

The Methods Lab | User Research for Design

Edited by Hugh Aldersey-Williams,
John Bound and Roger Coleman

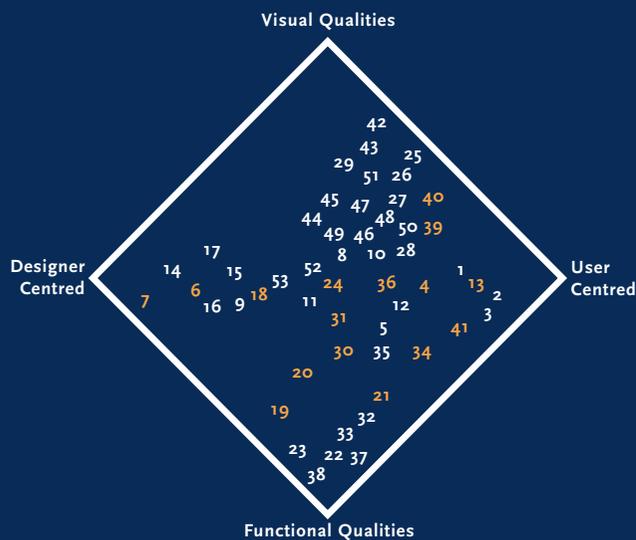
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The Methods Lab | User Research for Design

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Methods Map |



Methods described in this booklet are marked in orange.

The Methods Map

This map positions each Method listed in the Finder overleaf at a point along two axes that reflect designers' concerns.

The horizontal axis represents the external reference a Method requires. At the left end of the scale, "Designer centred" projects require no such reference. The right end, "User centred" projects, tends towards an ideal in which each user's needs would be individually met.

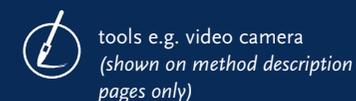
The vertical axis depicts design projects concerned with purely visual qualities at the top, ranging to those where functional qualities are predominant at the bottom.

The map is a quick way to identify candidate Methods for a given aspect of a project.

The Methods Icons

Output |
consumer data etc.

Input |



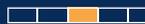
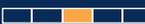
The Selection Criteria

These icons are designed to shortcut the search for the right Method by giving an instant view both of the kind of output to be expected from the Method and the kind of inputs it requires.

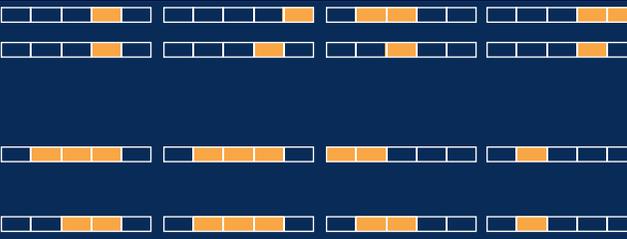
The outputs indicate each method's main benefit to the design team.

The inputs are level of expertise, time taken, staffing and costs. The four bars let you compare the resources needed for each method and show a range, marked orange, from minimum (left) to maximum (right) requirement for expertise, time etc. The tool icon is followed by a list of devices and technologies likely to be required. (The ranges and the lists have been established consensually by averaging the ranges and lists of practising designers and researchers).

Methods Lab Finder |

| TYPOLGY | PARTICULAR METHOD | METHOD NUMBER | OUTPUT | INPUT Resources needed |
|---|---|---|---|--|
| <i>Methods are grouped in Typologies for rapid navigation</i> | <i>The Methods Lab is a work in progress; further entries will be added in future</i> | <i>These appear in the Methods Map for comparison</i> | <i>These give the main benefit to the design team</i> |  <low> >high< />  Time <low> >high< />  Staff <low> >high< />  Costs <low> >high< /> |
| FUTURE CREATOR | live the future | 1 | | |
| | popular futurism/science fiction | 2 | | |
| | future concept prototypes | 3 | | |
| IMAGINE AND ACT OUT | scenarios | 4 | insights into future product usage |    |
| | long-range scenarios | 5 | | |
| | role play | 6 | enhanced sensitivity to users |    |
| | explore, represent, share | 7 | strategic focus |    |
| PROFESSIONAL TRACKERS | lifestyle studies | 8 | | |
| | professional futurists | 9 | | |
| | trend tracking | 10 | | |
| | expert interviews | 11 | | |
| | questionnaires/surveys | 12 | | |
| | opinion polls | 13 | large population statistics |    |
| DIRECT DESIGN EXPERIENCE | alpha testing | 14 | | |
| | user as developer | 15 | | |
| | skunkworks/internal champions | 16 | | |
| | design studio transplants | 17 | | |
| | immersive experience | 18 | first-hand knowledge |    |
| CO-DESIGN | lead user | 19 | insights into consumer responses |    |
| | rapid prototyping | 20 | 3D form for user reaction |    |
| | usability testing | 21 | structured feedback |    |
| | beta testing | 22 | | |
| | co-design | 23 | | |
| | rapid ethnography | 24 | quick hands-on information |    |
| | CO-RESEARCH | visual anthropology | 25 | |
| think aloud protocols | | 26 | | |
| train novice observers | | 27 | | |
| enable user/visual scans | | 28 | | |
| projective/visual research methods | | 29 | | |

Methods Lab Finder |

| T TYPOLOGY <i>Methods are grouped in Typologies for rapid navigation</i> | P PARTICULAR METHOD <i>The Methods Lab is a work in progress; further entries will be added in future</i> | M METHOD NUMBER <i>These appear in the Methods Map for comparison</i> | O OUTPUT <i>These give the main benefit to the design team</i> | I INPUT Resources needed  <low high> <low high> <low high> <low high> |
|---|--|---|--|---|
| EXPERT OBSERVATION | longitudinal analysis video ethnography task analysis time and motion studies shadowing mentoring direct observation physical trails physiological testing | 30 31 32 33 34 35 36 37 38 | data on physical & mental change interdisciplinary consensus deep user understanding behavioural data |  |
| STIMULUS AND INTERVIEW | individual interviews focus groups conjoint techniques preference testing non-directive testing | 39 40 41 42 43 | in-depth subjective understanding tested ideas & opinions comparative product preferences |  |
| CURRENT CUSTOMER INFORMATION | customer return cards on-line information sales figures public information sources in-built tracking/intelligence real-time information test markets/probes/pilot studies expeditionary marketing customer visits/parties/events promotional retail | 44 45 | | |
| Note: For explanation of the typologies please refer to website www.presenceweb.org (go to Methods Lab in the Discussion Forum). | Note: Methods described in this booklet are shown in bold. Further descriptions will be added in future. | | | |

The creation of successful designs that suit the greatest number of users is an ever more challenging task. In recent years, the process has benefited from some convergence among the disciplines of design and its related specialisms. At the same time, technologies have evolved that enable user needs to be examined more thoroughly and allow a greater range and number of potential product concepts to be tried before the final decision is taken.

These trends in turn suggest the need for a resource where designers and user researchers may learn about the latest methods and gain an informed basis for comparison and selection of methods in real project circumstances.

This is the background to this Methods Lab Booklet. The booklet is very much a work in progress, as is clear from

creating products that are more natural to use despite—or rather because of—their high technology content.

The Methods Lab Booklet's other context is the Presence Project. Presence is one of thirteen projects under the i³ (Intelligent Information Interfaces) programme of ESPRIT. It brings together designers and researchers from across the European Union who share an interest in developing a better understanding of the needs and aspirations of older people. Participating institutions in the Presence Project include Domus Academy, the Netherlands Design Institute and the Royal College of Art.

An important feature of the Presence Project is the Presence Forum which serves as an online and offline meeting place. Papers, news and interactive discussion are posted online

the Methods Lab Finder. This shows how it is hoped to build from this small start towards the Methods Lab Book, a full-scale directory of contemporary methods—the bible of user research in design.

The Methods Lab Booklet has dual origins. The initial list of user research methods we have adopted was assembled by Ewan Duncan, currently working with the Dublin Group in Chicago, as an internal research project commissioned by the international design consultancy, IDEO, in 1994. IDEO is known as one of the leading firms in bringing in new disciplines, new techniques and new technologies to design, especially of complex electronic products. The consultancy pioneered the new discipline of “interaction design”, uniting product and graphic designers, psychologists, ergonomists, software engineers and others in

as well as useful diary items, web site links and bibliographic references. There are also reports of more than half a dozen offline “Tea Parties” held during the course of the Presence Project. The online version of the Methods Lab is also here. Go to the Discussion Forum part of the Presence web site on www.presenceweb.org to see all these items.

The objective of the Methods Lab, in published offline form and in a continuing form online, is to build the definitive resource of user research methods in design. The methods it describes range from near-market to the highly conceptual, from the conventional to the experimental, from the quick and easy to the detailed and exhaustive. Above all, the methods are presented so as to bridge the gap between the academic and the practical. They are grouped for convenience in a number of Typologies in the Methods Lab Finder.

These are not easy targets to attain or ranges to encompass. To make it work, we have chosen to ask people who are globally recognized as authorities in each method to write about that method. Cruelly, we then required that these experts write with maximum concision—each method is given just 200 words. In this way, we hope to obtain method descriptions that are definitive and authoritative yet also accessible and useful to all.

Who is the Methods Lab for? Two hundred words will clearly say nothing new to academic experts in a given method. Instead, the Methods Lab is written primarily for design students, students of user research sciences, and designers and researchers in their first few years of professional practice. It is intended to be of a practical bent, helping designers and others weigh and choose methods appropriately.

that a number of complementary methods are often used in order to construct the most complete picture of the user. Finally, the range of methods is graphically demonstrated in the Methods Map which provides a ready-reckoner for designers seeking methods of a particular kind.

In the present Methods Lab Booklet, we have included an important section on more experimental methods of researching user needs. This gives an opportunity to describe some of the methods adopted during the Presence Project as well as others obtained from a round-table discussion at the Presence Tea Party that took place at the i³ Spring Days conference in Sitges in March 1999. Although experimental, these methods are presented in much the same way as the more conventional methods in the main part of the booklet; this seems appropriate since user

It is important that the Methods Lab itself sets an example in usability. This is one reason for our insisting upon brevity from our contributors so that you can read about each method on a single screen or in a single spread. However, we support the short basic descriptions of each method with a number of easily navigable additional features, which in keeping with the Presence philosophy have been developed through regular meetings with expert groups of designers and researchers. There are the main (qualitative and/or quantitative) outputs likely to be produced by each method and icons that give an instant measure of important practical matters such as the time and cost of using the method. (These are described in more detail elsewhere.) There are directions to more detailed information: to PDFs online; to related web sites; and to published reference works. The methods are cross-referenced, reflecting the fact

research is such a rapidly evolving area where today's crazy probe can become tomorrow's standard practice.

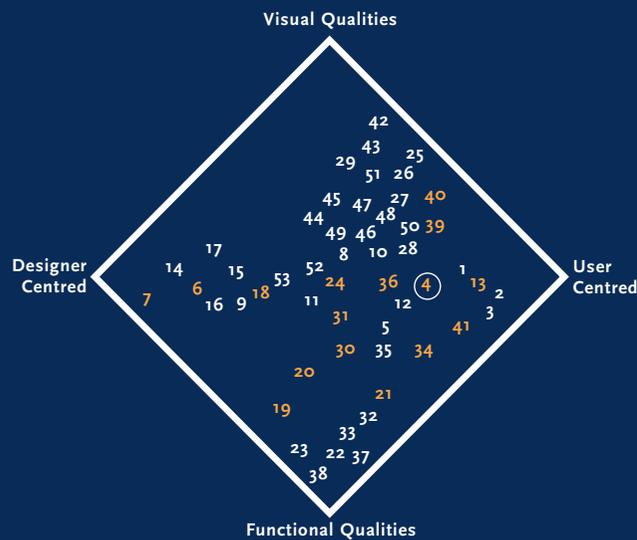
In all, the Methods Lab Booklet lists sixteen “proper” methods with a similar number of experimental methods. It is hoped that the eventual resource—Book rather than Booklet—will list some fifty methods, each description written by an international authority. Each method may be illustrated by one or more case studies. This is a continuing project, and we would welcome your help in building this potentially invaluable resource. Turn to the final pages to see how you can help us. Meanwhile, we hope you find this Booklet enjoyable and useful.

**Hugh Aldersey-Williams, John Bound
and Roger Coleman** 25 June 1999

The Methods Lab | **User Research Methods**

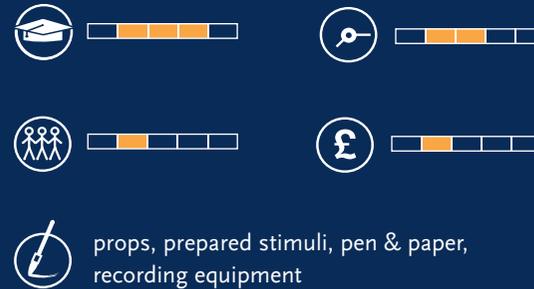
| | |
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| Scenarios, Alison Black | <i>page 8</i> |
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| Opinion polls, Robert Worcester | 11 |
| Immersive experience, Patricia Moore | 12 |
| Lead user, Susan Holder | 13 |
| Rapid prototyping, Ed Matthews | 14 |
| Usability testing, David Yelding | 15 |
| Rapid ethnography, Donald Norman | 16 |
| Longitudinal analysis, James Fozard | 17 |
| Video ethnography, Françoise Brun-Cottan | 18 |
| Shadowing, Siamack Salari | 19 |
| Direct observation, Neville Stanton | 20 |
| Individual interviews, Wendy Gordon | 21 |
| Focus groups, Hannele Hypponen | 22 |
| Conjoint techniques, Miriam Comber | 23 |

Scenarios | 4



Output | insights into future product usage

Input |



props, prepared stimuli, pen & paper, recording equipment

Used in conjunction with
Role play
Future concept prototypes
User as developer

Further reading

Verplank, B., Fulton, J., Black, A., Moggridge, B., "Observation and Invention-Use of Scenarios in Interaction Design", Tutorial notes for InterCHI'93 (Amsterdam, 1993).

Links

www.nada.kth.se/cid/projekt/smart/ideo/Smideo.htm

Constructing stories can help design teams propose new design concepts from an understanding of people's present experience

Scenarios are sketch stories that put the people who will use new products and services in future contexts, surrounding them with the trappings of their future lives. New products and services create new behaviours. Building scenarios allows experimentation with those behaviours, testing them from a human, experiential point of view.

Typically, scenarios are founded on observation. The real people observed provide the basis for imaginary scenario

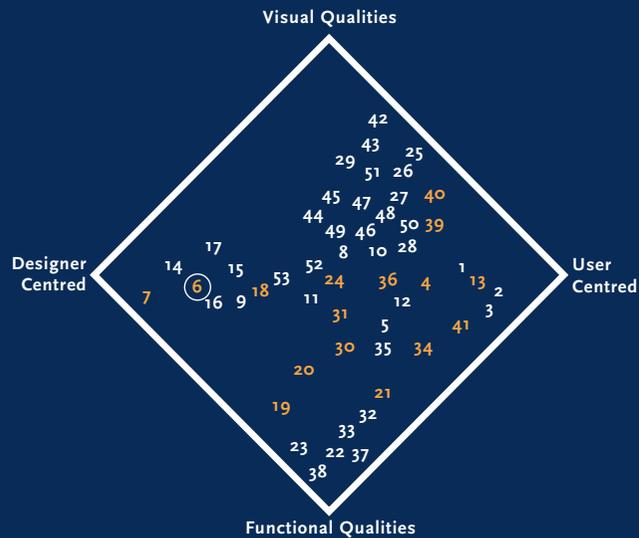
characters. Because most products and services have different kinds of users, each with their own concerns, three or four different scenarios constructed around different characters are needed to cover the scope of product or service interactions.

Scenarios promote broad thinking. They bind the personal, social and technological aspects of product and service use. They help communicate design concepts and user issues among teams of professionals from different disciplines. They help prevent those professionals making assumptions based on their own, limited experience.

Scenarios may be presented as texts, storyboards, videos, plays etc. Individual practitioners find that particular presentation techniques suit their working methods. Beyond the design team, scenarios can be used to communicate concepts either within an organisation or for evaluation with potential users. Here again, presentation techniques should be selected to optimize communication.

Alison Black | IDEO | London, UK

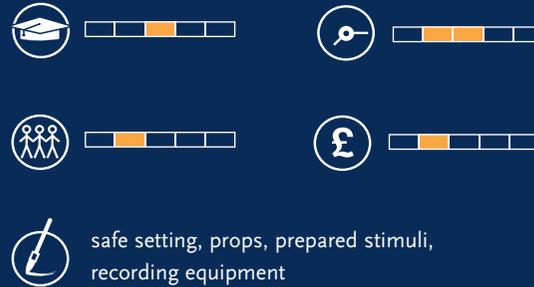
Role play | 6



Output | enhanced sensitivity to users

Used in conjunction with
Scenarios
Direct observation
Future concept prototypes

Input |



Role play can help designers imagine new design approaches and communicate design intentions

We all act out everyday life performances—as workers, leaders, presenters, teachers, etc. We simply forget that we once struggled with how to perform these roles. Through minimal, but careful, drama coaching—and the provision of a reasonably supportive “safe” environment to play in—even stage-shy technology designers can effectively “remember” how to role-play and tap into these latent abilities as a design project activity.

Simple “parlour game” protocols provide a playful way to create an environment where credentials do not matter and where designers can begin to explore role-playing design techniques. Re-interpretation of previously observed characters or scenarios provides a grounded platform to move in an enacting way from what “is” to what “might be”. Simple props and models can be employed to provide focus on particular design directions.

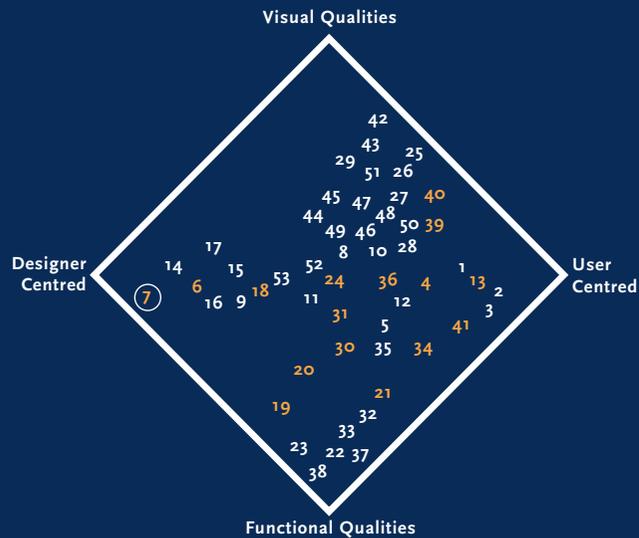
Role play builds on principles of empathic design techniques, aiming to place the design activity within re-enacted user scenarios for the environments and artefacts being designed. These techniques were developed as a way to

grapple with the conceptual design stage for technology products in highly active usage scenarios.

Performance may thus serve as a tool for both team-based ideation (“bodystorming”) and communication to users and/or clients (“informances” or informative performances). Performances may become quite elaborate, involving full-size play-stages and many actors.

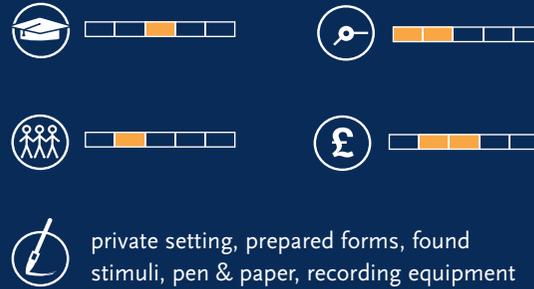
Colin Burns | IDEO | London, UK

Explore, represent, share | 7



Output | strategic focus

Input |



Used in conjunction with Skunkworks/internal champions
Task analysis
Co-design

Further reading

J. Christopher Jones, Design Methods (New York: Van Nostrand Reinhold, 1992).
Koberg, D. and Bagnell, J., The Universal Traveller (Los Angeles: Kaufmann, 1981).

Links

www3.open.ac.uk/courses/cframedes/B822.htm

Exploring ideas, representing them and sharing them in a facilitated group setting can increase awareness and release creativity

This is a process for designing your own user research methods—a kind of meta-method. Designers dislike methods that restrict options, are too specific or swamp them rather than inform. They want to remain open, confident and free. But time is money and deadlines must be met, and this can be limiting. Flaws in off-the-shelf research methods, user contact or organisation can also hamper progress, wasting creative potential and resources. ERS is a group facilitation process which uses written

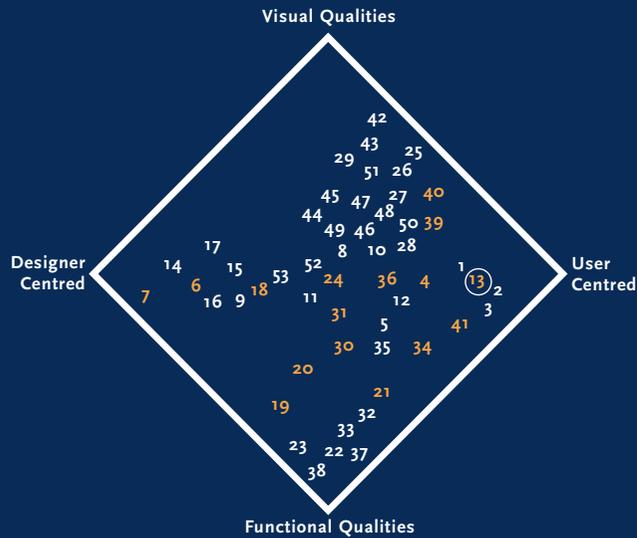
prompts and a structured process to encourage participants to explore ideas, represent them in words, drawings and objects and share their meanings. The facilitator concentrates on delivering the prompts to enable the participants to create their own solutions.

The prompts encourage participants to articulate their thoughts on paper. Sample prompts might be: “Something that my users wouldn't like is ...”; “My ideal method could look like this ...”; “This wouldn't work because ...”. Other participants interpret your output. Their doing so in turn causes you to expand your ideas, both widening and informing your options.

Whatever problem a design team faces, whether cultural, strategic or simply to do with indecision, ERS allows the team to craft its own method that is local, flexible, effective and thoroughly documented. Ideas are explored and distilled, liberating new awareness and energy for innovation.

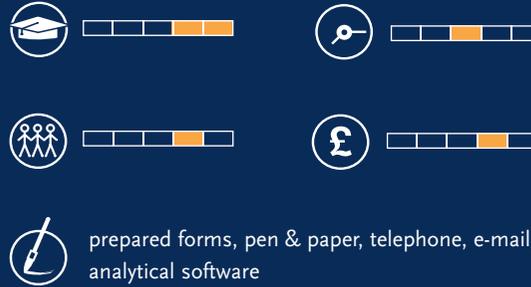
Denis O'Brien | Ringi | London, UK

Opinion polls | 13



Output | large population statistics

Input |



Used in conjunction with
Focus groups
Individual interviews
Expert observation

Further reading
Worcester and Downham, eds.,
Consumer Market Research
Handbook (McGraw-Hill).
British Public Opinion: The
History and Methodology
of Public Opinion Polling
(Blackwell).

Representative samples of people are asked a set of questions in order to gain a reliable measure of the views of an entire population

Opinion polling marries the art of asking questions and the science of sampling the people whose views you want to represent. All you have to do is ask the right sample the right questions and add up the figures correctly—and ensure that the results are reported accurately.

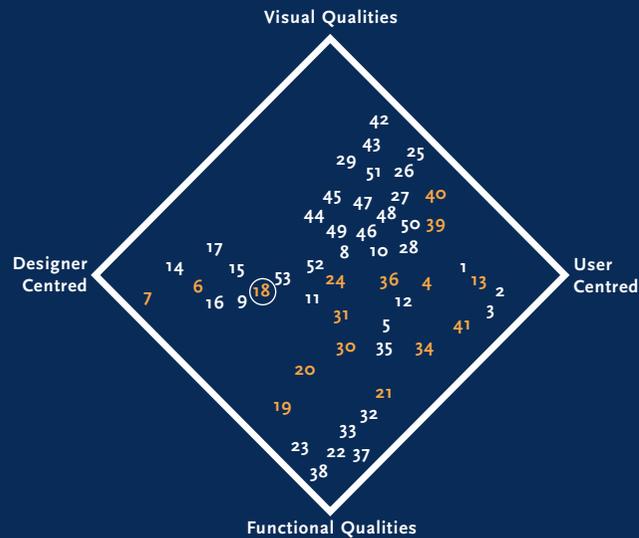
Recently, there were reports in newspapers predicated on the findings of a phone-in poll (I call them “voodoo polls”) which showed that 84 per cent of the British public were

opposed to British bombing in former Yugoslavia. The same morning, three properly conducted opinion polls, using representative samples, found the British public approved of British involvement by a ratio of two to one.

The “voodoo poll” was from a self-selected, and therefore unrepresentative, group of listeners. To be representative, each person in the group to be sampled should have an equal probability of selection. Questions should be easily understood, capable of being answered, unbiased, and not “lead” the respondent.

Opinion polls are the tip of the market research iceberg, being only one per cent of the surveys done. Before-and-after quantitative research, qualitative techniques such as focus groups, observation, depth interviews etc. can be used to put flesh on the statistical bones.

Robert Worcester | Director, MORI | London, UK



Output | first-hand knowledge

Input |



Used in conjunction with

- Role play
- Direct observation
- Longitudinal analysis

Further reading

Moore, P. and Conn, C. P., *Disguised: A True Story* (Waco: World Books, 1985).
 Userfit: A Practical Handbook on User Centred Design for Rehabilitation and Assistive Technology (TIDE USER Consortium, 1996).

Researchers may “immerse” themselves in the user experience in order to gain deeper insights into actual life circumstances

In order to experience difficulties or problems faced by certain user groups, developers can actually role play those users. Disguises and disabling devices allow them to experience both the physical and mental aspects of the user situation.

This can tell designers about the actual circumstances of consumers’ lifestyles, employment conditions, or their utilisation of environments or products, providing deep and

direct information not obtainable by observational research. Also known as empathic research or role-playing, this form of data gathering allows the designer to understand not just the physical use of products and spaces, but how the individual feels emotionally and socially in situations and tasks. This form of first-person experience is especially valuable where attitude and quality of life are considered critical to successful design.

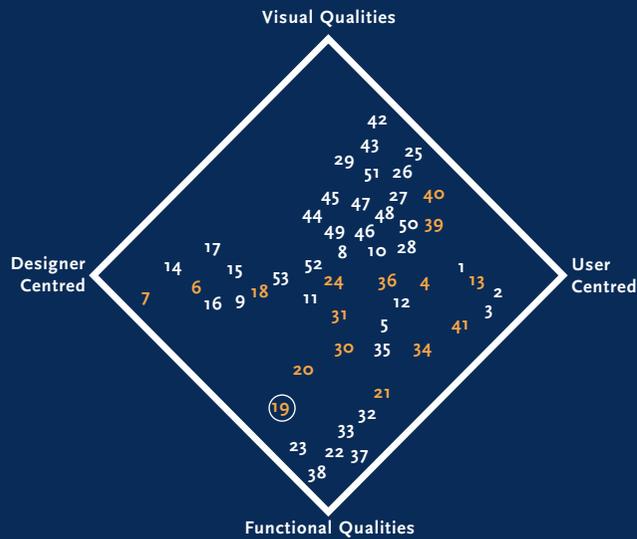
In the workplace, for example, an employee might perform adequately, but lack enthusiasm or, in extreme cases, become unwell because of unidentified shortcomings in the environmental design. In the home, people can be

at risk from poor design which may make daily tasks needlessly difficult and ultimately impair their independence.

Better solutions in these situations are often ones where the designers have physically placed themselves in the user’s position and have thus been able to identify and avoid these shortcomings.

Patricia Moore | Guynes Design | Phoenix, Arizona, USA

Lead user | 19



Output | insights into consumer responses

Input |

| | | | |
|--|---|--|--|
| | | | |
| | | | |
| | pen & paper, telephone, e-mail, recording equipment | | |

Used in conjunction with
Focus groups
Individual interviews
Scenarios

Further reading
Cerha, J., "Inventing Products to Fit the Future Market", ESOMAR Seminar, "Research for New Product Development" (Neu Isenberg, Germany, 4-7 November 1970).
Holder, S. and Young, D., "A Journey Beyond Imagination", ESOMAR Seminar, "Successful Product Engineering (Berlin,

Germany, 22-24 February 1995).
Holder, S. and Young, D., "Researching the Future in the Present—Putting the Consumer First", 50th ESOMAR Congress (Edinburgh, Scotland, 7-10 September 1997).
Peters, T., "Translating Listening into a Strategic Advantage", pp 83-85 in Liberation Management (New York: Random House, 1992).

Consumers with a passionate interest in a given product single themselves out and may be used to explore future developments of the product

The inventor of the theory of "future featuring", Janko Cerha, put it best: "For any product field there is a group of consumers who are passionately interested in it, actively seek all they can to read about it and whose attitudes and behaviour consequently change in advance of the general trend." These people are lead users or "future featureers".

Future featuring makes use of three key philosophies and related methodologies. The first of these is the belief that

"the future exists in the present". This future may be found by talking to consumers with an active, passionate interest in a particular market or product field. They are dissatisfied with the current offer and are searching for something better. Thus, they may be the first to identify previously unarticulated needs or unserved consumer populations.

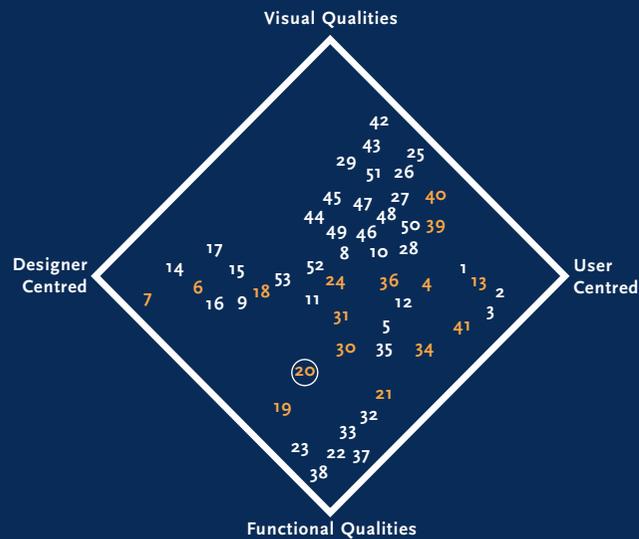
Second, these people may be identified and recruited through an open invitation to a large audience. In this way, those who respond select themselves, and their interest is the key criterion both for them to participate and for you to recruit them.

Third and last, in the project itself, lead users set their own agenda based upon their own views and experiences as consumers in the real world.

Future featureers are a vital resource for many projects. They may join the team as consumer consultants and advisors on the development of the creative brief and its execution—they are the R&D department living in the real world.

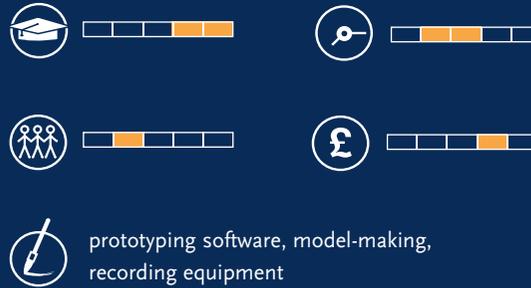
Susan Holder | Future Featuring | London, UK

Rapid prototyping | 20



Output | 3D form for user reaction

Input |



Used in conjunction with
Alpha testing
User as developer
Future concept prototypes

Further reading
Time Compression
Technologies (London: Rapid
News Publications).

Links
www.timecompression.com

This is a way of making realistic models of product concepts quickly from CAD data that can be evaluated by clients and users

There are a number of rapid prototyping processes commercially available, but all lead to reasonably accurate solid models of product concepts initially designed on 3D CAD systems. Although limited in some respects, these models provide a convincing and tangible idea of what a final product could look and feel like.

Models can be used for limited physical testing and to gain users' impressions. Because it takes just 10-15 hours to

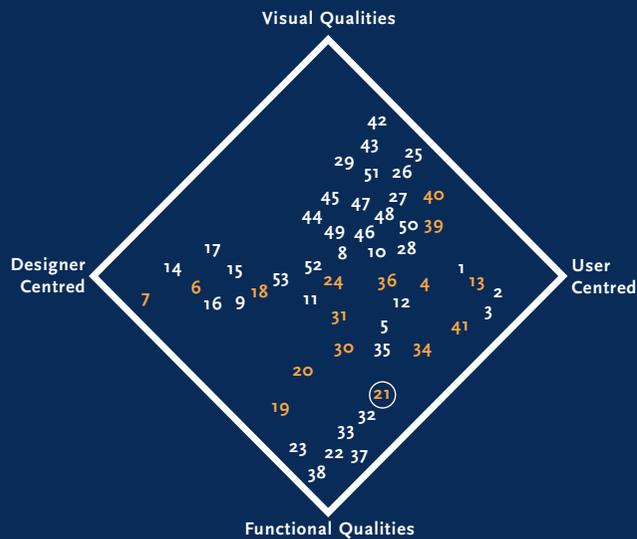
make one, it is often feasible for designers to make models of a number of alternative concepts. They can also make a sequence of models, refining them progressively based on user feedback from the previous model to reach an optimum design. Models can also be used to make silicone rubber moulds from which it is possible to cast additional models in materials such as polyurethane or epoxy resins.

The ability to make many and varied models makes it profitable to involve users more closely and earlier during product development: the users give more useful reactions to a physical representation of a potential product than to

designers' questions or sketches. It may, however, be necessary to take steps to counter people's tendency to regard a solid object, far more than a sketch on paper, as something they cannot change. With rapid prototyping, they really are part of the shaping process.

Ed Matthews | Pearson Matthews | London, UK

Usability testing | 21



Output | structured feedback

Used in conjunction with
 Physiological testing
 Physical trials
 Individual interview

Input |

| | | | |
|--|--|--|--|
| | | | |
| | | | |
| | suitable setting, prepared forms, instrumentation, customised software, pen & paper, recording equipment | | |

Testing usability involves observing and questioning sample users as they use past or planned products in typical daily situations

Researching and testing usability needs to be an integral part of product development, not added on as an after-thought. Start early. Find out what's been done before, watch people use similar products, talk to them. Begin to list key factors – acceptability, adjustability, ease of use, dimensional compatibility, comfort.

After this, tests should consider the person, the product, and the environment where it will be used. Ask the right

people: either recruit a cross-section, or consider those who have the most difficulty. Consider what might be relevant – age, dexterity, strength, vision, hearing, mobility, one-handed use, cognition, etc.

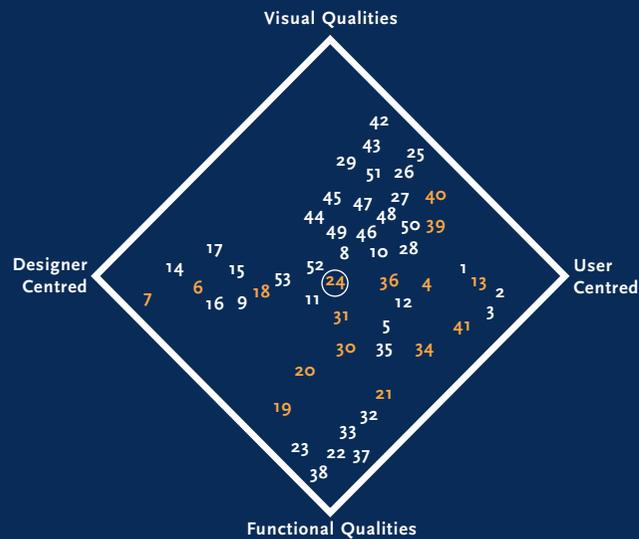
Then, ask the right questions. Base tests on real life tasks such as assembling, cleaning, storing ... Keep questionnaires short and simple. Collect reactions immediately after each task, and ask the reason for any difficulty, likes or dislikes.

Include questions about the look and feel of the product. Observe the test yourself. Consult experts – occupational

therapists and ergonomists have experience and specialist insight. Ensure that all test procedures are safe, but also check on the safety of the product in normal use and for foreseeable “misuse”.

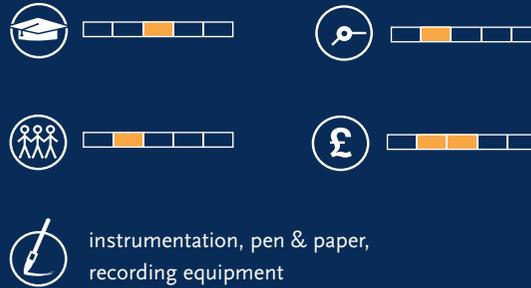
David Yelding | Director, RICA | London, UK

Rapid ethnography | 24



Output | quick, hands-on information

Input |



Used in conjunction with
Visual anthropology
Video ethnography
Direct observation

Further reading
Norman, D.A., *The Invisible Computer* (Cambridge, MA: MIT Press, 1998).
Nielsen, J., *Usability Engineering* (New York: John Wiley & Sons, 1994).

Links
www.jnd.org
www.nngroup.com

Designers can adapt a range of research methods to commercial needs by acceptably trading scientific accuracy for speed of results

Designers need answers in hours, not months. This means they must adapt observational and other methods often developed in an academic context to be practical for them. The trade-off is to gain speed but lose precision.

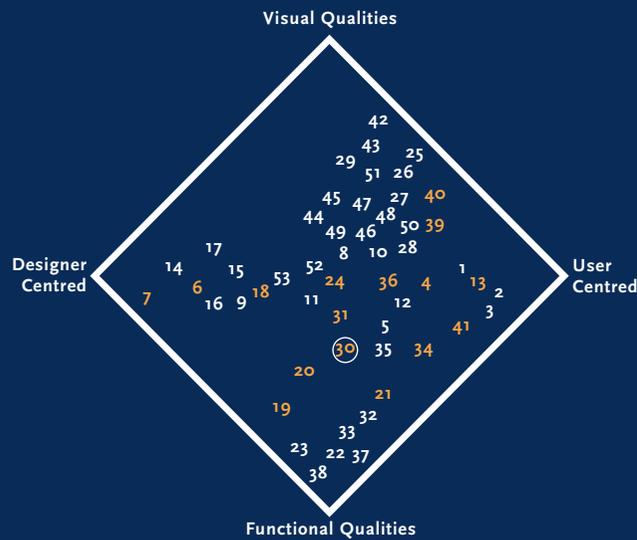
Methodologies in cognitive science, psychology, anthropology and sociology may be approximated so they can be used with speed by designers who do not need scientific precision. Answers can be approximate. They don't have to

be precise. The benefit of many fast answers far outweighs any deficits. And some data is always preferable to no data at all, which is the common choice when time is limited. By illustration: psychological tests require careful set-up to eliminate bias and errors when small effects are being examined. However, human-centred product development concerns mainly large changes, and can make use of simplified experimental methods. Even research such as ethnographic studies which are by their nature lengthy may be streamlined. The basic principles of the technique are retained, while new methods of estimation speed up the process.

This rapid ethnography is critical to the invention of new classes of products and can accelerate the evolution of young, hard-to-use technologies into mature, well understood ones.

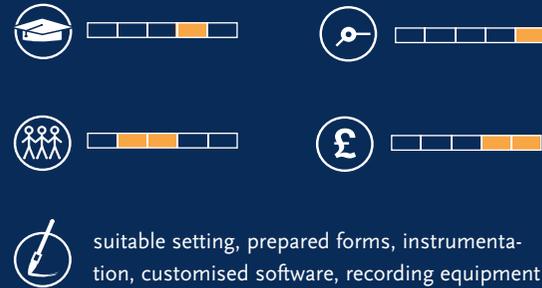
Donald A. Norman | Nielsen Norman Group | Atherton, California, USA

Longitudinal analysis | 30



Output | data on physical & mental change

Input |



Used in conjunction with
Physiological testing
Individual interviews

Links
geron.psu.edu
www.tue.nl/gerontechnologie

Further reading

Deeg, D., Experiences from Longitudinal Studies of Aging (Amsterdam: NIG Press, 1988).

Fozard, J.L., "Contributions of Longitudinal Studies to Epidemiology and Disease Prevention: an Overview", (Australasian Journal on Ageing 17 1 (1998) 22-24).

Repeated assessments of the same people can describe physical and mental development in childhood, adolescence and ageing

Longitudinal, or serial, measurements of the same individuals over time are used to describe developments during maturation and changes during ageing. Longitudinal studies are usually preferred to studies where people of different ages are measured just once. This is because the experience of development or ageing may not be the same in different periods of time. For example, the maturation of children in an environment that contains computers and television is different from their maturation before these items were

common. Longitudinal analysis provides information about body stature and composition, changes in physical and mental functioning, sensory and motor capabilities.

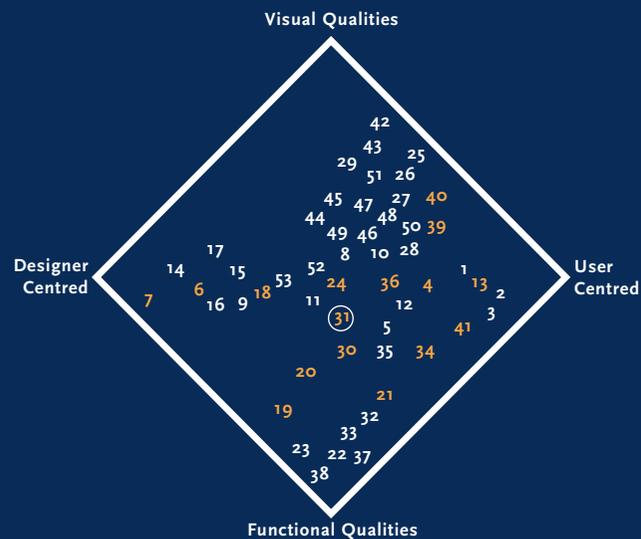
A longitudinal study may last months or decades depending on who and what is being studied. The number of people is variable: allowing for people to drop out, the initial population of each age group, typically about 30 people, should be judged from the number of people ideally in the study by its end.

Procedures used run the gamut of available techniques from physical measurements to videotaped interviews.

Since the goal is to measure change, the key requirement is high reliability of the question or measure. Statistical and expert support is necessary in planning the study and analysing the data.

James L. Fozard | Director, Geriatric Research | Morton Plant Mease Health Care | Clearwater, Florida, USA

Video ethnography | 31



Output | interdisciplinary consensus

Input |



Used in conjunction with

- Direct observation
- Task analysis
- Co-designing

Further reading

Brun-Cottan, F. and Wall, P., "Using Video to Re-Present the User", *Communications of the ACM*, 38 5 (1995) 61-71.
 Suchman, L. and Trigg, R., "Understanding Practice: Video as a Medium for Reflection and Design", in J. Greenbaum and M. Kyng, eds., *Design at Work: Cooperative Design of Computer Systems* (Hillsdale, NJ: Lawrence

Erlbaum Associates, 1991) 65-89.
 Schegloff, E., "On Talk and Its Institutional Occasions", in P. Drew and J. Heritage, eds., *Talk at Work* (Cambridge: Cambridge University Press, 1993) 101-134.

Links

www.acm.org/pubs/articles/journals/cacm/1995-38-5/p61-brun-cottan/p61-brun-cottan.pdf

A visual record of users' actions provides a basis of consensus from which the disciplines viewing it can work together for new designs

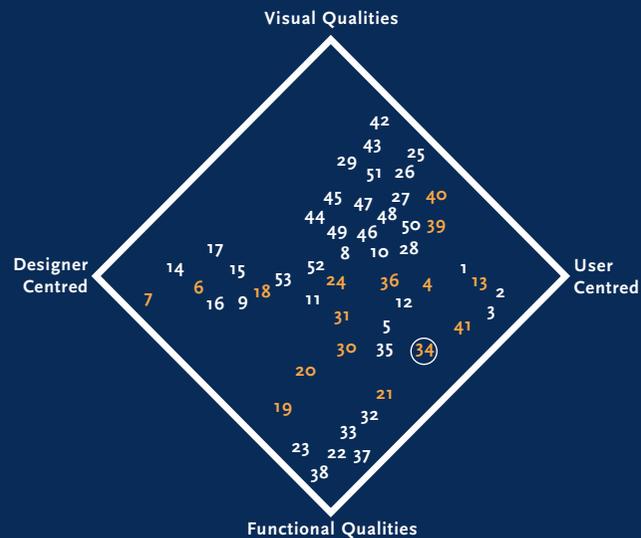
Video ethnography provides a way of studying in detail the dynamic interplay of people's interactions with one another. Their shared understandings of their material and organisational environment can yield critical insights which can then inform the co-design of new technologies for the workplace. Videotaping events as they happen "in context" allows methods of addressing, categorising and resolving those work-related activities most relevant to the "users" to be captured and demonstrated.

Video recordings permit repeated viewings of activities by both the user participants themselves and by research and development communities not able to attend actual field sites. Having members of different communities (software and hardware engineers, interface designers, marketers, as well as user community workers and senior management) view the recordings opens the dialogue among holders of different perspectives and sensibilities regarding what is occurring and its import. Co-viewing of these records by these communities provides a stable referent base from which users and builders can construct models and prototypes of new technologies and processes.

While it doesn't deny the applicability of understanding gathered from other studies and in other contexts, this method is distinct in that it can provide a warrant for claiming that analysts' descriptions are grounded in the participants' own relevant categories and criteria.

Françoise Brun-Cottan | Xerox PARC/Xerox Research and Technology | Rochester, New York, USA

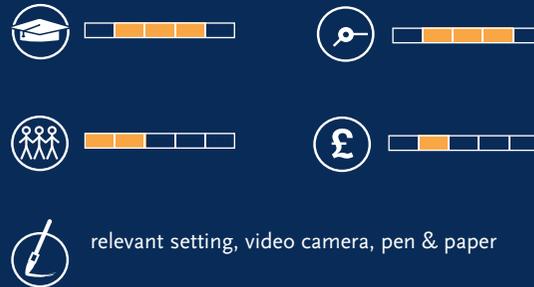
Shadowing | 34



Output | deep user understanding

Used in conjunction with
Video ethnography
Direct observation

Input |



Shadowing users over days gives deep insights that stem from involvement in activities rather than passive observation

There are no real rules of engagement for sustained user observation or “shadowing”. I have found myself helping with the gardening, carrying shopping in from the car, even divulging details of my credit rating to people I have known only a few days.

But there is one “rule” which can serve as a quality control device: don’t turn subjects into “respondents” by behaving formally or asking structured questions. Remember, the key

output is the capture of naturalistic observations and events.

The way to achieve naturalism (never 100 per cent) is to spend days rather than hours immersed in other lives. This way, we can discover things we didn’t even know we didn’t know about people’s lives! It uncovers the reality of what people really do compared to their perceptions; it captures spontaneous (rather than prompted) decisions and behaviour leading to an understanding of what people do and nearly do; it captures the way people personalise products in use.

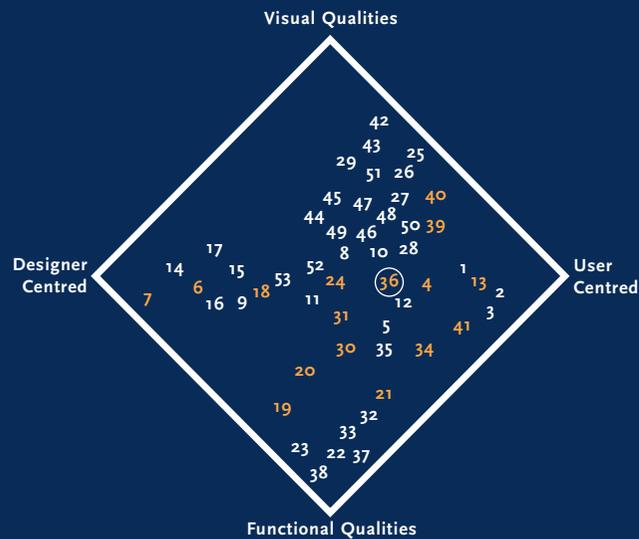
These are some of the immediate benefits. With clear

hypotheses to investigate, and the time to contemplate what one sees, it is possible to obtain insights so deep they give you goose pimples!

A video camera is a prime recording tool, but note-taking is an effective way to focus one’s mind around the events being captured, stimulating fresh ideas and ways of seeing things that can’t be achieved by peering through a viewfinder. Don’t be afraid to involve the subjects as this, too, can add new perspectives.

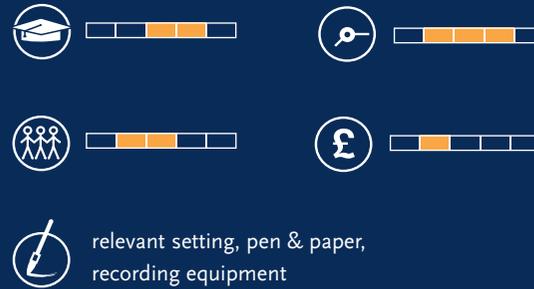
Siamack Salari | Culture Lab, BMPDDB Needham | London, UK
UK

Direct observation | 36



Output | behavioural data

Input |



Used in conjunction with
Video ethnography
Visual anthropology
Projective/visual research

Human Use (London: Taylor & Francis, 1999).

Further reading

Stanton, N.A., Human Factors in Consumer Products (London: Taylor & Francis, 1998).

Stanton, N.A. and Young, M., "Is Utility in the Mind of the Beholder? A Review of Ergonomics Methods", Applied Ergonomics, 29(1) (1998) 41-54.

Stanton, N.A. and Young, M., A Guide to Methodology in Ergonomics: Designing for

Observing people interacting with a device gives data on errors and performance time, and insight into the ease or difficulty of tasks

Observation seems, at first glance, to be the most obvious way of collecting performance data on people to inform user-centred design: it simply requires one to observe users performing tasks. However, this belies the complexity of potentially interacting and confounding variables.

Observing people affects what they do. The type and number of people observed may bias the results, as might an unrepresentative range of tasks. The way in which data is

recorded could compromise the reliability and validity of the observations. Overcoming these potential problems requires careful preparation and piloting of the observational study.

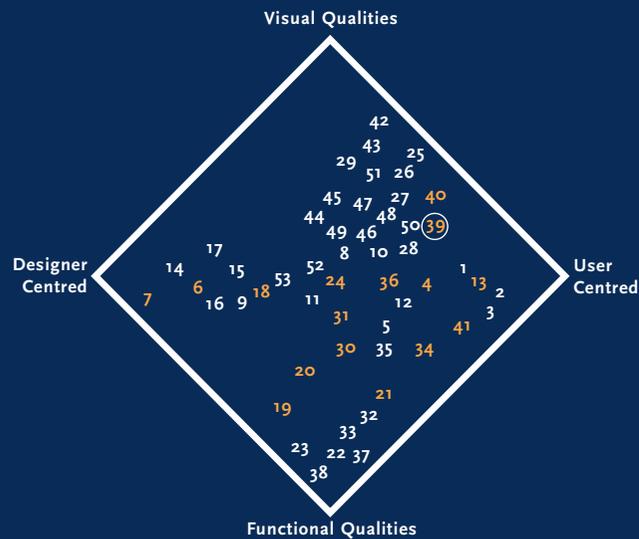
First, determine what activities are to be observed. Second, the characteristics and size of the sample population should be specified to ensure that they are representative of the likely user population (experts or novices, males or females, older or younger people, for example). It is worth spending some time beforehand with the person to be observed to get them used to you and the idea of being watched. This can help reduce bias. Third, decide what aspects of perfor-

mance you are looking for: thoughts (which may be elicited through verbal protocols), errors (noted down), speed of performance (measured times), or behaviour (recorded on a pre-coded observation sheet).

Finally, observational data is useless unless you can be sure it is correct. Reliability can be checked by comparing the agreement of two independent observers or, in simple situations, comparing what is seen on video with the observer's record.

Neville Stanton | Engineering Psychology Research Group | University of Southampton, UK

Individual interviews | 39



Output | in-depth subjective understanding

Input |



Used in conjunction with
Focus groups
Questionnaires/surveys
Opinion polls

Further reading

Gordon, W., *Goodthinking: A Guide to Qualitative Research* (NTC Publications, 1999).
Burns, C. "Individual Interviews" in Robson, S. and Foster, A., *Qualitative Research in Action* (Edward Arnold, 1989).

One-to-one interviews provide information about individual actions and motivations that cannot be obtained in group discussions

An individual interview is a conversation between a researcher and a respondent selected according to agreed criteria of age, lifestyle, etc. It typically lasts an hour or two and may take place in any agreed setting.

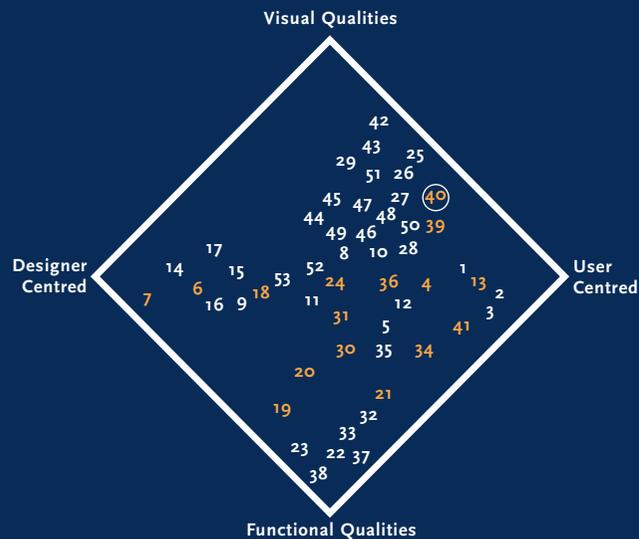
Individual interviews are an important complement to focus groups. Contrary to general belief, the type of information to be gained from each method is different. Individual interviews are particularly suitable for discussing: sensitive

issues such as redundancy or medical problems; product categories where over-claiming or under-claiming is known to be a problem, such as drink; and cases where individuality is of prime importance, such as financial services. They are to be preferred in cases where the "memory amalgam" that emerges from group discussions would provide information that is less "real" than individual accounts. A case in point is where one wishes to reconstruct a user's or purchaser's decision-making process. They are also good with "difficult" interviewees, whether because they are widely geographically spread or because they are strongly opinionated.

The interviewer must be skilled and sensitive. Social and listening skills, awareness of body language, self-awareness of the interviewer's own prejudices, and knowing when and how to draw out or challenge the interviewee are all important.

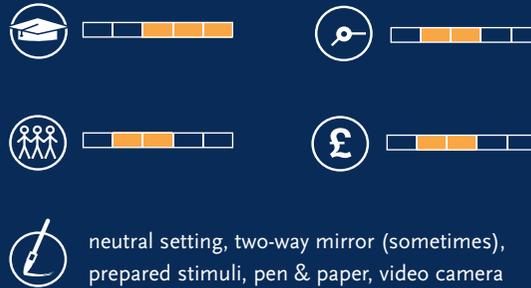
Wendy Gordon | The Fourth Room | London, UK

Focus groups | 40



Output | tested ideas & opinions

Input |



neutral setting, two-way mirror (sometimes), prepared stimuli, pen & paper, video camera

Used in conjunction with
Individual interviews
Direct observation
Conjoint techniques

Organizing, Conducting and Analyzing the Focus Group Interview, 2nd edn. (Probus Publishing, 1994).

Further reading

Greenbaum, T.L., The Handbook for Focus Group Research (Sage Publications, 1997).
Userfit. A Practical Handbook on User-Centred Design for Rehabilitation and Assistive Technology (Tide User Consortium, 1996).
Templeton, J. F., The Focus Group: A Strategic Guide to

Links

www.useit.com/papers/focusgroups.html
www.lboro.ac.uk/research/husat/include/1-7-6.html

A focus group is a forum of selected people controlled by an impartial moderator to give feedback to design ideas

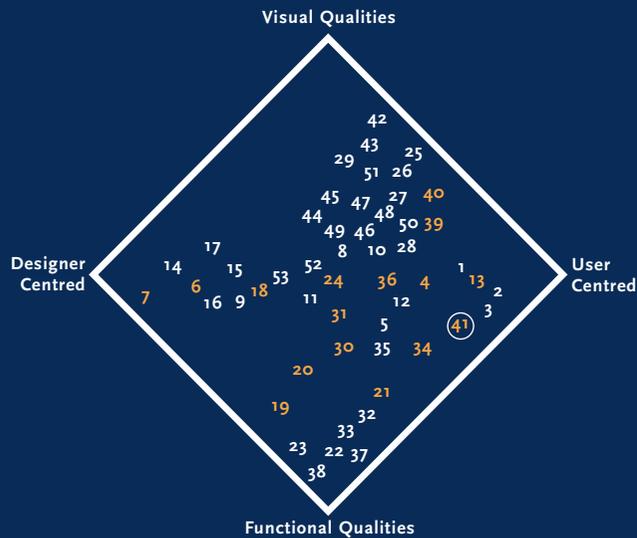
Focus groups are used to gather raw data from people to identify user needs in the concept development phase. They can also be used for clarifying particular issues during a design phase and as an evaluation method. The result is usually a list of agreed (and disagreed) statements. With help of a good moderator, a discussion can reveal not only explicit but also implicit needs and reactions. This method is often recommended as a complementary one to interviews and observation.

Some key issues for a successful meeting are carefully selecting and preparing participants, good preparation for the meeting, creating a democratic, supportive and informal atmosphere, and skilful moderation of the discussion. Attention must be paid also to the individual needs of different users considering, for example, their diet and functional abilities. Research suggests that groups of six to eight people are likely to raise most of the important issues between them, but sometimes larger numbers of participants representing different viewpoints can be fruitful, depending on the issue at hand. It may be desirable to include “critical users” representing the extremes of the user group to ensure inclusive design.

Meetings are often conducted in a room equipped with a two-way mirror to allow different members of the design team to observe the group. The group session is often videotaped due to the abundance of data coming forth in the discussions.

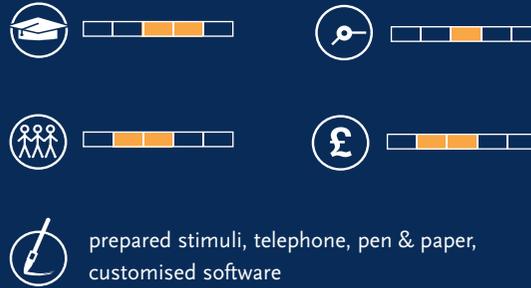
Hannele Hypponen | Stakes | Helsinki, Finland

Conjoint techniques | 41



Output | comparative product references

Input |



Used in conjunction with
Individual interviews
Direct observation
Focus groups

Links
dfca.larc.nasa.gov/dfc/ppt/cjaB.html
www.sawtooth.com/pages/art1.html

Conjoint analysis allows researchers to establish how much consumers value individual features of products or services

Conjoint analysis makes it possible to estimate which features of products or services are valued most by consumers and the price they are likely to pay for given combinations of features. This can help new product developers decide which features to include and the price to charge for a new product or service.

If consumers are asked to rate features individually they tend to rate all as equally important. Conjoint analysis

asks people to rate combinations of features, or to choose between two or more combinations. This forces them to make trade-off decisions which is closer to how they make choices in real life.

Suppose you want to design a toothbrush and need to decide on three features: stiff or flexible handle, rounded or flat bristles, and round or pointed head. You would ask people to rate combinations of features (stiff handle, rounded bristles, rounded head vs. stiff handle, flat bristles, pointed head, for example). Analysis of the ratings allocates a value to each feature (handle, bristles and head) and to each of the options (stiff vs. flexible handle) from which it

is possible to estimate the value of any combination of these elements.

Methods of conjoint analysis may be simple to complex. Simple conjoint analysis may be carried out by telephone or face-to-face interview. More complex problems may call for a computer-driven interview.

Miriam Comber | Research Business International | London, UK

The Methods Lab | **Presence Methods**

The following descriptions of user research methods were contributed by participants in the Presence Project.

| | |
|---|----------------|
| Sidsel Bjørneby , Human Factors Solutions, Norway | <i>page</i> 25 |
| Stefano Cardini , Domus Academy, Italy | 25 |
| Roger Coleman , Royal College of Art, UK | 25 |
| Danielle van Diemen , Netherlands Design Institute | 25 |
| Tony Dunne , Royal College of Art, UK | 26 |
| Bill Gaver , Royal College of Art, UK | 26 |
| Cecilia Laschi , Scuola Superiore Sant'Anna, Italy | 26 |
| Elena Pacenti , Domus Academy, Italy | 27 |
| Marco Susani , Domus Academy, Italy | 27 |

Presence Methods |

Sidsel Bjørneby | User trial involvement

I prefer human factors-related user research methods where the users are directly involved in practical trials and constructive discussions about their views and attitudes. Usually this means a combination of several methods like structured interviews, trials of concepts, new prototypes or existing systems or products and focus group discussion at the end.

I find that users are much more creative than we tend to think, and that especially elderly users are quite happy to be constructive if they know that their opinions are being respected.

Presence Methods |

Roger Coleman | User forums

User forums are not simply discussions between users but regular meetings between designers and users. Their advantages are that the two groups get to know one another and become comfortable with one another over time. One disadvantage is that the users may develop some design awareness and so perhaps become less useful as research “subjects”.

User forums work very well in the early stages of introducing designers to user issues—in particular introducing young students to older users and/or other groups from very different backgrounds to themselves. A lot happens that is

Stefano Cardini | User screenplays

Storyboards and user profiles can help designers through the use of a “filmic” point of view: what will my character do now? and how, and why? Defining a sequence of actions requires clarification of each single step, according to the needs and personality of an imaginary user. The user profile isn’t built just on statistic/objective data: since it’s not a description of a normotype, it requires the transposition of personal judgement and experience about people’s habits and attitudes.

Seeing things as a child does help in finding new solutions: playing with concepts, merging them or splitting them in

small parts, considering a single aspect of a problem as if it could be isolated from the whole thing, looking at things as if their use were mysterious—just trying not to have rules, to define new ones.

useful to designers but does not deliver specific or quantified information. User forums should be used in conjunction with other methods that can deliver more specific information relevant to the project in hand.

Danielle van Diemen | Oral ethnic cultural history

The purpose of this method is to investigate and counter forces of cultural dominance that may be in operation while researching user communities that include ethnic groups. Greater knowledge of the mechanism by which research data is subverted to the dominant culture in a test site or organisation is necessary to avoid this process and to give each group its own platform. In this way, better and more accurate results will become available from ethnically diverse research populations.

Presence Methods |

Tony Dunne | Pseudo-documentary

As a result of feedback from exhibiting “The Pillow”, I made a pseudo-documentary video in collaboration with Dan Sellars and Fiona Raby. An elderly woman in her home describes how she thought she would live with an object like “The Pillow”, how she came by it, when she used it, and what she used it for. We explored where she would keep it, how often she would use it, and how her friends and neighbours might react. The interviewee is a knowing participant in a fiction.

The intention was to steer between a number of established approaches. User-testing requires that the object works

fully. Product clinics test consumer reactions to a product based on how things are now. “Informance” aims to persuade an audience that a product fits in and has a place. But here the aim was not to convince an audience of a need, but to draw them into a “what if ...” scenario, a “value-fiction” to stimulate a desire for change.

Bill Gaver | Cultural probes

The cultural probes were packages of maps, postcards, cameras and other items given to elders in local test sites for their responses. Developed at the beginning of the Presence project, when we knew little about the sites’ culture and had few expectations about what we would design, we purposefully left our requests vague, ambiguous, and even absurd in order to evoke free and imaginative responses from the groups. The probes broke with scientific methodologies, instead pursuing a design approach seeking inspiration not information. The nonscientific approach came through in the openness and aesthetics of the mate-

Presence Methods |

rials themselves, and in how we used them: rather than attempting a summary analysis, we used the returns continuously as living reminders of the sites, with individual items spurring-on or serving as resources for our design.

The probes were successful in providing us with rich inspirational materials, and in sparking intense conversation with the elders. We believe this is because we designed them personally for each of the sites. For this reason, we prefer to think of the cultural probes as embodying an approach to starting a dialogue with people, rather than a methodology to be emulated in detail.

Cecilia Laschi | Multi-discipline questionnaire

A deeply user-oriented approach was followed in Peccioli in a study of the elderly, directly involving the user group, mainly through questionnaires. A significant number of questionnaires (1200) were distributed to all the families in Peccioli through a local newspaper, and they were answered by 600 people, a remarkable 50 per cent response. Questionnaires were assembled by an interdisciplinary team, including engineers, designers, a geriatrics doctor, architects, an economist, a sociologist, and people expert in the local social and cultural habits. They were structured so as to explore: the demographic structure of the village, the

functional profile of the elderly citizens needing assistance, the social structure of the village, possible problems in daily activities and daily assistance, the potentiality of tools for home assistance. Direct comments and suggestions were also invited.

The analysis of the results and the cross-correlation of the different questions led to the definition of the community through synthetic user profiles and to the extraction of their needs and requirements. Based on them, the functional guidelines for the proposed solution (device/service/infrastructure) have been defined.

Presence Methods |

Elena Pacenti | “Ideal types” user profiles

User profiles provide a synthetic, schematic description of users as the potential recipients of new design concepts. The “user profile” is based on raw data, but it is not a description of a real user. Instead it is the construction of an “ideal typical” profile that clusters meaningful characteristics of people as described by the raw data.

To inspire designers, the profiles must contain subtle information about people’s behaviour and attitudes. More than just a list of functional characteristics of a person (his or her abilities or disabilities), the profile should describe people’s attitudes, their psychological profile, their

domestic environment, their lifestyle, and so on. The profile may also contain description of relations with others, such as a family, colleagues and friends.

Marco Susani | Maps of relations

Maps of relations are synthetic, descriptive representations of social relations in space. They are used after observation of people’s behaviour in existing spaces and engaged in existing practices as an inspiration for the design phase.

Maps indicate hierarchies between people in space, the connection between their “social power” and their position (or behaviour) in space. An additional element of these maps is their ability to provide a simple description of the “power of attraction” of space—for example the “power” of a church in a piazza to “attract” conversation and personal encounters to itself or the “power” of a desk in a classroom to draw

Presence Methods |

one’s eye towards it.

The description may include tools (and media) inside the space. (“How powerful is a television in a living room?”)

The Methods Lab | Sitges i³ Methods

At the Tea Party were:

The following descriptions of user research methods were additionally contributed by participants in the i³ Spring Days Presence Forum Tea Party. The discussion included some of those involved in the Presence Project and also researchers from other i³ projects. The emphasis of the Tea Party was on designerly methods of researching user needs; on ways of projecting into the future and trying to understand users in what is for them unknown territory; on raising questions about how research can inform this process, and how design can bring it to life by filling a future landscape with people interacting with new products and services; and on how we can evaluate and validate such speculative proposals.

The Tea Party was concluded by asking those present to take ten minutes to describe a chosen user research method. The result was a series of spontaneous descriptions of user research methods that are refreshingly direct and free from academic jargon. We believe they offer an interesting snapshot of the range of methods in use today.

| | |
|---|---------|
| Alessandra Agostini , Campiello Project, University of Milan, Italy | page 29 |
| Andy McGrath , BT Systems, UK | 29 |
| Lieselotte van Leeuwen , Kidslab, Halmstad University, Sweden | 29 |
| Anu Mäkelä , Maypole Project, Helsinki University of Technology, Finland | 29 |
| Alan Munro , Persona Project, Napier University, UK | 30 |
| Michael Smyth , Edinburgh University, UK | 30 |

Sitges i³ Methods |

Alessandra Agostini | Participation in user activities

This method couples participatory design with ethnographic studies. It requires strongly committed users and researchers as well as a strong empathy between them.

The researchers participate in crucial activities of the users and, moreover, they stimulate meaningful new activities among the users and participate in those also. These activities must be chosen according to criteria defined by the researchers bearing in mind the goals of the project.

Sitges i³ Methods |

Lieselotte van Leeuwen | Wizard of Oz 2

The designer must decide what are the variants and invariants of autonomous behaviour. The question is with what kind of agents a user wishes to interact. Answers will be very different for particular user communities such as children.

In projects with children, this method proceeds to introduce behavioural constraints in the form of rules of a game. For example, a castle guard may only open or close the castle drawbridge and not do anything else or a princess may only converse with a bird.

Changing the constraints then allows a comparison of the

Andrew McGrath | Punk research

Punk research aims to give research back to the non-professionals. It takes its name from the 1970s punk movement which was concerned with putting energy back into activities such as music-making which were perceived as having become too staid.

This is a method of research where a group of people who are filled with energy get together to create research ideas. The fact that they are not so expert in their areas that what they have to say has become bland is important.

The group must be able to undertake the basics of the research themselves, but the main emphasis is on energy,

attitude and self-promotion. Each group will naturally break up after a short time, thereby avoiding becoming research dinosaurs.

Anu Mäkelä | Photo diaries with interviews

Photo diaries made by users are useful tools in allowing designers to enter the user's world with only a small expenditure of time and effort.

Users are asked to take pictures of their environment, tools, social network and so on, depending on the focus of the design process. Following this, they are asked to make an album of the photographs they have taken. They are then interviewed about the content and meaning of the pictures and the overall structure of the album.

Sitges i³ Methods |

Supported by the interviews, the albums give rich data on user values and preferences. Moreover, they elicit stories from the life of the person who made the album.

Sitges i³ Methods |

Michael Smyth | Storyboarding

Storyboarding is a technique for articulating ideas and concepts which in turn act as a common currency during the design process. Sketching interface ideas has the advantage of being rapid and easy to produce. It enables a number of alternative ideas to be pursued, and can facilitate consideration of the problem in hand at a variety of depths.

The sketches can be shown to potential users and feedback obtained very rapidly. Such sketches can also act as a resource articulating the history of a project.

Alan Munro | Ethnography

Ethnography is a method of close observation of a given environment. It is based on techniques from anthropology and sociology. The method places great emphasis on behaviour viewed as contextual, as part of its environment, rather than taken from its environment, decontextualised, and codified.

An orientation to context can mean that the field worker “suspends” judgement on the activities observed, for example whether, in a work environment, they constitute good practice or not. Instead, the idea is to see the activities as part of the everyday realities of the workplace.

As ethnographers, we are not afraid of the ad hoc; we are not afraid of the messy; we do not count beans.

Acknowledgements |

In our effort to build an authoritative resource based on expert consensus, we have consulted many leading designers and researchers around the world.

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