

Lecture 6 Conceptual Design

Brainstorming
Card sort
Semantic networks
Personas
Scenarios, flowcharts and cognitive walkthroughs

Heim, Chapters 5.1-5.2



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Technology Myopia

- Interaction designs must be sensitive to:
 - Human-human communication
 - Implicit Knowledge
 - Non-technical aspects of work

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Integrate technology and human activities carefully

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Conceptual Design

- Conceptual design involves
 - Structuring the information space
 - Creating of alternative solutions
 - Determining which design concept to pursue

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Conceptual Design

- The tools involved in conceptual design:
 - Brainstorming
 - Card sort
 - Semantic networks
 - Personas
 - Scenarios
 - Flowcharts
 - Cognitive walkthroughs
 - Use cases

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Conceptual Design - Brainstorming

- Team activity
 - Stream-of-consciousness
 - Semantic networks
 - Storyboarding
- Brainstorming sessions generate a lot of material that must be filtered and organized

[Google example](#)

Conceptual Design – Card Sort

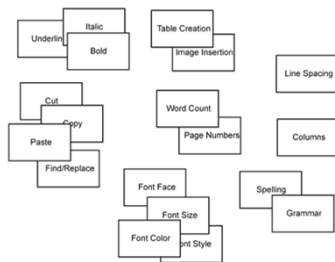
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Card Sorting can be used to discover user-centered groupings

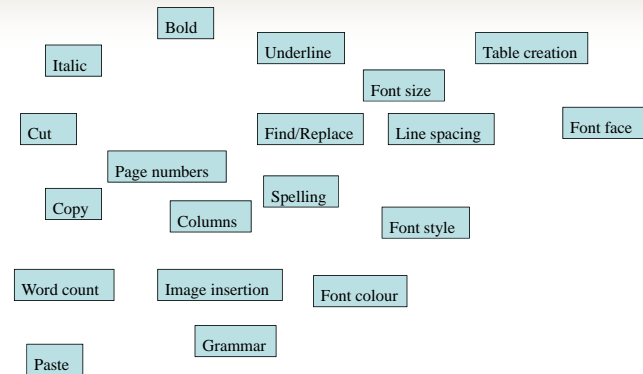
- Card sorting can be used to organize the information collected in the discovery phase
- Used to define groupings for menus, controls and Web page content
- Used to generate labels for menus, buttons and navigation links

Conceptual Design – Card Sort

- Result of a card sort



My card sort...



Conceptual Design – Card Sort

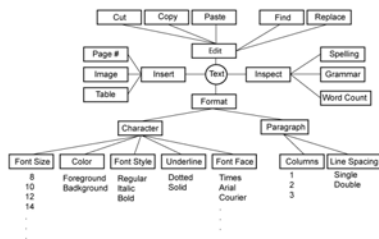
- Advantages of card sorting sessions:
 - They are quick and easy to perform.
 - They can be done before any preliminary designs have been made.
 - They will let you know how people organize information.
 - They will expose underlying structures.

Conceptual Design – Card Sort

- Disadvantages of card sorting sessions:
 - They only involve the elements that you have written on the cards.
 - They suggest solutions that imply structures.
 - They become difficult to navigate with more categories.

Conceptual Design – Semantic Network

- A semantic network is a web of concepts that are linked through association.



Conceptual Design – Semantic Network

- Advantages of semantic networks:
 - They allow an easy way to explore the problem space.
 - They provide a way to create clusters of related elements.
 - They provide a graphical view of the problem space.
 - They resonate with the ways in which people process information.

Conceptual Design – Semantic Network

- Disadvantages of semantic networks:
 - They require knowledge of the problem space.
 - They can lead beyond the problem space.
 - There is no formal semantics for defining symbol meaning.

Conceptual Design – Personas

- Personas are archetypes of actual users, defined by the user's goals and attributes.

“Personas are derived from patterns observed during interviews with and observations of users and potential user (and sometimes customers) of a product”

(Cooper & Reimann, 2003, 67)

Conceptual Design – Personas

- A persona is created by identifying the primary stakeholder and creating an identity based on the stakeholder profiles and other collection activities such as interviews and surveys.
- Expected to have:
 - A name
 - Goals and motivating forces
 - Behaviours and a personality

Conceptual Design – Personas

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Personas should be a strict reflection of the information derived from the collection activities.

- If you cannot point to a direct one-to-one relation with an observed user behavior, then that particular persona characteristic is either unnecessary or, more important, erroneous and will lead to incorrect design decisions.


Conceptual Design – Personas

• Advantages of personas:

- They are quick and easy to create.
- They provide a consistent model for all team members.
- They are easy to use with other design methods.
- They make the user real in the mind of the designer.

• Disadvantages of personas:

- They can be difficult to create if the target audience is international.
- Having too many personas will make the work difficult.
- There is a risk of incorporating unsupported designer assumptions.



Timothy Powell
P. Eng. Civil Engineer
GeoLine Engineering
Age: 52

"Speed trumps security when it comes to exchanging documents. It's not worth jumping through hoops to protect a document that nobody's interested in but me and the client."

Sends: 12 documents/week at nearly 100 MB each via FTP
Sends: 8 documents/week under 5 MB each via email
Receives: 15 documents/week under 3 MB each via email
Receives: 15 hand-drafted CAD drawings/week via fax
Exchanges: primarily PDF and Microsoft Word files
Employs: counters only for shipping physical goods

Internet use: is mostly limited to a website that hosts discussion groups for civil engineers, Purchases flights, hotels, and conference registrations twice per year.

Goal: Get everything done before heading home. Timothy has a lot of work to stay on top of and firm deadlines that cannot be missed. Speed is a competitive advantage for GeoLine, so it's essential that delays do not occur. Timothy hates working at night, too, so he makes the most of his hours at the office.

Goal: Cover his back and avoid blame. In Timothy's industry, projects usually go far over budget and are completed late, at which point all the subcontractors involved begin pointing fingers at each other. Timothy needs detailed records that prove he completed exactly what was expected of him and his company.

Timothy Powell is famous among his coworkers for once visiting a construction site and remarking to the client, "Look, you may build bridges, but I design them. And that's the most critical part!" He may not have made a friend that day, but Timothy was unconcerned. He doesn't suffer fools, just as he won't put up with anything that stands in the way of getting his job done. Timothy's work is extremely deadline-driven. His clients demand aggressive schedules and expect him to stick to them, as timing is crucial when coordinating subcontractors and suppliers on a large construction project.

"On a great day, I'm able to get everything out the door and into our clients' hands. Never ever let anything come between you and that door!" Timothy struggles with this all the time. With at least three major projects underway, it takes an enormous effort to produce his CAD drawings on schedule. As a result, he ships most of his documents at the end of the day, just before leaving the office around 5:30 pm.

Persona example

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Timothy Powell

Timothy spends about equal time working in AutoCAD and Microsoft Outlook, by far the most important tools in his job. AutoCAD is where he produces his work; Outlook is where he manages it. He creates a folder in Outlook for each project and is meticulous about archiving copies of all correspondence there. He copies himself on every outgoing email just for that purpose. In fact, after a phone call with a client, he'll even summarize the conversation in an email and send it to both himself and the person he spoke with if he knows their email address. Outlook acts as a central record of everything that has transpired on his projects, which is important: when clients demand, "Why did you design this bridge for only three lanes?" he can point to an archived email and tell them with satisfaction, "Because you told me to." Timothy says that his records in Outlook have saved him many times.

Although Timothy exchanges all his documents electronically — he would love never to touch another piece of paper — he is quite unhappy with the inconvenience of handling large files. He wishes that everything could be exchanged as email attachments, but over half of the 20 files he sends each week are almost 100 MB each. Files that large must be sent by FTP instead. This aggravates Timothy for several reasons. First, there's no record in his Outlook project folder. But also annoying is the speed: their FTP system is so slow that it's often the next day before he learns that a delivery failed; he sends most of his files just before heading home and doesn't want to wait an extra half hour just to see if it's successful. If a document is particularly important, he might investigate by calling the recipient from his mobile phone while driving home. Earlier this month, Timothy had to turn around and restart a transfer that had encountered an error. He was not impressed.

"Most of our clients have policies that say all documents must be transferred by FTP for security and archival reasons," Timothy admits. "But that's a load of crap. I don't think a client has ever sent me something by FTP. They send edits by fax and everything else as an attachment. Nobody has ever complained about attachments and never will — unless it's a lawyer, I suppose." He dryly remarks that "we're not building the space shuttle here, so I doubt we have to worry about espionage."

For the full story behind this persona, see Robert Barlow-Busch's chapter titled "ClickDoc: A Case Study in Personas" in the book User-Centered Design Stories by Carol Kight and Janice Jarvis. You may also read more or contact Robert through his blog at [www.chopstick.com](http://chopstick.com/).

Persona example

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Conceptual Design – Scenarios, Flowcharts, and Cognitive Walkthroughs

• Scenarios

- A description of a typical task
- It describes
 - The basic goal
 - The conditions that exist at the beginning of the task
 - The activities in which the persona will engage
 - The outcomes of those activities

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Scenarios afford a rich picture of the user's tasks

Scenario example

Accessing Design Files from a remote server

PACT Analysis

People: Design engineer on a project

Activities: Using the DMS to identify released document set for a design part

Context: Remote site work environment, independently managed work activity

Technology: Mobile interface to previous PC-based DMS

Scenario

Engineer is on site discussing construction of 'Bridge D' 'Deck' with contractors.

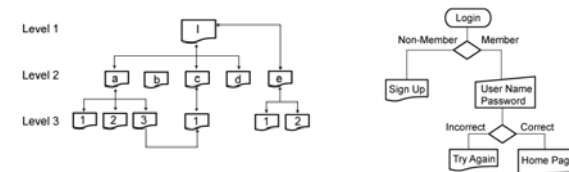
Doesn't believe that they have all the documentation and needs to check their set of documents against the master set. Uses mobile device to access DMS and authenticates with the system. Selects project 'Bridge D' and design part 'Deck'. Requests the set of released documents to be identified. Works through the identified set of documents checking document codes, release date, and versions with the contractor. Identifies no anomalies with the contractor's set and completes programme task.

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Conceptual Design – Scenarios, Flowcharts, and Cognitive Walkthroughs

• Flowcharts can be:

- Simple network diagrams that identify the pages of a Web site and the navigational links between them
- Sophisticated diagrams that capture conditional junctures and computational processes



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Conceptual Design – Scenarios, Flowcharts, and Cognitive Walkthroughs

- Cognitive walkthrough - the evaluator follows the various scenarios using the flowcharts or the low-fidelity prototypes
- The evaluator takes the part of the primary stakeholder and tries to accomplish that stakeholder's various tasks

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Summary

- User centered design approach helps identify real user requirements at conceptual design stage and beyond
- Personas and scenarios are important approaches to support conceptual design

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