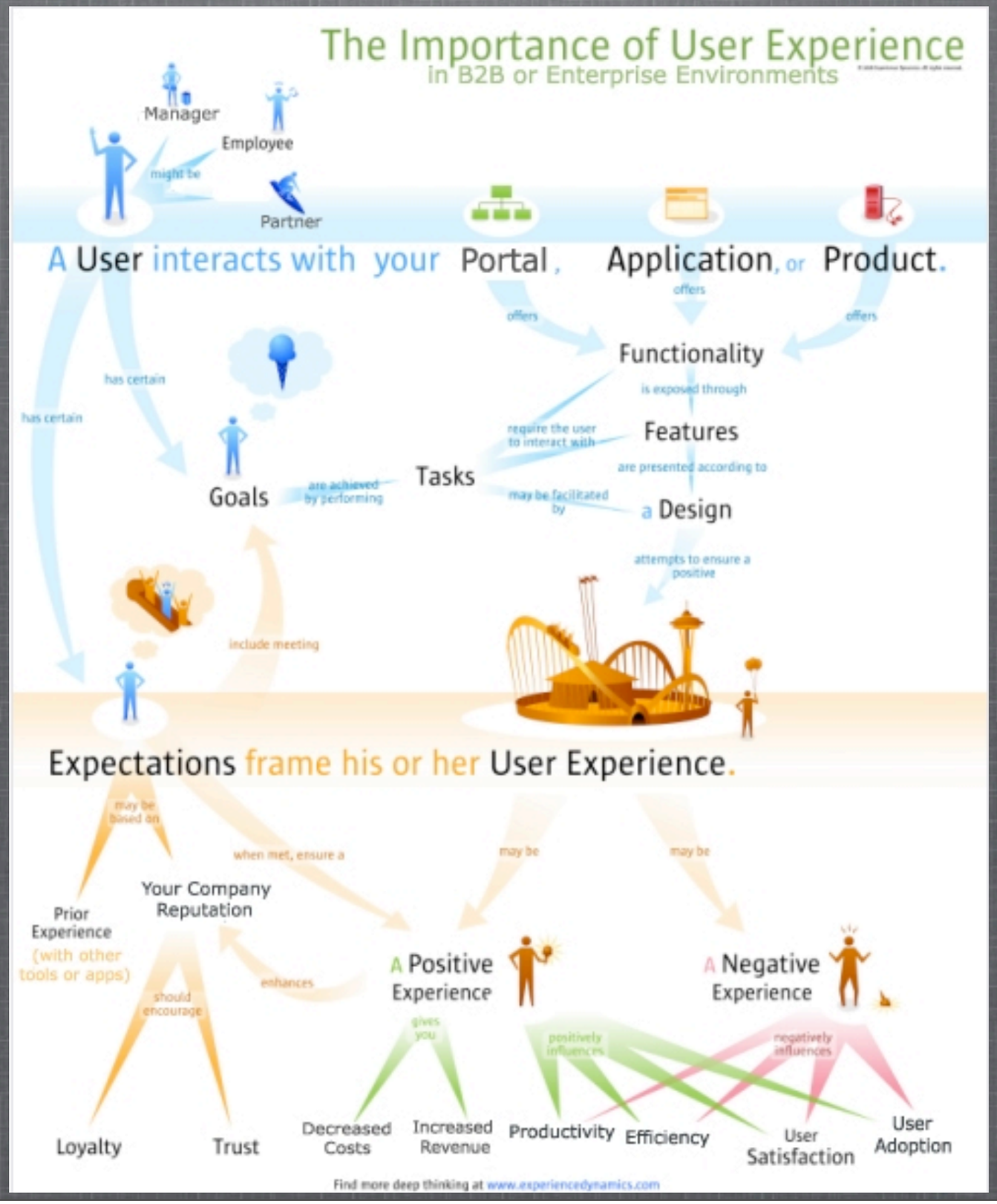
INTRODUCTION TO USABILITY

http://experiencedynamics.blogs.com/site_search_usability/usability_methodology/index.html



WHAT IS USABILITY?

”Usability means methods and theories that help making the interaction of humans and devices more efficient and pleasant. Usability takes benefit of the research of cognitive psychology and HCI.”

”Psychology of usability”,
Authors: Sinkkonen, Kuoppala, Parkkinen, Vastamäki

WHAT IS USABILITY?

ISO 9241-11 ” Ergonomic requirements for office work with visual display terminals – instructions about usability” states that usability depends always on the context (environment, user, etc.).

According to Jakob Nielsen usability is part of the utility of a product.

Nielsen states that good usability is formed of learnability, low error rate, memorability, efficiency and satisfaction. ISO agrees on efficiency and satisfaction, but adds productivity on the list.

WHAT IS USABILITY?

Usability is not a single characteristic of a product - not measured as such!

Usability is made of several components…such as: subjective satisfaction, "objectively" measured performances of given tasks

Jakob Nielsen:" Usability is a measurement of quality that user is experiencing when interacting with a system"

WHAT IS USABILITY?

In the past computer vendors were using term ”user friendly”.
UI professionals created their own terms:
HCI and CHI (Human-Computer Interaction and vice versa),
UCD (User-Centered Design),
MMI (Man-Machine Interface),
HMI Human-Machine Interface),
OMI (Operator-Machine Interface),
UID (User Interface Design),
HF (Human Factor)
User Experience (UX)

http://experiencedynamics.blogs.com/site_search_usability/usability_trends/index.html

Definitions

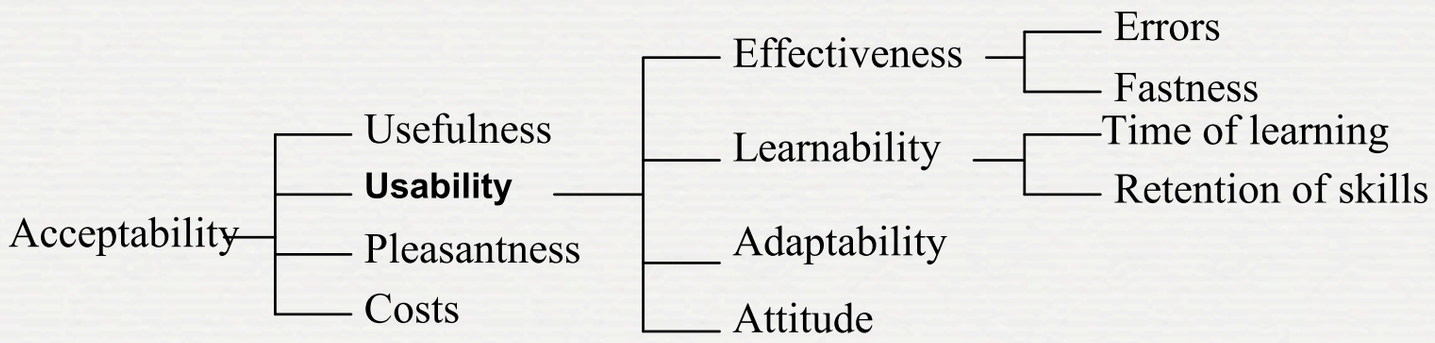


Figure 1: Usability Attributes by Shackel

Brian Shackel: ”Usability is acceptance of the product.”

The acceptance is sum of attributes:

- Utility / Usefulness
- Usability
- Pleasantness
- Costs

DEFINITIONS

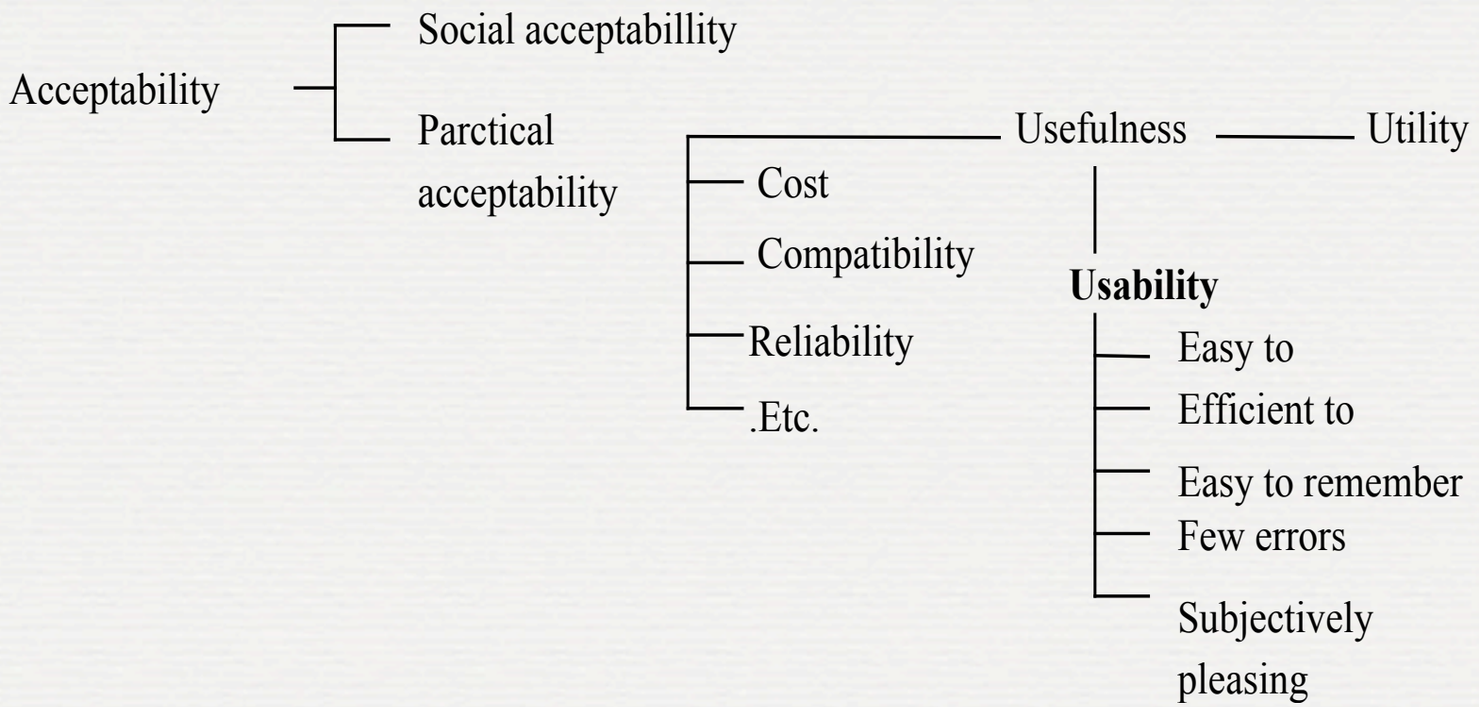


Figure 2. Usability Attributes according to Nielsen

DEFINITIONS

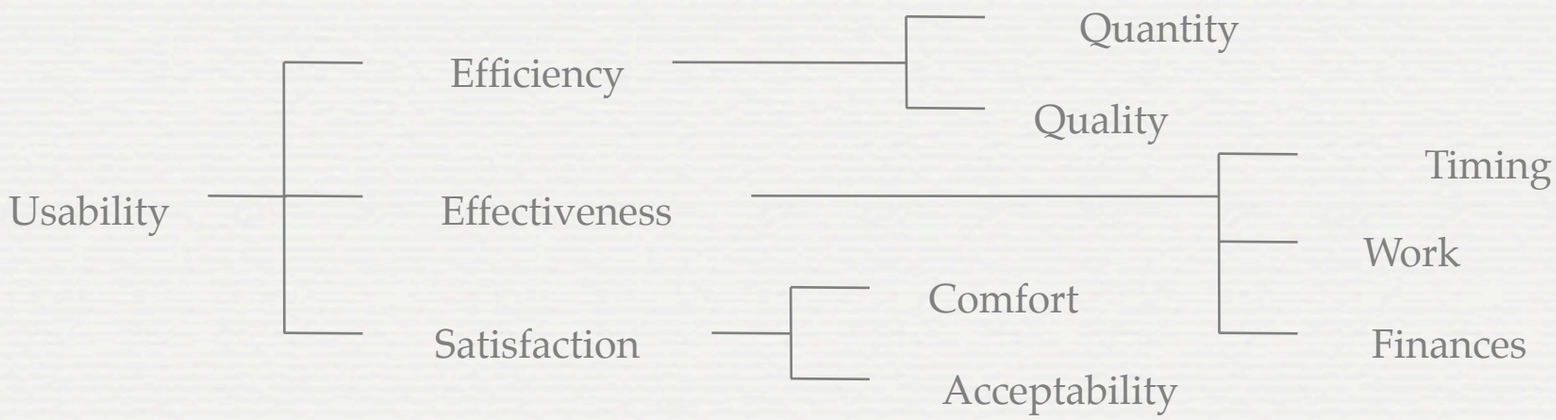


Figure 3. Usability Attributes According to ISO 9421

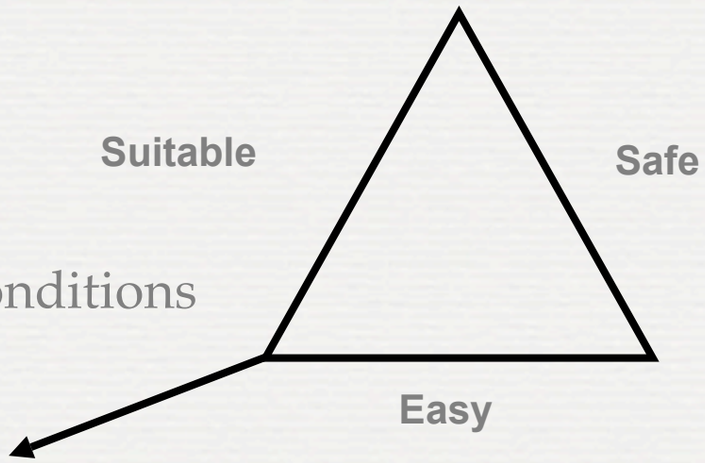
ISO 9241-11 is an International standard - it describes ergonomic requirements for office work with visual display terminals.
The definition of usability by ISO 9241 is:”The extent of which a product can be used by **specified** users to achieve specified goals with effectiveness, efficiency and satisfaction in a **specified** context of use”.
The components for this are:

- Effectiveness
- Efficiency
- Satisfaction

DEFINITIONS

Conclusion of the above:

- Product is suitable for:
- User group
- Certain user
- Usage, work
- Usage situation and conditions
- Organisation



Product is safe:

- When it feels safe and solid
- Does not cause "user's" errors -> product does not contain any ergonomic "traps" and tolerates usage errors

That is why use of product is:

- Fluent
- Fast
- Effective
- Pleasant

Product is easy to:

- Learn
- Remember how to use
- Adopt and teach
- Usage of it is "natural": it is easy to see how application should be used

Figure 4. Usability Dimensions

- So the product is easy to learn, remember, use and it does not put user under the confusing or even dangerous situations.

PROBLEM POINTS FOR USABILITY IMPLEMENTATION

- Designer cannot have overall control to the final product and its appearance since it is dependent on use context and tool ecology.
- Applications are supposed to be scalable e.g., for net: to different resolutions, browses, connection speeds, operating systems etc.
  - Response times and transmission speeds vary a lot.
- Technology development is fast.
- Different users - e.g., novices and experts

WAI

- **WAI – Web Accessibility Initiative**
- Wai is one of the Word Wide Web consortium's development areas (http://www.w3.org/WAI)
- It co-operates with governments, companies, universities and researchers around the world.
- It gives guidelines to improve use of the Internet and make it available also for those who have disabilities.
- WAI has divided accessibility into three main groups:
- Web content creation
- Internet browsers
- Writing tools [W3C – WAI Resources]

WAI – WEB ACCESSIBILITY INITIATIVE

- WAI checklist: http://www.w3.org/TR/WCAG10/full-checklist.html ; this is made for the content checks.
- For the technical parts there is a validator: http://www.cast.org/bobby

HOW USABILITY BECOMES EVIDENT?

Usability problems usually appear only after the product has been released, or after marketing of it has started.

If usability problems are noticed in the beginning of the planning phase, fixing it is not that expensive and it does not demand that as much resources, or make designers frustrated.

USERS

- Characteristics:
  - Physical and psychological differences: senses, memory, personal ”needs”.
  - Cultural features (quite permanent): language, some norms and habits
  - People are expected to have (and they do have) several **conventions** about and of technical devices and interfaces.
  - Standards and guidelines (ISO, company guidelines, design principles)

USERS

- Cultural elements that change: trends, underground cultures, company rules
- Tasks
- Personal skills
- Environment where user does his/hers job = Context

USABILITY AND OTHER CONSIDERATIONS

- To some extent, usability is a narrow concern compared to the larger issue of system acceptability, which is the question of whether the system is good enough to satisfy the needs and requirements of the users.
- The overall acceptability of a computer system is a combination of its social acceptability and practical acceptability.

USABILITY AND OTHER CONSIDERATIONS

- Within socially acceptable, we can further analyse its practical acceptability in various categories, such as
  - cost,
  - support,
  - reliability,
  - compatibility with other systems,
  - usefulness, etc.
- **Usefulness** The system can be used to achieve some desired goal.
- It can be broken down into two categories: utility and usability.

USABILITY AND OTHER CONSIDERATIONS

- Utility: the functionality of the system – in principle it can do what is needed by the users and context
  - Remember that the concept of utility does not necessarily have to be restricted to the domain of hard work: A computer games have high utility if it's fun to use.
- Usability: users can use that functionality and understand the features.

USABILITY AND OTHER CONSIDERATIONS

- Usability applies to all aspects of a system with which users might interact, including installation and maintenance procedures.

USABILITY COMPONENTS

- Usability has multiple components and is traditionally associated with these five usability attributes:

1. **Learnability:**

   - The system should be easy to learn so that the user can rapidly start getting some work done with the system.

USABILITY COMPONENTS

2. **Efficiency:**

   - The system should be efficient to use, so that once the user has learned the system, a high level of productivity is possible.

3. **Memorability:**

   - The system should be easy to remember, so that the casual user is able to return to the system after some period of not having used it, without having to learn everything again.

USABILITY COMPONENTS

4. **Errors:**

   - The system should have a low error rate, system prevents users errors and recovers well from possible errors made. Catastrophic errors should not exist.

5. **Satisfaction:**

   - The system should be pleasant to use, e.g., users are subjectively satisfied when using; they like it.

USABILITY COMPROMISES

- You can not win every time. All common rules of usability can not be followed optimally in every project.
- You have to make compromises every time when you are designing a **complex** user interface including the interaction logic.
- You should try to pursue a win-win situation, where you offer a workaround that fulfills the requirements.
  - It means that you make an alternative solution for the first idea that is equally good but does not include the usability problems.
- Also You should always try to define **the most important usability factor** i.e., the criteria which are important for **that** product, users and context.

RECENT USABILITY

USABILITY SLOGANS

- The user is not always right
  - Unfortunately, it means that UI design cannot be derived just by asking users what they would like.
  - Usually the users do not know what they would like before testing the different options.
- Users are not designers
  - Novice users do not customise their interfaces when such facilities are available.
  - Expert users do use customisation features, but do not rely on user customisation as the main element of UI design.

USABILITY SLOGANS

- Designers are not users
  - It can be tempting for designers to trust their own intuition about UI issues.
  - Unfortunately, system designers are different from users in several respects.
- Top executives are not users
  - Many CEOs and other top executives in businesses understand that usability is one of the main competitive parameters.
  - The downside of this is that they try to affect the UI design although their knowledge about it is very limited.
  - Money should never affect the design!

USABILITY SLOGANS

- Less is more
  - One tempting solution to the UI design problem might be to throw in any imaginable option or feature.
  - This is wrong. Every single element in a UI places some additional burden on the user in terms of having to consider whether to use the element.
- Details matter
  - Usability often depends on minor interface details, which is why systematic usability engineering work is necessary.
  - And consistency is a key issue

RECIPE FOR ACTION

1. Recognise the need for usability in your organisation / project
2. Make it clear that usability has management support.
3. Devote specific resources to usability engineering.
4. Integrate systematic usability engineering activities into the various stages of your development life-cycle, including the early ones.
5. Makes sure that all user interfaces are subjected to user testing.

SOME READING

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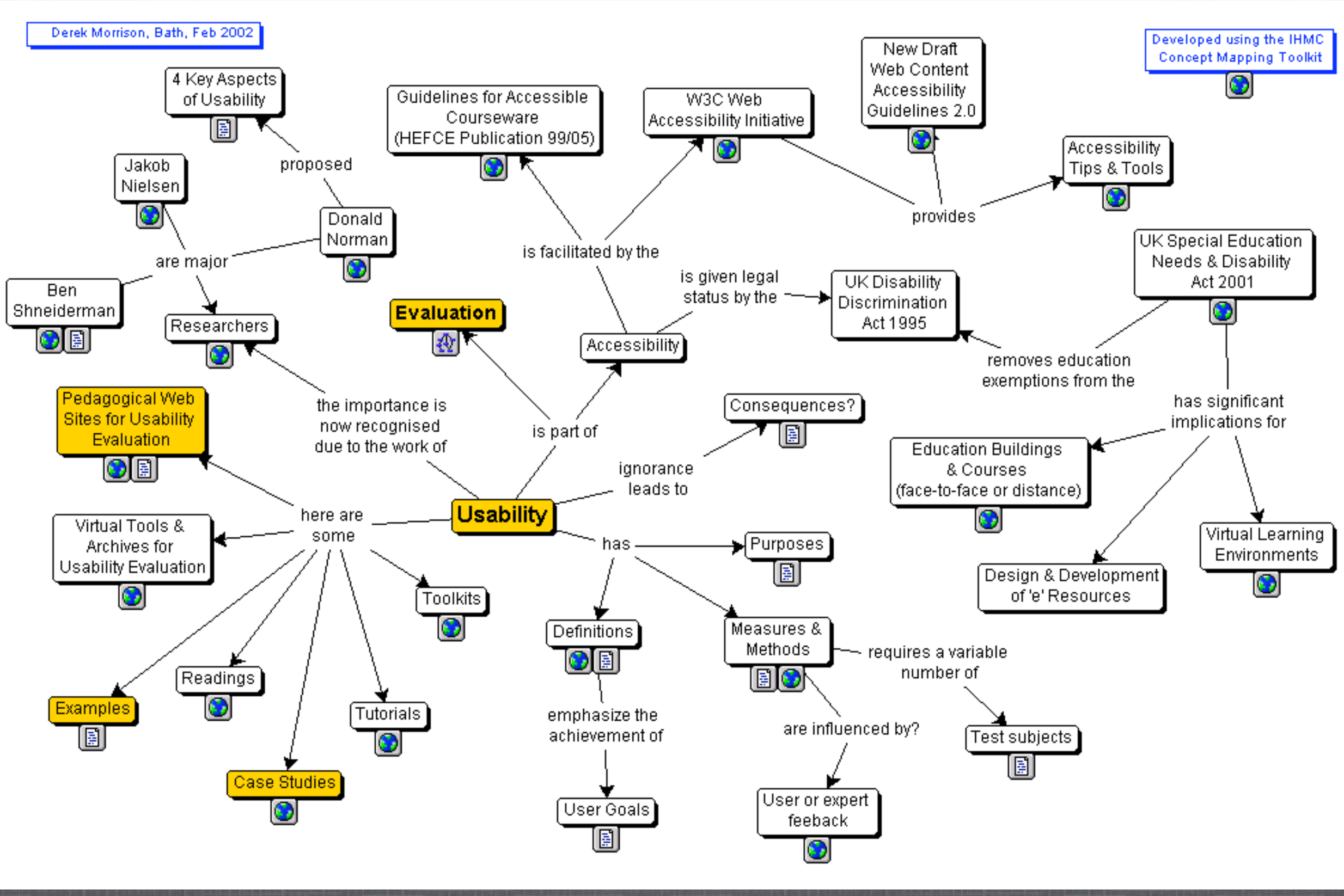
Derek Morrison, Bath, Feb 2002
Developed using the IHMC Concept Mapping Toolkit
4 Key Aspects of Usability
proposed
Jakob Nielsen
Donald Norman
are major
Ben Shneiderman
Researchers
Guidelines for Accessible Courseware (HEFCE Publication 99/05)
W3C Web Accessibility Initiative
New Draft Web Content Accessibility Guidelines 2.0
Accessibility Tips & Tools
provides
is facilitated by the
Evaluation
Accessibility
is given legal status by the
UK Disability Discrimination Act 1995
UK Special Education Needs & Disability Act 2001
removes education exemptions from the
has significant implications for
Pedagogical Web Sites for Usability Evaluation
the importance is now recognised due to the work of
is part of
Consequences?
ignorance leads to
Education Buildings & Courses (face-to-face or distance)
Virtual Learning Environments
Design & Development of 'e' Resources
Virtual Tools & Archives for Usability Evaluation
here are some
Usability
has
Purposes
Toolkits
Examples
Readings
Tutorials
Case Studies
Definitions
Measures & Methods
requires a variable number of
Test subjects
emphasize the achievement of
are influenced by?
User Goals
User or expert feeback

http://www.youtube.com/watch?v=pQHX-SjgQvQ