

Human-Computer Interaction (HCI)

DEC02500/7250

Dr Maxime Cordeil

deco2500@uq.edu.au

03

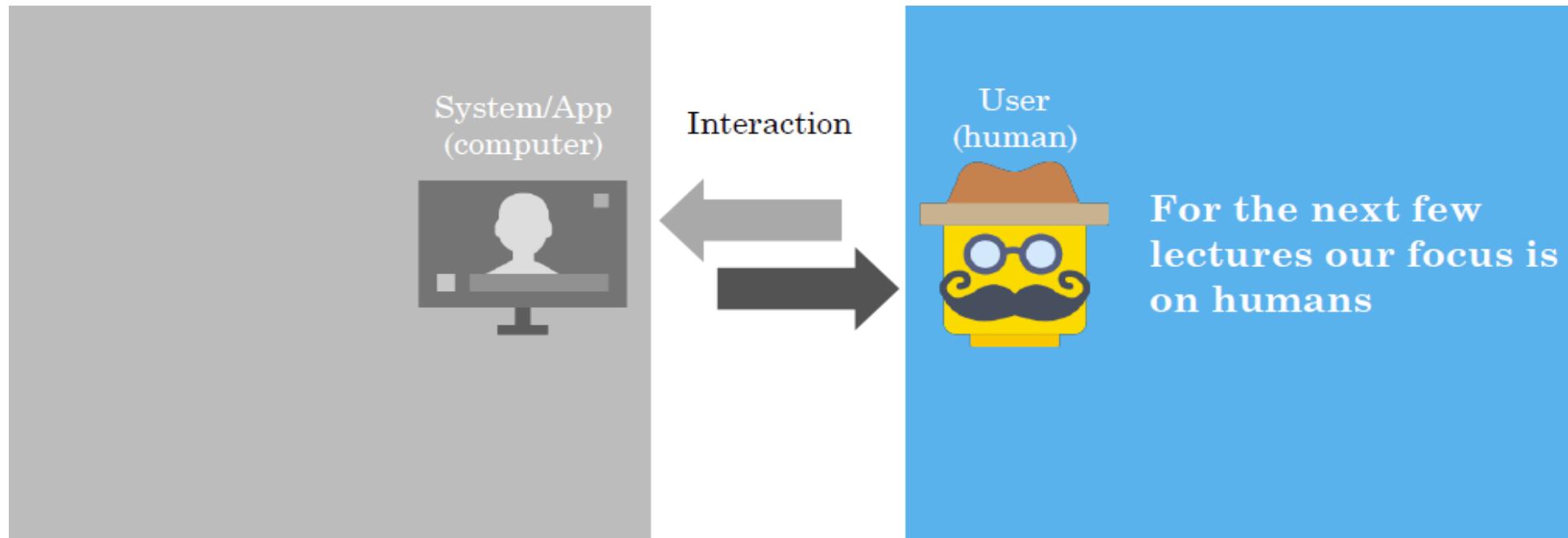
Mental Models & Conceptual Design

In this session...

- Mental Models
- Conceptual Design
- Relationship between mental models and conceptual design

Looking Beyond The GE&E

- We need to look at the features of both sides of the interaction: **humans** and systems (computers)



Looking Beyond The GE&E

Why we need to consider humans

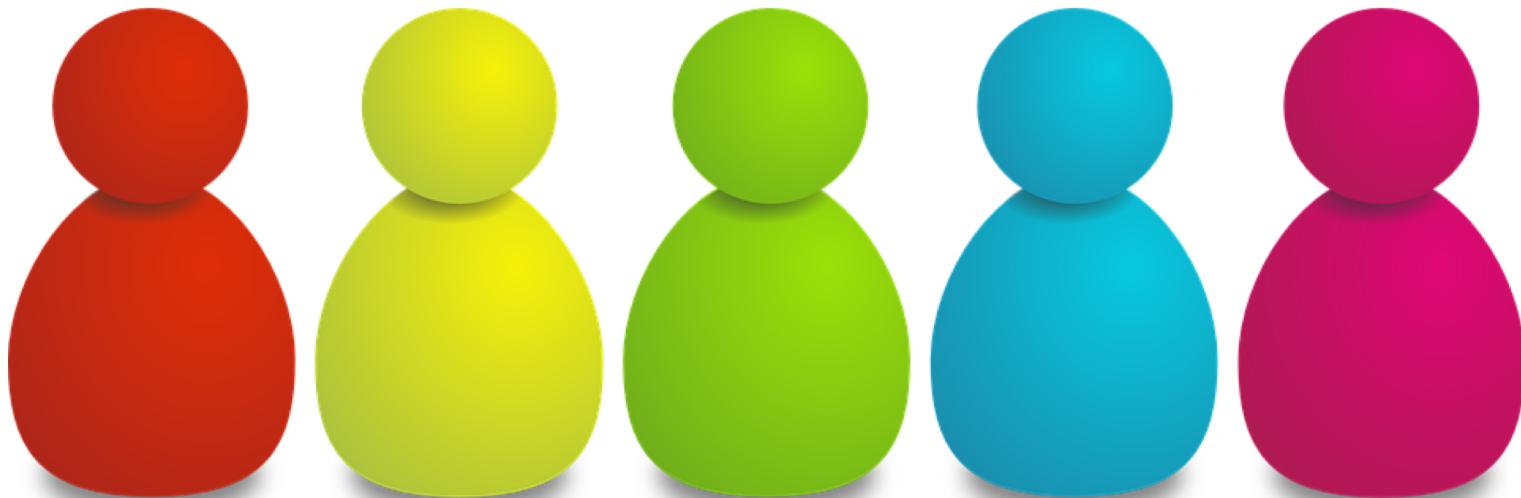
“Is it that the system doesn’t work, or that it just doesn’t work for people?”



Looking Beyond The GE&E

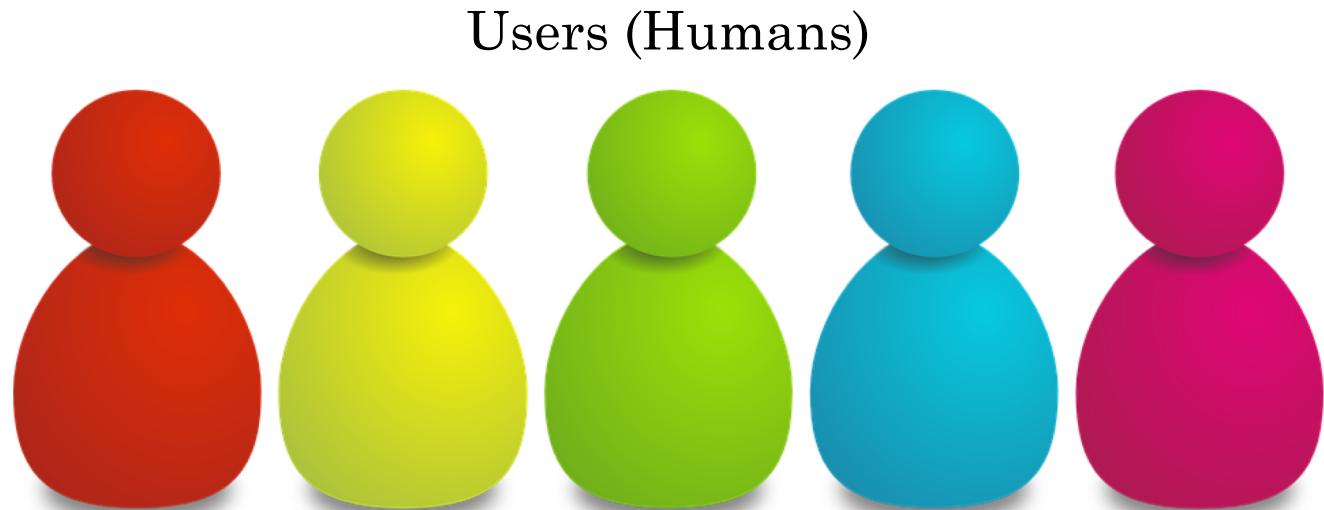
- Our systems must recognize and respond to the diversity of people, but what does this mean?

Users (Humans)



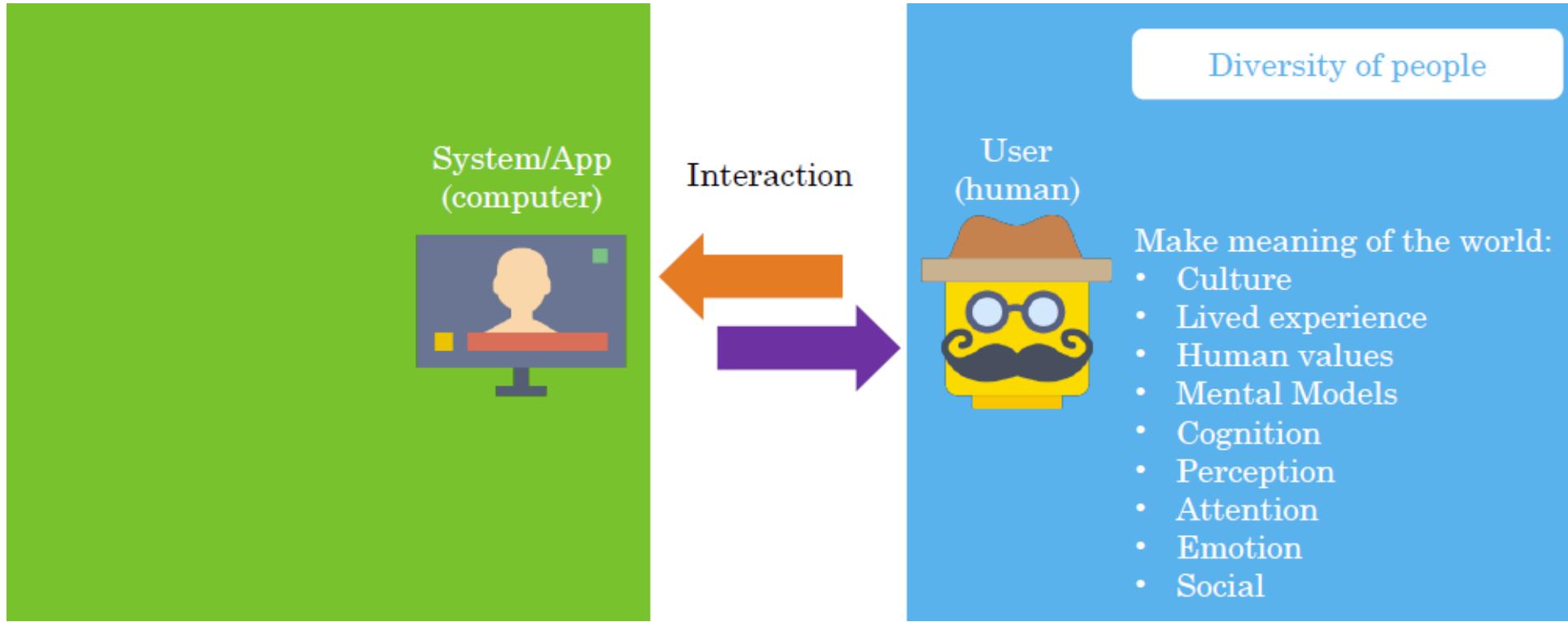
Looking Beyond The GE&E

- Diversity means considering ...
 - Making meaning of the world:
 - Culture
 - Lived Experience
 - Human Values
 - Mental Models
 - Cognition
 - Perception
 - Attention
 - Emotion
 - Social
 - Temporal



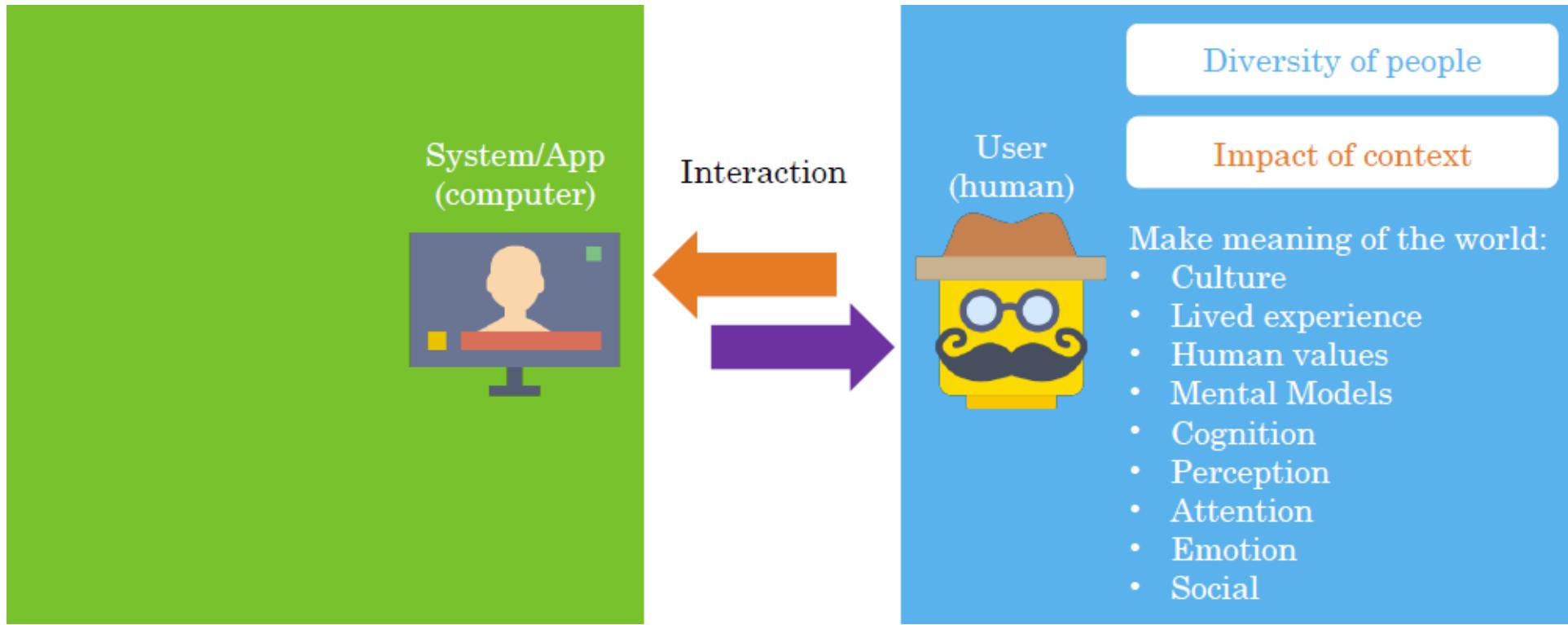
Looking Beyond The GE&E

- When we add these factors back into our view of interaction ...

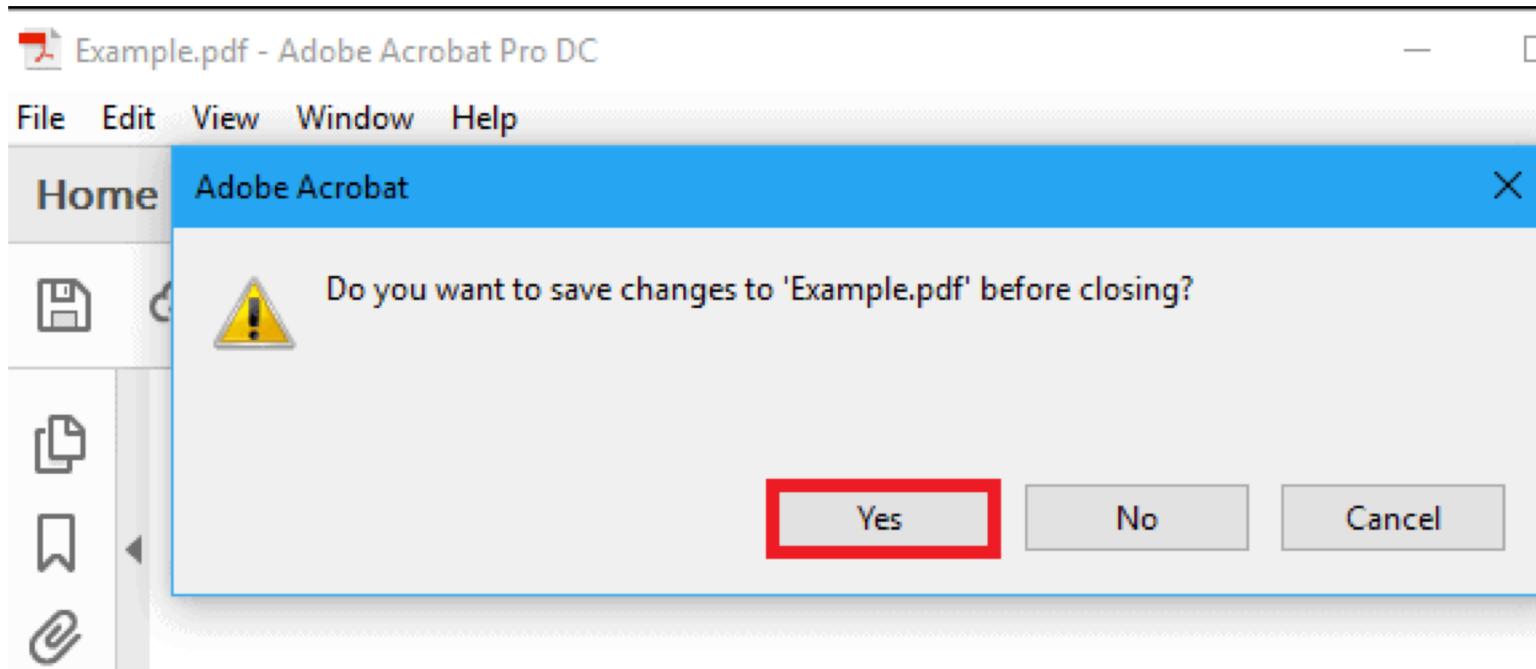


Looking Beyond The GE&E

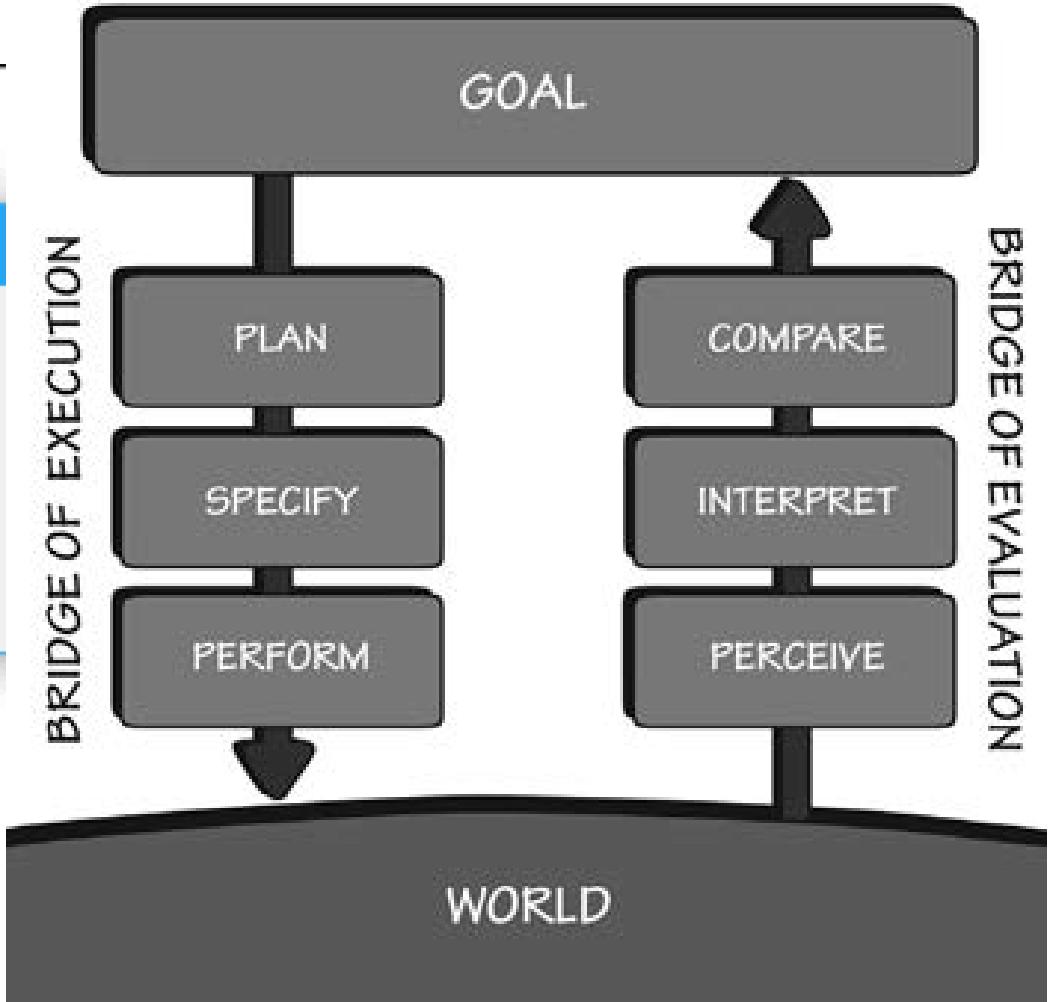
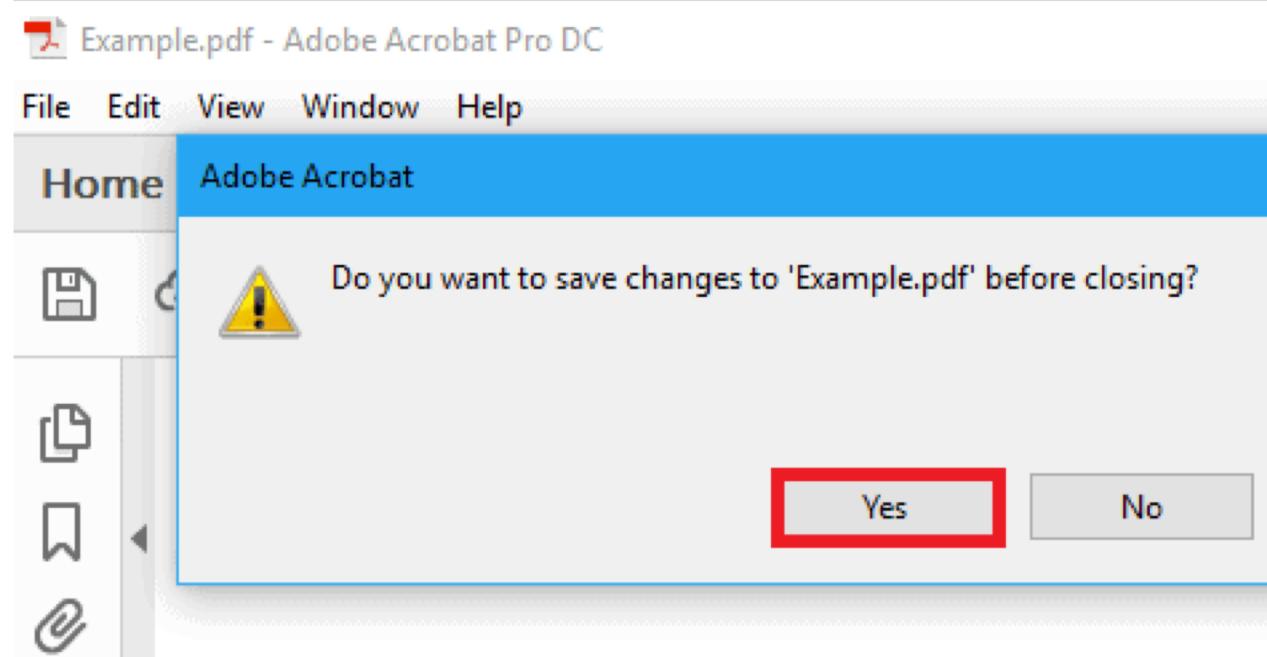
- The context of use is a significant consideration
- We find out about many of these things through the process of contextual inquiry



Looking Beyond The GE&E



Looking Beyond The GE&E



Do you want to save changes before closing?

GOAL: minimise the document

GULF OF EXECUTION

Plan: minimise the document

Specify: find the minimise button

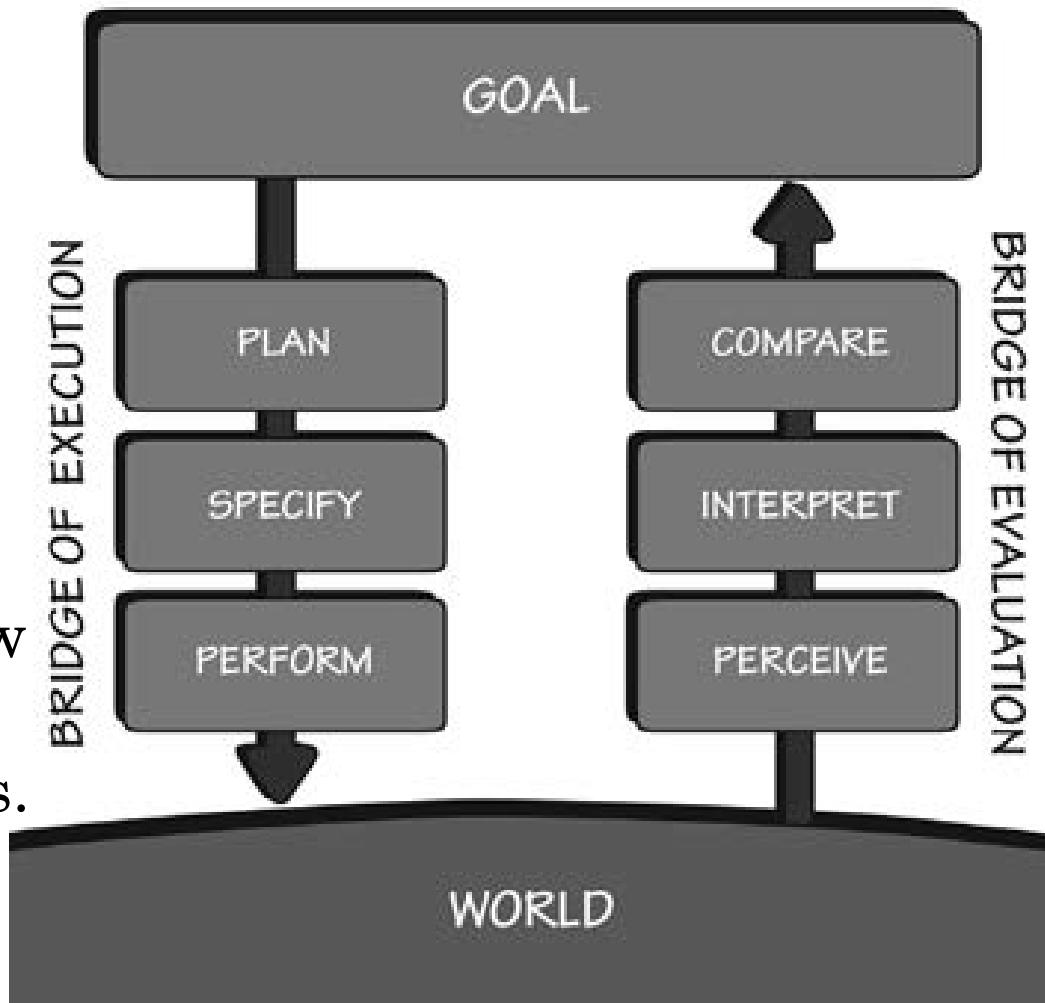
Perform: click the minimise button

GULF OF EVALUATION

Perceive: notice pop-up modal window

Interpret: read/understand question

Compare: document not minimised vs.
now have to respond to question



Do you want to save changes before closing?

NEW GOAL: dismiss modal dialog to try to minimise window again

GULF OF EXECUTION

Plan: click an answer

Specify: find “no”

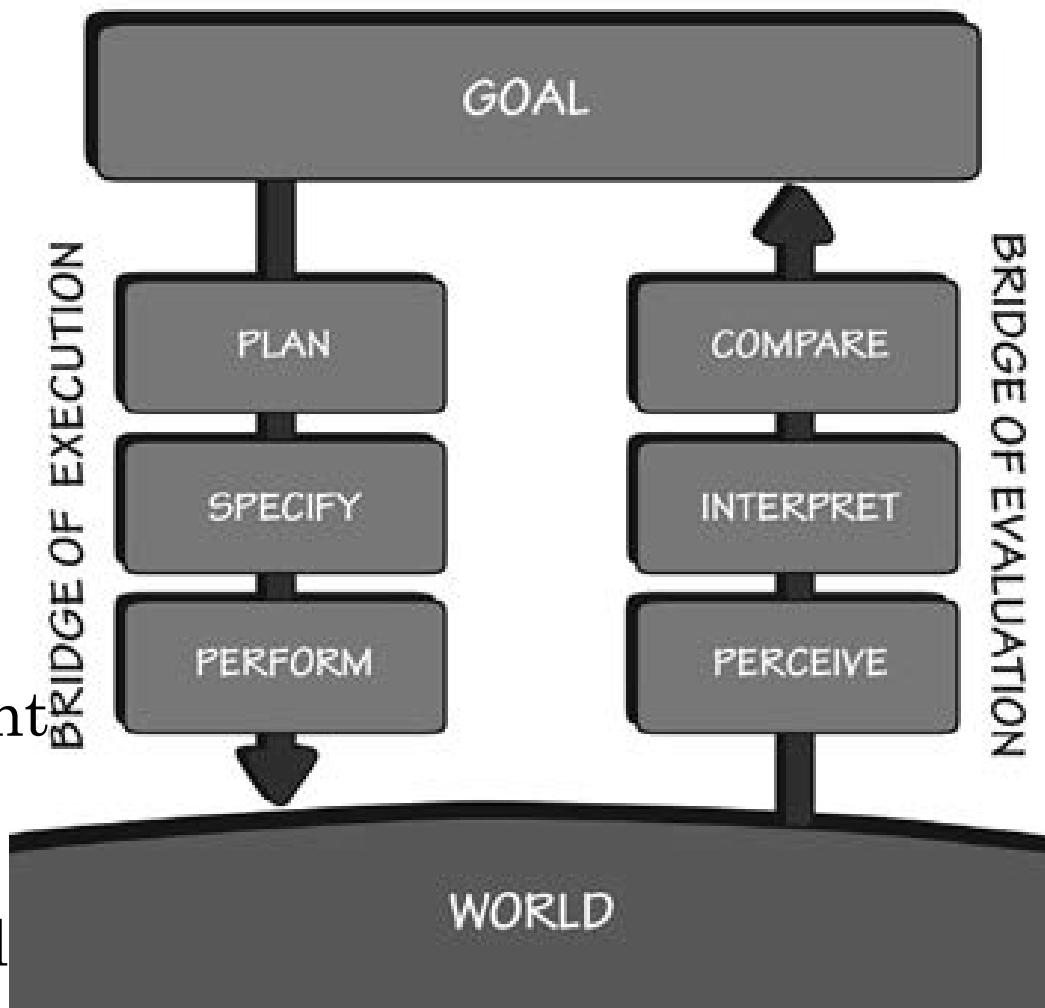
Perform: click “no”

GULF OF EVALUATION

Perceive: modal window and document disappear without animation

Interpret: document is closed (!)

Compare: document is gone vs. modal window dismissed



Looking Beyond The GE&E

Culture – what is a reasonable answer to a question with a mistaken premise?

Lived Experience

Human Values

Mental Models – what was expected to happen?

Cognition – what is understood to be happening?

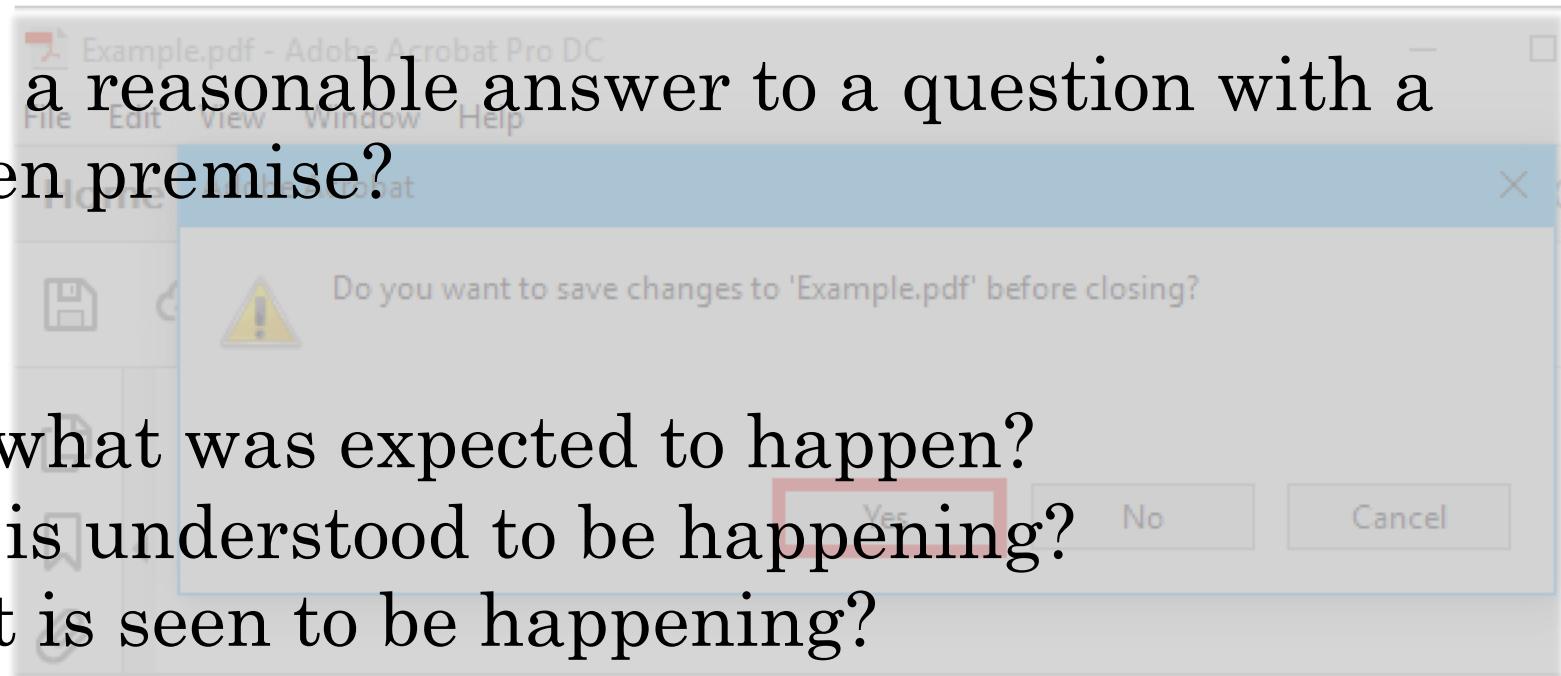
Perception – what is seen to be happening?

Attention – what is being focused on?

Emotion – what state of mind? stressed? tired?

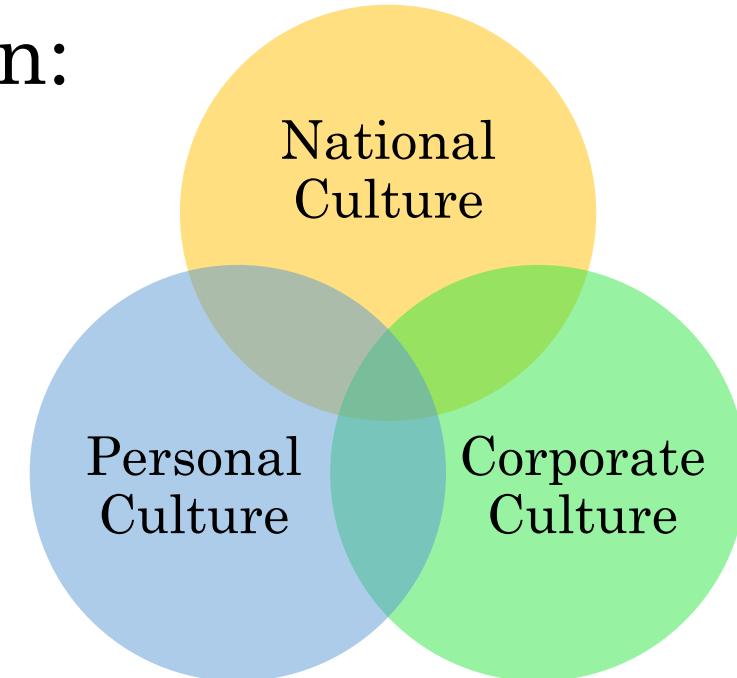
Social

Temporal – what just happened prior? how does that matter now?



Diversity of People – Culture

- “Culture is the collective programming of the mind which distinguishes the members of one group from another” – G. Hofstede & G.J. Hofstede (2005), *Cultures and Organisations: Software of the mind*
- Culture can have an influence on:
 - Learning styles
 - Attitudes to change
 - Expectations, assumptions
 - Aesthetic taste
 - Judgment
 - Perception



Diversity of People – Culture

- “Culture” is not often solely or primarily responsible for many important differences
- A focus on users’ culture can also invite incorrect, and damaging, stereotypes
- Culture is an important consideration because it requires designers to *identify their own culturally-based assumptions* about what they consider to be ‘normal’ or ‘obvious’, **not** because it provides a shortcut for grouping large cultural groups together as the ‘same’. Many cultural stereotypes are inaccurate.
- When we design, we have to see our own culture.

Diversity of People – Culture



TravelBird

Reserveren / Dit is de aanbieding

Incl. Vlucht!

Beleef het mooiste van Ierland

Tijdens deze fascinerende rondreis door Ierland vergaap je aan machtige kliffen, eeuwenoude kastelen, prachtige natuur én aan steden als Dublin en Galway! Inclusief 7 nachten in 3*- en 4*-hotels, ontbijt, vlucht en huurauto!

[Lees meer](#)

Stap 1 / Kies je vertrekdatum

Luchthaven van vertrek ▾

▼ Laagste prijs ■ Nu beschikbaar ■ Vol

mei 2016							juni 2016							juli 2016						
ma	di	wo	do	vr	za	zo	ma	di	wo	do	vr	za	zo	ma	di	wo	do	vr	za	zo
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31				1	2	3	4	5	6	7	8	9	10	11	12	13	14

augustus 2016							september 2016							oktober 2016						
ma	di	wo	do	vr	za	zo	ma	di	wo	do	vr	za	zo	ma	di	wo	do	vr	za	zo
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	
28	29	30	31				1	2	3	4	5	6	7	8	9	10	11	12	13	14

november 2016							december 2016													
ma	di	wo	do	vr	za	zo	ma	di	wo	do	vr	za	zo							
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
21	22	23	24	25	26	27	28	29	30	31				1	2	3	4	5	6	7
28	29	30					1	2	3	4	5	6	7	8	9	10	11	12	13	14

Stap 2 / Je bestelling
Stap 3 / Persoonlijke gegevens
Stap 4 / Betaling

TravelBird

Reservieren / Das ist das Angebot

Mit Flug!

Strandurlaub in Lagos

Sonrige Algarve: 7 Nächte im Carvi Beach Hotel direkt am Strand mit täglichem Frühstück, Hin- und Rückflug und gratis WLAN im Hotel

[Mehr lesen](#)

Inklusive

- » 7 Nächte im Doppelzimmer mit Gartensicht oder Seesicht
- » Tägliche Frühstück
- » Gratis WLAN
- » Hin- und Rückflug mit Germanwings von Hamburg (HAM) und Stuttgart (STR) bzw. mit Ryanair von Bremen (BRE), Düsseldorf (NRN) oder Frankfurt-Hahn (HHN) oder mit TUIFly von Düsseldorf (DUS) oder München (MUC) nach Faro (FAO)
- » Germanwings/Eurowings: 1 Handgepäckstück pro Person bis zu 8 kg (55x40x23 cm)
- » Ryanair: 1 Handgepäckstück pro Person mit bis zu 10 kg (55x40x20 cm) & 1 kleine Handtasche (35x20x20 cm)
- » TUIfly: 1 Handgepäckstück pro Person mit bis zu 6 kg (55x40x20 cm)

Exklusive

- » Reiseversicherungen
- » Aufgabengepäck (Optional hinzu buchbar)
- » Transfers (Optional hinzu buchbar)
- » Evtl. Touristensteuer

Schritt 1 / Bitte wählen Sie ein Abreisedatum

Nach Flughafen sortieren

Günstigster Preis Jetzt verfügbar Zurzeit nicht verfügbar

Juni 2016							Juli 2016							August 2016						
Mo	Di	Mi	Do	Fr	Sa	So	Mo	Di	Mi	Do	Fr	Sa	So	Mo	Di	Mi	Do	Fr	Sa	So
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10
28	29	30					1	2	3	4	5	6	7	8	9	10	11	12	13	14

September 2016							Oktober 2016													
Mo	Di	Mi	Do	Fr	Sa	So	Mo	Di	Mi	Do	Fr	Sa	So							
5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	
26	27	28	29	30			1	2	3	4	5	6	7	8	9	10	11	12	13	14

Schritt 2 / Ihre Buchung
Schritt 3 / Persönliche Daten
Schritt 4 / Bezahlung

Diversity of People – Culture



TravelBird

Reserveren / Dit is de aanbieding



Beleef het mooiste van Ierland

Tijdens deze fascinerende rondreis door Ierland vergaap je aan machtige kliffen, eeuwenoude kastelen, prachtige natuur én aan steden als Dublin en Galway! Inclusief 7 nachten in 3*- en 4*-hotels, ontbijt, vlucht en huurauto!

[Lees meer](#)

Stap 1 / Kies je vertrekdatum



Stap 2 / Je bestelling

Stap 3 / Persoonlijke gegevens

Stap 4 / Betaling

Help



TravelBird

Fragen?

Reservieren / Das ist das Angebot



Strandurlaub in Lagos

Sonrige Algarve: 7 Nächte im Carvi Beach Hotel direkt am Strand mit täglichem Frühstück, Hin- und Rückflug und gratis WLAN im Hotel

Mehr...

Inklusive

- » 7 Nächte im Doppelzimmer mit Gartensicht oder Seesicht
- » Tägliches Frühstück
- » Gratis WLAN
- » Hin- und Rückflug mit Germanwings von Hamburg (HAM) und Stuttgart (STR) bzw. mit Ryanair von Bremen (BRE), Düsseldorf-Weeze (NRN) oder Frankfurt-Hahn (HHN) oder mit TUIFly von Düsseldorf (DUS) oder München (MUC) nach Faro (FAO)
- » Germanwings/Eurowings: 1 Handgepäckstück pro Person bis zu 8 kg (55x40x23 cm)
- » Ryanair: 1 Handgepäckstück pro Person mit bis zu 10 kg (55x40x20 cm) & 1 kleine Handtasche (35x20x20 cm)
- » TUIfly: 1 Handgepäckstück pro Person mit bis zu 6 kg (55x40x20 cm)

Exklusive

- » Reiseversicherungen
- » Aufzgebepäck (Optional hinzu buchbar)
- » Transfers (Optional hinzu buchbar)
- » Evtl. Touristensteuer

Schritt 1 / Bitte wählen Sie ein Abreisedatum

Nach Flughafen sortieren

<input type="checkbox"/> Stuttgart (STR) von 459,00 €	<input checked="" type="checkbox"/> München (MUC) von 479,00 €	<input type="checkbox"/> Düsseldorf (DUS) von 569,00 €
<input type="checkbox"/> Münster (MUN) von 489,00 €	<input type="checkbox"/> Hamburg (HAM) von 579,00 €	

Juni 2016

Mo	Di	Mi	Do	Fr	Sa	So
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Juli 2016

Mo	Di	Mi	Do	Fr	Sa	So
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

August 2016

Mo	Di	Mi	Do	Fr	Sa	So
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

September 2016

Mo	Di	Mi	Do	Fr	Sa	So
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Oktober 2016

Mo	Di	Mi	Do	Fr	Sa	So
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Schritt 2 / Ihre Buchung

Schritt 3 / Persönliche Daten

Schritt 4 / Bezahlung



Diversity of People – Lived Experience

- “Personal knowledge about the world gained through direct, first-hand involvement in everyday events rather than through representations constructed by other people” – *Oxford Reference*
- Experience that is embedded in a ‘natural’ or ‘real’ context of use
- Incorporates people’s perceptions of those experiences – the meaning that they attribute to the experience



Diversity of People – Human Values

- What's important to *people*:
 - Guiding principles e.g. justice, security, freedom, community, individuality, responsibility/duty...
 - Something we cherish e.g. spending time with friends, personal privacy, self-improvement...
 - **You'll need to this when you analyse your interviews...**



Privacy vs
Discount?

Distrust vs
Connection?



Identifying Human Values

- What's important to *people*:
- The quote (next slide) comes from an interview from a teacher talking about how new measurement technologies change the way children “do” science at primary school. When studying water quality, children used to have to take a physical sample of water from the creek, identify its colour from a chart, perform chemical (litmus) tests to find its pH levels etc. Now they have a device they can stick in the water and get the readings:

Identifying Human Values

- “It [the old way] is **fun** for the kids and I think doing that **hands-on** gives them a **better appreciation** of what they are **doing** and what they are seeing, **experiencing** it, whereas when you **just put a device** in water and pull it out, that tells you what it is. You really **don’t have a great understanding** of what it is, ‘oh, I am reading salinity, um I am reading density and I am reading turbidity and I am reading oxygen levels’, but what does that **really mean?**...”

Identifying Human Values

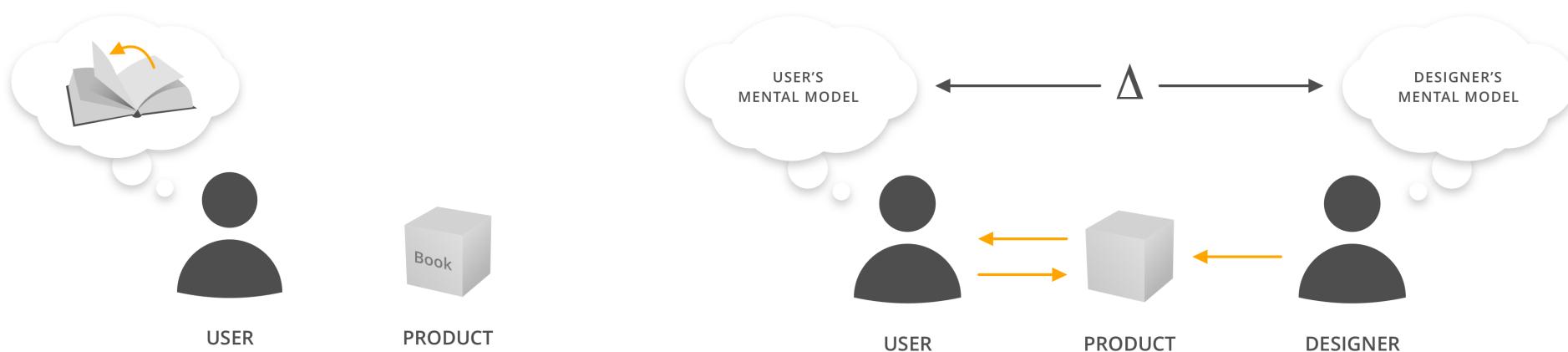
- Fun
- Hands-on activity
- Doing it themselves
- Personal experience
- “Great understanding”
- What measurement “really means”
- Instantaneous results/numbers
- Abstract numbers
- Invisible process of measurement
- Hidden relationship between the water and the results on screen—how did the ‘magic box’ get those numbers?

Identifying Human Values

- How do we design systems that support values?
- Read your interviews not just for what they say or what their opinions are, but for what **values** you can identify from the **points** they make, the things they call out as being **important**, and **reasons** they give.

Mental Models

- Refers to a user's **underlying expectations about how something should work**
- Based on their **existing experiences** with what people perceive as **similar interactions** or systems or by **assumptions** they've made based on how it appears (perceived affordances)
- Allows people to reason about a system to **determine how it works** and to **predict the behaviour of a system** or application including **how to recover from errors**
- A user's mental model is **constantly evolving and subject to change** due to influences by new experiences with the product, other technologies, and day to day life



Mental Models

- I want to heat my oven to 180°C as fast as possible



Mental Models

- Audience poll:
- Go to www.menti.com and use the code 1402 9819



Mental Models

- I want to heat my oven to 180°C as fast as possible

GAS?



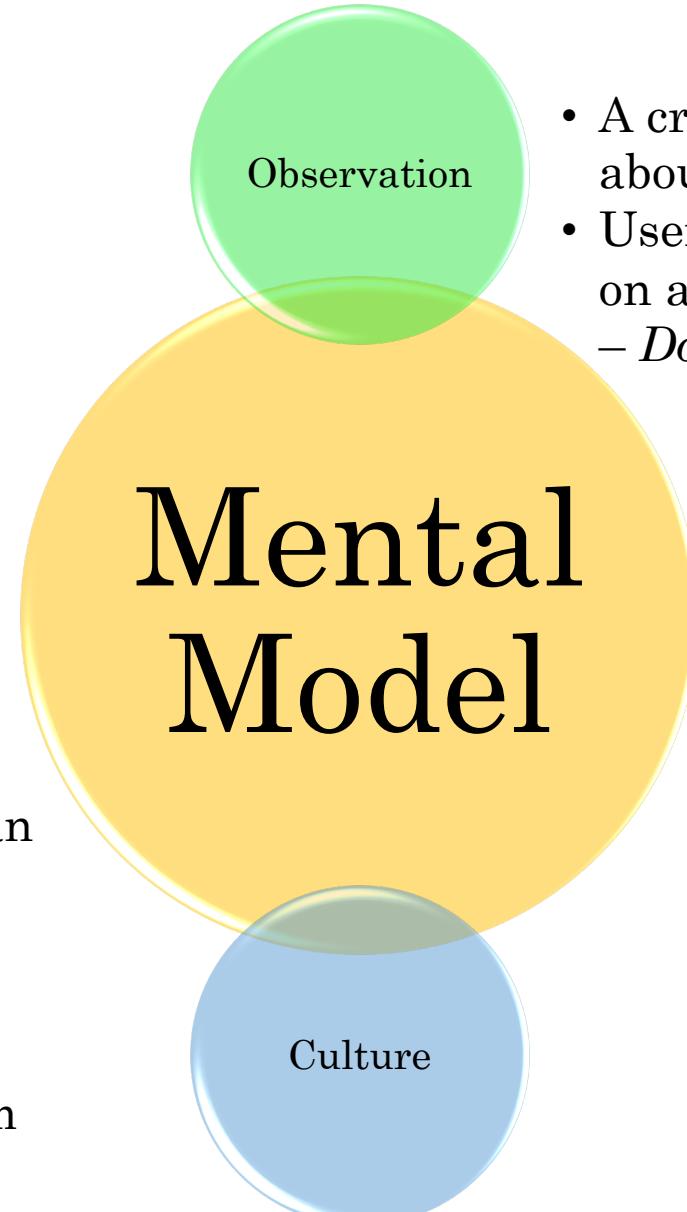
ELECTRIC?

Mental Models



A screenshot of a supermarket website's promotional page. At the top, there is a banner with the text "Save with Drink Specials!" and a "Shop now" button. Below this, there is a section titled "Featured Specials" which lists various products with special offers. The products include Nescafe Blend 43 Instant Coffee (\$14.00), Primo Gluten Free Short Cut Bacon Rindless (\$11.00), Nestle Milo (\$10.00), Mission Original Wraps 8 pack (\$4.00), Finish Dishwasher Tablets (\$16.00), and Devondale Regular Butter Blend (\$4.50). Below this, there is a section titled "Stock up on 2 for \$9 Chocolate Bunnies" which lists four types of Lindt chocolate bunnies: Lindt Bunny Flower Milk Chocolate (\$6.20ea), Lindt Gold Bunny White Chocolate (\$6.20ea), Lindt Gold Bunny Milk Chocolate (\$6.20ea), and Lindt Gold Bunny Dark Chocolate (\$6.20ea). Each item has a "Buy 2 Get 1 Free" offer.

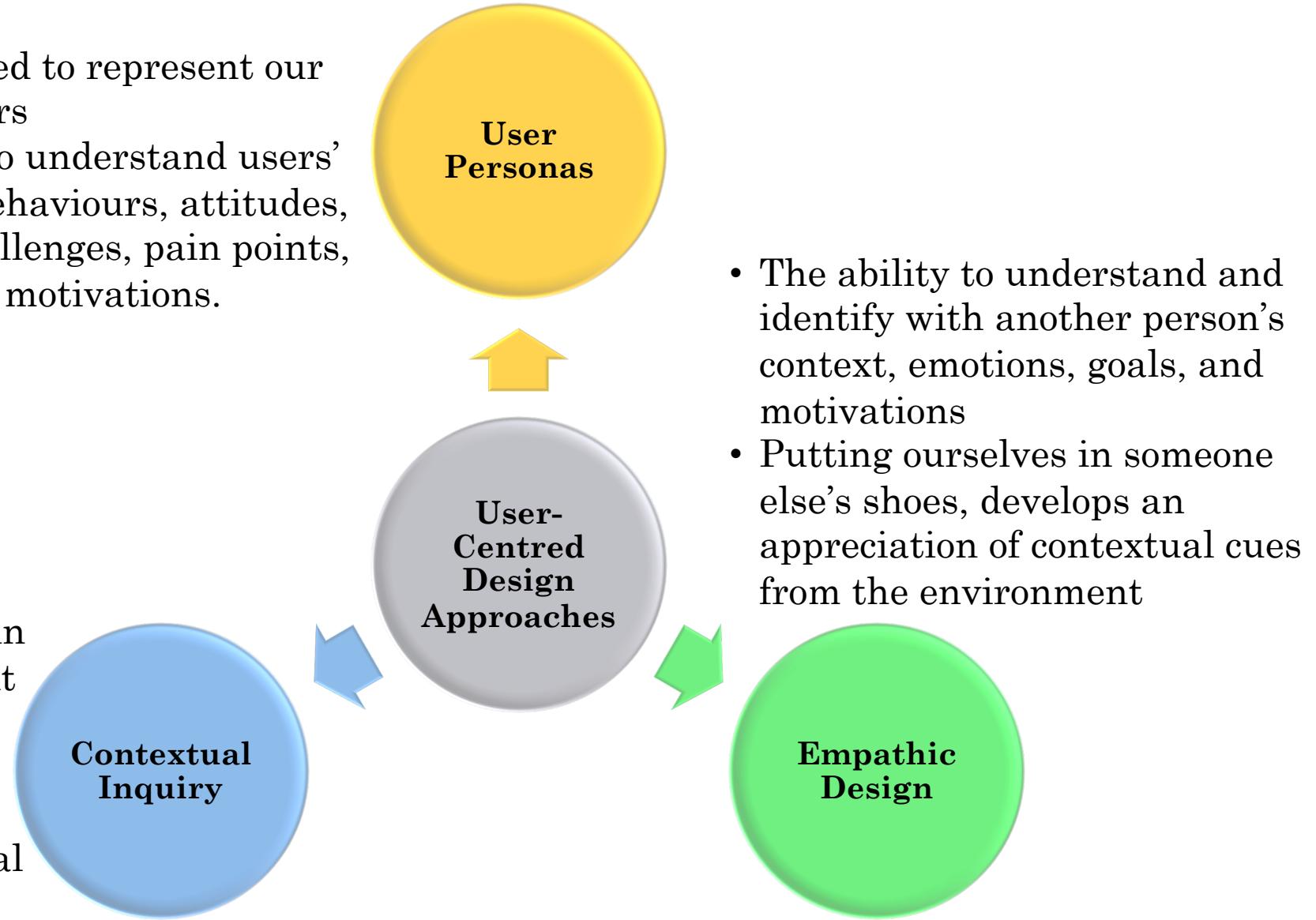
Forming Mental Models



- Cultural expectations shape human perceptions
- All design is cultural. If you aren't identifying your own cultural assumptions, don't expect users to make the same sense of the system that you do.
- A critical method of obtaining answers about our general surroundings
- Users update their mental models based on additional experience with the system
– *Don Norman*

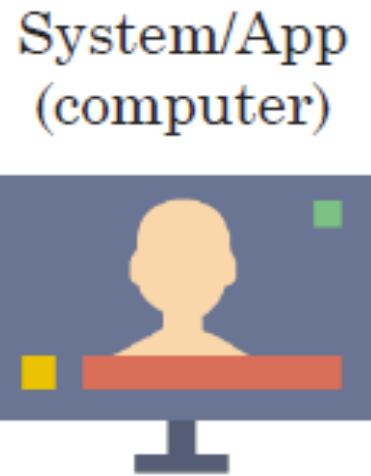
Leveraging Mental Models

- Can be used to represent our target users
 - Helps us to understand users' context, behaviours, attitudes, needs, challenges, pain points, goals, and motivations.
-
- Studying users in their own natural environment to obtain information about the context of use
 - Can gain useful perspectives that enable us to gather a realistic view of users' natural behaviours



Beyond the GE&E

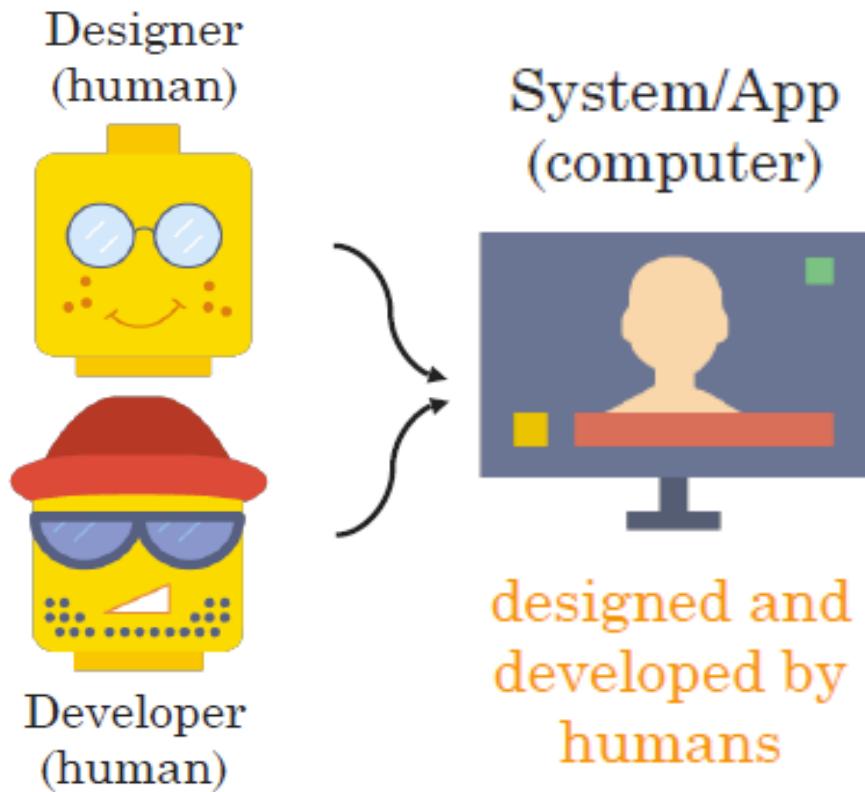
- Designers and developers also have mental models of the systems they build



designed and
developed by
humans

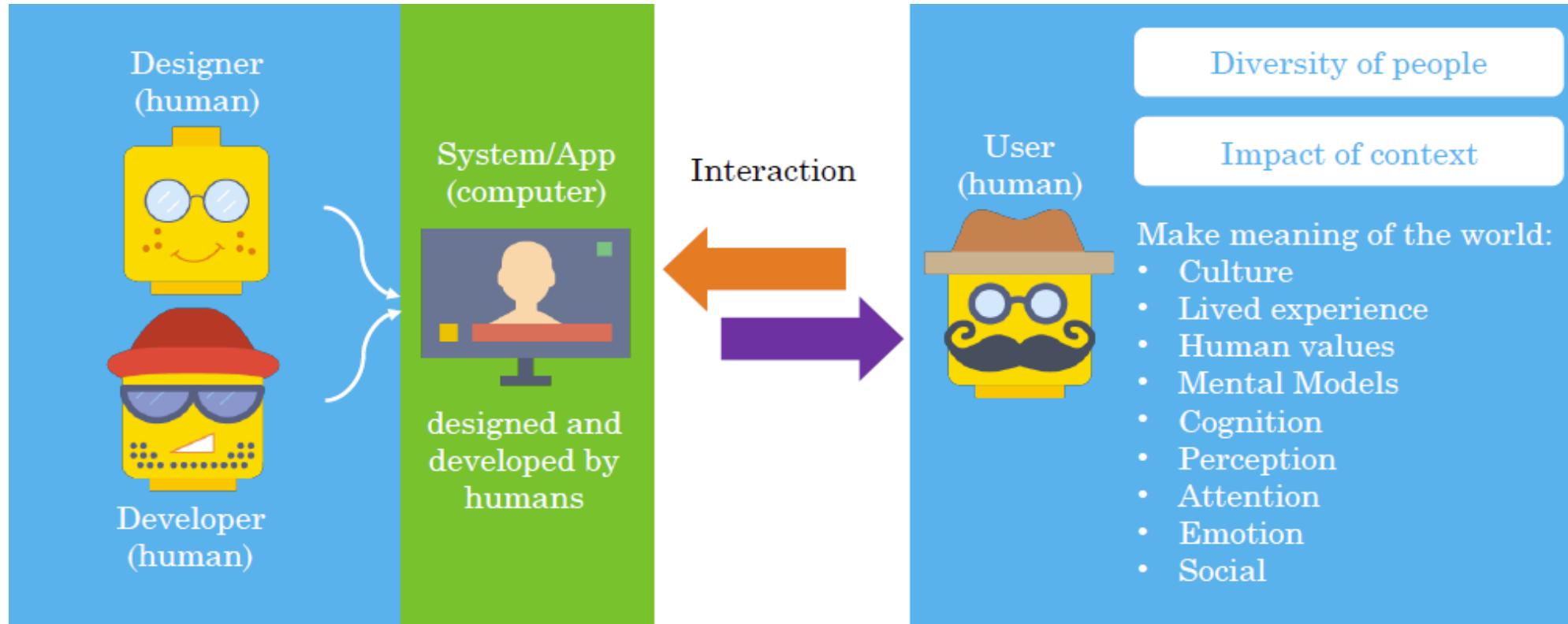
Beyond the GE&E

- Designers and developers also need to be considered



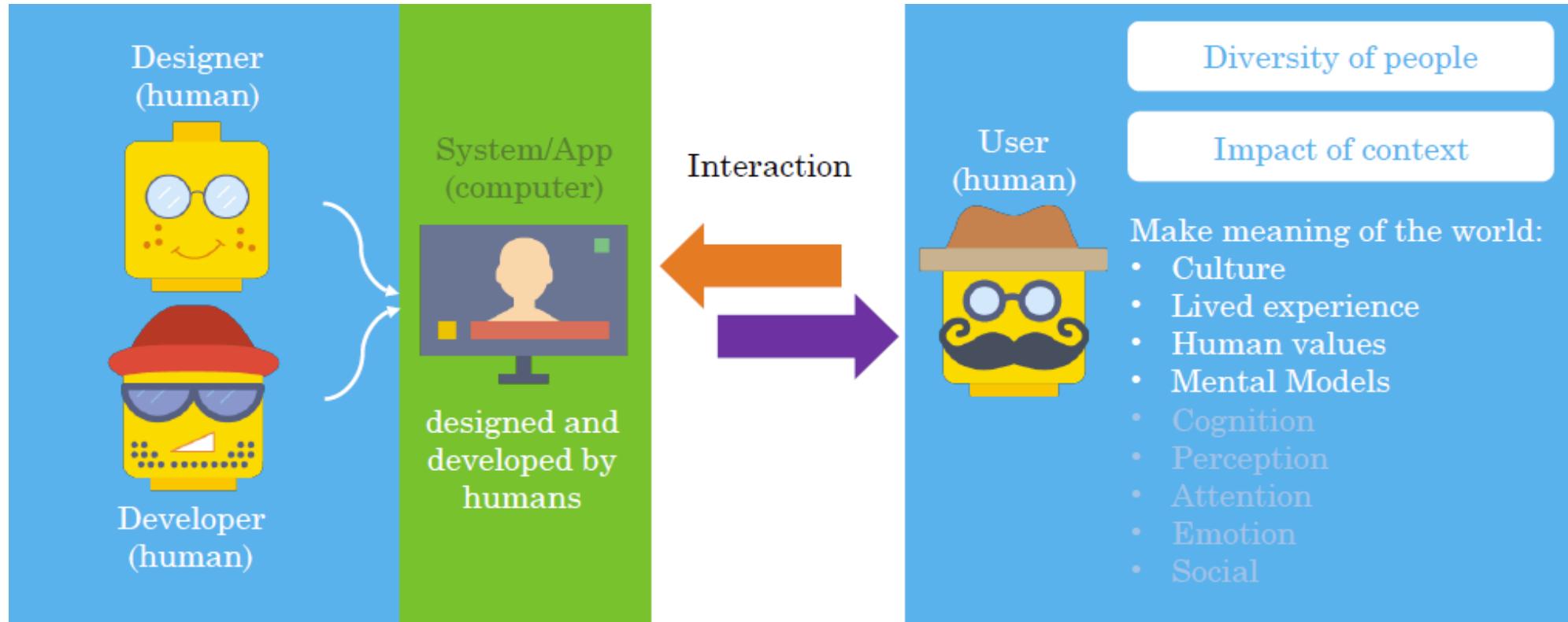
Beyond the GE&E

Our view of interaction now looks like this ...



Diversity of People

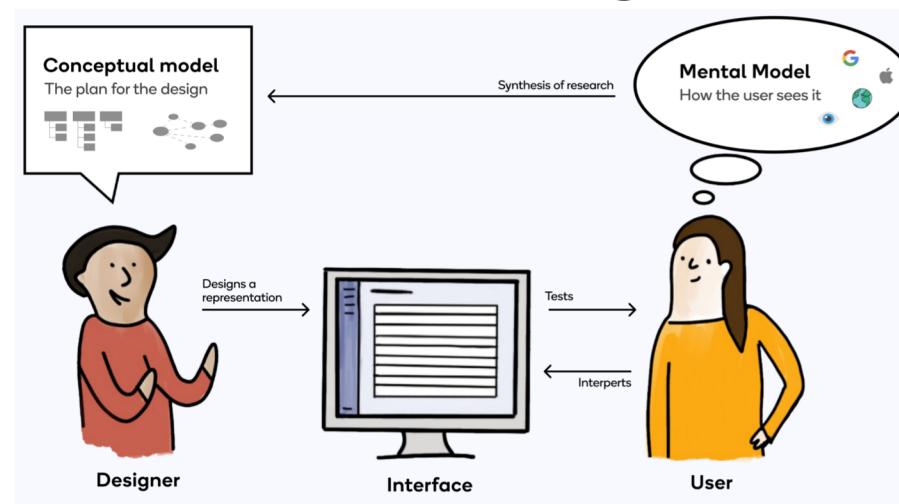
The same human issues also apply to designers and developers



We often design and develop technology around how we understand the world, but it should be around **how the user understands the world**

Conceptual Design

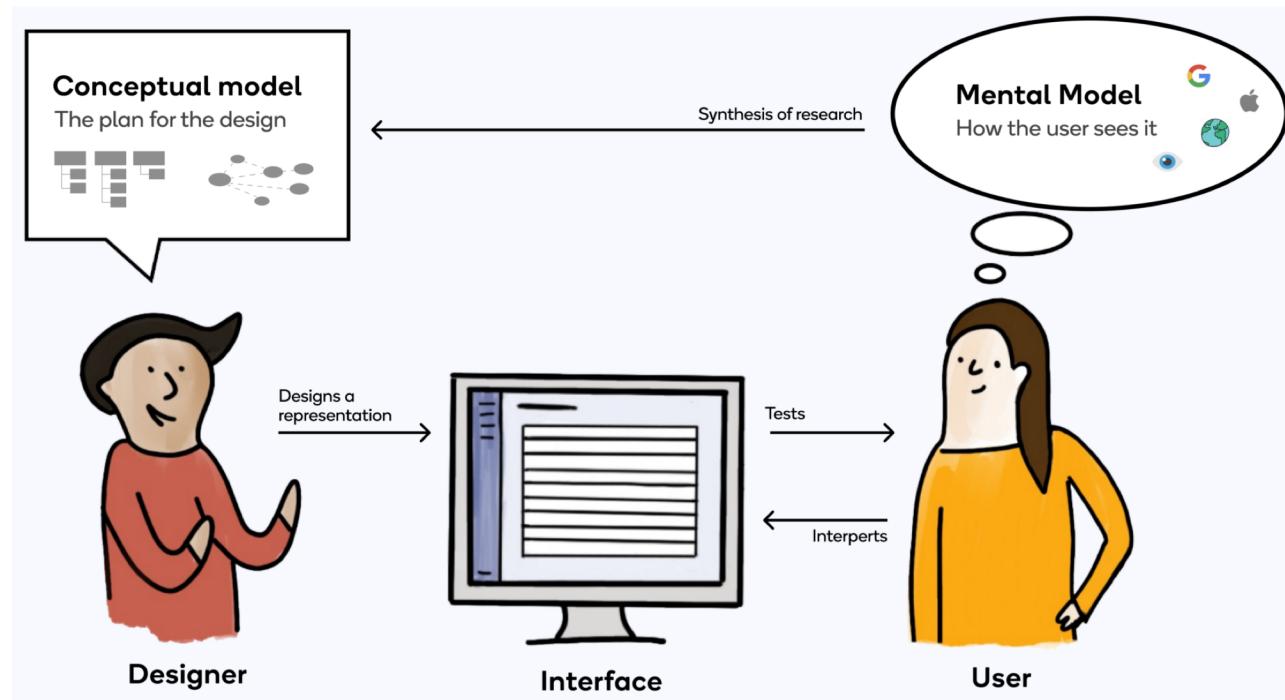
- Going from a great idea to a fully functioning app or system is a long process that involves many steps, such as UI design and functional testing
- Before any development starts, it's important to have a clear picture of what is being created



Conceptual Design

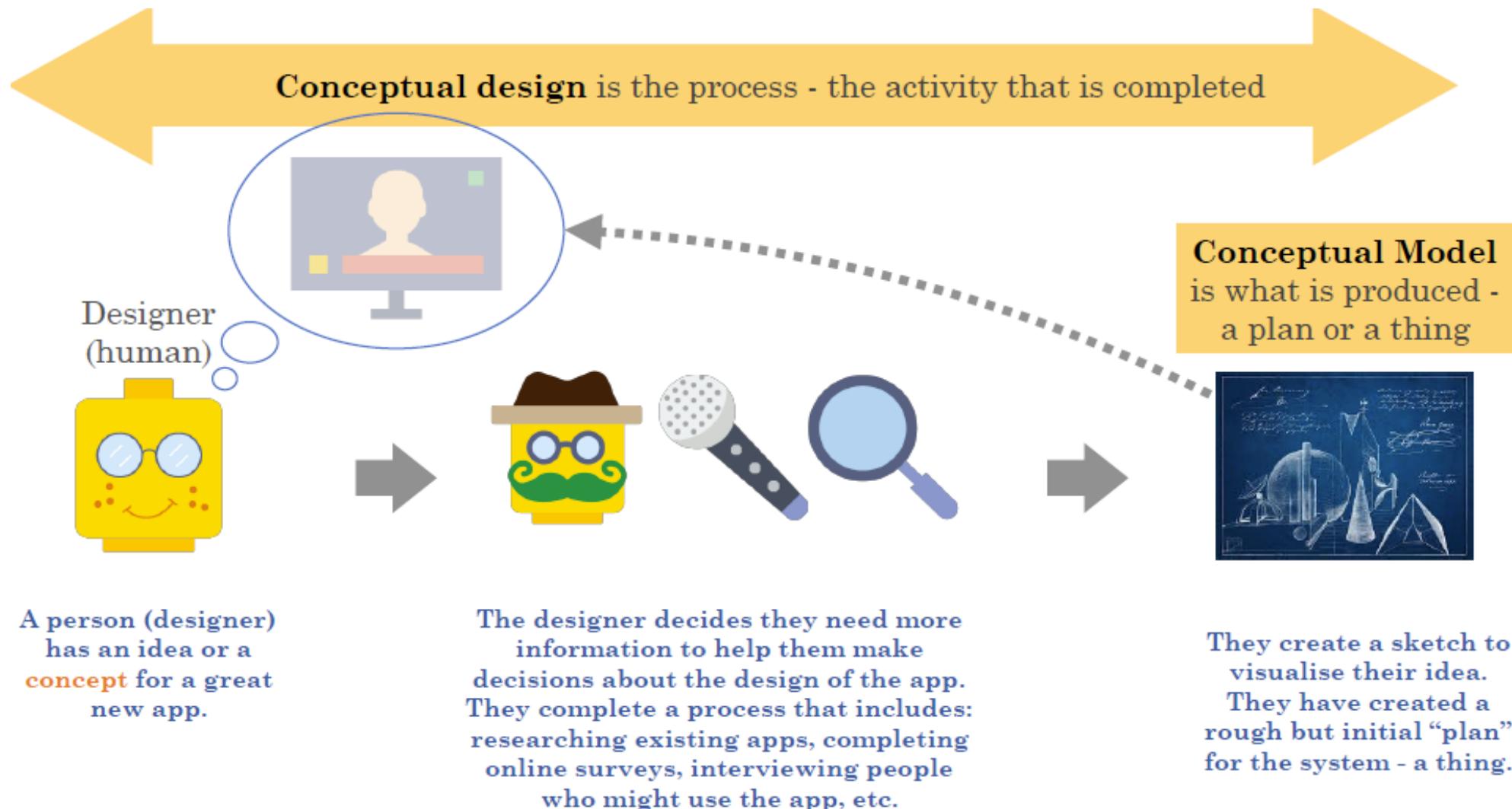
- It is the job of conceptual design to connect the two
- This ensures that everyone is ‘on the same page’

A designer's mental (conceptual) model is a vision of how a system works as held by the designer



A user's mental model is a description of how the system works, as held by the user

Conceptual Design



Conceptual Design

- **Conceptual Design** involves producing the conceptual model for the product
- **Conceptual Model** describes an *abstraction* outlining what people can do with a product and what concepts are needed to understand how to interact with it

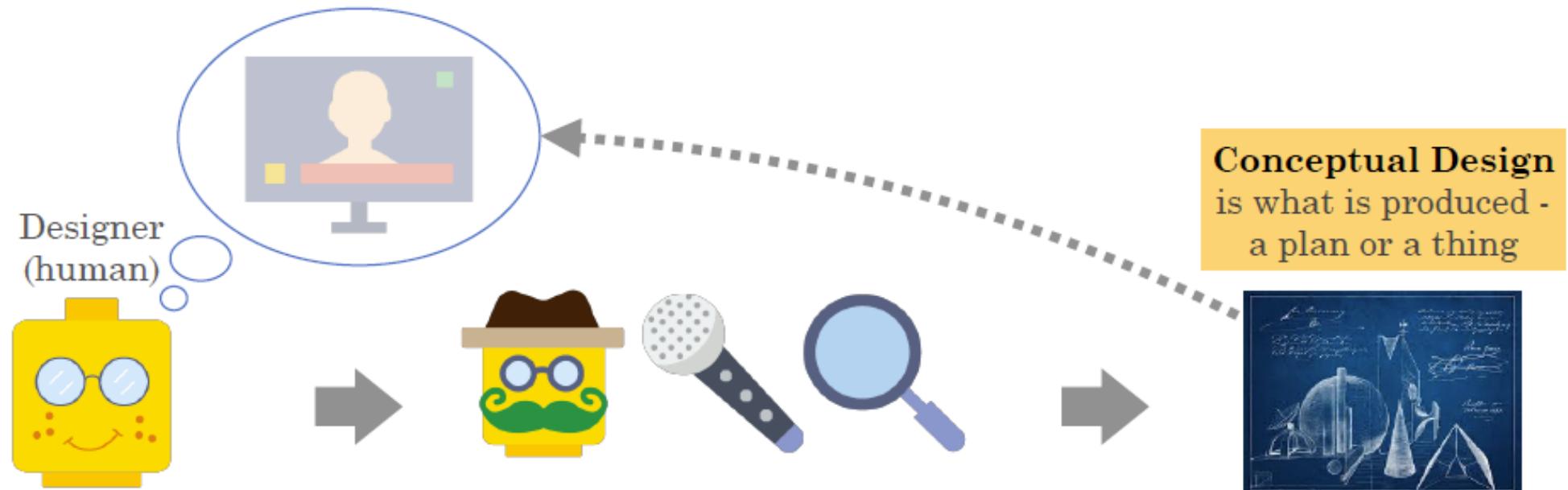
This is an “abstraction”:



... and so is this:

Gourmandise is an app for mobile phones where users can search for recipes using the ingredients they have in their cupboard.

Conceptual Design



A person (designer) has an idea or a **concept** for a great new app.

The designer decides they need more information to help them make decisions about the design of the app. They complete a process that includes: researching existing apps, completing online surveys, interviewing people who might use the app, etc.

Conceptual Design is what is produced - a plan or a thing



They create a sketch to visualise their idea. They have created a rough but initial “plan” for the system - a thing.

Conceptual Design

- A **conceptual design** is the part of an interaction design containing a theme, notion, or idea with the purpose of communicating a design vision about a system or product
- A conceptual design is the *manifestation* of the designer's mental model within the system [...]. It is the part of the system design that brings the designer's mental model to life within the system.

This is a “manifestation”:



... and so is this:

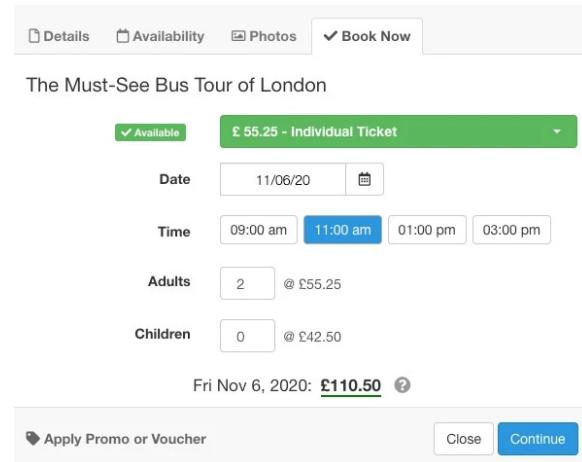
Gourmandise is an app for mobile phones where users can search for recipes using the ingredients they have in their cupboard.

Conceptual Design – Course Approach

1. The *manifestation* or *abstraction* of the designer's mental model of the system, encompassing a theme, notion, or idea with the purpose of communicating a design vision about a system or product
 2. The process used to transform user needs and requirements (aims, desires and functionality) into that manifestation or abstraction
- Important to note – conceptual design is not the same as a user interface
 - It is the *concepts* that people need to understand in order to use the interface.

Conceptual Design - example

- Echoing common mental models in the design leads to successful interface design
- Task: booking a service online
- Common mental model involves diaries, calendar, dates, time (notion, metaphor)



The Must-See Bus Tour of London

£ 55.25 - Individual Ticket

Date: 11/06/20

Time: 09:00 am, 11:00 am, 01:00 pm, 03:00 pm

Adults: 2 @ £55.25

Children: 0 @ £42.50

Fri Nov 6, 2020: £110.50

Apply Promo or Voucher

Close Continue

A screenshot of a web-based booking form for a bus tour. At the top, there are tabs for 'Details', 'Availability', 'Photos', and 'Book Now' (which is highlighted). Below the tabs, the title 'The Must-See Bus Tour of London' is displayed. A green button labeled '£ 55.25 - Individual Ticket' is shown. The 'Date' field is set to '11/06/20'. The 'Time' field shows four options: '09:00 am', '11:00 am' (which is highlighted in blue), '01:00 pm', and '03:00 pm'. Below these, the 'Adults' field shows '2' at a price of '£55.25'. The 'Children' field shows '0' at a price of '£42.50'. At the bottom, it says 'Fri Nov 6, 2020: £110.50'. There are buttons for 'Apply Promo or Voucher', 'Close', and 'Continue'.

[What are Conceptual Models? | IxDF \(interaction-design.org\)](https://interaction-design.org)

Conceptual Design – example (continued)

- Navigating an e-book: pc vs tablet (Task)
- Common mental model pages, bookmarks, interactions...

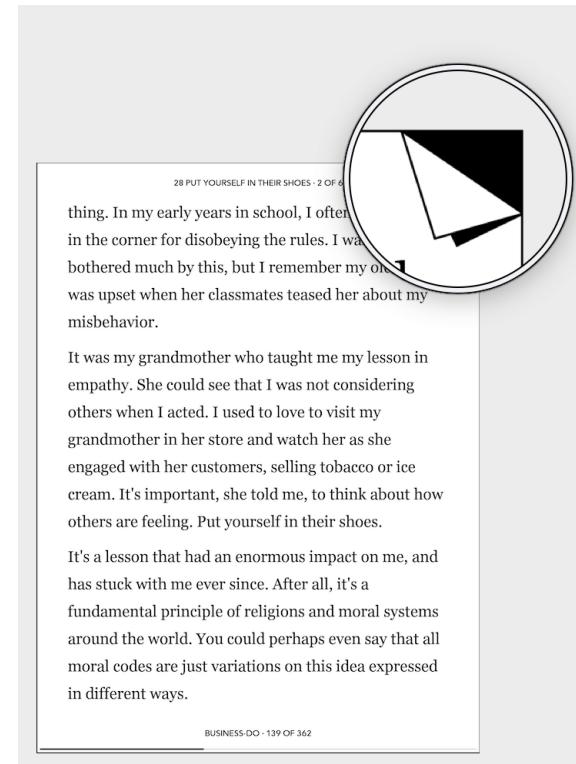
The screenshot shows a Microsoft Word document with the title "Experimental Human–Computer Interaction". The content discusses the practicalities of conducting experiments in HCI research. It includes a sidebar with navigation icons and a page thumbnails pane.

Experimental Human–Computer Interaction

Experiments that require the use of human participants are time consuming and costly: it is important to get the process right the first time. Planning and preparation are key to success. This practical book takes the human-computer interaction researcher through the complete experimental process – from identifying a research question, to designing and conducting an experiment, to analyzing and reporting the results.

The advice offered in this book draws on the author's 20 years of experience in conducting experiments. In describing general concepts of experimental design and analysis, she refers to worked examples that address the real practicalities and problems of conducting an experiment, such as managing participants, obtaining ethical approval, preempting criticism, choosing a statistical method, and dealing with unexpected events.

DR. HELEN C. PURCHASE is a Senior Lecturer in the School of Computing Science, University of Glasgow. She is the recipient of Teaching Excellence awards from both the University of Queensland and the University of Glasgow. Her research has been published in numerous journals, including *IEEE Transactions on Visualization and Computer Graphics*, *International Journal of Human–Computer Studies*, *Information Visualization*, *Graph Drawing Conference*, and *ACM SIGCSE Bulletin*. Her research

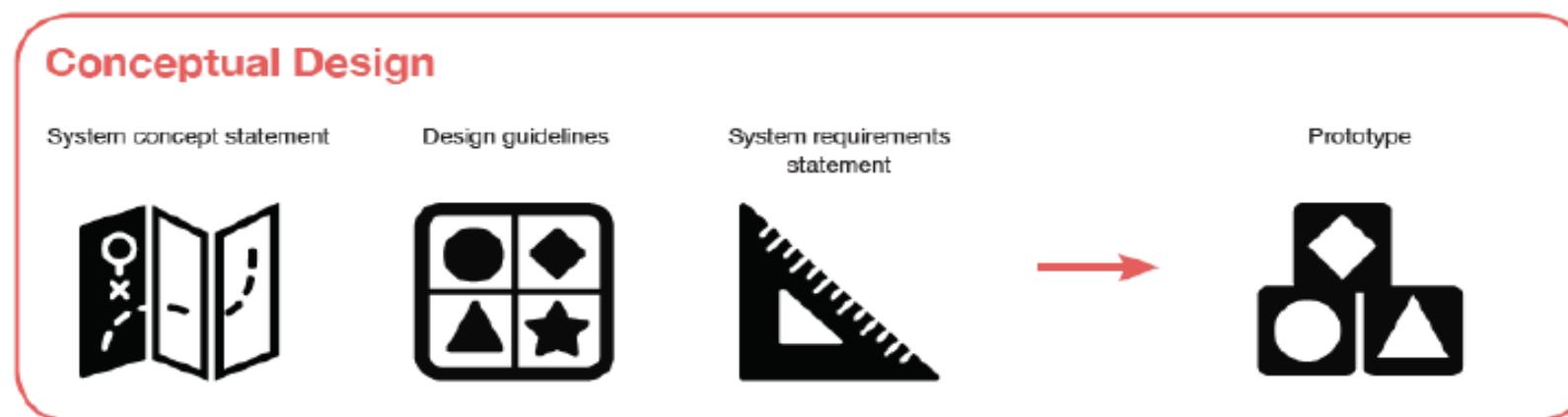


Conceptual Design - Norman

- (1) Introduction to Conceptual Models - Intro to the Design of Everyday Things - YouTube

Conceptual Design – Course Approach

- The manifestation or abstraction of a Conceptual Design will consist of four elements:
 - System Concept
 - Initial Design Guidelines
 - Initial System Requirements
 - Prototype (physical representation)

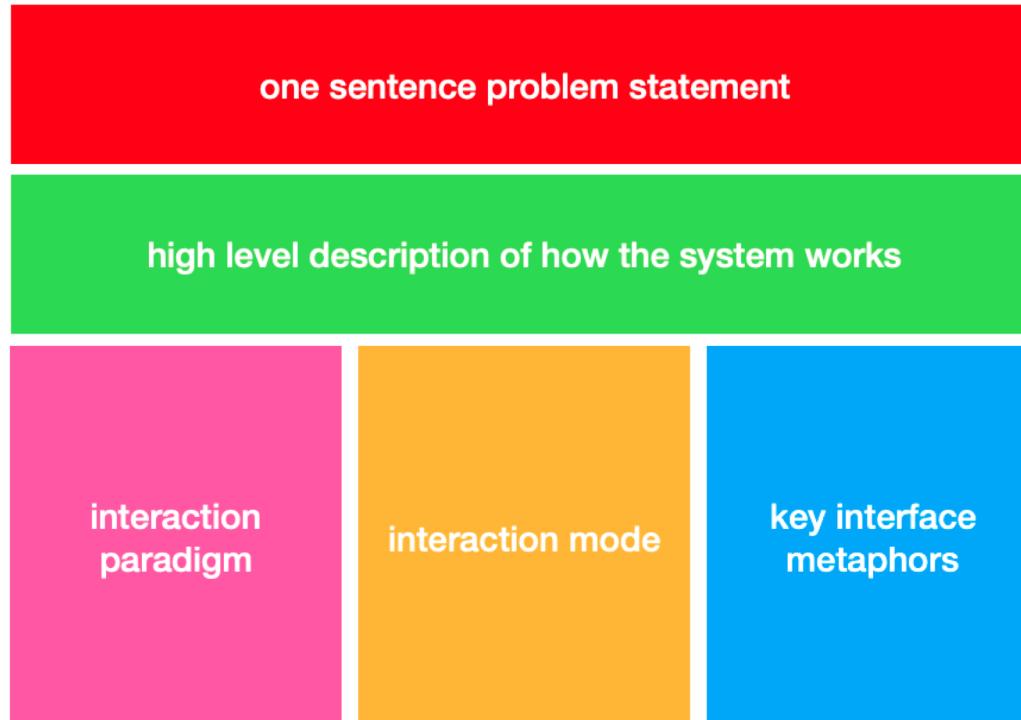


System concept statement

A structured, clear, and updated explanation of what your system is and what it does.

Created from design directions and outcomes from analysing all data from user inquiry.

It has 5 parts:



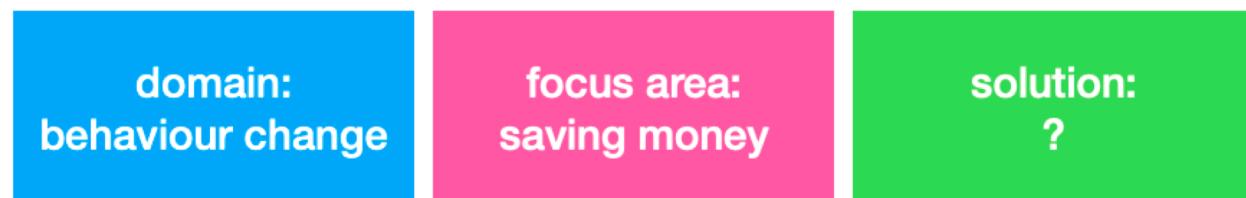
System concept statement example

In this example, we use one data point, but you will need to synthesise many insights, design directions and outcomes to do this step.

The domain that has been chosen is **behaviour change** and the particular topic is a **problem with saving money**.

The first step is to truly understand the nature of the problem.

**the need to
understand the
problem**



System concept statement example

From our interviews, we may have identified the following statement and included it into our affinity diagram:

“I get bored on weekends, trying to find something to do. So I talk to my housemates and we decided to go to the city just to wander around. But I always end up shopping and buying something with the money that I intended to save.”

Breaking this down, the issues might be:

- Being bored on a weekend
- Choosing the city as a place to spend idle time
- When in the city, they end up shopping
- If they go shopping, they end up buying things

Should we focus on all of these issues or just one?

System concept statement example

We can then choose to focus on **one aspect** of this issue:
when in the city, they end up shopping.

By focusing on this aspect of the problem, we can then propose a solution:

the need to understand the problem

**domain:
behaviour change**

**focus area:
saving money**

**solution:
when in the city during idle times suggest activities that do not involve shopping**

System concept statement example

From the same information, we can see that they also express some human values:

- Finding interesting things to do
- Enjoying the city as a place to be
- Being social with friends

There are possibly some other issues that also need to be considered that are general concerns or interests, for example:

- Having fun
- Being careful of data usage on their phone
- Personal tastes of what they find enjoyable

From these things we can start to construct key bits of information that need to be taken into account when developing a solution. Other aspects of the original interview quote could also be considered for a different solution.

System concept statement example

From this information we can then start to construct the one sentence problem statement. This is what the one sentence problem statement might look like:

When in the city he ends up shopping

solution:
when in the city during idle times suggest activities that do not involve shopping

Design and develop an application to be used on a mobile device that detects when a person is in the city in “idle” time and provides suggestions for activities that do not involve shopping in a way that is fun and personally interesting to the person wanting to save more money.

Activity to be supported



Form of the solution

Identity of the users

Level of support/Desired Experience

Key points:

1. Fun and interesting experience using the application
2. Most likely mobile devices - DATA USAGE!
3. Personal tastes
4. Track history

System concept statement example

The next thing we need to add is a high-level description of how the system works, which is an idealised view of how the system might work for example:

When in the city he ends up shopping

solution:
when in the city during idle times suggest activities that do not involve shopping

Design and develop an application to be used on a mobile device that detects when a person is in the city in “idle” time and provides suggestions for activities that do not involve shopping in a way that is fun and personally interesting to the person wanting to save more money.

The system aims to provide alternative activities to the person that do not involve shopping with the objective of supporting the person saving money. It will access data from public sources that list activities It will track the users history of selections in order to identify preferences It will ...

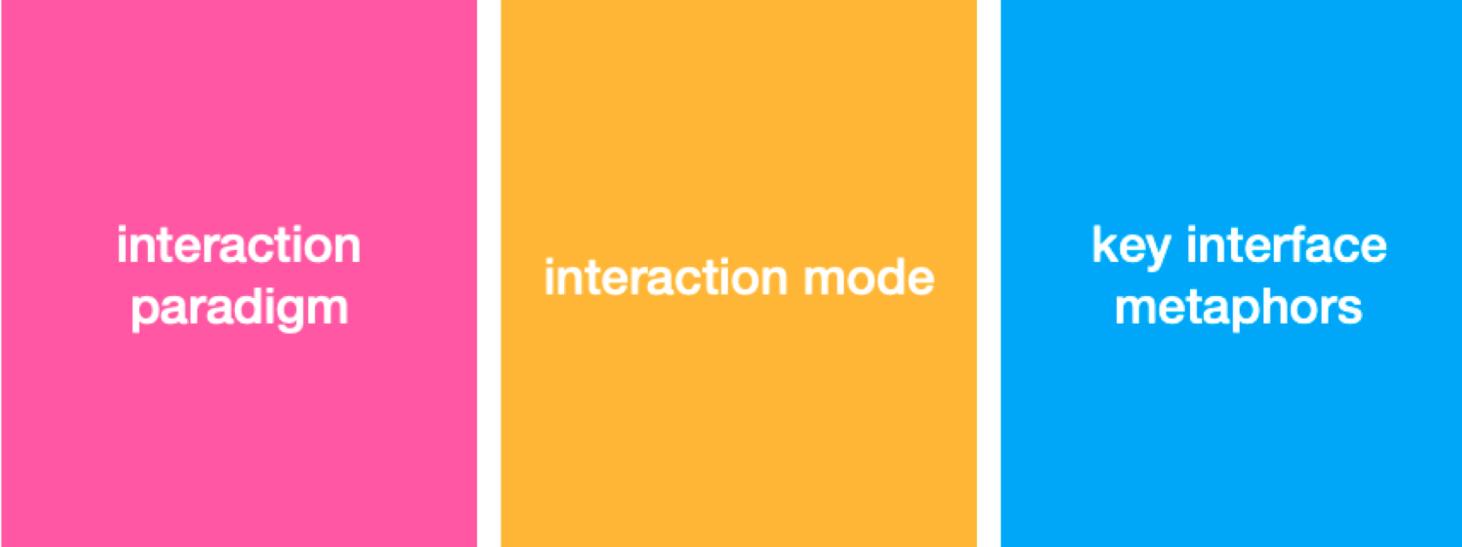
interaction paradigm

interaction mode

key interface metaphors

System concept statement example

The bottom 3 sections will be covered in lectures next week, but are explained in the guide for this week on blackboard.



interaction
paradigm

interaction mode

key interface
metaphors

System concept statement - as a class

Let's work through a quick example using a data point from someone in the class

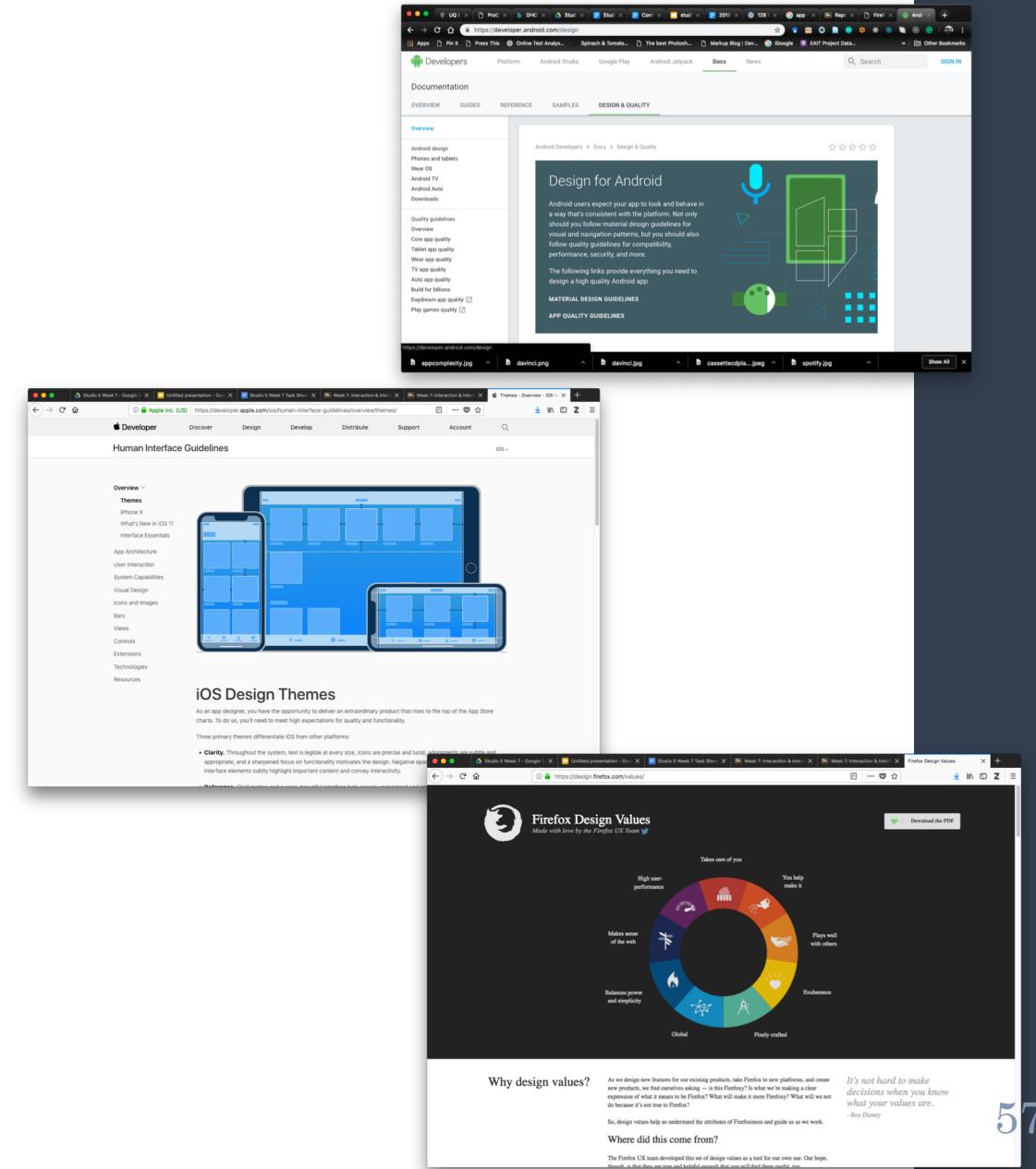
1. What's the domain and topic?
2. What's the data point?
3. What are the issues? Which will you choose?
4. Human values and considerations?
5. Ideas for a solution? Describe as a one sentence problem statement including:
 - a. The activity to be supported
 - b. The form of the solution
 - c. The identify of the users
 - d. The level of support and/or desired experience
6. Add a high-level description of how the system works ("it will... it will...")

Design guidelines (AKA design principles)

“A UX, or interaction, design guideline is a statement suggesting recommendations and considerations to inform the design of a specific aspect or component of interaction in a certain context. Some design guidelines come from study data, but most come from principles, maxims, and experience. (UX Book, Chapter 22)”

Examples are:

- Apple Human Interface Guidelines
- Design for Android
- Firefox Design Values



System requirements statements

Each system requirement statement is a ‘card’ that describes a feature for an outcome.

Each has a description of the requirement, and the insights and data points that justify why it is necessary.

**requirements
statement or
specification**

Name of major feature or category

Name of secondary level feature or category

Rationale - linked back to the insights you have generated

Notes - quotes from your raw data plus any additional information you think is needed to explain the requirement

System requirements statements

One example system requirements statement:

requirements statement or specification

Simple & readily accessible call for help

Key interface needs very obvious call to action

Rationale:

The application will be used by a person when calling for help whilst an earthquake is occurring or in the aftermath

Notes:

“It will be a very stressful environment possibly whilst a person is amongst the rubble or a damaged building or whilst helping injured people” (Jane Wu, Chief of Emergency Services)

Person may be experiencing high levels of stress and fear (emotion) so the button on the screen needs to be very visible and clearly identifiable.

System requirements statements

One example system requirements statement:

requirements statement or specification

Simple & readily accessible call for help

Key interface needs very obvious call to action

Rationale:

The application will be used by a person when calling for help whilst an earthquake is occurring or in the aftermath

Notes:

“It will be a very stressful environment possibly whilst a person is amongst the rubble or a damaged building or whilst helping injured people” (Jane Wu, Chief of Emergency Services)

Person may be experiencing high levels of stress and fear (emotion) so the button on the screen needs to be very visible and clearly identifiable.

You may just combine these to describe the feature if it makes more sense

System requirements statements - as a class

Let's make an example system requirement statement from the system concept statement we made earlier

1. What's a possible necessary feature? (think about what the system will do)
2. What's the rationale, why is this feature needed?

Summary

- The Gulfs of Execution and Evaluation (GE&E) help us to design an interaction, understand where things may go wrong, and point to areas for solutions.
- A mental model is a person's model (thoughts) about: how to interact with a system and how that system works
- Both users and designers have mental models about a system.
- Conceptual Design is created by the designer as a high-level plan for how the system will work and fit together
- Made up of different elements that shape the organisation of the system

Next Time...

- In our next session, we will continue delving into the human issues that impact on interaction and look at **Interaction**