User Research Collection of Methods

German UPA, User Research Working Group

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Methodological knowledge is an important part of user research, both in the area of user-centered and agile development processes. So-called qualitative methods, in particular, can be used to gain valuable insights into established practices and expectations of users or to investigate far-reaching questions that can be used, for example, in early development phases to understand the target group and can be included in the requirements analysis. In addition, these methods offer a wide range of possibilities for collecting user feedback for iterative product development so that acceptance hurdles can be lowered as early as possible and the greatest possible value can be created for the end customer.

Qualitative methods, which make up the majority of this collection, provide answers and insights into why and how users experience experiences, what their needs are, what problems arise and how they are dealt with. The basis for this is non-numerical (so-called qualitative) material, which requires an interpretation. This is obtained, for example, from audio and video recordings, but it can also consist of artifacts created by users, such as drawings or diary entries. The results of the qualitative methods thus provide the basis for hypotheses and information for decision-making processes.

Since 2015, a working group within the "User Research" working group of the German UPA has been collecting and documenting proven methods in this field. This collection of methods is intended to support user researchers in the selection and application of suitable methods and provide a quick overview of added value, costs, time and personnel expenditure. It is also intended as an argumentation aid for colleagues, project partners, and customers.

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Method Overview

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Adjective Association

Variations	Adjective Technique
What?	Within the adjective association, participants are asked to collect adjectives to given images.
How?	The object of investigation may be images of competitors' products or other similar products. The participants assign their own or predetermined adjectives. The method can be used as part of an interview or a user workshop.
When? Why? *(expected outcome)*	The method can be used to gather ideas for requirements regarding a concept, visual design, a brand experience or similar.
Effort *(Costs, time, personnel)*	as part of a user workshop; user acquisition
Who? *(No. of users/experts)*	approx. 5–10 participants

Analytics

Variations	Customer Analytics
What?	Analytics are mainly used in software design to generate usage data or click flow and analyze them in order to understand user behavior better or compare software features (A/B Testing).
How?	Based on a known/expected user journey software, design features are defined and interconnected to a meaningful click flow. At the end of a funnel goals describe a conversion action that is used to define positive output.
When? Why? *(expected outcome)*	This method is used for A/B testing to compare software features/design but also to find deviations to the expected user journey.
Effort *(Costs, time, personnel)*	Integration and evaluation; set up of in place Analytics software like Google Analytics or Piwik need to be incorporated in software code. Analysis can be done live and easily provide quick answer once analysis are defined. geringer Aufwand (Software-Tools)
Who? *(No. of users/experts)*	Knowledge in data analysis is needed to set up analytics dashboards, define goals and funnels. Most likely UX Researcher. Samples for quantitative analysis should start with 50 users.

Apprenticing

Variations	One-Day Internship
What?	Apprenticing offers the researcher a close look at the daily tasks of a user. Therefore researcher accompanies a user while executing his daily tasks. The user shows how to perform certain tasks and guides the researcher in executing them. Due to his specialized knowledge the user becomes the role of the "master".
How?	The work context, the individual steps and their sequence can be analyzed from the perspective of the user. Practical challenges become visible. Often errors occur that would no longer happen to a seasoned user.
When? Why? *(expected outcome)*	Apprenticing gives an accurate picture of the work processes and the functionality of the actual system. For example, it can be used when users have important technical know-how but have difficulties describing their activities. The result of the method is a documentation of the processes and the problems of the users, but also of possible solutions.
Effort *(Costs, time, personnel)*	It should be possible to gain a deeper understanding of the activities within a reasonable period of time (e.g. one day).
Who? *(No. of users/experts)*	at least 1 product expert or task expert respectively

Card Sorting

Variations	–
What?	Card sorting is used to let users define hierarchy or visual arrangement of design features like navigational elements in a menu or content items on a page.
How?	Cards are sorted manually by users in an interview set up or virtually with a web tool. As a result you gain the structure or sitemap of the application with a menu and sub-categories. This method also provides explanations from users regardng their choice.
When? Why? *(expected outcome)*	The information architecture of a webpage can be explored in a card sorting task as well as the content arrangement of a product.
Effort *(Costs, time, personnel)*	user acquisition; low effort, cards need to be prepared
Who? *(No. of users/experts*	approx. 10–30 participants
	For first insights 5+ users are sufficient. For more validated results approx. 10–20 users are better.

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Co-Creation

Variations	–
What?	In co-creation, various stakeholders (in-house, end customers, or other external actors) work together with the users to solve a product-relevant issue.
How?	In (sub) groups ideas for a product are worked out, selected and prioritized together. For this purpose various creative methods can be used. Afterwards, the participants present and discuss the results.
When? Why? (expected outcome)	Co-creation can be used to develop or refine ideas but also to further develop existing ideas.
Effort (Costs, time, personnel)	cost: moderation materials, creative environment, first skecthes (depending on the project stage)
Who? (No. of users/experts)	approx. 5–8 persons (different stakeholders)

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Competition Analysis

Variations	Competitor Analysis, Market Analysis, Benchmarking
What?	Based on pre-defined categories selected competitors can be compared within the competition analysis.
How?	Pre-defined categories could be: compliance based on DIN EN ISO 9241, architecture and technical parameters, functionalities, unique features or graphic design.
When? Why? *(expected outcome)*	Competition analysis helps to get first insights or an overview about a topic or field of an application. It also can build the basis for the concept phase.
Effort *(Costs, time, personnel)*	time: research, defining criteria
Who? *(No. of users/experts)*	1–2 experts

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Cultural Probes

Variations	Technology Probes, Diary Study (see Diary Method)
What?	Cultural probes are designed to give the participants of a previously defined target group the opportunity to document their thoughts, feelings and surroundings in various forms. This experimental, explorative approach offers the opportunity to understand the target group emotionally.
How?	There is a wide choice of ways to stimulate the participants through the probes, for example (depending on the topic of the study): disposable cameras that allow subjects to document things based on specific instructions, dictation devices that record sounds from the environment or subjects' thoughts in specific situations, or postcards and city maps that recall memories or document routes. It is important that the probes are provided with an affordance or a specific instruction and request an implicit action with this object. The probes kit is issued for a certain period of time and the examination is usually completed with a feedback interview (qualitative interview), so that the processed material of the probes can be discussed in more detail.
When? Why? *(expected outcome)*	Cultural probes are useful if the application context is difficult to access and there is only little contextual information available. The method provides insights into everyday life and the (work) practices of the target group as well as thoughts and feelings that are difficult to express.
Effort *(Costs, time, personnel)*	user acquisition; creation or purchase of the probes material (e.g. camera), logistics; execution time: several days
Who? *(No. of users/experts)*	min. 10 participants

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Design Thinking

Variations	–
What?	Design Thinking (DT) is a combination of known user research methods ordered by their product development stage: Empathize, Define, Ideate, Prototype and Test.
How?	DT is based on the hypothesis that usability issues can be solved by running a more complete user centered design analysis. The first DT stage Empathize includes qualitative methods like a workshop, focus groups or interview to understand the user as a whole resulting in a more global Persona description. Define describes the in-depth analysis of user needs which fuel the Ideate stage which is first design approach to the found usability issue. Protoype is the more advanced design stage were the design concept is mock-ed up in a low-fi prototype and tested in the next phase (Test). The last two stages can be seen iterative.
When? Why? *(expected outcome)*	DT can be used for known usability issues of an existing product or the creation of a product. It´s more seen as mindset and way of thinking than a defined method.
Effort *(Costs, time, personnel)*	increased effort due to combination of methods, DT also used as design sprints (1w–2w)
Who? *(No. of users/experts)*	interdisciplinary team (including UX experts)

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Diary Study

Variations	–
What?	A diary study helps to document the behaviour, usage, experiences, etc. of the users over a certain period of time with the help of a diary or a diary-related format.
How?	Dairy studies can be conducted offline (with a physical diary) or online (with a mobile application or a web browser solution). In any case the documentation is without moderation: participants document using a template on their own and in regular time frames, they are self-responsible. The documentation can comprise check boxes (multiple choice tasks), free text fields, photo, audio or video.
When? Why? *(expected outcome)*	Diary studies help to get a more detailed understanding of learning processes and regular usage of applications and products during the everyday life. This method is approriated in order to expose routinized and even unconcious usage behaviour. These insights can be used for requirement analysis and/or idea creation. Results summarize in a structured report and show coherences. Quotes of the users illustrate central requirements, wishes, problems etc.
Effort *(Costs, time, personnel)*	user acquisition; time: longer duration for conducting a study in the field; personnel: structure of the diary, analysis
Who? *(No. of users/experts)*	min. 6–10 users

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Eye Tracking

Variations	Mobile Eye Tracking, On-Desk Eye Tracking
What?	With eye tracking the point of gaze and the motion of an eye relative to the head are analyzed in order to under-stand attention and reading behavior of website.
How?	Eye tracker can be used remotely or mobile depending on setting and research objective. Mobile eye tracker are an easy tool for field research and consumer beavior, marketing. Remote eye tracker are mostly used in scientifiy research or standard set ups were participants interact with a website stationary.
When? Why? *(expected outcome)*	Points of gaze are associated with attention and are used to interpret what the participants actually looked at. Motions or saccades are used to interpret reading beahvior or visual scanning. As a result graphical analysis like heat maps or gaze plots areused to identify usability issues and define UX recommendations.
Effort *(Costs, time, personnel)*	increased effort due to technical equipment, analysis software and screening
Who? *(No. of users/experts)*	approx. 15–20 user

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Focus Group

Variations	Group Discussion
What?	A focus group can be used to have diverse users approaching a defined topic. Group discussions enable a dynamic set up where users can build upon different opinions, change perspective and potentially find consens.
How?	The moderator of a focus group is responsible to maintain a discussion atmosphere that focus on relevant content, have all participants included and give room for diverse opinions. Notes can be taken to analyze comments in depth later or visualize comments during the session to drive the discussion. Audio recordings are an easy way to document comments.
When? Why? *(expected outcome)*	Focus groups are best in late product development when idiation and concepts are in place or products are already defined, but can also be used to identify the needs, attitudes or interests of the participants.
Effort *(Costs, time, personnel)*	user acquisition, netto duration 1–2 hrs
Who? *(No. of users/experts)*	approx. 6–8 user (per focus group)

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Interview

Variations	Contextual Inquiry, Pre-Session Interview, Post-Session Interview, Semi-Structured Interview, Open Interview, Narrative Interview
What?	In qualitative user research mostly so-called semi-structured interviews are used. On the basis of a previously developed guide an interviewer reachs out to one or more participants about a specific topic. A contextual inquiry takes place where the user's interaction with the product usually takes place.
How?	As it is very versatile, the interview is one of the most widely used methods in the field of qualitative user research. The interviewer asks open, non-leading questions. The participant mainly talks during the interview whereas the interviewer listens and takes notes. The most frequently asked questions are wh- questions (when, what, why, where). The interview can take place in the actual context of use (contextual inquiry) or in a neutral interview situation. An audio recording during the interview is indispensable to analyze comments in dept later.
When? Why? *(expected outcome)*	Interviews are used to learn about the experiences, needs and problems of a target group as well as to understand reasons for possible problems. If the application area and the target group are little known, open or narrative interviews can be used to learn more about the context of use. The gathered information (e.g. needs, usability problems, suggestions for improvement) is prepared in a report, often including photos (especially in the case of contextual inquiries). The interview results can be transferred into personas or product requirements documents.
Effort *(Costs, time, personnel)*	user acquisition; duration approx. 1h (per interviewee), evaluation of the recorded material
Who? *(No. of users/experts)*	min. 10 participants

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Laddering

Variations	–
What?	Laddering is a specific method of qualitative interviews. By conducting specific requesting relationships between characteristics of a product and the value of use will be identified. Based on that so called "cognitive ladders" will be elaborated.
How?	Using a specific questioning technique or questioning chains ("Why is this important for you?") one will climb upwards the cognitive ladder and reaches indiviual values or the actual value of use that users attach to a product.
When? Why? *(expected outcome)*	This method can be applied when a prototype exists already and the value of use shall be identified. Interviews summarize in a structured report and quotes of the users illustrate central requirements, wishes, problems etc.
Effort *(Costs, time, personnel)*	user acquisition; time: in-depth interviews, audio recorder
Who? *(No. of users/experts)*	approx. 5–50 users

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Mental Model

Variations	–
What?	A mental model visualizes the users' behavior and basic needs of a defined target group. It compares planned and current functionalities of a product.
How?	As a pre-step information from conducted interviews will be grouped and visualized in tasks, actions and motivation. Planned or actual functions of a product can be assigned and possible gaps between funtionality and user needs can be identified.
When? Why? *(expected outcome)*	Mental models help to identify gapy where a product does not fully adress the users' needs or where a product offers funtions who does not adress any user need. Baed on that, the method can be valuable for strategic positioning of a product as well as in the concept phase.
Effort *(Costs, time, personnel)*	–
Who? *(No. of users/experts)*	approx. 5 users (depending on the method used to collect the information)

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Observation

Variations	Shadowing, Participatory Observation, Field Observation, Home Video Tour
What?	Participant observation is a method of field research in the social sciences. It provides insights of the behavior and effects of behavior of individuals and groups. This method is characterized by the personal participation of the researcher in the interactions of the persons who are the object of research.
How?	Observations are often used in combination with other methods, e.g. in combination with interviews or as part of usability testing.
When? Why? *(expected outcome)*	Observations can be carried out at different times in a project, at the beginning to generate basic insights into the behavior and problems of users, or at the end to evaluate and use the product being developed.
Effort *(Costs, time, personnel)*	user acquisition; experts: at least one observer per user
Who? *(No. of users/experts)*	approx. 5 participants per target group

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Persona

Variations	–
What?	A persona is a representative descrition of a person in the adressed target group. The person describes very individual characteristics, the life style, socio-demograpic characteristics, individual needs and expectations.
How?	A persona can be developed based on conducted qualitative research (e.g. interviews). Ideally, it will be created within a team. If more than one persona wil be created, they have to distinguish from each other in a clear way.
When? Why? *(expected outcome)*	As a possible result of a research phase or a qualitative interview, personas are well appropriate and can be used as a basis for the concept phase or the design of a product. Personas presented in a poster help team mebers to design more empathic through the eyes of the users and have their target group in mind.
Effort *(Costs, time, personnel)*	According to the pre-collected data base, for instace interviews and empathy map.
Who? *(No. of users/experts)*	Each persona should be reviewed by two independent experts at least.

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Questionnaire

Variations	Survey, Online Survey
What?	As a qualitative method, the questionnaire is used to evaluate the users' experiences with a product or interactive system. In contrast to the quantitative questionnaire, which is used much more often to collect numerical material, the answers in the qualitative questionnaire reflect the personal perspective and the impressions of the participant.
How?	The questionnaire can be used to gather reliable information on the relevance of planned features or the requirements of a new product. In contrast to the interview, the presence of a moderator during the survey is not required. The questionnaire can be used asynchronously across different time zones and working hours. In addition, it is easier to obtain larger samples.
When? Why? *(expected outcome)*	Questionnaires can be used to collect information about the context of use, the user experience and / or the satisfaction with a product or interactive system.
Effort *(Costs, time, personnel)*	user acquisition; for standardized questionnaires:
Who? *(No. of users/experts)*	20–200 participants, depending on existing benchmark records

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Storytelling

Variations	–
What?	Storytelling serves the transfer of knowledge from the interviewer or note taker to the whole project team. The transfer can be achieved through reproducing the heard or seen insights with the help of post-its.
How?	Storytelling is a vivid presentation for the proeject team from the interviewers' view and can be supplemented with photos, videos etc. if needed. Provided information will be documented on post-its, grouped or categorized.
When? Why? *(expected outcome)*	Storytelling provides a basis for further structuring and the analysis of conducted interviews and is done - after interviews are conducted - for their synthesis. Based on this, team members who are not in charge of research, can be actively involved in the the results and further steps of the analysis.
Effort *(Costs, time, personnel)*	costs: materials (e.g. post-its
Who? *(No. of users/experts)*	interviewer/minute taker + stakeholders from a company

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Task Analysis

Variations	Hierarchical Task Analysis (HTA), similiar to a sitemap (in software)
What?	Task Analysis breaks down a task or goal of a user to analyze and characterize its subtasks as a preparation for a usablity study.
How?	Therefore related mental and manual activities, the sequence and allocation, the frequency and duration of sub tasks as well as other related factors as cothing or locations are described. The sub tasks are visually presented in an hierarchical order to reveal relation and dependency.
When? Why? *(expected outcome)*	In an early product development stage a task analysis provides a more complete picture of a taks or a goal and breaks it down into sub tasks. As a result, a hierarchical network of sub taks in relation to the overall goal can be expected and an abstract overview of dependecies is visually presented.
Effort *(Costs, time, personnel)*	low time effort; user acquisition
Who? *(No. of users/experts)*	1–2 experts

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Usability Evaluation

Variations	Expert Review, Inspection-Bbased Usability Evaluation, Formative Usability Evaluation, User-Centred Usability Evaluation, Inspection
What?	Within the usability evaluation the user interface (UI) of a product (e.g. design concept, prototype or software) will be evaluated based on pre-defined scenarios or principles of usability. One or more experts have a look at the UI with a user's view to identify difficulties in the usage of the product.
How?	Depending on the the type of usability evaluation either educated (for instance validated heuristics of Norman Nielsen) or basic principles of usablity can be used. The more experts are involved the better the quantity and quality of results will be. In principle three to five experts should be involved. The principle of multiple-assessor verification is valid.
When? Why? *(expected outcome)*	This method is suitable if basic knowledge and requirements from the users exist, which help to save time. This evaluation step can be conducted on several stages during the development process, for instance during (formative) or at the end of the product development process (summative, comparing to the A-B testing and earlier versions of the product or in comparison to products from competitors). As a result, a report is provided with the identified (prioritized) usability problems and concrete suggestions for design improvements.
Effort *(Costs, time, personnel)*	time: checklist can be used
Who? *(No. of users/experts)*	approx. 3–5 experts

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Usability Testing

Variations	Remote Usability Testing, Moderated Usability Testing, Not Moderated Usability Testing, Uncontrolled Usability Testing, Validation Study
What?	In a typical usability testing situation users are observed while performing defined tasks. The users' task performance and observations can reveal usability problems as well as positive aspects of the considered product.
How?	Usability tests can be run in a lab environment but also in a more flexible field setting. The mix of quantative (e.g. time on task, error rate) and qualitative research methods or the mix or both can be used. In addition to the observation, interview elements can reveal non seen subjective assessments. Session are often video or audio recorded to analyze them in depth later. For a qualitative analysis 3 sessions already show trends, 5 users give a good overview and with 8–10 users 80% of all usability issues can be found.
When? Why? *(expected outcome)*	Testobject can be a prototype or a existing product. Most common are usability tests for a later stage in the product development but in theory usability tests both summative or formative method can be used to compare between products (A/B Test). As a result a list of critical incidents will be generated and could be supplemented with screenshots and quotes from users. The report can provide implications for design.
Effort *(Costs, time, personnel)*	intermediate (user acquisition, test set up, test bed, session max 1hr, analysis)
Who? *(No. of users/experts)*	min. 5 user, better 8–10 users (depending on the composition of the target group)

User Journey Map

Variations	Experience Flow, Customer Journey Map, Service Blueprint
What?	The user journey map helps to represent a typical process e.g. of a specific task, a daily routine or experiences with a service etc. from the users point of view in a visualized manner and splitted into smaller tasks.
How?	The visualization is based on different data bases including qualitative methods and stakeholder knowledge. This can be run with several stakeholders and based on an existing persona. If not enough information exist based on qualitative investigations, this method can be used to frame first hypothesis and verify them afterwards. Therefore, identified task will be splitted up into single task and tranfered into features, which can be prioritized.
When? Why? *(expected outcome)*	The user journey map offers the possibility to have a holostic view on the user's behaviour. The method is suitable for teams in order to develop a common understanding of usage behaviour.
Effort *(Costs, time, personnel)*	requirement: persona
Who? *(No. of users/experts)*	approx. 6–10 stakeholders

Validation Interview

Variations	–
What?	In a validation interview the user gets acces to a (paper) prototype including all basic functonalities which are explained. Changes and improvements can be discussed, which seem to be relevant from the users point of view. The concept can be evaluated regarding strenghts and weaknesses.
How?	Validation interviews can be conducted as qualitative interviews, either at workplaces, in a defined usage context or at an arbitratry place. Gained results depend on the given details of the tested prototype, for instance if scribbles were used or final designs, single screens or complex processess, or if the prototype is made on paper or if it is clickable for the user.
When? Why? *(expected outcome)*	The validation interview has mainly a formative nature and can be applied at different stages during concept creation and realization phases.
Effort *(Costs, time, personnel)*	time: user acquisition, duration max. 1h, moderator
Who? *(No. of users/experts)*	min. 5–8 users

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Workshop

Variations	Creativity Workshop, Design Workshop
What?	A workshop includes users to solve a defined problem together to get diverse perspectives and uses creative problem solving approaches. A workshop can be used to create a User Journey map or generate design ideas.
How?	A workshop usually takes place a whole day and include diverse participants representing the user base.
When? Why? *(expected outcome)*	Usually workshops are used in an early product development stage, also formmative, when only little knowledge about the user or a system is available. A deeper understanding of users can be expected but less vertical under-standing of usage can be gained.
Effort *(Costs, time, personnel)*	user acquisition; mostly day workshops are planned since the preparation for materials and recruting and teh time needed to get an engaging workshop atmosphere are comparably high.
Who? *(No. of users/experts)*	diverse user group 3–7 user

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Since its foundation in 2013, the **working group "User Research" of the German UPA** offers all interested parties from practice and science a joint forum for the exchange of ideas and interdisciplinary cooperation around the topics of user research and user-centered product development.

A central component of user-centered product development is the collection and documentation of user requirements and the evaluation of the resulting product ideas and technical implementations. Nevertheless, this component is not always taken into account in user experience projects and in product development. Therefore, the aim of the working group is to increase the visibility of User Research within the User Experience department. In addition, the working group encourages an exchange of applied research methods as well as new methodological approaches.