What makes an application a “good” application?
How is software experienced by end-users?

Christian Campo
EclipseCon 2012
• Christian Campo

How is software experienced by end-users?

• What is Usability?
• Flow?
• “Gestalt” Laws?
Software Quality

Efficiency

Functionality

Usability

Portability

Maintainability
Definition of Usability

"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use."

Source: ISO 9241-11
Definition of Usability

"The extent to which a **product** can be used by **specified users** to achieve **specified goals** with **effectiveness**, **efficiency**, and **satisfaction** in a specified **context of use**."
Usability

Product, User, Goal, and Context of Use

"The extent to which a product can be used by specified users to achieve specified goals... in a specified context of use."

Source: Productergonomie, H. Dirken
Usability: the user

Input
- Sight, Hearing, Taste, Smell, Touch, Balance & Acceleration, Temperature

Output
- Motor skills, Speech

Context of Use

Throughput
- Decision (processing), Memory (storing)

Source: Productergonomie, H. Dirken
Usability: the product

Input
- Keyboard/Keypad, Mouse, Joystick, Microphone, Touch Screen

Output
- Monitor, Internal speak, Vibration

Throughput
- Decision (processing), Memory (storing)

Source: Productergonomie, H. Dirken
Usability: context of use

Context of Use

- Use environment (Environmental-, Social- Technological context)
- E.g. Temperature, Noise, Pressure, Lighting Conditions, Other products (e.g. safety glasses, gloves), Social Context

Source: Productergonomie, H. Dirken
Product, User, Goal, and Context of Use

"The extent to which a product can be used by specified users to achieve specified goals ... in a specified context of use."

Source: Productergonomie, H. Dirken
Design decisions: the user

User

• What goals does the user have?
• Vocabulary of the domain
• How existing products are used
• Abilities and impairments?
• How do the goals of my software relate to other goals of the user’s job?
• Experience level?

• Required domain knowledge knowledge (what does the user need to know to accomplish their job?)
Design decision: context of use

Context of Use

• What are characteristics of the context (e.g. heat, noise)

• Artifacts in the context

• Context of how the product fits into their lives/workflow

Factory floor
Public space
Library
Crowded office space
To make a more usable design, you need to know:

› Who are your users?
› What are their skills?
› What are their goals?
› In which context is your product used?

The information on user, context, goals will help you make realistic design decisions.

How to get this information?

› USABILITY RESEARCH & TESTING!
Definition of Usability

"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use."

Source: ISO 9241-11
• **Effectiveness**
  › Definition: *Successful in producing an intended result*

  › Measuring Effectiveness
    › Percentage of task completed
    › Ratio of success to failure

  › Number of features or commands used

Efficiency

Definition: Achieving maximum productivity with minimum wasted effort or expense

Measuring Efficiency

- Time to complete the task
- Time to learn
- Time spent on error
- Percentage or number of errors

Usability: satisfaction

• **Satisfaction**
  › Definition: *Fulfillment in one’s expectations, needs, or pleasure derived from this*

  › Measuring Satisfaction
    › Rating scale for satisfaction with functions and features
    › Rating scale for usefulness of the product or service
    › Number of times user expresses frustration or anger

**Usability: satisfaction**

- **Satisfaction**
  - Fulfillment in one’s expectations, needs, or pleasure derived from this

Keep **users** happy by allowing for **flow**
What is flow?

Flow is the mental state of operation in which a person in an activity is fully immersed in a feeling of energized focus, full involvement, and success in the process of the activity.

How to allow for flow? (Some principles)

- The user must have a clear goal
- Task should be doable/workable
- (Inter)actions should have immediate feedback

In Software? (Some principles)

- Direct, don’t discuss
- Keep tools close at hand
- Provide modeless feedback

Sources: About Face 2.0, Cooper, Reiman, The Psychology of Optimal Experience; Csikszentmihalyi
deep hack mode

When coding, one may get into the deep hack mode. At this point, you forget everything around you and become one with the code. Nothing exists any more except for the problem you are working on. In this zen-like state, you may not only solve your problem but achieve this better than you would ever have imagined. If you are not able to reach the deep hack mode, you will never become more than a mediocre programmer.

- "I wanted to see Dave, but when I started to talk to him, he just raised his hand and continued looking at the screen. I waited for 20 minutes for him to turn towards me, but he just continued typing. Does he hate me?"
- "No, he was in deep hack mode. You should be happy that you saw this phenomenon with your own eyes."

programming  code  zen  perfection  mind-over-electron
by Danzelot  Jun 21, 2010  share this  add a video
Allowing for flow search

We did not find results for: eccccclllipse riena. Try the suggestions below or type a new query above.

Suggestions:

- Check your spelling.
- Try more general words.
- Try different words that mean the same thing.
- Broaden your search by using fewer words.
- Try asking a question on Yahoo! Answers
Allowing for flow search
Allowing for flow search

Google: eccccccclipse riena

Suche
Ungefähr 152.000 Ergebnisse (0,24 Sekunden)

Alles
Ergebnisse für eclipse riena
Keine Ergebnisse für eccccccclipse riena gefunden

Riena - Eclipse
www.eclipse.org/riena/ - Diese Seite übersetzen
The Riena platform is the foundation for building multi-tier enterprise client/server applications. As such Riena is broadening the usage of the service oriented...

The Riena Project
www.eclipse.org/...riena/
Some of these components ...

Riena Project
wiki.eclipse.org/Riena_Project
The Riena platform is a ...

de.wikipedia.org/wiki/Eclipse_Riena_Platform
Die Eclipse Riena Platform (kurz Riena) ist ein Open Source Java-Framework für die Anwendungsentwicklung. Riena ist seit Januar 2008 ein Projekt der...

Eclipse RCP: Eclipse Riena Tutorial
www.rafibert.de/blog/eclipsercp/riena_tutorial/ - Diese Seite übersetzen
10 Aug 2009 – Eclipse Riena delivers a simplification of the Eclipse RCP workbench concept and comes with its own UI and navigation concept. In this tutorial ...

compeople AG | Eclipse Riena
www.compeople.de/18-0-Eclipse-Riena.html
Allowing for flow search
Allowing for flow

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search
Allowing for flow
Allowing for flow

Meine

save
Allowing for flow
Allowing for flow
Allowing for flow
Allowing for flow
Flow != Workflow

- Flow links Workflows
- Flow allows uninterrupted Work
- Think ahead for your user ??
Efficiency

> Achieving maximum productivity with minimum wasted effort or expense

To make a **product** more **efficient** one can reduce **TIME** and **WORK**

- **Mnemonic Work**
  - "recall of passwords, command vectors, names and locations of data objects and controls, and other relationships between objects"

- **Perceptual Work**
  - "decoding visual layouts and semantics of shape, size, color, and representation"

- **Logical Work**
  - "comprehension of text and organizational structures"

- **Physical/Motor Work**
  - "number of keystrokes, degree of mouse movement, use of gestures, switching between input modes..."

Source: About Face 2.0, Cooper, Reimann
Reducing perceptual work?

- (Some) Dimensions of visual coding
  - Position
  - Color
  - Texture
  - Shape
  - Size

Source: Productergonomie, H. Dirken
Reducing perceptual work?

**Proximity**
- Elements that are close together tend to be perceived as a group (belonging together)

**Similarity**
- Elements with similar properties (e.g. shape, color) tend to be perceived as groups
Reducing perceptual work
Reducing perceptual work
Reducing perceptual work
Reducing perceptual work

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Reducing perceptual work
Reducing perceptual work
Reducing perceptual work

1. Label  |  Textfield  |  next Label

2. Label always at the beginning of a new line
Reducing perceptual work

I meant in an intelligent way :-)
Reducing perceptual work
Reducing perceptual work
Reducing perceptual work

YES! this is the same as the one above 😊
Reducing perceptual work
Reducing perceptual work

- mandatory
- static
- easy to overlook
Reducing perceptual work
Reducing perceptual work

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</thead>
</table>

*no longer mandatory*
Reducing perceptual work
Reducing perceptual work

- errormarker
Reducing perceptual work
Reducing perceptual work
Reducing perceptual work

Invalid format for taxnumber, no '-' allowed

Basic
- salutation
- title
- surname
- first name
- birthday: 09.10.1900
- birthplace

Birth + Tax
- birth name
- birth country: Germany
- marital status: single
- tax number: 415T-12
- tax office
- children: no

Sales
- ranking
- hide file
- yes
- sales rep no
- sales rep name
- vm no
- vm name
- customer nr
- customer status
- created on

| person | salutation | title | surname | first name | birthday | marital status | ranking |
Reducing perceptual work

ambiguous meaning of disabled
Reducing perceptual work

better?
what about the label
Definition of Usability

"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use."

Source: ISO 9241-11
The question is?

Who are my users?

What are their goals?

What is the context of use?

How can I make their work more efficient?

How can I make their work more satisfying?

How can I make their work effective?

How do users experience YOUR software?
Give Feedback on the Sessions

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2. Select Session Evaluate

3. Vote +1 0 -1