

Case Studies : Fairness 1

Proposed Answers

Case 1 : Analyzing values in an existing product

Context:

Values play an important role in responsible design: they represent what people (e.g. designers, users) think is good and important. This activity is designed to help you get familiar with values by first reflecting on the values that are important to you. In a second step, you will look at existing products and the values they implement. Since values are varying in importance between stakeholders, groups, individuals, etc. they can create tensions. Identifying these tensions could help to prevent harms or to make design choices more inclusive.

Part 1 - Your own values

1. Fill out the "Own values questionnaire" (appendix 1.1).
2. Compare with your neighbor, what are your conclusions about the nature of values?

Proposed answer:

There is no wrong answer! Values are subjective, personal and dependent on context: not everyone may be sensitive to the same values, and our values may change with time.

Part 2 - How values can manifest in products

Let's analyze **Google Maps** through the lens of values and Schwartz's theory!

Look at:

- the *advertisement* website <https://google.com/intl/en/maps/about>.
- the different *features* of Google Maps in a web browser (make sure to use a private window).

Which values are promoted and/or implemented?

Fill out the "Artifact values questionnaire" (appendix 1.2). Describe how each value is manifested.

Proposed answer:

See appendix 1.2

Part 3 - How stakeholders' values are affected by a product

We will now focus on 3 particular stakeholders:

Name	What they want	What they fear
Kai (user)	Kai is an adventurous spirit who thrives on discovering new experiences, from hidden cafés to local events and cultural spots. Sharing honest, thoughtful reviews is crucial to Kai, even if it means leaving negative feedback, because they believe that helping others make informed choices is essential.	Kai is highly conscious of their public image. They worry that a single misstep, like a poorly chosen activity shared with others could lead to social judgment. This makes them meticulous about how they present themselves online and in person, with a strong concern for how others perceive them.

John (indirect stakeholder)	John is deeply committed to the well-being of his community. He volunteers at the local community center, organizes neighborhood clean-ups, and is always committed to making the neighborhood a better place for everyone.	John becomes anxious when the main street of his village becomes congested, which means vehicles are redirected by navigation apps through the streets near his home. He fears for the safety of his children playing outside or walking to school.
Amani (user)	Amani is a chef at a bustling restaurant in a vibrant cosmopolitan city. Constantly on the move, she values staying organized and in control. For her, mastering her schedule and being punctual despite unpredictable traffic is not just important, it's essential.	Amani takes great pride in her work as a chef, but the thought of negative reviews on Google keeps her on edge. Every dish she plates is carefully crafted, and she worries that even a small misstep could affect her reputation.

- For each of the stakeholders, identify 2 values that you can relate to Google Maps and specify whether they are benefited or harmed by Google Maps. Fill the table below:

Stakeholder	Key values	Manifested	Benefits	Harms

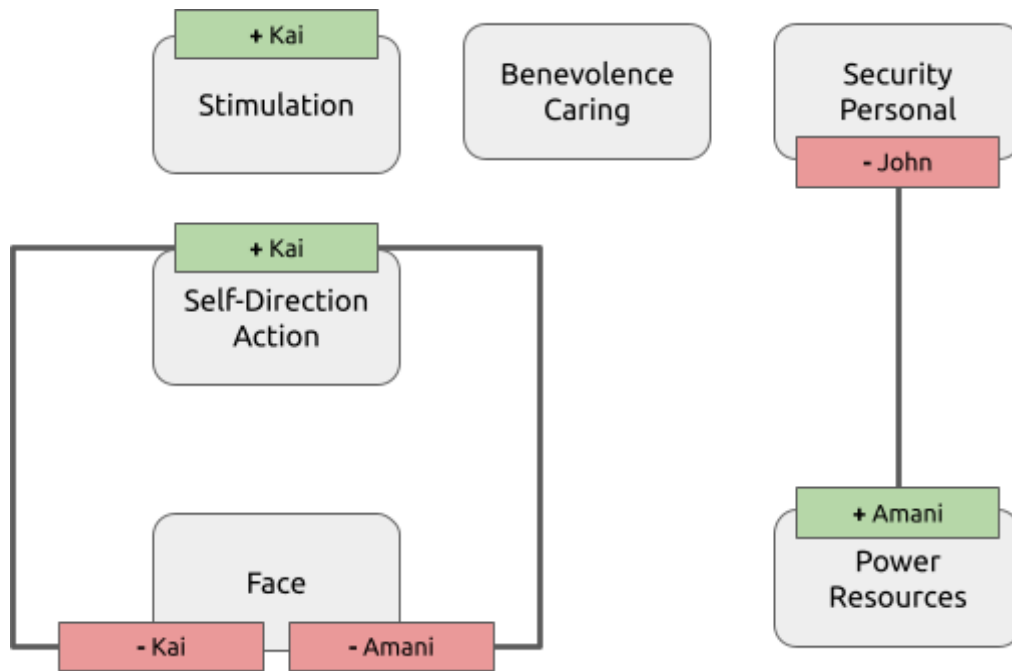
- Draw the value tension map for the values you have found.
Reminder of the methodology (take a look at the cheatsheet):
 - First draw the values
 - Then for each value indicate the associated stakeholders and specify whether they get a value benefit (+) or a value harm (-).
 - Draw lines representing the tensions.
- Compare and discuss with your neighbor the values and tensions you have found. See if new tensions appear when you merge your respective tables.

Proposed answers:

- Stakeholder values, benefits and harms:

Stakeholder	Key values	Manifested	Benefits	Harms
Kai (user)	Stimulation Self-Direction Action Face	Yes Yes Yes	Exploring, discovering Truthful reviews	Online social anxiety
John (indirect stakeholder)	Benevolence Caring Security Personal	Yes Yes	[no benefit described in the scenario]	Family safety
Amani (user)	Power Resources Face	Yes Yes	Live traffic updates	Negative reviews

2. Value tensions:



Debriefing:

- Identifying tensions is difficult and requires some interpretation in the analysis.
- In this case we have worked on an existing product that has been on the market for a long time, therefore a number of value tensions have been resolved or attenuated. When in the process of designing a new product, it is more likely to identify more value tensions and resolving them will lead to design changes such as dropping a feature or adapting it.

Case 2 : Inclusive Design

Context:

As a responsible software engineer, you know the importance of inclusive design and its principles.

For your next job, you have to design an app for the town of Geopolis.

The town of Geopolis would like to propose a parking spot finder to facilitate people visiting the city center. The city would like that the app (i) suggests times during the week when the city center is less busy to reduce pressure during rush hour and (ii) propose specific parking places that are immediately available (iii) work for both residents and tourists. The businesses and environmental advocates think that it is reasonable for people to walk up to 500m from their parking spot to their desired destination, but feedback from some citizens suggests that this is too far. There may be other issues to consider as well.

Exercise:

The goal of this exercise is to make you use the strategy "Inclusive design" seen in the videos. You have to apply the 04 stages procedure to design the parking app following inclusive design principles.

Use the human capabilities table for stage 01 (appendix 1.3), then use the user table template (appendix 1.4) to write your answers for each stage.

Proposed answer:

Stage 01: Identify capabilities needed to use the software + perform the associated task(s)

We selected these capabilities from the human capabilities table and started to build the user table (we focus here on 4 capabilities but others are obviously possible):

Stage 01 Capability		
Vision		
Communication		
Locomotion		
Dexterity		

Stage 02: Identify "Non Average" Users (NAU) based on capabilities

We identified one corresponding "non-average" user for each capability (others are possible).

Stage 01 Capability	Stage 02 Identified NAU	
Vision	Impaired vision (passenger)	
Communication	Non-english speakers	
Locomotion	Reduced mobility (not able to walk 500m without difficulties): with permanent disability, temporary	

	disabilities (injuries, etc.), elderly, pregnant persons, families with small kids	
Dexterity	People suffering from tendonitis (unable to perform certain movements without feeling pain)*	

* see for instance: Zirek, E., Mustafaoglu, R., Yasaci, Z., & Griffiths, M. D. (2020). A systematic review of musculoskeletal complaints, symptoms, and pathologies related to mobile phone usage. *Musculoskeletal Science and Practice*, 49, 102196. <https://doi.org/10.1016/j.msksp.2020.102196>

Stage 03: Expand your analysis: brainstorm any other capabilities, categories of users, non-users, community groups... who may use the artifact

We identified other non-users and communities (we focus on 2 groups but others are possible)

Stage 03 Capability+	Stage 03 Identified NAU+	
	No smartphone or no data access (e.g tourists)	
	Privacy-conscious	

Stage 04: For each potential user identified, use your skills and creativity to find concrete solutions and design inclusively

We found solutions that are feasible (others solutions are possible)

Stage 01 Capability	Stage 02 Identified NAU	Stage 04 Solution
Vision	Impaired vision (passenger)	High contrast, different textures for different elements, dark mode, enlarged text.
Communication	Non-english speakers	Possibility to choose language, app. in different languages.
Locomotion	Reduced mobility (not able to walk 500m without difficulties): with permanent disability, temporary disabilities (injuries, etc.), elderly, pregnant persons, families with small kids	The app could allow users to register a permanent disability (e.g. with an official certificate), reduced mobility and family situations but also temporary disabilities. Some parking spots could be reserved for these situations (e.g. with priority levels), with stair-free pedestrian itineraries to reach the main city infrastructures.
Dexterity	People suffering from tendonitis (unable to perform certain movements without feeling pain)*	Vocal control, bigger hitboxes.
Stage 03 Capability+	Stage 03 Identified NAU+	Stage 04 Solution
	No smartphone or no data access (e.g. tourists)	A web version is available for use from a computer or tablet instead of a smartphone. A few physical terminals could be made available in strategic places at the periphery and center of the city.

		Implementing a phone front-end with interaction through audio and keypad could also be considered.
	Privacy-conscious	<p>The town of Geopolis is not interested in collecting user data beyond anonymous high level statistics. With a privacy by design approach, the app would collect and store only very minimal data.</p> <p>Some features (favorite locations, payment information storage or notifications) could be opt-in only. The app could make it easy for users to delete their account and data.</p> <p>In addition, the app could have a guest mode where finding a spot and paying does not require an account.</p> <p>A clear and concise privacy policy is a must.</p>

Debriefing:

- Once we think about “non-average users” we realize that a great diversity of people could use the app and that some choices in design and features can make the app unusable for some people. Even if it may be difficult to make an app usable virtually by anyone and to think of any individual or group of non-average users, our role is to make software more inclusive. This could also benefit so-called average users.
- In this case we focused on inclusive design setting aside economic viability. This is obviously a criteria to take into account. If we apply the principles of inclusive design at the beginning of a project, economic viability could also be optimized.

Case inspired by and with permission from: Isaac, S. R., Kothiyal, A., Borsò-Tan, P., & Ford, B. A. (2023). Sustainability and Ethicality are Peripheral to Students’ Software Design. *International Journal of Engineering Education*, 39(3), 542-556.

Appendices

1.1 Own values Questionnaire

1 = Not all important 2 = Not important 3 = A little important 4 = Moderately important 5 = Important 6 = Very important

	1	2	3	4	5	6
Power-Resources (POR)						
Power through control of material and social resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power-Dominance (POD)						
Power through exercising control over people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Achievement (AC)						
Personal success through demonstrating competence according to social standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hedonism (HE)						
Pleasure and sensuous gratification for oneself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stimulation (ST)						
Excitement, novelty and challenge in life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Direction Action (SDA)						
The freedom to determine one's own actions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Direction Thought (SDT)						
The freedom to cultivate one's own ideas and abilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Universalism-Tolerance (UNT)						
Acceptance and understanding of those who are different from oneself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Universalism-Concern (UNC)						
Commitment to equality, justice, and protection for all people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Universalism-Nature (UNN)						
Preservation of the natural environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humility (HUM)						
Recognizing one's insignificance in the larger scheme of things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Benevolence-Dependability (BED)						
Being a reliable and trustworthy member of the in-group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Benevolence-Caring (BEC)						
Devotion to the welfare of in-group members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tradition (TR)						
Maintaining and preserving cultural, family, or religious traditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conformity-Interpersonal (COI)						
Avoidance of upsetting or harming other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conformity-Rules (COR)						
Compliance with rules, laws, and formal obligations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Security-Societal (SES)						
Safety and stability in the wider society	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Security-Personal (SEP)						
Safety in one's immediate environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Face (FAC)						
Security and power through maintaining one's public image and avoiding humiliation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.2 Artifact Values Questionnaire - Applied to Google Maps

	Yes	No	DK
Power-Resources (POR) Power through control of material and social resources Manifestation: "get answer fast", "realtime"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power-Dominance (POD) Power through exercising control over people Manifestation: "You can also keep fellow drivers in the know by reporting incidents"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Achievement (AC) Personal success through demonstrating competence according to social standards Manifestation: "Make your plans happen"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hedonism (HE) Pleasure and sensuous gratification for oneself Manifestation:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Stimulation (ST) Excitement, novelty and challenge in life Manifestation: "Explore and navigate your world", "Discover new experiences across the world or around the corner"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Direction Action (SDA) The freedom to determine one's own actions Manifestation: "explore new places confidently" "Book ahead" "Make your plan happen"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Direction Thoughts (SDT) The freedom to cultivate one's own ideas and abilities Manifestation: "make your plan happen"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Universalism-Tolerance (UNT) Acceptance and understanding of those who are different from oneself Manifestation: "Five blind veterans kayaked through the Grand Canyon... street view"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Universalism-Concern (UNC) Commitment to equality, justice, and protection for all people Manifestation: "Bobby Kurian... tag her parents' location to help rescue them"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Universalism-Nature (UNN) Preservation of the natural environment Manifestation:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Humility (HUM) Recognizing one's insignificance in the larger scheme of things Manifestation: "Google Maps are honored to continue to pursue"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Benevolence-Dependability (BED) Being a reliable a trustworthy member of the in-group Manifestation: "Princess Llonze got hospitals... on the map to help save lives"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Benevolence-Caring (BEC) Devotion to the welfare of in-group members Manifestation: "put their communities on the map, and help others" "Mums who Map, dedicated their time to help parents"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tradition (TR) Maintaining and preserving cultural, family, or religious traditions Manifestation: "Map making is an ancient human endeavor... continue to pursue"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conformity-Interpersonal (COI) Avoidance of upsetting or harming other people Manifestation:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conformity-Rules (COR) Compliance with rules, laws, and formal obligations Manifestation:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Security-Societal (SES) Safety and stability in the wider society Manifestation:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Security-Personal (SEP) Safety in one's immediate environment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Manifestation : "real-time updates on traffic jams, accidents" "to protect your data"			
Face (FAC)	Security and power through maintaining one's public image and avoiding humiliation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Manifestation: "you can keep these lists private"			

1.3 Human capabilities table

Perceive	Vision	Detect objects, discriminate surfaces, etc.
	Hearing	Discriminate tones/speech, localize sounds, etc.
	Touch & Haptic	Discriminate pressures, detect temperature, etc.
	Smell	Detect odors, discriminate odors, etc.
	Taste	Detect 5 basic tastes, detect temperature, etc.
Think	Thinking	Process info., attention, memories, select appropriate responses, etc.
	Communication	Understand others, express oneself, etc.
Act	Locomotion	Move around, bend down, climb steps, etc.
	Reach & Stretch	Put arm(s) out in front of body/above head/behind back, etc.
	Dexterity	Fine finger manipulation, pick up, carry/grasp/squeeze objects, etc.

1.4 Template of the user table for all stages.

Stage 01 Capability	Stage 02 Identified NAU	Stage 04 Solution
Stage 03 Capability+	Stage 03 Identified NAU+	Stage 04 Solution

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