

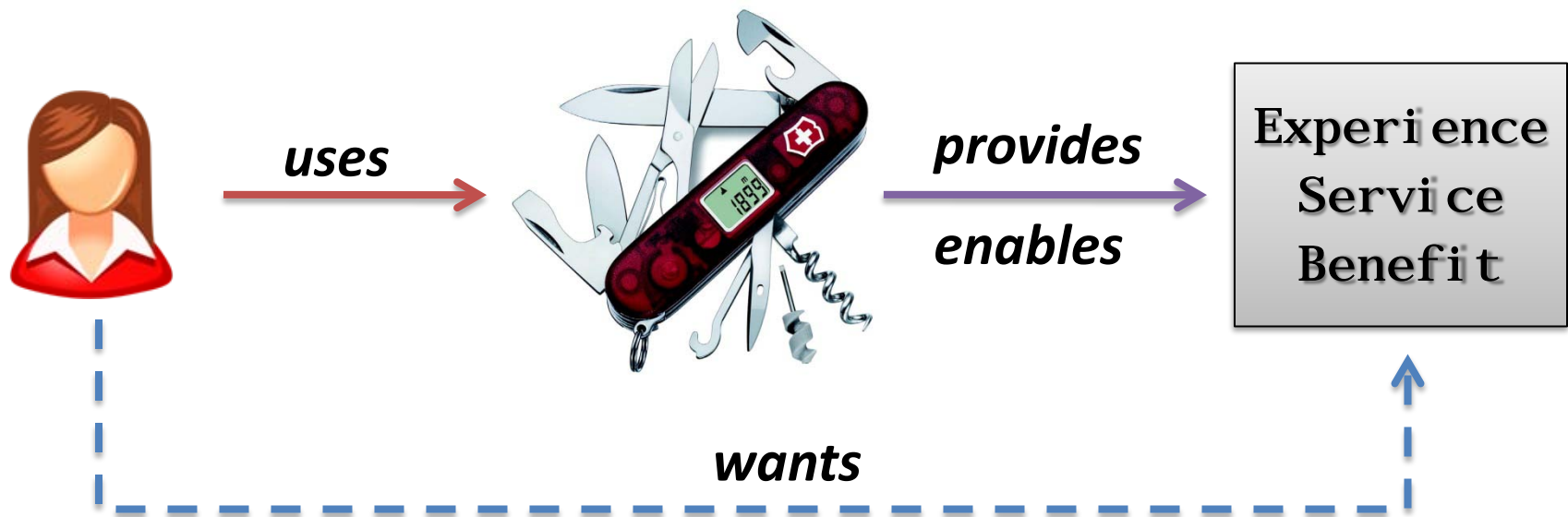
Web Usability

Carles Farré

Agenda

- What does **this** topic do **here**?
- Introducing Usability
- Usability Testing
- Usability vs Aesthetics
- Usability & Accessibility
- Online Services: Beyond Usability
- Should a **service engineer** from the **FIB** know about **this**?

What does this topic do here?



Agenda

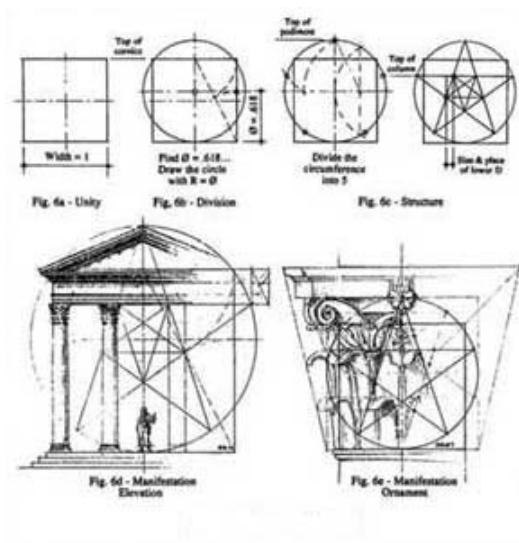
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FIRMITAS · VTILITAS · VENVSTAS

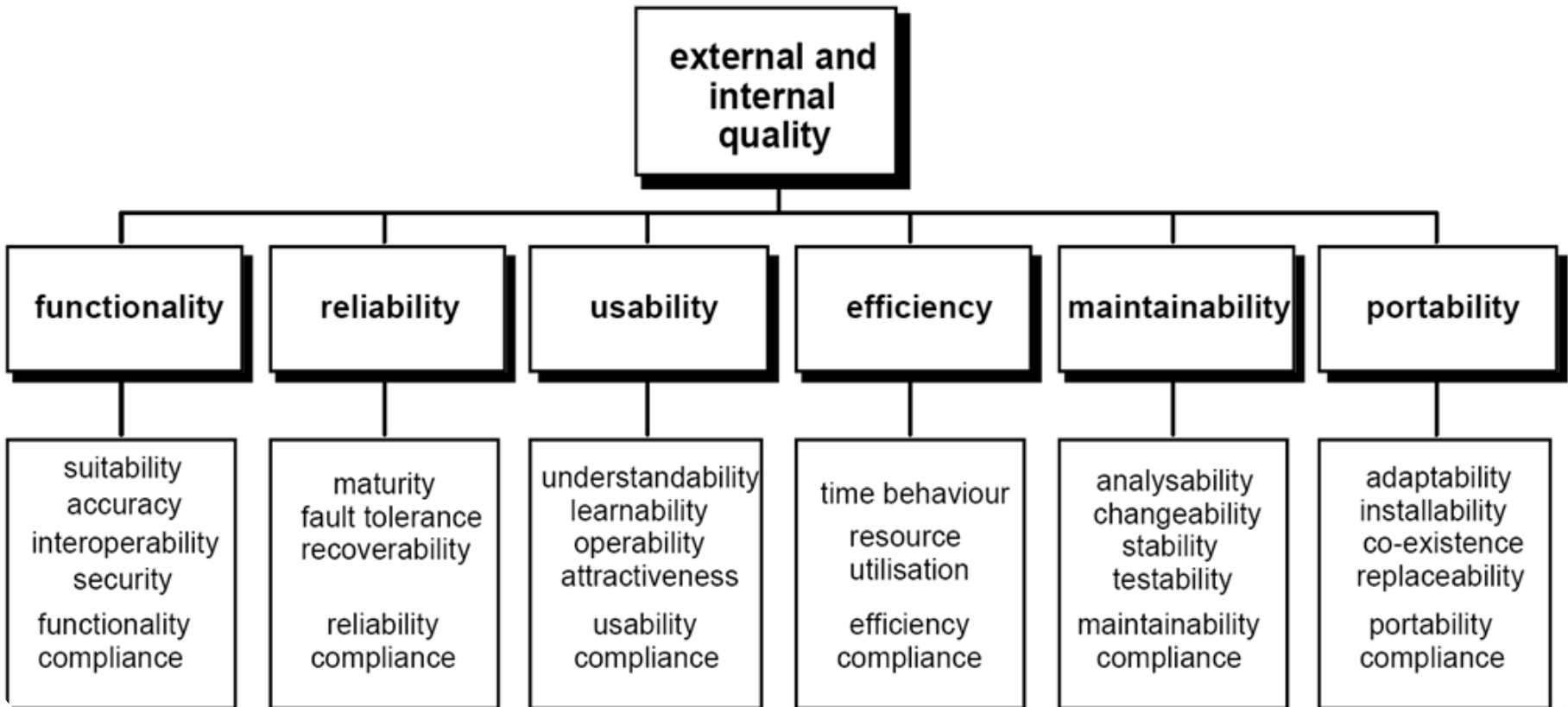
De Architectura

Marcus **Vitruvius** Pollio

(born c. 80–70 BC, died after c. 15 BC)



ISO/IEC 9126-1 Software Quality Model



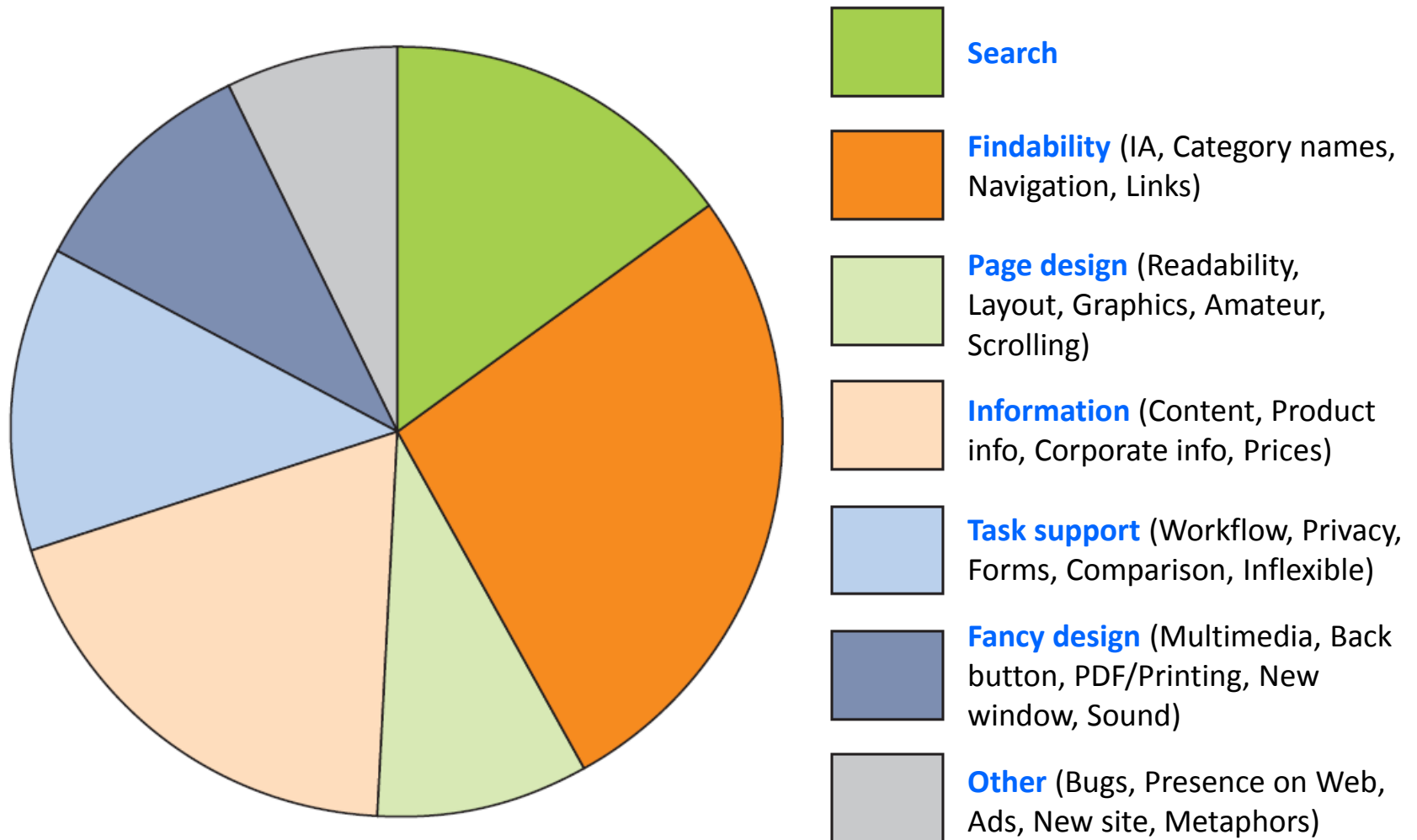
Usability

- Usability is a **quality attribute** that assesses **how easy user interfaces are to use**. Also refers to methods for improving ease-of-use during the design process.
- Usability is defined by five quality components:
 - **Learnability**: How easy is it for users to accomplish basic tasks the first time they encounter the design?
 - **Efficiency**: Once users have learned the design, how quickly can they perform tasks?
 - **Memorability**: When users return to the design after a period of not using it, how easily can they reestablish proficiency?
 - **Errors**: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
 - **Satisfaction**: How pleasant is it to use the design?

Why Usability matters www.usabilitynet.org/management/c_cost.htm

- 62% of web shoppers **gave up** looking for an item. (Zona study)
- 50% of web sales **are lost** because visitors can't easily find content. (Gartner Group)
- 40% of repeat visitors **do not return** due to a negative experience. (Zona study)
- 85% of visitors **abandon** a new site due to poor design. (cPulse)
- Only 51% of sites complied with simple web usability principles. (Forrester study of 20 major sites)

Why people fail



Usability problems weighted by how frequently they caused users to fail a task [NL06]

Top Ten (Usability) Mistakes in Web Design

1. Bad search
2. Pdf files for online reading
3. Not changing the color of visited links
4. Non-scannable text
5. Fixed font size
6. Page titles with low search engine visibility
7. Anything that looks like an advertisement
8. Violating design conventions
9. Opening new browser windows
10. Not answering users' questions

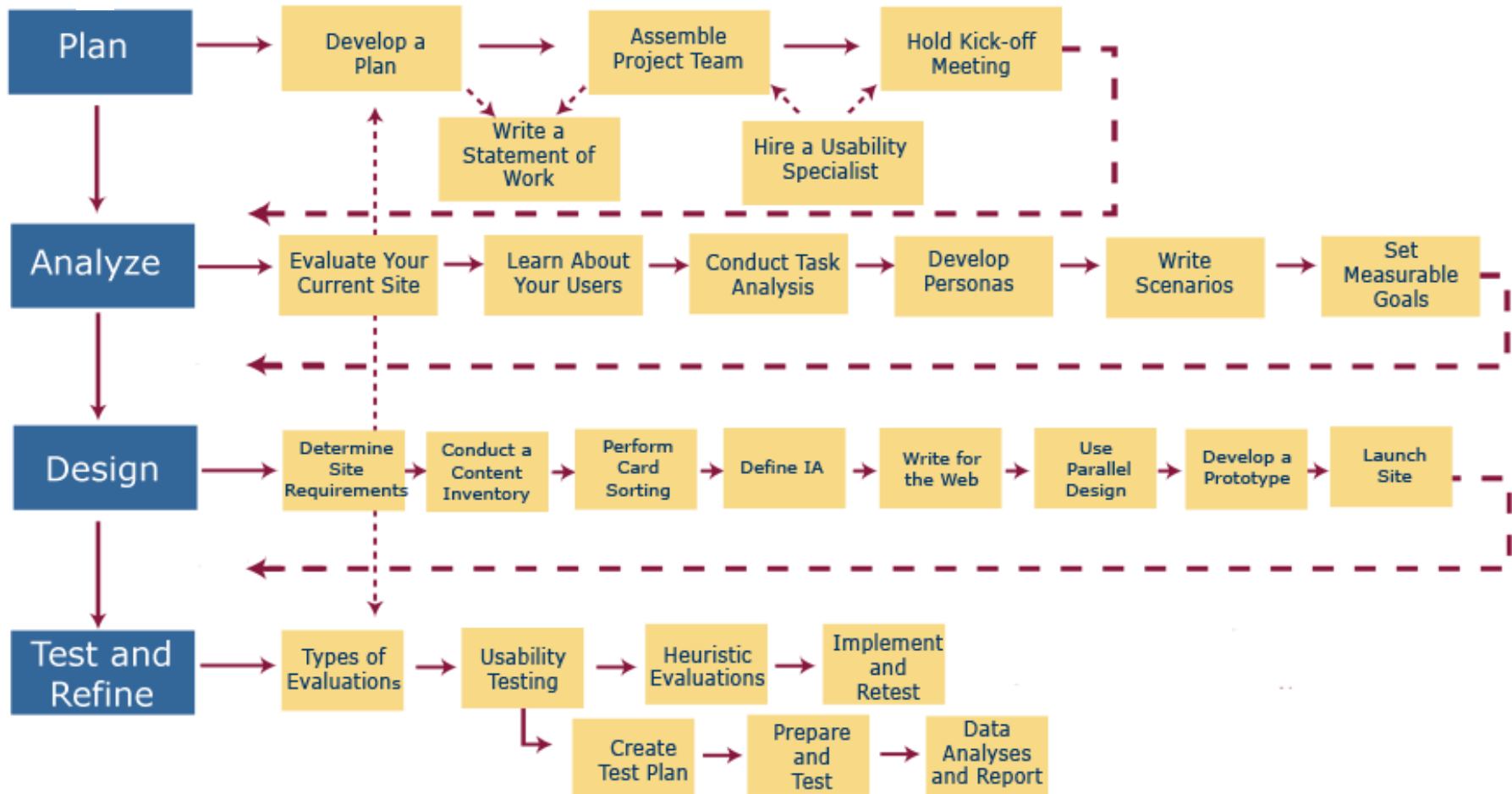
Assessing Usability

- Two major types of assessing methods:
 - **Usability evaluations:**
 - Evaluators and no users
 - Techniques: surveys/questionnaires, observational evaluations, guideline based reviews, cognitive walkthroughs, expert reviews, heuristic evaluations
 - **Usability tests:** focus on users working with the product
- Usability testing is the only way to know if the Web site actually has problems that keep people from having a successful and satisfying experience.

Usability Testing & User-Centered Design (UCD)

- Usability testing fits in as one part of the UCD process.
- Usability testing is best implemented after completing earlier steps in the UCD process (It's better to have clearly defined objectives and risks before testing).
- UCD, aka. **usability engineering**, is a structured approach to producing a Web site that involves users throughout the entire design process.
- UCD applies several methods at appropriate times:
 - defining business and user goals and objectives
 - gathering requirements
 - evaluating design alternatives, building and testing prototypes
 - analyzing usability problems, testing a site with users, and proposing solutions to problems

UCD: Usability.gov's Step-by-Step Guide



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Usability Testing

- Usability testing is a methodology that employs potential users to evaluate the degree to which a website/software meets predefined usability criteria.
- Basic Process:
 1. Watch Customers
 2. They Perform Tasks
 3. Note Their Problems
 4. Make Recommendations
 5. Iterate



Measures of Usability

- **Effectiveness** (Ability to successfully accomplish tasks)
 - Percentage of goals/tasks achieved (success rate)
 - Number of errors
- **Efficiency** (Ability to accomplish tasks with speed and ease)
 - Time to complete a task
 - Frequency of requests for help
 - Number of times facilitator provides assistance
 - Number of times user gives up

Measures of Usability

- **Satisfaction** (Pleasing to users)
 - Positive and negative ratings on a satisfaction scale
 - Percent of favorable comments to unfavorable comments
 - Number of good vs. bad features recalled after test
 - Number of users who would use the system again
 - Number of times users express dissatisfaction or frustration
- **Learnability** (Ability to learn how to use site and remember it)
 - Ratio of successes to failures
 - Number of features that can be recalled after the test

Usability Testing Roles

- Facilitator:
 - Oversees the entire test process
 - Plan, test, and report.
- Participant:
 - Actual or potential customer.
 - Representative users (marketing, designers) avoided.
- Observer (optional):
 - Records events as they occur.
 - Limits interaction with the customer.
 - Does contribute to the report.

Testing Methods & Tools

Method/Tool	Short description
Usability laboratory	A room with computer equipment, a place for an observer to sit and a special observation area.
Web-based	Online evaluation with live feedback from users.
Thinking Aloud	A test subject thinks aloud while navigating the site.
Observation	Visiting the users and observing them work.
Questionnaires	Site or email questionnaires are an effective way of measuring user satisfaction.

Testing Methods & Tools

Method/Tool	Short description
Interviews	Well suited to exploratory studies where one does not know yet what one is looking for.
Focus groups	Users are brought together to discuss new concepts and identify important issues.
Heuristic evaluation	Looking at an interface and trying to come up with an opinion about pros and cons about it.
Log file analysis	The computer automatically collect statistics about the detailed use of the system.
User feedback	Shows the immediate and pressing concerns, is an ongoing process and is adapts quickly.

Usability Testing Process

Step 1: Planning The Usability Test

- Define what to test
- Define which customers should be tested
- Define what tasks should be tested
- Write usability scenarios and tasks
- Select participants

Step 2: Conducting The Usability Test

- Conduct a test
- Collect data

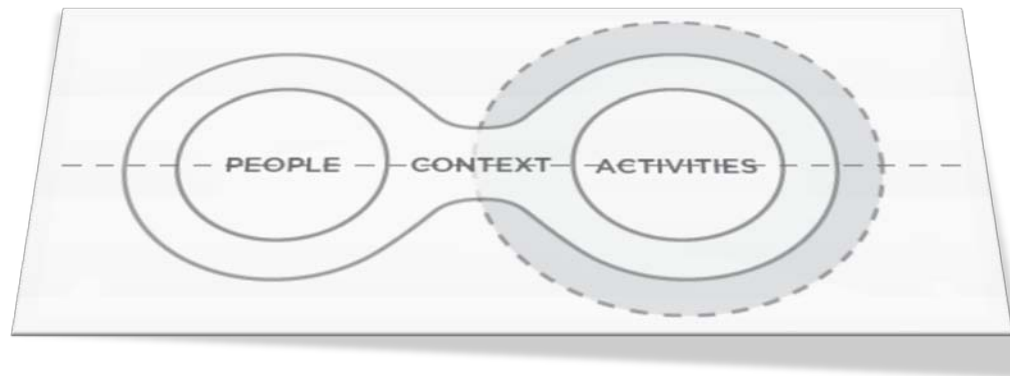
Step 3: Analyzing and Reporting The Usability Test

- Compile results
- Make recommendations

People – Context – Activities

Step 1: Planning The Usability Test

- Define what to test
 - → **Activities (Use Cases)**
- Define which customers (user profiles) to be tested
 - → **People (Actors)**
- Provide a background for the activities to test
 - → **Context**



Usability Scenarios and Tasks

- Provide the participant with motivation and **context** to make the situation more realistic
- Include several **tasks**:
 - Make the first task simple
 - Give a goal, without describing steps
- Set some *success* criteria, examples:
 - N% of test participants will be able to complete x% of tasks in the time allotted.
 - Participants will be able to complete x% of tasks with no more than one error per task.
 - N% of test participants will rate the system as highly usable on a scale of x to x.

Example of Scenario with Tasks

- Context:
 - You want to book a sailing on Royal Caribbean International for next June with your church group. The group is called “Saint Francis Summer 2010”. The group is selling out fast, so you want to book a cabin, which is close to an elevator because your leg hurts from a recent injury.
- Tasks to perform:
 1. Open your browser
 2. Click the link labeled “Royal Caribbean”
 3. Tell me the available cabins in the “Saint Francis Summer 2010” group
 4. Tell me a cabin number closest to an elevator
 5. Book the cabin the best suits your needs

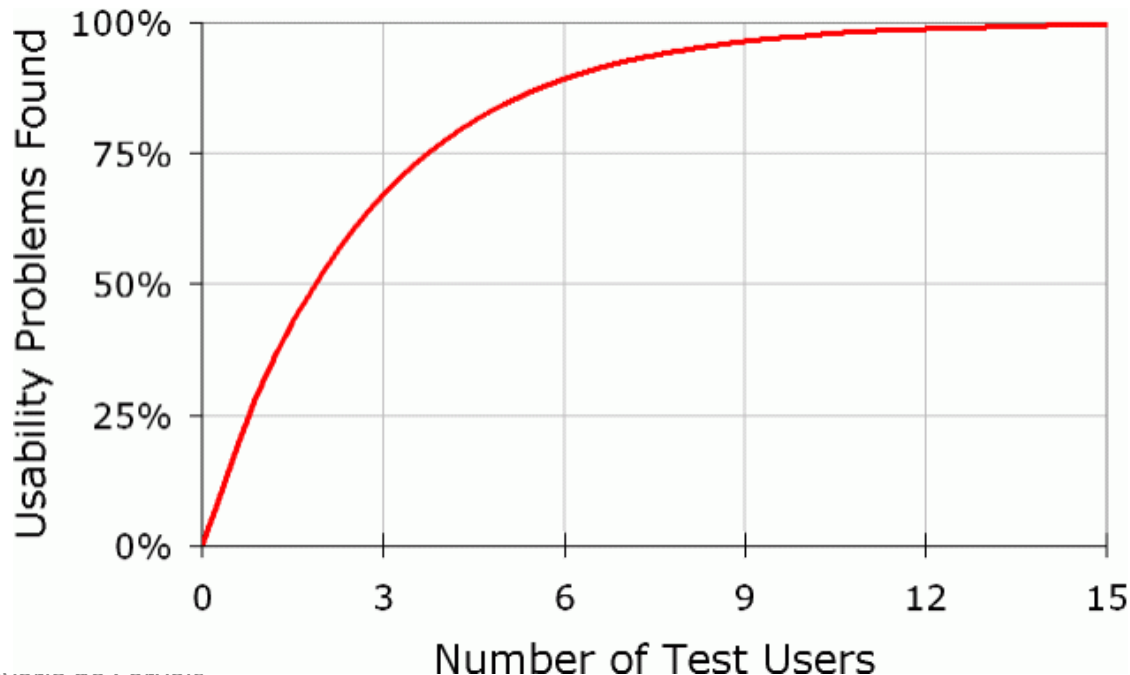
Selecting Participants

- Recruit participants
 - In-house
 - recruitment firms, databases, conferences
- Match participants with user profiles
- Numbers: of participants, floaters
- Schedule test sessions
- Incentives:
 - Gift checks (\$100 per session)
 - Food or gift cards



How Many Test Participants Are Required?

- The number of usability problems found in a usability test with n participants is: $N(1-(1-L)^n)$
 - N : total number of usability problems in the design
 - L : the proportion of usability problems discovered while testing a single participant.

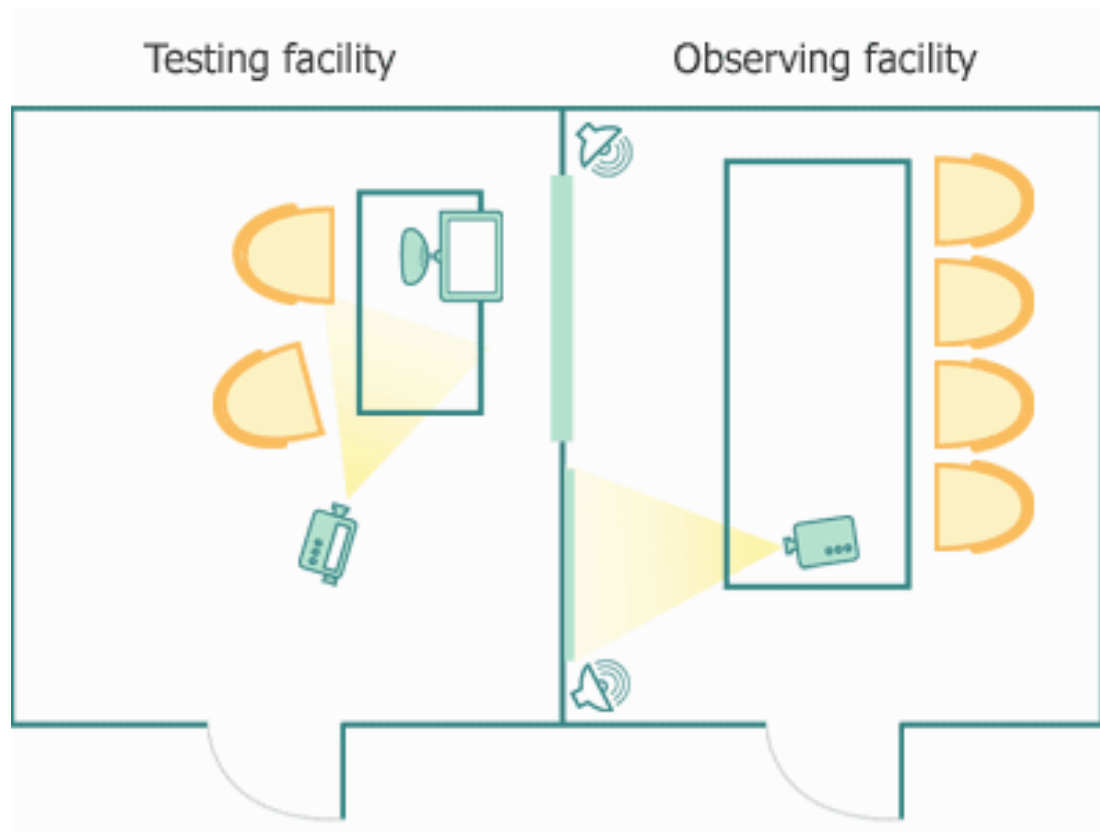


For $L = 31\%$

How Many Test Participants Are Required?

- It seems that you need to test with at least 15 participants to discover all the usability problems
- However, is better to perform 3 tests with **5 participants** than to perform one with 15 participants:
 - After the first test with 5 participants has found **85%** of the usability problems, you will want to fix them in a redesign.
 - After creating the new design, you need to test again.
 - The second test with 5 users will discover most of the remaining 15% of the original usability problems that were not found in the first test (and some new one).
 - The new test will be able to uncover **structural** usability problems that were obscured in initial studies as users were stumped by surface-level usability problems.
 - Fix the new problems, and test ...

Usability Labs ... Not Necessary



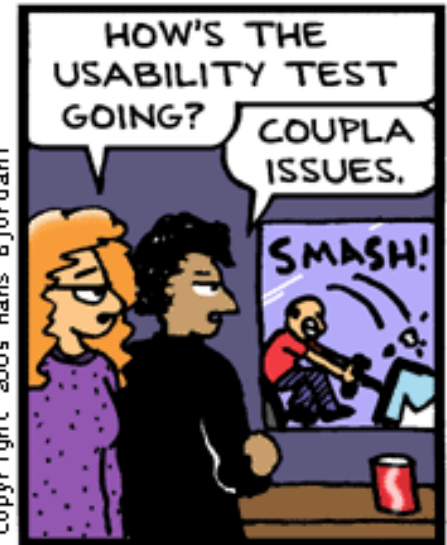
The testing room contains office furniture, video tape equipment, a microphone and a computer with appropriate software.

The observer side contains a powerful computer to collect the usability data and analyze it. A one-way mirror separates the rooms.

Usability Labs ... Not Necessary?



Copyright 2005 Hans Bjordahl



Bug Bash by Hans Bjordahl

<http://www.bugbash.net/>

Test Side-by-Side



Conducting Tests: Facilitator's Role

- Start with an easy task to build confidence
- Sit beside the person not behind the glass
- Use “think-out-loud” protocol
- Give participants time to think it through
- Offer appropriate encouragement
- Lead participants, don't answer questions (being an enabler)
- Don't act knowledgeable (treat them as the experts)
- Don't get too involved in data collection
- Don't jump to conclusions
- Don't solve their problems immediately

Collecting Data

- Performance
 - Objective (what actually happened)
 - Usually Quantitative
 - Time to complete a task
 - Time to recover from an error
 - Number of errors
 - Percentage of tasks completed successfully
 - Number of clicks
 - Pathway information
- Preference
 - Subjective (what participants say/thought)
 - Usually Qualitative
 - Preference of versions
 - Suggestions and comments
 - Ratings or rankings (can be quantitative)

Report findings and recommendations

- Make report usable for your users
- Include quantitative data (success rates, times, etc.)
- Avoid words like “few, many, several”. Include counts
- Use quotes
- Use screenshots
- Mention positive findings
- Do not use participant names, use P1, P2, P3, etc.
- Include recommendations
- Make it short

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The evolution of culture marches with the elimination of ornament from useful objects

Ornament und Verbrechen

Adolf **Loos**

(1870 - 1933)



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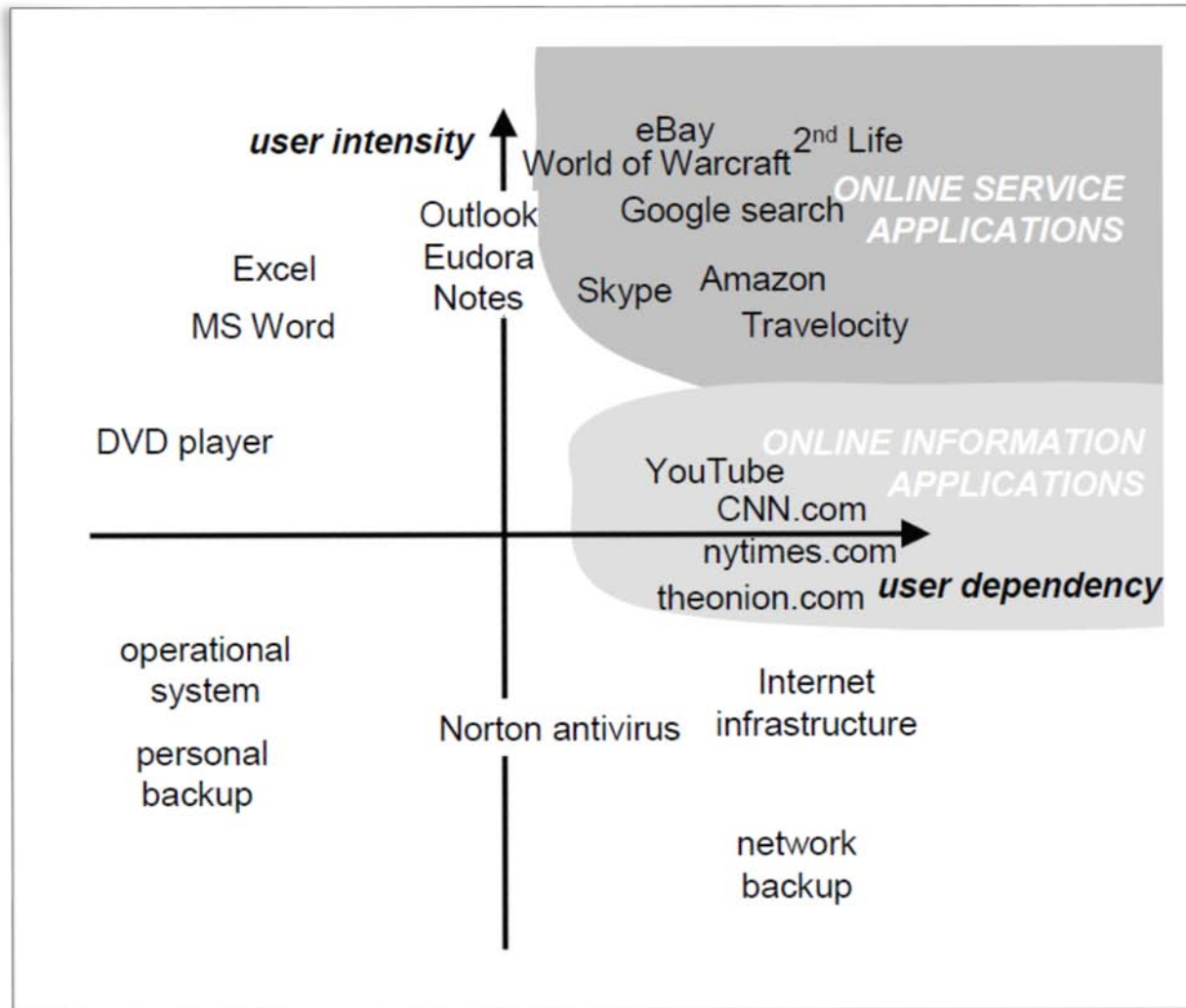
Usability & Accessibility

- Usability means designing websites to be effective, efficient, and satisfying for *most* people
- Accessibility makes sure it is effective, efficient, and satisfying
 - for more people — especially people with disabilities —
 - in more situations — including with assistive technologies, mobile devices, and more.
- The W3C's [Web Content Accessibility Guidelines \(WCAG\) 2.0](#), [Authoring Tool Accessibility Guidelines \(ATAG\) 2.0](#), and [User Agent Accessibility Guidelines \(UAAG\) 2.0](#) provide a stable set of accessibility requirements that can be met using different techniques

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A Service Science Perspective for Interfaces of Online Service Applications [Pin08]



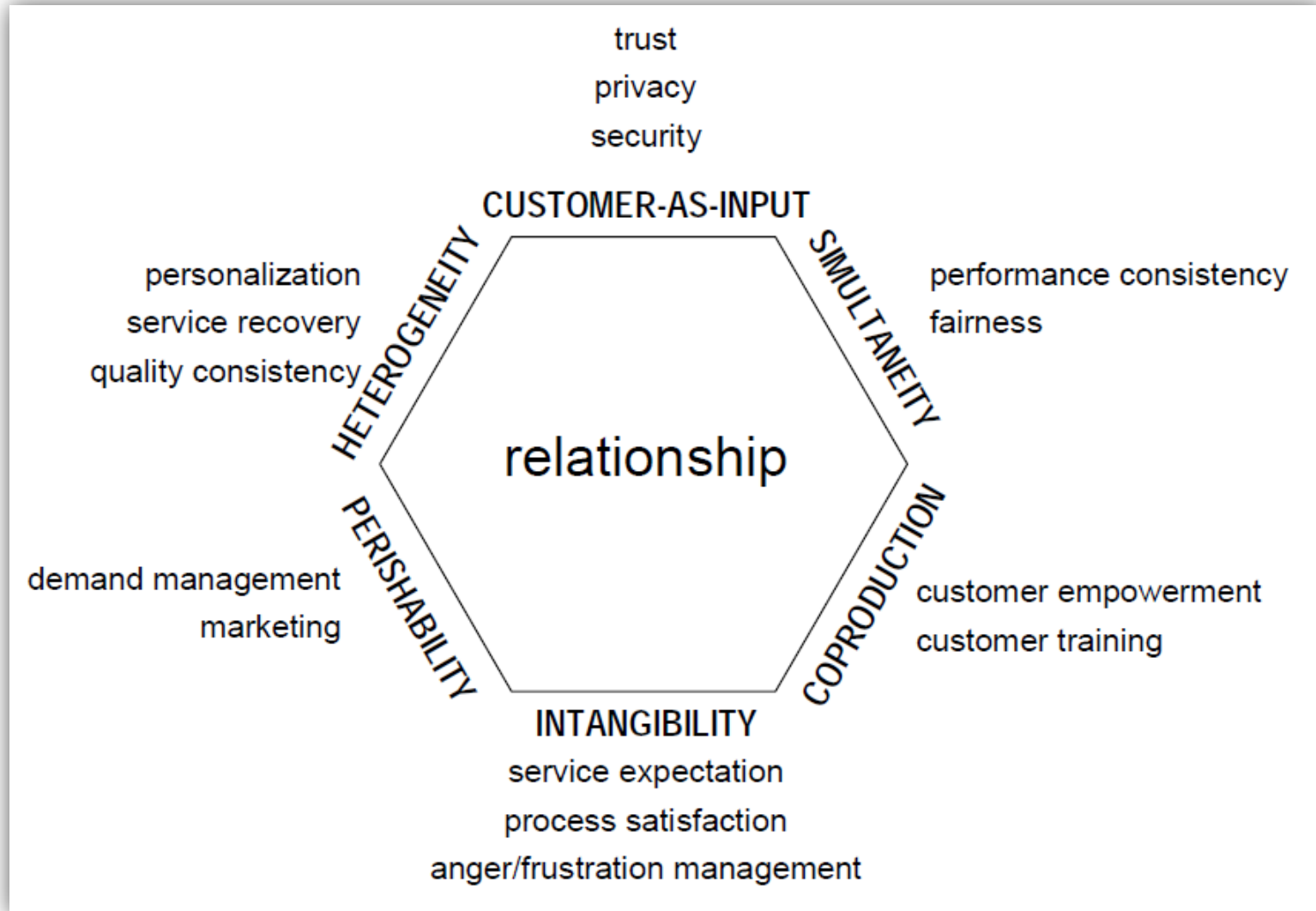
Online Services: Defining Features

- The user does not control most means of production. (resources, capital, and labor), therefore she cannot determine
 - when and how intensively resources are used
 - where her information is stored and who can access it
 - how much effort is put on a given task or goal
 - what the cost of the service is and how it changes
- The user (self, belongings, information) is a significant part of the input to the production process,
 - therefore the application behave as a service rather than a manufacture.

Online Services: Beyond “Classical” Usability

- “Classical” HCI evaluation and usability:
 - determines typical usage scenarios of the device/product
 - recreates in the laboratory meaningful test procedures.
- Web applications required HCI practitioners to change some techniques to cope with their special needs
- Taking one step further, recognizing the specific characteristics of online services in contrast to generic web applications will allow the development of more appropriate tools
- A new framework is proposed by considering 6 common characteristics of services reported in the SSME literature: *customer-as-input, heterogeneity, simultaneity, perishability, coproduction, and intangibility.*

Online Services: Important Issues (To Test)



Should a *service engineer* from
the *FIB* know about this?

References

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