Usability Evaluation | IN 604

Product Usability Development

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Introduction to Product Usability

The term usability was coined some 10 years ago in order to replace the term **“user friendly”** which by the early 1980s had acquired a host of undesirably vague and subjective connotations.

However, in the intervening years, the word **“usability”** itself has become almost as devalued as the term it was intended to supplant. There are still many different approaches to making a product usable, and no accepted definition of the term usability.

“Derived” Definition of Product Usability

The definitions which have been used derive from a number of views of what usability is. Three of the views relate to how usability should be measured:

- the product-oriented view, that usability can be measured in terms of the ergonomic attributes of the product;
- the user-oriented view, that usability can be measured in terms of the mental effort and attitude of the user;
- the user performance view, that usability can be measured by examining how the user interacts with the product, with particular emphasis on either
  - ease-of-use: how easy the product is to use, or
  - acceptability: whether the product will be used in the real world.

What is Product Usability?

The proposed ISO ergonomics definition (Brooke et al 1990) is usage, user and contextually oriented:
“the effectiveness, efficiency and satisfaction with which specified users can achieve specified goals in a particular environment”.

Eason's (1988) definition is ease-of-use oriented:
“the degree to which users are able to use the system with the skills, knowledge, stereotypes and experience they can bring to bear”.

Finally, formal definition of usability is a quintuple comprising the elements ***level of usability metrics, product, users, goals*** **and** ***context of use*** - providing concrete values for these elements then constitutes the investigated type of usability.

Why?

Product Usability is defined by product attibutes that address

physical needs,
coginitive needs and
emotional needs

of intended users.

Recommendations for usability in product development practice

1. Understand usability and what it means for your products

Because
> Usability is considered ungraspable and fuzzy
> Reaching a goal requires an understanding of the goal

Requires
> Discussing what usability means for your products
> Discussing stories and examples
> Involving all disciplines
> Staff with communication skills

2. Analyse the consequences of usability for your company

Because
> Usability is prioritized if its (business) consequences are understood and visible

Requires
> Analysis of what usability means to your company

3. Decide whether usability should be a priority

Because
> User-centred product development requires a significant investment and support from upper management

Requires
> Understanding of usability and its consequences for your company
> Understanding of the potential benefits of usability for your company
> Discussing the requirements for user-centred product development
> Understanding the required investments for implementing user-centred product development

4. A development process that facilitates user-centred methods

Because:
> Creating usable products requires user research, user-centred synthesis, usage evaluations, and iterations

Requires
> Sufficient time to execute methods for user-centred design in all phases of product development
> A product development process that is equipped to deal with the outcomes of user involvement

5. Think concept as well as detail

Because
> The choice of UI concept determines the hypothetical maximum level of usability
> How well a UI concept is implemented determines how close you get to that hypothetical maximum

Requires
> Development of multiple UI concepts
> Prototyping of multiple UI concepts
> Comparative evaluation of UI concepts
> Attention to detail
> Multiple iterations of evaluation and redesign
> High design freedom
> Interaction designers as well as user interface designers

6. Think development rather than design

Because
> It is about usable products, not about usable designs
> An ‘ok’ design that gets implemented is more usable than a dream design that gets compromised beyond recognition

Requires
> Truly collaborative product development, involving all disciplines
> A development team that is conscious of limitations
> Product manager responsible for whole product innovation cycle

7. Apply guerrilla usability techniques

Because
> Multiple, small-scale, fast iterations are more effective than one half-hearted 100% ‘reliable’ iteration

Requires
> Knowledge of and experience with guerrilla user-centred design methods
> Company culture open to qualitative methods

Guerrilla usability methods

Jakob Nielsen (1994) presents methods for user-centred design that can be applied in a limited amount of time, by a limited amount of people, and at limited costs, which he refers to as ‘guerrilla HCI’ or ‘discount usability engineering’. Successfully applying discount methods does require a company culture that is open to qualitative analysis and evaluation techniques.

8. Early user research, usage simulation and evaluation

Because
> Early knowledge = high design freedom

Requires
> Conduct user research previous to project start
> Early prototyping & testing
> Usability inspection methods
> Transfer of information from previous projects
> Apply after sales feedback from previous projects
> Similarity over product generations
> Keeping product development teams intact over generations
> Accepting that you can’t - and don’t need to - quantify everything

9. Inside-out approach to user research and usage evaluation

Because
> Early knowledge = high design freedom
> Resources are limited
> You can’t look inside other people’s heads

Requires
> Personally exploring a product (user research) or a evaluating a design (user evaluation)
> Understanding of and empathy with the user group
> Compensating for participants not being similar to the projected user group
> Compensating for designer bias
> Compensating for bias due to personal experience

10. Rich communication of user research and usage evaluations

Because
> Designers need detailed information for design decisions
> Facilitates understanding, acknowledgment, empathy and engagement

Requires
> Capturing user research and evaluations on video
> Integrating video clips when presenting user research or usage evaluations
> Involving designers in user research and usage evaluations
> Presence of team members at user research or usage evaluations

11. Select the appropriate functionality

Because
> Products with extensive functionality are more prone to be unusable as well as harder to develop

Requires
> Knowledge about the user group (needs and preferences)
> Knowledge about product usage (usage frequency of functions)
> Looking at a product from the user perspective (and not the buyer's or the geek's)
> A functionality evaluation and selection method
> Ianus prioritizations of functions: from both a sales and usability perspective
> Prioritizing quality over quantity of functionality

12. User-centred design skills on the team early and throughout

Because
> Early phases = high design freedom
> Early perspective on human-product interaction
> Transfers knowledge from previous user involvement
> Enables execution of user research
> Allows designers to be sensitized to the assignment and restrictions

Requires
> Early and throughout involvement of interaction designers and usability specialists
> Usability specialists and interaction designers present in organization
> Product development process facilitates methods for user-centred design
> Sufficient staff
> Budget

13. One roof: all disciplines in one room throughout the process

Because
> Informal communication is efficient and effective
> Facilitates cooperation between industrial/interaction designers, software/hardware developers
> Facilitates shared understanding
> Allows all team members to learn from their actions

Requires
> Team members being present
> Offi ce architectures that facilitate both project spaces and departments
> One central product development location
> Being in one project room (or having regular work sessions)
> Budget
> Staff

14. Feed the ‘feel for the user’ - communicate feedback to teams

Because
> Increases the ‘feel for the user’, which is essential for user-centred design proficiency
> People take pleasure in seeing the result of their work

Requires
> Communicating the results of user evaluations and after sales feedback to the whole product development team in an engaging manner

“Designers rarely have the opportunity to see outside people interacting with their product, so when they do they become very inspired by what they see. (...) They get a tremendous amount of empathy for the user. So that’s why they just need to see the user test.” (Usability consultant)

15. Get and keep experienced people

Because
> Experience fosters ‘feel for the user’
> Domain knowledge is crucial
> Enables knowledge transfer

Requires
> Keeping project teams intact (over projects)
> Low personnel rotation

“The worst that can happen to a product is a new product manager and a new interaction designer, because they’ll want to leave their mark and have no idea yet what users want.” (Product manager)

16. Don’t let designers do their thing

Because
> Large (potential) impact of design on usability
> Some designers want to be artists
> Some designers believe they represent the user

Requires
> Designers educated in human-product interaction principles and methods
> Analytical designers, or intuitive designers embedded in a user-centred process
> Learning: seeing user tests, after sales feedback
> User-centred product designers (as well as interaction designers)

17. Increase design freedom

Because
> Knowledge & user-centred design proficiency are useless when not applied

Requires
> Sufficient resources to design and implement a user-centred design
(time, staff, budget, equipment)
> Development team has control over the technological platform
> Flexible hard/software architecture
> Ownership of the UI (not depending on suppliers)

18. Don’t innovate the UI; think generations and families

Because
> User interfaces take years and generations to optimize
> Time pressure too high to design from scratch for every product
> UI paradigms capture what’s good, transfer knowledge

Requires
> User interface paradigm (suitable for a product category)
> Design freedom to implement a UI paradigm: control over the UI
> Cross-range and between-generation consistency
> Continuous improvement of UI paradigm

19. Don’t prescribe methods for user-centred design

Because
Prescribing methods may
> lead to inappropriate methods being applied
> lead to a check-box mentality
> cause teams to look for workarounds

Requires
> Development team with knowledge of methods for user-centred design
> Development team that prioritizes usability
> Product development structure that facilitates the integration of user involvement
> Exchange of knowledge about and experiences with user-centred design method

20. Align the organization with user needs

Because
> Products keep changing (integration required)
> Product usability > interface usability
> System usability > product usability

Requires
> Ownership of the product's eco-system
> Development groups within company cooperating
> High-level visionary
> Product development groups in one location
> Budget
> Guts

21. Upper management that gets and prioritizes usability

Because
> Product development = compromising and upper management decides about resources
> Upper management can ensure development groups within a company cooperate
> Upper management influences company culture

Requires
Upper management that:
> understands its products
> understands (and prioritizes) usability
> is involved in or informed about product development

22. Establish a user-centred company culture

Because
> Product development = compromising
> User-centred product development requires a signifi cant investment

Requires
> Knowing if and why usability is important
> Team members seeing the results of their work
> Customer satisfaction as performance indicator
> Viable product proposition and stable technical platform
> Upper management that gets and prioritizes usability
> Usability (perceived as) part of a company’s brand promise

23. Merge ‘buy’ and ‘try’ in retail

Because
> Usability must be experienced

Requires
> Usable products
> Fully functional products at sales points
> Customers can access products freely
> Knowledgeable sales staff
> Optional: product appearance that reflects a product’s usability

24. Control your sales channels

Because
> Third-party sales channels may demand non-user-centred requirements
> Provides control over how products are presented

Requires
> Setting up own sales channels
> Owning a product that third-party resellers need to have in their store

25. Don’t explicitly advertise usability

Because
> ‘Easy to use’ products can stigmatize buyers
> Usability is not an important purchase consideration
> Advertising usability raises expectations

Requires
> Having other purchase arguments besides usability
> Buyers experiencing the product in-store (buy or try)
> Marketing message that implies usability and highlights the benefits
> Marketing message that blames products for being unusable, not people for not understanding them

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Thank you…