Making a difference – a survey of the usability profession in Sweden

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Organising and performing UCSD in practice

- Part of a bigger project on usability and user centred systems design in practice
- In cooperation with several public authorities, companies and user organisations
- Swedish Council for Working Life and Social Research (FAS)
What is software development like?

“...there is a prolonged period of confusion at the start followed by a frantic scramble to finish on time at the end”.


Problem with the usability profession

- The usability profession is perhaps the most significant impact the HCI community has had on practice.
- Lacking impact in the development process
- Lack of time, resources, knowledge, interest, etc.
- Unclear responsibilities
- Lack of consistency in naming
Background

- "...the software designer should be the champion of user experience..." (Kapor, 1991)
- "...all aspects of usability should be under one focus or one person..." (Gould, 1997)
- "...act as advocate for end users and other stakeholders in the system development enterprise and the development team." (ISO/TR 18529)

NOTE 1 The stakeholder advocate reminds the staff in the system development enterprise that the system is intended for use by real people and has to achieve quality in use. This role includes championing human-centered approaches, arranging for end-user involvement in conceptual studies, investigation and dissemination of context of use issues". (ISO/TR 18529)

Previous studies...

- Sweden – Katzeff & Svärd (1995)
  - Low usability maturity
  - Sporadic and non-systematic usability activities
  - Subjective informal ways of gathering user knowledge
  - Usability mainly addressed in evaluation
  - No usability competence in the projects

  - Similar experiences
  - Usability was not a key factor
  - Usability professionals had a low profile
Now

- North America – Vredenburg et al. (2002)
  - UCD methods widely used
  - Gaining more impact in industry
- Sweden – ???

Method

- Electronic survey answered by 194 usability professionals in Sweden
- Deep interviews with usability designers at different organizations
  - one large governmental authority
  - one medium-sized UCD software consultancy company
Educational background

Phases with user involvement
Why don’t we get involved with the programmers?

” Don't waste time with the geeks, unless you like hanging out with them. You'll never get their money. The proper self-assigned job of the authors ought to be to work out how HCI can make its deserved living from guaranteeing increased operational effectiveness, i.e. Value For Money - something the programmers don't give the project.”

Get involved with the “geeks”

- “UCD professionals who focus on doing “studies” as opposed to generating designs and products, will always be perceived as peripheral.” (Siegel & Dray, 2003).
- The usability professionals must have “skin in the game” (Cooper, 1999).
- The usability person must participate in all the user-centred activities, to prevent valuable information from being lost in the transitions between the activities, in accordance with the principle of integrated design (Gould et al., 1997).
What methods aspects do we see?

- The usability professionals favoured methods that directly involved users
  - Lo-fi prototyping, scenarios, think aloud, interviews, field studies
- They did not favour
  - Checklists, style guides, personas, questionnaires, benchmarking
- Do we really need more methods???
Selected results from survey

How do you get the support required?

- Changing basic values in the organisation
- Work to change the organisation’s overall strategies
- Educate!
Responsibility versus authority

- Good usability is thanks to the usability professionals
- Bad usability is everybody else’s fault
- Usability professionals must be given the authority to decide on matters affecting the usability
Conclusions from the survey

- Not lack of knowledge and methods (as it was 10 years ago)
- Lack of respect and support from management and other stakeholders
  - Increase knowledge among all stakeholders in the development process
  - Improve support through processes
  - Management awareness and strategic support
  - Emphasising the roles of the users and the buyers in requesting usability

Usability designer

Facilitated situations
Success factors and problems

Success factors

- Prototypes facilitate communication with users and developers (3 UDs, User)
- Effective means for communication in particular with users, allowing users to express their needs in familiar terms (2 UDs, 1 PM, User)
- Success stories and reference cases to communicate impact of usability efforts (2 UDs)
- Other communication aspects included sharing offices with users and small development teams (incl. splitting large projects into smaller units - people-wise and time-wise)

Obstacles/problems

- Usability fuzzy concept - people have preconceptions about it and about user involvement - must not take time or incur costs (4 UDs, 1 PM)
- Use cases problematic to use and have technical focus (2 UDs, User)
- Other communication aspects included failure to communicate to project what you intend to do, communication difficulties in large project
Success factors and problems

Success factors

- A user-centred attitude in organisation – particularly on management level (5 UD) & (1 PM)
- Support from project manager (5 UD & 1 PM)
- Client aware of the importance of usability and/or buys into the user-centred process, allowing for user involvement (4 UD & 2 PM)
- Attitudes in general in project – the importance of being wanted and appreciated. One of them mentioned analysts in particular. (3 UD)

Obstacles/problems

- Poor awareness of importance of usability in project. Usability seen as GUI matter only. UD not appreciated. PM and project have technical focus. (6 UD)
- Poor awareness of importance of usability in organisation – middle management do not understand the concept. Problems with IT architects in particular (4 UD & 1 PM)
- Client not aware of importance of usability (3 UD & 1 PM)
- Everyone feels entitled to have opinions about interaction design (3 UD)
- Usability one area among others contending for priority (2 UD)

Attitudes

- Having skilled, experienced UD in organisation – a usability champion (5 UD)
- UD role being well defined in project with well defined interfaces to other roles (2 UD & 1 PM)
- Communication skills (see section on role and personal qualities)

Obstacles/problems

- UD role being ill defined – mixed up with the UI designer role in RUP – UD sometimes assigned UI designer role (4 UD)
- UD not natural part of project (2 UD)
- Inexperience – too few UD in organisation – usability work tightly coupled to individuals (1 UD & 1 PM)
- The work situation of the UD – an ongoing struggle to justify their position in project/organisation – wears you down in the long run.

"You can’t keep fighting an uphill fight for ever. It takes incredibly much energy and wears you down not being respected."
### Relationships

- Good or very good relations with
  - Appreciate input from UD

- Problems with
  - IT archs have high status and exert much power

- Unspecified problems with
  - Afraid of UD taking over their role
  - Work in close cooperation

- UD on client side
  - UD one stakeholder among others
  - UD closer to client and domain experts than SW dev team

- Contacts in org important

- UD in general
  - Need someone to link you up with users
  - UD sometimes seen as user rep

- UD on client side
  - UD one stakeholder among others
  - UD closer to client and domain experts than SW dev team

- Teamwork important
- Being consultant is a drawback
- Not being a usability police but provide support

### Conclusions from the interviews

- The usability profession is not yet fully integrated in the development process
- Swedish usability professionals have succeeded in moving from analysis/evaluation to more design-oriented activities
- The interviewed usability designers spend their time in projects on a continuous basis
- The project manager relation is crucial for the outcome of their activities
Usability designer manifesto

The usability designer should

- be responsible for maintaining a user-centered approach and focus on usability (planning, performing, follow-up in close cooperation with users)
- take active part in design and development, and not become another project manager
- participate continuously in all phases, including implementation and deployment
- be a bank of knowledge of the project in accordance with the principle of integrated design (Gould et al., 1997).

(Göransson & Sandbäck, 1999)
Do we need numbers?

- Eighty percent of software life cycle costs occur after the product is released, in the maintenance phase. Of that work, 80% is due to unmet or unseen user requirements only 20% of this is due to bugs or reliability problems. Karat, C. (1993), Usability Engineering in Dollars and Cents, IEEE Software, May 1993, pp 89.


- Norwich Union, an insurance company in Australia, found that calls to its help desk reduced dramatically by two thirds after one of its core applications was improved using user-centered design techniques. Norwich Rethinks Customer Service, Computer World, 24 November 1995.

User involvement is central

In US 250 billion dollars is every year spent on 175 000 different IT-projects. 365 IT-companies with 8380 different IT-projects were analyzed in 1995.

- 31,1 % of the companies’ projects were cancelled.
- 52,7 % were performed with changed plans.
- 16,2 % were performed according to plan.

On average the costs for the changing plans increased with 189 %. 81 billion dollars is every year spent on projects that never leads to any results.

CHAOS report, Standish Group, 1995 (www.standishgroup.com)
Swedish Work Environment Law (Ch.2, §1)

Arbetsmiljön skall vara tillfredsställande med hänsyn till arbetets natur och den sociala och tekniska utvecklingen i samhället.

Arbetsförhållandena skall anpassas till människors olika förutsättningar i fysiskt och psykiskt avseende.

Arbetstagaren skall ges möjlighet att medverka i utformningen av sin egen arbetssituation samt i förändrings- och utvecklingsarbete som rör hans eget arbete.


Det skall eftersträvas att arbetet ger möjlighet till variation, social kontakt och samarbete samt sammanhang mellan enskildas arbetsuppgifter.

Det skall vidare eftersträvas att arbetsförhållandena ger möjlighet till personlig och yrkesmässig utveckling liksom till självbestämmande och yrkesmässigt ansvar.

The worker should be given the possibility to participate in the design of his/her own work situation and in changes and development that concerns the work.

Purpose

- Why the urge to measure everything???

- Is it because we think it makes research or practice better?
  or
- Is it because it is easier to get it accepted?
  or
- Do we think that it is the way to change the world?
  or
- Is it only because it makes life easier?
McNamara Fallacy

- The first step is to measure whatever can easily be measured. This is OK as far as it goes.
- The second step is to disregard that which can't be easily measured or to give it an arbitrary quantitative value. This is artificial and misleading.
- The third step is to presume that what can't be measured easily really isn't important. This is blindness.
- The fourth step is to say that what can't be easily measured really doesn't exist. This is suicide.

Numbers are considered as eternal truths

- Important for strategic communication
- What decision makers needs to make decisions
- If you agree with what the numbers show you do not question them
- If you don’t agree with what the numbers show, you start questioning how they have been obtained
"86.6% of all statistics are made up on the spot"

**Jacob Nielsen**

**Conclusions**

- To measure anything we need to define it
- Be aware that there are non-measurable effects that may be important
- Analyze the purpose of the measurement
  - Assessment versus improvements
- Prepare yourself to what measurements may lead to
The “Science” of Creationism

Y-Value 1

Y-Value 1

-50000000 -40000000 -30000000 -20000000 -10000000 0 50000000 100000000 150000000 200000000 250000000 300000000 350000000
Perhaps more important conclusions...

- Why measure at all...?
- Numbers may pull things in wrong and even nasty directions
- Isn’t it a risk that research tends to put its emphasis more on issues that are easily measured rather than important

Summarizing usability goals and evaluation

Usability goals are important, but can not substitute good, informative and creative interaction design.
And, most importantly, not for a user-centered process.
Obstacles to strategic usability

- Resource constraints (28.6 %)
- Resistance to UCD/usability (26.0 %)
- Lack of understanding/knowledge about what usability is (17.3 %)
- Better ways to communicate impact of work and results (13.3 %)
- Lack of trained usability/HCI engineers (6.1 %)
- Lack of early involvement (5.1 %)
- No economic need – customers not asking for usability (3.6 %)


Obstacles to strategic UCSD

- We believe that all of these factors are related to a lack of knowledge on how to apply UCSD methods and their potential benefits.
- System development projects, in general, don’t have the explicit goal to develop usable systems.
- They have the goal to deliver a “running and working” system.
- Existing tools does not give any support for performing UCSD.
- Not everybody has the goal of developing usable systems.
Crosby’s quality maturity grid

- **Ignorance** – “We don’t have problems with usability.”
- **Uncertainty** – “We don’t know why we have problems with usability.”
- **Awakening** – “Is it absolutely necessary to always have problems with usability?”
- **Enlightenment** – “Through management commitment and improvement of human-centered processes we are identifying and resolving our problems.”
- **Wisdom** – “Usability defect prevention is a routine part of our operation.”
- **Certainty** – “We know why we do not have problems with usability.”

Crosby P.B. (1978) Quality is Free: The Art of Making Quality Certain

Strategic UCSD in organizations

Inspired by Deborah Mayhew, Eric Shaffer and Usability Maturity Model.
Promoting UCSD

- Focus on influencing **people**.
- Gaining initial support for usability.
- Single usability lead.
- Introduce usability methods and techniques.
- Cost justification – “number crunching”.
- Demonstrate what usability is all about – demonstrate value.
- Make usability visible.
- Introduce UCSD, nice and easy. Be careful not to overwhelm the receiver.
- Get into project plans is a key success factor.

Establishing UCSD

- Focus is on influencing **projects / products**.
- Define UCSD roles and define the UCSD organizational structure – staffing up.
  - Centralized vs. decentralized organization
- Impact projects.
- Usability as requirements.
- Style Guide and some user-centered activities (user analysis, usability testing) are accepted and treated as “standards”. Demands management support.
- Planning and operating strategically for long term success.
- Get access to users.
**Operationalizing UCSD**

- Focus is on influencing **process**.
- Change from projects to process.
- Requirements with usability focus.
- Develop UCSD into the “standard operation procedure” (SOP).
- UCSD well integrated into development process.

**Institutionalizing UCSD**

- Focus is on influencing **organizations**.
- Educate...
- UCSD is spread among all developers / stakeholders.
- Get all stakeholders involved – usability and UCSD everywhere. A change in paradigm.
- Full acceptance and conformance of the principles for UCSD.
Strategic UCSD in organizations – conclusion

- Promoting
  - Focus is on influencing **people**.
- Establishing
  - Focus is on influencing **projects / products**.
- Operationalizing
  - Focus is on influencing **process**.
- Institutionalizing
  - Focus is on influencing **organizations**.

How the usability profession should develop...?

- Thorough integration of the usability profession in the development process
- More concrete contribution to the development (design before documentation)
- Increased knowledge and acceptance among everybody involved in the development
- Clearer labelling of the usability role and perhaps certification of the profession
- Greater need for designers and developers than psychologists and ethnographers
- Need for more usability designers in practical development (~10% of dev. staff acc. Nielsen)
Further reading

- **The lonesome cowboy – A study of the Usability Designer role in systems development.**

- **Usability as a profession – current practices and future development (prel. Title).**

Thank You!

- "*I know that I have to produce a design solution till Thursday. You can’t wait for inspiration – we can’t cancel the only meeting we have [with the users]. That wouldn’t do.*"

- "*You can’t have a bad week.*"

(quotes from interviews with Usability Designers)
Project Management

Project management – basic concepts
What is a project?

“Series of actions to achieve a result”

Project management: History

- Already the Egyptians… (Crucifixion raids or east India trips were organized as projects, but without any management philosophy)
- 1911 Taylorism/Scientific Management: Henry L Gantt invents the Gantt scheme
- 1931: Karol Adamiecki creates the first network diagram, the so called Harmonogram
- 1942-45: The Manhattan project (USA). 2 billion dollar turnover, at most 120,000 employees. Goal control, parallel activities
- 1950ies: Operations analysis, RAND Corporation
- 1957: The Sputnik chock, initiating the Polaris project
Project management: History

- The Polaris project: 250 main suppliers and 9000 secondary suppliers coordinated to perform ca 70,000 different activities using PERT (Program Evaluation and Review Technique).
- 1956-59: CPM (Critical Path Method) is created at DuPont, independent of PERT.
  - PERT and CPM are very similar and are both examples of network planning of projects
- 1959: The concept of "project manager" is coined in Harvard Business Review.
- 1960ies: Great interest in matrix organizations
- 1967: INTERNET (IPMA) and PMI is established.

Project management: History

- 1968 The Nätplan interest group is created in Sverige (later to be named Svenskt Projektforum).
- 1980ies: Increasing interest in organizational and project management issues in projects. The project philosophy spreads to other fields, to smaller activities and to internal activities.
- 1987: PMBOK (Project Management Body of Knowledge) presents its first issue by PMI. The ambition to create certified project management, so called PMPs (Project Management Professionals).
- 1990ies: Management by projects (the project based company)
Project: Definition

"Series of actions to achieve a result"

- **Single occurrence** – a unique, non-repetitive assignment
- **Time limitations** – with a pre-defined date of delivery
- **Clear purpose** – specified from one or more goals (well defined, measurable and realistic), do not mix project goals and effect goals
- **Unpredictable structure** – it consists of a number of complex activities with mutual interdependencies
- **Own organisation** – e.g. Not in the original line of work
- **Procurer** – internal or external acquirer that has expectations on the result

What is a project plan?

The aim of a project plan is to go through, document and agree upon important issues that define the work in the project.
Project Management: concepts

- System theory
- Project triangle

- Work Breakdown Structure (WBS)
- Gantt-scheme

Gantt schedule
Positive and negative things about a Gantt diagrams

**Advantages:**
- Good for planning.
- Good overview
- Sequence of activities
- Easy to know who does what
- Better picture of project status

**Disadvantages:**
- Things never turn out the way we think
- Time
- Difficult to maintain
How do you calculate time?

- Have a good guess?
- Calculate?
  
  - Guess at minimum (A), probably (B) and maximum (C)
  
  - Calculate
    
    \[(A + 3B + C)/5\]

Information and communication

Common problem in projects

- Lack of communication and structure is often a problem in projects
- Difficulty in involving the project members, the customer, the procurer and other stakeholders.
Meeting and meeting techniques

- To succeed it is necessary to have a goal with the meeting and an agenda.

- Meeting are necessary, but need to be efficient. A good way of organising is an agenda.

Different meetings

Steer group meetings
At milestones or when needed
Protocol written by PM

Project Management Meetings
Every Friday
Protocol written by PM

Project Meetings
Every second Monday
Protocol written by PM.
Information – reports at meetings

- Agenda
- Summary
- What has happened since last time?
- What happens next?
- Time plan
- Risks and options

The only thing we truly know about the future is that we do not know anything about it.
Results from a risk analysis

- A list of risks in prioritized order
- Suggestions of how to eliminate, reduce or meet risks

Workflow in a Risk Analysis

- Use project idea and goal as starting point
  - Make a list of risks and threats individually
  - Make a common list
  - Look for reasons for risk
  - Make a risk calculation
    - 1) Likelihood that the risk might occur
    - 2) Effect of risk
  - Make suggestions of ways to deal with the risk
  - Write a report
  - Decide about what to do
Aspects not included in project management perspective

- Motivation
- Joy to work together
- Group dynamics
- Creativity
- Spontaneity

Standardized project management models
Example 1: PROPS

- 80% of Ericsson employees are involved in projects on a daily basis
- Three main project based processes:
  - Product development projects (Time to market)
  - Customer delivery projects (Time to customer)
  - Internal project (supporting processes)

PROPS

- Ericsson’s general model for all types of projects in the entire organization
- Are also used in organizations such as Saab, Telia, Statoil, etc.
PROPS: A success story

- Based on best practices (internal and external)
- Is continuously being developed
- Has a special unit for support, development and training
- Information distribution among its users
- Strong management support
- 3500 project managers, 150 project office managers, 100 PROPS coaches

And what is PROPS?

- Traditional project management method based on milestones/tollgates:

  TG 0. Initiating a pre study?
  TG 1. Shall a feasibility study be initiated?
  TG 2. Should the project be performed?
  TG 3. Shall the project continue with original or revised plans?
  TG 4. Shall the result be reported to the client?
  TG 5. Can the project be approved and a project summary report be made?
PROPS

Four perspectives in PROPS

- The business perspective
- The human perspective
- The project organization perspective
- Project flow perspective

All perspectives must be considered in all decision points/tollgates!
The business perspective

- Focus all efforts in the organization towards the same business goals,
- focus on the client,
- Focus on business profits
- Effective resource allocation

The human perspective

The individuals in an organization are the organization’s most important resources. A mutual project culture with an understanding of teamwork and management, can liberate creativity and make use of the knowledge and experiences of all individuals.
The project organization perspective

Identifies the project stakeholders and participants and identifies their functions and roles in the project organization as well as each responsibilities. In addition to the project participants and the project manager PROPS identifies which role higher management in the line organization should have in a certain project.

The project flow perspective

To be able to fulfil the project and reach the goals that have been set, PROPS identifies a general work model that defines what should be done and when. Different phases in the project and control functions, as well as advice on how the project manager should coach the project participants is described.