

The Usability Engineering Lifecycle – A Case Study

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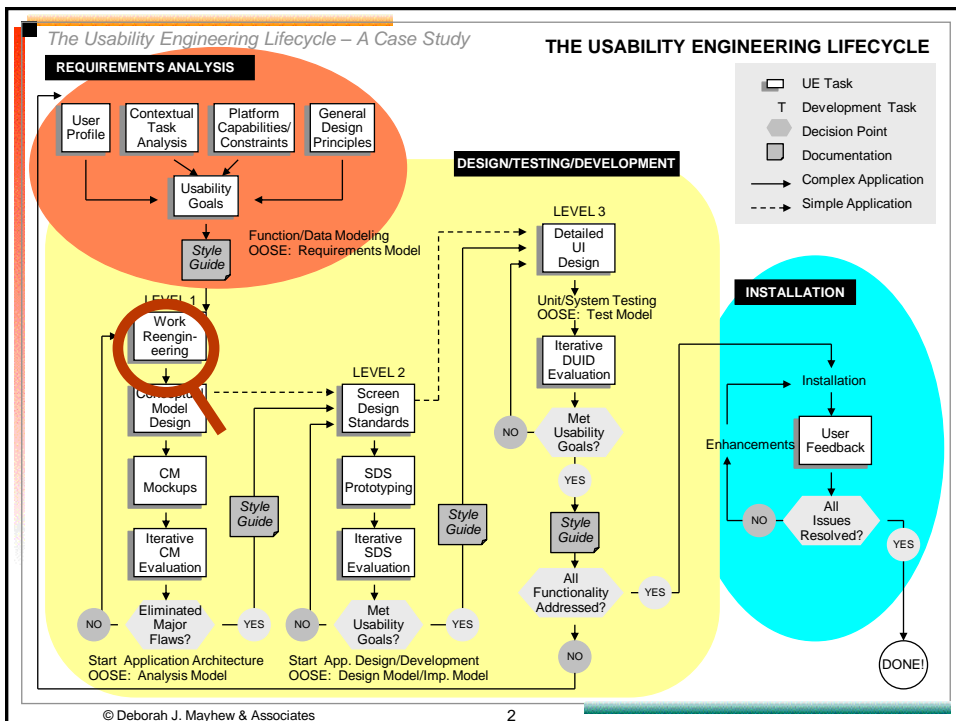
The Usability Engineering Lifecycle - A Case Study

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WORK REENGINEERING

► Case Study

- Project Context
 - Non-profit Foundation
 - Conducts variety of projects related to its overall mission
 - Projects benefit both institutions and the public
 - Raises funds through:
 - » Grants
 - » Private donations
 - › Sponsors events to motivate donations
 - › E.g., Public speeches, dinners, auctions

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WORK REENGINEERING

► Case Study

- Project Context (cont.)
 - Employs a variety of staff, including “Publicity Managers”:
 - » Deal with media (e.g., newspapers, radio, TV etc.)
 - » Plan and implement publicity
 - › E.g. press releases, speeches
 - » Serve as contact people for reporters writing news stories involving Foundation
 - » 35 users, each in a separate city across the USA
 - Development Project:
 - » Tool to support Publicity Managers
 - » Part database:
 - › File/retrieve details of projects, events, phonebook of media contacts, history of communications with media etc.
 - » Part document management system:
 - › Filing and retrieval of publicity related documents (e.g., press releases, news articles, etc.)
 - › Documents can be linked to projects, events, media contacts, speeches etc in database

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WORK REENGINEERING

► Case Study

- Project Context (cont.)
 - Development Project (cont.):
 - » Platform
 - › 15" screen laptops
 - › Windows NT OS
 - › Screen res = 1024X768
 - › Microsoft Internet Explorer version 5.0 browser

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WORK REENGINEERING

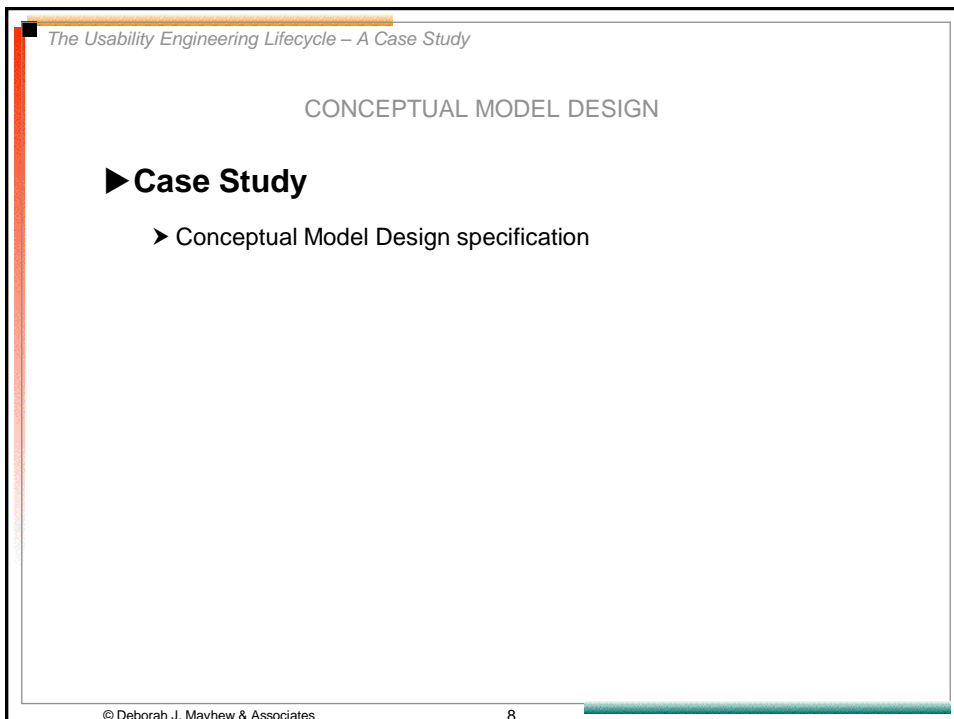
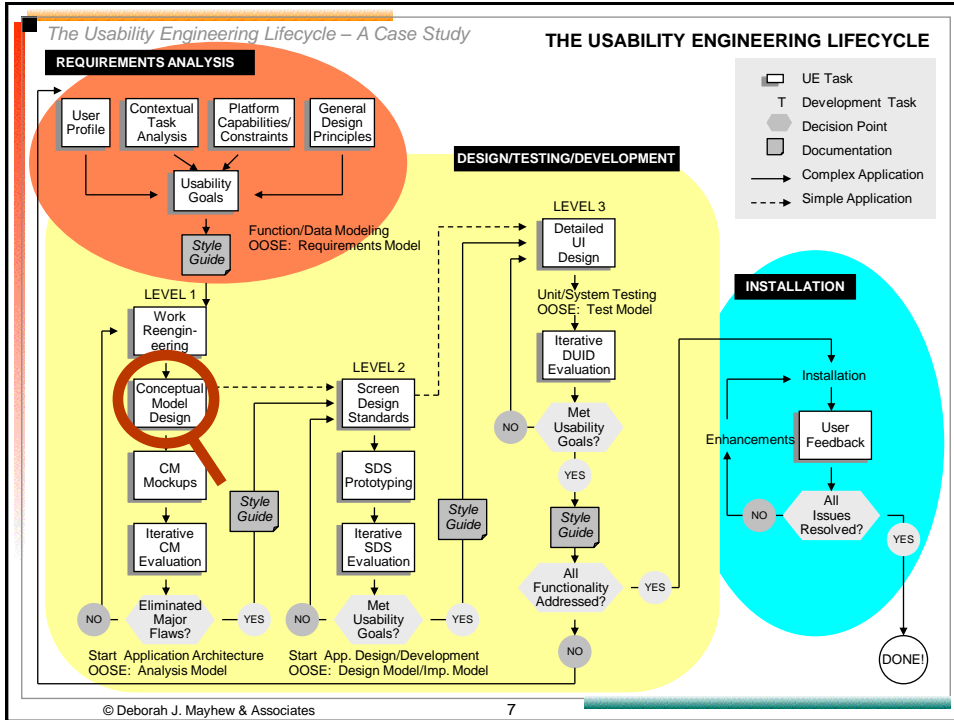
► Case Study

- Information Architecture (ie, Work Reengineering)

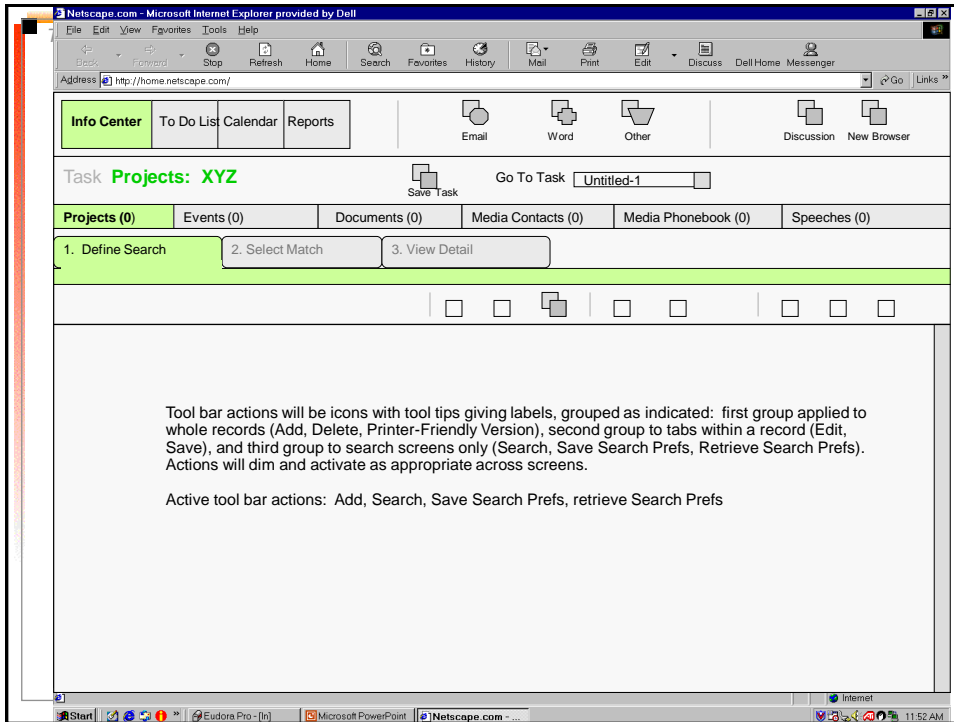
Info Center	Info Center (cont)
Projects	Media Phonebook
Define Search	Define Search
Select Match	Select Match
View Detail	View Detail
Background	Background
Project Type	Speeches
Significance	Define Search
Publicity Details	Select Match
Documents	View Detail
Events	Request Description
Define Search	Request Submitted by
Select Match	Request Status
View Detail	Documents
Background	To Do List
Details	Calendar
Press Coverage	January
Documents	February
Media Contacts	etc.
Define Search	Reports
Select Match	Report Criteria
View Detail	Show Report
Background	
Details	
Documents	

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▶ 3 groups of top level links in banner:

- ▶ Main content links
 - ▶ Info Center – database file and retrieve
 - ▶ To Do List – a scratch pad allowing notes, maybe some automated entries
 - ▶ Calendar– formatting provided for database data
 - » Includes Project Events and Speech Requests
 - ▶ Reports– allows National staff to generate reports on nationwide trends
- ▶ Links to other applications
 - ▶ Email – maybe pick address from this app before launching email
 - ▶ Word – maybe pick doc from this app before launching Word
 - ▶ Other – maybe take this app data to navigate to specific part of Other app
 - ▶ Each launches a second window, tiled vertically with this app window
- ▶ Links to other web sites
 - ▶ Discussion – link to discussion page in Foundation Publicity site
 - ▶ New Browser – opens a new browser window
 - ▶ Each launches a second window, tiled vertically with current app window

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- Note use of light green as a consistent “**You are Here**” indicator on *all* tabs, including grid column headers
 - It is redundant with the depressed look of radio tabs, but that look was shown to not be salient enough in testing
- Note **different sizes and shapes of the 4 levels of tabs**:
 - 1st level (e.g. Info Center) – square and larger font
 - 2nd level (e.g. Projects) – rectangular and larger font
 - 3rd level (e.g. Search Criteria) – rounded corner rectangular and larger font
 - 4th level (e.g. Background) – even narrower rectangles and smaller font
- Note **VERY light gray background** to overall screen, so both white (editable) fields and black text will stand out and be legible

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- **2nd level Radio Tabs have the following behaviors**:
 - The content of these **tabs** at any moment are always **linked**, and can be thought of as simply different views on the same data. The **assumption** here is that most of the time, **when** a user does a **search in one** of these tabs, they will **want** quick and easy access to **all related data**
 - For example, let’s imagine the user starts out in the Projects tab, and runs a **search for a Project**, and is now viewing the details of that project in the View Detail tab for Projects
 - If they now **click on the Media Contacts tab**, focus will shift to the *Select Match tab* for Media Contacts, and *already listed there* will be a **list of contacts related to that Project**. That is, the system assumes (as a default) that they want media contacts related to the Project they just searched for, and automatically runs the search for them and presents the results, **rather than requiring that they manually define the search and then run it**. Now they can pick one of the contacts in the Select Match tab and view it in the View Detail tab.
 - Next, they could **click on the Documents tab**, and focus would shift to the Select Match tab for Documents, and already listed there will be a list **Documents related to that project . . . Etc.**
 - Note that **until the user explicitly executes a new search** somewhere, or explicitly goes back to the Projects tab and backs up and selects a different project and goes to a new display in the View Details tab, **all data remains oriented around the project** in the View Detail tab
 - Note also that **two context lines reiterate the current search and the current View Detail data**

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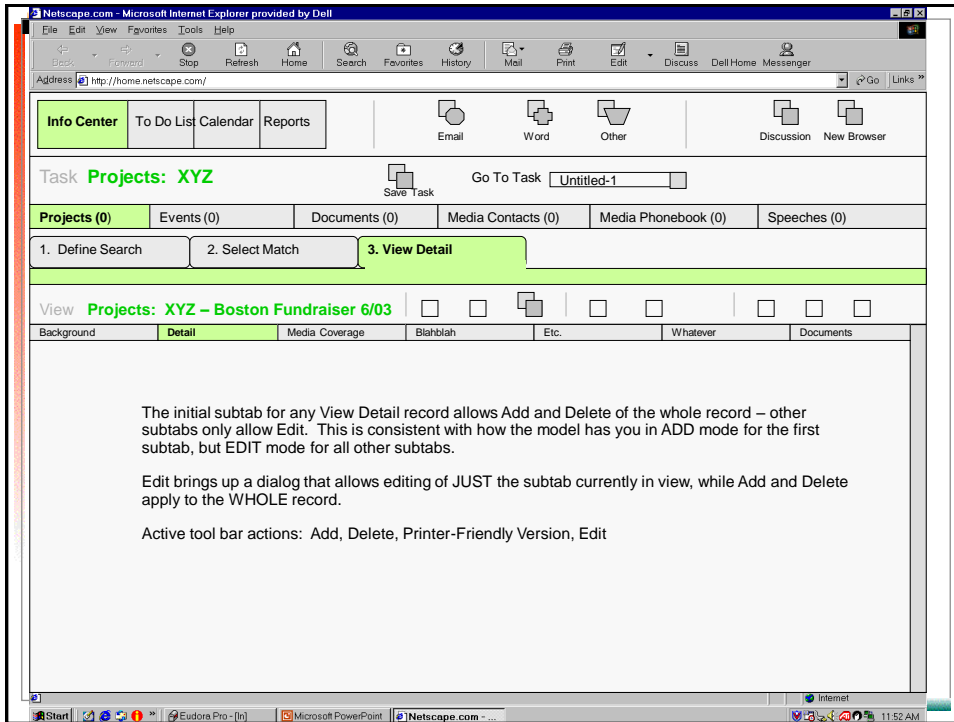
- ▶ **2nd level Radio Tabs have the following behaviors (cont.):**
 - ▶ Also note the following behaviors:
 - ▶ **Once a search has been run** in a particular 2nd level Radio tab, generating a match list in the Select Match tab,
 - ▶ a **number indicating the number of matches** in the Select Match tab is displayed in the parentheses to the right of the 2nd level Radio Tab label.
 - ▶ numbers appear in the parentheses in **all other 2nd level Radio tabs** indicating the number of matches in each of their labels
 - ▶ a **context line** will appear just below the banner and just above the 2nd level Radio Tabs which summarize a few key fields from the **search**.
 - ▶ This allows the user to move from tab to tab and always be reminded of the context of the data they are looking at

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This screen always contains a list of matches from the search – there is no Add button on the grid, and no Delete buttons – just a View Detail button for each line item. User must bring up View Detail that shows record in order to delete the record, and cannot add to a search result list.

Active tool bar actions: Add

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 - Note also that two context lines reiterate the current search and the current View Detail data
 - Note that in this approach, the tabs themselves actually serve as the cross-tab hyperlinks in the View Detail displays

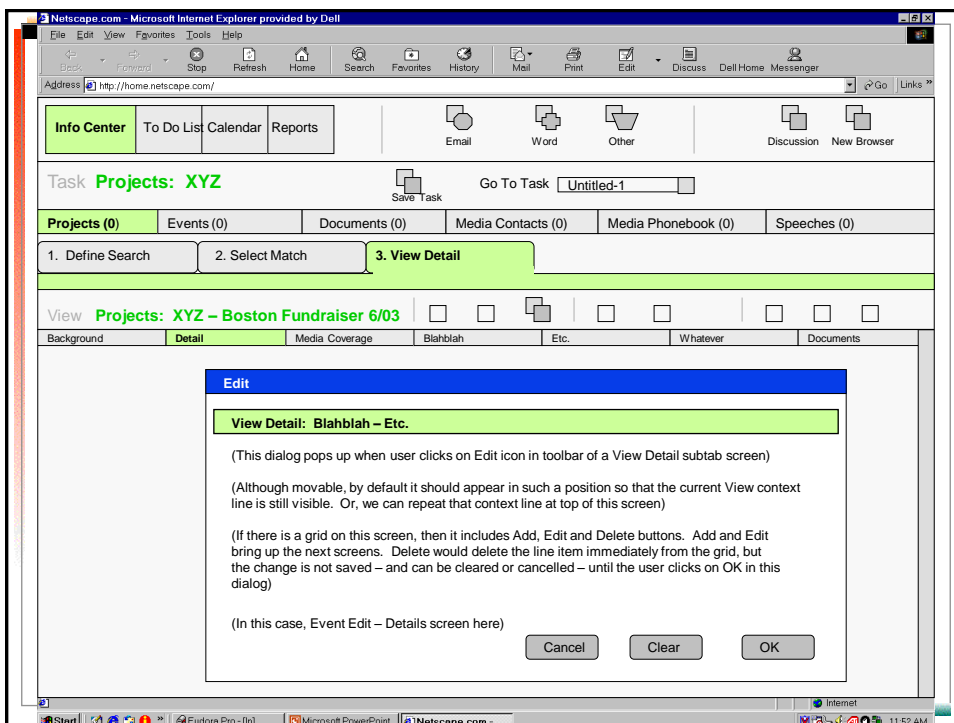
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- ▶ 2nd level Radio Tabs have the following behaviors (cont.):
 - ▶ Also note the following behaviors:
 - ▶ Once a search has been run in a particular 2nd level Radio tab, generating a match list in the Select Match tab, a number indicating the number of matches in the Select Match tab is displayed in the parentheses to the right of the 2nd level Radio Tab label.
 - ▶ Once a particular search result has been selected and displayed in the View Detail Tab in one 2nd level Radio Tab, numbers appear in the parentheses in *all other 2nd level Radio tabs* indicating the number of matches in each of their labels
 - ▶ Once a search has been run in one of the 2nd level Radio tabs, a context line will appear just below the banner and just above the 2nd level Radio Tabs which summarize a few key fields from the search.
 - » This allows the user to move from tab to tab and always be reminded of the context of the data they are looking at
 - » If the user is National, this context line should include the Local user name
 - ▶ The only Define Search tab that maintains filled in data is the most recently executed one. Within a Task, if the user executes one search in Projects, and then another search in Documents, the data entered in the Projects Define Search tab is cleared, but the data entered in the Documents Define Search tab is maintained until a third search is executed
 - ▶ If the user enters data in a second Define Search tab and clicks the Search button, a pop up dialog box will appear asking them if they want to: 1) lose all current data, or 2) invoke Open New Task, which allows them to name the current Task and be able to navigate back to it later through the Go To Task pull down
 - » This pop up could also have a "Don't ask me again" option, so the user can avoid the pop-up once they understand the "Open New View" function

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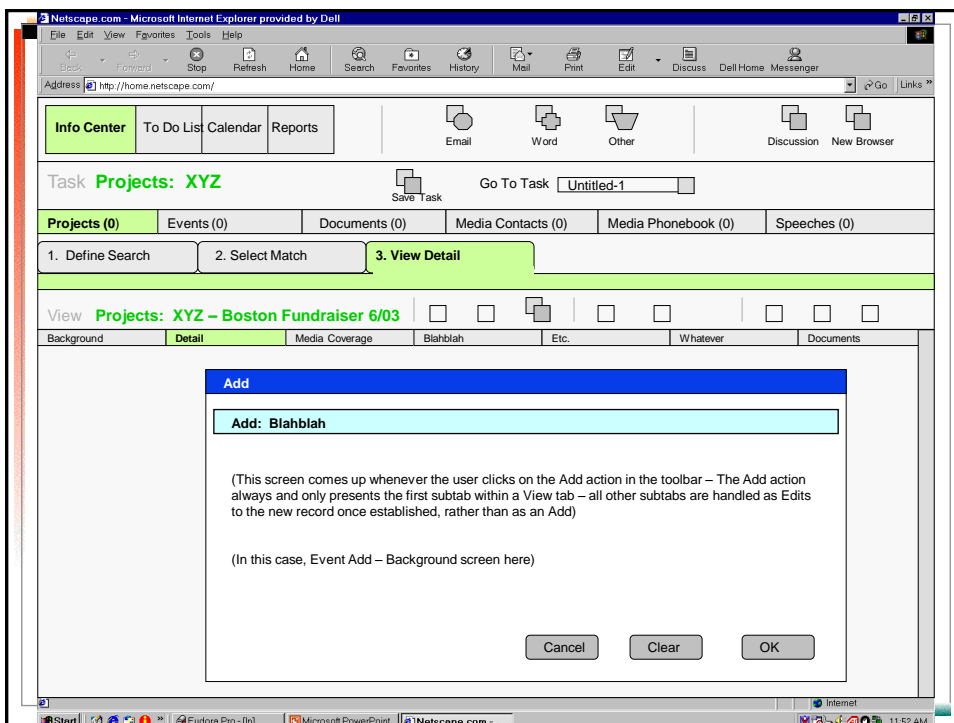


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- ▶ **To edit fields within a tab of a record**
 - ▶ **Navigate** to tab of fields
 - ▶ Click on **Edit icon** in toolbar
 - ▶ **Pop up dialog box** appears containing all fields on this tab
 - ▶ Although movable, by default it should appear in such a position so that the Current View context line is still visible.
 - ▶ Direct editing allowed
 - ▶ **OK button** to accept, return to main tab with changes registered

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- ▶ **To add a record within a category**
 - ▶ **Navigate** to category (e.g., Events)
 - ▶ Click on **Add icon** in toolbar
 - ▶ **Pop up dialog box** appears containing all fields contained in **first tab** (e.g., Background) for this record category
 - ▶ **Fill in** all required fields
 - ▶ **OK button** to accept, return to main tab with new record displayed
 - ▶ To add data to fields in other tabs, navigate to tab and use **Edit tool**

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- ▶ **How design responds to goals:**
 - ▶ Goals from *Task Scenarios* in Contextual Task Analysis task:
 - ▶ **GOAL:** Need to be able to **suspend tasks** in mid-stream and initiate other tasks, but be able to **easily and quickly return to where left off** in interrupted tasks
 - ▶ **Open New Task** function accomplishes this – allows opening a new window for each separate task, leaving old tasks where you left off in old window
 - ▶ **GOAL:** Need **constant context info** on screen – high level reminder of currently open tasks, as well as where you are within a task when you return to it from another task for from interruptions
 - ▶ **Green “You are Here” indicators** are context of place in task
 - ▶ **Window in Task Bar** are reminders of other open tasks

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► **How design responds to goals:**

- Goals from *User Profile* task
 - **GOAL: Build on MS Windows Conceptual Model** and/or conventions where applicable (e.g., assume familiarity with GUI widgets; could use a menu bar like construct)
 - Note design, while not Windows per se, has a general look that is **more GUI than web-like**
 - Note tool bar
 - See Screen Design Standards Case Study section to note use of **GUI widgets** in screen design

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► **How design responds to goals:**

- Goals from User Profile task (cont.)
 - **GOAL: Do not assume familiarity** with common **Web conventions** – make things as intuitive as possible (e.g., don't assume familiarity with Back button, provide comparable controls on each page)
 - Note while **browser tool bar** is visible, it is **not necessary** (also after testing, browser tool bar was **suppressed**, as it caused some confusion and unpredictable effects)

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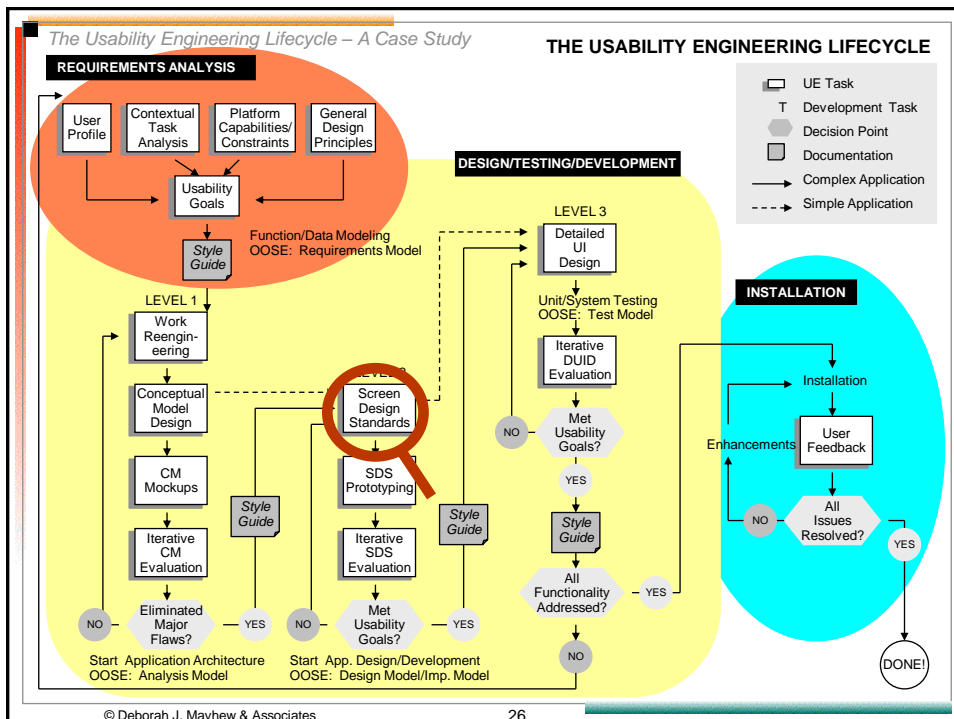
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► How design responds to goals:

- Goals from User Profile task (cont.)
 - **GOAL:** Design to **facilitate communication** and sharing
 - Note **link to Discussion** web page
 - Note that whole application is oriented around **shared data and documents**
 - **GOAL:** **High frequency tasks** should be up front with **minimal clicks**. **Low frequency tasks** should be **easy to find/remember**
 - Note can go anywhere from anywhere quickly, given that **all links at all levels are always visible**
 - Note that **consistency** between high frequency tasks (e.g. search for articles) and low frequency tasks (e.g., search for speech request) will make low frequency tasks easy to remember

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Screen Design Standards

► **Case Study**

► Screen Design Standards specification

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The screenshot shows a Netscape browser window with a task bar design specification. The browser's address bar shows 'http://home.netscape.com/'. The task bar contains several sections: 'Info Center' (highlighted in green), 'To Do List', 'Calendar', and 'Reports'. Below these are icons for 'Email', 'Word', 'Other', 'Discussion', and 'New Browser'. A 'Task Projects: XYZ' section includes a 'Go To Task' field with 'Untitled-1' and a 'Save Task' icon. Below this are tabs for 'Projects (0)', 'Events (0)', 'Documents (0)', 'Media Contacts (0)', 'Media Phonebook (0)', and 'Speeches (0)'. A search bar is divided into three steps: '1. Define Search' (highlighted in green), '2. Select Match', and '3. View Detail'. Below the search bar are several small square icons. The main content area contains the following text:

Tool bar actions will be icons with tool tips giving labels, grouped as indicated: first group applied to whole records (Add, Delete, Printer-Friendly Version), second group to tabs within a record (Edit, Save), and third group to search screens only (Search, Save Search Prefs, Retrieve Search Prefs). Actions will dim and activate as appropriate across screens.

Active tool bar actions: Add, Search, Save Search Prefs, retrieve Search Prefs

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Information Center – Projects – Define Search

PROJECT

Name:

Xxxxxxx:

Number:

Include Related Projects:

DATE INITIATED

Between: and:

PROJECT MANAGER/LOCAL OFFICE

PROJECT MANAGER

Last Name:

First Name:

Local Office

Local

Area

National

PROJECT TYPE

Yyyyyyyyy:

Zzzzzz:

AAAAAAA:

Bbbbbb:

Ccccc:

Dddddd:

Eeeeeee:

Fffffff:

Gggggg:

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- The Usability Engineering Lifecycle – A Case Study
- ## ► Define Search Screen Standards
- **No fields are required** – a blank screen generates a list of, for example, ALL Projects – default sort is alphabetical by name
 - Exception is Local Office – by default will be user's Local Office
 - All fields are **blank by default** – except Local Office, which defaults to the user's office if user is Local, and to National if user is National
 - An **“AND” relationship between fields** is assumed if users fill out more than one search field
 - That is, the more fields filled in, the narrower the search
 - Allow **multiple selections in some fields**
 - Within these fields an **“OR” relationship** is assumed
 - **Cursor default** to top left (e.g., Project Name) field
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► Define Search Screen Standards (cont.)

- **Group Boxes** used to group related fields
 - **Group titles** in all caps embedded in border
- **Left justification** of captions and fields within group boxes
- **Date fields** allow either type in, or pull up a calendar in a pop-up window
 - Pop up calendar requires 2 clicks – on start date, and on end date
 - To select in a single date, click twice on same date
 - If filling in date fields manually, will interpret a single date in the “Between” field as between then and now, and a single date in the “and” field as anytime prior to that date – to indicate a single date, enter the same date in each field
- **Dimming** is used to indicate temporarily inactive/irrelevant fields
 - E.g.: Aaaaaa/Cccccc field is dimmed out until a selection is made in Bbbbbb – then pick list is tailored to the Bbbbbbb picked

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Information Center – Project – Select Match

Sort by [Xxxxxxx]

Show Detail for [Project:]

Project Name	Xxxxxxx	Project Number	Project Type	Parent Project	Last Actual Event Date	Last Actual Event Type	Project Manager Last Name
X	Whatever	1234567890	Parent	1234567890	Sep 23, 2001	Whatever	Smith
Y	Whatever	2345678901	Child	1234567890	Sep 23, 2001	Whatever	Smith
Z	Whatever	3456789012	Child	1234567890	Sep 23, 2001	Whatever	Smith
A	Whatever	4567890123	Parent	4567890123	Sep 23, 2001	Whatever	Smith
B	Whatever	5678901234	Child	4567890123	Sep 23, 2001	Whatever	Smith
C	Whatever	6789012345	Child	4567890123	Sep 23, 2001	Whatever	Smith

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► **Select Match Screen Standards**

- Partial **records** with key fields represented as **rows in a grid**
- **Rows alternate gray and white** to facilitate tracking
- **View Detail buttons:**
 - Clicking on one takes you to the View Detail tab for the record represented by that row in the grid, where you can view all record detail and edit.
 - Buttons will have a **pencil icon** on them, and the pop up tool tip for them will be “View Detail for [Project: X]” – where last item in brackets is specific to the table and line item in it
- **Tool tips** will be provided on all buttons
- If the grid has enough data to reach some maximum size it will have an active **scroll bar**
- Note – cannot scroll table independently of the table header buttons – will have to **scroll whole page** (under the nav buttons).

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► **Select Match Screen Standards (cont.)**

- **Default** order of records in a grid will always be to be **sorted on first column**
 - First column always be the **key one**, so that this is always a good default
- Note that mechanism for **sorting** by columns (Radio Tabs) is consistent with the use of Radio Tabs elsewhere to switch views

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Information Center – Projects – View Detail - Background

View: Project: X

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► **View Detail Screen Standards**

- **Default** will be that **no field** is highlit/selected, on the assumption that more often users are just viewing, rather than making changes to, View Detail screens
- Note the following **cues**:
 - **Non-editable** fields (Other App data) should have a *2-D transparent background with black borders*. Non-editable list boxes will still have active scroll bars when necessary.
 - **Editable** fields (input by Local users) will be *3-D with a white background with black borders* and may be standard GUI widgets such as drop downs
 - **Temporarily inactive** fields have dimmed text labels and *3-D field areas with transparent backgrounds with gray borders and dimmed controls (e.g., drop down arrows.)* For example, in the screen illustration above:
 - » Mmmmm comes from the Local users, not the Other App and it is currently unfilled, but can be edited.
 - » Sssss fields are editable but currently inactive and thus dimmed, as Mmmm has not been filled in.
 - » If Mmmmm is filled in as mmm, then Sssss fields would be activated.

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Information Center – Projects – View Detail - Staff

View: Project: X

PROJECT MANAGER
Last Name: Phone:
First Name: Email:
Ppp:

ASSISTANT PROJECT MANAGER
Last Name: Phone:
First Name: Email:
Local Office: Ppppp:

Show Detail for [Development: XYZ]

OTHER STAFF

Development: (Add)

Scientific: (Add)

Financial: (Add)

Administrative: (Add)

Delete [Development: XYZ]

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► View Detail Screen Standards - Grids

- Note order of - and tool tip labels for - grid controls
 - View Detail on right, Delete on left
- Grids are still **read only** – user must invoke the View Detail control by a line item in order to get an editable version of that line item, and must invoke the Add control in the grid to add a line item (see slides below)
- **Rows** alternate gray and white
- **Scroll bars** on right when necessary

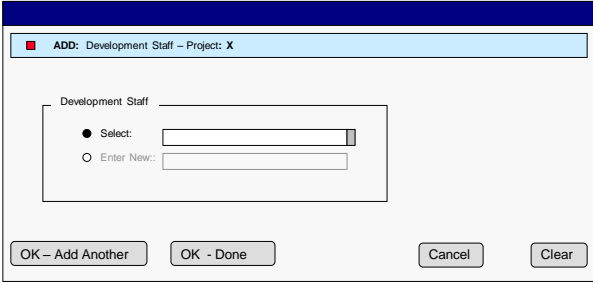
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Information Center – Projects – View Detail – Staff – Pop-Up ADD [Development]

View: Project: X

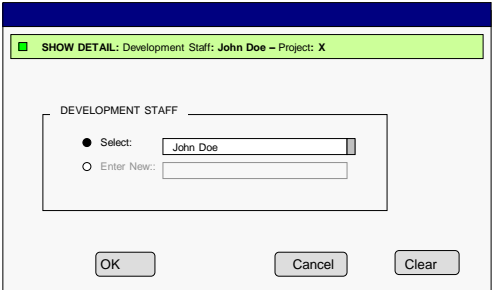


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Information Center – Projects – View Detail – Staff – Pop-Up SHOW DETAIL [Development] Staff

View: Project: John Doe




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Information Center – Projects – View Detail – Staff – Pop-Up DELETE [Development Staff]

View: Project: X



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► **View Detail Screen Standards – Grid Pop Ups**

- We can **prefill any pick list** with an initial set of default values that the user can then add to at will
- Note that in **pick list**, user can **enter first letter** and this will highlight first item in pick list that starts with this letter – helps on long lists
- **To add to grid entries**, use **Add control in first line of grid** – this will take you to an Add screen, as shown
 - **Cancel** button activates
 - **OK and Clear** buttons don't activate until you add to a field – data is in bold
 - All these Add screens work the same – you can pick a choice from the **Select** list or **Enter a New** piece of data, which will then also be added to Select list
 - » Note that to add multiple new entries to a grid, you can use the OK - Add Another button
- **To edit grid entries**, use standard grid **Show Detail** button
 - This will take you the Edit screen shown
 - Same behaviors for **Cancel/Clear/OK** buttons as described for Add screen
 - All Edit screens work the same – you can **change the current Selection**, or **Enter a New** piece of data in the Enter New box to substitute for the current Selection
- **To delete grid entries**, use standard grid **Delete** button
 - Brings up confirmation dialog

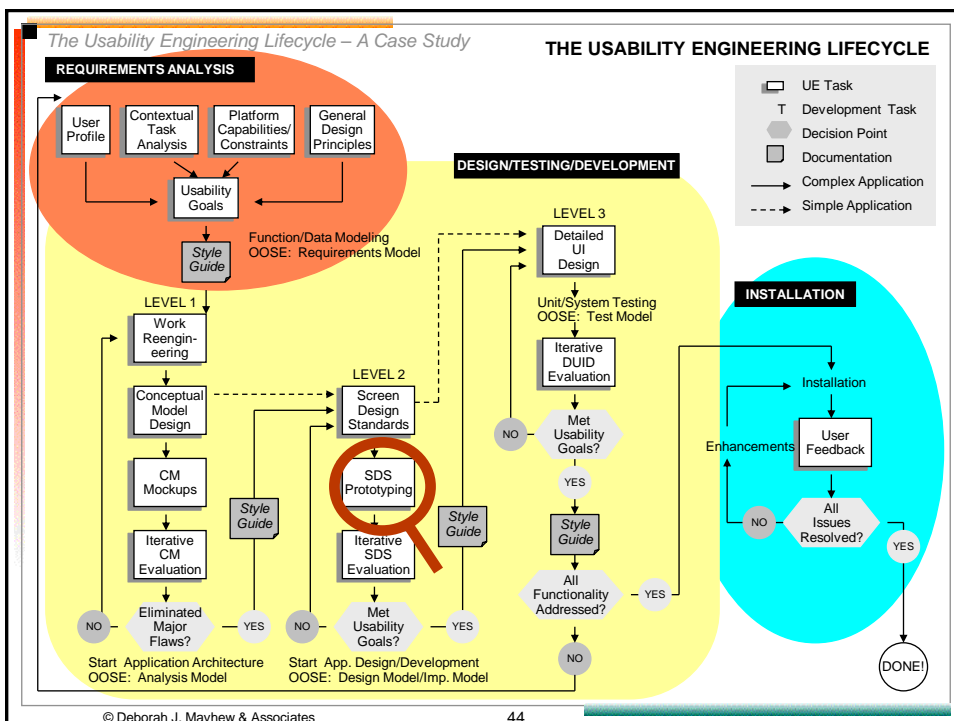
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- General standards for all dialog boxes:**
 - Overall **background color** is same as for application window – a very light gray
 - Note **context line at top** of dialog box, under **title bar**
 - Icon** corresponding to icon that got you to the dialog
 - Format is:**
 - Action is upper case bold, followed by colon (**SHOW DETAIL:**)
 - Lowest level data type in normal intensity, followed by colon IF data follows (Development Staff:)
 - Lowest level data in bold IF relevant – if multiple parts, just spaces between parts (**John Doe**)
 - Hyphen with space on either side
 - Higher level data type in normal intensity, followed by colon (Project:)
 - Higher level data in bold – if multiple parts, just spaces between parts (**X**)
 - Etc. on up to highest level data type and data
 - Note context line has a distinctive **background color** – NOT white, which is our cue for an editable field
 - Yellow** for a **warning**
 - Green** for **view**
 - Blue** for **add**
 - Red** for **error messages**
- Standard **positions for pushbuttons** on any dialog box:
 - OK – Add Another** (if present) on far left
 - OK – Done** (or just OK) next
 - Cancel** – second from right
 - Clear** (if present) – far right

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SCREEN DESIGN STANDARDS PROTOTYPING

► **Case Study**

► Prototype

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The screenshot shows a Microsoft Internet Explorer browser window displaying a web application prototype. The browser title is 'PIO v1.0 - Microsoft Internet Explorer'. The address bar shows 'http://h'. The page content includes a navigation menu with 'Info Center', 'To Do List', 'Calendar', and 'Reports'. Below this is a 'Window Project XYZ' section with a 'Select Window Type' dropdown and a 'Start New Window' button. A main menu contains 'Projects (0)', 'Events (0)', 'Document (0)', 'Media Contacts (0)', and 'Media Phonebook (0)'. A sub-menu below it has '1. Define Search', '2. Select Match', and '3. View Detail'. The main content area is titled 'View Project XYZ' and has tabs for 'Background', 'Details', 'Blah', 'Etc.', 'Media Coverage', 'Whatever', 'Etc.', and 'Documents'. The 'Background' tab is active, showing a form with fields for 'PROJECT Name' (value: XYZ), 'PROJECT Number' (value: 130030014), 'Date Initiated' (value: 10/20/1999), 'MEDIA COVERAGE Number of Entries' (value: 0), and 'Date of Last Entry'. There are also several 'Blah:' labels followed by input fields and a 'Blah:' label with a dropdown menu. The status bar at the bottom shows 'Done' and 'Local intranet'.

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