

An evaluation framework



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The aims

- Explain key evaluation concepts & terms.
- Describe the evaluation paradigms & techniques used in interaction design.
- Discuss the conceptual, practical and ethical issues that must be considered when planning evaluations.
- Introduce the *DECIDE* framework.

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Evaluation paradigm

Any kind of evaluation is guided explicitly or implicitly by a set of beliefs, which are often under-pinned by theory. These beliefs and the methods associated with them are known as an '**evaluation paradigm**'

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User studies

User studies involve looking at how people behave in their natural environments, or in the laboratory, both with old technologies and with new ones.

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Four evaluation paradigms

- 'quick and dirty'
- usability testing
- field studies
- predictive evaluation

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Quick and dirty

- **'quick & dirty' evaluation** describes the common practice in which designers informally get feedback from users or consultants to confirm that their ideas are in-line with users' needs and are liked.
- Quick & dirty evaluations are done any time.
- The emphasis is on fast input to the design process rather than carefully documented findings.

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Usability testing

- Usability testing involves recording typical users' performance on typical tasks in controlled settings. Field observations may also be used.
- As the users perform these tasks they are watched & recorded on video & their key presses are logged.
- This data is used to calculate performance times, identify errors & help explain why the users did what they did.
- User satisfaction questionnaires & interviews are used to elicit users' opinions.

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Field studies

- Field studies are done in natural settings
- The aim is to understand what users do naturally and how technology impacts them.
- In product design field studies can be used to:
 - identify opportunities for new technology
 - determine design requirements
 - decide how best to introduce new technology
 - evaluate technology in use.

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Predictive evaluation

- Experts apply their knowledge of typical users, often guided by heuristics, to predict usability problems.
- Another approach involves theoretically based models.
- A key feature of predictive evaluation is that users need *not* be present
- Relatively quick & inexpensive

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Overview of techniques

- observing users,
- asking users' their opinions,
- asking experts' their opinions,
- testing users' performance
- modeling users' task performance

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DECIDE: A framework to guide evaluation

- Determine the *goals* the evaluation addresses.
- Explore the specific *questions* to be answered.
- Choose the *evaluation paradigm* and *techniques* to answer the questions.
- Identify the *practical issues*.
- Decide how to deal with the *ethical issues*.
- Evaluate, interpret and present the *data*.

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Determine the goals

- What are the high-level goals of the evaluation?
- Who wants it and why?
- The goals influence the paradigm for the study
- Some examples of goals:
 - Identify the best metaphor on which to base the design.
 - Check to ensure that the final interface is consistent.
 - Investigate how technology affects working practices.
 - Improve the usability of an existing product .

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Explore the questions

- *All* evaluations need goals & questions to guide them so time is not wasted on ill-defined studies.
- For example, the goal of finding out why many customers prefer to purchase paper airline tickets rather than e-tickets can be broken down into sub-questions:
 - What are customers' attitudes to these new tickets?
 - Are they concerned about security?
 - Is the interface for obtaining them poor?
- What questions might you ask about the design of a cell phone?

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Choose the evaluation paradigm & techniques

- The evaluation paradigm strongly influences the techniques used, how data is analyzed and presented.
- E.g. field studies do not involve testing or modeling

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Identify practical issues

For example, how to:

- select users
- stay on budget
- staying on schedule
- find evaluators
- select equipment

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Decide on ethical issues

- Develop an informed consent form
- Participants have a right to:
 - know the goals of the study
 - what will happen to the findings
 - privacy of personal information
 - not to be quoted without their agreement
 - leave when they wish
 - be treated politely

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Evaluate, interpret & present data

- How data is analyzed & presented depends on the paradigm and techniques used.
- The following also need to be considered:
 - Reliability: can the study be replicated?
 - Validity: is it measuring what you thought?
 - Biases: is the process creating biases?
 - Scope: can the findings be generalized?
 - Ecological validity: is the environment of the study influencing it - e.g. Hawthorn effect

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Pilot studies

- A small trial run of the main study.
- The aim is to make sure your plan is viable.
- Pilot studies check:
 - that you can conduct the procedure
 - that interview scripts, questionnaires, experiments, etc. work appropriately
- It's worth doing several to iron out problems before doing the main study.
- Ask colleagues if you can't spare real users.

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Key points

- An evaluation paradigm is an approach that is influenced by particular theories and philosophies.
- Five categories of techniques were identified: observing users, asking users, asking experts, user testing, modeling users.
- The *DECIDE* framework has six parts:
 - Determine the overall goals
 - Explore the questions that satisfy the goals
 - Choose the paradigm and techniques
 - Identify the practical issues
 - Decide on the ethical issues
 - Evaluate ways to analyze & present data
- Do a pilot study

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A project for you ...

- Find an evaluation study from the list of URLs on this site or one of your own choice.
- Use the DECIDE framework to analyze it.
- Which paradigms are involved?
- Does the study report address each aspect of DECIDE?
- Is triangulation used? If so which techniques?
- On a scale of 1-5, where 1 = poor and 5 = excellent, how would you rate this study?

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