; shared understanding



Interpretation session

The session should happen within 48 hours of the interview

What if you wait longer? You will no longer remember!

Solution: go back to the recording (transcribe/listen)

Better solution: do multiple short sessions

Preparation

- Yellow sticky notes (100 per session) + pens
- Flip chart paper or unwaxed butcher paper + markers (red, green, black)
- Interview notes, photos, audio (backup)



Interpretation session

Result of one interpretation session (you'll do 4–5 of these)

- 5 experience models*

- 50-100 affinity notes

- 3-8 key insights

Eventually...

- ...the models from all sessions will be consolidated

- ...the affinity notes will go into a large affinity diagram

- ...the insights go directly into the report



Team roles

Interviewer:

- walks through the interview
- makes sure important stuff gets captured

Others:

- ask questions, suggest interpretations, design ideas
- write important things on stickies (affinity notes)
- builds/annotates experience models



Team roles

Everyone:

- tell each other to capture stuff if needed
- make sure everyone is actively involved
- make sure everyone stays on track



Steps

Write a user profile

User ID, demographics, system use, knowledge

Create a physical model (if applicable)

Annotate during interview walkthrough

Walk through the interview

Interviewer starts talking, others ask questions, take affinity notes (yellow), build the models (now, not afterwards)

At the end: discuss/select main insights

Put them on 3-8 green sticky notes



Affinity notes

Interviewer gives objective account of user's actions ("how")

Everyone else probes the "what" and "why" behind the actions, write down important things on sticky notes

What are examples of important things? See next slide...



Affinity notes

Take from interview:

- Interpretation of events
- Important task characteristics
- Insightful quotes
- Higher-level inferences (label them I)
- Design ideas (DI)
- Sensations (S)

Take from models:

- Breakdowns
- Design questions
- Anything unexpected



Affinity notes

Result

- All relevant things on sticky notes
- About 50-100 per interview, labeled U#-#
- Keep them concrete and short (more notes = better)
- Facts + explain why it matters
- Make them concise but not too cryptic



Affinity diagram

After all interviews are done, put the affinity notes into a diagram:

- Shuffle and divide your affinity notes (in batches of 30)
- Put up your yellow notes in groups (of max 6)
- Add blue notes to each group (overarching statement)
- Add pink notes (groups of 2-6 blues; still use “I” language)
- Add green notes (themes; groups of 6-8 pink)



Affinity diagram

Any questions so far?



Experience models

Different perspectives on the user's life



Experience models

The experience models describe users' practice in context of their life

Understanding the context helps software designers go beyond single-feature solutions

Each model provides a different “lens” that reveals part of what matters

First, create a full set of models for each interview

Then consolidate the models into a single model



8 models*

Day-in-the-life model

how things get done
throughout the day

Identity model

what matters to the user

Relationship model

how closeness to others is
affected through the activity

Collaboration model

how collaboration gets things
done and improves
relationships

Sensation board

aesthetic and emotional
experiences

Sequence model

the order of work tasks over
time

Decision point model

what influences the user's
decisions

Physical model

the constraints of the physical
environment



Day-in-the-life model

This model captures how people get the task done

How the activities involved in the task integrate with their life

Collecting the data:

During the CI, make sure to capture the full activity

Building the model:

Divide model into the places where the activity takes place

Capture every act related to the activity



Day-in-the-life model

What to capture about each act?

- Where the user was (location on the model)
- What they were doing
- Content accessed during the act
- Attention needed / given to the act
- Device used

Put it on a sticky-note

This makes it easier to move around and consolidate



Day-in-the-life model

Day In The Life - Odessey - UO9

Prepping to go --

Charges all his devices (tablet, phone, laptop, extra batteries) and puts movies on tablet day before trip at home

Prints boarding pass at home on Saturday for travel Sunday

Packs noise cancelling head-phones at home

Emails hotel for early check-in

Hotel in Barcelona

Uses hotel phone to call wife (BD: very expensive)

Night before flight home:
- uses laptop to check in (prints boarding pass at airport)

Stayed up late at hotel to watch game on MLB.com on laptop (paid for high-speed access)

Airport/Flight

Listens to podcast on phone in security line
(continues listening during flight)

On long flight watches movies and TV shows on tablet

Watched football on pub TV at airport

Annoyed flight doesn't have wifi-would have preferred to watch ballgame

In the world (Barcelona)

On street, used public wifi to bring up mapping app and find out how to walk back to hotel after dinner

Sightseeing, used colleague's phone to access Yelp and find restaurant

On street, used Google Translate to look up word

At restaurant, used camera on phone to photo the displayed special dish rather than try to describe it to waiter in Spanish

At work

Looks up flight possibilities, books flight through company travel page at desk

Talks to boss about where to stay (in person)

Prints out itinerary a few days ahead of trip

Emails restaurant to make reservation (big dinner with colleagues)
- uses Outlook to coordinate time

Conference in Barcelona

Use Facebook messaging to stay in touch with wife & kids

Took notes with pen & paper
- keeps phone charger with

Constant emails on phone about meetings, etc.



Day-in-the-life model

Consolidate after all interviews are done:

- About 3 “organizing contexts” (main locations of the activity)
- Organized activities by context
- Best stories per activity



Day-in-the-life model

Home Base

High-level synthesis of work and life activities done at home that relate to the project focus. Include data about which devices are used and how different activities are fit into chunks of time.



...off to work
How do users get ready to transition between home and work? Include what devices they bring with them and any check-ins they do in preparation for their commute or workday.



Bedroom

Synthesis of users' wake-up routine and other activities related to project focus done in the bedroom. Include which devices users keep in the bedroom and which devices are carried from room to room.

Living area

Synthesis of work and life activities related to project focus that users do in kitchen, living room, dining room and other main living areas of their homes. Include which devices are used.

Home office

Synthesis of work and life activities related to project focus that users do in their home offices. Include data about telecommuting, which activities, if any, are confined to this space and which devices are used.

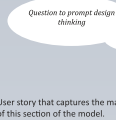


Gym (at home or not)

Synthesis of work and life activities that users do while at the gym. Include information about how users interleave other activities with exercise, what chunks of time do they have and what devices they use.

Commuting

High-level synthesis of work and life activities that are done while commuting that relate to the project focus. Include data about which devices are used and how different activities are fit into chunks of time.



...driving or walking
What do users do while commuting if they are walking or driving and so have to pay more attention to the commute? Include data about the devices they have with them and the chunks of time the use.

...passenger
What do users do while commuting if they are a passenger and so do not need to pay as much attention to the commute? Include data about the devices they have with them and the chunks of time the use.

Moving in the world

High-level synthesis of the places outside of home and work and chunks of time available to users in those places, where they do activities related to the project focus. Include data about which devices are used and how users make the most of free moments and longer waiting periods.



Free moments

Include data about how users fill small chunks of time to accomplish work and life activities. Which devices are used?

Offsite work

Include information about where users go to do work activities. What devices do users bring and use? Are there constraints specific to the location?

Longer wait time

Include data about how users fill longer chunks of time when they are waiting. Which devices are used?

Offsite meeting

Include information about offsite work meetings. What devices do users bring and use?



...driving or walking
What do users do while commuting if they are walking or driving and so have to pay more attention to the commute? Include data about the devices they have with them and the chunks of time the use.

Going home

...passenger
What do users do while commuting if they are a passenger and so do not need to pay as much attention to the commute? Include data about the devices they have with them and the chunks of time the use.

Work Place

High-level synthesis of work and life activities that users do in the work place. Include data about which devices are used and how users are interrupted by others and themselves during work activities. Also include data about how users organize their activities into chunks of time.



...doing work

How do users structure their work activities? What life activities do they do while at work? How do they handle external interruptions and how do they interrupt themselves? What devices do they use?

...at lunch

What activities do users do during their lunchtime? Do they stay at work or go out? What devices do they use?

...at remote meeting

How do remote meetings fit into users' workdays? What other activities do users do during remote meetings? What devices do they use?

...at face to face meeting

How do face-to-face meetings fit into users' workdays? What other activities do users do during meetings? What devices do they use?





Identity model

This model highlights sources of pride, self-esteem, value

How the user's identity relates to the task

Collecting the data:

During the CI, sensitize the concept of identity

Building the model:

Set up identity element groups (3-4 broad categories)

Add identity data to the groups (Points of pride, excitement, personal investment, disgust)



Identity model

What are the identity element groups?

I do: identity as it relates to the work of the activity

“I optimize my time”, “I make time for my kids”

I am: how the person approaches the activity

“I’m a responsible parent”

1-2 other groups

keep these empty at first; they’ll emerge



Identity model

UO2 Identity Model

- I like being comfortable & relaxed when I travel
- I double-check available seats on my flight to see if a better seat is available
- I ignore the rules and listen to podcasts during takeoff
- I travel with a tennis ball massager

I LIKE

- I make reasonably priced choices for business travel
- I don't want my boss to think I'm wasting company money
- I'm embarrassed to stay at a \$400/night hotel

I DO

I AM

- I prefer self service
- "I control it and I tailor it" (my travel arrangements)

I am a Veteran Traveler

- I have tips & tricks
- I know how to prep for a trip
- I can bend the rules

- I am deserving of travel rewards
- "I travel a lot for work and deserve the benefit for my personal travel"

I am a VIP traveller --
I'm proud I get early check-in



Identity model

Consolidate after all interviews are done:

- 3-4 sections (I am, I do, ...)
- 8-12 identity elements that characterize people
- Each element has a name, an “elevator pitch” (speech bubble), a description, and a number of “give me’s”



Identity model

Identity Model

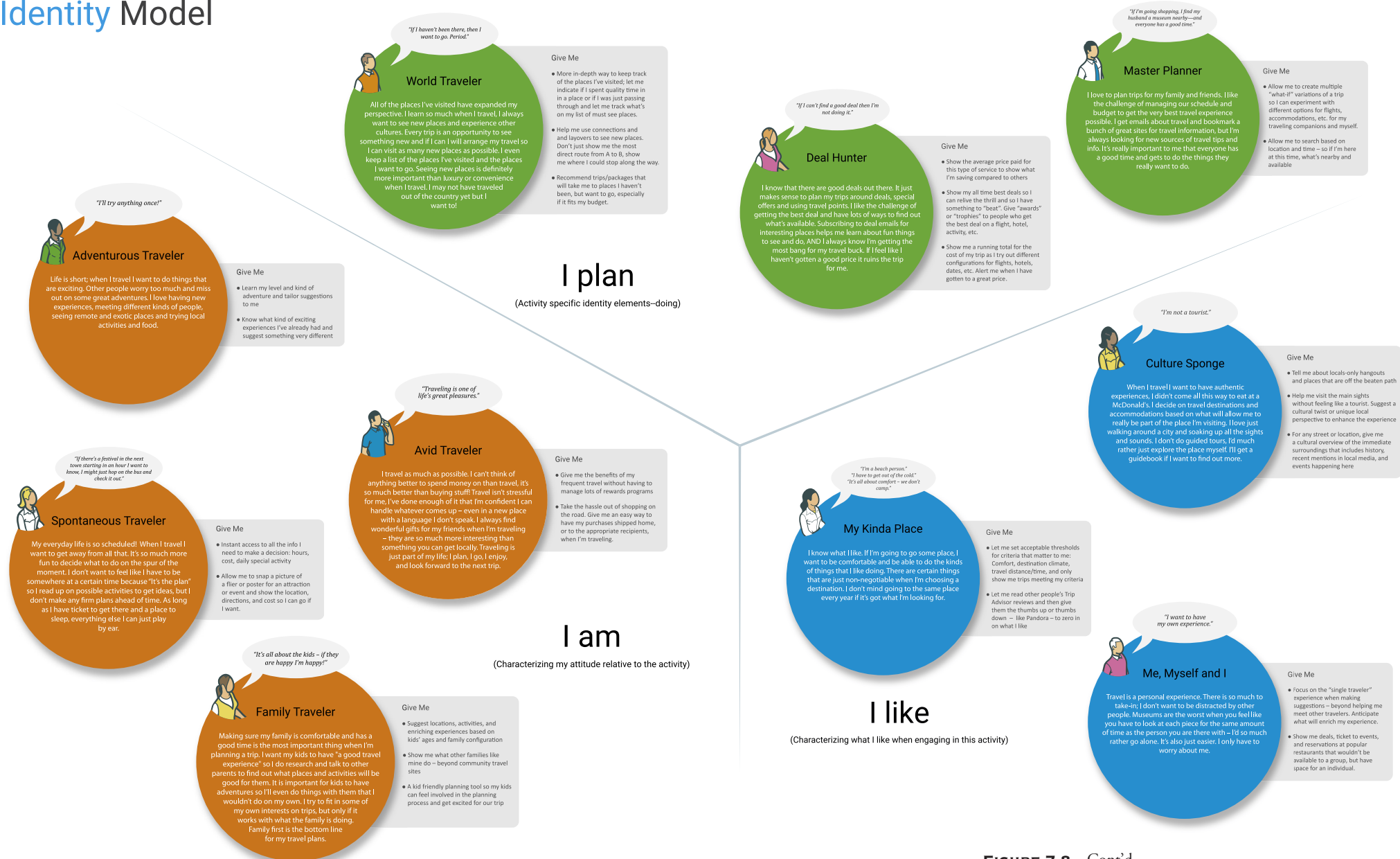


FIGURE 7.8 Cont'd



Identity model



"I'm not a tourist."

Culture Sponge

When I travel I want to have authentic experiences, I didn't come all this way to eat at a McDonald's. I decide on travel destinations and accommodations based on what will allow me to really be part of the place I'm visiting. I love just walking around a city and soaking up all the sights and sounds. I don't do guided tours, I'd much rather just explore the place myself. I'll get a guidebook if I want to find out more.

Give Me

- Tell me about locals-only hangouts and places that are off the beaten path
- Help me visit the main sights without feeling like a tourist. Suggest a cultural twist or unique local perspective to enhance the experience
- For any street or location, give me a cultural overview of the immediate surroundings that includes history, recent mentions in local media, and events happening here



Relationship model

This model captures closeness

- How closeness is affected by the activity

- How closeness affects the activity (support network)

Collecting the data:

- For each other person involved, get the user to talk about the level of intimacy with / importance of that person

Building the model:

- Draw during the interview, then redraw later



Relationship model

During the CI, pay attention to:

- Who that person is and their role
- How often that person is touched as part of the activity
- What information or conversational content is shared as part of the activity
- How decision-making is impacted
- How the activity promotes doing things together

You can draw a preliminary model during the interview

Each person is a bubble, containing activities and feelings



Relationship model

Each person is a bubble, containing activities and feelings

Distance = closeness

Add drivers of intimacy (e.g. frequency of doing this task with this person, family relationship, etc.)



Relationship model





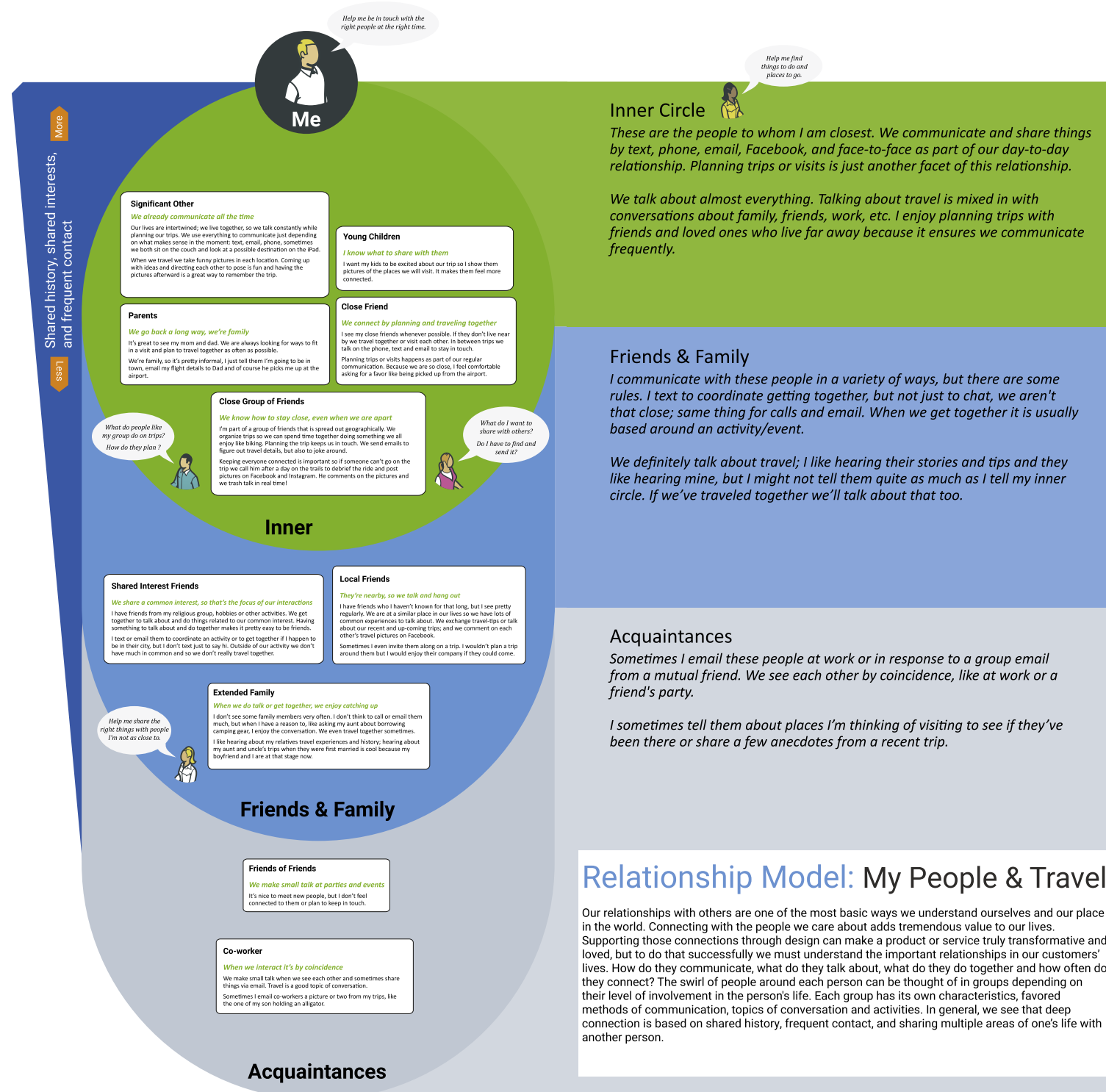
Relationship model

Consolidate after all interviews are done:

- 3 levels of relationship
- At each level: the main relationships and illustrative stories
- On the right: introduce issues, activities, and sources of closeness for each level
- Far left: what creates the closeness
- Question bubbles: boundaries and opinions



Relationship model





Collaboration model

This model highlights collaboration

- Activities and relationships

- Preparation, schedules and deadlines, delegation/roles, meetings, etc.

Collecting the data:

- Anytime the user interacts with someone for the activity, pay attention to coordination, (in)formal roles, devices

Building the model:

- A flow diagram for each collaboration intent



Collaboration model

For each collaboration intent:

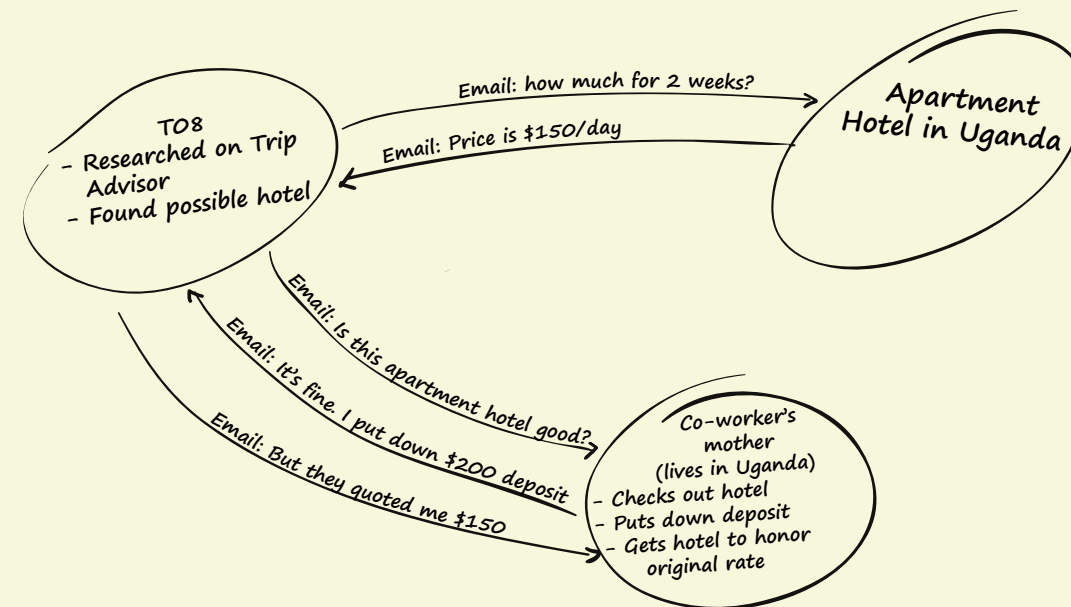
- A bubble for each person (including the user)
- A square for each repository
- Communication = arrows between bubbles
- Write the content of the communication on the arrow;
include the tool

You can already capture them during the interview, but make sure to re-capture them during the interpretation session

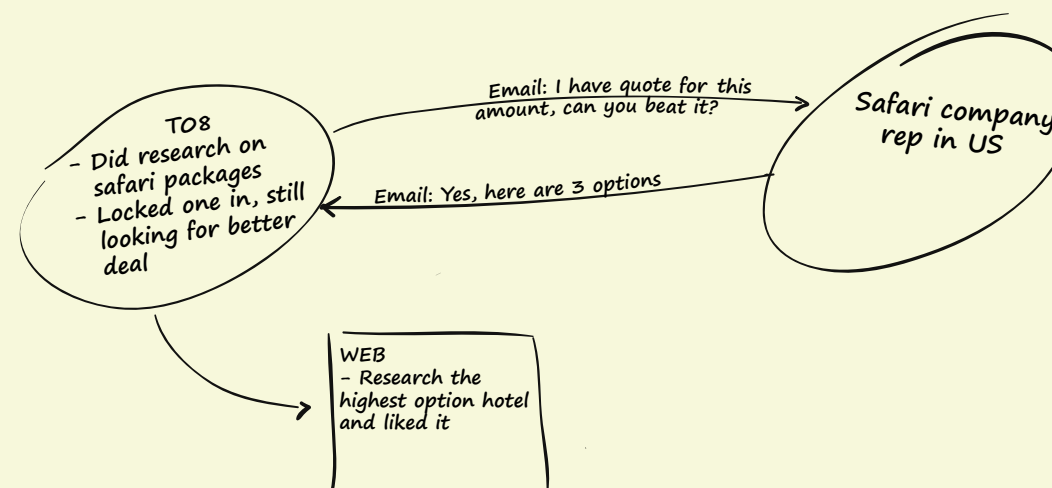


Collaboration model

T8: Collaboration Flow Finding a place to stay

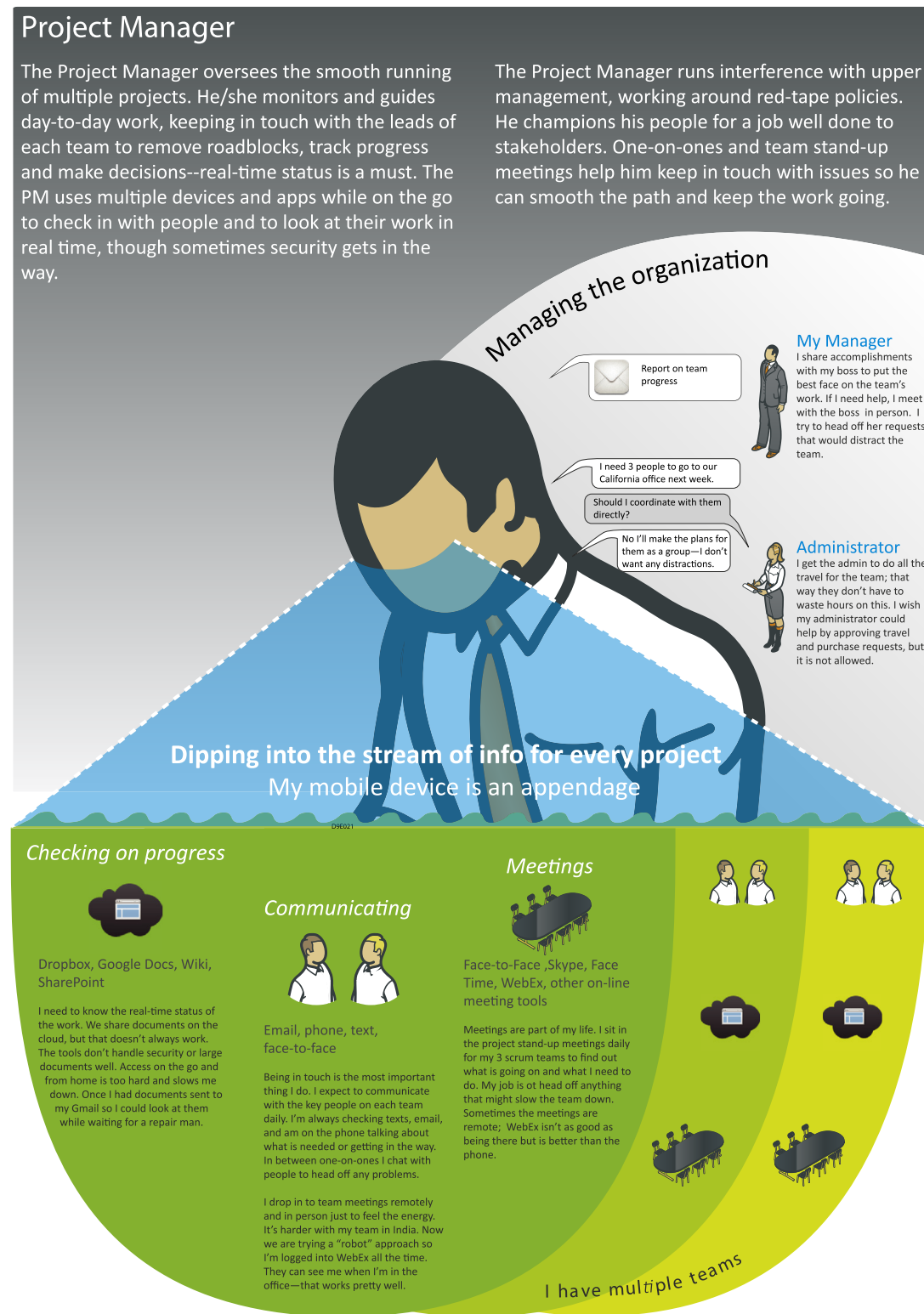


T8: Collaboration Flow Planning a safari





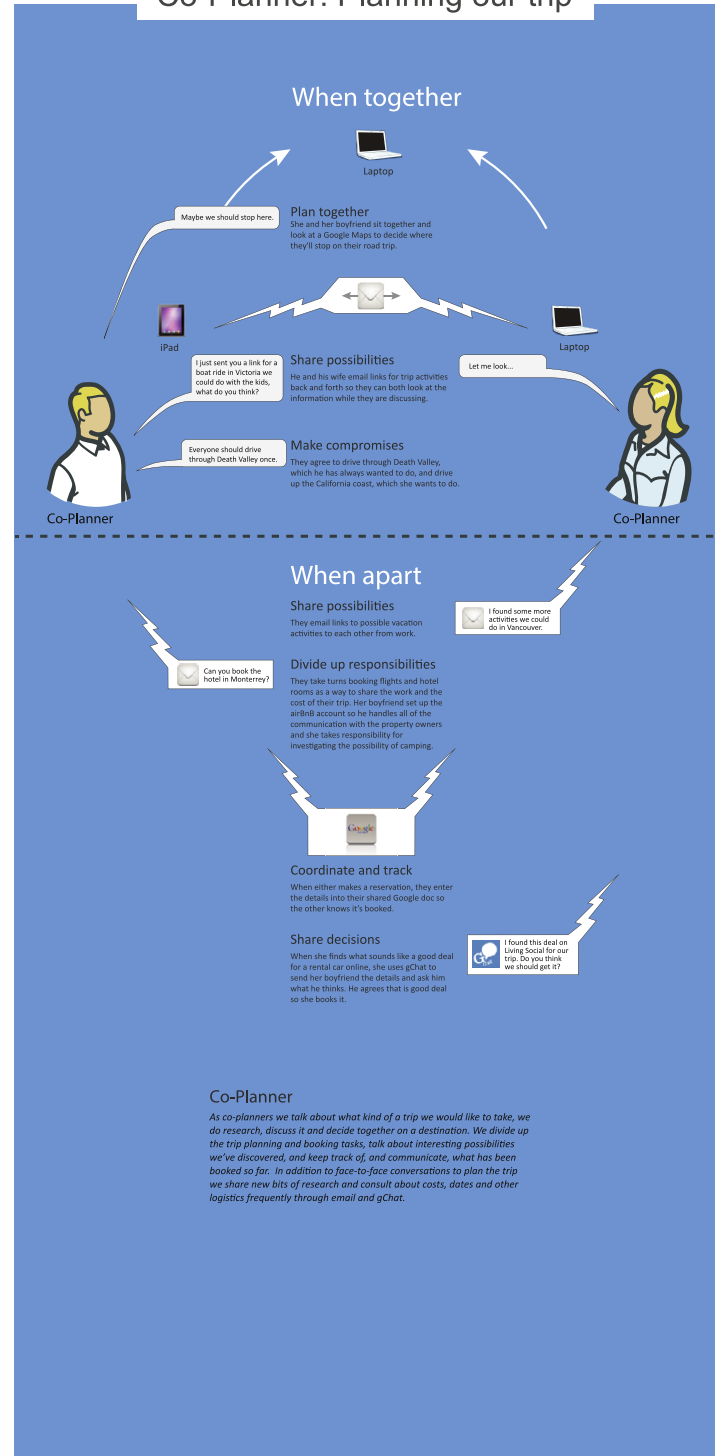
Collaboration model



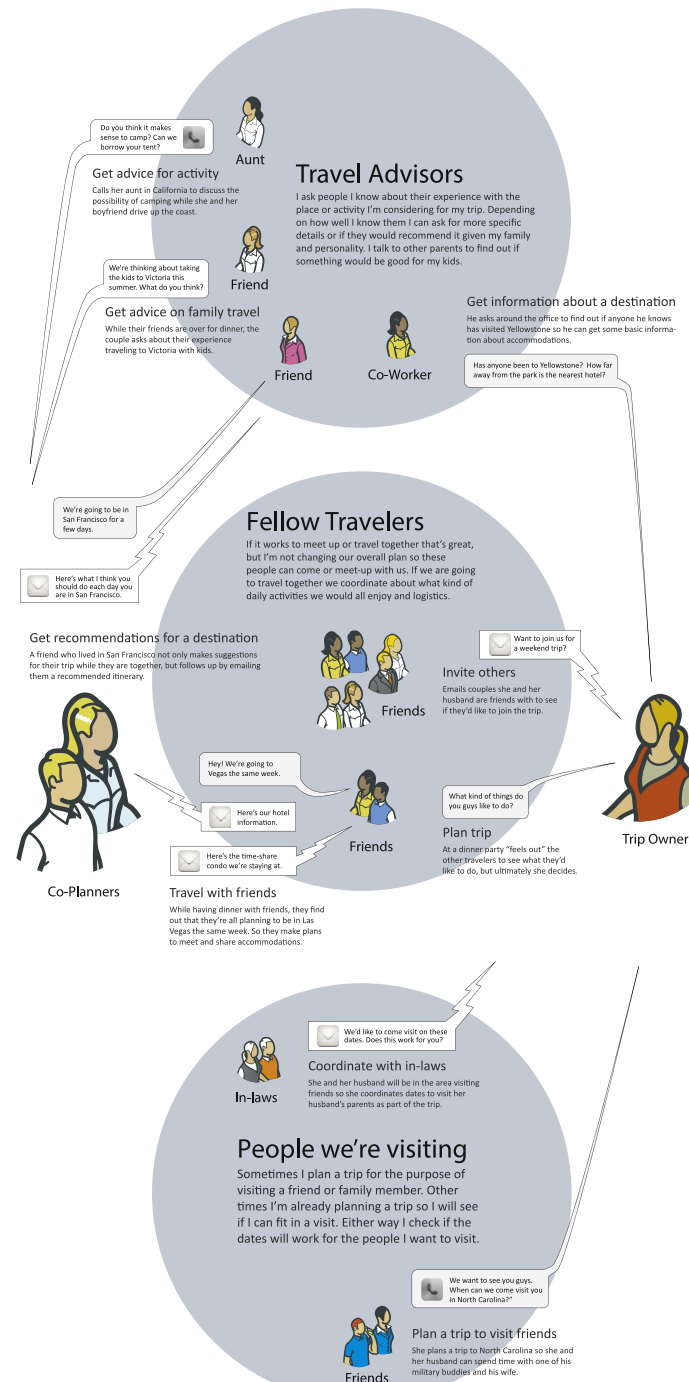


Collaboration model

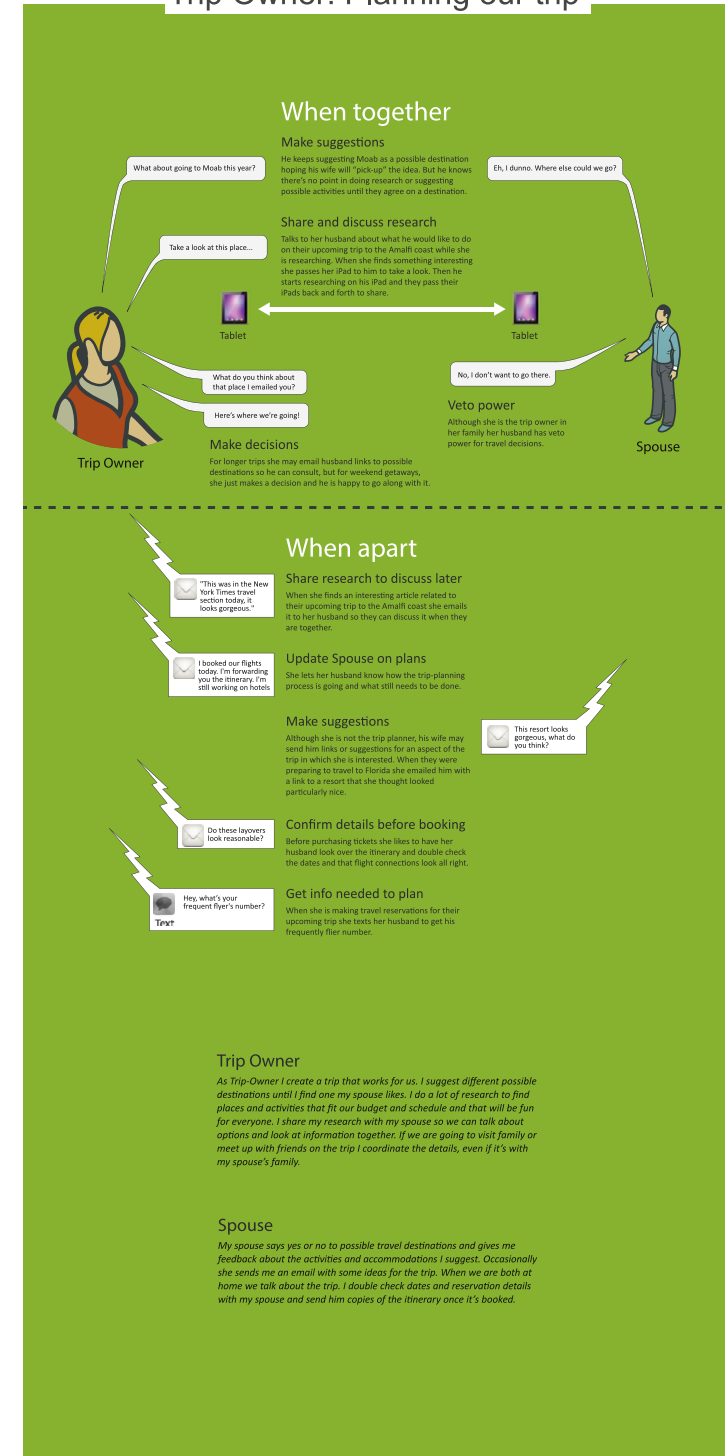
Co-Planner: Planning our trip



Coordinating with others



Trip Owner: Planning our trip





Sensation board

This model captures aesthetic and emotional experiences

Mood board with various sections

Collecting the data:

During the interview, pay attention to the smile or grimace

Building the model:

Put emotions and sensations in your affinity notes

At consolidation time, walk the affinity diagram to extract key sensations



Sensation board

Step 1: Walk the affinity diagram; find emotional themes, write them down

Step 2: Agree on 4-8 sections that seem to contain strong emotional themes

Step 3: Label each section

Step 4: Find pictures that fit the feeling expressed by the section



Sensation board





Sequence model

This model captures users' actions in detail

Reveals strategies, intents, and how tools help/hinder the task

The steps may change, but the intents tend to be stable

Collecting the data:

Watch the action and write each step down in order; level of detail depends on the task

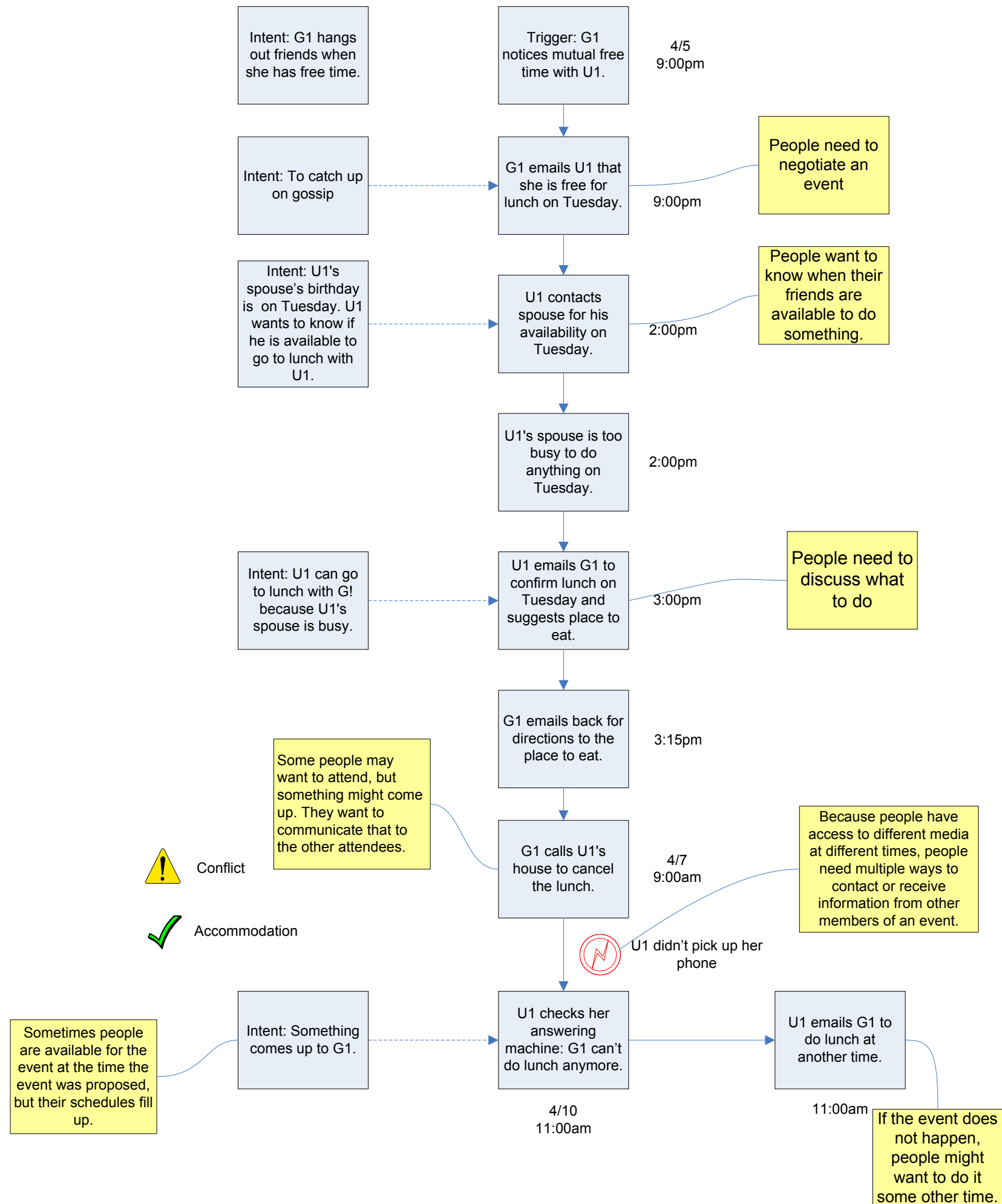


Sequence model

Building the model:

For each activity:

- Identify overall intent (“title” of the model)
- Identify the trigger
- Capture each step
- Identify breakdowns
- Identify additional intents (why certain sub-tasks are done)





Sequence model

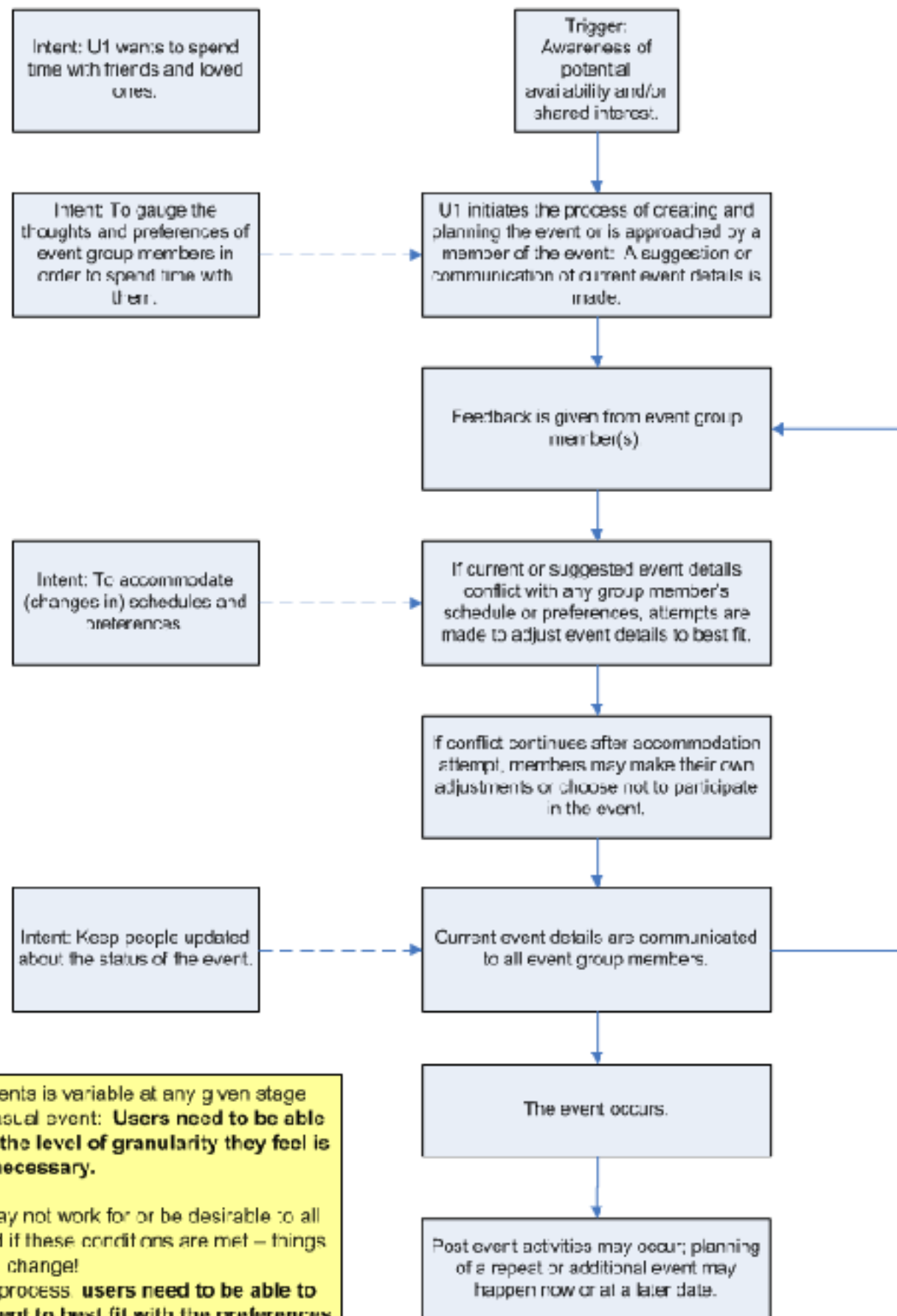
Consolidated structure:

Like a sequence model, but with common structure and strategies

Group sequences that do the same thing

Segment them into common “activities”

Identify the common intents



The level of detail for events is variable at any given stage during the planning of a casual event: **Users need to be able to specify information at the level of granularity they feel is necessary.**

The details of an event may not work for or be desirable to all members of the event, and if these conditions are met – things change!

Throughout the planning process, **users need to be able to adapt the details of an event to best fit with the preferences and schedules of those participating in the event.**

Even a casual event can be made of many specific details. In order for these details to exist and be known to other members of an event, **users need to be able to communicate the details with each other.**





Decision point model

This model explains what influences users' decisions

Things that have a pos/neg impact on the outcome

Collecting the data:

Look for decisions, collect everything that influenced it

Building the model:

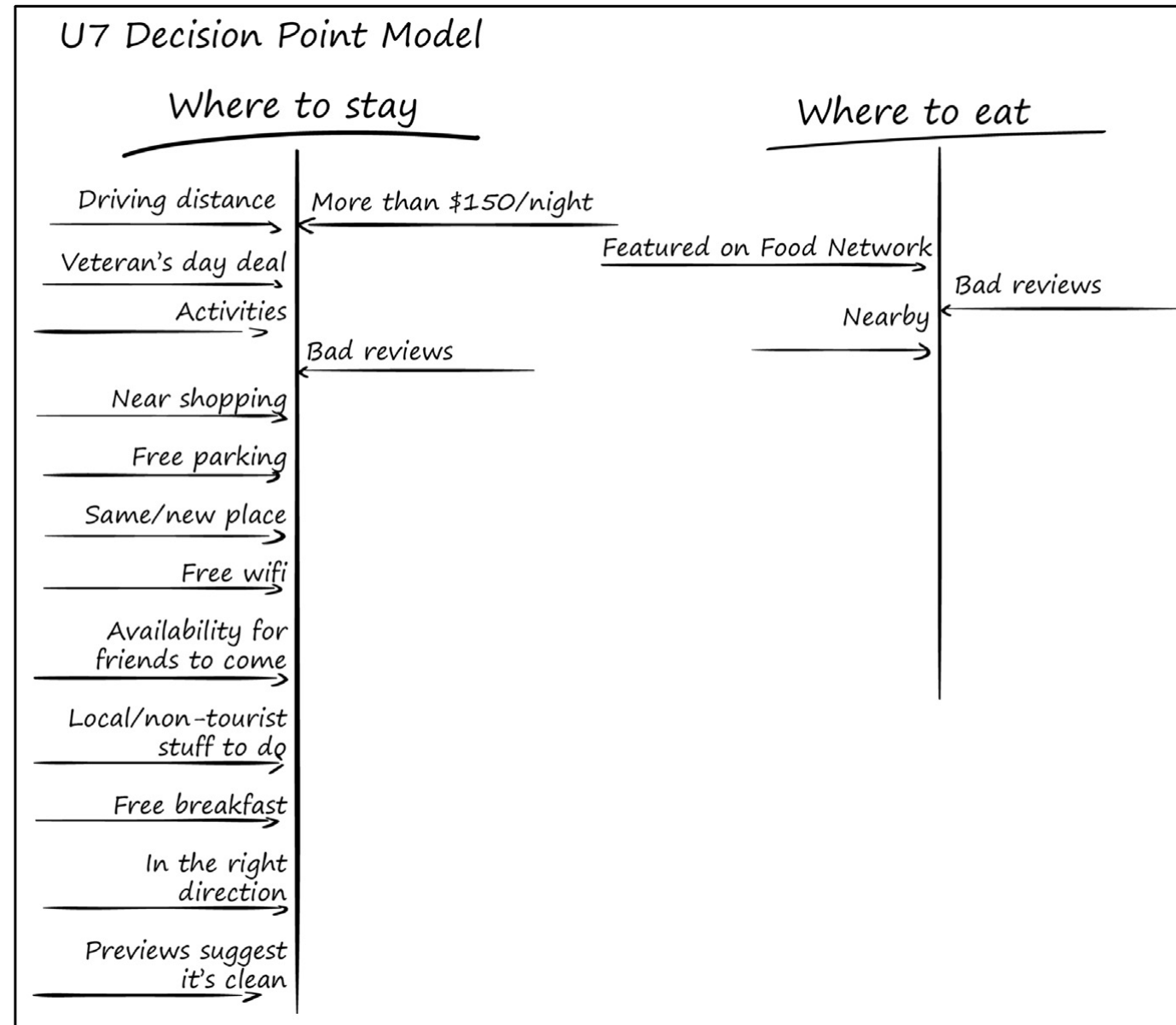
Put the positive and negative influences in a model

Consolidated structure:

Put the ones together that are about the same decision

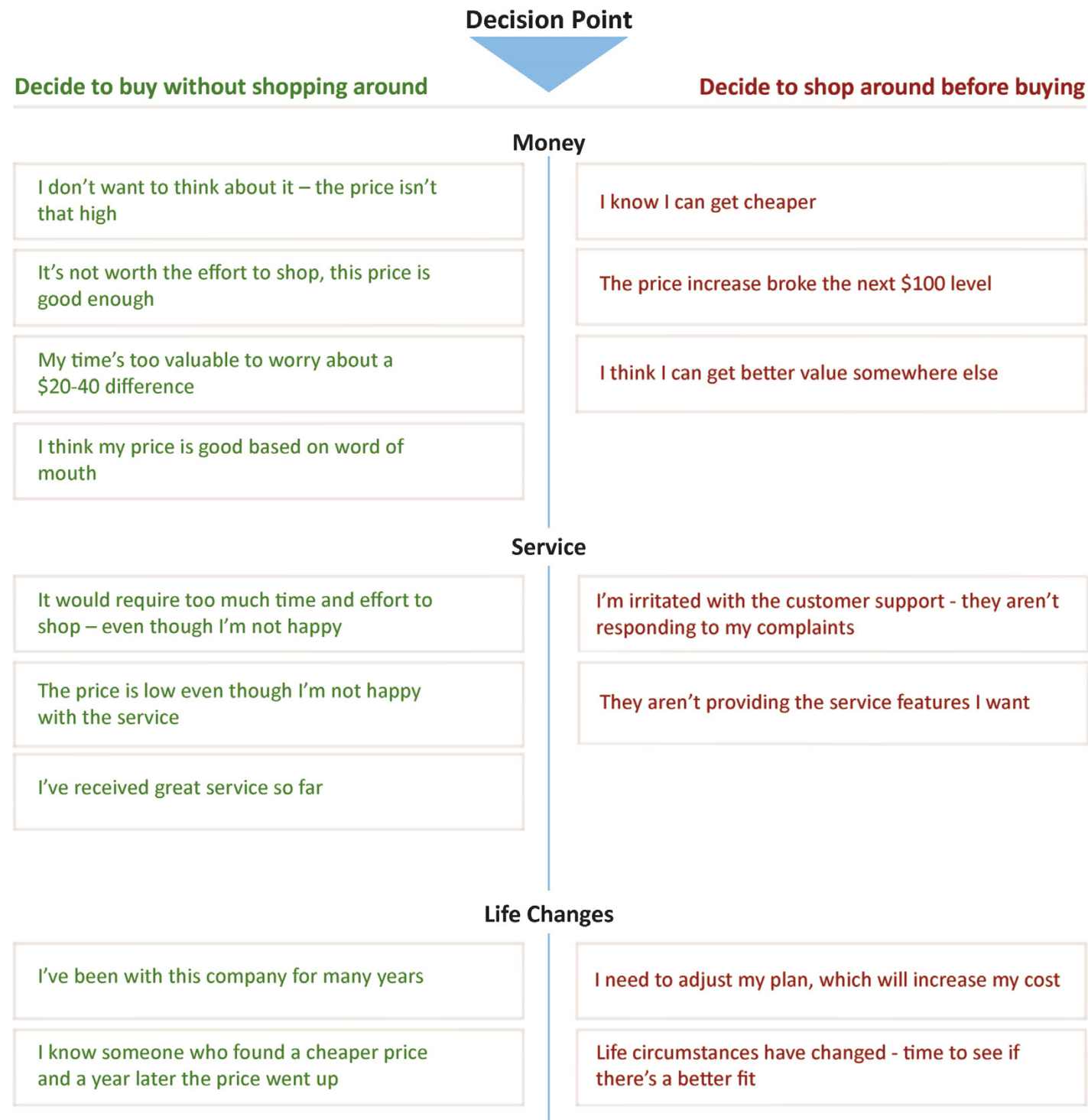


Decision point model





Decision point model





Physical model

This model describes how people use their space

How do people organize and cluster their space

This informs how to best organize things in an app

Collecting the data:

Draw a picture of the environment and annotate it during the interview... where are things put and why (intent)?

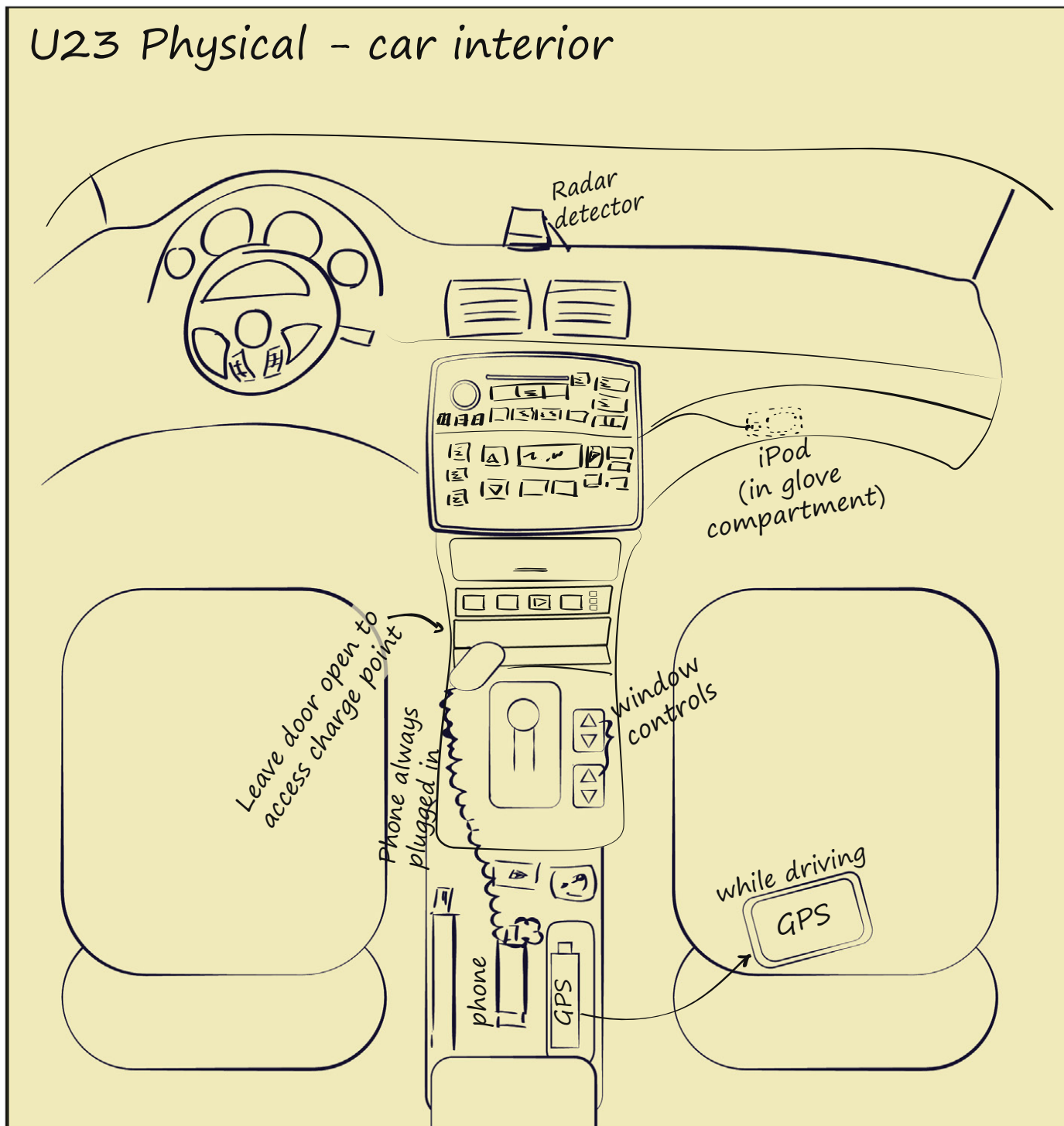
Building the model:

Add detail about organization, division of space and groupings, movement, breakdowns



Physical model

U23 Physical - car interior





Physical model

Consolidated structure:

Very similar to a regular physical model (although perhaps a bit more schematic)

Might include variants



Physical model

