

Usability Design

– A new discipline in Rational Unified Process

Bengt Göransson

Enea Redina AB

Bengt.Goransson@enea.se

and

Uppsala University

Department of Human-Computer
Interaction

<http://www.hci.uu.se/~bengt/>



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Developing usable interactive systems is all about practicing user-centered systems design

A discipline is a collection of related activities that are related to a major "area of concern" within the overall project.

Why a new discipline in RUP?

- ❖ "Enea Redina offers a way of working where we, together with stakeholders and users, in their own work situation, develop interactive systems with focus on business objectives and usability."
- ❖ "Enea Redina's development approach builds upon key principles for user-centered systems design."
- ❖ No support for user-centered systems design in RUP.
- ❖ Many of our customers demands or suggests RUP, so we have to face this "dilemma" of using RUP for UCSD.
- ❖ A discipline is visible.
- ❖ But, a discipline is really not enough to be fully user-centered, it must be a shift of paradigm and a change in attitude for this to happen.

Other approaches

- ❖ Change minor details in the User-Interface Designer role.
- ❖ Challenging all the other disciplines for a more user-centered systems design approach. This is a gigantic approach and would definitely change the core of RUP!
- ❖ The new XP plug-in might be one way to go. Maybe applying UCSD to the XP plug-in!
- ❖ Available today are the core activities and roles in RUP, the Ux plug-in, a Roadmap on Usability Engineering, concept papers on User-Centered Design and usability testing.

RUP and user-centered systems design

- ❖ RUP and user-centered systems design doesn't come easily.
- ❖ The fundamentals in RUP actually prohibits a true user-centered systems design process.
- ❖ Why? Some examples...

Four reasons why RUP violates UCSD

1. RUP is “an architecture-centric” and a “use case driven” process. It’s not “user-centric” or user-centered.
 - “Use cases drive the Rational Unified process end-to-end over the whole lifecycle, but the design activities are centered around the notion of architecture - system architecture, or for software-intensive systems, software architecture. The main focus of the early iterations of the process - mostly in the elaboration phase - is to produce and validate a software architecture, which in the initial development cycle takes the form of an executable architectural prototype that gradually evolves to become the final system in later iterations.”

Four reasons why RUP violates UCSD

2. The understanding of iterations within RUP differs significantly from the commonly agreed on understanding used in e.g. UCSD. Iterations within RUP is the time period under which a release is developed. The activities inside the iteration are laid out as a waterfall. This prohibits iterations to formally occur within workflows and activities.

Iteration: A distinct sequence of activities with a base-lined plan and valuation criteria resulting in a *release* (internal or external). (*RUP Version 2002.05.00, from the glossary*)

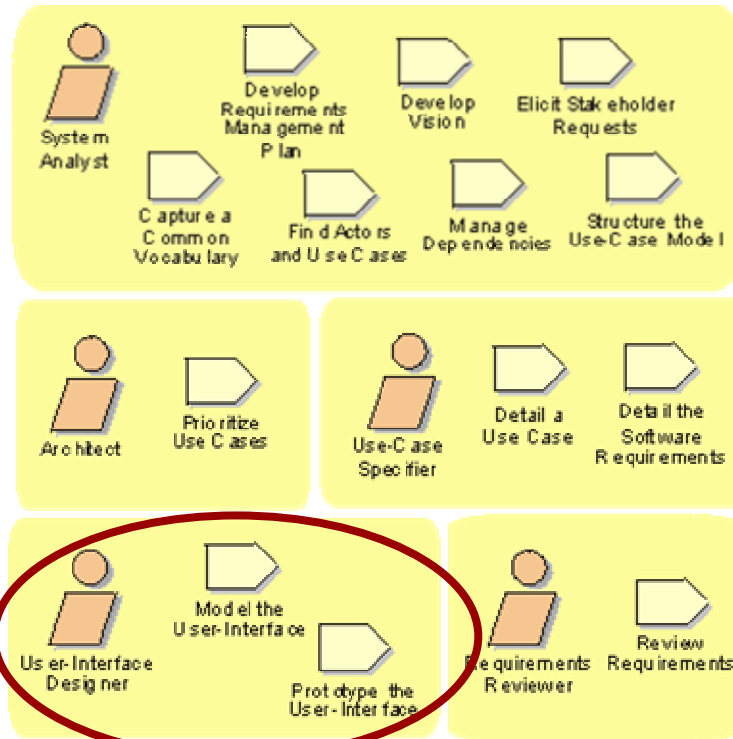
From a UCSD point of view: an iteration is a refinement of a certain part of the system (an increment), going through the phases analysis, design and evaluation until goals are met.

Four reasons why RUP violates UCSD

3. Usability related activities does only occur within the Requirements discipline (workflow) and primarily in the Elaboration phase. From a user-centered systems design perspective: usability related activities occurs from the very beginning of the project to the very end. To view usability as only requirements is fundamentally wrong. The usability of a system evolves over time and is not something that can be stated just as requirements.

(Not having explicit usability related activities in a discipline such as "Analysis & Design" is a mystery to me.)

Requirements discipline



Analysis & Design discipline



Four reasons why RUP violates UCSD

4. The way of describing the process (RUP) leads to too much, and too early, focus on artifacts. The overall picture gets lost and the process activities focuses on writing documents (artifacts) – “fill-out-forms”. Every role encourages to get “his/her work done” not to collaborate.

UCSD is a about working together in a multi-disciplinary fashion. UCSD is mainly user- and process-driven, with focus on the activities. The main thing is to perform the activities, learn from the activities and put the knowledge to work. The methods vary and so does the outcome (the artifacts).

Objectives for adding a usability discipline

- ❖ To practice User-Centered Systems Design.
- ❖ There are problems in understanding and recognizing user-centered systems design. State of the art development processes do not honor usability and user-centered systems design.
- ❖ Lack of competence in usability and user-centered systems design.
- ❖ Usability is often taken for granted and does not get any attention.
- ❖ If a client in the tender process does not specifically order a usable system, e.g. have usability requirements built into the requirements specification, the developer organization is reluctant to spend any additional resources on making the system usable.

User-Centered Systems Design

Donald Norman wrote back in 1986:

- ❖ "But user-centered design emphasizes that the purpose of the system is to serve the user, not to use a specific technology, not to be an elegant piece of programming. The needs of the users should dominate the design of the interface, and the needs of the interface should dominate the design of the rest of the system."

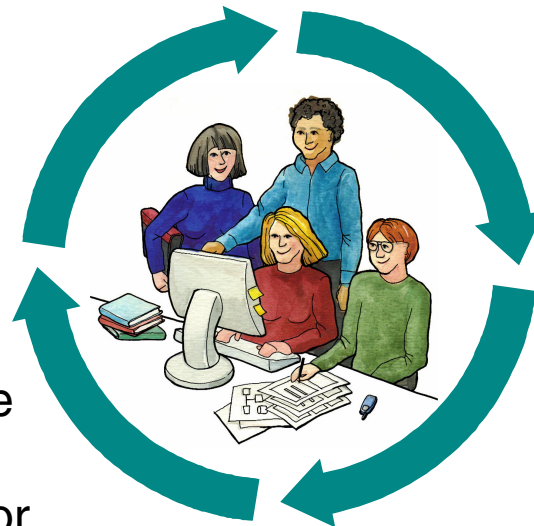
(Donald Norman, "Cognitive Engineering", in D. A. Norman & S. W. Draper (eds.), User Centred System Design, 1986)

User-Centered Systems Design – our definition

*Active users, usability focus
and iterative design*

Feedback with suggestions for changes.

Evaluation in context. Measure against usability goals and criteria for design.



Analysis of users, activities, tasks and context of use.

Design suggestions using prototypes, an iterative and creative process in itself.

User-centered systems design is a process focusing on usability throughout the entire development process and further throughout the system life cycle. It is based on the following key principles.

User focus – the goals of the activity, the work domain or context of use, the user's goals, tasks and needs should early guide the development.

Active user involvement – representative users should actively participate, early and continuous throughout the entire development process and throughout the system lifecycle.

Evolutionary systems development – the systems development should be both iterative and incremental.

Simple design representations – the design must be represented in such ways that they can be easily understood by users and all other stakeholders.

Prototyping – early and continuously, prototypes should be used to visualize and evaluate ideas and design solutions in cooperation with the end users.

Evaluate use in context – baselined usability goals and design criteria should control the development.

Explicit and conscious design activities – the development process should contain dedicated design activities.

A professional attitude – the development process should be performed by effective multidisciplinary teams.

Usability champion – usability experts should be involved early and continuously throughout the development lifecycle.

Holistic design – all aspects that influence the future use situation should be developed in parallel.

Processes customization – the user-centered systems design process must be specified, adapted and/or implemented locally in each organization.

A **user-centered attitude** should always be established.

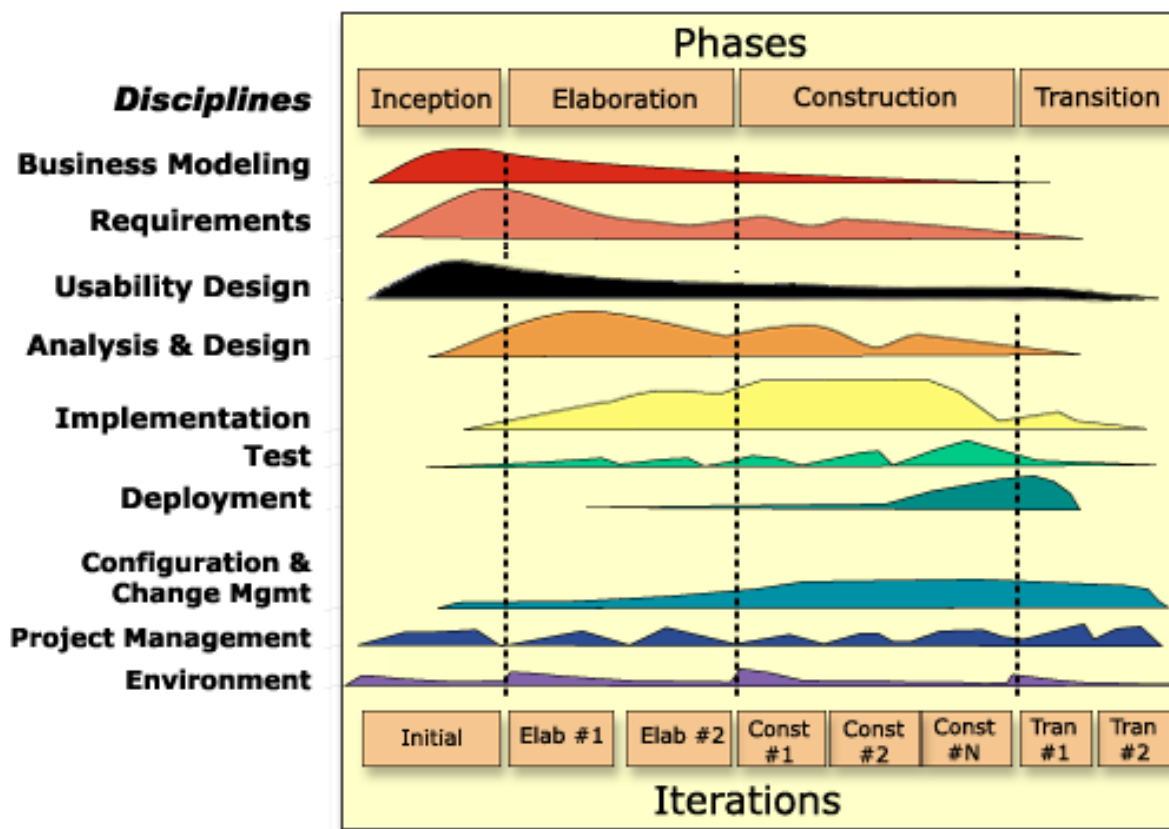
What you have to do

- ❖ Decide on how important usability is.
- ❖ You specifically have to address usability aspects to achieve a usable system.
- ❖ RUP gives no or little support in this.
- ❖ A different approach and philosophy is needed. Activities in RUP have to be more user-centered than architecture-centered.
- ❖ Customize your instance of RUP for this, with additional disciplines, workflows, activities, roles, etc.
- ❖ Add user-centered activities and a common understanding among all stakeholders about the importance of usability.
- ❖ Ensure active user participation.

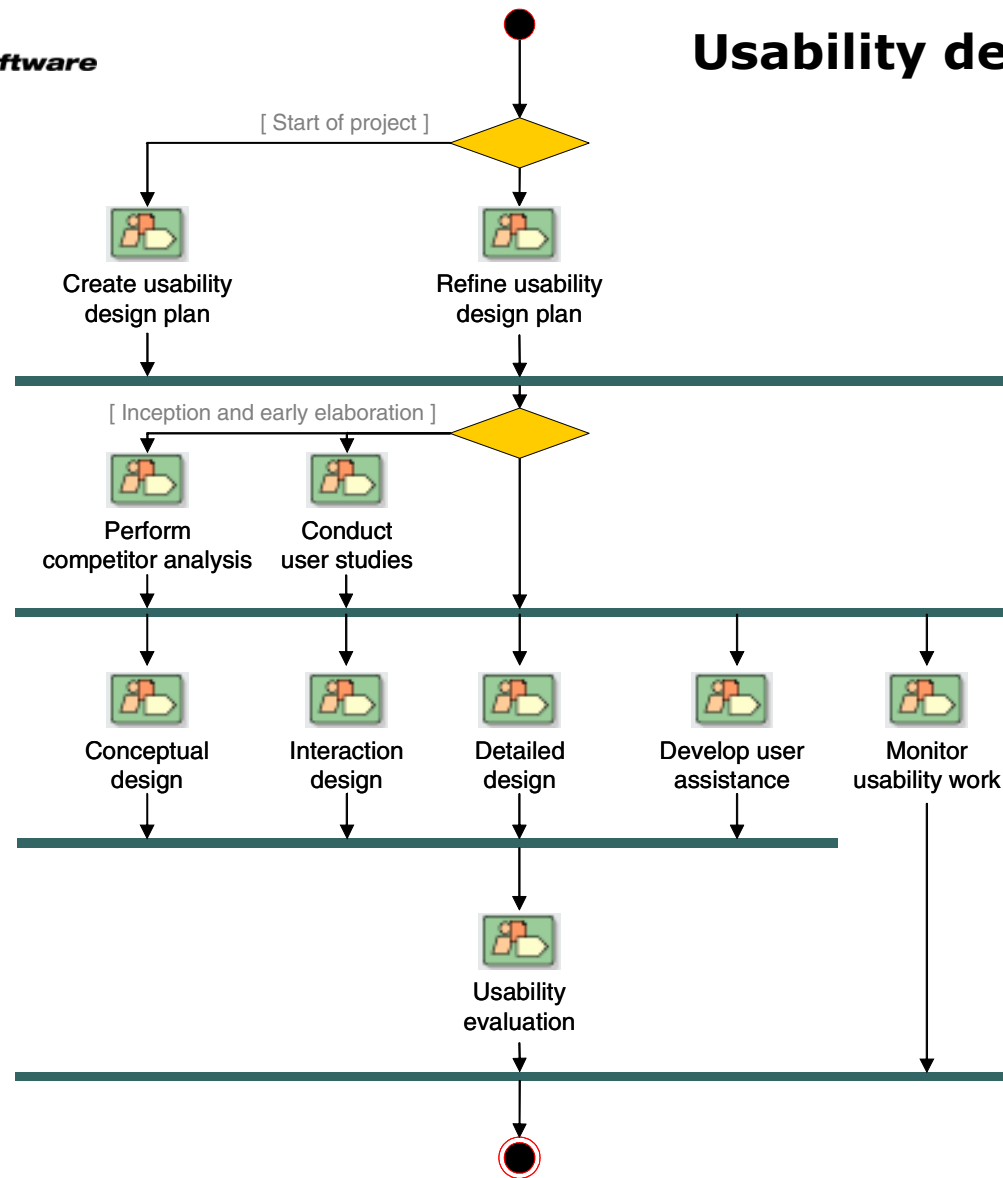
Usability Design discipline

- ❖ Enea is a partner to Rational, we are working together on this.
- ❖ A plug-in to RUP: textual and graphical guidelines, examples and templates.
- ❖ Adds the key principles for user-centered systems design to Best Practices segment in RUP.
- ❖ Will be available for use by us and our clients.

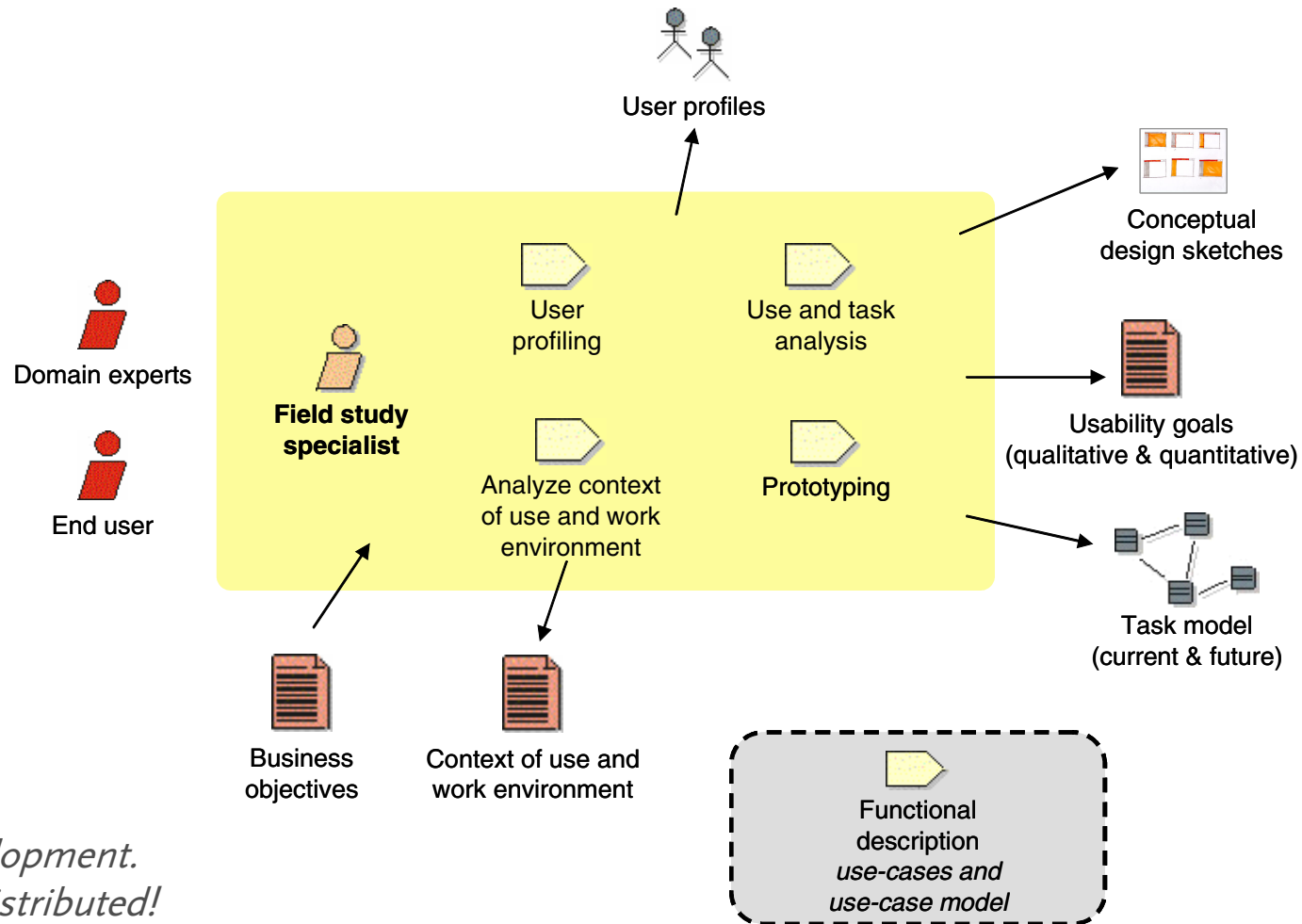
Usability Design in RUP



Usability design: Overview



Workflow detail: Conduct user studies

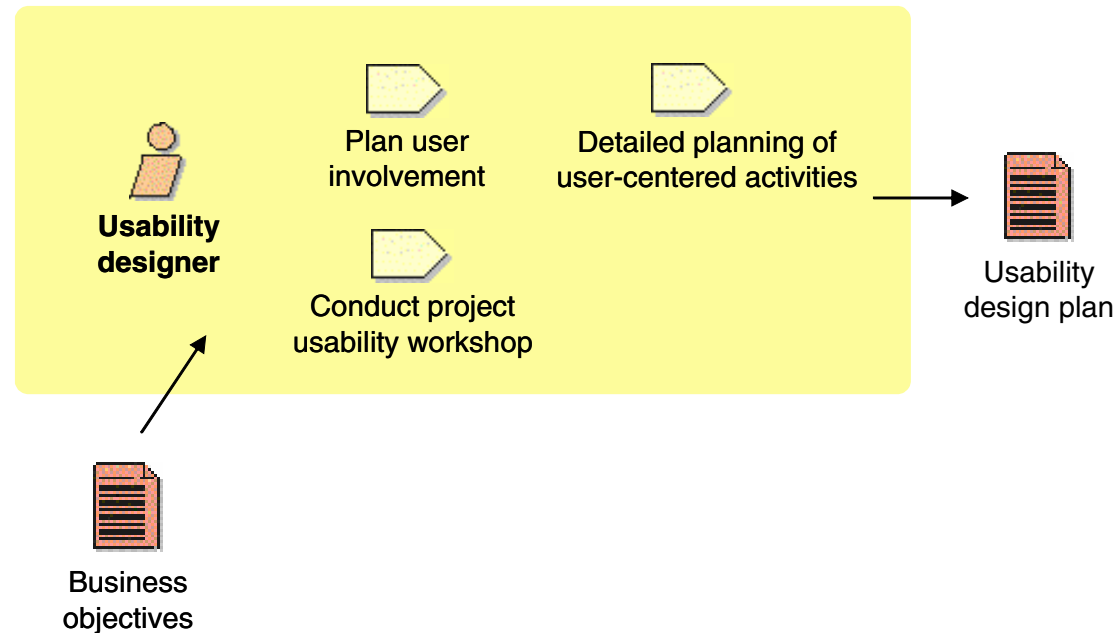
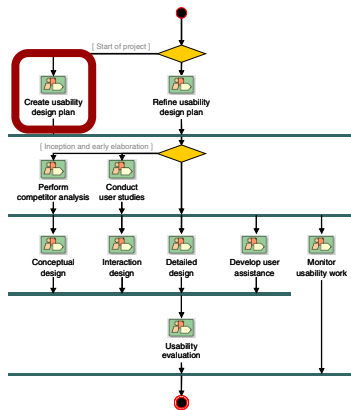


*Under development.
Not to be distributed!*

Activity: User profiling

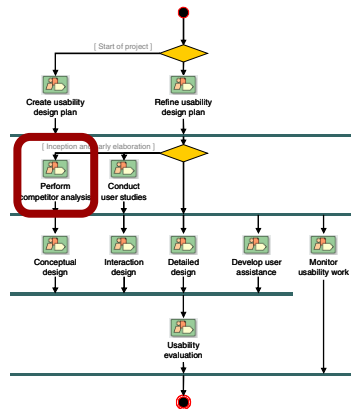
Purpose <ul style="list-style-type: none">▪ Define users, their characteristics and prioritize them	
Steps <ul style="list-style-type: none">• To understand who to use the system▪ Collect characteristics of different user categories▪ Prioritize user categories	
Input artifacts <ul style="list-style-type: none">• ...	Resulting artifacts <ul style="list-style-type: none">• User profiles• User model
Role: Usability designer	
Tool mentors <ul style="list-style-type: none">• ...	
Workflow details <ul style="list-style-type: none">• ...	

Workflow detail: Create usability design plan



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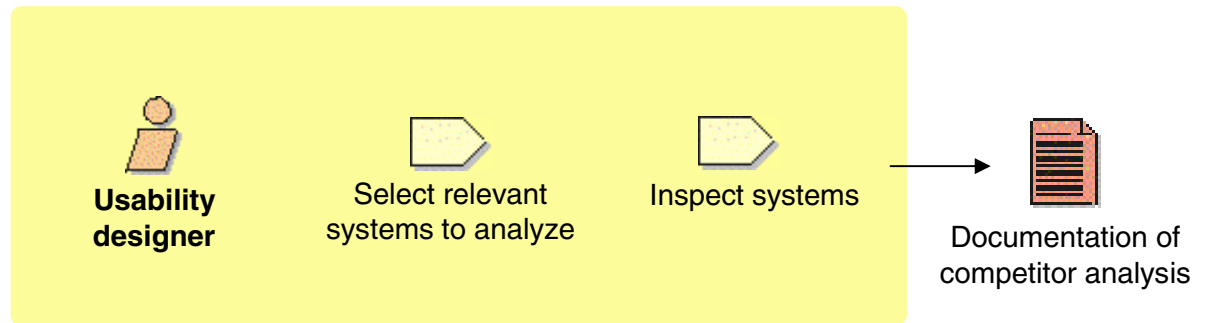
Workflow detail: Perform competitor analysis




Domain experts

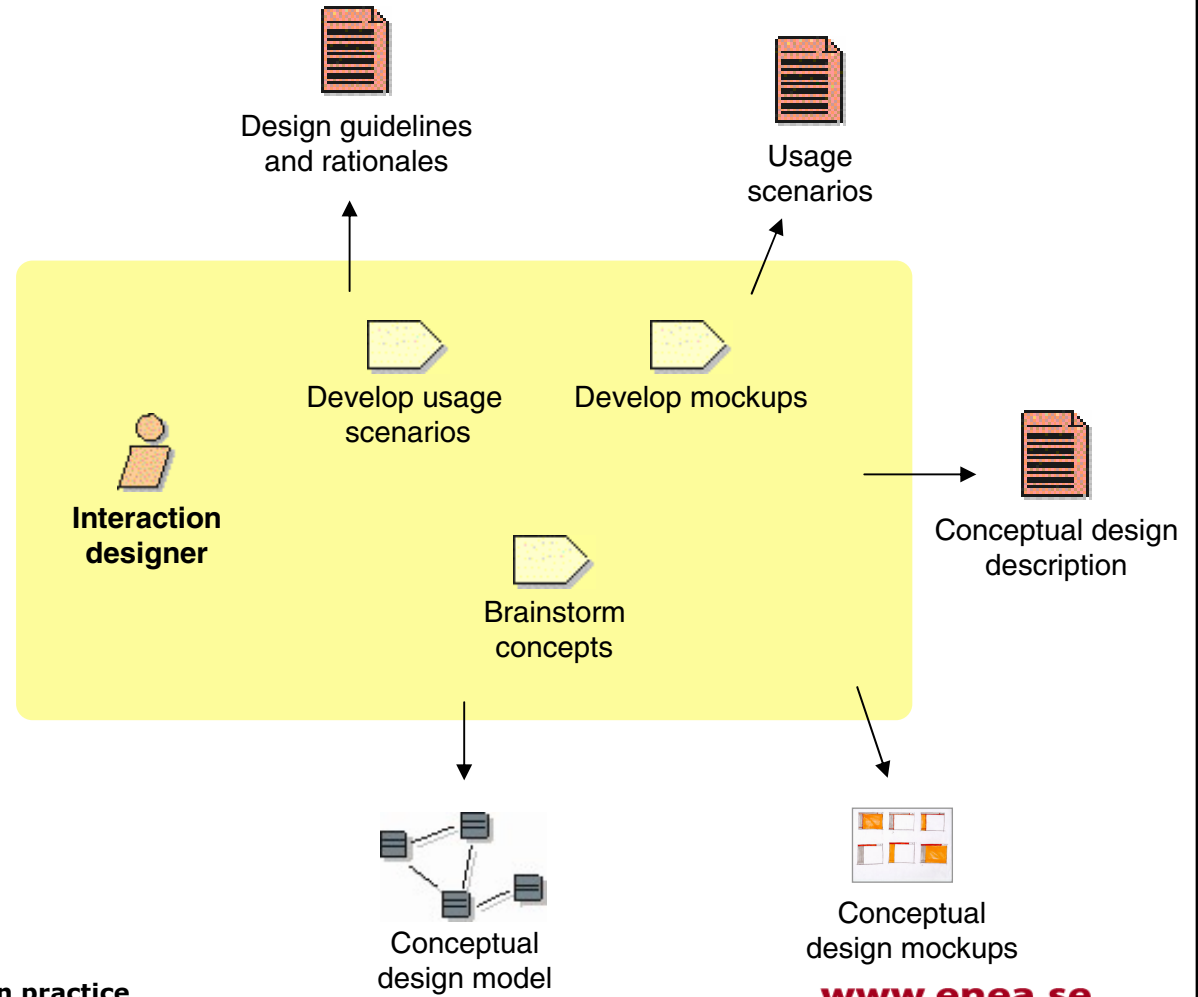
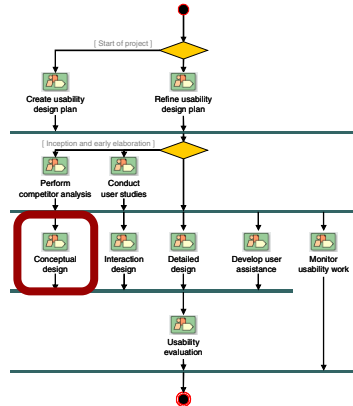

End user


Customer



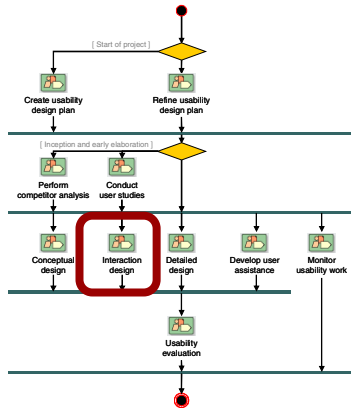
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Workflow detail: Conceptual design



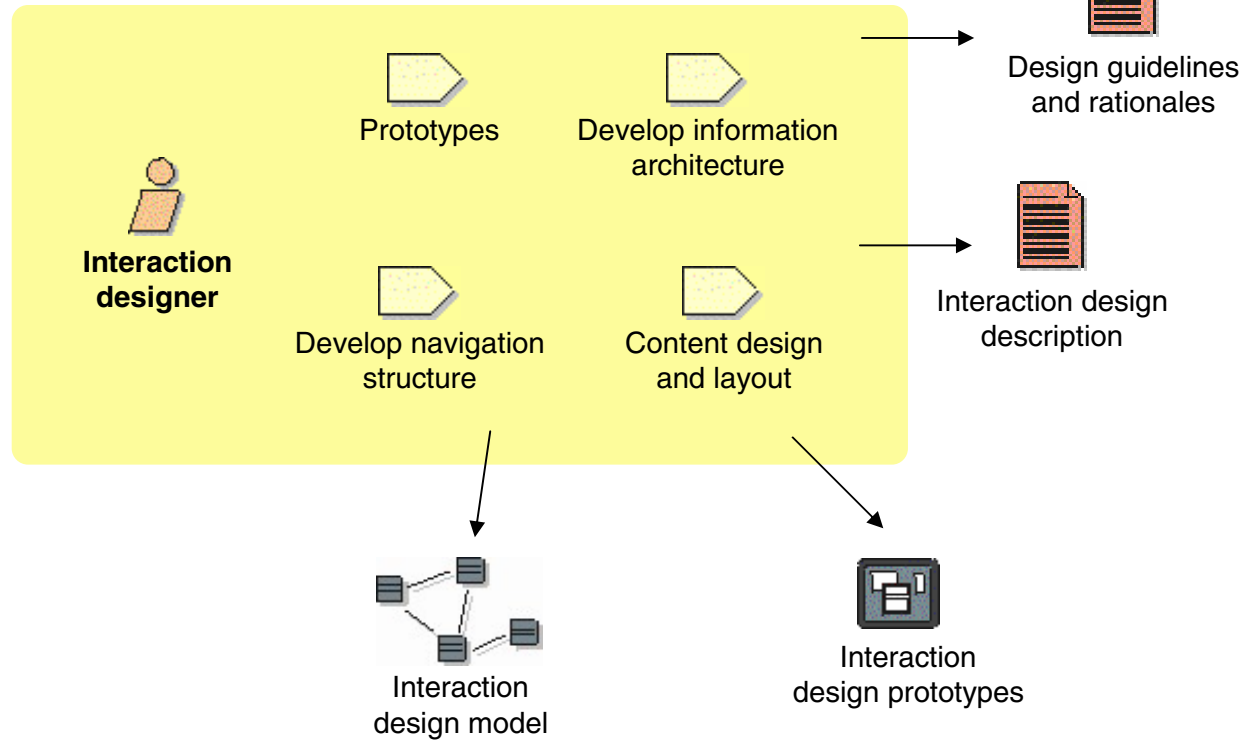
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Workflow detail: Interaction design



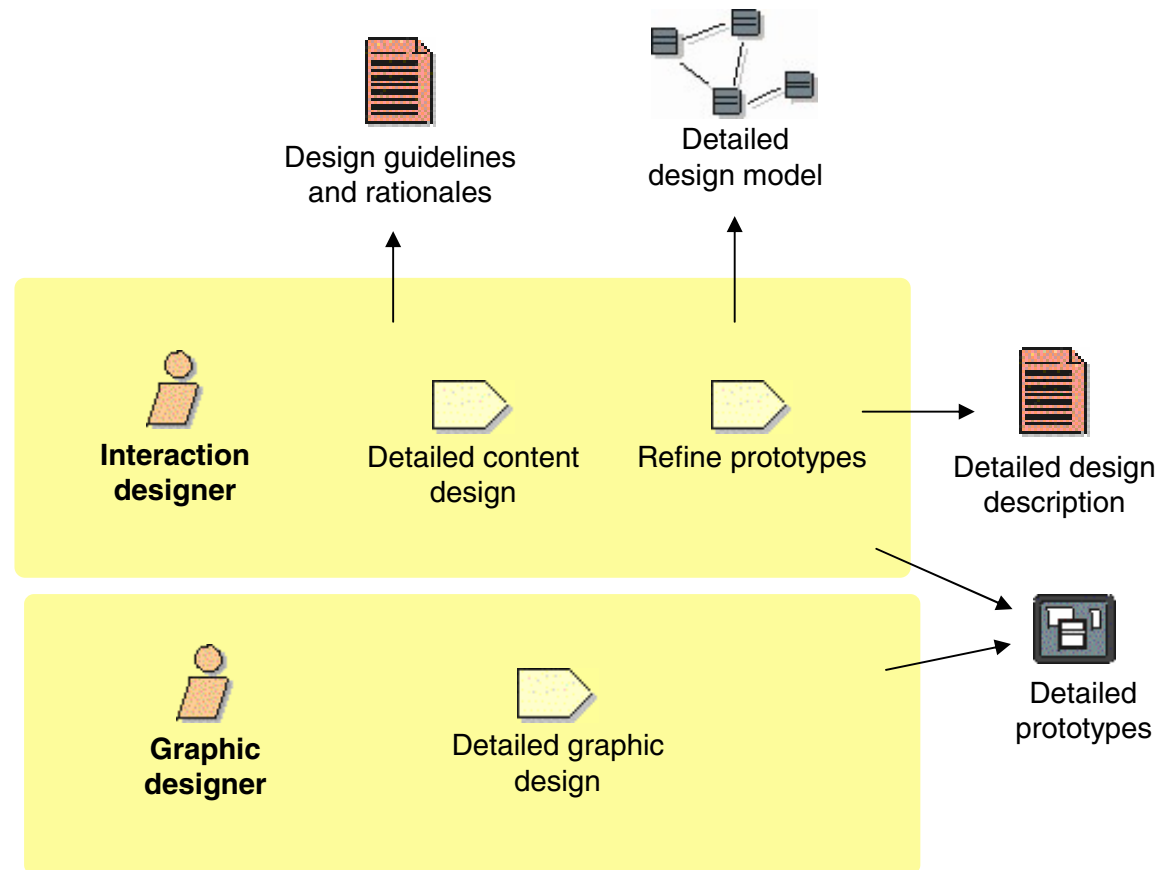
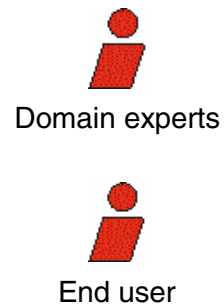
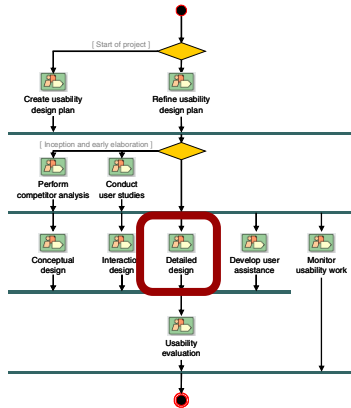
 Domain experts

 End user



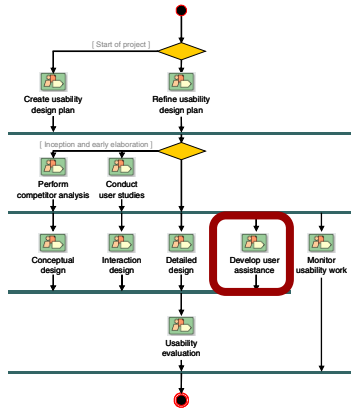
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Workflow detail: Detailed design

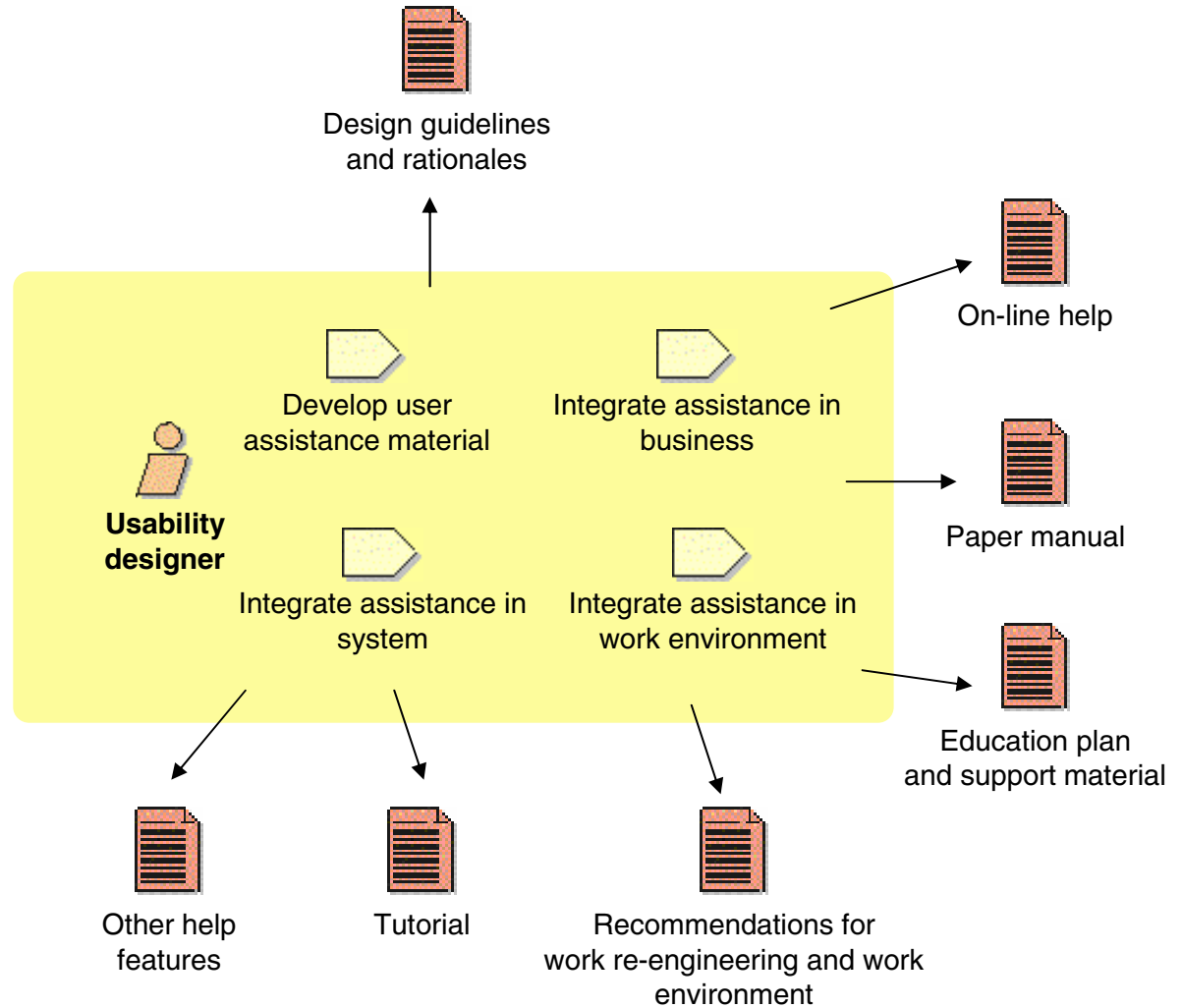


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Workflow detail: Develop user assistance

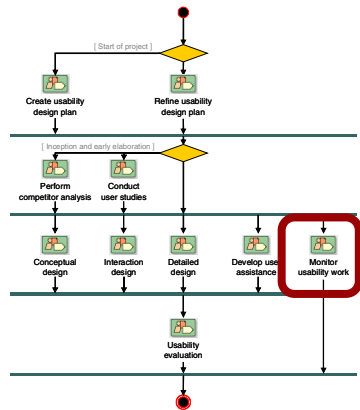


-  Technical writer
-  Domain experts
-  End user



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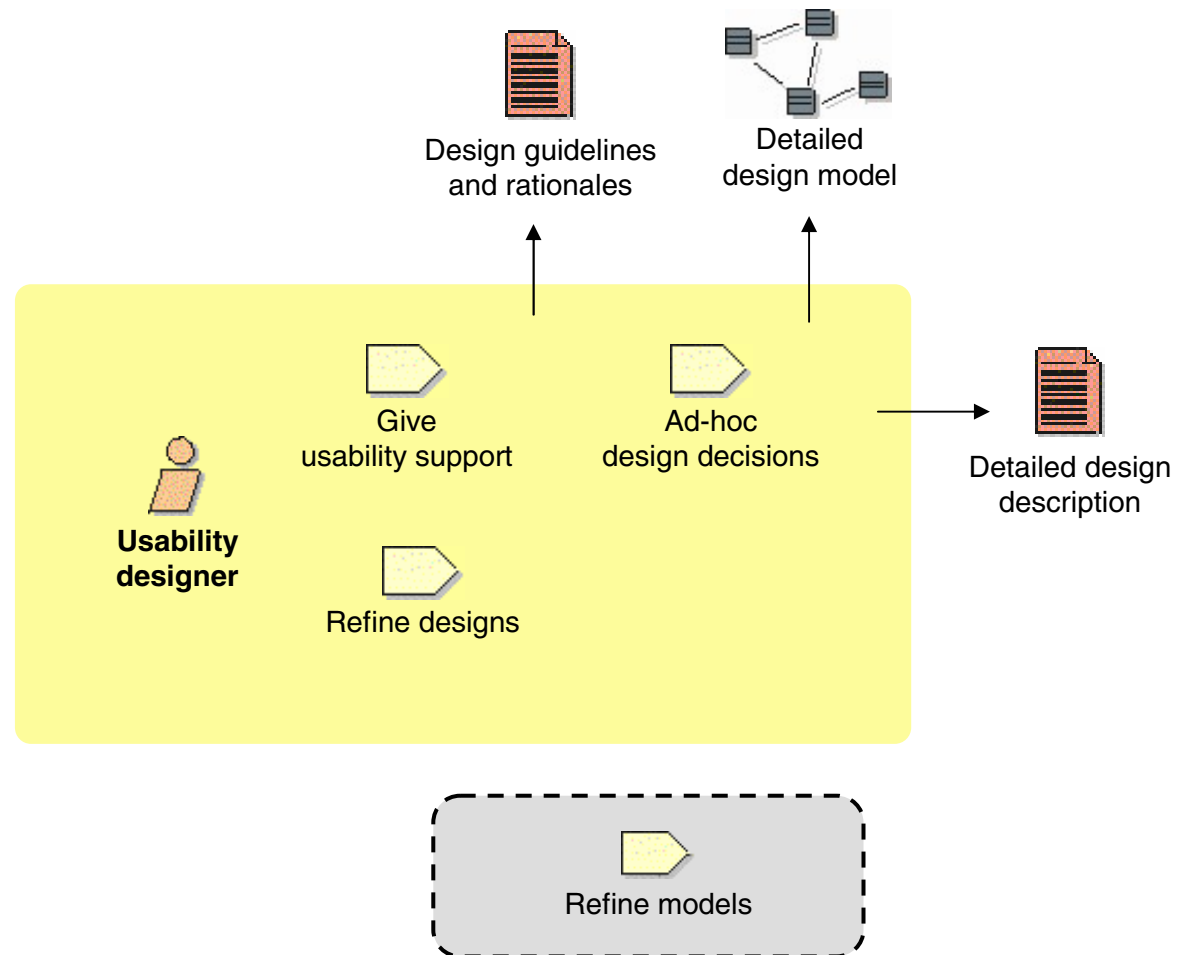
Workflow detail: Monitoring usability work



 Domain experts

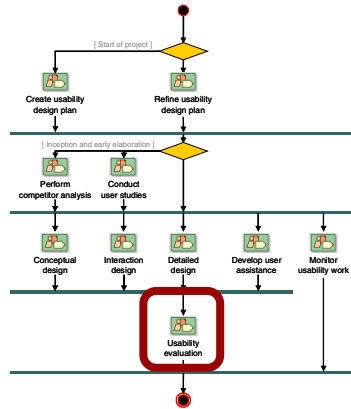
 End user

 Customer



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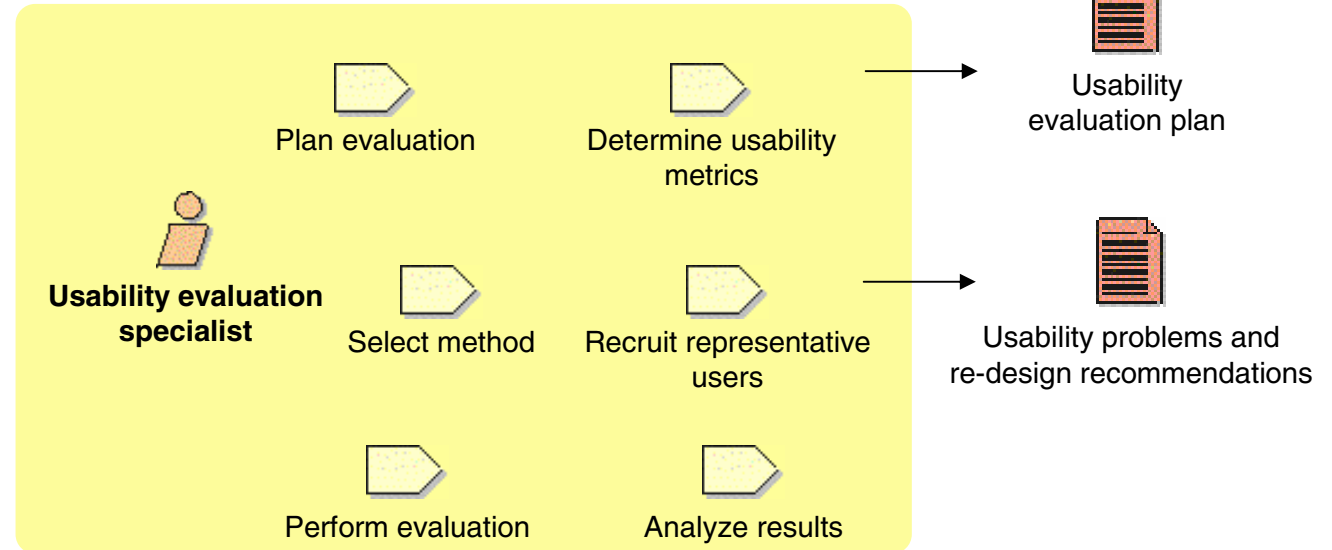
Workflow detail: Usability evaluation




Domain experts

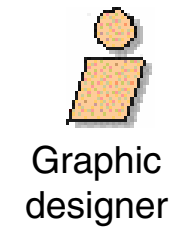
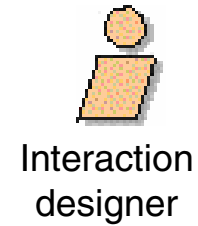
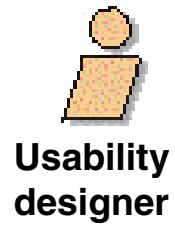
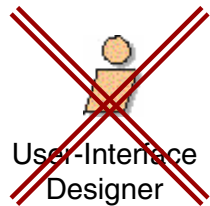

End user


Customer

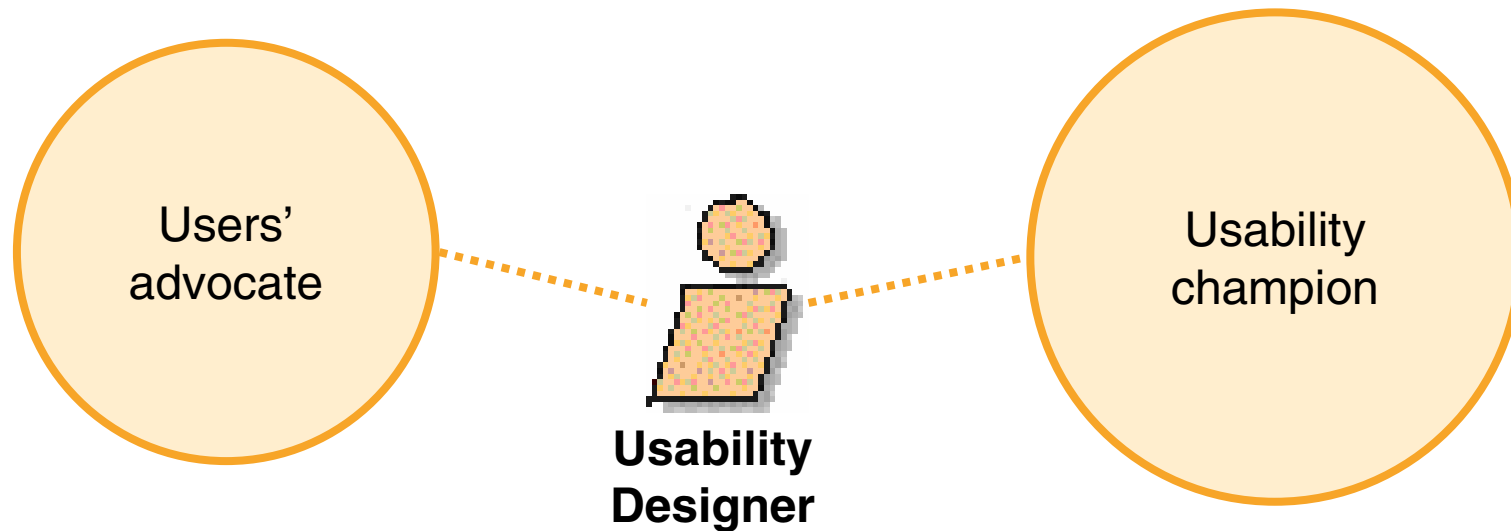


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Roles



Usability Designer

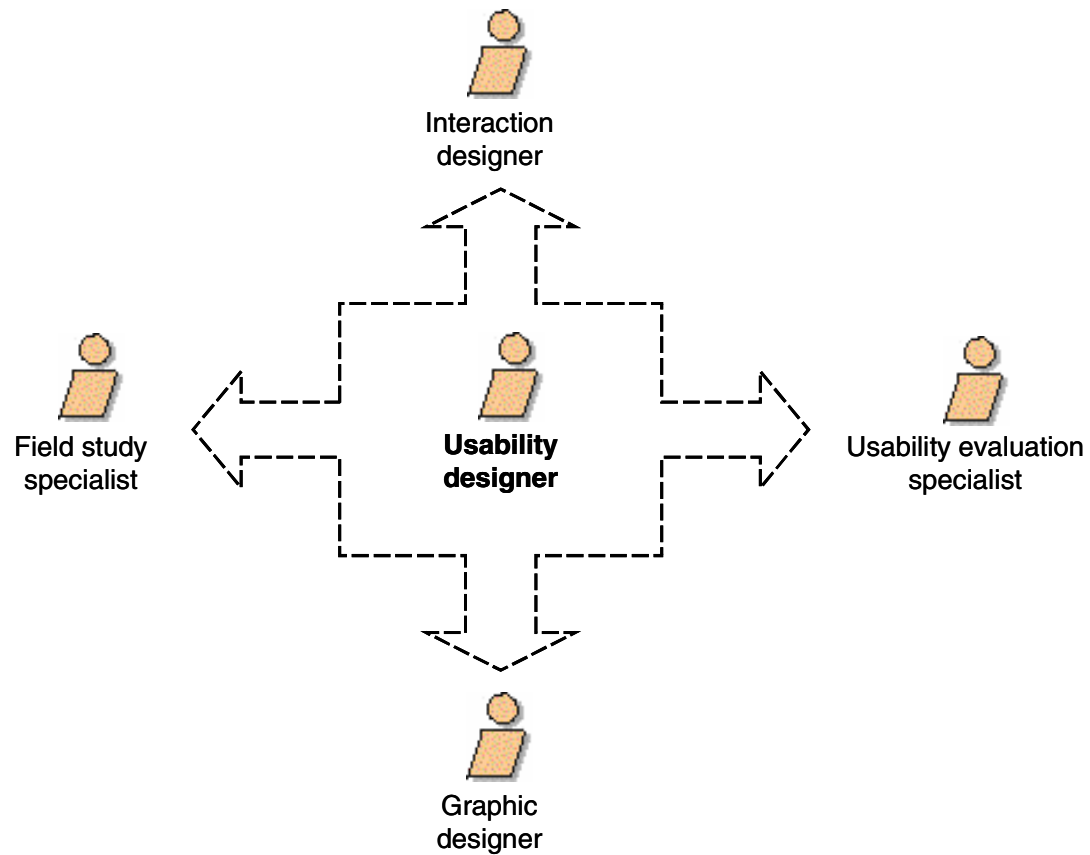


A Usability Designer at work

- ❖ A usability champion working together with users and acting as an advocate for the users.



More on roles



Artifacts

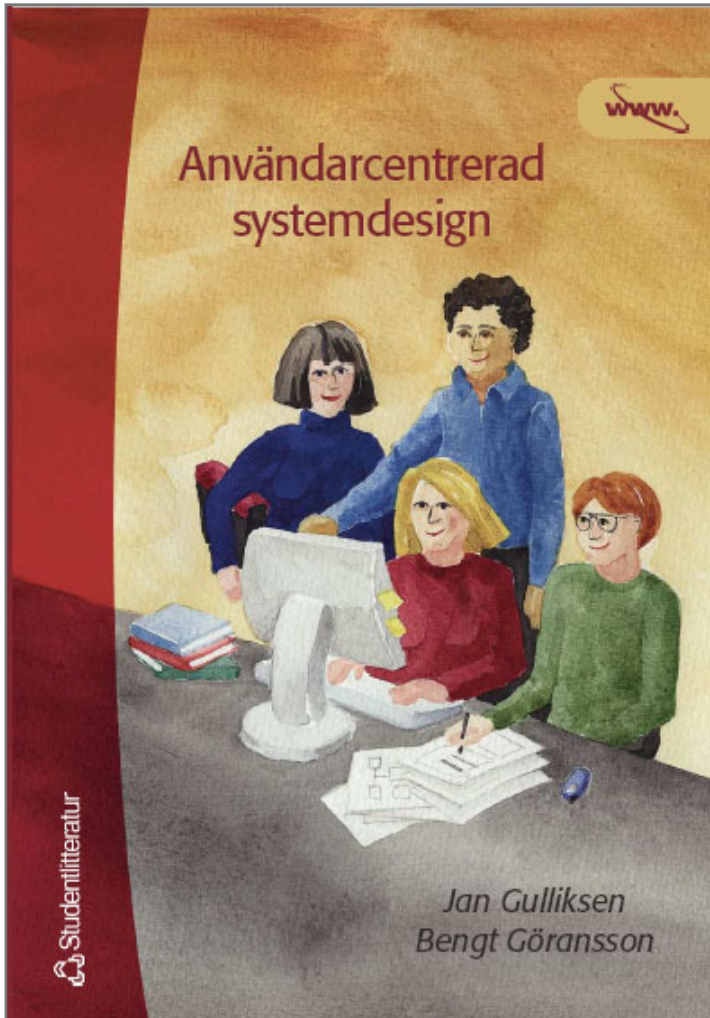
- ❖ One big "book" or fragmented documents?
- ❖ Usability Design Guide.
- ❖ Require changes in other artifacts.

To practice user-centered systems design

- ❖ You have to decide on making usable systems.
 - Demands the “users” of the process (the developers) to have a user-centered *attitude* and act accordingly.
- ❖ All stakeholders have to agree on this and act accordingly: clients, managers, users, developers, etc.
 - Further on, there must be an understanding between the development organization and the organization buying the system to work according to a user-centered design philosophy.
- ❖ There must be requirements on usability (usability goals) as well as demands on what kind of process to use.
- ❖ A dedicated plan and process to incorporate user-centered activities in systems development.
 - User-centered systems design must become the standard operating procedure for a developing organization.
- ❖ A role in the organization to promote usability and a project role to assure the user-centered focus: usability champion or usability designer.

More info on the plug-in

- ❖ Soon to be completed.
- ❖ Evaluation in progress.
- ❖ Available later this year.
- ❖ Look at <http://www.enea.se/>
- ❖ Contact Bengt.Goransson@enea.se



More info on usability and User-Centered Systems Design

<http://www.hci.uu.se/acsd/>

How to develop usable interactive systems in practice

www.enea.se

Thank you!

Questions

Bengt.Goransson@enea.se

<http://www.hci.uu.se/~bengt/>