

Interaction quality

Unit 2

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Short bio

Zeno Menestrina

- MSc in Computer Science, UniTn
- PhD Student in Computer Science, UniTn
- Research on video game design

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Ground rules

- Leave the mobile in your bag
- Keep talking, whispering and other background noise to a minimum
- If there is something you don't understand, please interrupt
- If you want to make a general remark, please wait until there is a natural break

Group work

- ~4 people each
- Subscription from 20/09 to 25/09
- More details in 2 weeks

Learning outcomes

- Define quality metrics
 - Usability
 - User experience
- Understand the main types of evaluation

Interaction Design

“Designing interactive products to support the way people communicate and interact in their everyday and working lives”

– Rogers, Sharp, Preece (2011)

Interaction Design

Architects

Software Engineering

Civil Engineers

Interaction Design

Architects

- People and their interactions
- Family and private space?
- People live in the space in the way it was intended to use?

Software Engineering

Civil Engineers

Interaction Design

Architects

- People and their interactions
- Family and private space?
- People live in the space in the way it was intended to use?

Software Engineering

Civil Engineers

- The project
- Costs and durability
- Structural aspects
- Environment
- Fire regulations

Usability

“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.”

- ISO 9241-11:1998 Ergonomic requirements for office work with visual display terminals (VDTs) -- Part 11: Guidance on usability.

Usability

- Usability is a **quality attribute** that assesses how easy user interfaces are to use.
- Five quality dimensions

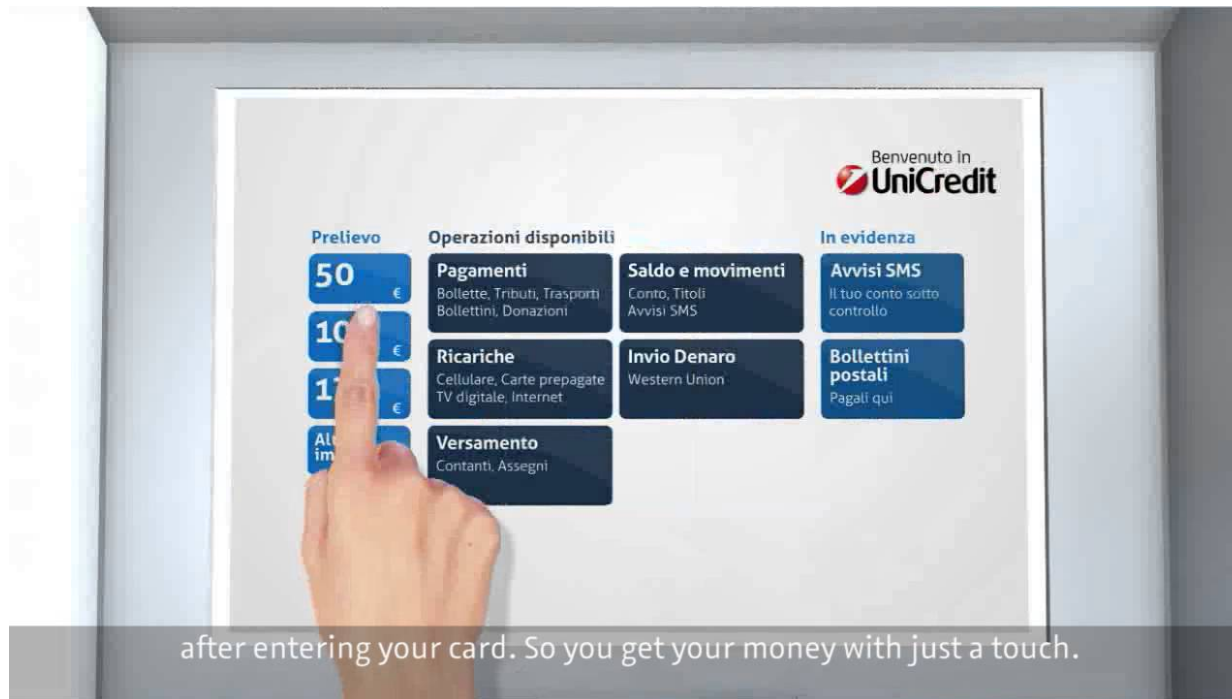
Learnability

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?



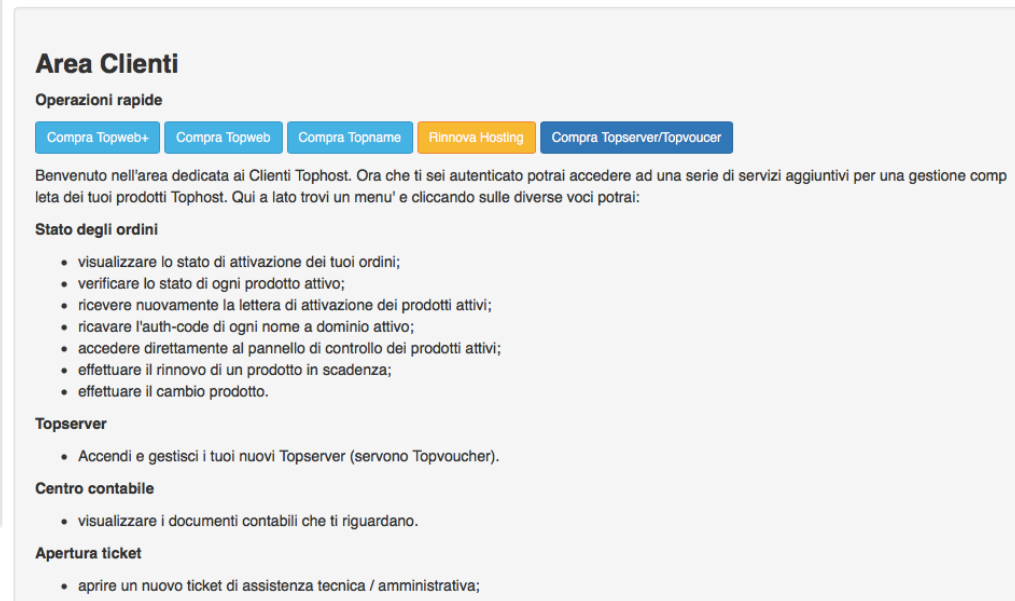
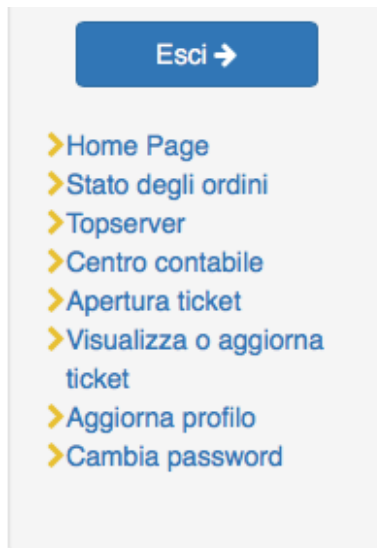
Efficiency

Once users have learned the design, how quickly can they perform tasks?

The PayPal logo is displayed in a large, bold, blue font with a white outline. The word "Pay" is in a lowercase, italicized font, and "Pal" is in an uppercase, italicized font. A registered trademark symbol (®) is located at the top right of the "l".

Memorability

When users return to the design after a period of not using it, how easily can they reestablish proficiency?



Memorability

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The screenshot displays a web application interface. On the left is a navigation menu with a blue 'Esci →' button at the top. Below it are several menu items with blue chevron icons: 'Home Page', 'Stato degli ordini', 'Topserver', 'Centro contabile', 'Apertura ticket', 'Visualizza o aggiorna ticket', 'Aggiorna profilo', and 'Cambia password'. A red arrow points to the 'Stato degli ordini' item.

The main content area is titled 'Stato degli ordini per il cliente menestrinazeno83@gmail.com'. It is divided into sections: 'CLIENTE', 'ELENCO PRODOTTI ATTIVI', and a table of active orders.

The 'CLIENTE' section contains two columns: 'Persona di riferimento:' and 'Dati di fatturazione:'. The 'Persona di riferimento:' column lists 'Zeno Menestrina', 'Telefono 3405959778', and 'E-mail: zeno1987@hotmail.it'. The 'Dati di fatturazione:' column lists 'Zeno Menestrina', 'Via Giacomo Matteotti 16', '38122 Trento (TN)', and 'P.I./C.F. MNSZNE87L24L378V'.

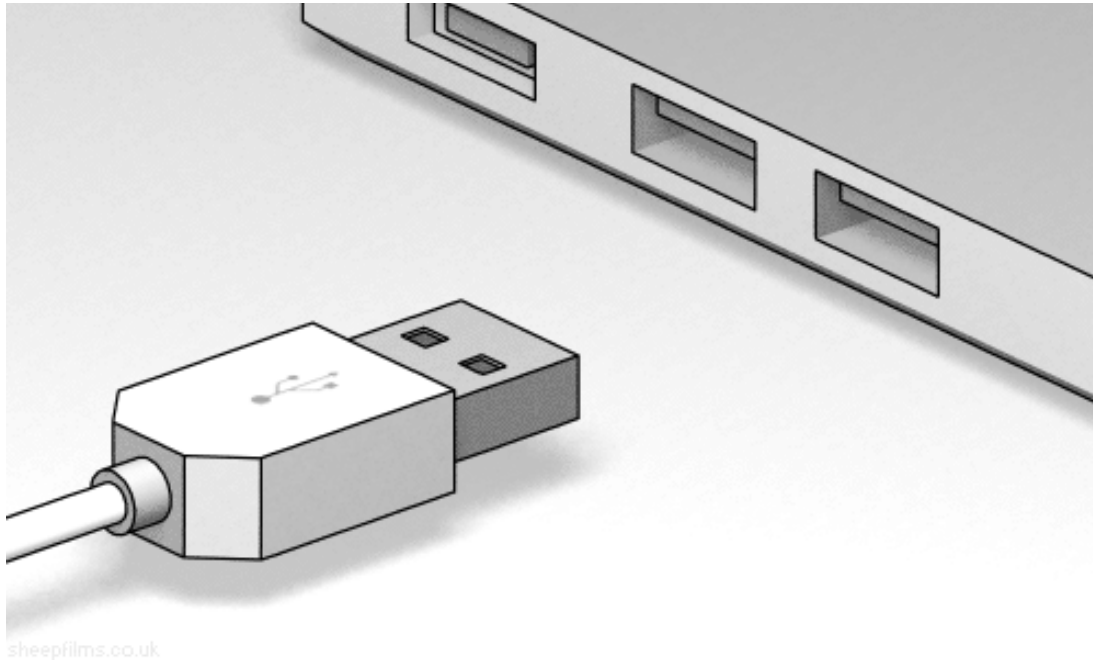
The 'ELENCO PRODOTTI ATTIVI' section contains a table with the following columns: 'Data ordine', 'Stato', 'Nome a dominio', 'Prodotto', 'Rinnovabile entro la data', and 'Procedure aggiuntive'. A red arrow points to the 'Procedure aggiuntive' column header.

The table contains one row of data: '13/10/2015', 'attivo', 'supersantosdesign.org', 'topweb', '05/11/2016', and a set of icons representing various procedures.

At the bottom of the page, there is a pagination bar showing 'Risultati 1-1 / 1', navigation buttons, 'Pagina 1 di 1', 'Per pagina 20', and a 'Reset' button.

Errors

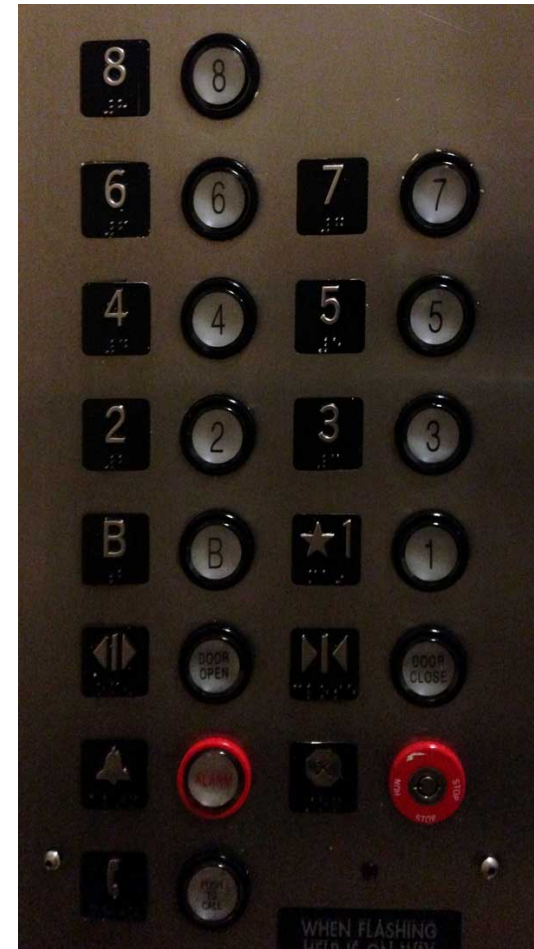
How many errors do users make, how severe are these errors, and how easily can they recover from the errors?



sheepfilms.co.uk

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?

Usability

- Usability is a **quality attribute** that assesses how easy user interfaces are to use.
- Five quality dimensions:
 - **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?
 - <http://www.useit.com/>

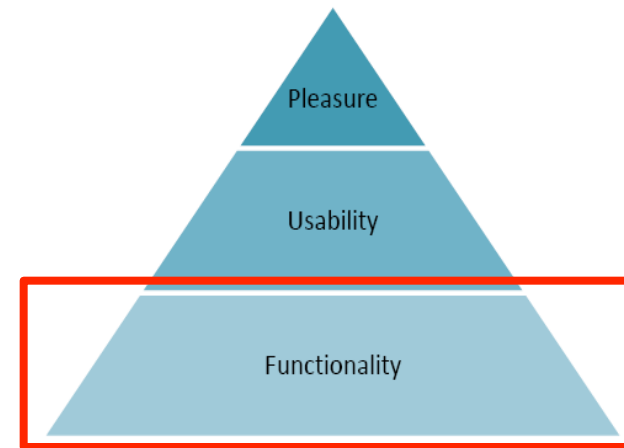
Usability

- Quality = absence of problems
 - Discover usability problems and reduce their frequency and severity
 - It can be measured
 - Objective data (performance is measured by behavioural data, user observations)
 - Subjective data (quality is estimated by the user, self-report, questionnaire or interview)
 - Meeting specific usability criteria

Hierarchy of consumer needs

Jordan (2000)

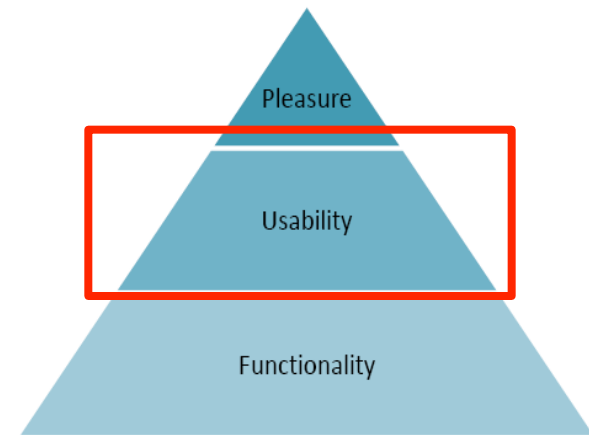
- Functionality = “a product will be useless if it does not contain appropriate functionality, a product cannot be usable if it does not contain the functions necessary to perform the tasks for which it is needed”



Hierarchy of consumer needs

Jordan (2000)

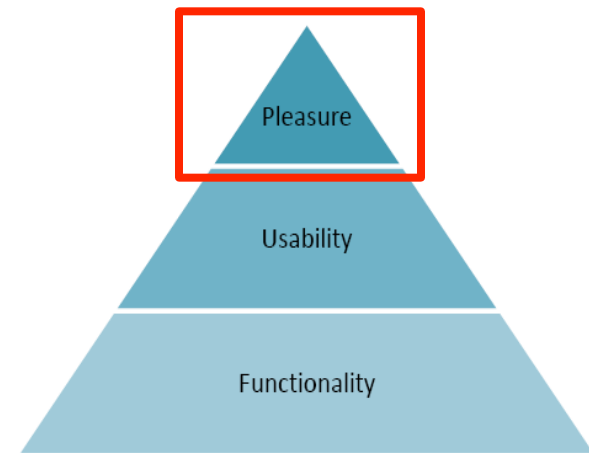
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- Usability = “once people had become used to having appropriate functionality they then wanted products that were easy to use”



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- Functionality = “a product will be useless if it does not contain appropriate functionality, a product cannot be usable if it does not contain the functions necessary to perform the tasks for which it is needed”
- Usability = “once people had become used to having appropriate functionality they then wanted products that were easy to use”
- Pleasure = “having become used to usable products, it seems inevitable that people will soon want something more: [...] products that bring not only functional benefits but also emotional ones”



User experience

- The User Experience (UX) is a complex psychological response to the interaction with computing systems.
- This response is a consequence of
 - Individual predispositions of the user (e.g., attitudes, motivations and needs)
 - Characteristics of the interactive system (e.g., purpose, functionality and usability)
 - Contextual dependencies (e.g., task and environment).

User experience goals

- Satisfying
 - Fun
 - Enjoyable
 - Entertaining
 - Helpful
 - Motivating
 - Aesthetically pleasing
 - Motivating
 - Enhancing sociability
- Rewarding
 - Support creativity
 - Emotionally fulfilling
 - ...and more

Examples - UX

Entratel - Fisconline

Accedi ai servizi

- Registrazione
- Statistiche
- Avvisi dei Servizi Telematici
- Verifica File
- Assistenza ai Servizi Telematici
- Domande frequenti

Ti trovi in: Entratel Fisconline

Accedi al servizio Entratel - Fisconline

Primo piano

- 16-09-2016 - [Richiesta di rimborso del canone di abbonamento alla televisione per uso privato addebitato nella bolletta elettrica](#)
- 14-09-2016 - [Nuova versione del modulo di controllo modello IRAP 2016](#)
- 14-09-2016 - [Nuova versione del modulo di controllo delle dichiarazioni 2016](#)
- 14-09-2016 - [Nuova versione del modulo di controllo del modello Consolidato Nazionale e Mondiale 2016](#)
- 14-09-2016 - [Nuova versione del controllo formale dei pagamenti effettuati con i modelli F24](#)
- 12-09-2016 - [Nuova versione del modulo di controllo delle dichiarazioni 770 Ordinario e 770 Semplicato](#)
- 01-09-2016 - [Nuova versione del Modulo di controllo dei modelli di dichiarazione IVA 2016](#)
- 29-08-2016 - [Nuova versione del modulo di controllo Studi di Settore/Parametri 2016](#)
- 04-08-2016 - [Disponibilità delle ricevute Entratel](#)
- 29-07-2016 - [Novità per il canale telematico CIVIS](#)
- 27-07-2016 - [Dichiarazione sostitutiva relativa al canone di abbonamento alla televisione per uso privato](#)

Accedi al servizio

Nome utente:

Password:

Codice pin:

- Non sei ancora registrato?
- Hai smarrito le credenziali?
- Accesso con Smart Card

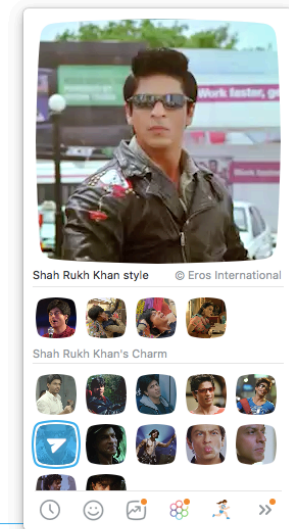
Examples - UX

Skype



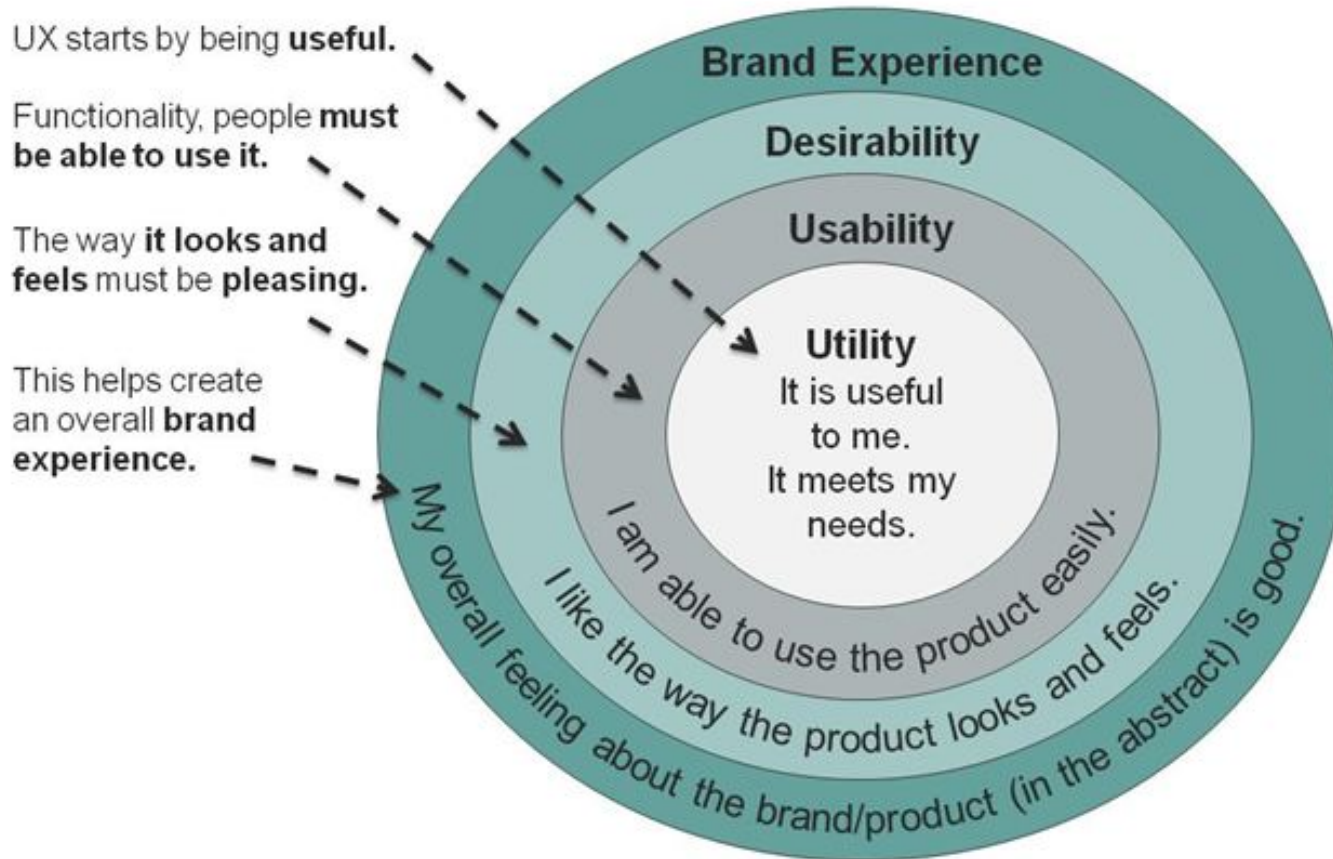
```
mIRC 05:51:19 am 64 users 420 lines - [#shroomery] [+ctrl]: DONT DO DRUGS... UNLESS YOU CAN ASCERTAIN THAT THEY ARE IN FACT DRUGS AND YOU WILL IN FACT GET HIGH OFF OF THEM
[August 26 2006 Saturday 04:30:30.11 AM] * Now talking in #shroomery
[August 26 2006 Saturday 04:30:30.11 AM] * The topic of #shroomery is "DONT DO DRUGS... UNLESS YOU CAN ASCERTAIN THAT THEY ARE IN FACT DRUGS AND YOU WILL IN FACT GET HIGH OFF OF THEM"
[August 26 2006 Saturday 04:30:30.11 AM] * The topic of #shroomery was set by kake on Friday 08/25/2006 02:31:51 PM
[August 26 2006 Saturday 04:30:30.11 AM] * The topic of #shroomery was created 13 hours 58 minutes 39 seconds (13 hours 58 minutes 39 seconds)
[August 26 2006 Saturday 04:30:43.11 AM] <Neal> Kek @ topic.
[August 26 2006 Saturday 04:31:41.11 AM] <Safrole> k back
[August 26 2006 Saturday 04:32:29.11 AM] * SmiinBob (~SmiinBob@d022162.37148937.res.r.com) Quit (Quit: Leaving)
[August 26 2006 Saturday 04:33:44.11 AM] <rdx> not me
[August 26 2006 Saturday 04:34:22.11 AM] <Safrole> so sick
[August 26 2006 Saturday 04:34:22.11 AM] <Safrole> omg
[August 26 2006 Saturday 04:34:22.11 AM] <Safrole> so sick
[August 26 2006 Saturday 04:34:22.11 AM] * kake (~eatmy@tungu.ys) Quit (Quit: )
[August 26 2006 Saturday 04:34:22.11 AM] <Safrole> i almost puked
[August 26 2006 Saturday 04:34:22.11 AM] <Safrole> I was dry heaving
[August 26 2006 Saturday 04:37:00.11 AM] <rdx> ew
[August 26 2006 Saturday 04:37:00.11 AM] <rdx> from what?
[August 26 2006 Saturday 04:37:19.11 AM] <Chabha> drink broeski
[August 26 2006 Saturday 04:37:52.11 AM] <Safrole> this photo that got sent to me on my phone when I walked to the 7-11
[August 26 2006 Saturday 04:38:02.11 AM] <rdx> hah
[August 26 2006 Saturday 04:38:06.11 AM] <rdx> weak stomach then
[August 26 2006 Saturday 04:38:07.11 AM] <Safrole> right after I popped my roll too
[August 26 2006 Saturday 04:38:17.11 AM] <rdx> what kind of roll?
[August 26 2006 Saturday 04:38:27.11 AM] <Safrole> a green duck
[August 26 2006 Saturday 04:38:33.11 AM] <rdx> never seen those
[August 26 2006 Saturday 04:38:42.11 AM] <Safrole> they is new
[August 26 2006 Saturday 04:38:49.11 AM] <rdx> last ones I had were pink squirrels/thumbs up
[August 26 2006 Saturday 04:38:58.11 AM] <rdx> do they have meth in them?
[August 26 2006 Saturday 04:39:04.11 AM] <Safrole> no
[August 26 2006 Saturday 04:39:04.11 AM] * mainlininMalice (~mainlinin@231698ba.2e138044.atlaga.adelphia.net) has joined #shroomery
[August 26 2006 Saturday 04:39:08.11 AM] * mainlininMalice (~mainlinin@231698ba.2e138044.atlaga.adelphia.net) has left #shroomery
[August 26 2006 Saturday 04:39:07.11 AM] <Safrole> supposeably pure
[August 26 2006 Saturday 04:39:18.11 AM] <Safrole> MDA/MDPE I think
[August 26 2006 Saturday 04:39:21.11 AM] <rdx> yeah I've never seen or had any "pure" rolls before
```

mIRC



via Skype
Type a message here

User Experience



Source: *User Experience 2008*, nnGroup Conference Amsterdam

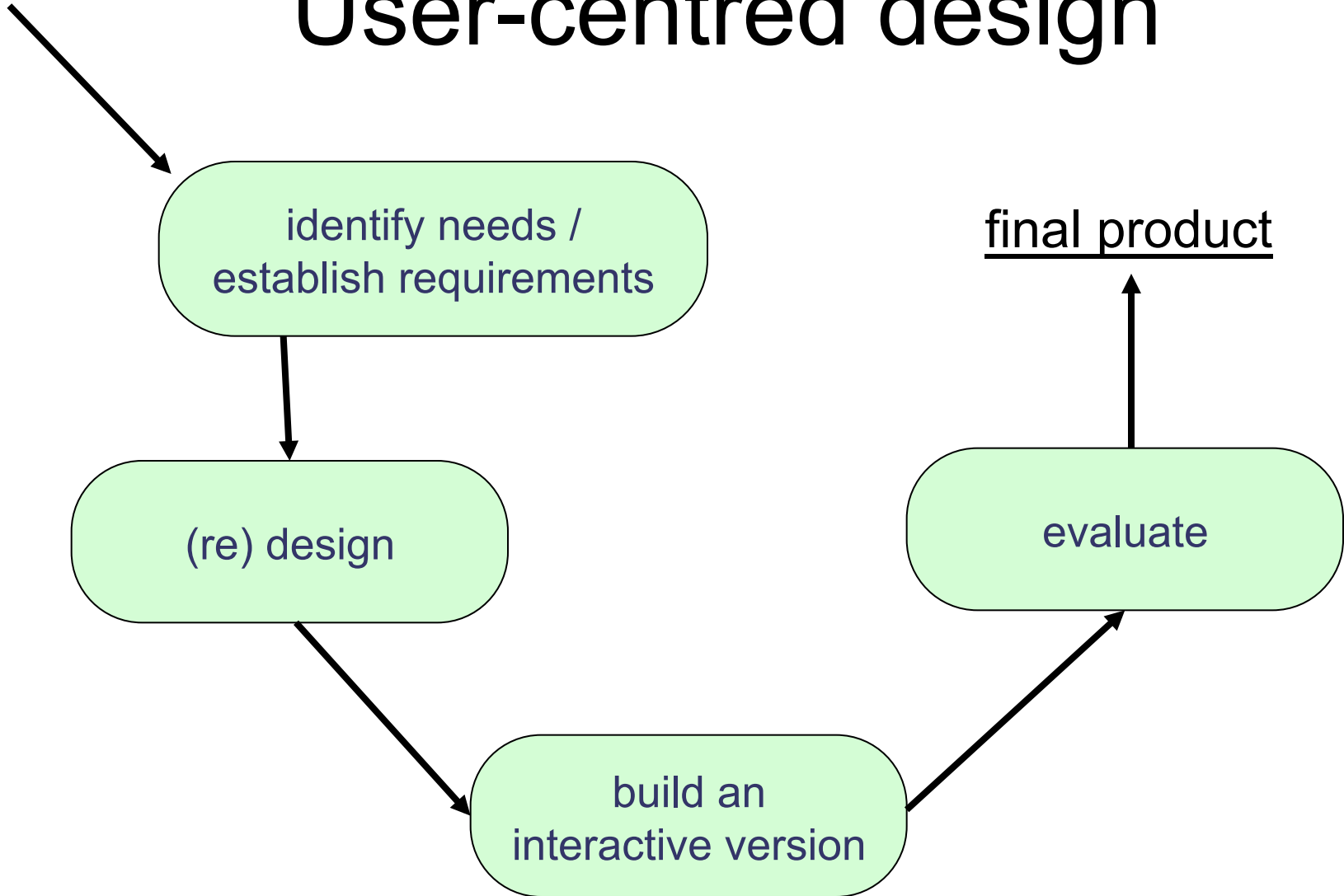
Design metrics - UX

- Usability
 - Easy of use and efficiency
- Aesthetics
 - Sensorial experience generated by the look and feel of the interface and to the extent to which this experience matches individual preferences and goals.
- Symbolism
 - Meanings and associations elicited by a system.
 - As opposed to aesthetics which can be ‘visceral’, symbolism requires cognitive processing (the individual recognizes a symbol and associate a meaning to it).

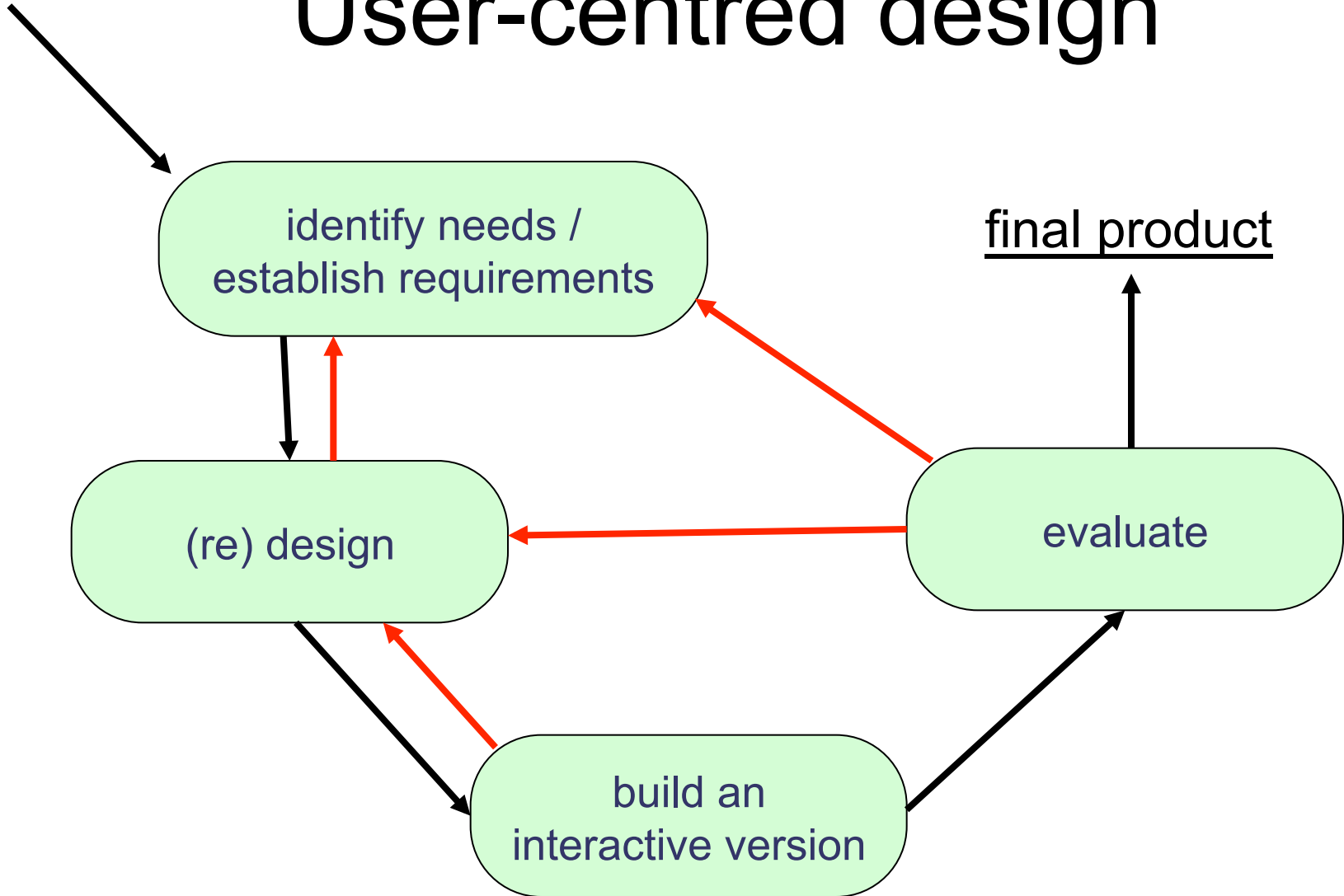
User Experience

- Positive
 - Good design is more than absence of problems.
 - Add “extra value” to design (emotion, fun, personal fulfillment)
 - Holistic
 - Pragmatic qualities (traditional usability dimensions),
 - Hedonic qualities (non-task related, beauty, challenge, stimulation and self-expression)
 - Subjective
 - Usability focuses on performance and tasks: can be objectively measured
 - Hedonic attributes relate to the user’s self which is subject to deep variations among individuals.
-

User-centred design



User-centred design



When do you evaluate?

- Formative evaluation
 - During design and development process
 - Inform design
- Summative evaluation
 - After design is deployed
 - Measure effectiveness
 - Check standards
 - Guide adoption decisions
 - Collect requirements for future systems

Evaluation

- Exploration – Conceptual design
 - Assess what it would take for a design to fulfill users' needs and likes – e.g., requirements
 - Based on scenarios, storyboard
- Development – Physical design
 - Evaluate alternatives
 - Anticipate breakdowns
- Deployment
 - Upgrade subsequent versions
 - Continual improvement
 - Collect user requirements for future systems

Overview of usability techniques

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

3 main types of evaluation

- Analytical – expert based
- Usability studies – controlled tests with users
- Field studies – watch people while they spontaneously use the tools in their everyday life

Key points

- Usability
- User-experience
- Different evaluation types

At home

- Register your group
- **(optional)** How game design is related to interaction design, usability and user experience?