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Dynamic user experiences

workbook

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DYNAMIC
USER EXPERIENCES

Context is everything.

WORKBOOK

HaptiMap

This workbook is designed to be actionable, allowing you to not only gain awareness about and reflect on dynamic user experience design, but also enabling you to directly apply new methods and approaches in your everyday work.

The workbook involves methods and approaches to both create and communicate insights throughout the design and development process. It will allow you to evaluate and reflect on how well your current design practices take into account situation-dependent abilities and dynamic user experiences, and it will allow you to take practical action towards implementing design practices that deliver accessible, useful and desirable products and services.

Many industry practitioners working with product and service design are currently lacking awareness about what dynamic user experience design is about, why they should care about it, and how they can practically approach it in their everyday work.

A key objective of the workbook is to make it easier for industry practitioners to embed dynamic user experience considerations and practices into the design and development process, making it an integral part of their everyday work.

The first part of the workbook aims to raise the awareness of the close relationship between dynamic user experiences and accessibility - and explain why these aspects are crucial to the desirability and profitability of products and services. The second part provides a range of design methods and approaches to help industry practitioners consider dynamic user experience and accessibility aspects in their daily work. The third part exemplifies how these approaches could be tied together in a practical, three-stage workshop format.

PART 1
Overview and 3 key reasons why design for dynamic user experiences should be prioritized.

PART 2
A 9-method toolbox for making design for dynamic user experiences happen.

PART 3
3 workshops for team-based design for dynamic user experiences.

PEOPLE

We have different physical, sensory, cognitive, emotional and social abilities.

CONTEXT

The environments and settings that surround us have different characteristics.

SITUATION

Our abilities change as we move between different contexts.

This workbook is based on the belief that ability is not a property of an individual, but rather a function between the individual and society. Our physical, sensory, cognitive, emotional and social abilities are not static – they change continuously depending on the contexts and situations that we are immersed in.

Dynamic user experience design is not about designing for fringe users, it is about paying close attention to **situation-dependent abilities** that ultimately concerns all users at one point or another.

For designers and developers of products and services, it is absolutely crucial to develop a deep understanding of how people's relationship to the technologies they interact with evolve within a wide range of contexts and situations.

Key to this workbook is the ambition to provide useful and easy-to-use approaches that help industry practitioners better understand how user experiences evolve in a variety of contexts. When designing for dynamic user experiences, we need to focus more closely on how people's abilities might change (or stay the same) depending on continuously changing situations.

Issues related to situation-dependent abilities are undered, relevant to anyone being hampered in their use of a system in a certain context.

Some companies that manufacture accessible products do not advertise this as accessibility since such products carry a stigmatizing relation to elderly people and people with disabilities.

Branding a product or service as accessible might turn away potential buyers who do not consider themselves part of the target group (e.g. they are "young", "healthy" and "able"). Furthermore, it may also scare away people who are in particular need of these accessibility features, but who do not feel old or do not want to admit openly that they are disabled.

Again, it is crucial to look beyond people's static abilities, and focus more closely on how their abilities change with new contexts.

A contextual and dynamic view of ability can help us see accessible design as a way to create great user experiences, increase pleasure of use, and create desirable products, regardless of how users score along the physical, sensory, cognitive, emotional and social dimensions.

Products and services are often designed according to optimal conditions of use, and breakdowns are often attributed to extraordinary circumstances. However, real use situations are usually non-optimal, and circumstances that put users and systems to the test are, in reality, far from extraordinary.

Whether it is the user, the product, the surrounding environment, or a combination of them, that is changing, we need to make sure that design and development activities take into account the non-static nature of many user experiences, what we call **dynamic user experiences**, which constantly change according to the dynamics of the task, the context and the situation.

For example, what is appropriate behavior depends on the context and the situation. Consider sending a text message to a friend in the three situations illustrated to the right.

It is the same person using the same service, just a few minutes apart, resulting in different experiences and outcomes for both the user and others that might be affected.
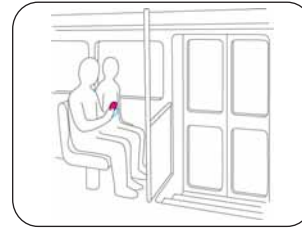
Sitting on the bus
[Value of privacy?]
Could be a convenient way to communicate without disturbing other passengers while also ensuring privacy.
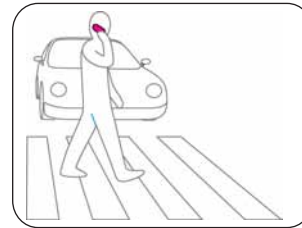
Crossing the street
[Value of safety?]
If your attention to traffic is distracted, this could potentially be dangerous.
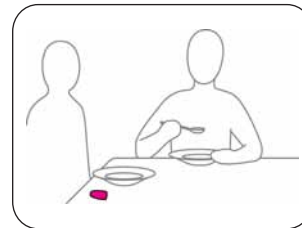
Eating dinner
[Value of friendship?]
Your dinner friends could definitely consider it rude behavior.

Whether we are running to stay healthy or running to catch the last bus home, we need to interact with mobile devices without having to slow down or stop. Being forced to stand still while in a hurry is not a pleasurable user experience.

Mobile situations are, to a much greater extent, non-optimal – bright sunlight might make the screen hard to see, a noisy environment might make the audio hard to hear, the device might be kept in a bag, etc.

Both designers and developers typically work in an office environment, meaning that the situations they encounter, and the contexts in which they work, are often very different from the actual mobile use situations and contexts of real life.

The mobile use situation is inherently dynamic, but we often fail to recognize how quickly the users switch between different situations and contexts. Many methods originate from the design of desktop systems – a kind of usage situation that often is close to optimal – good lighting conditions, quiet environment, few disturbing elements, etc. Mobile situations are, to a much greater extent, "non-optimal" – bright sunlight might make the screen hard to see, a noisy environment might make the audio hard to hear, the device might be kept in a bag, etc.

By focusing too much on personal abilities, the influence of the mobile context may easily be obscured. For example, it is easy to assume that a typical user will have good eyesight, good hearing and no cognitive impairments, but when viewed in light of non-optimal use situations, we all suffer from various kinds of situation-induced impairments.

Festivals, fairs and concerts are social experiences. You want to connect to people to share experiences, but you don't want to miss what's going on at the stage. You want to move between different stages to hear your favorite bands, but don't want to lose your friends in the crowd. How do you find a friend at a loud and dark concert venue?

?
Why should we care about dynamic user experience design?

AWARENESS →→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→ ACTION

This question relates to the motivation for prioritizing dynamic user experiences and situation-dependent abilities when there are so many other crucial aspects to devote resources to throughout the lifecycle of a product or service.

For example, many practitioners assume that accessibility is merely a hygiene factor with marginal relevance to their particular target group, instead of a motivation factor that could bring exceptional value and excitement to both their specific target group and, potentially, an even wider user population.

This workbook will contribute to an increased awareness of why dynamic user experiences and accessibility are so closely related and why they need to be prioritized – from a user, business and designer perspective.

Vibrations and noise might cause you to miss an incoming call or text message. People might peer at you from a seat behind you, and you might want to interact with others while protecting your privacy.

How do we embed dynamic user experience design into our everyday work?

?

AWARENESS →→→→→→→→→→→→→→→→→→→→→→ ACTION

This question relates to the deployment of design methods and approaches for accessible design and dynamic user experiences. Even if companies actually realize that there is business potential for accessible design, awareness is not enough.

Knowing that methods exist is simply of little value, if these methods are not brought into play within everyday work practice.

This workbook will contribute with straightforward, easy-to-use methods and approaches to practically embed dynamic user experience and accessibility considerations into everyday work.

Many users are underserved, and even excluded, by the way products, services and systems are designed. Importantly, accessible design is not just about designing for people with mild to severe impairments of chronic nature (e.g. fringe market), but also about people with situation-induced impairments of temporary nature (e.g. mainstream market).

Our physical, sensory and cognitive abilities are not static – they change continuously depending on the contexts and situations that we are immersed in. For example, consider using a touch display in very cold conditions, using visual display in bright light conditions, or relying on sound feedback in a noisy environment.

In a mobile use situation, conditions of use are often non-optimal.

In these situations, accessibility is a major factor in deciding if products and systems are worth using. To achieve delightful and meaningful user experiences for dynamic mobile situations, we need to view accessibility issues in a new light.

Accessible design can be defined as:

"Design focused on principles of extending standard design to people with some type of performance limitation to maximize the number of potential customers who can readily use a product, building or service." (ISO/IEC Guide 71, 2001)

In our view, however, these performance limitations are not limitations of the individual person, but limitations in the interaction between the individual and society.

"…a person is not fundamentally disabled as such, but rather is disabled by external factors. … disability is not an attribute of the person but of the environment that is 'disabling'." (Keates, 2006)

While usability is becoming recognized as a profitable approach for companies, the case for accessibility is somewhat different. Companies tend to minimize their accessibility efforts since these efforts are often not seen as something that increases the profit.

However, inaccessible design ultimately leads to low perceptions of value and unpleasurable user experiences. This has short and long term consequences for market share, return on investment, brand value, etc. By realizing that accessibility is intimately related to the idea of "use-worthiness", and thus connected to subjectively perceived product value, we start seeing that accessibility is profitable.

Accessible design contributes to the desirability of product and brand, and to the pleasure of use.

OXO founder Sam Farber understood that underserved and excluded user populations equals untapped market potential. His wife had arthritis, and he thought: *"Why shouldn't everyone who cooks have access to comfortable, attractive tools?"*

OXO Good Grips Swivel Peeler
designed by Smart Design

Importantly, to achieve great user experiences we need to facilitate not only awareness, but also action. Knowing is not the same as doing.

Raising the awareness of the user and business benefits of dynamic user experience design is crucial to motivate top-level management to dedicate resources to design efforts that consider situation-dependent abilities and accessibility.

However, developing a capability to perform dynamic user experience design throughout the product lifecycle and across the value chain is an ongoing process. Managers, designers and developers need help motivating each other to continuously prioritize accessibility and dynamic user experiences, and to find ways of embedding these aspects in everyday practice.

To achieve great user experiences we need to facilitate not only awareness, but also action. Knowing is not the same as doing.

This workbook includes a toolbox with examples of practical methods and approaches for how to make dynamic user experience design an integral part of innovation, and how to effectively communicate situation-dependent insights to other stakeholders in the value chain.

Many common design tools, such as Personas, are usually focused on relatively static characteristics of users, not taking into account how these characteristics might change in dynamic and emerging situations.

Similarly, although approaches like Scenario Based Design involve aspects of usage context, they are usually focused on static contexts, not taking into account how users might move between different contexts in a mobile and dynamic use situation.

Many designers, developers and marketers tend to focus too closely on fairly stable user populations and target groups – as if user behavior is in some way more predictable if you know who the user "is". When designing for situation-dependent abilities, we instead focus more closely on what people "do", *why* they do what they do, and furthermore on *how* their behavior might change (or stay the same) as they move between highly dynamic and emerging contexts and situations.

Current tools need to be extended to cater more effectively to the highly dynamic and context-dependent nature of mobile usage. A wider use of such tools will lead to mobile products and services becoming more accessible, useful, and desirable.

Many designers, developers and marketers tend to focus too closely on fairly stable user populations and target groups – as if user behavior is in some way more predictable if you know who the user "is".

The toolbox is organized according to three domains of practice within design for dynamic user experiences. Within each domain, tools and methods are illustrated which are intended to provide support in design and development.

However, this does not imply an entirely linear process. Do not forget to iterate, and do not hesitate to mix and match methods from different domains to suit your needs.

The overall idea behind the toolbox is that user experiences are inherently driven by the notion of value which the product or service delivers for the user. By understanding the value perceptions, we may understand the incentives for purchase and use, and thereby the goals for the customer (the focus of the first part; *Perceiving user value*). These goals reside within contexts of use, therefore it is fundamental to understand how value perceptions change in dynamic use situations (*Situating user value*), before moving into developing suitable ways of working with developing dynamic user experiences (*Prototyping value-focused practices*).

1 Perceiving user value

2 Situating user value

3 Prototyping value-focused practices

The table below describes the three domains of practice covered in the toolbox, with the overall aims and questions that guide the process.

DOMAINS OF PRACTICE		
1	**2**	**3**
Perceiving user value	**Situating user value**	**Prototyping value-focused practices**
How can we understand people's emotional, social and functional value of using products? The aim is to explore the underlying reasons for people's relationships with products (i.e. their incentives for use/ownership). Why do people love or hate products, and in what ways are products meaningful, relevant and desirable to them?	*How can we understand how people's value perceptions change in highly dynamic use situations?* The aim is to investigate people's experiences of using products, taking into account how people's perceived value of products change depending on the context and situation of use.	*What practices are suitable for creating and sharing insights about user value in highly dynamic use situations?* The aim is to create practical approaches for how to implement value and context focused design in your everyday work practices.

The table below describes the nine methods (three in each domain) that are covered in the toolbox.

METHODS		
① **Perceiving user value**	**②** **Situating user value**	**③** **Prototyping value-focused practices**
a. Value perceptions b. Value dimensions c. Value maps	a. Context transitions b. Context cards c. Context trails	a. Visual prototypes b. Tangible prototypes c. Action prototypes

DOMAIN
1
Perceiving user value

How can we understand people's emotional, social and functional value of using products?

The aim is to explore the underlying reasons for people's relationships with products (i.e. their incentives for use/ownership). Why do people love or hate products, and in what ways are products meaningful, relevant and desirable to them?

Methods
a. Value perceptions
b. Value dimensions
c. Value maps

The table on the right summarizes the guiding questions and aims for "Domain 1: Perceiving user value", including an overview of the methods.

a. Value perceptions

There is a growing recognition that providing superior value for users is instrumental for business success, and that value perceived by the customer is a driver for satisfaction and loyalty. Moreover, advances in customer value can make competition irrelevant by opening up entirely new markets.

Every user has his or her own value model based on a number of personal factors, including his or her own value system, needs and desires, demographics and personal characteristics, and financial resources. The value for the customer is highly contingent upon situation and circumstance, i.e., perceived value is situated and changes dynamically, as the experience itself. It is also diachronic, i.e. it will have different impact at different points in the consumption process.

In design, consumer or customer value often refers to the evaluation of some object or product by some subject or user. We suggest that accessibility is a fundamental requirement in order to create value in product use, which, in turn, is a bottom line for business success.

Accessibility is a fundamental requirement in order to create value in product use, which, in turn, is a bottom line for business success.

Perceptions of value vary widely between different user groups, situations, contexts, and cultures. We recognize at least the following types of value within the user-product relationship:

Value as exchange and use:

- *Exchange value:* The monetary value spent for product quality. For example, we may be prepared to pay more for a product which we perceive as lasting longer.

- *Use value:* The utility of the physical properties of the product, realized upon its use. If the product is faster, stronger, or easier to use, we may be willing to pay a premium and assign it a higher value.

Value as sign:

- People value products for what they signify, for example their symbolic value, or as an index of social status. People are using products to converse with each other, implying that products are used to communicate certain messages and images, independent of the products' use or function.

Value as experience:

- Value may reside in the consumption experiences derived from the product and its brand. At the core is the idea that what people actually desire is not products, but the experiences products provide. For example, congruency between person and brand character may increase the perceived value of the product – "the product is tough, like me".

- Experiences emerge from the interaction between the product and the user, and include active as well as passive, or reflective, elements. Intuitive and fluid use, free from disruptions or poor logic, provides a better experience.

- Experiences are context and situation specific; that is, they change from one set of immediate circumstances, time and location, to another. Therefore, the same product may be assigned a different value by users in different contexts. A person talking in a mobile phone in a silent area may be very annoying to other people, while the same behavior would be widely accepted in other environments.

b. Value dimensions

Value perceptions are subjective, dynamic, and varied. However, they may be categorized rather uniformly according to the type of dimension they belong to. There are three generic dimensions which characterize user value.

Intrinsic/extrinsic dimension:
This dimension relates to whether a product is valued as an end, per se, because of its qualities, or for the means or functions it offers that help users accomplish certain ends.

For example, a product such as Stark's Juicy Salif is usually assigned intrinsic value, because it is appreciated as an end in itself, rather than as a means for squeezing lemons.

Self-oriented/other-oriented dimension:
This dimension corresponds to whether a product is valued because of its benefit to the user or because of the reactions it draws from others. A car, for example, has a self-oriented value because its functional qualities bring certain benefits to its user, such as convenient transportation or safety. Furthermore, it has other-oriented value because it signifies social status and evokes reactions from others.

Active/reactive dimension:
This dimension represents a distinction regarding whether there is a manipulation of a product by the user or vice versa.

Art objects, for example, have a reactive value, because their benefit results from passive admiration. A drill, on the other hand, has an active value because its benefit arises from the user actively interacting with the product.

A combination of these types of value may emerge from users' experiences with products. For some consumer products, such as interactive mobile devices, all of these dimensions may be present to various degrees, while for other products such as B2B products or personal memorables, only a few may be present or relevant to consider.

Utility value:
Refers to the utilitarian consequences of a product, for example the fact that it might enable the accomplishment of a physical or cognitive task. It encompasses the values of convenience, economy, and quality as sub-categories.

Economy value:
Refers to the economic benefits provided by products. These benefits include, but are not limited to, purchase economy, such as can be provided by low prices or flexible installment plans.

Social significance value:
Refers to the socially oriented benefits attained through ownership of and experience with a product. These include attainment of social prestige and construction and maintenance of one's identity. People use goods as markers of their relative position in the social nexus.

Emotional value:
Refers to the affective benefits of a product for people who interact with it, benefits such as pleasure or fun. Affective experiences are context dependent. For example, local perceptions of aesthetics might affect what users define as beautiful or pleasurable. These perceptions are sometimes driven by trends and fashions, which may also differ from one location to another.

Spiritual value:
Refers to spiritual benefits such as good luck and sacredness that are enabled by a product. Sometimes, such values may be very decisive in consumption, for example in religious icons or graphic symbols. Ethical value is also included here.

In addition, we may add other types of value which may be regarded as combinations of one or several of the above. For example, "play value" and "possession value" may be seen as a combination of emotional and social significance value, while "efficiency value" is created from utility and economy value. Also, dimensions may need to be added for, e.g., specific products or circumstances, where the above categories may not suffice.

Due to the subjective, dynamic and varied nature of value perceptions, i.e. the notions of value that people assign to a product, service or system, the process of understanding of value perceptions requires an intimate understanding of peoples' value systems, motivations, goals, and context (social, cultural, economic).

Such information may be captured through ethnographic types of studies, such as interviews and situated at-home studies. Relying on constructed data only will render the same limitations as those suffered by, e.g., Personas; i.e., those related to a mental idea of a "typical" user, rather than a real-world, person-based case.

Still, there are situations when creating an image of value perceptions based on imagination will be useful, such as in method training. As an initial approach, thus, we suggest the heuristic method of generating ideas about peoples' value perceptions through a brainstorming session using mixed in-house respondents.

Such an exercise will exhibit a wide variety of subjectively based perceptions of value, however not based on the statements of a carefully defined external user group, which is a condition for valid data.

As a **method** to generate an initial concept of possible value perceptions of users, the following approach can be used:

1. Assemble a varied group of in-house subjects, such as developers, managers and marketing representatives of different age, gender, ethnicity, and origin.

2. Select the toughest competitor product on the market. Visualise the product and make sure everyone knows about its basic characteristics and performance on the market.

3. As a group, generate as many ideas as possible about values of different kinds, which people may assign the product, or which represent reasons why customers chose to purchase or buy the product.

c. Value maps

The idea of value mapping is to generate "helicopter view" insights regarding the types of value assigned to specific products, in order to enable an assessment of value. Does our product or service offer the user the types of value we intended? Have we missed the opportunity to generate types of value which may be decisive in the customer's selection process? Is value created which render the product or service relevant, desirable or meaningful to the user?

During value mapping, the previously generated value perceptions are categorized in the value dimensions which are considered relevant for the product and context. Powerful insights may be created by considering a **four-step triangulation approach**:

1.

Establish an understanding of value perceptions for three products: a key product from your own organisation, a product which is perceived as the most lifestyle-related on the market (the "experience" product), and a product which is the number one competitor in terms of technical ability (the "performance" product). Differently coloured **Post-it notes**, one colour for each product, is an ideal tool for this exercise. Remember that you, as a developer, is not "the user" – thus, in order to create a valid understanding, "real" (actual or potential) customers must ultimately be the source of the value perception data.

2.

For each product, categorise the value perceptions in the value dimensions of importance. This may be done by clustering Post-it notes denoting related value sets into **affinity groups** – each affinity group may be labeled with a name and a colour. Note that the value dimensions may vary between products, and that they may be more or less significant as contributors to overall ("gestalt") value of the product as a whole.

3.

Establish a **Daisy Chart** mapping scheme to visualize all value dimensions of the three products in one graphic illustration. The value dimensions may include value types found in only one, or in several, of the products – this will be visualized through the coloured Post-its. Some of the dimensions may be similar or even identical. If so, try to reduce the number of similar dimensions into fewer ones. The resulting Daisy Chart will clearly illustrate what types of value are generated by which product.

Safety

Identity   Status

Convenience   VALUE
                    PERCEPTIONS   Intuitiveness

...   ...

...
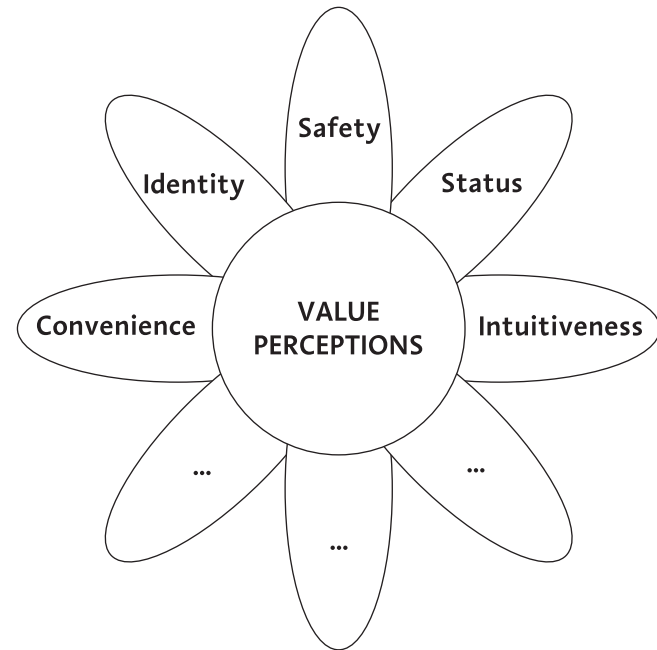
4.

Finally, rate and rank each product with respect to the value dimensions. How does our product compare in perceived value to the competitor products? How mature is our product in each value dimension, compared to the other two products? What dimensions do we regard as being essential for the value perceptions generated by our product? How does this compare to the desired value set we want to create?

Assess each product using a **Radar Graph** to visualize the perceived maturity of each value dimension. This type of benchmarking may provide essential information regarding focus and priorities during development, with respect to the existing value set, in relation to what is desired, for a specific product.
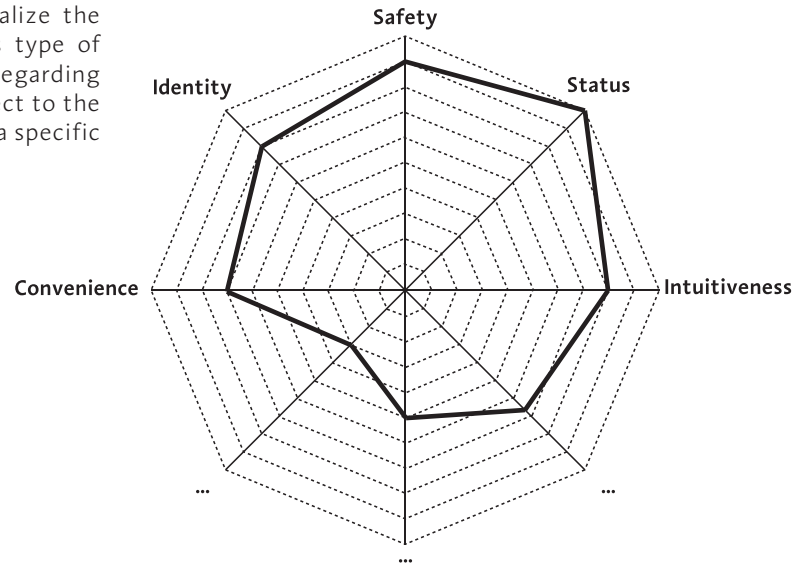
The table on the right summarizes the guiding questions and aims for "Domain 2: Situating user value", including an overview of the methods.

DOMAIN
2
Situating user value

How can we understand how people's value perceptions change in highly dynamic use situations?

The aim is to investigate people's experiences of using products, taking into account how people's perceived value of products change depending on the context and situation of use.

Methods
a. Context transitions
b. Context cards
c. Context trails

a. Context transitions

Scenarios are fictional stories that describe how people interact with products and services over a period of time. Rather than speaking about the behavior of users and systems in abstract terms, scenarios allow you and your design team members to discuss specific situations where users interact with the solution you are developing while transitioning between contexts.

Scenarios of user experiences can span hours, days, months and even years, but it is important to not forget how dynamic user experiences can evolve second-by-second and minute-by-minute. Since a lot of products and services are being used "on the move" rather than in a single and static setting, context transition scenarios pay particular attention to what happens to the user experience when users switch between different situations and contexts.

As perceptions of user value can change quickly under new circumstances, **context transition scenarios** would enable you to explore crucial "what if?" questions – reasoning about how users might respond to your products and services if new situations and contexts would be introduced during use.
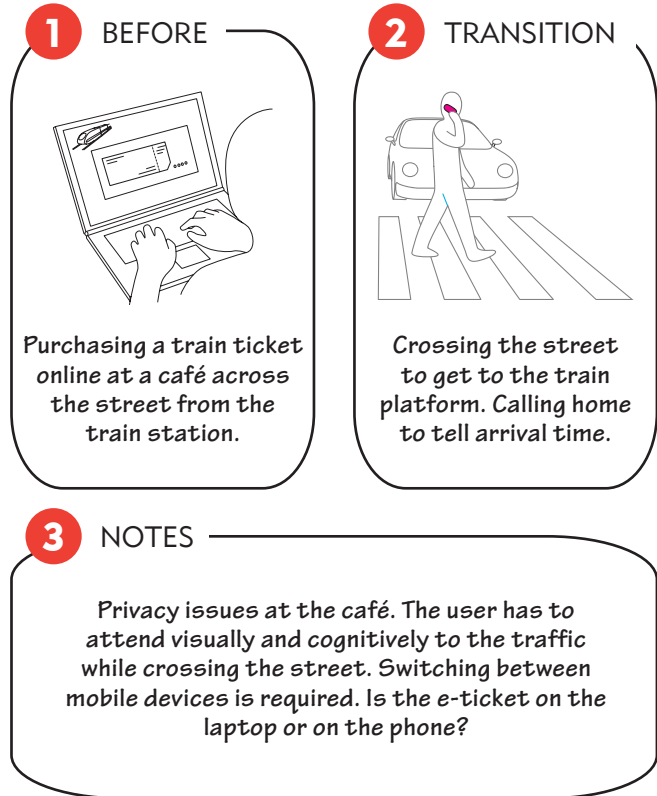
1 BEFORE

Purchasing a train ticket online at a café across the street from the train station.

2 TRANSITION

Crossing the street to get to the train platform. Calling home to tell arrival time.

3 NOTES

Privacy issues at the café. The user has to attend visually and cognitively to the traffic while crossing the street. Switching between mobile devices is required. Is the e-ticket on the laptop or on the phone?

1 BEFORE

2 TRANSITION

3 NOTES

How to use them?

1. In the first frame, draw an illustration of the "before" situation. Where is the user? What is the user doing? How is she or he using mobile devices?

2. In the second frame, illustrate the "transition" situation. What is changing in the situation and/or context? Where is the user now? How has the usage pattern changed since the first frame?

3. In the notes frame, describe how the transition might impact the user experience. Does the role of technology change due to the transition. What is similar? What is different?

If possible, it is also very useful to create video clips of various context transition scenarios. Regardless if your scenarios are on paper or on video, keep them short and keep them specific! Avoid making long and complicated scenarios that risk overshadowing the core concerns.

It is important that these context transition scenarios are used to both stimulate new ideas and to guide evaluation of ideas and concepts. Visualising the scenarios in sketches, photos or videos is a powerful and simple way of engaging others in the creative process.

b. Context cards

Since users move quickly and effortlessly from situation to situation and from context to context, mobile products and services must be designed to deliver great user experiences that are equally dynamic. One way for design teams to explore the dynamics of mobile user experiences, and to understand how their products and services might be perceived in dynamic situations and contexts, is to use context cards.

Users might use the product or service in **non-optimal lighting conditions**, for example in bright sunlight or in a dark movie theater.

Users might use the product or service in **noisy environments**, such as on a busy street or at a train station. Also, they might be in environments where quiet is preferred, such as at a library.

Users might use the product or service in situations which limit their ability to touch or feel the device, such as having **cold hands, using gloves,** or when **vibrations** or **shaking** make it hard to sense feedback.

Users might use the product or service in situations where they would need to **pay attention to other things** in their immediate context, but might choose not to, such as while driving a car or riding a bike.

The situations and contexts described on the left, and in the **context card deck**, are examples that can be used either to enhance heuristic tests – "how does this application work under these conditions?" – or as a starting point for generating device or application specific scenarios.

We do not suggest that all parts of any application need to work under all these critical conditions, but we do argue that any designer or developer needs to think about various realistic and thus non-optimal conditions.

How to use them?

1. Choose a product or service to evaluate or develop new ideas for.

> 2a. If you are evaluating an existing product or service: pick a context card from the deck and ask yourself: "What would the user think about the experience (or how would he or she behave) if this situation or context should occur during use?"

> 2b. If you are developing ideas for new products or services: pick a context card from the deck and ask yourself: "How could we create something which delivers great user experiences in this particular situation or context?"

3. Mix and match context cards in different sequences to explore how your products and services might impact user value as users switch between contexts and situations.

The context cards can also be used to trigger the development of new *Context Transitions* or the development of new *Context Trails*.

c. Context trails

Context trails is an immersive method to gain insights through interactive, situated usage simulations of dynamic user experiences. As such, it is designed to provide a level of insight and understanding of situation-induced impairments, which is not easily gained through other methods such as observation, interviews or usability studies.

In contrast to, e.g., cognitive walkthroughs, the **context trail** engages the researcher in personally lived, actual situations of use. He or she thus gets a firsthand experience of difficulties, problems or benefits of interactive mobile devices, which may be pivotal in the creation or design revision of mobile products and services.

The method should be seen as explorative; while the developer's insights or experiences may not be representative of the typical user, they may direct attention to opportunities and issues that need to be addressed. More traditional methods, used to build more profound insights into users' experiences, may be employed at a later stage of the process to gain deeper understanding of situation-induced impairments in dynamic user experiences.

In a context trail, a physical course is created where the developer (designer, usability expert, or other team member) experiences typical use situations her/himself. The trail is designed such that critical situations, environments and contexts may be explored with respect to the use of a particular device.

The critical situations are simulated through the use of context cards and task cards. For example, contextual factors such as low light, sounds, obstacles, movements, etc may be embedded into the trail, while tasks designed to explore use and test certain behavior are provided through verbal commands by a facilitator (shadower) or through the delivery of task cards.

How to do it:

The trail can consist of exercises such as: hold a cup of coffee in one hand while doing task x, use the application while walking, cycling, or walking down a flight of stairs, use it in a noisy environment, use it in the dark, bright sunlight or when it is cold, raining (under an umbrella) etc.
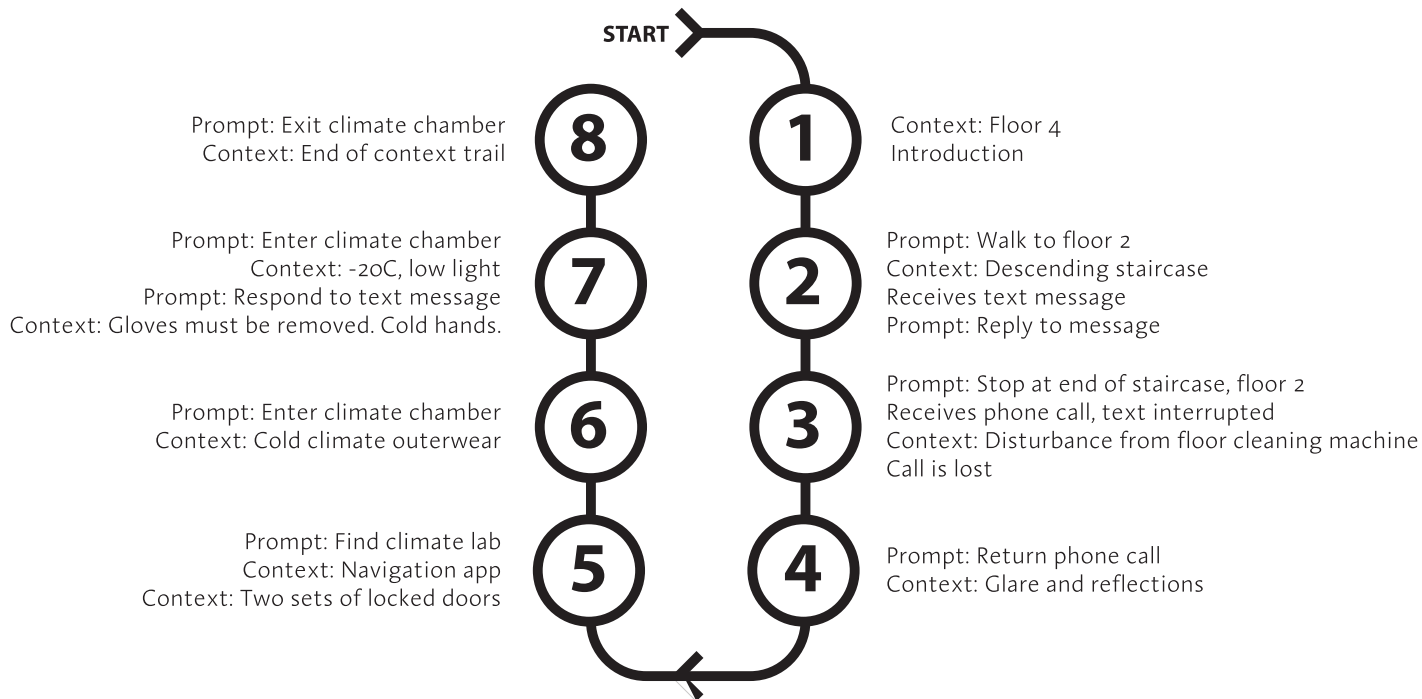
Throughout the context trail:

• Guide the participant through a series of tasks (prompted by task cards or a facilitator) and transitions (which lead from one task to the other and contextualize each task setting),

• Observe each participant's journey through the trail and document by shadowing through video documentation in a manner which is as un-obtrusive as possible.

• Interview each participant with respect to their experiences through the journey. This may be done while reviewing the video material, highlighting critical incidents.

• Analyse the material with respect to research questions of the study from the point of view of accessible user experience and with respect to the significance for design
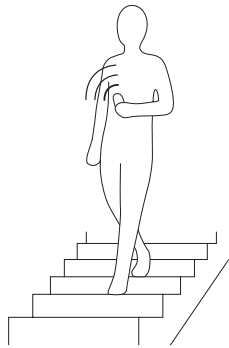
Preparations:

• Identify and define critical interactions with the device, which may be affected by dynamically changing contexts.

• Choose a location that enables the design of a safe and realistic context trail. The location should allow for the creation of contexts for tasks, which as realistically as possible simulates the critical aspects of the desired interaction with the product and the context.

• Devise task cards that concisely describe the activity to be performed during the interactions with the device.

• Prepare the environment and perform a trial run of all transitions and tasks to make sure the desired interaction is created.

The following example illustrates a context trail concept for a mobile application, designed to simulate a wide variety of circumstances for many types of users.

1. The participant is provided with the mobile device, a general description of its use (if he or she is unfamiliar with the device), and a brief description of the trail.

2. Through the use of a task card, the participant is prompted to walk from the fourth to the second floor of the building. He/she starts walking and enters the first flight of stairs. While walking down the stairs, the facilitator (who is following closely behind) sends a text message and prompts the participant to respond to the message.

3. While arriving at the second floor, the facilitator prompts the participant to stop at the glassed-in area at the end of the staircase. Here, the phone rings, requiring the participant to answer the call. The caller is speaking in broken language and on a shaky line. While the participant is talking, the ride-on floor-cleaning machine passes by, generating a substantial amount of noise. The call is lost.

4. The facilitator prompts the participant to return call back to finish the phone conversation. The environment is very light, causing glare and reflections on the screen of the device.

5. The participant is prompted through a task card to use the map/navigation application to find the way to the climate laboratory located in the building. On the way, the participant is forced to open two set of doors, one requiring an access key code, and one featuring a key lock.

6. Once at the lab, the participant is asked to put on a down parka, gloves and a wool hat, and is prompted by the facilitator to open the door and enter the climate chamber.

7. The chamber holds a temperature of minus 20 degrees Centigrade and is only dimly lit. Through a task card, the participant is prompted to respond to the text message, discovering that the screen will not operate using the thick gloves due to poor conductivity between glove and touch screen. Texting without gloves quickly makes the hands cold.

8. The respondent is prompted to exit the chamber, where the context trail is ended. He/she is interviewed with respect to the experience and how it related to expectations and the interaction with the product in the various environments.

START

8   **1**

Prompt: Exit climate chamber
Context: End of context trail

Context: Floor 4
Introduction

7   **2**

Prompt: Enter climate chamber
Context: -20C, low light
Prompt: Respond to text message
Context: Gloves must be removed. Cold hands.

Prompt: Walk to floor 2
Context: Descending staircase
Receives text message
Prompt: Reply to message

6   **3**

Prompt: Enter climate chamber
Context: Cold climate outerwear

Prompt: Stop at end of staircase, floor 2
Receives phone call, text interrupted
Context: Disturbance from floor cleaning machine
Call is lost

5   **4**

Prompt: Find climate lab
Context: Navigation app
Context: Two sets of locked doors

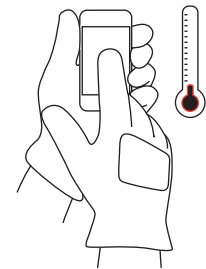Prompt: Return phone call
Context: Glare and reflections

2. The facilitator sends a text message and prompts the participant to respond.
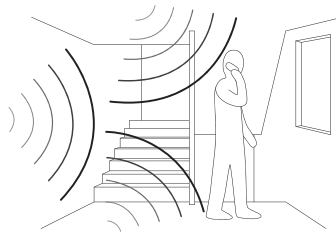
4. The environment is very light, causing glare and reflections on the screen of the device.
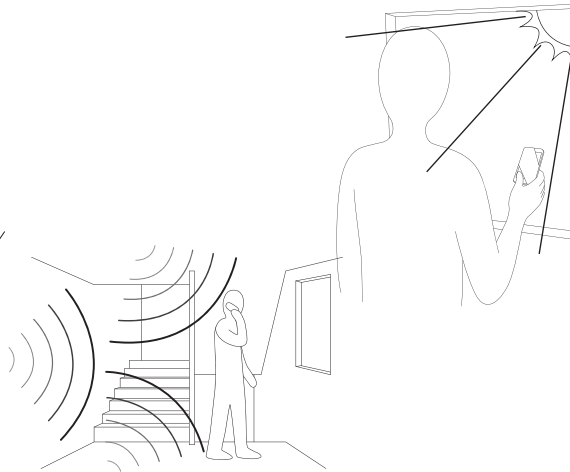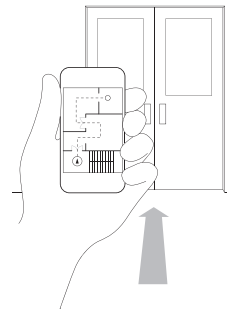
7. The screen will not operate using the thick gloves... texting without gloves quickly makes the hands cold.

3. The ride-on floor-cleaning machine passes by, generating a substantial amount of noise.

5. The participant is prompted through a task card to use the map/navigation application to find the way.

DOMAIN

3

Prototyping value-focused practices

· ·

What practices are suitable for creating and sharing insights about user value in highly dynamic use situations?

The aim is to create practical approaches for how to implement value and context focused design in your everyday work practices.

Methods
a. Visual prototypes
b. Tangible prototypes
c. Action prototypes

The table on the right summarizes the guiding questions and aims for "Domain 3: Prototyping value-focused practices", including an overview of the methods.

a. Visual prototypes

Great ideas are a good start, but getting those ideas out in the open, organizing and implementing them, are absolutely crucial.

Making quick sketches of your ideas (products, services, work practices, methods, experiences, behaviours, or just about anything that you aim to create) will allow both you, your design team, and prospective users to react on your ideas and give feedback that will enable you to take the idea forward.

Visual prototyping is not all about aesthetics and detailed illustrations of imagined final products, it is also about helping people connect to your ideas in ways that are not possible if you only share your thoughts verbally.

Being visual enables you and your team to build on each other's ideas, it makes grouping of ideas easier, and it makes it easier to see patterns that are emerging. Visual prototypes help people remember ideas more clearly, and it makes progress visible.

The mind is for having ideas, not holding them.

David Allen

How to do it:

1. Work in teams to create visual prototypes of new value-focused work practices.

2. Make sure that each visual prototype has the following features: (a) a sketch that symbolizes the main idea, (b) a memorable name, (c) a tagline or slogan, and (d) a set of unique selling points.

3. Each team selects one prototype to present to the other teams.

4. The teams that are not presenting provide feedback after each presentation in the form of "Sweet spots" (key benefits) and "Weak spots" (potential for improvement).

5. One member from each team stays with their prototype to ensure carry-over of design rationale. The other members rotate between teams.

6. The new teams are given the task to improve further on the "Sweet spots" and eliminate the "Weak spots" of the previously presented concept.

7. Make sure to document each iteration of the concepts.

8. Scan all concepts and distribute to all team members.

NAME

TAGLINE

SKETCH

USPs

SWEET

WEAK

b. Tangible prototypes

A tangible prototype can basically be anything that you, your design team participants, and users, can interact with physically. Tangible prototypes are not only for product design, they are also for the design of new work practices, services, experiences and behaviors. The priority is to build the right thing, before building it right. It is <u>not</u> about getting things right the first time.

Tangible prototypes enable teams to fail quickly and often in the earliest design stages, where failure is cheap. Tangible prototypes lower the cost of learning and should be used to accelerate learning and facilitate communication, not only to evaluate and validate relatively mature concepts.

When talking about, writing down, or sketching ideas are not enough, tangible prototypes enable teams to start "somewhere", and eventually things might fall into place. When visual prototypes are not up to the task, a tangible prototype is worth a thousand pictures.

You are building to think, and building to learn. You are actively seeking out "what might not work", because finding out what fails takes you one step closer to finding out what works.

You should not get emotionally attached to any single prototype. It is not the prototype that is important, but the feedback and insights that you gain from interacting with it. You should not defend your prototype. Gladly accept the critique and learn from the mistakes that people make when using it.

Use tangible prototypes to explore new behaviors, not only the performance of products. Make something tangible that allows collaborators and users to experience not only what it would look like, but also what it would be like or feel like.

Tangible prototypes help break familiar patterns and routines. By introducing a foreign object into an experience, you cannot do things as usual. Prototypes are excuses to behave differently.

<p style="text-align:center; color:orange; font-size:larger">…build the right "it", instead of trying to build "it" right.</p>

<p style="text-align:right">Patrick Copeland</p>

How to do it:

1. Work in teams to create lo-fi prototypes (e.g. LEGO, cardboard, etc.) of new value-focused work practices.

2. Focus first on prototyping tangible representations of an existing work practice (e.g. As-Is: this is how we work it today).

3. Then, focus on prototyping tangible representations of a desired work practice (e.g. To-Be: this is how we want to work in the future).

4. Each team selects one As-Is prototype and one To-Be prototype to present to the other teams. No powerpoint slides allowed. Be visual, be tangible.

5. The teams that are not presenting provide feedback after each presentation in the form of "Sweet spots" (key benefits) and "Weak spots" (potential for improvement).

6. One member from each team stays with their prototype to ensure carry-over of design rationale. The other members rotate between teams.

7. The new teams are given the task to improve further on the "Sweet spots" and eliminate the "Weak spots" of the previously presented concept.

c. Action prototypes

Ideas are only beginnings. Execution is key. Action prototypes can help you avoid procrastination, stimulate accountability, and facilitate action throughout your daily work.

People are good at avoiding danger. When things become difficult, many of us has a tendency to give up. We might have a lot of great ideas that we are enthusiastic about, but as soon as roadblocks emerge, our entusiasm often falters before the job is done.

We need to accept that innovation happens in the discomfort zone. We need to act without knowing what the outcomes will be. We need to embrace, rather than avoid, risk and ambiguity. Waiting for consensus or the right moment to act can paralyze us.

Innovation is about consciously avoiding familiar routines. The new is always unfamiliar, so we need to consistently provoke our competence. We have to want to struggle a bit to achieve innovation. We need to avoid the competency trap, where we continue doing only what we know best.

Action prototypes are based on the idea that change starts with you. You start with who you are, what you know, and whom you know. What can you do with what you have? What will you do differently tomorrow? What can you do to be a change agent or an innovator?

Action prototypes are about looking for small wins and small measures of improvement. Change – one step at a time.

We need to be specific and concrete to successfully change our behaviors. "Doing our best" is too vague. We need to set specific and difficult, but possible, goals.

Action prototypes are focusing on what we *will* do, not what we *can't* do. We are prototyping action triggers (e.g. when X happens, I will do Y), and commitment strategies that would allow us to take greater personal responsibility for catalyzing change.

Remember that when you publicly commit yourself to doing something, the likelihood increases that others will commit, too, or offer support.

Innovation = ideas + execution.

Vijay Govindarajan & Chris Trimble

How to do it:

Work as teams and individuals to design the following action prototypes:

1. **TEAM: Action trigger prototype**. One effective way of getting things done is to set up an action trigger: a decision to execute a certain action (e.g. write on a project plan) when you encounter a specific situational trigger (e.g. after the weekly meeting). Going to the weekly meeting simply triggers the next action, without conscious deliberation.

   What kind of action triggers would your team like to devise to to increase the chance of implementing value-focused practices? What is the time and place that you are going to act differently?

2. **INDIVIDUAL: Commitment prototype.** Grand long-term visions are important, but they can also cause procrastination and paralysis. It is often difficult to know where to start on ambitious tasks, so we often postpone them to a "better day". There is no better day than today.

   What can you do as an individual to make sure that you start making steady incremental progress, rather than wait for a big leap? What kind of routines can you create that will help you avoid postponing tasks. What can you do today to start creating change? What will you do differently on Monday?

"When X happens, I will do Y…"

Action trigger prototype

"My next step is to…"

Commitment prototype

Organizing a participatory, cross-functional workshop is one of the quickest ways to raise awareness and stimulate action. Based on the dimensions and methods described earlier, we propose an immersive workshop format for accessible design for dynamic user experiences.

A set of interchangeable workshop modules allows you to adapt the workshop objectives, scope and duration to better fit the needs of your particular team.

We provide a table with workshop themes and objectives, a table with workshop modules and outcomes, and agendas for three example workshops.

WORKSHOP MODULES		
1 **Perceiving user value**	**2** **Situating user value**	**3** **Prototyping value-focused practices**
a. Value perceptions Select a product or service to focus on. Gather stories, examples, and subjective opinions from workshop participants related to how they value the product or service. **b. Value dimensions** Analyze and categorize the subjective value perceptions from workshop participants according to a given value dimension framework. **c. Value maps** Select two competing products or services to focus on. Identify the value maturity levels and value gaps for each value dimension.	**a. Context transitions** Select a product or service to focus on. Sketch a fictive scenario of a typical/atypical day. What are some key switches of contexts and situations that your users go through? **b. Context cards** Participants play a card game where they are using context cards to trigger idea generation about possible drawbacks or benefits of the chosen product or service with regard to particular contexts. **c. Context trails** Engage in a lived scenario, and let participants move through a trail that represents highly mobile and dynamic use sitations and contexts.	**a. Visual prototypes** Participants work in teams to create a conceptual prototype on paper. Sweet spots and weak spots are highlighted through peer review during team presentations. **b. Tangible prototypes** Participants work in teams to create lo-fi prototypes (e.g. LEGO, cardboard, etc.). Focus on one existing practice (As-Is: this is how we do it today) and one desired practice (To-Be: this is how we will do it tomorrow). **c. Action prototypes** Participants work individually to create a set of action prototypes to avoid procrastination, stimulate accountability, and facilitate action after the workshop has ended.

WORKSHOP OUTCOMES		
1	**2**	**3**
Perceiving user value	**Situating user value**	**Prototyping value-focused practices**
Combining all three modules will, among other insights, result in a set of paper-based value maps showing the perceived value performance of competing products, indicating possible unique selling points and areas for improvement.	Combining all three modules will, among other insights, result in a set of paper-based transition scenarios and video-based lived scenarios, highlighting situations where further accessible design efforts are needed to realize exceptional user value.	Combining all three modules will, among other insights, result in a set of prototypes of new practices for accessible design, along with personal commitments for action.

WORKSHOP: BASIC		
09:00	**Introduction**	
09:15	**Perceiving user value**	Value perceptions
10:00	**Situating user value**	Context transitions
10:45	**Break**	
11:00	**Prototyping value-focused practices**	Visual prototypes
12:00	**End**	

WORKSHOP: INTERMEDIATE		
09:00	**Introduction**	
09:15	**Perceiving user value**	Value perceptions
		Context transitions
11:00	**Lunch**	
12:00	**Situating user value**	Context transitions
		Context cards
13:45	**Break**	
14:00	**Prototyping value-focused practices**	Visual prototypes
		Tangible prototypes
16:00	**End**	

WORKSHOP: ADVANCED - DAY 1		
09:00	**Introduction**	
09:15	**Perceiving user value**	Value perceptions
		Value dimensions
11:00	**Lunch**	
12:00	**Perceiving user value (cont.)**	Value maps
13:45	**Break**	
14:00	**Situating user value**	Context transitions
16:00	**End**	

WORKSHOP: ADVANCED - DAY 2		
09:00	**Introduction**	
09:15	**Situating user value (cont.)**	Context cards
		Context trails
11:00	**Lunch**	
12:00	**Prototyping value-focused practices**	Visual prototypes
13:45	**Break**	
14:00	**Prototyping value-focused practices (cont.)**	Tangible prototypes
		Action prototypes
16:00	**End**	

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PHOTOS

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Context is everything.

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