The Rich Viz of Rich Viz

This brochure reflects on Rich Visualizations 2006, an elective course for MSc students in Industrial Design Engineering.

Tools and techniques for user-centred design were explored to support the communication phase of contextmapping. Relevant examples, guidelines, and theories were gathered from communication design, psychology, cinema and creativity studies. Then, a dataset from user research studies was analysed, and translated into rich visualizations: images, movies, objects intended to inform and inspire a design team about user experience.

A design team from Philips Design carried out an idea generation session using these visualizations, and reflected on their use.
Rich Viz!

Inspiring design teams with rich visualizations

authors

Pieter Jan Stappers
Remko van der Lugt
Froukje Sleeswijk Visser
Corrie van der Lelie

with contributions of

Philips Design
Students of Industrial Design Engineering

StudioLab Press  Delft University of Technology
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Before the course

1.1 preface
1.2 participants
Over the past decades, techniques from applied ethnography have entered user-centered product development. Companies have found that understanding the customer is becoming increasingly important for marketing success, and designers are struggling to gain richer understanding of people’s everyday lives, in order to develop products and services which fit into those lives.

For this, designers need more than the classical design brief and quantitative, verbal marketing studies. Establishing empathy is as important as gaining understanding. This is expressed by phrases as ‘stepping into the user’s shoes’, and ‘walking the walk’.

One preferred way of including attention for user experiences into the design process is by including the users themselves as part of the design team; another way is immerse the designer in the user’s life; yet another way is to try to convey this information in rich ways.

In the practice of product design, there is little time and budget available for user interaction among the many concerns of the design team, so efficiency is an important consideration.

At the same time, the information for the team must address a multitude of aspects: it must answer the full Aristotelian set of questions of who, what, where, when, how, why, ...

There are as yet no complete theories to replace the view on life. Instead of a fixed model, the design team needs a ‘contextmap’, not to replace the terrain of user experience, but to help them find their way in it.
The contextmapping process has three stages: getting the data (using cultural probes and generative tools), structuring the insights (with qualitative methods), and communicating them to the design team (with an emphasis on retaining both overview and empathy). In this project, an elective course for MSc students in Industrial Design Engineering, we focus on the last step: communicating.

First, we explored relevant examples, guidelines, and theories from communication design, psychology, cinema and creativity theory. Then, a dataset from user research studies was chosen, analysed, and turned into rich visualizations: images, movies, objects intended to inform and inspire a design team about the user experience. Finally, a design team from Philips Design carried out an idea generation session with these tools, and reflected on their use. This brochure, , reflects our experience, in what we hope is again an informative and inspiring manner.

refs


I'm not inspired by your diagrams
In the RichViz! project, 15 design students of TU Delft deepened their knowledge and skills, building forward on the course ID4215 Context & Conceptualization. The project was guided by the contextmapping team, supported by the multidisciplinary design research community at ID-StudioLab, and conducted in collaboration with designers from Philips Design.

The RichViz! project was set up by the contextmapping team; Pieter Jan Stappers, professor of Design Techniques, always eager to combine visual stuff, exploratory analysis, experience-centered design; Remko van der Lugt, design researcher; Froukje Sleeswijk Visser, PhD student on communication of contextmapping results and user researcher; Corrie van der Lelie, graphic designer, with a special interest in storyboarding.

ID-StudioLab is a design research community at the Faculty of Industrial Design Engineering, TU Delft. Research and teaching at ID-StudioLab focuses on user-centered design, from a variety of viewpoints. The StudioLab website gives an overview of that.
Philips Design has long-standing experience with user-centered design. Within the company (and towards outside clients) they provide design research & design services, and have worked on developing new techniques for bringing in user understanding into design.

The students in this course all have an expressed interest in experience-centered design. All of them have taken the course id4215, Context & Conceptualization, which laid the foundation for the contextmapping process, the analysis and communication needs. Motivations for both staff and students for this project were to increase our practical skills, connect to industrial practice, and further refine our grasp on possible principles and theories in this wild, multidisciplinary and inspiring domain.

refs

www.id-studiolab.nl

www.contextmapping.com

www.design.philips.com
State of the art

2 STAFF
2.1 communication basics
2.2 personas
2.3 practice at Philips
2.4 storyboarding
2.5 documentary

3 STUDENTS
3.1 stepping in
3.2 stepping back
3.3 storytelling
3.4 space
3.5 time

The project started with gathering, combining, and confronting existing tricks, guidelines, examples, and theories.
The contextmapping team, designers from Philips Design, a guest from RCA London, and the students all informed about what they knew, and shared what had inspired them.
After the founding theory (section 2), groups of student focused each on an aspect, sought for new literature and examples, and presented their findings (section 3).
Communicating experiences to design teams is a complex balancing act. The design team wants to be both inspired and informed. The data should be sufficient, but not overwhelming. It should serve generalization beyond individual users, but also sustain empathy with the users. Some elements of the message are conveyed best visually, others verbally. The data must be quick to access, yet have sufficient depth.

In the visual communication literature, there are tips, guidelines, and examples, but no sure-guide cookbook or overarching theory exists as yet. Communicating experiences is still an explorative design subject: out of the richness of user experience research, we should make a contextmap, giving hold to designers, yet leaving them free to use this data together with the many other considerations that are needed in designing.

In order to organize and connect the many what’s, who’s, and how’s that come out of research, we often use ‘narrative structures’ that tie the bits together in coherent wholes: personas bind to people, scenarios bind to storylines, situations bind to places. Combinations of these different structures can be used to weave a larger, coherent, structure without losing the richness of the data.

Two main sources of insight are used a lot in finding forms for communication: works on visual communication design present guidelines, background theory, and even experimental justification of the principles. Edward Tufte’s books on information visualization are the standard source of examples of infographics. Many inspirational examples of conveying heavy loads of data can
be found here, although relatively little about conveying user experiences. Stephen Kosslyn addresses basic perceptual issues of graphic communication design based on perception theory, giving principled guidelines to enhance the unambiguous communication quality of diagrams. Scott McCloud’s Understanding Comics discusses conveying emotions and narratives, and the impact of abstraction in visual styles. Lidwell et al. present a provocative set of perceptual principles which can help design.

The other source is formed by examples of evocative narration and depiction. For examples, collections of school wall charts show how many different small stories can be conveyed in one overview which can become a ‘map of activities and events’ sparking discussions in the design team. The exactitudes art project shows similarities and differences in user groups.

refs
Kosslyn, S. (1993) Elements of Graph Design. Freeman
www.exactitudes.com
Representing user data by people

One way for conveying user data in an engaging way, is showing PEOPLE. These people can be ‘real people’ who participated in the actual research and/or fictive people, which are called personas.

(Re)presenting user data by showing people could be in videos, photos, images, anecdotes, etc. Besides conveying the authenticity of the data, showing people has the advantage of communicating more than explicit information. It can also convey tacit information.

Images of people utilize our mind’s powerful ability to extrapolate from partial knowledge of people and to create coherent wholes and project them into new settings and situations.

So showing actual people conveys a richer insight into the data and it is easier for designers to relate to a set of people with actual names and faces (in comparison to abstracted target groups) than explicit and abstracted information.

Moreover, it stimulates empathy with the users, since designers see individual people and get insight in their daily lives.

If the participating user number is low (<10) and it is allowed to show the real actual people, it is a great advantage to (re)present the data with these actual people (such as The Personal Cardset, see 2.2a). In practice (especially in large companies) personas are often used. A persona is a fictive person who has life stories, goals and tasks. A persona creation can involve quant & qual information, including market, trends, demographic
research and focus groups, etc. These personas (often 3-5 personas) are created for a project, e.g., Bill, Jane & Daniel) and are used to communicate information to the multi-disciplinary team (so they all know who they are talking about). Next, these personas can be used to explore early concept ideas in scenarios (How would Bill use this concept in his early morning routine?)

refs

Experience-centered design in the real world: Philips design

Philips Design is one of the world’s leading design companies. We are renowned for our visionary approach - enriching design with human sciences, user research and always with a clear people focus - allows us to shape technology in a way that answers people’s existing and latent needs.

Whilst we may already be practicing user experience-centered research there is always the need to continually improve our tools and methodologies. It is our everyday practice of course, which enables us to identify opportunities for such improvement. Our design teams are truly multi-disciplinary comprising designers and researchers with different capabilities each of whom undoubtedly has varying strengths and weaknesses. Whilst we work hard at enabling communication within our teams one of the biggest hurdles we tend to find is the ability to transfer information from the research specialists to the ‘creatives’ within the team. One could argue that in a true multi-disciplinary approach the designers should be involved from the outset in the fieldwork however this proves logistically never as easy to realize as stated.

Rich Visualizations are therefore an interesting tool to us in facilitating the process of translating user research into the start of the design ideation process. What is required is a means of enabling designers to rapidly immerse themselves in user-centered data, making it tangible,
understandable and interpretable for them. Design being a ‘visual’ profession it only seems logical that we should utilize visual language as a means of enabling this process – hence when the RichViz team approached us asking for our involvement we thought immediately it was worth diving in.

To achieve human-centric innovation, it is important to understand people in the context of everyday life and anticipate this when developing and creating solutions.

refs

Lucile Rameckers & Stefanie Un (2005); People insights at the fuzzy front of innovation, Philips Design.

Anton Andrews (2006): The Open Lifestyle Home, Philips Design

www.design.philips.com
A storyboard is a visualisation form which can integrate all the aspects that convey experiences: It tells a story, featuring all the Aristotelian questions of why?, how?, what?, where?, when?, with whom?, what for?, ... It has visual and verbal elements, shows a concrete instantiation in the cells, and annotations explaining and generalizing issues. It appeals to the reader to step in to experience the user’s experience, and to step back to take an overview of the event.

Making a storyboard is not easy. Just beginning with the first frame and start drawing is not an option. Experience from the film industry, and from teaching and research suggests the following group process:

- Collect ingredients, e.g., considerations, people and products;
- Determine a set of events that expresses what you need to express;
- Intertwine these into a story line, which has an interesting development;
- Act out the story, take photos and immediately make rough prints;
- Arrange, discuss, replace, and sketch over the prints;
- Rework the storyboard into a page;
- Restyle its aesthetics

By acting and photographing rather than drawing out, the team already steps into the action, experiences the story, and postpones decisions of aesthetics in favour of discussions of content.

In a photoboardning workshop, story lines were developed for the fictional design case of 'social interactions on viewing TV together'.


Katz, Steven D. (1991) *Film directing shot by shot: visualizing from concept to screen*. Michael Wieze Productions, Studio City

Often not everyone in multidisciplinary design teams can take part in the ethnography at the beginning of a project. It is too time-consuming for the team members and too invasive for the users. Design Documentaries can communicate what designers have found in everyday life to a larger team in an inspiring way, without imposing fixed conclusions.

As a designer you try to empathize, you aim to understand situations from the perspective of the people you are designing for. But you can’t just follow what your participants say, you also have to develop your own perspective. This balance act is not unfamiliar to documentary filmmakers. Interesting documentary films present a discussion between the perspectives of the filmmaker and the people s/he films.

In our research at the early stages of a design process we can benefit from the techniques and approaches for portraying everyday life that documentary filmmakers have developed over the past 100 years. Design Documentaries are building on that potential by suggesting a new way of using video to discover what matters to people, and to designers. They go beyond the usual neutral observations or interviews that we normally record on video. In stead they adapt documentary techniques like empathic observation, ethno-fiction, juxtaposition, intervention, performance or compilation to tell a story with a film.
My aim as a filmmaker is to approximate some of the complexity of the real world, rather than to simplify it.

[Frederick Wiseman (filmmaker)]

All these techniques help to setup a discussion between different perspectives in a visual way that can easily be understood by all members of a multidisciplinary team. Design Documentaries offer a solid shared and inspiring reference for the continuation of that discussion during the rest of the design process.

Design Documentaries are the result of PhD research by Bas Rajmakers at the Royal College of Art in London.

Illustrations

2.5a – ‘Storage, clutter and display in the home;’ an interactive film by Bas Rajmakers for the Equator network, UK (2003).
2.5b – ‘Kent;’ a film on the everyday life of a heart patient based on observations and interventions by Bas Rajmakers for Philips Medical Systems (2004).
2.5c – ‘Debra;’ a video letter from one heart patient to another by Bas Rajmakers for Philips Medical Systems (2005).
2.5d – ‘Fred;’ a compilation film on a heart patient persona by Bas Rajmakers for Philips Medical Systems (2004).
2.5e – ‘On/Off the Bus,’ an observation experiment on the Routemaster bus platform by Bas Rajmakers (2003).

I do not intend to speak about Just speak nearby

[Trinh T. Minh-ha (filmmaker, anthropologist, poet)]

refs


http://www.designdocumentaries.com

http://www.interaction.rca.ac.uk/people/phds/bas-raijmakers.html
A famous painting by the French artist Magritte depicts a pipe, accompanied by the statement ‘Ceci n’est pas une pipe (this is not a pipe)’. With this, the power of visual imagery is shown. While it is indeed not a pipe but rather an image of one, this statement causes a kind of cognitive dissonance because we are accustomed to interpret images as being ‘real’.

This quality – often referred to as suspension of disbelief – is used about a multitude of media, to immerse the viewer in what is communicated; to allow him to step in, to have a feeling of ‘being there’. To use this in a design process, it is important to determine the qualities that the visuals should have in order to allow a designer to step in. The visuals should generate *empathy* with a user. The reader should experience the story empathically, i.e., through the eyes of our hero: the user. How can this be achieved? The literature points at two important factors. One factor is the amount of visual information. Here again we have an optimum; to provide the viewer with sufficient information to trigger immersion, but not to confuse and tire him with an overload. The other factor is the level of
abstraction: A realistic visualisation can be abstracted by either idealising it, or by iconising it. Idealisation is common in advertising and provides a fake look that is not useful for conveying empathy. Iconisation is the process of removing detail, often in facial characteristics. There is an optimal level of iconisation, in which the viewer will go from regarding a character as someone else, to placing himself in position of the character, and experience the story from his or her viewpoint.

McCloud gives the example that in Manga comics, the hero is often drawn in iconic style, surrounding characters in realistic style. This promotes the reader to ‘fill in’ the hero, and to identify with him/her. There is a lot that can be learned from the expressive languages of comics and cinema. Yet design communication is different from these modes of narration. For a movie-goer, it may be best to ‘only experience’ the story. The designer must also reflect on it. That is, he or she must step in, but also step back.

refs


illustrations

3.1a – iconisation and idealisation
3.1b – iconisation of a face
3.1c – McCloud’s interpretation of Magritte’s painting
3.1d – balancing sensory load for immersion
Chaos and order are not enemies, only opposites

(Richard Garriott)

<table>
<thead>
<tr>
<th>Abstraction (means ↔ end)</th>
<th>Decomposition (Whole ↔ Part)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Values</td>
<td>Love</td>
</tr>
<tr>
<td>Functional Purpose</td>
<td>Friendship</td>
</tr>
<tr>
<td>Abstract Function</td>
<td>Communication</td>
</tr>
<tr>
<td>Generalized Function</td>
<td>Composing a letter</td>
</tr>
<tr>
<td>Physical Function</td>
<td>Writing text</td>
</tr>
<tr>
<td>Physical form &amp; config.</td>
<td>Desk &amp; stationary</td>
</tr>
</tbody>
</table>

3.2a – an abstraction hierarchy shows how a single interaction can be simultaneously understood and described on different levels.

3.2b – an infographic supports both primary impression, overview, and repeated returns for more detailed information.

3.2c – a mindmap uses various expressive means to provide overview, relations, associations, and detail.

refs

http://www.volkskrantblog.nl/blog/58
http://www.elmundo.es/graficos/multimedia/espana.html
http://homepage.mac.com/jonming/PhotoAlbum4.html
...and stepping back

The context-driven design team must integrate insights from very many disciplines, many perspectives, and moving beyond the individual stories of individual users at singular events. What techniques help to give an overview of different factors, to give the design team a map to tackle the complexity of issues involved?

Several stages in a design process require the designer to step back from the experience and take an overview. For each stage a certain technique fits best.

In the beginning of the design process stepping back is required to sort your own thoughts and the information you found but haven’t analysed yet. Mindmaps are suitable for getting this overview. A mindmap clusters all gathered information, and allows you to organize and emphasize elements and connections.

When you want to analyse the information, an abstraction hierarchy can be used. It ranks the information from purpose and functions to physical implementation. By asking ‘why?’ and ‘how?’, respectively, you move up and down between abstraction and physical form. On the one side stand social values and needs, on the other means to support those.

Then when you are in a stage where you have analysed your data and want to visually represent it, infographics are suitable. An infographic is a visualisation of lots of information in form of rich pictures, maps, charts, diagrams, or combination of those. The information in it is given in different layers, quotes, samples, and small explanations. This allows a quick grasp on the main message, and supports exploring the subject deeper and deeper by a flexible set of routes.

Beside these common techniques, there is a whole range of visualisations that give overview.
Stories are a major tool for uniting different, but related insights. Theories from theatre and movies have been applied to design, in order to do justice to the fact that experience with products occurs over time, in sequences of interactions between products, people, and environments. In developing storylines, narrative wholes, these techniques help the design team deal with the complexity at hand.

But what makes a good story? During research, we found enough guidelines to get one started. A story always has a beginning, middle and end and needs the following fundamental elements: setting, character, plot, invisibility, mood and movement. It has a systematic form, consisting of stages. These stages add emotional depth, meaning and magnitude. In most interesting stories, there is a reversal of fortune (Laurel, 2005). For design inspiration the story should not be a flawless user-instruction, but can be a dramatic narrative containing negative event (possibly resolved within the story).

Products interact with people and are designed for people, so the character is of great importance. To empathize with the character, the audience should be able to understand the character, or ‘the hero’, to identify with him/her; therefore it is important to know your audience. To make a character come alive he/she should be good (morals), appropriate and consistent.

By giving details and giving the character a past, the character will become more realistic and therefore evoke empathy.
Because reality is boring, a story should always be somewhat enhanced to make it more interesting. In a story there should be no coincidences, because everything that happens gets a meaning. Ambiguous or too much information should be avoided, just as missing links. Stories are used throughout the design process, moving from evocative stories as the design ideas are created to prescriptive stories that describe the details of the design. They can be used for evoking discussion, for communication (e.g. user data) or for persuading people. They are easy to remember and can act as an equalizer within the design team, providing a common ground in discussions. Through stories, personal engagement of designers with users can be enhanced.

refs
www.whitneyquesenbery.com

Illustrations
3.3a – a story has a beginning, middle and end
3.3b – a dramatic reversal of fortune
3.3c – fundamentals of the character
3.3d – reality is boring
3.3e – storytelling in the design process
Rich visualisations are created to support creative work. They are not meant to be read, enjoyed, and forgotten, but used as tools, e.g., in idea generation workshops. Therefore it is worthwhile to consider not only the message and its audience, but also the ways in which they are used. That includes the space in which creative sessions occur. What type of place works well to stimulate creativity and what gets us in the right frame of mind?

What is the theory?
The space we are in is more than the room around us and all the artifacts in it. Basically everything around us can serve as an inspirational factor. Besides visual input there is varied input to all our senses. Some inspirations may be guided by the user research, e.g., storyboards, others are unintentional, chirping birds. When materials are developed to guide creativity in a certain direction, toward a consistent company style or toward empathy with the user, the materials should only provide guidance: you can not force creativity. With other words, all materials should leave room for exploration and interpretation. Creativity is an active process, opportunities should be available to play with ideas mentally, but also physically. Provide materials for play and tinkering, to make mock-ups, sketches or just to fool around.

Put this into practice
There are at least two ways to shape your working space to support your design inspiration. First you can adapt your present location into a more inspirational environment. This can be done in a general fashion or by introducing aspects of the intended context of use. Secondly you can move to a space that is more related to a specific activity. There are ‘creativity rooms’, facilities which are specialized in providing inspirational spaces. Or you can move to a place that is similar to the intended design usage context, as IDEO did when they went to long corridors as a place to make a design for an airplane’s interior.
The atmosphere of being there with the end user in the environment ... can provide inspiration for solutions that would not be thought of behind the office desk.

refs


Communication, like product use, takes place over time. Workshops have a progressive structure to facilitate the creative process. And the design process has already begun before the workshop, and continues afterward. In contextmapping, a lot of attention is paid to the process of sensitizing the creative participant over time before sessions take place. Advertisement campaigns similarly use teasers to get people started, into the right frame of mind, before they come to meet the product. How can we use these techniques in setting up design communication?

With this question in mind the research focused on identifying and analyzing everyday activities or rituals that are used to build up tension or excitement for an event to come. The long list included rituals such as the Christmas calendar and advent wreath, the Olympic Games’ torch runner or domino and memory games.

By using the clustering technique four basic principles were found: counting towards the future, foretaste or some kind of mini experience, send a message and involve connectors, like clowns in the circus or moderators in a TV show. Those principles could again be divided into two groups. The more active level aims at motivating the person or receiver in order to get them passionate whereas the other one would solely aim at preparing or informing the person, which is a bit more passive than the other option.

Out of these clusters a matrix was developed which can be used to sort any everyday life example into a certain category. This provides not only inspiration but also becomes a working toolbox over time, as the amount of similar yet somehow different principles support new sensitizer combinations.
It ain't over 'til it's over
and when it starts, it's long begun

LADDER: MEANING OF HEALTH AND WELLNESS

Feeling healthy is not being healthy. Conventionally, being feels healthy (rather than being healthy), which is an endurance test to perform well daily. Feeling healthy (or enough condition to have endurance to work and not to be out of health after running, not having headaches or a bad appointment makes him capable of doing what he wants to do). Being healthy is important in the long haul.

With either physical or emotional effort, the person achieves relief from stress or pain, creation, busy, and have obligations in the world (where the person goes thus making the

When the person is stressed, and he needs to take care of his body and mind trying to sleep and having proper nutrition, they

"LADDERING"

"MULTIPLE ENCOUNTERS"

"WORKSESSIONS"

"KNOWLEDGE BASKET"

"RAPID CRAFTING"
Our own data and message

4.1 family morning rituals
4.2 from data to message
To base the visualizations on real data from user research, we drew on two datasets which had been done in earlier projects at Philips Design and TU Delft. We decided to take as raw data as possible, because ideas for visualization often arise during the interpretation process. On the other hand, the data should be sufficiently public, so we could use our visualizations in a brochure such as this one.

Getting data for a research project is always difficult, especially if you want to be able to show the results later. Several factors stand in the way of using real data, especially interpretations and pictures. Interpretations are company confidential, privacy rules stand in the way of using the pictures or names of participants in the study.

The main data in this project came from a series of interviews about morning rituals from a previous research project. IDE student Meta de Best interviewed four couples, two with children, two without children, to explore the form and variability of family’s morning rituals. The study addressed actions such as taking a shower, setting the table, taking care of the kids, reading the newspaper, planning the day, etc. And especially they discussed whether they conducted these rituals always in the same order and intensity, or whether this changed, e.g. between weekdays and weekend, between summer and winter, between run-of-the-mill days and special events...
During a visit to the home of each of the four couples, a probe was handed over. The probe contained a two-week dairy, a fun tear-off calendar and a big envelope containing a weekend assignment.

The diary was designed for two people (or more, in one case). The couples were asked to write down their morning routine on a timeline. The calendar was more for the couples to get into the project. It was not used for data. The envelope contained four different layouts of houses, from which the couple had to pick one that resembled their house most. Next assignments included filling in the layout with furniture, marking the morning routine route and placing text balloon stickers on the place of an activity.

After the two-week period, I came over for the final assignment. This assignment was in the form of a board game in which the couple had to visualise their morning routine together. Using cards that displayed little scenes of everyday things, they had to go from the bed to the door that were displayed on the board. Finally, six red ‘chance’ cards were introduced to see if a random accident or happening would change their routines. This was all recored on video and in photos. Each session was then made into a transcript (in Dutch). A detailed layout of the cards was made to complement the text.

After all the visits, I had four sets of dairies, layouts of their houses, videos, transcripts and digital pictures. These formed the basic dataset for the analysis, and the developed visualizations.
How analyzed

A rapid and loose qualitative analysis workshop was performed on the user data. Prior to this workshop, all students studied parts of the user data, especially the transcripts of the interviews, and prepared key insights in the form of statement cards. During the workshop, these were discussed, grouped and labeled, in order to extract storytelling carriers: events, personas, and situations that formed the basis for the development of the visualizations.

Determining what the message is, is not trivial. User-centered data as it arises in contextmapping is multi-layered, and multi-faceted. And there is a lot of it, so some form of reduction is needed. We decided to do the analysis with the group, and move fluently into visualization.

First, the group read the transcripts and studied the posters made by the participants (data level). Using the ‘statement card’ technique (see, e.g., Stappers & Sleeswijk Visser, 2007), interpretations were made (information level) in the form of paraphrase-quote combinations, which were then related, categorized, and further organized (knowledge level). Along such this process, we noticed that this ends up in abstractions, lists of short words, which lose touch with the original data. Therefore the abstraction phase was followed by a renewed searching the data for quotes that exemplified the generalizations. After
a few of these iterations, a number of mindmaps and infographics were made, which covered most of what we wanted to convey. These served as a map in which to plot the Visualizations. Events, storylines, situations, places, and persona’s were constructed, compared, and iterated to produce two sets of final visualizations.

Illustrations

4.2a - quotes selected from interview transcripts
4.2b - categorizing the quotes with statement cards
4.2c - summarizing and diagramming the conclusions
Developing ....

5 PROCESS
5.1 how developed - first run
5.2 developing on
5.3 deciding and finishing
5.4 tuning
The analysis moved into visualization, during which the findings were refined further, gaps were filled in, and expressive forms were tried out. This was done iteratively. First groups of students took different approaches, which were compared. Then, the different approaches were merged into a set of communication tools.
How to make a storyboard which shows where everything is happening simultaneously in space and over time? This was our approach to the challenge of designing the rich visualizations for the Philips workshop.

We decided what theme our storyboard should contain. We decided on: “giving a positive twist to what at first seems a negative experience in the morning ritual”.

Besides the storyline we wanted to include a sense of space to the storyboard so you would know where the storyboard takes place.

In the first phase we made a photo-storyboard, to which we added a few prints of what the house and some of its rooms looked like.

In the second phase we developed the storyboard into a 3D model of the house. So the people who would use the storyboard would be more aware of where certain actions took place. This showed, more than a linear storyboard can, how surprisingly closely knit a family’s morning activities are. We made an open house of cardboard and pasted photos of the rooms on the walls. The storyboard was cut up in pieces representing individual actions, and these were pasted into the house.
The problem we then faced was that it was difficult to see the sequence of the different actions, therefore we added a timeline to the storyboard represented by a red wire twisting through the house. If you followed it you would see the actions in chronological order.

As rich visualization to give to the designers of Philips we improved the house as can be read in the section 6.3 ‘the house’.

Illustrations

5.1a – photostoryboard which led to the 3D house
5.1b – first version of ‘the house’
Steven? Are you awake yet?

- Of course I'm awake... because of my annoying, noisy little brother!

Claire and Steven

Illustrations

5.2a – A social interaction moment

5.2b – Initial sketches of the Andrews family: Donald, Claire, Steven and Mark
5.2 developing on

Actions by people: The Andrews Family

The final point in analysing the data was the translation of several key factors in the morning rituals, to sketches of situations that would provide a suitable basis for creating a fleshed-out storyline. Some of these centered around organising parents and task division, and these were combined to lay the basis for the Andrews family.

The process of developing the visualisation consisted of three phases. First, to create a set-up for the storyline, with basic personas. The form of presentation was not of great importance here. Secondly, to create a draft version of the final product, with more developed personas and a more finished look, but with fewer details. Third, there was a process of detailing, and combining with another storyline, creating the definitive visualisation.

Initially, the personas were created (both physical characteristics and personality traits) and a storyline for the morning ritual was written. The personas were the Andrews family, which consisted of parents Donald and Claire, rebellious adolescent Steve, and childish, noisy Mark. Defining the look of the characters was of great importance, this gave everyone in the group a springboard and made the characters come to life. The setup was presented in the form of a handdrawn storyboard in a cartoony style.

For the draft, the story was simplified into a more cohesive whole, with a focus on social interaction at the breakfast table. The drawing style became slightly less iconised to set the perspective of the viewer to observer rather than partaker. The story was presented in the form of a movie, with a rough, sketchy quality.

A movie was chosen as this was viewed as a very immediate way of letting the designers immerse themselves in the story. Finally, in the final phase, storylines were combined and further detailed. The final version is described in section 6.3 ‘the documentary’.
We designed a set of cards that explained insights in the form of small stories about a family. Our starting point of constituting ‘events’ was the theme “privacy and conflict” of a family in the morning.

At first, we gathered events from the data that are typical for the morning rituals. To combine and relate these events, we built up personas, so the characteristics of family members make the story vivid and empathic.

We extracted 7 events from the list and assigned them to the morning timeline. The events were detailed to form a single storyline fitting the personas’ characters.

We then constructed one big panel which had 7 events on the timeline; each of the events was illustrated by vivid, realistic drawings. Instead of drawing the faces of family members, some abstract shapes in coloured paper were cut out. Each colour corresponded with one member of the family. During the following RichViz meeting the effect of omitting facial expression was discussed.

Through comparison it was concluded that leaving the faces blank seemed to stimulate empathy and imagination.
For rich visualisations to communicate to designers, we decided to further develop the event cards. The drawings placed on the cover illustrated a certain event; inside the card was a map presenting the lively story and the location of the other family members at that moment. The family members were depicted by using the same colour code as for the faces. This technique enabled the reader to get a feeling for the family members’ favourite areas, for example the father and his armchair.
The development of the personas and storyboard of Tom and Anne

Merging original data into useful design inspiration visuals is a complex process. It is necessary to recognize patterns in order to capture the essence of the data. On the other hand, a realistic level of detail and some clashes should be added so that the story will be inspiring to the designers.

The creation of the personas and storyboard was structured around a couple, one of whom is very organized, the other a more laid back person. First, two rough personas were created; the organized mum Anne and laid back dad Tom. The first visualizations of these personas showed the diaries of both Tom and Anne, illustrated with pictures. Parallel a storyboard for Anne was made in a quick and dirty collaging style. After a group discussion it was decided that the pictures from the personas were not realistic and that the text was too long. For the storyboard it was decided that it also needed to show Tom’s view and that the contrast between the different layers of the collaging technique in the storyboard was not big enough. The faces drawn on to the picture of the character seem to work well for creating empathy.

In the next phase, the text in the personas was shortened and the visual was adapted to a style that represented the personality of the persona. Anne’s persona showed her neat and organized diary, whereas Tom’s showed loose and unorganized post-its. To make more contrast between different layers, the storyboard was made with different visual material; black- and-white and colored pictures of the environment, realistic pictures of children and black outlined pictures of the main character. Furthermore, the storyboard represented two storylines.
A story can consist of several storylines, each centered around one main character and clashes in the morning ritual were accentuated by twisting the frame slightly. The final adjustments to the storyboard were making a black frame around the pictures from the two storylines showing social interactions and accentuating clashes in the morning ritual with a red frame.


Illustrations
5.1a – initial version of “Anne’s diary”
5.1b – final diaries of Tom and Anne
5.1c – the first storyboard, showing Anne’s face in abstracted style
5.1d – the second storyboard carried two parallel storylines
5.1e – in the final storyboard, connections between the storylines are made explicit
In the run up to the workshop, the Philips design team received a steady trickle of teasers, to sensitize them toward the user data. The two teams received different sensitizers which connected to the different workshop materials.

Team A made coffee mugs, each one representing a different persona. Also three “advent calendar walls” were made for the coffee corner at Philips. Team B made several sensitizers, namely dolls with different T-shirts for every day, lunchboxes with triggering questions, and emails, sent to the design team members.

The goal of the sensitizers was to make the participants aware of (and engaged with) the main topic ‘morning rituals’ of the workshop and to give a very short introduction to the personas that would be used in the session.

The coffee mugs were given one week before the session. On every mug there was a picture of the persona, a quote of this persona (from the original data) and a triggering question.

The two advent calendar walls were to be placed in the coffee corner. Each had a theme, expressed by a triggering question, e.g. “What irritates you in the mornings?”. People could open small ‘doors’ to see general pictures behind them, which raised the anticipations of the team. Markers and post-its were provided for people to add their own reactions, reflections, or experiences.
Team B

Almost a week before the sessions the first sensitizers arrived at Philips. The other sensitizers were distributed in the succeeding days.

First, two dolls appeared. Silhouettes of two young boys, representing personas, were placed in the coffee corner with their clothing frames and wardrobes. The boys’ wardrobes existed of T-shirts with slogans on them; these shirts were replaced several times during the week. The design team could be prepared in this way, because they already knew the opinions and views of the two personas.

Furthermore, the team got mail in their mailbox from StevenMark.Andrew@gmail.com three days in a row.

In those emails, the two boys introduced themselves and wrote in an informal way some of their insights. The emails were also set up to get to know the two boys a bit better on forehand of the session.

The last sensitizers were some lunchboxes. Lunchboxes arrived at the desks of the designers. In those lunchboxes were, except for the biscuits, drinks and apples, some cards with messages meant for Mark or Steven and inspiring questions. The designers should, in this way, be inspired to think about their childhood again.
People can experience the same morning differently. Especially in a family situation differences in morning rituals can lead to small conflicts on a daily basis. A storyboard and two personas were made to show the different perspectives of two parents from the same household: Tom and Anne.

Anne is an organized mum and Tom is a more laid back dad. These differences in character are visualized in their personas; Anne’s persona shows a neat and organized agenda with notes about her life values and morning routine. Tom’s persona shows loose post-its with quotes of his life values and morning rituals. Their portraits were added to make them come alive.

The storyboard showed the morning ritual from their two different perspectives. For their construction, theories from storytelling (section 3.3) were used; the two big pictures at the beginning and the end of the storyline indicate where the story happens and that both storylines happen at the same place and at the same time. This makes it possible to easily step back. To provide for stepping in, the storyboard has many different layers. Based on techniques mentioned in ‘Understanding Comics’ we chose to represent the different persons in each storyline in different ways; the adult main character e.g. has black outlines and a drawn expression to let the designer empathize with this person.

To make the storyboard realistic we collected pictures of the environment from a house selling website.
A combination of black-and-white and colour pictures was used to make the storyboard more readable. Furthermore all pictures of the house, objects and personas were superimposed with a 2.5 D collaging technique, to make the storyboard more engaging and to allow readers to switch easily between the different layers. Based on what we learnt from the storyboard workshop a short descriptive text beneath each frame made the events explicit.

6.2 a – the storyboard with the personas
A black frame around the pictures from both storylines bounds the moments where Tom and Anne interact. To draw the designer’s attention, a clash in the morning ritual is indicated by a red frame and by twisting the image slightly. (see also 6.2d)

6.2 b – Tom, the main character of this storyline, has black outlines
6.2 c – the first picture of the storyboard sets the scene
6.2 d – detail of the storyboard showing the 2.5D collage technique

refs
When preparing breakfast
I am mostly alone, but
then we will eat it and
then we are together

[research data quote, posted in the house]

6.3a – the first draft house
6.3b – similar pictures used from the storyboard; an impression
6.3c – the final house presented to the design team (with- and without the outside box)
The story around the morning ritual of two personas, Anne and Tom, is captured in a storyboard. For adding an extra dimension, a 3D house was built, representing the living space, morning rituals and followed paths of the characters. The house provides an overview and makes the story come to life. It is designed as a stepping in and stepping out tool for the designers during the workshop.

For the storyboard, as explained in Section 6.2, a story was contrived, based upon facts from the actual data, enriched where needed by our own experiences, regarding two personas Anne and Tom. A 3D version of this storyboard is designed, in the form of the house that Anne and Tom are living in. The house is a representation of the same story, with an extra dimension added. The house provides an overview of the living space of the personas and explains their rituals and the paths that they follow in the morning as well. A link with the real data was created by adding quotes. The house provided a stepping in and stepping back tool for the designers during the entire session. They could look at it over and over again and keep discovering new things; the house’s spatial arrangement makes the story come to life. To stimulate curiosity in the beginning of the session, an outside for the house was created. This outside box, representing the actual house, includes small windows, through which the designers can peek inside, and which triggers them to explore the house further during the session. The special moments of the house and the storyboard are connected by colour-coding and by using a coherent style of pictures. The house is kept sketchy to make it easily accessible for the designers to work with and in order not to detract from the story of the personas.
6.4 the documentary

This documentary is used in the design workshop with the Philips Design team, to introduce them to the Andrews family and their morning rituals. By using a documentary as stepping-in tool, a more dynamic way of storytelling was provided. The story of the morning ritual was drawn in comics style; subsequently, these pictures were filmed in sequence, while a voice-over tells the storyline, and gives in-depth information about feelings and values of the personas.

At the beginning of the workshop, the documentary was shown, to let the designers meet the Andrews family with their morning rituals and their feelings they have around the breakfast table. Also the designers should know about the values of the different personas after seeing the documentary. Together with the documentary a piece of white paper with a small print of the house of the family was given to the designers. While watching the documentary, the designers could use this to make notes and mark where a situation takes place in the house. After seeing the documentary, the designers got cards with a precise description of the personas they can refer to during idea generation.

The story was drawn in several pictures in comic style, these pictures where filmed in sequence. While filming, a storyteller tells what happens with each picture and what the feelings of the personas involved are. This way the story of the morning ritual is told and simultaneously the personas are introduced with their values and meanings.
When I am making the lunchboxes, I’m usually sitting alone, but when eating breakfast we sit together. A cup of tea we drink together, and a sandwich, very nice.

By using sketchy, comic style pictures, we meant to give the designers space to let them fill in situations with details they know from own experiences. We chose to show the story in a documentary form instead of an on-paper form, so it was less effort for the designers to get into the morning ritual of the family and to make the story come more alive.

Illustrations
6.4a – the Andrews family
6.4b - watching the documentary
6.4c - the persona tools for in the session
6.4d - stills from the documentary

Refs

Raijmakers, B., *Documentary workshop*, this course
The materials were used in a four hour design workshop, in which design team used the visuals just described as inspiration sources, and gave feedback on how well the visuals served their needs in designing for a special situation. The workshop was organized through the question of 'enhancing social interaction around the breakfast table'. Two teams, A and B, worked separately.

Team A was made up of six designers and design researchers. After an introduction of the problem, they briefly discussed their experiences with the sensitizers. With the introduction of the storyboard and the personas, the team began to dive into the context. The team was very good at empathizing with the persons depicted in the storyboard. During their first reading they frequently commented on the content, referring to the personas by name. After 15 minutes of analysis, the cardboard house was introduced. The team was fascinated by the house, and eagerly did the assignment, quickly placing the quotes in the proper places of the house. Having explored the materials, they then split into two groups, each working separately on one of the storylines. During idea generation, they put the materials aside and hardly returned to them. At the end of the session they presented concepts for interactive breakfast tableware that prompts its users toward interactions.
The team’s feedback on the RichViz materials helped greatly in evaluating our design choices.

The team was mostly content with the materials. The storyboard was said to help them to ‘get into’ the routines. The way photographs were used in the storyboard and the persona representations, helped create empathy. The design team quickly became familiar with the patterns and spaces via the house model. This was said to be detailed to a desired degree, and they explained that they did not refer back to it during the session, because it had been ‘with them’ in their minds, not because it lacked interest.

In general, though, they missed a level of concrete detail in the visualisations of storyboard and personas. Being drawn, these were still too much interpretations, too little ‘raw data, which always contains many small and inspiring details’.

The team had wanted more details about the personalities of the personas, the children themselves and some real tension in the story. Regarding the house, they would have wanted to hear the voices of the people in the house.

And most importantly, they found the materials too rich and unambiguous for such the design task, which gave them difficulties in elaborating the problem.
**Design team B was provided with a documentary, a card-set and a 3D-map of the house as inspirational material for designing a new product concept for the breakfast table.**

The documentary was shown once, in a 5 minute presentation. The team then split up into two groups (each 3 to 4 people), which worked separately. The first group hardly ever used the map and analysed all perspectives by using post-its, whereas the second group was talking about morning rituals in general, their own experiences and analysed the documentary by use of the map. Both groups used the cards in a later stage of the process and these were shared between the two groups. The cards were mostly used when the designers got stuck, wanted more information or to find back information that had been forgotten.

The second group started using post-its on a map and drawing ideas halfway the process. By the time they got back together, reuniting the groups was difficult, as their ideas had diverged greatly. Both presented their ideas, but these were developed from different perspectives (one group chose the dad’s, the other a son’s perspective).
Get rid of routine

[Daniel, on post-its]

The cards were used, but these didn’t give them much grip. The group hesitated to make choices. One person from each group took up the challenge to combine the ideas and divide tasks. In the last 5 minutes they sketched everything very quickly and presented their ideas.

A comment of the Philips designers on the documentary form was, that by using the sketchy comic style, they thought the information was too much filtered, they missed the information that would trigger them. For example more information about the environment and details. They had the feeling they had to rely too much on personal knowledge. This means the pictures were too much simplified, the level of iconicity did not match the needs of the designers. Next time the pictures should be more based on real breakfast table situations, with all stuff standing on the table.
After

8.1 evaluation and afterword
8.2 colofon
some ideas resulting from the sessions
Two hour sessions are short, very short, for processing and working with rich user data, even if a sensitizing beforehand was carried out. Still, the sessions gave a good impression of what worked best, what surprised us, what the design team had expected, and what to strive for next time.

The sensitizing tools had worked well, even though some people in the design teams had not received them in time. From the beginning of the session, the teams were familiar with the persona’s, to whom they referred by name. The ‘boys’, sitting at the table, elicited questions; it might have been better if someone played their part to answer them.

There was some discussion about the brief, which didn’t completely match the sensitizing, and (unlike the regular ways of working) did not have a specific problem. Designers are used (and trained) to identify problems. Therefore, a switch to finding opportunities in a situation where nothing is wrong, requires some adjustment. Also, the storylines might have benefited from a more explicit ‘bump’, rather than a routine flow.

Sensitizing upfront, the house, and the scenario succeeded in giving the session a really rapid kickstart. It was striking that the house was explored intensively, but only for 15 minutes; however, afterwards the teams explained they didn’t have to go back to the model, because the whole overview was well alive in their heads.

The teams studied and discussed all the detail that was provided in the materials, and wanted even more. The cartoon style worked well to start up the scenario’s, but photos were preferred as it was difficult to get an empathic feel for the abstracted figures. The designers wanted even more detail in the scenarios, e.g., “what did they eat?” “What did they say at the table?”. 
RichViz 2006 was an elective project in tools & techniques for user-centered design, focusing on the communication phase of contextmapping.

For more information about the related research, visit the contextmapping pages (http://www.contextmapping.com).

For further flanking research, come visit the ID-StudioLab pages (http://studiolab.io.tudelft.nl).

P.J. Stappers, R. van der Lugt, F. Sleeswijk Visser, & C. van der Lelie.

Philips Design and students of IDE, TU Delft

Corrie van der Lelie

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