



## Web 2.0 and its potential for the library community

Making the most of your web presence

Christopher Roosen



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## ◀ Christopher Roosen

- Senior Usability Consultant and Interaction Designer
- Formerly a psychology graduate
- Self perception - act as a bridge between users and organisations
- Not an traditional information scientist or computer scientist

## ◀ PTG Global

- Australian company specialising in design and usability of information systems
- Eye-tracking, interface design, usability testing, requirements gathering
- Websites, transactional systems, mobiles, and desktop applications using a team of organisational psychologists to gather requirements and generate robust designs

## ◀ The material in this presentation is collated from work done on several library and informational resource websites, most specifically the State Library of NSW

- ◀ Maximization of web presence via three key themes
  - **Seeking** a strong relationship between the organization and the Users. Synergistic relationships over ignorant or conceding relationships
  
  - **Understanding** the progression of web technologies. Are we undergoing a technological or conceptual shift?
    - Web 1.0
    - Web 2.0
    - Web 3.0/Infowelt 1.0
  
  - **Using** a rigorous design process, as process will always underline the technology
    - Requirements
    - Modelling
    - Design
    - Testing
  
- ◀ Discussion embedded in the context of work carried out by PTG Global on behalf of the State Library of NSW

- ◀ Overall goal: Where at all possible, find the mutually beneficial goals and tasks of both the user and the organisation in order to generate a system that is both **useful** and **usable**
  
- ◀ **Useful** so it contains the right functionality and **Usable** so that a user understands how to use the functionality
  
- ◀ Improve your web presence using a grounded and stable process which will adapt across technologies
  - Requirements - What does the user/organisation need?
  - Modelling - Use models to translate raw requirements into interface guiding frameworks
  - Design - Translate abstract user interface models into designs
  - Testing - Confirm user's ability to understand the designs
  
- ◀ Key tips
  - Solve the problem, don't just apply a solution
  - Focus on Organisations **and** Users, not Organisations **versus** Users
  - Be afraid of magic bullets, both users and information are **Evolutionary** rather than **Stationary**

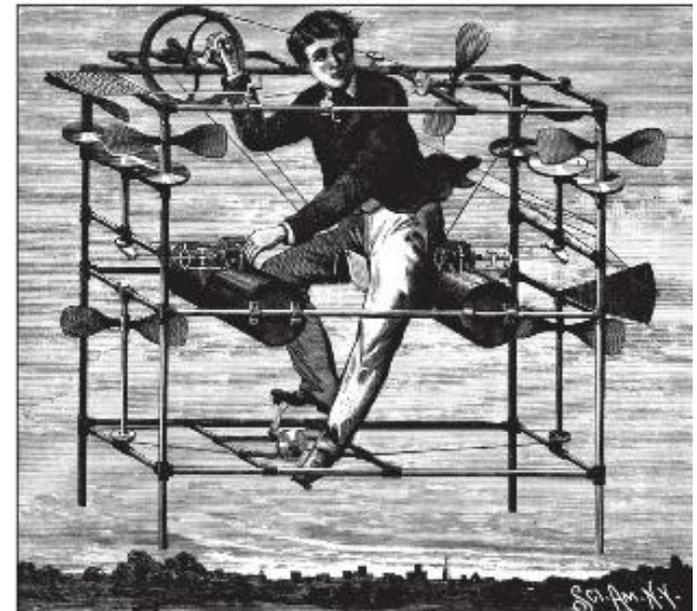
# Step 1: Requirements



- ◀ Requirements are essential. Research suggests that there are three key failures in the development lifecycle, two of which involve requirements
  - Wrong or inaccurate requirements
  - Failure to translate requirements into design
  - Failure to translate designs into implemented systems
  
- ◀ Requirements gathering
  - Requirements sources
    - User groups
    - Staff
    - Interested parties
    - Stakeholders
  
  - Requirements activities
    - Workshops and Focus groups
    - Observation and Ethnography
    - Domain research
    - Localized questionnaires and competitor reviews
  
- ◀ If the budget allows, gather fine-grained data. The summary can come later.

# Rationalising requirements

- ◀ Requirements come ‘en-masse, a sample of requirements gathered from the NSW State Library project
  - “Search the catalogue for books or journals, usually on a particular topic”
  - “Search for newspapers in databases - local papers, old papers on microfiche”
  - “Search for photographs in catalogues and databases”
  - “Find events and exhibitions - tours, talks, courses, movies”
  - “Access to the Library shop”
  - “Fill out grant applications”
  - “Pay a fine”
  
- ◀ However, gathering requirements alone is not enough, as this leads to feature creep.
  
- ◀ Rationalising requirements is crucial

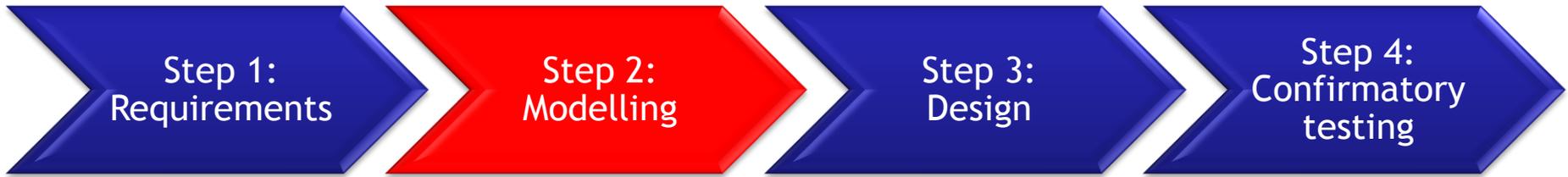


- ◀ In this example, requirements were rationalised by a priority matrix where requirements were ranked high to low and were also re-cut according to user group
- ◀ Exploring relationships between requirements exposed variations even between user groups. For example, participant opinions on search included:
  - “Having different search categories (search catalogue etc) would be confusing” (Group A)
  - “I would prefer to choose which catalogues and databases to search.” (Group B)
- ◀ Goal is to make sense of the data using qualitative methods and exploratory analysis, regardless of technology or planned implementation.
- ◀ Key questions included:
  - How much funding does X group produce?
  - How much of the total users does X group represent?
  - How vocal is X user group?

Requirement	Priority
Search the catalogue for books or journals	High
Search for newspapers in databases	High
Search for photographs	High
Find events and exhibitions	High
Access to the Library shop	Medium
Fill out grant applications	Low
Pay a fine	Low

- ◀ Do we really need requirements?
- ◀ Looking back in time, into the early Web 1.0, user requirements did not always seem central to the design of web or desktop systems
- ◀ Web 1.0 was characterized by:
  - Dial-up internet with first generation protocols
  - First online library websites
  - Card catalogues still used in libraries
- ◀ Web implementation seemed heavily focused on technological capacity and/or its limitations
- ◀ Users often seemed left out of the loop or marginalised by other concerns

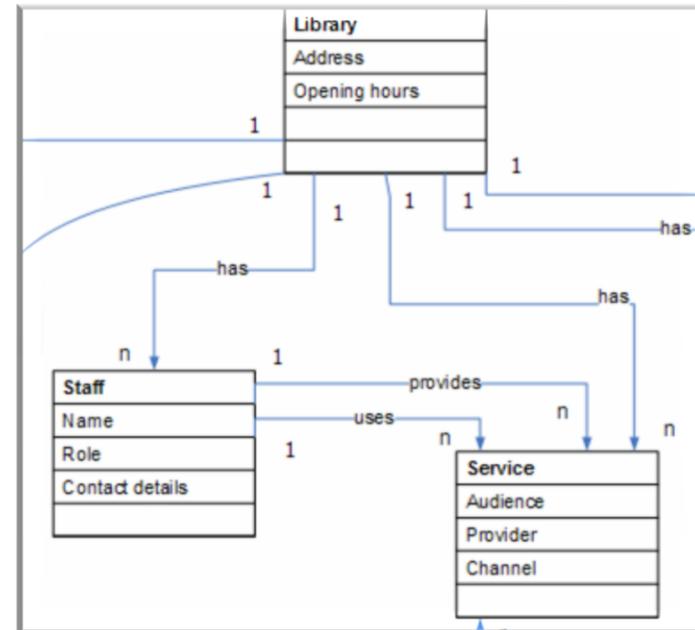
# Step 2: Modelling



- ◀ Traditional user-centred design can be difficult as it can over-compensate designs due to the comments of individual reviewers or rush the design without an appropriate understanding of the domain
- ◀ In contrast, the waterfall software development model risks ‘paralysis by analysis’, inflexibility and incorrect requirements as the domain evolves
- ◀ The best solution is an agile implementation of model-based design. Model driven design makes the strongest commitment to a framework with controlled iteration by placing the emphasis on transitional models
- ◀ In this example, key models included
  - **Information architecture** - Structure and categorisation of information
  - **Workflows** - Mapping the goals, decisions and tasks of the user
  - **Object models** - Key data manipulated by users

## Object models

- Not just for programming
- Focus on the objects (data, people or things) being used in activities
- Provides the data for actual designs
- Can help when designing for Web 2.0 (and beyond) by providing a strong basis from non-linear applications



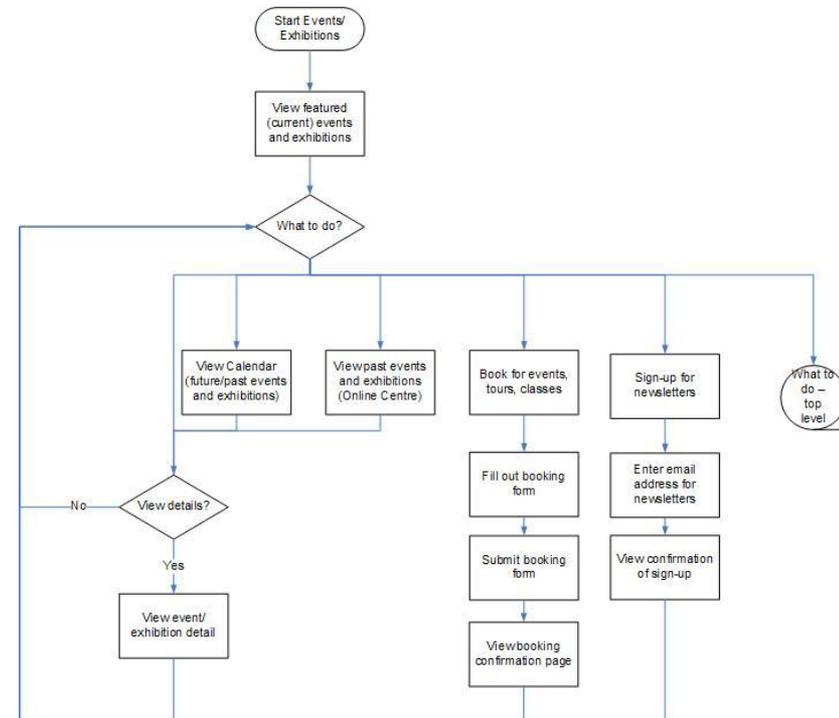
## Information architecture

- Still crucial for websites, despite emergence of fuzzy, bottom-up categories and non-linear task flows
- Works in conjunction with workflows/may be identical to high level workflow
- Provides a framework for emerging Web 2.0 transactional systems

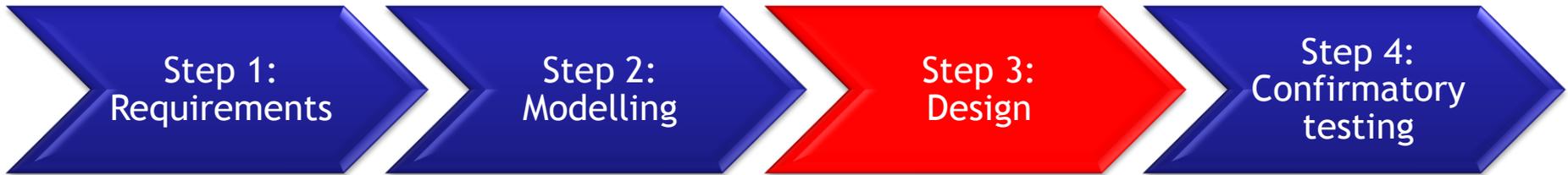


## Workflows

- Goals, Decisions, Tasks
- Independent of technology
- Very useful for managing the next generation of Web 2.0 and 3.0 websites by making sure the user can still complete tasks to achieve their goals, regardless of increasing interaction capacities



# Step 3: Design



- ◀ From a user perspective, the user interface is the application. The user interface is the only point of access between the user and the system
- ◀ The user will evaluate the interface to explore whether the application provides all the functionality relevant to complete their goals
- ◀ At the same time the interface may be the only place where the organisation can plant and reap the appropriate relationship with the user
- ◀ Several key design principles continue to occur across the change in technologies, including
  - Present summary information up-front. Allows users to make key decisions without having to drill down
  - Ensure key functionality and objects are present in the design
  - Ensure users know how to act on the objects and in the correct sequence
  - Create a modular design that supports permissions management. Allows for growth and flexibility and translation to new technologies

- ◀ Web 2.0 is often characterized by a number of technological changes, including:
  - Broadband internet and AJAX
  - Complex search
  - Wikipedia and Facebook
  - Sign in, transactions and custom alerts
  - Podcasting and streaming media
  - Folksonomies and tag clouds
  
- ◀ Or, Web 2.0 as a way of thinking versus a specific technology ? For example, wiki's could have and can be built using Web 1.0 technologies. So is Web 2.0 really a technological change?
  
- ◀ Traditional user centered design and a Web 2.0 may have a potential dark side as organizations feel pressured to implement either a profundity of Web 2.0 cutting edge technologies or a design solution that does not achieve organisational goals
  
- ◀ Hence the perception of the tension between user and business suited designs. “Users want X, but we can't afford X, therefore without X we will have no value”, this is a fundamental misperception
  
- ◀ A good design solution ensures that both parties achieve their goals

- ◀ Revisiting the requirements, alignment starts to appear
  
- ◀ Recall the contrast between different user groups:
  - “Having different search categories (search catalogue, etc) would be confusing” (Group A)
  - “I would prefer to choose which catalogues and databases to search” (Group B)
  
- ◀ Instead of siding on one or another requirement, a good design solution will ensure that each user group can achieve their goals

# Aligning requirements to design

Organisational goal	Requirement	User Priority	Organisational priority	Design solution
Generate traffic through key resources	Search the catalogue for books or journals	High	High	Blended search
	Search for newspapers in databases	High	High	
	Search for photographs	High	High	
Generate revenue from sale-able products and services	Find events and exhibitions	High	High	Booking system
	Access to the Library shop	Medium	High	Embedded call to action
Fulfil mandates	Fill out grant applications	Low	Medium	Categorised IA
Retrieve damages	Pay a fine	Low	Medium	Embedded call to action

# Design example 1: Homepage

Prototype designs conducted on behalf of State Library of NSW

# Design example 2: Federated search

**State library of New South Wales**  
Including the Mitchell Library.  
Lorem ipsum dolor sit amet, consectetur adipiscing elit, ullamcorper...

**Search**  
 Catalogue  This website  
   
[Database search](#) [Advanced search](#)

**About the Library** **Using the Library** **Exhibitions & Events** **Collection types** **Topic guides** **Services** **Shop**

**Event or Exhibition title**

  
porttitor feugiat, lorem  
nd nunc eros ac est.  
[More Journeys...](#)

  
Vestibulum quis pede sit amet orci porttitor blandit.  
Suspendisse potenti. Nullam dignissim purus ac.  
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**Simple search for general public users with drill down for detail**

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**Ask a librarian**

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**Events calendar**

Mon	Tue	Wed	Thu	Fri	Sat	Sun
		1	2	3	4	5

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Prototype designs conducted on behalf of State Library of NSW

# Design example 3: Robust multi resource search with filters and subsections

Build up composite search

Alternate search terms

Sophisticated content type filter

Search results by type with sub type pagination

Home > Using the Library > Advanced search > Search results

## Search results

Keyword  -  +  
 Keyword  -  +  
 Did you mean: [whales](#)  [Search tips](#)

Advanced search options [Show advanced search](#)

**Collection types:**  
 Books, Journal articles, Magazines, Manuscripts, Maps, Microform records, News and media releases, Newspaper articles, Objects, Pictures and photographs, Sheet music, Sound recordings and oral history, Videos and films, State Library website pages.

Your search for 'wales' returned 1,508 results.

<input checked="" type="checkbox"/> 8 books	<input checked="" type="checkbox"/> 15 microform records	<input checked="" type="checkbox"/> 0 sheet music
<input checked="" type="checkbox"/> 15 journal articles	<input checked="" type="checkbox"/> 3 news and media releases	<input checked="" type="checkbox"/> 8 sound recordings and oral histories
<input checked="" type="checkbox"/> 15 magazines	<input checked="" type="checkbox"/> 3 newspaper articles	<input checked="" type="checkbox"/> 15 videos and films
<input type="checkbox"/> 15 manuscripts	<input type="checkbox"/> 15 objects	<input checked="" type="checkbox"/> 78 webpages from the State Library website
<input type="checkbox"/> 7 maps	<input type="checkbox"/> 8 pictures and photographs	

**Journeys** [Exclude Journey results](#)

1 item found, displaying 1

	Title	Availability
<input type="checkbox"/>	<a href="#">History of the Australian Nation</a> Brings to life the early days in New South Wales, of Sydney's eastern harbour suburbs and the people who settled there.	Online <a href="#">View Journey</a>

**Books** [Exclude book results](#)

8 items found, displaying 1-5 [View all book results](#) << Previous 1 2 Next >>

	Title	Author	Year	Result type	Call number	Availability
<input type="checkbox"/>	<a href="#">Multicultural Library Services Wales</a> Lorem ipsum dolor sit amet, wales consectetur adipiscing elit, sed do eiusmod wales incididunt labore et dolore magna aliqua...	Smith, Ann	2007	Book	Q994.41/264	On shelf <a href="#">Request item</a>
<input type="checkbox"/>	<a href="#">Consectetur adipiscing wales</a> Lorem ipsum dolor sit amet, wales consectetur adipiscing elit, sed do eiusmod wales incididunt labore et dolore magna aliqua...	Dicta, Sunt	2006	Book	Q994.41/264	On shelf <a href="#">Request item</a>
<input type="checkbox"/>	<a href="#">Cras in wales magna</a> Lorem ipsum dolor sit amet, wales consectetur adipiscing elit, sed do eiusmod wales incididunt labore et dolore magna aliqua...	Dolorem, Eum	2006	Book	Q994.41/264	On shelf <a href="#">Request item</a>

Login for saved search capacity

Related search ideas

Instant call to action

# Item detail

< Previous result    Next result >

Standard format | [MARC tags](#)

[Back to search results](#)

Description		Item details	
<b>Title</b>	<a href="#">Ratione voluptatem sequi nesciunt</a>	<b>Format</b>	Book
<b>Author</b>	<a href="#">Keane, M. G.</a>	<b>Details</b>	88 p ; 21 cm.
<b>Publisher</b>	Dublin : Teagasc, 2003.	<b>Edition</b>	First edition
<b>Summary</b>	Lorem ipsum dolor sit amet, wales consectetur adipiscing elit, sed do eiusmod wales incididunt labore et dolore magna aliqua sequi nesciunt.	<b>ISBN</b>	184170332X
<b>Subject</b>	<a href="#">Australia – History – Evaluation</a>	<b>Notes</b>	N/A
<b>Series</b>	N/A	<b>Number of copies</b>	3
		<b>Alternative title</b>	N/A

Results save

Revenue channel and shopping call to action

Holdings			
	Availability	Location	Call number
1.	On shelf	Mitchell Library	Q559.406/2 <a href="#">Request this item</a>
2.	Currently in storage	State Reference Library	NQ559.406/1
3.	On shelf	Library Bookshop	<a href="#">Buy a copy</a>

# Design example 3: Calendar of events

## Event calendar

● Exhibition ● Talk ● Movie ● Tour ● Event

< May 2007 **June 2007** July 2007 >

Exhibitions running in June

- Max Dupain: Modernist 9 June – 23 September
- Sydney Harbour: Seldom Scene 5 March – 10 June
- A Grand Obsession: The DS Mitchell Story 18 June – 30 September
- Nelson Meers Foundation: Heritage Collection Ongoing

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
28	29 An indigenous reflection on the '67 referendum Shakespeare Room Introductory tour	30	31 World Press Photo 07 [closes] Introductory tour	1	2	3
4 Shakedown: Australia's grab of Timor oil	5 Shelly: Poet and rebel Shakespeare Room Introductory tour	6 The tyranny of happiness and beyond	7 La lingua d'Italia Introductory tour	8 <b>Today</b> Vietnam symphony Kate Ceberano & the Ministry of Fun in concert	9 Max Dupain: Modernist [opens]	10 Sydney Harbour: Seldom scene [closes]
11	12 Authors' portraits Shakespeare Room Introductory tour	13	14 Max Dupain: modernist One the move: French dance Introductory tour	15	16	17
18 A Grand Obsession: the DS Mitchell Story [opens]	19 Shakespeare Room Introductory tour	20 Curious obsessions in the history of science and spirituality	21 Introductory tour	22 Wuthering heights	23	24
25	26 Languedoc Shakespeare Room Introductory tour	27 The renewal of things past	28 David Malouf Introductory tour	29	30	1

< May 2007 **June 2007** July 2007 >

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Last updated: Saturday 09 June 2007, 10:58 AM

**David Malouf**  
Donec vitae enim id erat tempus auctor.

**When:** Thursday 28 June, 5:30 pm  
**Where:** Dixon Room, Mitchell wing  
**Admission:** \$22, seniors \$20, \$15 Friends and students. Includes light refreshments

[Book now](#) [More about David Malouf talk](#)

Scalable calendar

Online booking for events

Prototype designs conducted on behalf of State Library of NSW

- ◀ All design solutions discussion so far are:
  - Content scalable
  - Robust under the impact of different technologies (e.g. backwards compatible to non AJAX browsing with minor tuning)
  - An elegant relationship between user and organisational needs
  - Designed as modules to support extensibility into other interfaces
  - Designed based on abstract user interface models so it is easier to re-generate interfaces for new platforms

# Step 4: Confirmatory testing



- ◀ The cycle of design followed by testing, followed by design, followed by testing, is popular in UCD and web circles
- ◀ However, this can have an incredibly wasteful side effect, if iterations occur across stages or across an entire project lifecycle. Combine this with new technology that requires, in and of itself, a certain amount of tweaking
- ◀ A better approach to the iterative testing cycle:
  - A confirmatory testing approach
  - Models to guide design and testing to confirm
  - Try to avoid the ‘design and see’ mentality

# Step 5: Into the future

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Step 1:  
Requirements

Step 2:  
Modelling

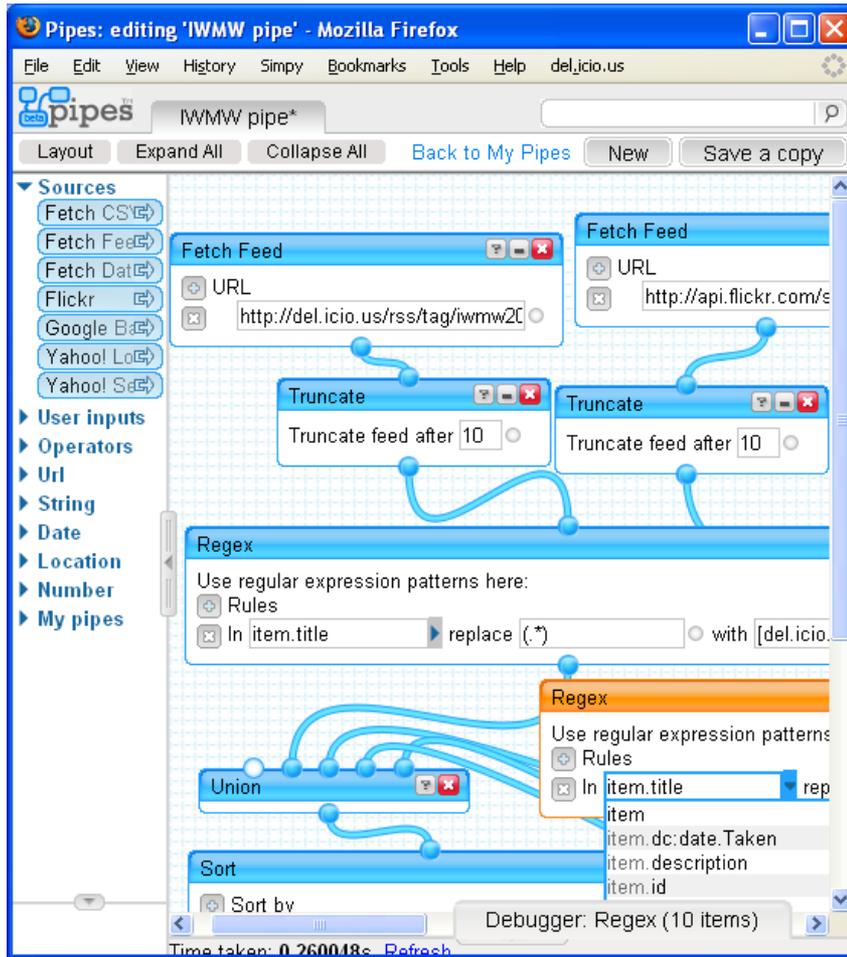
Step 3:  
Design

Step 4:  
Confirmatory  
testing

**Design for the future**

- ◀ The future web, Web 3.0, is likely to be characterized by a number of technological changes, including
  - Wide-band and Gigabyte internet
  - Virtual and augmented spaces
  - Agent based search and Semantic web
  - Mobile or Ultra Mobile PC as your computer
  - Really Easy Mashup (REM) (e.g. Yahoo pipes, Popfly)

# Yahoo Pipes and Popfly



The screenshot shows the Yahoo Pipes editor in Mozilla Firefox. The browser title is "Pipes: editing 'IWMW pipe' - Mozilla Firefox". The address bar shows "del.icio.us". The interface includes a menu bar (File, Edit, View, History, Simpy, Bookmarks, Tools, Help) and a toolbar with buttons for "Layout", "Expand All", "Collapse All", "Back to My Pipes", "New", and "Save a copy".

The main workspace contains a flowchart of pipe components:

- Sources:** Two "Fetch Feed" blocks. The first has a URL of "http://del.icio.us/rss/tag/iwmw20". The second has a URL of "http://api.flickr.com/s".
- Operators:** Two "Truncate" blocks, each set to "Truncate feed after 10".
- Regex:** A "Regex" block with the rule "In item.title" and the replacement "replace (,\*)" with "[del.icio]".
- Union:** A "Union" block that combines the outputs of the two "Fetch Feed" blocks.
- Sort:** A "Sort" block with "Sort by" options: "item", "item.dc.date.Taken", "item.description", and "item.id".

The "Debugger" at the bottom shows "Regex (10 items)" and "Time taken: 0.260018s".



The screenshot shows the Popfly Alpha Mashup interface. The browser title is "Popfly Alpha". The address bar shows "Microsoft". The interface includes a menu bar (Logo goes here, Find Users, Forums, Help) and a toolbar with buttons for "Save", "Save As", and "Sign Out".

The main workspace shows a map of the United States with several mashup blocks connected by lines:

- Twitter:** A red block with the Twitter logo.
- Virtual Earth:** A red block with a map icon.
- GeoNames:** A red block with a location pin icon.

The "Preview" pane on the left shows "2 matches found" for "GeoNames". The "Blocks" pane on the left shows "Flickr" and "GeoNames". The "Map" pane on the right shows a map of the United States with the mashup blocks overlaid.

The footer includes "© Microsoft 2007", "Privacy", "Legal", "Behave", "Report Abuse", and "Learn more about Popfly".

- ◀ However, as previously mentioned, our ability to parse Web 1.0, 2.0 and 3.0 may not be according to technology, but according to changes in both organisational and user mentality
  
- ◀ Trends in users
  - Democratisation in information production
  - A paradoxical increase and decrease in quality
  - A potential increase in apathy, so much information it is hard to get motivated, “Its all propaganda”
  
- ◀ Trends in organisations
  - A shift from information storage to information services and delivery

- ◀ Web 3.0 to Infowelt (Information World)1.0
  - My information anytime and anywhere anyhow (digital library)
  - Information that can be re-visualised and re-structured on the fly using metadata
  - User based manipulation of the very fabric of the web
  - Web 3.0 to Infowelt 1.0 → Technological space gives way to imagination and “Information World”
  - Apparent tensions resolved between users and business as new design models supplement existing models to handle cutting edge, emergent and non-linear interfaces
  
- ◀ Sting in the tail
  - Long term implications with how Libraries portray and provide their information
  - Although organizational and user requirements do not have to be in opposition, deep trends can cause rifts as organizations work through paradigm shifts
  
- ◀ See the new world as opportunities rather than Limitations
  - “Certified accurate” search results
  - Partnerships with media portals as trustworthy content providers
  - Furthering the parallel movements of digitization and preservation
  - Libraries as research services