

User Experience Design I **(Interaction Design)**

UX Evaluation of Products and Services
- The Basics

Summative vs. formative

Summative evaluation

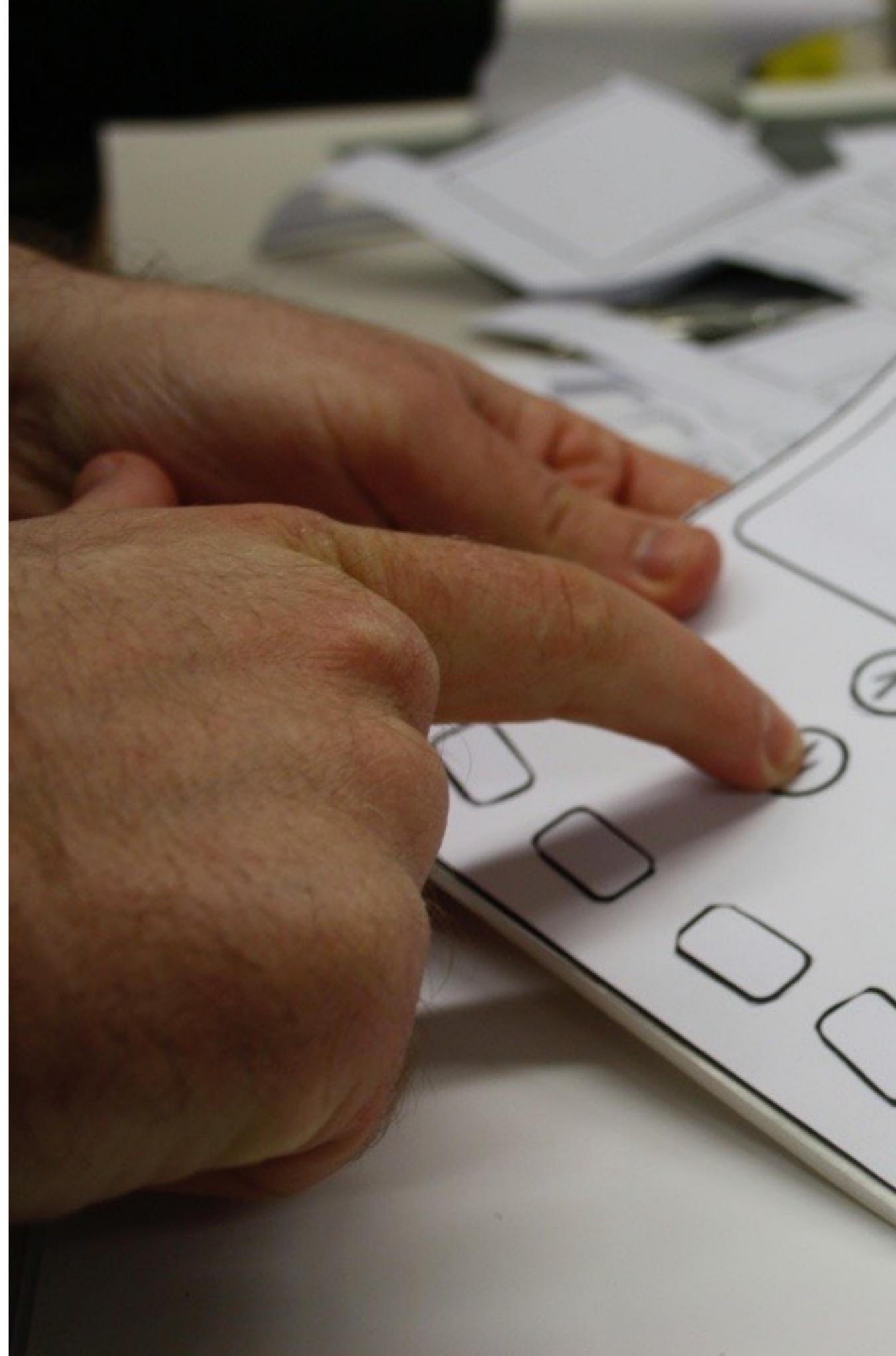
"How good did it get?"

- Assess quantitatively, final, summarising
- criteria-oriented e.g. "certification", questionnaires, etc.

Formative evaluation

"What has to be redesigned and how?"

- Understanding, qualitative, process-accompanying, improvement-oriented
- e.g. "Design Theater", role play with props, etc.





Analytical vs. empirical UX measurements

Analytical evaluation

- Expert judgment, "assessment"
- Often individual judgments
- "Judge by **expertise**"

Empirical evaluation

- Lay judgments, lay performance groups
- statistical analysis possible
- "Let the **experience** speak for itself"

Collecting UX Data - quantitative vs. qualitative

Quantitative: Predefined answer categories, quick implementation, simple evaluation "How do you feel on a scale from 1-9?".

Numerical

Qualitative: Free answer options, more complex analysis, makes comparisons difficult, "How do you feel?", can capture aspects that could be lost in quantitative measurement.

Verbalised



UX Focused Evaluation

Different levels of user experience evaluation, e.g.:

Product judgments on usability

- "The product is practical"

Performance data

- Time to complete a task

Product judgments on aesthetics

- "The product is beautiful"

Characterisation

- "The product looks likeable"

Emotions

- "I felt good while using the product"

Psychological needs

- "While using the product, I felt like I was close to other people"

Human-machine interaction from the experience driven perspective

Human-centred design approach:

Problem-centred, tasks, use cases, efficiency, usability...

“How can task XX be performed as efficiently as possible?”

Opportunities-centred, motivators:

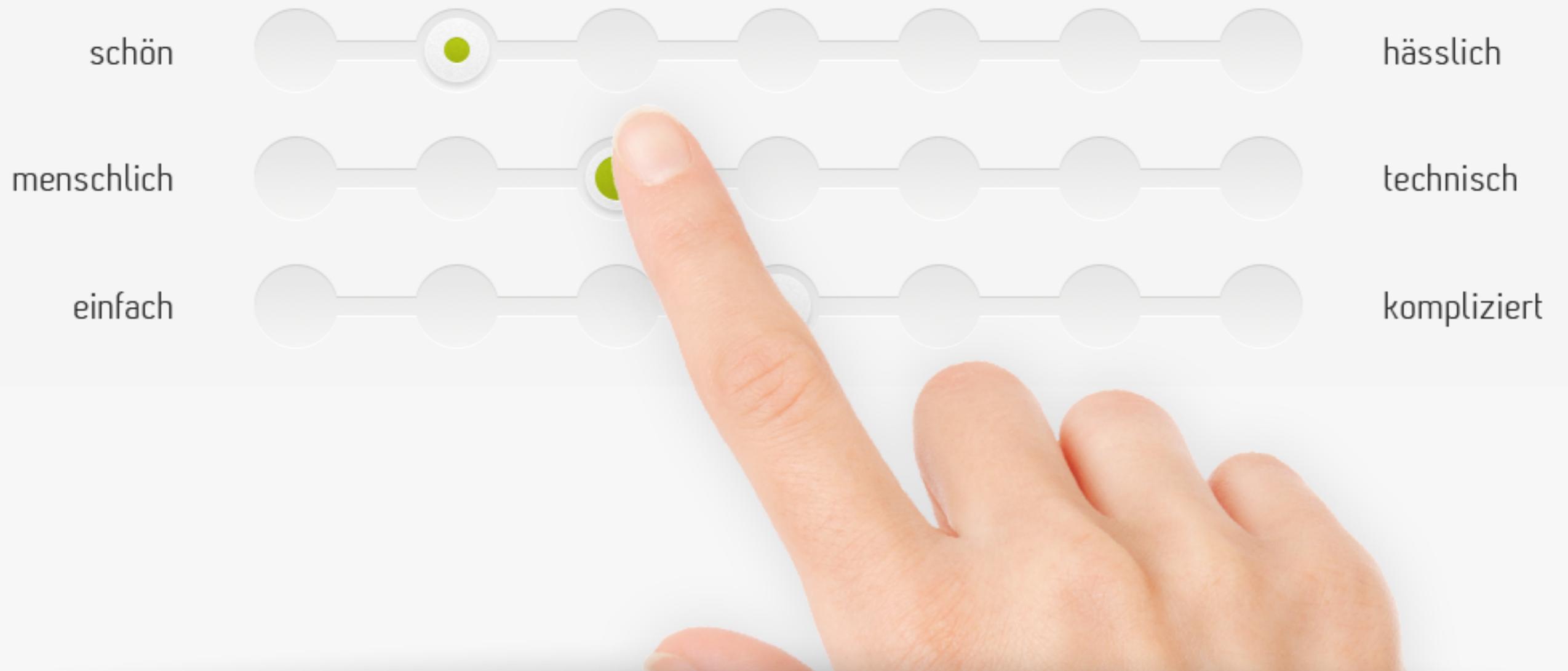
“What is fun about XX?”

“Which detail of XX is important for people?”

“Which need is addressed here?”

“How can this experience be created or intensified through technology?”





Attrakdiff evaluation of the perceived product character
[Hassenzahl et al., 2003] Hedonic quality, pragmatic quality, global attractiveness

Summary UX Evaluation using **AttrakDiff**

Advantages

- quick insight into the product character
- insight into the underlying aspects of attractiveness assessments

Disadvantages

- neglect of further psychological needs
- items are sometimes difficult to understand
- no direct reference to product features characteristics
- summative
- empirical

Statistical Methods

Dependent vs. independent variables in UX experiments

An independent variable is a variable that represents a quantity that is manipulated in an experiment.

A dependent variable represents a set whose value depends on the independent variable that is being changed.



Statistical Methods

Recommendations for professional UX evaluation:

Specify hypotheses and research questions BEFORE the study

"What differences do I expect?"

"Which questions would I like to be able to answer?"

Describe the planned study exactly

"What analyses will I get from these answers? "

Rethink the dimensions / study design if necessary

- Number of groups

Data level

- Interval data vs. ordinal data vs. nominal data

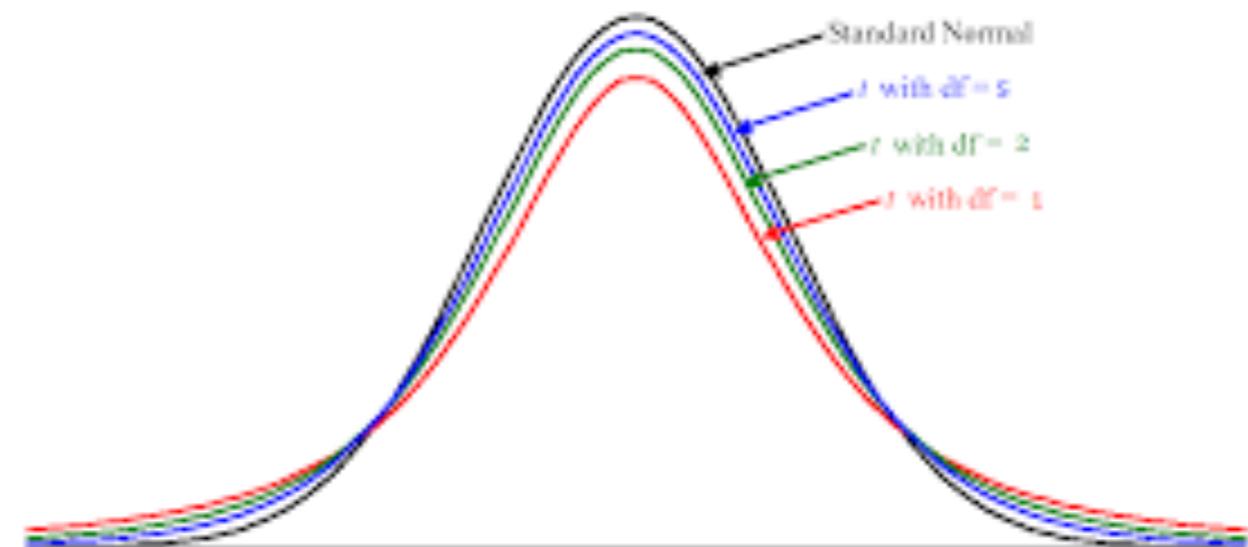
Statistical Methods

Independent samples T-Test
Checks whether there is a
difference between two
(independent) groups

H0: There are no differences
between the groups
(differences arose randomly)

H1: There are differences
between the groups
(differences arose systematically)

Student's t -distribution



Influencing variables

Mean difference - how far apart are the mean values

Variances - how homogeneous were the answers in the questionnaire

Degrees of freedom - how many people participated in the study

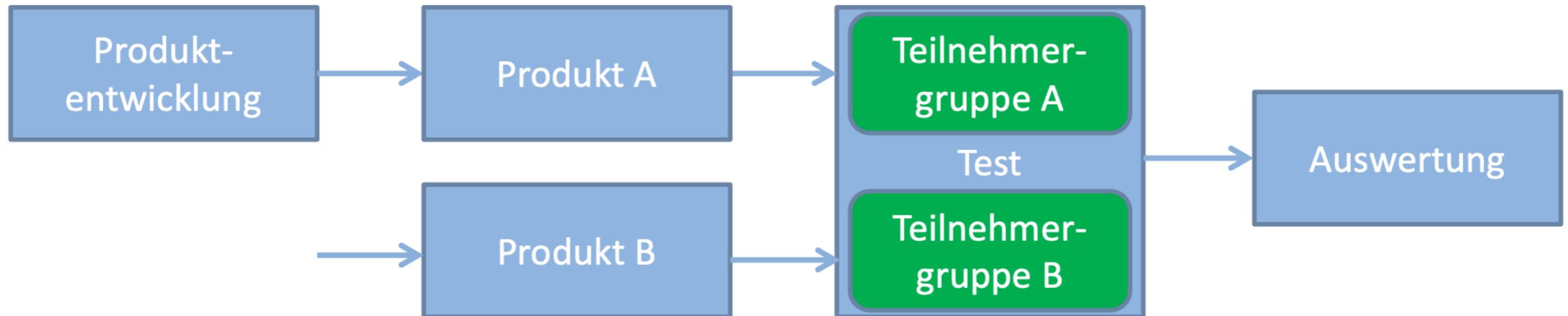
T-test result

T value ("calculated difference")

p-value ("probability of error")

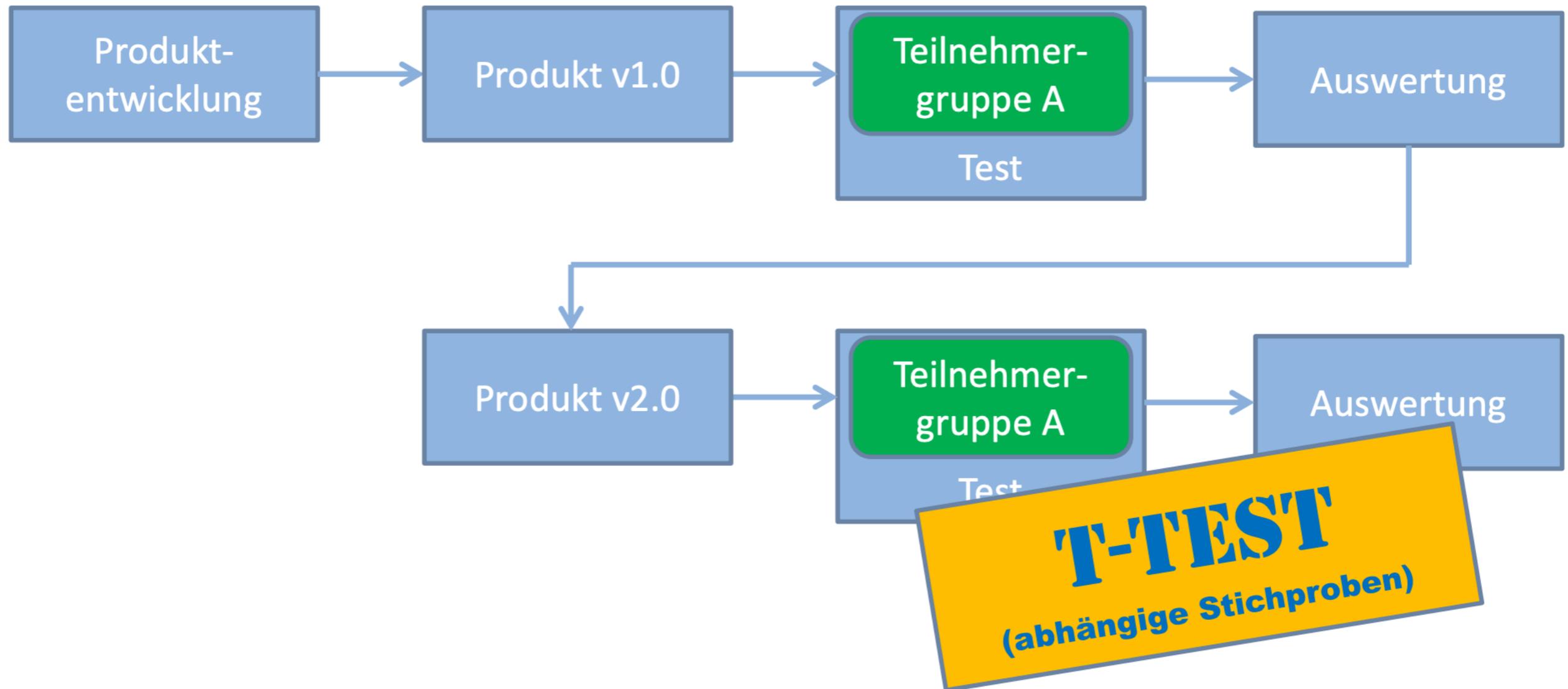
- how likely is the result found although H0 actually applies
- Frequent procedure: from p-value $< .05$ rejection of the H0
i.e. differences are interpreted as significant

Statistische Methoden



T-TEST
(unabhängige Stichproben)

Statistische Methoden



Lecture Summary

- **History**
- **Process**
- **Usability**
- **UX Research**
- **Prototypes**
- **Laws**
- **Beyond the Desktop**
- **Service Design**
- **Evaluation**