
Design patterns

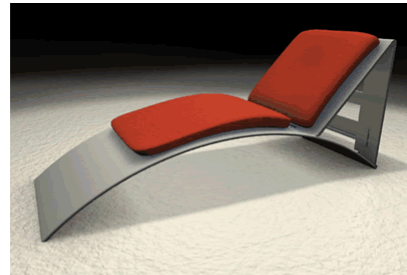
From architectural structures to web-based systems

Overview

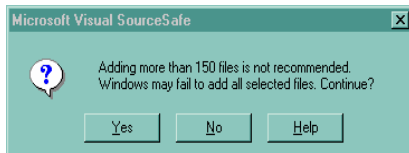
- Why we need to systematize web design
 - What is pattern
 - Definition
 - What they offer
 - History of patterns
 - Designing a web-based system using DPs
 - Examples of Design patterns
 - Pattern elicitation process
 - Critiquing patterns
-

Interactive technologies - Affordances

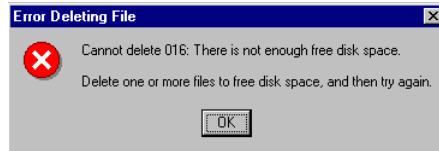
- Mike Spector at CEDLA 2004, David Boud and Peter Goodyear at NL 2004:
 - Technology changes
 - What we do
 - Also what we can do and want to do
 - Need to find ways for bringing experts closer to novices
 - Need to implement innovative technologies that can be demonstrated to improve understanding and performance
 - Key word: **Affordances**
- Web-based systems are not “context neutral”
 - We need to identify the usage scenarios for serving specific user needs via these systems’ functionality



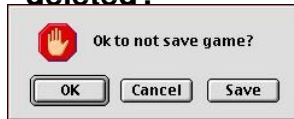
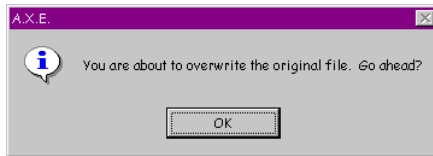
Dialog Boxes



Umm, thanks for the warning, but what should I do?



What happens when you delete a file that cannot be deleted?

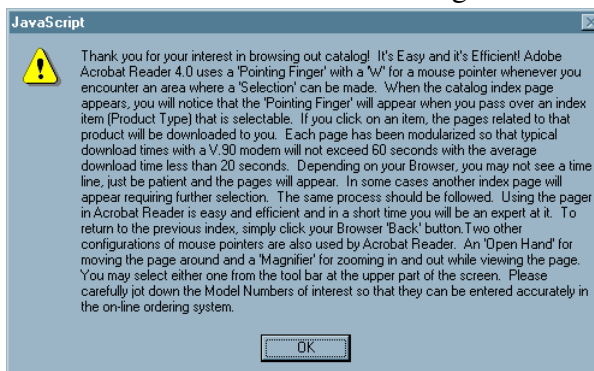


Do I have any choice in this? Uhhh... I give up on this one

Some of these interfaces were posted on Interface Hall of Shame

Pop Up Dialog Boxes

Midwest Microwave's online catalog



Some of these interfaces were posted on Interface Hall of Shame

Error messages ...

276304 - Error Message: Your Password Must Be at Least 18770 Characters and Cannot Repeat Any of Your Previous 30689 Passwords - Microsoft Internet Explorer

Address: <http://support.microsoft.com/default.aspx?scid=KB;en-us;q276304>

Microsoft Product Support Services United States

Microsoft Knowledge Base Article - 276304

Error Message: Your Password Must Be at Least 18770 Characters and Cannot Repeat Any of Your Previous 30689 Passwords

The information in this article applies to:

- Microsoft Windows 2000 Server SP1
- Microsoft Windows 2000 Advanced Server SP1
- Microsoft Windows 2000 Professional SP1

This article was previously published under Q276304

SYMPTOMS

If you log on to an MIT realm, press CTRL+ALT+DELETE, click **Change Password**, type your existing MIT password, and then type a new, single password that does not pass the dictionary check in Kadmin, you may receive the following error message:

Your password must be at least 18770 characters and cannot repeat any of your previous 30689 passwords. Please type a different password. Type a password that meets these requirements in both text boxes.

Note that the number of required characters changes from 17,145 to 18,770 with the installation of SP1.

NOTE: This is not a common case; it occurs only when you configure Windows 2000 to authenticate against an MIT Kerberos domain.

RESOLUTION

To resolve this problem, obtain the latest service pack for Windows 2000. For additional information, click the following article

<http://support.microsoft.com/default.aspx?scid=KB;en-us;q276304>

Tabbed Panes

HOME SEARCH OPEN HOUSES FIND REP

FARM COMM MFAM RENT

RESIDENTIAL CONDO LOT

-Low Price- -Hi Price-

Beds- # Baths-

Neighbourhood:

All
Regional Municipality
Airport
Alfred Twp
Alta Vista

Property Type:

All
2 Storey
3 Storey

Psych v4.0.1320

Bezier Cyclic Pattern Plasma Polygon Sphere Stain

Auxiliary Settings Edit Displays Video Mode Sequencer

Cube Palette Custom Sound Main Settings

Slide Show Line Squiggle Plug-In Wave Wander Wipe

Star Vortex Ray Whip Effect Flow Random

Current settings for the Effect module:
Page 1 of 4

Source

Users don't like bugs

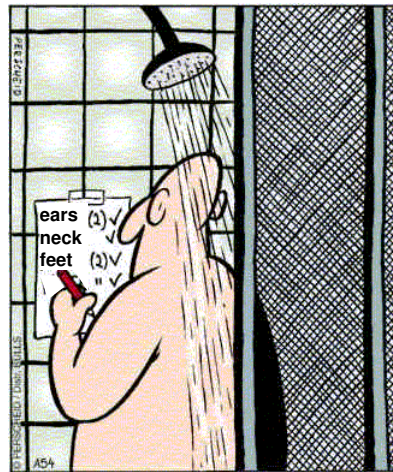
O.k., and now you'll do exactly what I'm telling you !



Main questions for HCI designers?

- How an “ideal” system should be designed?
 - The market is packed with systems of similar type (genre) that offer services in various ways
 - We need a framework that will help us design a web-based system based on identified user needs within a specific context of use, usability criteria and technical requirements
 - We need to learn from experience
 - We need to put in practice sound usage scenarios
- Is a system appropriate for the users?
 - We need to easily if a system meets requirements of the specific genre

Use check-lists for testing



Use guidelines or heuristics

- H8: Aesthetic and minimalist design (Nielsen)
 - Only relevant information in dialogues

Form Title -- (appears above URL in most browsers and is used by WWW search)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
WebMania 1.5b with Image Map Wizard is here!		
<input type="button" value="Prev Tab <<"/>		<input type="button" value="Next Tab >>"/>

Architecture as an informing practice

- What appeals to me particularly about architecture as a source of ideas for creating convivial, productive on-line learning spaces is that architecture is about the crafting of affordances. Architecture (built space) does not determine activity. **Bad architecture endangers some kinds of valued activity. Good architecture can nurture it.** But the users of built space have proper scope for autonomy.



Peter Goodyear (1999)

Educational technology, virtual learning environments and architectural practice

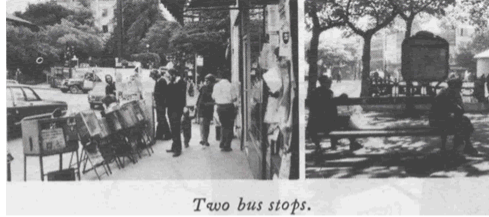
in Ely, D., Odenthal, L & Plomp, T, eds., Educational science and technology: perspectives for the future, Enschede: Twente University Press, 75-91



Alexander's original ideas

- Alexander's intention was to democratise architecture and town-planning by offering a set of conceptual resources that ordinary people could use in (re)shaping their environment.
- His work provides a principled, structured but flexible resource for a **lingua franca** in design.
- He strikes the right balance between rigor and prescriptiveness - offering useful guidance **without constraining creativity** and providing helpful foci for design.

BUS STOPS



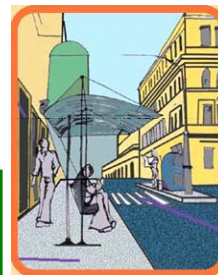
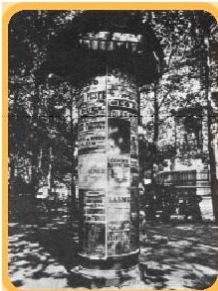
20 The Bus Stop

The problem

Bus stops must be easy to recognize, and pleasant, with enough activity around them to make people comfortable and safe

The solution

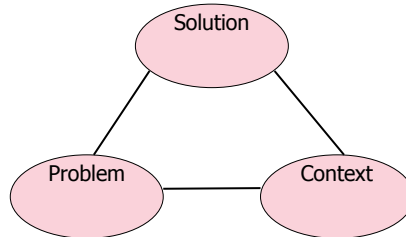
Build bus stop so that they form tiny centers of public life. Build them as part of the gateways into neighborhoods, work communities, parts of town. Locate them so that they work together with several other activities, at least a newsstand, maps, outdoor shelter, seats, and in various combinations, corner groceries, smoke shops, coffee bar, tree places, special road crossings, public bathrooms, squares, ...



Related patterns

Main gateway(53), public outdoor room(69), path shape(121), place to wait (150, food stand(93), seat spots(241

What is a design pattern?



A **Solution** to a **Problem** in a **Context**

Alexander defines a pattern as follows:

"... Each pattern describes a **problem** which **occurs over and over** again **in our environment**, and then describes the core of the **solution** to that problem, in such a way that you can **use this solution a million times over**, without ever doing it the same way twice"

[Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). A Pattern Language. Oxford University Press, New York.]

Alexandrian form of pattern formation

If you find yourself in **CONTEXT**

For example **EXAMPLE**,

with **PROBLEM**,

entailing **FORCES**

Then For some **REASONS**,

apply **DESIGN FORM** and/or **RULE**

to construct **SOLUTION**

leading to **NEW CONTEXT** and **OTHER PATTERNS**

name+rating


243 SITTING WALL**

context

... if all is well, the outdoor areas are largely made up of positive spaces—POSITIVE OUTDOOR SPACES (106); in some fashion you have marked boundaries between gardens and streets, between terraces and gardens, between outdoor rooms and terraces, between play areas and gardens—GREEN STREETS (51), PEDESTRIAN STREET (100), HALF-HIDDEN GARDEN (111), HIERARCHY OF OPEN SPACE (114), PATH SHAPE (121), ACTIVITY POCKETS (124), PRIVATE TERRACE ON THE STREET (140), OUTDOOR ROOM (163), OPENING TO THE STREET (165), GALLERY SURROUND (166), GARDEN GROWING WILD (172). With this pattern, you can help these natural boundaries take on their proper character, by building walls, just low enough to sit on, and high enough to mark the boundaries.

If you have also marked the places where it makes sense to build seats—SEAT SPOTS (241), FRONT DOOR BENCH (242)—you can kill two birds with one stone by using the walls as seats which help enclose the outdoor space wherever its positive character is weakest.

picture



problem (forces)

In many places walls and fences between outdoor spaces are too high; but no boundary at all does injustice to the subtlety of the divisions between the spaces.

Consider, for example, a garden on a quiet street. At least somewhere along the edge between the two there is a need for a seam, a place which unites the two, but does so without breaking down the fact that they are separate places. If there is a high wall or a hedge, then the people in the garden have no way of being connected to the street; the people in the street have no way of being connected to the garden. But if there is no barrier at all—then the division between the two is hard to maintain. Stray dogs can wander in and out at will; it is even uncomfortable to sit in the garden, because it is essentially like sitting in the street.

examples

243 SITTING WALL

diagram

The problem can only be solved by a kind of barrier which functions as a barrier which separates, and as a seam which joins, at the same time.

A low wall or balustrade, just at the right height for sitting, is perfect. It creates a barrier which separates. But because it invites people to sit on it—invites them to sit first with their legs on one side, then with their legs on top, then to swivel round still further to the other side, or to sit astride it—it also functions as a seam, which makes a positive connection between the two places.

Examples: A low wall with the children's sandbox on one side, circulation path on the other; low wall at the front of the garden, connecting the house to the public path; a sitting wall that is a retaining wall, with plants on one side, where people can sit close to the flowers and eat their lunch.

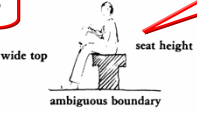
Ruskin describes a sitting wall he experienced:

Last summer I was lodging for a little while in a cottage in the country, and in front of my low window there were, first, some beds of daisies, then a row of gooseberry and currant bushes, and then a low wall about three feet above the ground, covered with stone-crests. Outside, a corn-field, with its green ears glistening in the sun, and a field path through it, just past the garden gate. From my window I could see every peasant of the village who passed that way, with basket on arm for market, or spade on shoulder for field. When I was inclined for society, I could lean over my wall, and talk to anybody; when I was inclined for science, I could botanize all along the top of my wall—there were four species of stone-crest alone growing on it; and when I was inclined for exercise, I could jump over my wall, backwards and forwards. That's the sort of fence to have in a Christian country; not a thing which you can't walk inside of without making yourself look like a wild beast, nor look at out of your window in the morning without expecting to see somebody impaled upon it in the night. (John Ruskin, *The Two Paths*, New York: Everyman's Library, 1907, p. 203.)

Therefore:

Surround any natural outdoor area, and make minor boundaries between outdoor areas with low walls, about 16 inches high, and wide enough to sit on, at least 12 inches wide.

wide top



ambiguous boundary

Place the walls to coincide with natural seat spots, so that extra benches are not necessary—SEAT SPOTS (241); make them of brick or tile, if possible—SOFT TILE AND BRICK (248); if they separate two areas of slightly different height, pierce them with holes to make them balustrades—ORNAMENT (249). Where they are in the sun, and can be large enough, plant flowers in them or against them—RAISED FLOWERS (245). . . .

references

solution

The structure of an Alexandrian design pattern

A picture (showing an archetypal example of the pattern)
[easier in architecture than networked learning]

An introductory paragraph setting the context for the pattern
(explaining how it helps to complete some larger patterns)



(to mark the beginning of the problem)

A headline, in bold type, to give the essence of the problem in one or two sentences

The body of the problem
(its empirical background, evidence for its validity, examples of different ways
the pattern can be manifested)

The solution, in bold type. This is the heart of the pattern – the field of physical and social relationships which are required to solve the stated problem in the stated context. Always written as an instruction, so that you know what to do to build the pattern.

A diagrammatic representation of the solution



(to show the main body of the pattern is finished)

A paragraph tying the pattern to the smaller patterns needed to complete and embellish it.

History of Design Pattern

- 1979: Christopher Alexander, architect, "The Timeless Way of Building", Oxford Press
- 1987: OOPSLA (Object Oriented Programming System), Orlando, presentation of design pattern to the community OO by Ward Cunningham and Kent Beck
- 1995: Group of Four alias E. Gamma, R. Helm, R. Johnson and J. Vlissides : "Design Pattern: Elements of Reusable OO software"
- CHI2002, CHI2003, CHI2004, INTERACT2005 Workshops on User Interaction Design Pattern
- CSCL 2003 Workshop on elearning design patterns
- ECSCW Workshop: From Good Practices to Patterns: Mining socio-technical patterns from experience with groupware, September 15, 2003
- EDMEDIA2004, CELDA2004, NL2004, SURF2005, ECTEL2006: Design patterns for e-learning

From architecture to other domains

- The notion of design patterns has been picked up more recently within the field of software engineering -where it has been used to capture and share aspects of software engineering experience and as a way of representing successful models for the implementation of information systems (see e.g. Gamma, Helm, Johnson, & Vlissides (1995).
- Researchers and developers in the area of Human Computer Interaction have started using design patterns for designing usable systems with high interactivity (Wilie 2002; Borchers, 2003; Tidwell, 2000; Erickson 2000; Van Duyne 2002)
- Teachers of software engineering have also been experimenting with the idea of pedagogical patterns and educational technologists have been trying to apply a patterns-based approach to working on problems such as learning object descriptions, inter-operability, learning management standards, etc. (Lyardet, et al, 1998; Eckstein et al., 2001; Frizell & Hubscher, 2002; Avgeriou et al., 2003; Goodyear et al., 2004; Retalis et al. 2006).

UI Design Pattern Languages

- 57 Web & 25 GUI– Design patterns - Martijn van Welie- [www.welie.com, *Interaction Design Patterns.htm*](http://www.welie.com/InteractionDesignPatterns.htm)
- 30 – Design patterns - Hypermedia Design Patterns Repository <http://www.designpattern.lu.unisi.ch/PatternsRepository.htm>
- 90 Design patterns - Douglas K. Van Duyne, James A. Landay, Jason I. Hong, "*The design of sites*", Addison –Wesley July 2002
- The Interaction Design Patterns Page - pattern languages for interaction design (of which user interface design is a subset), and a few links to more general papers that may be of use to interaction designers.
- http://www.pliant.org/personal/Tom_Erickson/InteractionPatterns.html
- 30 UI Patterns Jenifer Tidwell <http://www.time-tripper.com/uipatterns/>

www.welie.com ...patterns in Interaction Design

Home **Web Design patterns** GUI Design patterns MobileUI Design patterns Literature & links About me

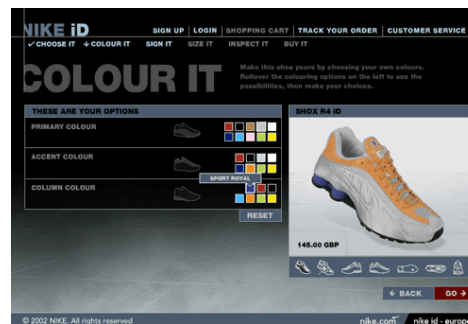
Web Design patterns

Site Types	User Experiences	Ecommerce	Related sites:
<ul style="list-style-type: none"> · My Site · Portal · Commerce Site · Community Site · Branded Promo Site · Corporate Site · News Site · Museum Site · Automotive Site · Web-based Application · Travel/booking Site · Multinational Site · Artist Site 	<ul style="list-style-type: none"> · Shopping · Community · Learning 	<ul style="list-style-type: none"> · Shopping cart · Login · Registering · Product Comparison · Product Configurator · Product Advisor · Premium Content Lock · Newsletter · Case study · Booking process · Store Locator · Virtual Product Display 	<p>These patterns in russian!!!</p> <p>Jenifer's new UI patterns</p> <p>Jan Borcher's patterns</p> <p>Sari Laakso's patterns</p>
Navigation	Searching	Basic Page Types	<p>NEW! View a random pattern</p> <p>ATTENTION: This sections contains many incomplete patterns, I know. That is because it is work-in-progress.</p> <p>If you have any comments, suggestions or if you know of better examples, let me</p>
<ul style="list-style-type: none"> · Main Navigation · Bread crumbs · Double tab · Meta Navigation · Split Navigation · Repeated Menu · Faceted Navigation · Teaser Menu · Header-less Menu · Fly-out Menu · Directory · Trail Menu · Scrolling Menu · Shortcut Box · Image Menu 	<ul style="list-style-type: none"> · Simple Search · Advanced Search · Search Results · Search Area · Sitemap · Topic Pages · Search Tips · Site Index · Help Wizard · FAQ 	<ul style="list-style-type: none"> · Homepage · Contact Page · Processing Page · Printer-friendly Page · Article Page · Blog Page · Product Page · Forms · Input Error Message 	

The Product Configurator Design Pattern

[From Welie]

- **Problem:** Users want to configure the product they may intend to buy
- **Use When:** You want users to get more enthusiastic about a product by letting them 'control' the product and kind of 'personalize' it.



Source: www.nickie.com

The Product Configurator Design Pattern

[From Welie]

- Solution: Allow users to configure a product using a direct and visual version of the configured product
- Configuring is usually done in several steps because there may be several aspects of the product that can be configured, e.g. the colour, material, writings, wheels etc.
 - The **product configurator** is therefore a Wizard where every configurable aspect of the product is handled in a single step.
 - Additionally there may be a 'buy' or 'order' step that leads to some additional steps for the wizard.
 - Since the steps of the process are usually not dependent on each other, Tabs can also be used to set each aspect instead of using a **Wizard**.

The Product Configurator Design Pattern

[From Welie]

[Solution continued...]

- The **product configurator** is a highly interactive concept where users can visually configure the product. Every time users make a change they should immediately see the results. Usually the users start with a base-configuration that can be changed.
- **Why:** The product configurator allows people to 'play' with a product and literally 'see' the different options. This way they can see the product as-is, a preview of the product they may want to order.

The Product Configurator Design Pattern

[From Welie]

- Problem:** At the Porsche US site potential customers can configure their 'ideal' Porsche. The model, exterior color, cabriolet tops, interior color, and equipment can be changed while the two images show the currently selected configuration.



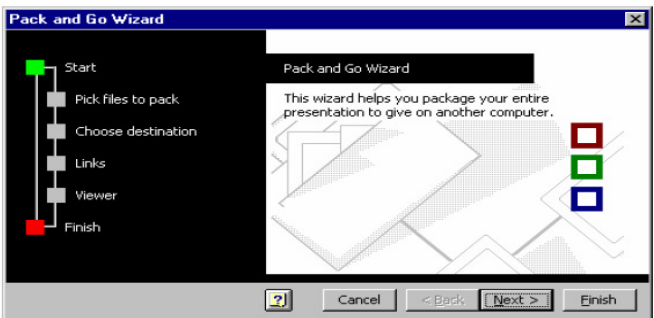
- Relationships:** Shopping Cart, Wizard

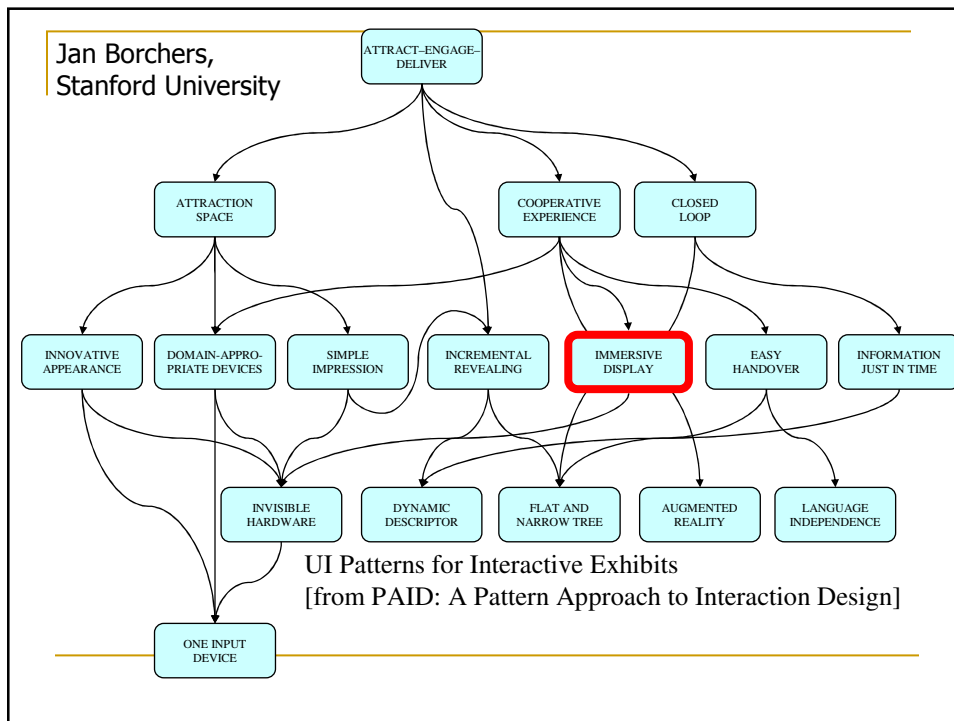
Source: <http://www3.us.porsche.com/>

Name	The Wizard
Problem	The user wants to achieve a single goal but several decisions need to be made before the goal can be achieved completely, which may not be known to the user.
Usability Principle	User Guidance
Context	The Wizard pattern can be used when a non-expert user needs to perform an infrequent complex task consisting of several subtasks in a linear order where decisions need to be made in each subtask. The number of subtasks must be small, e.g., typically between ~3 and ~10.
Forces	<ul style="list-style-type: none"> The user needs to perform a complex task but may not be familiar with the steps that need to be performed. Each task needs to be performed but the users may not always be interested in each task. The time it takes to perform the entire task. The task are ordered but are not always independent of each other i.e. a certain task may need to be finished before the next task can be done.
Solutions	<p>Take the user through the entire task one step at the time. Let the user step through the tasks and show which steps exist and which have been completed.</p> <p>When the complex task is started, the user is informed about the goal that will be achieved and the fact that several decisions are needed. The user can go to the next task by using a navigation widget (for example a button). If the user cannot start the next task before completing the current one, feedback is provided indicating the user cannot proceed before completion (for example by disabling a navigation widget).</p> <p>The user should also be able to revise a decision by navigating back to a previous task. The user is given feedback about the purpose of each task and the user can see at all times where (s)he is in the sequence and which steps are part of the sequence. When the complex task is completed, feedback is provided to show the user that the tasks have been completed and optionally results have been processed.</p> <p>Users that know the default options can immediately use a shortcut that allows all the steps to be done in one action. At any point in the sequence it is possible to abort the task by choosing the visible exit.</p>

Name	The Wizard
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<p>Examples</p>	 <p>The user wants to package a presentation so that the presentation can be given on another computer. Several relevant decisions need to be taken and the wizard helps the user take these decisions. The green box shows the current position in the sequence of tasks.</p>
<p>Usability Impact</p>	<p>Improves the learnability and memorability of the task but may have a negative effect of the performance time of the task. When users are forced to follow the order of tasks, users are less likely to forget important things and will hence make fewer errors.</p>
<p>Rationale</p>	<p>The navigation buttons show the users that they are navigating a one-dimensional space. Each task is presented in a consistent fashion enforcing the idea that several steps are taken. A simple task sequence informs the user at once which steps will need to be taken and where the user currently is.</p>
<p>Known Uses</p>	<p>Microsoft Powerpoint, Pack and Go wizard; Installshield installation programs</p>



H13 IMMERSIVE DISPLAY *



Figure 4.31: CAVE in the Ars Electronica Center Linz.

... you have decided to create an exhibit that several people can experience simultaneously—COOPERATIVE EXPERIENCE (H13). Now you need to find a way to design the visual output of such a system.

◇◇◇
Typical usage scenarios of standard computer systems often involve only one human interacting with the computer at any time, and the system is only a small part of the real environment of the user. But exhibits are usually visited by groups of people, and when users interact with them, they are ready to immerse themselves into the world of the exhibit.

The CAVE installation in the Ars Electronica Center in Linz uses wall-size projections all around the visitors to immerse them into a virtual reality. Special glasses synchronize with these displays to create a three-dimensional impression.

Virtual Vienna uses a rear-projected display screen of about

name+rating

picture

context

problem (forces)

examples

solution

diagram



1.6 m width, with the users standing at the same distance to the screen. This fills most of the optical viewing field when looking at the screen, and helps people to feel like they are actually standing at the place whose panorama is being displayed.

Personal Orchestra uses an even bigger display area of about 2.5 m width, again with a corresponding viewing distance. This conveys the impression of actually standing in front of the Vienna Philharmonic in a far better way than it would on a small computer monitor.

With these systems, this large display not only immerses the main user into the experience, it also allows several bystanders to at least observe the exhibit in action, which many may find already sufficient without becoming an active user.

Therefore:

Prefer a single exhibit with a large-scale display, with a minimum of 1.5 m in display width, over several similar stations with smaller displays, and over other output devices that shield a single user from his co-visitors, such as head-mounted displays. Design for a viewing distance that roughly equals the width of the display.

◇◇◇
If you hide the display technology, it can become a "magic image"—INVISIBLE HARDWARE (H14). ...

CAVE: 3-D walls

panorama

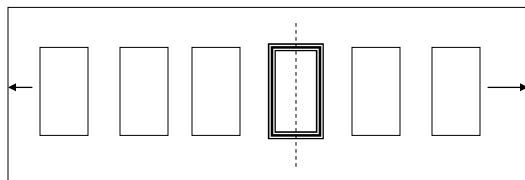
references

Interaction Design Patterns

(AKA. Amsterdam Collection, M. Van Welie)

Scrolling menu:

- Problem ...
- When use ...
- Solution ...
- Why ...
- More examples ...
- Known uses ...
- Related patterns ...



Patterns Can ...

- Capture expert practice in specific context
 - Provide common nomenclature for designers
 - Provide “shorthand” for effectively communicating complex principles
 - Help documentation and justification of the rationale
 - Capture the most important aspects of a problem solution in a standard format with a formalism
 - Show multiple examples of solutions
 - Become a tool for collaboration among peers who are interested in designing activities
-

Activity

- Let's try to study the “Calendar” pattern (From www.wilie.com)
 - Before that ...
 - Mention some genres of sites that an event calendar should exist
 - How could you design an event calendar at a web site?
-

Event Calendar

BAYLOR UNIVERSITY EVENTS CALENDAR

ACADEMICS ADMISSIONS STUDENT LIFE ABOUT BAYLOR ALUMNI ATHLETICS GIFTS TO BU

Baylor > Events Calendar

Events Calendar

Welcome to Baylor's online events calendar. Please select from the boxes at the right to view events for a day, week or month, and to filter events based on a category.

Featured Events: Week of Jan 9 - Jan 15

DATE/TIME	EVENT	PUBLISHER
1/10 (All Day)	Class Sessions Begin	Office of the Provost
1/11 (3:30 - 5 pm)	Spring Faculty Meeting	Office of the Provost

Jan 2005

S M T W R F S

26 27 28 29 30 31 1

2 3 4 5 6 7 8

9 10 11 12 13 14 15

16 17 18 19 20 21 22

23 24 25 26 27 28 29

30 31 1 2 3 4 5

Jan 2005 Go

Event Categories

- All Events
- Academic Calendar - Graduate
- Academic Calendar - Undergraduate

From <http://www.baylor.edu/calendar>

Problem Users want to be informed about future or past events

Use when You are designing a site for an institution that organizes many off-line events. Typically these include a [Museum Site](#), concert halls, educational institutes, governmental institutes etc. The number of events may range from just a view up to many per day.

Solution Present a list of events starting from the current date and allow users to select/search for other dates

The basic concept for the event calendar is to place a central list of event together with controls for scoping/filtering the list of events.

List of events

The list of events takes the [Center Stage](#) and may be displayed using [Alternating Row Colors](#) for increased clarity. Each event is listed with at least a date and basic description. Optionally, an icon or link can be used to add the event to a calendar program such as Outlook (a variation of the [Collector](#) pattern). Another optional element may be to include a [Send-a-Friend Link](#) so that event may be send to other people. In some cases, it may be possible that users can also add items to the calendar themselves: in that case, add an [Action Button](#) for that functionality.

Scoping

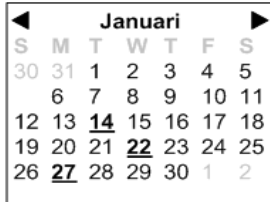
Usually event calendars present the events per month, but views per day are also used when the number of events is very high. Using a [Date Selector](#) users can choose the month and/or date. When the event calendar only has events on some days, it is good to show that fact already in the [Date Selector](#) by coloring the days, making them bold or just making days with events linkable and others not. It is also possible to use other mechanisms for selecting dates or periods, for example using a search field or a timeline. Usually the scoping mechanism is placed above the list of events but depending on layout constraints it may also appear on the left or right of the event listing.

Filtering on categories

When the events are numerous and can be categorized, it makes a lot of sense to allow users to filter directly on the categories. The categories can be presented as tabs, pull-down, or simply a list.

Searching

For agendas with many events it may make sense to search through the how list. Usually, it is a simple version of [Advanced Search](#) that has been limited to the **period**, **category** and **keyword**.



Search Box

From #

To #

Category ▼

Keyword

[Category1](#) | [Category2](#) | [Category3](#) | [Category4](#)

Date	Description
23/09/2005	Title Description Add to calendar
23/09/2005	Title Description Add to calendar
23/09/2005	Title Description Add to calendar
23/09/2005	Title Description Add to calendar
23/09/2005	Title Description Add to calendar

Examples of Events Calendar

University of Idaho

Even

Security/Privacy HOME A-Z Index Staff Directory Jobs Search

INEEL
Home of Science and Engineering Solutions

Wednesday
January 12, 2005

Public Information

Events Calendar

Community

Get Involved!

News Desk

INews

INEEL Publications

Public Documents

Media Resources

The INEEL is operated for the DOE by Bechtel BWXT Idaho, LLC.

Energy.gov
U.S. DEPARTMENT OF ENERGY

Events Calendar

Key to calendar labels

ICP Event for the Idaho Completion Project

INEEL Event for the Idaho National Engineering and Environmental Laboratory

Staff Event for Internal staff

Events for Wednesday, January 12, 2005

There are no events on this date.

Page contact: Teri Ehresman, shr@inel.gov.

Updated: Tuesday, January 20, 2004
For general inquiries about INEEL, please call 1-800-708-2680
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[Feedback](#)

Alternating Row Colors

		week 51 19 Dec 2002		
		1	2	3
1	robbie williams - feel-Williams/Chambes-Chrysalis/Capitol/EMI-	6	3	1
2	nelly ft. kelly rowland - dilemma-Gamble/Sigler/Haynes-Universal/Universal-	1	8	1
3	c. aquilera ft. redman - dirty-Aguilera/Cameron/Muhammad/Stinson-RCA/BMG-	2	9	2
4	jennifer lopez - jenny from the block-Oliver/deya-Epic/SME-	4	5	4

From <http://www.planet.nl/>

Problem Users need to read or scan a table in search of particular information

Use when Typically, an overview of items is given because of a [Search Box](#) or [List Builder](#). The table can be quite complex and have several columns which makes it hard to see which items belong to the same row.

Solution Use alternating row colours for making the table more readable.

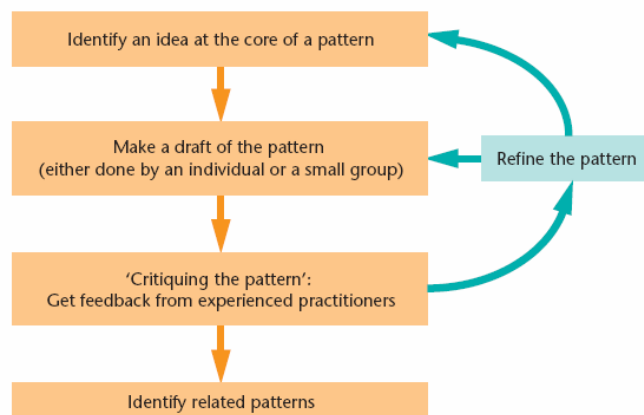
Use two colors of low saturation, e.g. white and a very light shade of an other color, that are only slightly different. Colour each row of the table by alternating these two colours. The effect can be enforced by adding another horizontal line using a dark colour.

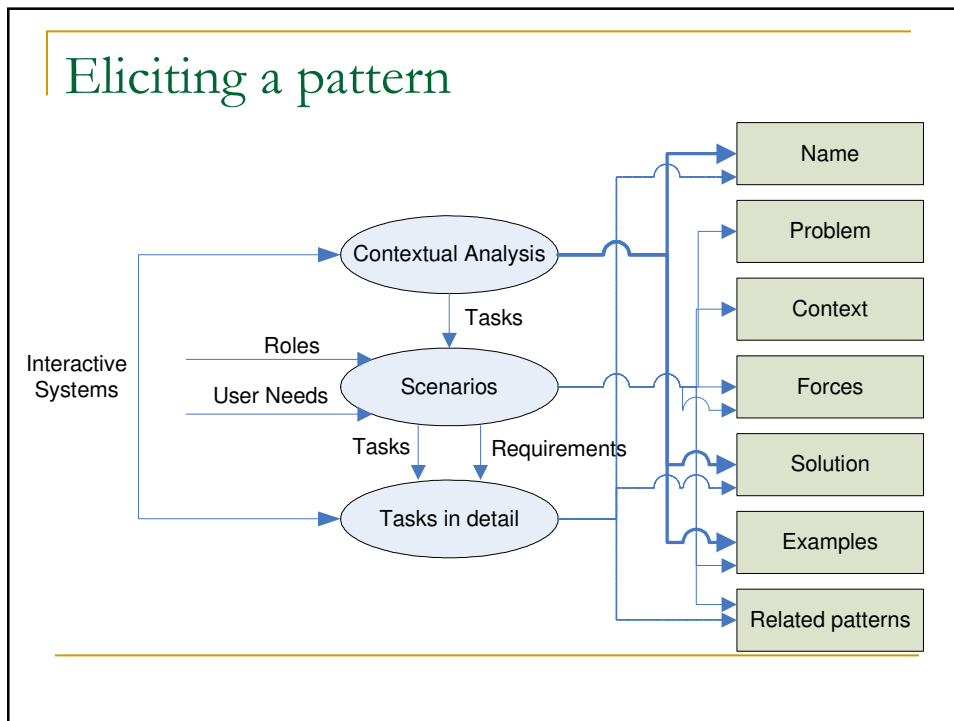
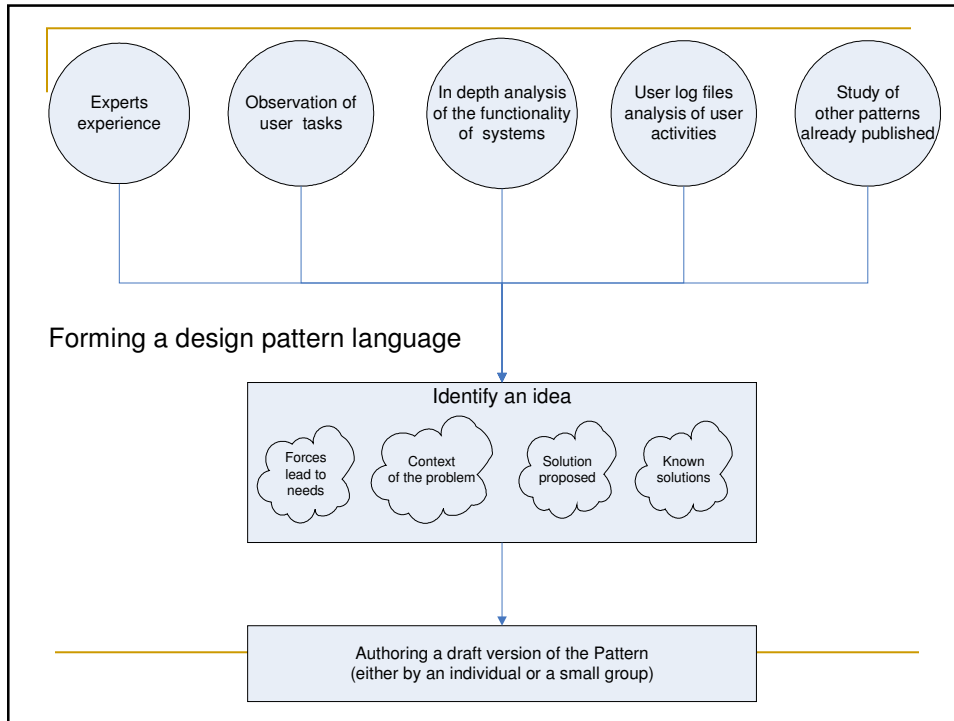
Why The row colour eliminate the need of table borders and make it easy for the eye to read a row. In a vertical sense, the colours make it easier to 'catch' an item because it is on either one of the colours.

More Examples Another example from CNN: [MARKETS & STOCKS > Widely Held Stocks](#)

Dow 30 Components			
Company	Price	Change	Last Update
▲ Alcoa Inc.	23.85	0.85 / 3.70	12/20 16:28
▲ American Express Co.	37.02	1.13 / 3.15	12/20 16:02
▲ AT&T Corp.	26.58	1.47 / 5.85	12/20 16:01

Design pattern lifecycle





Critiquing a design pattern

“When you first see a pattern, you will be able to tell almost at once, by intuition, whether it makes you feel good or not: whether, you want to live in a world which has that pattern in it, because it helps you to feel more alive.

If a pattern does make you feel good, there is a very good chance that it is a good pattern. If a pattern does not help you to feel good, there is very little chance that it is a good pattern.

Pattern checklist

- Does the pattern contain a recognizable problem, which occurs over and over again in your professional practice?
- Does the pattern give a clear and concrete description of the problem?
- Is there a good description of the forces that act to generate the problem?
- Does this pattern capture expertise that is not intuitive to inexperienced practitioners?
- Is the pattern too long or too complex? Should it really be more smaller patterns?
- Are the style and the presentation of the pattern clear so that people can easily determine whether the pattern applies and how they should use it?
- Is this pattern comprehensible without reading all the related patterns? (Is it an 'independent' pattern?)
- Is it clear for what audience this pattern is written?
- Is the terminology used familiar and clear? If not, is there a glossary with definitions available?
- Is the solution to the problem described at the right level of abstraction such that it captures a basic truth that is true to all solutions to this problem.
- Is this pattern adequately related to other patterns?
- Is the name of the pattern meaningful? Can you guess what the pattern might be about based only on the pattern name?

Activity- Critiquing a pattern (i)

- Criticism of a pattern
 - Study two patterns about the navigation process
 - Discuss the quality of the patterns in groups using the “pattern checklist”
 - Write down pros & cons
 - Check the adoptability of the pattern at aegean.gr and lufthansa.de
 - Write down your remarks
-

Activity - Critiquing a pattern (ii)

- Study the pattern “annotation on posted messages”
 - Discuss the quality of the patterns in groups using the “pattern checklist”
 - Write down pros & cons
 - Check the adoptability of the pattern at cosymoodle
 - Write down your remarks
-

Key questions about patterns

- **Pattern validation**: when does a pair <problem, solution> in a context become a pattern?
- Which are the **adoptability-acceptability** factors for HCI design patterns?
- **Pattern elicitation**: how to identify a pattern

Conclusion

The use of design patterns has potential

- to capture usable design knowledge,
- build bridges between practical problems and research-based evidence, and
- help designers see both the wood and the trees when they are engaged in design

The most important part of a successful design is the underlying conceptual model.

The hard part of design: formulating an appropriate conceptual model and then assuring that everything else be consistent with it.



M.C. ESCHER

Donald Norman

Questions?



Thank you for the invitation

What Is the Relation Between Design Patterns and Usability?

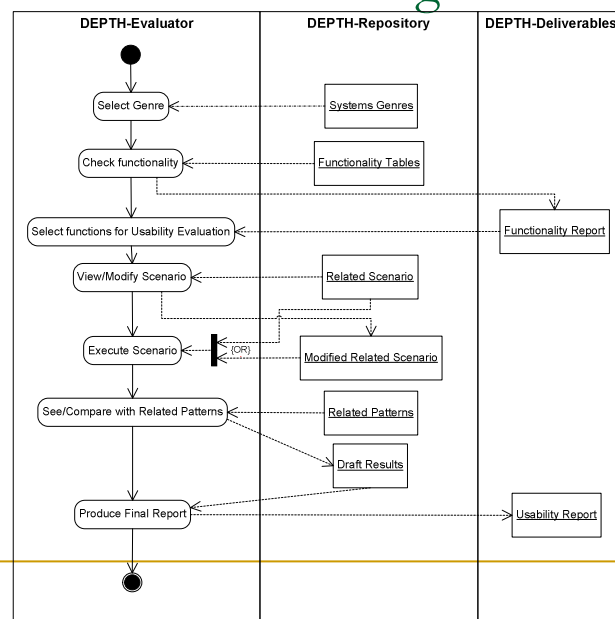
- HCI design patterns are “user centered design patterns” which by nature are focused on usability
 - HCI design patterns have been created with some underlying values in the same lines with Alexander (The Quality without a Name).
 - implementation of a design pattern varies
 - So let's check the implementation based on a design pattern!
-

Motivation in using Design Patterns for Usability Evaluation Purposes

- We try to minimize the time spent for the preparatory phase of a usability study
 - To create the scenarios and tasks to be checked and the things I would like to check each time
- To help novices in usability evaluation
 - not always try to look for usability experts
 - Patterns contain the distilled knowledge of an expert as well as their tacit knowledge
 - HCI design patterns are the means for expressing the “ideal” functionality of a web site in a justified and not prescriptive way.

So we have to correlate the “expert view” of a web site (in terms with HCI patterns and the actual implementation

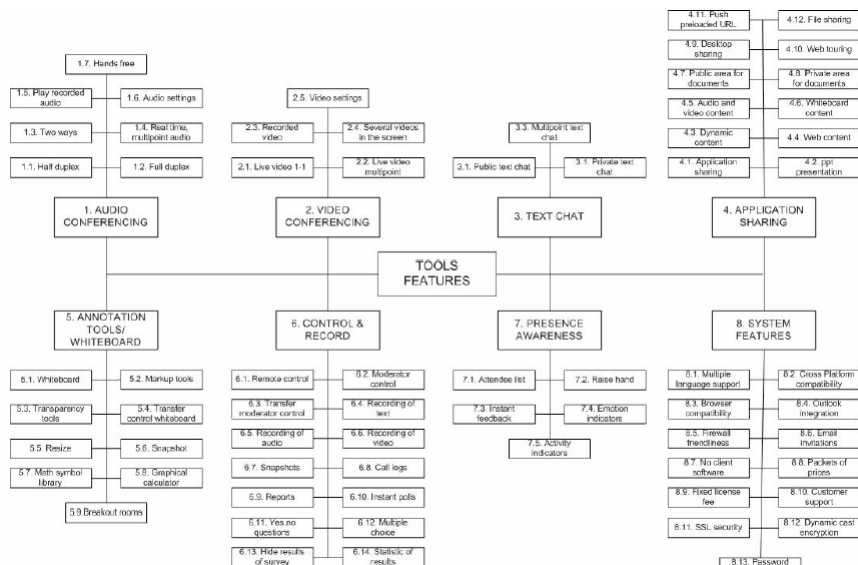
DEPTH method at a glance



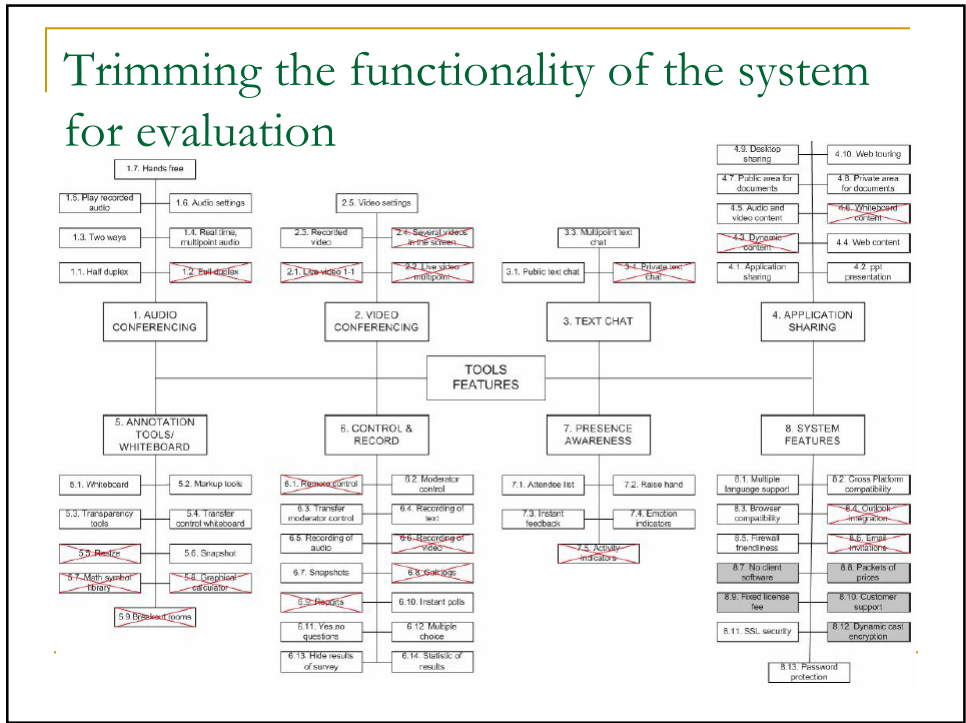
DEPTH Process - Preparatory Phase

- Decide upon the focus of the evaluation
- Gather all the design patterns related to domain application under evaluation.
 - The design patterns are actually related to features of the web application under evaluation.
- Select the patterns that will be applied in the evaluation process
- Create the set of interrelated patterns that will be used during the evaluation.
 - When selecting a pattern, a network of related patterns is constructed. The evaluator has to decide which related patterns to keep thus concluding to the final set of patterns.

Specifying the functionality of the system



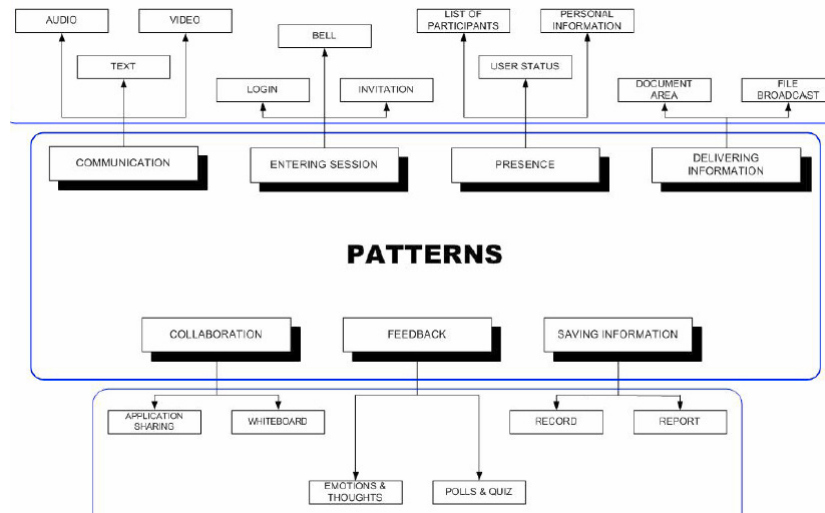
Trimming the functionality of the system for evaluation



Name	Sharing favourites	
Problem	Users want to know which are the most popular resources.	
Context	Users have to browse large lists of items before finding a small set of them that seems to be useful. They have to acquire them without assessing their quality. On the other hand users that have used those learning objects have their favourite ones.	
Forces	<ul style="list-style-type: none"> • Users want to be sure about the goodness of the resource they are going to acquire. • Users are in a hurry. • Users have their preferred learning objects. • Users use to be interested in related resources. 	
Solution	<p>Let users access to the list of favourites of other members.</p> <p>Users must be allowed to move resources from their portfolio to the list of favourite resources that is public. They must be able to delete some items from the list.</p> <p>Every time a learning objects is shown as part of a list of items the number of users that have added it to their list of favourites must be also stated. Users must be allowed to view the whole list of favourites of each user in order to check it for other interesting resources.</p>	
Examples	<p>Manipula Math - Trigonometry</p> <p>Average Rating: Four (4) out of 5 stars Member Comments (304) Simulation Location: http://www.ck12.org/ck12/ck12-trigonometry-301 Primary Subject: Mathematics and Statistics/Middle School Mathematics Category: Mathematics/Trigonometry Author: Math Education & Technology International Education Software CC BY</p> <p>submitted Aug 6, 2011 modified Dec 5, 2011</p> <p>Merlot platform include a similar service to 'sharing favourites'. Users are informed about how many people has added each resource to their portfolios. The problem is that users book resources before assessing them so no information about the quality of the resource is provided. On the other hand the list of favourites is made up of only good-quality resources.</p>	<p>Rationale</p> <p>The list of favourites is supposed to be filled only with good-quality learning objects. Providing users with the number of times each resource is considered as a favourite may help them to decide if they are worth acquiring.</p> <p>Related patterns</p> <p>taking out the hunt, the assessment, the detection, learning object profile, my short-listed items, personal accounts</p>

Find patterns that are related to the tasks

Find the interrelated patterns



DEPTH Process -Execution Phase

- The evaluator is then check whether the design of the web application matches to the solution of the design pattern.
- In case deviations from the design pattern occur, the evaluator reports them.
- Some deviations might be necessary due to the difference of the context of the web application under evaluation.
- In other cases, the evaluator can easily state the design problems and how these could be resolved according to the solution proposed by the design patterns.
- Of course the evaluator will make comments about the basic usability criteria such as aesthetics, satisfaction, etc.

Scenarios (i)

- A scenario is an instantiation of one or more representative work tasks and transitions linking those tasks (Rosson et. al., 2001).
- The granularity of the scenario is not fixed;
 - a scenario can be highly scripted or loosely defined.
- One of the main difficulties is how to create such scenarios
 - One solution: observe users

Scenarios (ii)

- I am looking for the price of a ticket in association with date and time factors. What should I do?
 - I will determine the item I wish to book or buy among probably some other options given. I will select town or even airport I wish to leave from and going to. If I don't know the names or the abbreviations, I have to find out from information given from the site. Then I will choose the departing date, the time, the booking class, and the people traveling with me. Because I am looking for the best available price and I don't mind to be precise to the dates I've given, I am flexible with the choice of dates but of course near to what I want. I will then submit my choices

Activity

- Read the scenario about the process of booking a flight/hotel/car
 - Perform the tasks indicated in the scenario for booking a flight at aegean.gr
 - Answer the questions posed after having performed the tasks

... theory and practice?

- We evaluated
 - e-bookstores like www.amazon.com, www.ianos.gr, www.wal-mart.com, www.plaisio.gr
 - e-learning brokerage platforms, like Universal, MERLOT, WorldLectureHall, COREO, etc.
 - Wiki-systems, like TikiWiki
 - Synchronous Web Conferencing Systems like netmeeting, Centra
 - Personalised web-based systems, like naftemporiki.gr
- A similar example of expert evaluation using design patterns has been performed by Van Welie for evaluating the general usability of web museums without user involvement.
 - He analyzed the major sections of the websites in order to recognize patterns that had been applied.
 - He commented that the evaluation is easier when the evaluator knows the pattern collection available

A tool to support DEPTH

- We have implemented a prototype Web-based tool for designing and implementing evaluations based on DEPTH methodology (http://softlab.teipir.gr/depth_toolkit). The tool supports both preparatory and execution phase.
- More specifically, the tool supports the following tasks:
 - Selecting genre of web application
 - Specifying the checkpoints/features that will be examined
 - Associating features with patterns and creating network of patterns
 - managing evaluation sessions and recording the results
 - authorized and personalized access for the “Designers”, “Session managers” and “Evaluators”.

The DEPTH Evaluation Tool

The screenshot displays the 'DEPTH Evaluation Toolkit' web interface. At the top, there is a navigation menu with links for 'Introduction', 'Preparatory Phase', 'Help', and 'Log Off'. Below the menu, the main content area is titled 'Patterns Classification' and shows a tree view of categories. The selected category is 'Basic e-Commerce', which includes sub-items like 'Advising & Personalized Recommendations', 'Shopping Cart', 'Quick-Flow Check-out', 'Payment Method', 'Easy Returns', 'Gift Giving', and 'Order Tracking and History'. The 'Advising & Personalized Recommendations' sub-item is expanded, showing a table with columns for 'Pattern Group', 'Pattern', and 'User'. The table contains one entry: '1112 Advising & Personalized Recommendations' by user '11111'. Below the table, there are four sections: 'Problem', 'Motivation', 'Forces', and 'Solution', each with a text area and a dropdown arrow. The 'Problem' section contains the text: 'Help the user find a product in the store. Assist him according to his wishes.' The 'Motivation' section contains: 'Many times users enter into a virtual store just to find some product they would like to buy. In a typical store there may be thousands of products and providing good indices or search engines may be just a partial solution to give him some orientation.' The 'Forces' section contains: '> Customers in an electronic shop may need to be assisted to find a product. > Search engines and indices are useful but they may be an incomplete solution. > We should take into account what the user may want.' The 'Solution' section contains: 'Build specific functionality for advising about products. E.g. there can be a complete subsystem for recommendations that use customer profiles for recommending products.' Below these sections, there are buttons for 'New Pattern', 'New Group', 'Delete Pattern', and 'Modify Pattern'. At the bottom of the browser window, the status bar shows 'Done' and 'Internet'.

The DEPTH Evaluation Tool

