**User Centred IoT-Design**

With the new task Internet of Things, designers are confronted with radical paradigm shifts. Neither they should design objects, nor they are able to create mandatory experiences. Dominated by algorithms, the traditional design understanding becomes fuzzy. However, with their fundamental user orientation, designers are not only best prepared for a redefinition of design services for the IoT, they are wanted to envision the future.

**Letting the Object Go**

User centred design in short, stands for a design process, which focuses on users’ needs and wants. Since a couple of years under the label “UX-Design” (User Experience Design), it focuses as well on the experience of using products and services to meet a need or desire of a user.

Whereas designing the usage of a concrete digital or tangible object always has the very closed stage of the human-machine-relationship in mind, experience design opens the scope to the time before, while and after the use of an object. As so far nobody ever defined how long is “before” and “after”, user experience design could be regarded as the designer’s responsibility for the embedment of products and services into the lives and memories of users, by adding practicability, joy and a medium for self-expression.

However, the concept of experience design calls for a radical different thinking of designers’ to the benefit of the users’ experiences. Those from now on no longer should concentrate solely on the product to be designed, but on the individual value chain of a user with a certain aim or need. It necessitates the concentration of processes in a whole, like “nourishing my family so that my kids stay healthy, although I have a full-time job“, instead of “how to operate a food processor”.

But experience design is not solely a design matter. If business-strategies are not aligned with the bigger picture of selling better processes instead of better products, no designer can deliver experience design.

How is that associated to IoT? As IoT is not to be understood as a conglomeration of more or less smart objects, connected to the Internet, no designer should design an isolated IoT-Object, but rather the process it is embedded in.

**Engaging the User**

As you could interpret the use of an object as a kind of micro-experience, it seems easy to design as well broader experiences, e.g. by adding service design to the mission. However the concept “experience“ is no such simple theoretical construct.

As of course experiencing (meant is the verb) happens in this one moment of use, an experience (meant is the noun) unfolds its whole value not before it has been brought in to the context of memories, dreams and emotions of an individual human.

Experiences are always individual and are created by nobody else than the user himself. In this connection psychologist and professor at the Ohio State University, Dr. Elizabeth Sanders, explicitly negates the term “experience design“: “There is no such thing as experience design. You can’t design experience because experiencing is in people. You can design for experiencing, however. You can design the scaffolding or infrastructure that people can use to create their own experiences.” (Sanders, 2001)

Dr. Marc Hassenzahl, Psychologist and Professor at the University Siegen, considers things (and technology) as an omnipresent companion in our daily lives. He ascertains that they “play a role as facilitator, creator and mediator of experiences. In retrospect, some of them will even define our selves. […] By that, technology gets its meaning through providing experiences, which in turn are crucial ingredients of our identities.“ (Hassenzahl 2010)

In summary experience designers have a great responsibility. They facilitate the environment to enable users to autonomously creating their own individual experiences (and – following Dr. Hassenzahl – thereby their identities). Thus experience design is not only “user centred“, but also nearly “individual centred“.

This doesn’t suggest, design should embrace every thinkable single user and turn back to custom-built machinery. The viewpoint cited above, just changes another traditional task of a designer: He is no longer responsible for a particular experience, predefined by design. He should rather equip users with tools that transform them on their part, into makers of their own individual experiences.

**Designing the Organism**

In the figurative sense, the experience designer has more of an architect, because he creates – let’s say – the emotional living space of a human. Of course today, hardly any UX-Designer, sees himself in the position to think in that broad sense. But, designing for the IoT might bring an essential paradigm change. The notion of an infrastructure for experiences and emotions, brings us fairly close to the vision of a daily life amidst connected objects, be it in our home, at work or in public space – called the Internet of Things.

Until now, the tasks of a designer were more or less strictly limited to the idea of creating one product – be it digital (software, app, website, …) or tactile (furniture, accessory, clothing, electronic devices, machines, …). But designing for the IoT neither means designing a single “smart” product connected to the Internet, nor designing the interface of this product. Designing for the IoT in the long run cannot ignore its systematic character.

**Redefining the Future**

How experiences can be triggered? Kennon Sheldon, and his colleagues isolated ten psychological needs that are – if fulfilled – responsible for positive experiences:

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| --- | --- |
| 01. Autonomy / independence | Only you alone but no external forces determine your action |
| 02. Competence / effectance | You feel capable and effective rather than incompetent or ineffective |
| 03. Relatedness / belongingness | You are in regular close contact to people who care about you |
| 04. Self-actualizing / meaning | You feel your life is meaningful because you develop your best potentials |
| 05. Security / control | You feel safe and control your life |
| 06. Money / luxury | You feel that you can buy what you want |
| 07. Influence / popularity | You feel liked, respected and as an influencer |
| 08. Physical thriving / bodily | You feel healthy and in well taken care off |
| 09. Self-esteem / self-respect | You feel like a worthy person, as good as anyone else |
| 10. Pleasure-stimulation | You feel enjoyment and pleasure rather than boredom and under-stimulation |

In short: We feel fine when we alone determine our life – declaredly without getting bored, when we get respect from others as well as attention from our intimates, and last but not least, when we are healthy and in a reasonably financial state.

Isn’t it hilarious that nearly any need of the list is on the verge of colliding with the IoT idea and its joined technology? The future interconnectedness of our complete habitat incapacitates the user under the guise of convenience. For now, a connected home or workspace is so expensive that only the rich can afford it. Artificial Intelligence in combination with conversational interfaces will sooner or later substitute our social relationships to humans. Long-established skimming strategies squeeze the data out of the user and convert him from former centre to product. Let’s face it – living in the observant IoT will expose the user defenceless to the data industry, if nobody puts an end to the unnatural separation of human and his own data.

In their paper “From the Internet of Computers, to the Internet of Things”, Friedemann Mattern and Christian Floerkemeier stated that the Internet already has changed from a technological to a socio-technological system, with a likewise social, creative and political dimension. But in the development of the IoT, the importance of its non-technological aspects is becoming even more apparent, since it adds an entirely new quality to these non-technological aspects. (Mattern, Floerkemeier, 2010) So, where are those aspects? Unfortunately, our vision for the future so far is driven by a technical utopia we didn’t change since the fifties. The German philosopher Harald Welzer states that we are still under the influence of a technology-optimistic image of our future that actually expired as we reached all the defined technological visions.

We obviously never reviewed our vision for the need to be updated. Now, we celebrate the IoT as the fulfilled dreams in which only time travelling is still in the air. Technology no longer meets our dreams of the future. Welzer accuses that today we are missing particularly social utopia. “The world we inhabit made our utopian horizon so narrow that for us the vision of the future is reduced to presence with other means. We need to transform ourselves to be able to build a new vision of the future.” (Welzer, 2012)

Designing for the IoT means not only to know but as well to deliberately counter the destructive effects of autonomous working connected products for humans. Instead of getting high by implementing very latest technology, designers should rather think about staging smart objects in the IoT as experience tools, deliberately conceptualized as antagonist of an out-dated technological golden calf. The concepts should facilitate self-determination, self-expression, social connection, intellectual and physical challenge as well as health and safety of users future life.

Designing for the IoT requires a radically updated vision of the future. A future in which technology isn’t the trigger for the conception of a self determined, social, meaningful and fulfilled life. I can only hope that designers take that ball being passed towards them.

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