Whole of Victorian Government ICT Guideline

Developing and managing an information architecture
Website Management Framework

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Developing and managing an information architecture

Overview

This guideline supports the Information Architecture (Structure, Classification and Navigation) Standard (WEB/STD/08), providing advice on how to develop, document and manage an information architecture (IA) for an individual website.

Audience

This guideline is intended to support those responsible for the development and management of an IA including, but not limited to:

- Website Management Taskforce Coordinators (WMTCs);
- website owners and managers;
- IA practitioners;
- communications specialists;
- website designers;
- developers;
- usability practitioners;
- content authors; and
- librarians.

Further information

For further information please contact web.standards@dtf.vic.gov.au.
Using this guideline

The Information Architecture (Structure, Classification and Navigation) Standard (WEB/STD/08) requires all websites to produce and maintain an information architecture (IA) plan that addresses specified IA components. This guideline provides assistance in addressing each of these components.

Please note that it is not mandatory to follow the information and techniques discussed in this guideline. Website owners are free to refer to and draw on any resource they wish in addressing the standard.

This guideline does not address every aspect of IA – IA is complex and unable to be articulated fully in a single guideline. Website owners creating a detailed IA Plan may need to supplement this guideline with additional research and findings, and/or seek advice from a subject matter expert.

For further assistance on these or other matters relating to website management and WoVG standards, please seek the advice of your Website Management Taskforce Coordinator. You can identify your Coordinator through the Website Management Framework group on the VPS Hub.¹

Required IA components

The IA components required to be addressed in an IA plan – and the pages on which they are discussed – are as follows:

- business needs analysis pp 15 – 16
- user research and analysis pp 17 – 22
- content inventory pp 24 – 27
- controlled vocabularies and metadata pp 28 – 33
- website navigation and hierarchy pp 35 – 39
- website layout pp 39 – 40
- search model and behaviour pp 41 – 42
- usability testing pp 42 – 49
- monitoring and maintenance pp 51 – 54
- change management pp 51 – 54
- ongoing review pp 51 – 54

Defining information architecture

What is information architecture?

Information architecture (IA) is the organisation of a website’s structure and content by:

- labelling and categorising information;
- designing navigation and search systems;
- identifying and using language and vocabulary schemata; and
- designing the website layout.

IA brings together design concepts and tools that assist users in finding the information they are looking for and completing tasks efficiently and effectively. It focuses on providing multiple pathways to information whilst retaining an understanding of the context and purpose for the information being accessed.

A structured, controlled and user-centred IA ensures that a website is proactive in maintaining a positive user experience while continuing to meet the needs of the business.

What information architecture is not

IA is neither usability nor visual design.

Usability is the practice of designing and testing whether a website is usable and – like IA – is only one aspect of website delivery. An IA can be tested for usability.

An IA is developed prior to the visual design, allowing it to inform that process. Where an IA addresses layout, structure and discovery, the visual design addresses the user interface, visual communication, style, colour scheme and branding.

What does information architecture include?

IA includes the:

- balancing of audience characteristics and needs with the content and business context (see Figure 1);
- provision of discovery methods that are available to internal and external users of the site including search and browse, search engine optimisation and portal integration;
- presentation, labelling and format of content on the website;
- categorisation and description of information; and
- underpinning business and data rules which support the discovery and delivery of information, e.g. organisation-specific metadata requirements.
The diagram in Figure 1 demonstrates the interdependent nature of users, content and context. When designing an IA it is essential to understand user expectations and behaviour, the content that is available or needs to be available and the context in which the website will exist.

![Diagram of the three circles of information architecture](image)

**Figure 1 - Three circles of information architecture**

**Useful information architecture resources**

- Boxes and Arrows ([www.boxesandarrows.com](http://www.boxesandarrows.com))
- Findability.org ([findability.org](http://findability.org))
- Information Architecture Institute ([jainstitute.org/en](http://jainstitute.org/en))
- University of Minnesota Duluth ([www.d.umn.edu/itss/support/Training/Online/webdesign/architecture.html](http://www.d.umn.edu/itss/support/Training/Online/webdesign/architecture.html))
- Louis Rosenfeld ([louisrosenfeld.com](http://louisrosenfeld.com))

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NSW Government Website Information Architecture, Version 2, NSW Government Chief Information Office 2009
Documenting your information architecture

Overview

Documenting an information architecture (IA) is a critical part of developing and managing a website. It provides a link between the IA and visual design and development and is a blueprint of what the information architecture should be now and into the future.

What is an information architecture strategy?

An IA strategy emphasises a collective view of an organisation’s website portfolio by determining:

- an accurate description of the website portfolio;
- the justification for the website portfolio;
- the benefits of each website and the portfolio as a whole;
- the alignment between the website portfolio and business objectives and strategies;
- the governance structure, including quality control and whole of organisation change management;
- consistency in user experience and message across the portfolio;
- commonality in language and structure;
- IA principles for the website portfolio;
- standards compliance;
- lessons learnt; and
- recommendations for the forward direction of the website portfolio.

IA strategies often have a less clearly defined problem to resolve than individual IA plans and can benefit from an initial problem definition workshop.³

What is an information architecture plan?
An IA plan is a living document that identifies the major components of the IA, including the design, management, maintenance, governance and review processes. It also provides an opportunity to highlight areas that require further analysis or improvement and to document any anticipated actions.

Importantly, an IA plan captures information for use in planning and managing audience needs, facilitating an ongoing, efficient discovery experience for users.

How detailed should an information architecture plan be?
An organisation’s Website Management Taskforce (WMT), and/or appropriate senior management, should determine the detail and breadth of their IA plan, taking into consideration the:

■ scope and depth of the website (whether existing or new) and the information and services presented;
■ range of audiences the website should address;
■ business risks associated with the website;
■ sensitivity of the information on the website; and
■ business investment in the website.  

Where the organisation has a small number of websites a combined IA strategy/plan may be sufficient.

How will the information architecture plan be used?
Business owners/website managers should use the IA plan to record, monitor and manage the IA of a website from a strategic and operational perspective.

WMTs should use their individual IA plans to develop a comprehensive view of their website portfolio, including a clear understanding of:

■ their audiences and needs;
■ the content being delivered;
■ the navigation and discovery approaches; and
■ the management processes employed.

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4 Business investment components include staff, technology, time and financial investment.

11 — WoVG Guidelines: WMF – Developing and managing an information architecture (WEB/GUIDE/03) November 2010, v2.0
Government Services Division (GSD, Department of Treasury and Finance) may ask for IA plans to be submitted during the Website Management Framework compliance reporting process.

GSD will use the submitted IA plans to:

- identify opportunities for cross-Government initiatives such as the development of whole of Government tools or technical support;
- research the needs of citizens (information and services);
- monitor the quality and planned improvements in IA across government websites; and

Managing an information architecture plan

The process of documenting and reviewing a website IA recognises that the information needs of users, the methods they use to discover information and the intent of a website may all change over time. It also recognises that organisations gather and test business intelligence – throughout the life of a website IA – to inform changes and prioritise major changes.

Acknowledging these evolutionary steps is an essential part of effective IA management. An IA plan can accommodate these steps, and effectively communicate the approach taken, through a change management schedule (see Figure 2).

The information architecture process

The process for developing and maintaining the IA of a website is outlined in Figure 2, below, and discussed in detail in the following sections.

The content of an IA plan corresponds to the five phases of the process. These phases also align with typical project phases for the development of a new website or the redevelopment of an existing website.

When using this phased approach, organisations should consider two key points.

Firstly, IA is not always a linear process. During the IA design phase there is often a need to cycle through various IA components, e.g. Classification and Navigation ↔ Website Layout, to end up with the most relevant and fluid design.

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Secondly, the functional specification and website design processes are not IA tasks, however the information architect is often involved in both and their outcomes often result in the IA needing to be refined or changed.
Figure 2 - Information architecture process
### Phase: Business needs analysis

#### Overview

This phase determines the scope of the website and the business context in which it will operate. It ensures that the website and the information architecture meet the business needs of the organisation.

Most of the activities of this phase have already been addressed when developing the website’s business case and/or completing a Website Approval form. Revisiting these documents during this phase will inform the development and focus of the information architecture.

#### Outcomes from this phase

The key outputs in this phase are the website’s:

<table>
<thead>
<tr>
<th><strong>Purpose and Scope</strong></th>
<th>As per the website’s business case and/or Website Approval form.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Identification of the website type, i.e. corporate website, program/issue specific website or thematic/portal website.</td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td>As per the website’s business case and/or Website Approval form. The emphasis should be on objectives that are measurable and able to be clearly attributable to the website.</td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td>Identification of the benefits that are expected to be realised by the website.</td>
</tr>
<tr>
<td><strong>Alignment or similar services</strong></td>
<td>Identification of aligned or similar services both within the organisation and across the Government. The deliverable should clearly acknowledge direct or indirect competition to the website’s information, services and/or intent.</td>
</tr>
</tbody>
</table>
Scope and business context

This phase should be informed by business documents including:

- relevant strategies (e.g. internet strategy);
- the website business case;
- organisation plan(s);
- the organisation’s mission statement;
- interviews of organisation leaders and key staff;
- comparisons/benchmarking with industry best practice websites;
- market analysis; and
- statistical information and analysis for the existing website (if relevant).

Reference should also be made to documents that reflect outcomes of previous research, analysis and measurement.

Defining the scope and business context of the website:

- ensures clear identification of the website’s objectives;
- places it in context with similar and/or aligned services within the organisation, with other websites in the Victorian Government and with other best practice websites; and
- prevents duplication of information and effort.
Phase: User research and analysis

Overview

The most significant step in developing an effective information architecture (IA) is the analysis of user characteristics and the tasks and interactions they want to undertake when visiting the website. This analysis is critical to ensuring that users are able to effectively find what they are looking for and complete the tasks they initiate on the website.

Outcomes from this phase

Specific information architecture activities addressed in this phase include:

- identifying and profiling users (user characteristics);
- describing users on the basis of their interaction requirements; and
- presenting different interaction model types.

Determining the interaction design for your website and its users

Successfully defining the interaction design for your website facilitates the most user-centred and streamlined methods to deliver information and services. Specifically, defining and tracking how users interact with a website helps to determine:

- how information is structured;
- navigation pathways;
- the user interface and content presentation; and
- technical and performance requirements.

Interaction analysis often involves:

- usability testing the interactions of similar sites;
- analysis of the existing website (if relevant);
- consumer research; and
- benchmarking against industry best practice.
The outputs of this process are plans that outline how users will interact, or currently interact, with the website and can take the form of:  

- structure diagrams, e.g. site maps;
- process flow diagrams, e.g. flow charts;
- storyboards;
- wireframe diagrams of page or screen layouts;
- interactive prototypes which move users through web pages to task completion;
- use case diagrams and templates;
- user profiles and interaction diagrams;
- data flow diagrams; and
- sequencing diagrams.

**Audience profiling and task analysis**

Audience profiling and task analysis identifies who a website’s audience is and what they want to accomplish.

Generally, this process aims to:

- identify who the website is serving;
- define the priority information, content and functional features that should be made available on the website; and
- contribute to the preparation of the IA and the navigational system to be used on the website.

Audience profiles characterise the information requirements of website users. A user may be a member of more than one audience profile and therefore may approach a website with a range of motivations or needs which may also change from one visit to another.

Each audience profile provides:

- an overview of the types of information required by that audience;
- the way in which one audience’s needs are different from another; and
- the types of web functions and services that are required to meet that audience’s requirements on the actual website.

Audience analysis can range from demographic profiling to cultural studies of actual users. The end result of this work is typically a set of profile statements that define users, needs and required tasks.

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7 Example diagrams are available in *Appendix A – Example diagrams.*
The extent and frequency of audience profiling and analysis is dependent on time, personnel, resources and costs. As with usability testing, informal and formal methods can be used.

**Audience research methods**

There are a number of research methods used to gather information about website audiences/users and their interaction needs and preferences. The investment required to implement these research activities will be dependent on time, resources, costs, scope, size and the risk profile of the website. The methods used to research audiences include:

- observation of calls received by the call centre;
- phone interviews with members of the public who have contacted an organisation’s call centre;
- demographic or audience profiling;
- face-to-face interviews with members of the public attending a government office;
- focus groups and phone calls with users and/or industry representatives;
- review of usage and search statistics (existing websites);
- interviews with internal staff from the organisation, e.g. staff that handle enquiries;
- online user surveys;
- focus groups with representatives of business and industry areas or members of the public;
- review of organisational research and other government research;
- review and analysis of similar, comparable sites and their user groups; and
- analysis of other existing sites.
Describing audiences based on their interactions

Audience/user research generates a list of information and service needs associated with website audiences. Within this list there are two significant must-have requirements for all website users:

- **Search** – the ability to find information using keywords; and
- **Browse** – the ability to find information by selecting terms from information categories.

Particular interaction needs that relate to certain audience groups, or that had low level mention across several audience groups, are also likely to be included in a listing of audience needs.

Tasks can then be classified according to audience, profile, sector description, interaction types, special needs and priority. This can be represented in a matrix as shown in Table 1, below.

<table>
<thead>
<tr>
<th>Audience</th>
<th>User profile</th>
<th>Sector – Major audience sectors</th>
<th>Description</th>
<th>Interaction types</th>
<th>Special needs</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name audience groups</td>
<td>Choose from Primary, Secondary, Occasional, Non-user</td>
<td>e.g. Consumer, Business, Other or Youth, Seniors etc</td>
<td>Short description of the characteristics of the audience</td>
<td>List typical interactions e.g. online registration</td>
<td>Consider language, disability, location etc</td>
<td>Rating - High Medium Low</td>
</tr>
</tbody>
</table>

**Table 1 - Sample audience/task matrix**

Audience data is used to plan the location, functionality, presentation and investment in the interactions delivered on a website. This will ensure that the most important interaction types are provided to the widest number of users.

The list of individual interactions gathered in a profiling exercise can be grouped into a number of interaction categories and the type of functionality or service that could be offered (see Table 2, below). This process helps to match the functionality with the activities that users require.

**Table 2 - Interaction categories**

<table>
<thead>
<tr>
<th>Interaction categories</th>
<th>Sample website interactions types</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identification based</strong> (I know who I am, or which group I belong to)</td>
<td>Audience classification options e.g. Youth, Seniors, Industry, Consumers</td>
</tr>
<tr>
<td><strong>Task based</strong> (I know what I want to do)</td>
<td>Transactional services, e.g. online bill payment</td>
</tr>
<tr>
<td><strong>Item based</strong> (I know what specific product or service I want)</td>
<td>Fast track options to products or services through Search or Homepage access</td>
</tr>
<tr>
<td><strong>Location based</strong> (I want to know where something is)</td>
<td>Interactive map showing location of offices, resources etc.</td>
</tr>
<tr>
<td><strong>Interest based</strong> (I know my general field of interest)</td>
<td>Subject taxonomy providing access to categorised information and services</td>
</tr>
</tbody>
</table>
Interaction categories | Sample website interactions types
---|---
**Organisation based** (I know which agency or department, or role of the person I want to talk to) | Directories, organisational diagrams
**Time based** (I want to know when something is happening or what’s on now) | Latest news, events, alert services
**Random based** (I am looking around to see if something interests me) | Search and browse

**Presenting different interaction types**

The design and effectiveness of interaction types can be presented in a number of ways. Useful diagram types for the demonstration of interaction types include:⁸

**Structure diagrams**
Structure diagrams emphasise what things must be in the system being modelled.⁹ Website site maps are a good example of a high-level structure diagram, providing a visual picture of progress through a website for the completion of an enquiry or task.

**Process flow diagrams**
Process flow diagrams display end-to-end processes such as locating information or completing a specific task.

**Wireframe diagrams**
In the context of websites, wireframes display layout, page level navigation, content types and functional elements and can be used to provide an indication of the users’ visual and navigation experience.

**Use case descriptions**
A use case describes the way in which a real world actor - a person, organization, or external system - interacts with an organization, such as through a website. A use case captures the sequence of events from the actor (human or system) using the system to complete a process. Typically use cases represent business processes and assist in communicating requirements and testing the value or relevance of a process.

**Scenario templates**
Scenario templates capture the interaction process in a formal descriptive manner.

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⁸ Example diagrams are available in Appendix A – Example diagrams.

Interactive prototypes

Interactive prototypes provide a working web interface which allows users to navigate through web pages to task completion. These prototypes create a sound simulation of a potential end product, clearly defining the navigation and process experience and facilitating the timing of task completion. While offering considerable benefits, the development of interactive prototypes has greater time and cost implications than other methods.

Sequence diagrams

Sequence diagrams track the interaction between a user and the messages sent to the system and the messages/information that the system returns.

Storyboards

Storyboards display a sequence of interactions and options throughout an activity. They can use either sketch diagrams of the sequence of activity or use wireframes to test and plot navigation.

User-profiled interaction flows

This type of interaction model groups users into major audience groups and identifies required information and service requirements.

Useful user research and analysis resources

- Scenario Plus (www.scenarioplus.org.uk/)
- Personas, Interaction Design Association (www.ixda.org/taxonomy/term/2198)
- Personas and the Role of Design Documentation, Andrew Hinton, Boxes and Arrows 2008 (boxesandarrows.com/view/personas-and-the)
- Toward User-Centred, Scenario-Based Planning and Evaluation Tools, WebAIM (webaim.org/articles/scenarios/)
- Experian Hitwise (particularly, Competitive Intelligence products – www.hitwise.com/au)
- Google DoubleClick Ad Planner (www.google.com/adplanner)
Phase: Information architecture design and documentation

Overview

This phase determines and documents the website’s fundamental information architecture (IA) components.

Outcomes from this phase

Activities addressed in this phase include:

- research and analysis;
- conducting a content inventory;
- defining controlled vocabularies and metadata;
- determining the classification and navigation structures;
- determining the website layout;
- documenting the search model and behaviour; and
- testing the IA to ensure it meets the needs of users.

Information architecture research and analysis

In addition to understanding the needs of the business and the user, forming a greater understanding of the trends, activities and best practice in IA and online delivery is fundamental to information architecture design.

At a minimum, IA research and analysis should include:

**Review of similar or related websites**

When conducting a review of a website, consider:

- what information architecture features it has;
- whether it delivers business value;
- how innovative and usable it is;
- how it compares to your website (competitive benchmarking);\(^{10}\) and
- commonalities with the other websites under review.

\(^{10}\) For further information on competitive benchmarking, see *Information Architecture for the World Wide Web*, 3rd Edition, Peter Morville and Louis Rosenfeld, O’Reilly Media.
Literature review

A literature review should include both internal documents (e.g. include business strategies, business cases, statistics, user profiles, audience analysis and previous research) and external literature (e.g. academic documentation, industry presentations and papers, editorials, whitepapers and reports from analysts such as Gartner and Burton).

Statistical review

For example, a review of website statistics (where the research and analysis relates to an existing website) including analysis of search terms, path analysis/navigation and visits. The emphasis of a statistical review should be on any patterns and trends in usage.

Useful information architecture research and analysis resources

- Burton Group (membership required - www.burtongroup.com)
- Gartner (membership required - www.gartner.com/technology/home.jsp)

Content inventory

The value of content:

‘IA is the bridge between the conceptual and strategic aspects of site development and the practical matters of design and implementation. IA can shape your site in a way that draws people in, entices them to explore, helps them find what they’re looking for, and encourages them to come back. But IA won’t help you if your content isn’t compelling.’

Conducting a content inventory helps to identify both required and existing content and inform the development of a website’s controlled vocabularies and navigation (taxonomy). A content inventory is also used to:

- identify content owners;
- identify the physical location of content (e.g. databases);
- identify the format of existing and proposed content;
- identify content gaps that require attention;
- identify and record content growth areas;
- review the quality of existing content and identify duplicated, irrelevant or outdated content;

11 Interview between Jeff Veen and Jesse James Garrett, Digital Web Magazine 2002 (www.digital-web.com/articles/jeffrey_veen_and_jesse_james_garrett/)

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align online content with other information and service delivery channels, e.g. print publications, call centre and shop front services; and

develop a comprehensive understanding of the available information base.

**Note: Practicality of developing a content inventory**

When refreshing an existing website it is not always practical to undertake a content inventory that includes every content page within the website; in many instances a high level content inventory will suffice. However, a detailed content inventory is recommended in more complex environments where the type, profile, priority or sensitivity of the website is notable.

The process of conducting a content inventory typically involves:

- consultation with business owners and staff members to identify content scope and priority (using surveys, focus groups or one-on-one interviews);
- generating a list of web pages from the content management system (for an existing website);
- reviewing relevant content, including online and offline resources;
- recording the content items and their attributes in an audit or spreadsheet tool;
- defining how content will be selected for continued use; and
- defining how content will be retired.

While an existing website's content inventory can be informed by its content management system and site map, these tools should not be used in isolation. Content should be subject to a detailed inspection and documentation, e.g. a content inventory spreadsheet. Table 3 displays a range of example headings for a content inventory spreadsheet.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique identifier</td>
<td>E.g. URL, content item ID, asset ID, web page ID</td>
</tr>
<tr>
<td>Page title</td>
<td>The item title - preferably the value in the DC.Title metadata element or HTML &lt;title&gt; tag.</td>
</tr>
<tr>
<td>Description</td>
<td>A brief description outlining the intent of the page. In an existing web page the value from the DC.Description metadata element is often sufficient.</td>
</tr>
<tr>
<td>Location</td>
<td>Where the content is found/stored, e.g. the navigational category, position within the website or the location within the organisation, e.g. another website, database etc.</td>
</tr>
<tr>
<td>Audience</td>
<td>Intended audience group.</td>
</tr>
<tr>
<td>Format (type 1)</td>
<td>The format of the content, e.g. HTML, PDF, Microsoft Word, video etc.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Implementation</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Format (type 2)</td>
<td>An additional identifying format type, e.g. web page, policy, standard, report or whitepaper etc.</td>
</tr>
<tr>
<td>Keywords</td>
<td>Keywords which describe the page. In an existing web page these can often be drawn from the values in the DC.Subject metadata element. The keywords should adequately describe the content of the page and be based on language the user would use to find the page.</td>
</tr>
<tr>
<td>Author/owner</td>
<td>The individual/role that owns the content item.</td>
</tr>
<tr>
<td>Last updated or Date created</td>
<td>The date the content was created or last updated. This value can often be found in the footer of the page or within the DC.Date.created metadata element. For offline documents the value should be found within the properties of the document, or the system managing the document e.g. content management system or document management system.</td>
</tr>
<tr>
<td>Quality</td>
<td>An indication of the quality of the content/document, noting if it needs review or to be rewritten, is a duplicate of other content or if it is irrelevant or outdated.</td>
</tr>
<tr>
<td>Priority</td>
<td>The importance of the content relative to user and business needs</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>An assessment of the sensitivity of the content and any risk associated with its publication/non-publication.</td>
</tr>
<tr>
<td>Notes</td>
<td>Any other comments on the content.</td>
</tr>
</tbody>
</table>

*Table 3: Example headings for a content inventory spreadsheet.*

---

Content selection and retirement

Upon completion of the content inventory, the documented items should pass through a selection process to determine their inclusion on the website. Criteria that might be used for this purpose include:

- relevance (to audience(s) or organisation);
- currency and age;
- quality;
- priority (for audience(s) or organisation); and/or
- sensitivity.

A process should also be developed for the retirement of content. This process should consider the triggers for retirement, approvals, archiving and any relevant organisational or Government guidelines and requirements.

A Website Management Framework (WMF) Content Ownership, Approval and Review Statement\(^\text{13}\) should also be completed to document how the content will be managed throughout its lifecycle.

Useful Content Inventory Resources

- *Web Content Inventory* ([pgsolutions.net/res_inventory.shtml](http://pgsolutions.net/res_inventory.shtml))

Functional requirements

Whilst determining functional requirements is not an IA task, often their development overlaps with the development of an IA, resulting in both tasks informing each other. The business needs analysis, audience research and analysis, IA research and analysis, and content inventory are all used in the development of the functional requirements for the website (for example how the website will work, its inputs, outputs, tasks and functional behaviour).

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Controlled vocabularies and metadata

Take an iterative and simultaneous approach

Controlled vocabularies, classification and navigational structures and website layout are often developed using an iterative and simultaneous approach, concurrently working and reworking each until the desired end result is achieved.

Defining controlled vocabularies

Controlled vocabularies are lists of standardised and approved terms that can be used to assist in categorising information, classifying content, developing navigational elements, indexing and retrieving information.

Controlled vocabularies are used to:

- provide consistency in the labelling of navigational elements, classification/menu structures and links within content;
- assign appropriate attribute values to content objects;
- help match users’ natural language with preferred terms;
- assist with the implementation of a sophisticated search engine;
- provide extended search functionality (e.g. including synonyms of searched term(s) in search results);
- promote keyword density in content (increasing the content’s relevance to internal and external search engines);\(^{14}\)
- provide a list of terms in a user interface control list; and
- tag content and documents to enable them to be found through navigation or search.\(^{15}\)

A controlled vocabulary ensures that website developers use consistent keywords when designing navigational structures and content creators choose consistent keywords when writing content (keyword density) or metadata.

Controlled Vocabularies

The most basic form of a controlled vocabulary is a consistent labelling system where a particular thing or concept has the same name throughout a website.\(^{16}\)

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\(^{14}\) See en.wikipedia.org/wiki/Keyword_density

\(^{15}\) A website taxonomy (navigational menu) is a controlled vocabulary.

\(^{16}\) NSW Government Website Information Architecture, Version 2, NSW Government Chief Information Office 2009

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Department of Treasury & Finance
There are different kinds of controlled vocabularies, including: 17

**Synonym rings**

A synonym ring extends controlled vocabulary term lists by connecting different but similar words for the purpose of retrieval, for example:

- two words with the exact or very similar meanings;
- acronyms, e.g. ABC and *Australian Broadcasting Corporation*;
- variant spellings, e.g. *honour* and *honor*;
- scientific terms and equivalent popular use terms, e.g. *bovine spongiform encephalopathy* and *mad cow disease*.

Search systems can be configured to use synonym rings. A good example of the use of synonym rings is the Victoria Online Thesaurus. 18

**Authority files**

An authority file is similar to a synonym ring, but instead of all similar terms being equal, e.g. ABC, *Australian Broadcasting Corporation* and *Aunty*, one term is identified as the preferred term (e.g. *Australian Broadcasting Corporation*) and the others are considered variant terms (e.g. ABC, Aunty).

**Taxonomies**

A taxonomy is the classification of an information domain, where terms are arranged into a hierarchy. It allows related terms to be grouped together and categorized in ways that make it easier to find the correct term to use whether for navigating or searching the website or to describe an object.

**Thesauri**

Thesauri are controlled vocabularies linked together by relationships between terms. In a thesaurus, where multiple words in the vocabulary have similar meanings, one central term is recommended for use to replace many semantic variants of that term. See Keyword AAA or Thesaurus of Australian Government Subjects (TAGS) for examples of government-relevant thesauri. 19

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18 The Victoria Online Thesaurus is a subject thesaurus of descriptive terms that reflect the themes and resources within Victoria Online portal. The thesaurus is used to populate the keywords metadata element within Victoria Online and is available for use by Victorian Government departments and agencies ([www.egov.vic.gov.au/victorian-government-resources/victoria-online/victoria-online-thesaurus/victoria-online-thesaurus-version-2-6-july-2009-a.html](http://www.egov.vic.gov.au/victorian-government-resources/victoria-online/victoria-online-thesaurus/victoria-online-thesaurus-version-2-6-july-2009-a.html)).

Faceted classifications

Faceted classification enables a given data record or document to be described in multiple ways (facets). The terms allowed in each facet may come from flat term lists, hierarchies, synonym rings, authority files, classification schemes or some other well defined domain. For example, a poem might be classified using an author facet, a country facet and a date facet.

Control lists

Controlled language lists prescribe a set of terms that limit the selection and description of a term or item. They are often used in the creation of metadata content or provided as selection options in online forms or other interactive elements.

Developing a controlled vocabulary

<table>
<thead>
<tr>
<th>Step</th>
<th>Actions</th>
</tr>
</thead>
</table>
| Identify the scope and purpose of the controlled vocabularies |  ■ Consider how the controlled vocabulary will be used on the website, e.g. for control lists in a form, the navigation menu (taxonomy) or the subject list for DC.Subject metadata fields.  
■ Determine how the controlled vocabularies will be managed and maintained. |
| Identify appropriate standard/s |  ■ Identify whether the controlled vocabulary will be based on a standard, e.g. AGLS metadata for metadata elements. |
| Review existing internal and external controlled vocabularies |  ■ Check whether there is an existing controlled vocabulary or another form of labelling system that can be used or modified to suit.  
■ Review similar websites to see what controlled vocabularies they are using.  
■ Collate external controlled vocabularies for reference. |

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20 [en.wikipedia.org/wiki/Controlled_vocabulary](en.wikipedia.org/wiki/Controlled_vocabulary)  
21 [www.dlese.org/Metadata/vocabularies/term_expln.php](www.dlese.org/Metadata/vocabularies/term_expln.php)
Managing your controlled vocabularies

Once the controlled vocabularies have been determined, the IA plan should be used to document and manage them. The plan should include:

<table>
<thead>
<tr>
<th>Name</th>
<th>The name of the controlled language or vocabulary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent/purpose</td>
<td>The intent or purpose of the controlled language or vocabulary and how it is used within the website.</td>
</tr>
<tr>
<td>Standard</td>
<td>The standard to which the controlled vocabulary complies, for example the Australian Government Locator Services (AGLS) metadata standard.</td>
</tr>
<tr>
<td>Derivation</td>
<td>The origin from which the controlled vocabulary has been derived, for example another controlled vocabulary such as the Thesaurus of Australian Government Subjects (TAGS).</td>
</tr>
</tbody>
</table>

---

22 A thesaurus is an example of where preferred terms, variants and hierarchies are required. In the web environment a thesaurus could be used to generate a dynamic menu structure or support a search tool. Where a thesaurus is supporting a search tool it is important to also include preferred and similar terms.
Implementing metadata

Metadata is data that describes information or, in the context of website information architecture, the content within a website. Metadata supports discovery by internal and external search engines and can be used to inform navigation.

The metadata requirements of content pages must be considered when creating a website’s classification and navigation structures (see Classification, Navigation and Layout). In the case of a website page, metadata is located between the <HEAD> tags of a web page’s HTML source. Every page should have associated metadata in its HTML header. The Website Management Framework (WMF) Discoverability Standard (WEB/STD/01) prescribes the metadata requirements for all Victorian Government websites.\(^\text{23}\)

Useful controlled vocabulary and metadata resources

- Controlled vocabularies resources, Dey Alexander (deyalexander.com/resources/controlled-vocabs.html)
- Controlled vocabulary/terminology concepts, Digital Library for Earth System Education 2004 (www.dlese.org/Metadata/vocabularies/term_expln.htm)
- What is a Controlled Vocabulary?, Leise, Fast and Steckel; Boxes and Arrows 2002 (www.boxesandarrows.com/view/what_is_a_controlled_vocabulary)
- Creating a Controlled Vocabulary, Leise, Fast and Steckel; Boxes and Arrows 2003 (www.boxesandarrows.com/view/creating_a_controlled_vocabulary)
- Synonym Rings and Authority Files, Leise, Fast and Steckel; Boxes and Arrows 2003 (www.boxesandarrows.com/archives/synonym_rings_and_authority_files.php)


Classification, navigation and layout

A website’s classification and navigation structures and information architecture layout can be determined after the successful completion of the:

- business needs analysis and user research analysis phases;
- IA research and analysis; content inventory; and
- controlled vocabularies and metadata tasks of this phase.

The key deliverables of this task are the:

- IA principles;
- navigational taxonomies and/or facets;
- website hierarchy and layout; and
- hierarchy diagrams, sitemaps and indices.

IA principles

**Definition: Information architecture principles**

> Principles are general rules and guidelines, intended to be enduring and seldom amended, that inform and support the way in which an organization [website] sets about fulfilling its [information architecture] mission.”

IA principles define the rules and guidance for developing, implementing and making changes to a website’s information architecture. IA principles should cover the main components of information architecture including content, classification and navigation, website layout and search.

An IA principle can be as simple as:

**Principle 1** – Users should be provided with multiple pathways to the same information.

---

Principle 1 – Multiple pathways to the same information.

Statement:
Users should be provided with multiple pathways to the same information and content.

Rationale:
Users come to information discovery with different backgrounds, different discovery needs and different levels of engagement.

Implications:
- Information and content should be able to be classified against multiple pathways and/or facets.
- Information and content should be able to be classified against the main taxonomy as well as the services taxonomy and quick links.

The complexity of IA principles depends upon the risk profile and governance requirements of the website and its information architecture.

IA principles should be relatively static, only changing when the strategic direction of a website’s information architecture changes. They should become ingrained into the website’s support culture and be used to govern the website’s IA and control the website’s information and content delivery.

Determining the website’s classification and navigational structures

Navigation systems are fundamental elements of a website’s IA. They facilitate the delivery of intuitive, efficient access to information and services and are key determinants of whether users find a site usable.

Definition: Taxonomy

‘A taxonomy is a collection of controlled vocabulary terms organised into a hierarchical structure. Each term in a taxonomy is in one or more parent/child (broader/narrower) relationships to other terms in the taxonomy.’

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25 The American Folklore Society, Ethnographic Thesaurus (et.afsnet.org/glossary.html)
Taxonomies are the predominant navigation approach on most websites. Implemented well, taxonomies offer intuitive, user-centred terms as pathways to information and services, leading to more effective menu usage and task completion.

IA proponents, Peter Morville and Louis Rosenfeld break navigation down into global, local and contextual navigation.

**Global navigation**

Global navigation features are those which need to be available on every page of a website.

Global navigation tends to address topics that are the most popular with users and/or require the most visibility to meet user needs, business objectives and/or standards compliance. Global navigation features are generally placed in a consistent location within the website.

Global navigational menus are often relationship-based or hierarchal in nature and provide pathways to information, services and tasks. They help the user to navigate from the broader generic subject areas to narrower and more specific topics, for example Health to Childcare.

Global navigation menus inform the user along the way and are particularly useful for those who are unsure of the subject areas or terminology. Hierarchal navigational structures are called taxonomies.

**Local navigation**

Local navigation features are those which enable users to explore a specific topic, facet or immediate area of the website.

Local navigation features are not required globally, are only relevant to a narrow audience and cover a narrow topic area.

**Contextual navigation**

Contextual navigation features are those which are not hierarchical and can be defined as ‘See Also’ type links, for example links within content, ‘More’ links at the bottom of a bulleted list or headings with an associated link.

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When designing a navigational structure thought must be given to how, and in what format, the taxonomy will be arranged. The tasks of developing a taxonomy are the same as developing a controlled vocabulary (see Developing a Controlled Vocabulary above). Other considerations include:

**Balancing audience needs versus business objectives**
- Identifying what each audience group needs and balancing it with the business objectives and messages.
- Determining how to address users who have a clear understanding of what they are looking for, for example streamlined options such as quick links.
- Determining how to address users who don’t know what they want, for example users that know the task they want to complete but are unsure what it would be called.
- Providing multiple pathways to the same information to accommodate different user experiences, backgrounds and needs.

**Website statistical analysis**
- For existing websites, reviewing website search terms and path analysis to identify common search terms, most popular navigational paths and the most popular pages. Also consider the least common/popular equivalents to establish what isn’t working and avoid reincorporating approaches that are failing.

**Best practice review**
- Reviewing the classification and navigational structures on other websites, particularly those that are similar in their objectives.
- Identifying the most prominent tasks, information and services on similar websites.
- Identifying the language and navigational structures used.

**Language style**
- Identifying what style of language should be used, for example active versus passive language, natural language versus technical/organisational language or subject versus function.

**Taxonomic groupings, format and structure**
- Determining the format and structure of each navigational taxonomy, example, e.g. sorting alphabetically, by relevance etc.
- Determining how navigational taxonomies will be grouped or categorised, for example by life event (birth, school, retirement) or topic (subject or functional), with the aim of structuring information into intuitive user-centric categories.
- Determining how each category and content page should be labelled.
- Determining the design of the navigational structure to facilitate movement through the information architecture.
- Determining how to create alignment between categories and content.
- Determining the degree of user input into taxonomies.
When developing hierarchical structures, consideration should also be given to user-generated taxonomies, commonly referred to as folksonomies or social tagging. User-generated taxonomies are ‘A means of classifying and categorizing data on the web through collaborative efforts from the online community.’\textsuperscript{27} Figure 3 shows a tag cloud, one form of user-generated taxonomies found readily on the web.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{tagcloud.png}
\caption{Example tag cloud}
\end{figure}

**Documenting a website’s navigation (taxonomy)**

While there are a number of tools available for use in taxonomy development, the simplest way to develop and document an average website taxonomy is with a spreadsheet. A spreadsheet doesn’t require any special skill, is easy to share and is available on most desktops. More advanced features such as Group and Outline can even simulate the opening and collapsing of a taxonomy in use which can be useful in testing.

**Documenting a website’s hierarchy**

Demonstrating a website’s hierarchy is an important step in documenting a website taxonomy. Whilst a spreadsheet goes some way to achieving this, a more visual method is a sitemap diagram (sometimes referred to as a blueprint).\textsuperscript{28}

A sitemap illustrates the structural perspective of the information available on a website and communicates the scope and purpose of the major elements. It should convey the associated behaviour or function of the elements at each level of the hierarchy (i.e. identify at what level in the hierarchy the user encounters actual content). A sitemap diagram also demonstrates the

\textsuperscript{27} A Quick Web 2.0 Glossary, Sixthings 2006, (www.brownbatterystudios.com/sixthings/2006/02/24/a-quick-web-2-0-glossary/)

\textsuperscript{28} See Appendix A – Example Diagrams for an example site map.
relationships between pages and other content components, and can be used to portray organization, navigation, and labelling systems.\(^{29}\)

**Determining the layout of the website**

Determining a website's layout is one of the primary tasks of IA. Generally, website layout is considered at the same time as classification and navigational structures.

**Definition: Wireframes**

> 'A wireframe...describes the contents of a web page by illustrating a mock layout.'\(^{30}\)

> 'Website wireframes are blue prints that define a web page’s content and functionality. They do not convey design – e.g. colors, graphics or fonts.'\(^{31}\)

A wireframe helps to convey the structural design of a website. It demonstrates the placement of key elements of the page and provides a means to explore a website’s potential layout including where functional, content and navigational features will be positioned.\(^{32}\)

Wireframes are an ideal tool to engage stakeholders in the design of the website and its IA, providing a means to explore options and test outcomes.

While it is not necessary to develop a wireframe for every page of a website, wireframes should be developed to demonstrate each unique page layout, for example the home page, a level 1 category page, a level 2 category page, a content page, a search result page and the help page.

**Developing a wireframe**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop hand-drawn wireframes</td>
<td>Given the explorative and iterative nature of determining a website’s IA, it can be beneficial to develop initial wireframes with a pen and paper or on a whiteboard. Hand drawn wireframes are also particularly useful exploration exercises with stakeholders.</td>
</tr>
</tbody>
</table>


\(^{30}\) *Where the Wireframes Are: Special Deliverable #3*, Dan Brown, Boxes and Arrows 2002 ([boxesandarrows.com/view/where_the_wireframes_are_special_deliverable_3](boxesandarrows.com/view/where_the_wireframes_are_special_deliverable_3))

\(^{31}\) *Web Site Wireframes, Samples, Examples*, Fat Purple 2007 ([www.fatpurple.com/2010/03/04/web-site-wireframes-samples-examples/](www.fatpurple.com/2010/03/04/web-site-wireframes-samples-examples/))

\(^{32}\) See Appendix A – Example Diagrams for an example wireframe.
### Step Description

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Translate into graphical wireframes</strong></td>
<td>When the hand-drawn wireframe provides a clearer vision of the layout it can be translated into a graphical mock-up. The graphical wireframe should illustrate placement of components and structural layout but not determine the visual design.</td>
</tr>
<tr>
<td><strong>The following steps are not IA tasks</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Translate into user interface design mock-ups</strong></td>
<td>After the wireframes have been approved a web designer/developer can translate the layout into user interface design mock-ups. These mock-ups comprise a more visual representation of the web pages, incorporating branding, images, colour themes and font styles.</td>
</tr>
<tr>
<td><strong>Translate into HTML mock-ups</strong></td>
<td>User interface design mock-ups are often translated into HTML mock-ups prior to website development. HTML mock-ups enable stakeholders to confirm how the final website will look prior to committing to the website development.</td>
</tr>
</tbody>
</table>

**Useful Classification, Navigation and Layout Resources**

- *Developing and Creatively Leveraging Hierarchical Metadata and Taxonomy*, Christian Ricci, Boxes and Arrows 2004  
  ([www.boxesandarrows.com/view/developing_and_creatively_leveraging_hierarchical_metadata_and_taxonomy](www.boxesandarrows.com/view/developing_and_creatively_leveraging_hierarchical_metadata_and_taxonomy))

- *How to create effective taxonomy*, Jie-Heng Morrison and others, ZDNet 2004  
  ([www.zdnetasia.com/how-to-create-effective-taxonomy-39190441.htm](www.zdnetasia.com/how-to-create-effective-taxonomy-39190441.htm))

- HTML wireframe template library, Roy Zornow  

  ([oreilly.com/catalog/9780596527341/](oreilly.com/catalog/9780596527341/))

- The Information Architecture Institute, IA tools  
  ([www.iainstitute.org/tools/](www.iainstitute.org/tools/))

- *Sketchy Wireframes*, Aaron T. Travis, Boxes and Arrows 2009  
  ([www.boxesandarrows.com/view/sketchy-wireframes](www.boxesandarrows.com/view/sketchy-wireframes))


- *Wireframe PowerPoint Parts* ([www.slideshare.net/graiz/wireframe-powerpoint-parts](www.slideshare.net/graiz/wireframe-powerpoint-parts))
Search model and behaviour

The role of IA in website search is not to select and implement a search engine but rather determine the search model and search behaviour that will support information/content discovery.

The key questions to answer in determining the internal search engine model and behaviour include:

**What are the users’ information discovery needs?**
- What content will users be looking for?
- What style of language (technical, natural, organisational etc) will users expect and what search terms will they use?

**What is the scope of the search engine?**
- Should an enterprise search model be used?
- Should the search engine be able to search the whole website or only parts of the website? Should the user be able to determine whether the search engine looks at all or part of the website?
- What should the search engine index? Should it search all content types, e.g. HTML, PDFs, documents, databases, image libraries etc?
- Should the search engine search both content and metadata?

**How should the search engine behave?**
- How will the identified audience groups interact with the search engine?
- What context will users bring to their search behaviour (subject matter expertise, search expertise, goals etc)?
- Based on the determined scope, which content resources should the search engine index?
- Should high profile, high priority content items be prioritised in search results, e.g. Best Bets?
- Can search results be refined or narrowed based on associated synonyms, related and/or narrower keywords (thesaurus)?
- Can stemming, substring matching, fuzzy matching (e.g. Did you mean ...?), wildcard search and Boolean operators be applied?
- Should the search engine offer advanced and/or fielded searches?

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33 Completed audience/user research and controlled vocabularies should be used to inform responses to this question.

34 Enterprise search addresses all websites, databases and content repositories within an organisation.


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Government Services Division

How should the search results page be presented?

- Should the search term remain in the search box after the results have been presented (recommended)?
- How many results should be displayed?
- Which elements should each search result display e.g. title (<title> or DC.Title), description (<description>, DC.Description or content extraction), URL etc?
- What other display elements are required?
- Should the search result page be wireframed?

The resulting search model and search IA will inform the visual designer in designing the search results page. They will also aid the business analyst(s) and technical team in determining functionality requirements and selecting of an appropriate search tool.

Usability testing

Usability testing is an iterative process that should be repeated at several stages in a website development or redevelopment process. It can offer valuable insights into the future success of an IA, particularly in ensuring it meets users’ needs and in revealing any flaws in the architecture, navigation or labelling of the website.

Good usability can secure strong user satisfaction and loyalty – resulting in increased usage and return visits – and should be considered a significant component of the IA design process.

Why test the usability of a website’s information architecture?

Usability testing the IA can reveal any flaws which might impede the discoverability of the website and users’ effective interaction with the website.

Usability testing the IA ensures users:

- can locate the information and services they need;
- can at all times identify where they are, where they have been and where they can go in a website;
- can understand the language and groupings used on the website and that they reflect the way users are likely to think about the information;
- recognise the elements placed on the page; and
- are presented with clear, relevant and valuable content.
Test usability regularly

*The most successful organisations conduct usability tests frequently; results are quickly integrated into the website, and the total cost of the testing program is smaller.*

What is a usability testing plan?

An IA usability testing plan describes an organisation’s approach to testing their IA.

There are six key components in the development of a usability testing plan:

1. defining the goals and scope of usability testing;
2. designing the testing program;
3. obtaining user input to the information architecture;
4. conducting the testing program;
5. analysing test results and determining implications; and
6. gaining stakeholder acceptance of user input to the design.

Some organisations have one formal usability testing plan and others have several – often more informal – testing plans. The approach adopted by a particular organisation will depend on the time, resources and costs available and the business risks associated with the website and its IA.

Some usability experts argue that the development of a usability culture characterised by frequent, small, inexpensive in-house testing can deliver results comparable to, or exceeding, those of more formal usability testing. In this culture-of-usability model, the tests are run on a regular, fixed schedule (once a month or more) with a small number of users, where any aspect of the website can be tested, e.g. design, performance, task completion.

Defining the goals and scope of the testing

Usability goals set out how the IA must function in order to support the business and user goals.

Usability goals underpin the overall design and interactions available on a website and should be established early in the design process; they should always be measurable and specific.

Usability goals have three attributes:

- **performance** (what should the user be able to do?);
- **conditions** (under what conditions should the user be able to do it?); and
- **criteria** (how well must it be done?).

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36 *The Culture of Usability*, Janice Fraser 2002 ([www.ddj.com/architect/184411669](http://www.ddj.com/architect/184411669))

IA features that require testing include:

- **design** (page design, readability, layout, graphics, scrolling);
- **finding information** (navigation, category names, links);
- **understanding information** (content quality and presentation); and
- **search** (quality of search results).

### Selecting appropriate user testing methods

There are a wide variety of methods that can be employed in user-testing an IA, including:

- **Cognitive walkthrough** A cognitive walkthrough is the breakdown and analysis of actions that a user must perform in order to use the system or perform a task.

- **Focus groups** Focus groups are a group of individuals brought together to discuss their personal experiences and views on the subject given to them for review, e.g. completing a task on a website. Focus groups can be useful for raising issues that may not come out during interviews and are excellent when cost and time are issues.

- **GOMS** GOMS (Goals, Operators, Methods and Selection rules) is a model for observing human computer interaction.  

- **One-on-one interviews** One-on-one interviews explore specific aspects of website presentation and functionality with users.

- **Prototyping** Prototyping involves developing representations of a system for testing purposes and can range from simple sketches to interactive, functional systems.

- **Scenario-based tasks** Scenario-based testing presents users with a task to complete – including a fixed start and end point – and asks them to map out how they would achieve the task. The information gathered from this exercise can be used to validate and/or improve the IA. Scenario-based testing is appropriate for testing all aspects of the website IA.

- **Task analysis** Task analysis is the evaluation of what steps and actions a user takes to achieve a particular goal. During this process an analyst watches a user complete their task from starting point to end point and makes observations and recommendations aimed at increasing efficiency and user-friendliness.

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38 See Wikipedia for further definition ([en.wikipedia.org/wiki/GOMS](en.wikipedia.org/wiki/GOMS)).

Usability inspection

Usability inspection is the review and test of a design – according to specific guidelines, inputs and/or outputs – typically conducted by experts.

User testing

User testing requires users to perform tasks on a website under the observation of usability experts that report and analysing their actions.

Developing test methods

The selection and preparation of test methods for inclusion in a testing program should be informed by research and evidence related to the website audience/users and stakeholders, such as:

- search terms;
- site statistics (path analysis and usage patterns);
- consumer/user research;
- stakeholder and/or business owner research;
- benchmark industry websites;
- audience interaction models;
- call centre queries; and
- shopfront queries.

Determining acceptable performance and how results will be collected

Consider and document the measures of acceptable performance and how they will be recorded so that recording is accurate and objective.

Data collection

Data can be collected through:

- observation;
- measuring task completion;
- interview;
- discussion assessments; and
- written assessments.
Usability testing tools  
IA usability testing tools include:

- index cards;
- paper prototypes;
- wireframes;
- storyboards; and
- interactive prototypes/ mock-ups.

Data collection tools  
Data collection tools include:

- logging sheets;
- questionnaires;
- observation checklists;
- audio tapes;
- tracking software;
- videotaping; and
- observation rooms/laboratories.

Obtaining user input on the information architecture

Effective usability test results are reliant on the appropriate selection of participants. Returning to the audience profiles documented in the IA plan will help in identifying the types of users that should be engaged to participate in user testing. Considerations include:

**Types of users to test**  
Users should be selected carefully and represent the intended audience groups. The user selection criteria can be less definitive in informal testing; however care must still be taken to ensure impartiality and limited familiarity with the organisational perspective. Users who have no knowledge of the subject domain being tested are generally more likely to identify flaws in the IA than those who are familiar with the area.
Number of users to test

Usability testing can involve large groups of users, particularly if there are several distinct audience/user groups. While some projects may allow for this type of extensive user testing, similar results may be able to be achieved with smaller numbers of participants using an iterative approach.40

In any case, the number of users and tests used should be influenced by the complexity of the information architecture, the range of user audiences/groups available resources and funding and the business risk associated with the site.

Conducting the testing program

Identify roles and responsibilities

Typical roles identified in this step are:

Facilitator

The facilitator:

- organises the testing program;
- conducts a test run-through;
- in some instances, confirms the participants, location, equipment and the participant incentive;
- introduces and contextualises the test session;
- establishes the test parameters;
- introduces the observers (if relevant); and
- closes the session.

Participant

The participant engages with the activities, questions and procedures in the test tool.

Observer/scribe

The observer/scribe focuses on documenting the user experience noting responses and summarising user comments.

Observer

The observer focuses on observing the activities of the participants during testing.

40 Nielson, Jakob (2000) Why You Only Need to Test with 5 Users

(www.useit.com/alertbox/20000319.html)
Facilitating the testing program

When considering the facilitation of the testing program, ensure that:

- the number of users and the resource requirements align with the scale of the testing program;
- the venue selected is fit for the purpose;
- the equipment to be used, e.g. computers, video and audio recorders, has been tested and is ready for use;
- the tests have been trialled in a test run-through to deliver the most useful results from the testing activity;
- debrief opportunities are available for users and observers; and
- privacy requirements are observed.

Analysing test results and determining implications

Usability testing outcomes should be documented in a report to guide ongoing change and development.

Testing the IA will likely identify a list of issues, problems and areas of user frustration. These items should be prioritised according to a sliding scale, reflecting the impact on the overall usability of the website and specifically on the way users find information on the website. Typically the scale would rate issues as:

**High**

These are fundamental usability problems that prevent the completion of tasks, e.g. discoverability of information. They may require a substantial review of the IA and should be addressed immediately. Once they have been addressed, the modified IA must be tested again prior to ongoing development.

**Medium**

These are usability problems which create frustration or confusion, e.g. misunderstood terms, terminal pathways. They should be addressed immediately and receive localised testing.

**Low**

These are low impact issues that will not delay other development activities but should be addressed prior to the launch of a new or redeveloped website.
Useful Usability Testing References

- Usability First, usability methods reference (www.usabilityfirst.com/usability-methods/)
- Usability Methods Toolbox, James Hom (usability.jameshom.com)
- Professional Website Usability, Lauren Kirby, Sitepoint 2000 (www.sitepoint.com/article/website-usability)
- Sitepoint, Usability and information architecture resources (www.sitepoint.com/subcat/usability)
- Jakob Nielsen (www.useit.com)
- Society for Technical Communication, Topics in Usability reference (www.stcsig.org/usability/topics/index.html)
- uzReview (uzilla.mozdev.org/heuristicreview.html)
Phase: Website design

Overview

Definition: website design

Web design is the skill of creating presentations of content (usually hypertext or hypermedia) that is delivered to an end-user through the World Wide Web, by way of a Web browser or other Web-enabled software... 

The aim of this phase is to translate the information architecture (IA) design into a user interface design. While the development of a website design is outside of the scope of IA, the information architect often works closely with the designer, refining the IA as the website design is progressed.

Outcomes from this phase

Key tasks and deliverables in the website design phase generally include:

- design of the user interface, incorporating the IA, branding/image elements, text, graphics, page and navigational elements;
- refinement of the IA to reflect design changes;
- usability testing the user interface design and the information architecture;
- review of the website design for compliance with relevant standards; 
- preparation of a visual style guide; and
- preparation of a content writing and publishing guide.

This phase should produce mock-ups and/or HTML templates that demonstrate the information architecture and the user interface design.

Once approved, the user interface design will be provided to website developers for the build process and the information architect will cease to have any responsibility or influence.

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Phase: Operational management

Overview

A website’s information architecture (IA) requires ongoing monitoring, maintenance and, where required, changes.

The ultimate aim of managing change and growth in a website is to ensure that it remains relevant to users and that there is continuous improvement of the discovery experience. Planned and governed maintenance ensures that a website continues to deliver on its objectives and that any changes or expansions to it take place according to agreed processes and terms.

Outcomes from this phase

This phase addresses how to manage an IA throughout its lifecycle, particularly:

- monitoring and managing change;
- ongoing tasks; and
- review.

IA monitoring, maintenance and change management

An IA should respond to and reflect the changing needs of the user and the business using both proactive and reactive approaches. Consideration of IA monitoring, maintenance and change management – both initially, and on an ongoing basis – is critical to this process.

Initial tasks

Determine the process for IA monitoring and maintenance

- Specify IA monitoring requirements – what will be monitored, how it will be monitored and with what frequency it will be monitored.
- Specify reporting requirements – what will be reported on, who it will be reported to and with what frequency it will be reported.
- Define and implement website statistical capturing and analysis.
- Define the archiving strategy – how will IA components be archived and where will they be archived to.
Determine the process for IA change management

Define and implement IA change management processes, including:

- when changes may be made;
- how changes will be assessed for impact;
- how changes will be grouped into change types and how each type will be managed;
- the workflow and approval cycle; and
- who will quality check and approve changes.

Identify key impacts/ opportunities

Scan both internal environments (business/organisational) and external environments (machinery of government, political, economical, technological and cultural) to identify issues, events and/or activities (current and future) that could impact upon or be harnessed as an opportunity for the website.

**Tools:** Tools for formal review include PEST Analysis. 44

Ongoing tasks

Throughout the lifecycle of the website, owners must be vigilant in managing and reviewing changes to the IA and synthesizing the findings from their reporting to ensure the IA is continuing to meet the needs of users.

Review past changes

Review changes made to the website’s IA that may have impacted how the website is used.

**Frequency:** Formal review should be undertaken annually; more informal reviews should be conducted monthly or as required.

**Tools:** IA Plan, 45 change management schedule.

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43 Ideally changes should be classified as either minor fixes (fixing an identified issue), minor changes (changes that have a low impact and do not require usability testing), moderate changes (changes that may have a medium impact and might require usability testing) or major changes (changes that may have a high impact, and will require usability testing). Major changes should ideally be grouped together for completion under the structural rigour and governance of a formal project.

44 [www.mindtools.com/pages/article/newTMC_09.htm](http://www.mindtools.com/pages/article/newTMC_09.htm)

45 Information Architecture plan template (WEB/TEMP/02)
Review key impacts/ opportunities

Review new and existing impacts and opportunities and update any documented register accordingly.

**Frequency:** Formal review should be undertaken annually; more informal reviews should be conducted monthly or as required.

Review website statistics

Undertake a review of the available website statistics focusing on identifying patterns of usage and behaviour and comparing statistics from one reporting period to the next, e.g. year to year, month to month. Particularly consider:

- **Usage statistics**
  - What do the key usage metrics indicate, e.g. page views?
  - How many users are there on a daily, weekly, monthly or yearly basis?
  - How does usage compare to previous years?

- **Search term analysis**
  - Are users’ search terms/phrases consistent over time?
  - Are there any unexpected search terms used?
  - Are there any consistent patterns?

- **Path analysis**
  - Which are the most and least popular browse paths?
  - How does the path usage compare over time?
  - Are there any consistent patterns?

- **Content usage**
  - Which are the most and least visited content pages?

**Frequency:** Formal review should be undertaken annually; more informal reviews should be conducted monthly or as required.

**Tools:** Web analytics tools.  

Compare changes and key impacts to web statistics

Compare the reviewed changes and identified key impacts to the analysed web statistics looking for connections. Have particular changes (e.g. labelling adjustment) or key impacts (e.g. external event) affected the website statistics?

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46 See en.wikipedia.org/wiki/List_of_web_analytics_software
Identify and implement IA changes

Using the review, analysis and comparison from prior steps, identify and implement IA changes according to their types, e.g. minor fix. Document all changes to the IA in an IA change management schedule as part of the IA plan.

Useful IA Monitoring, Maintenance and Change Resources

- PEST Analysis (www.mindtools.com/pages/article/newTMC_09.htm)
- Web Analytics and Information Architecture, Hallie Wilfert, FUMSI 2008 (web.fumsi.com/go/article/manage/3460)
Social information architecture

**Definition: Social information architecture**

‘Shared design of semi-structured information environments.”

Social information architecture (IA) is an emerging area of IA practice combining the two fields of IA and social media. Social information architecture focuses on user generated information structures which allow users to create and self-classify content, such as blogs, tagging websites and wikis.

**What is the role of information architecture in delivering social media?**

Social media offers considerable benefits from its organic approach to content creation and delivery. However, like any other information repository, organic and uncontrolled growth of content can result in compromised information discovery and a compromised user experience.

The role of the information architect in social IA is to mitigate these potential threats and ensure that:

**Social media provides a means of social engagement**

- Social media must meet the needs of its users. Users must have a reason for wanting to use your social media environment.
- Social engagement is reliant on relationships and trust. Users must be able to trust your environment for it to succeed.
- Social media should not just be another channel for push communications.

**Users understand the intent of each engagement point**

- Users must be able to understand the intent of the social media engagement point, and the information they will discover.
- Social media items should be clearly defined/described, i.e. metadata.

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47 See Social Information Architecture Workshop (www.slideshare.net/gsmith/social-information-architecture-workshop)
Social media use fits into the broader business and information architecture objectives

- Social media implementations should have a:
  - clear business intent, and not be provided purely for the purpose of being seen to have social media touchpoints;
  - clearly defined information and/or interaction goal; and
  - clear alignment with business and IA objectives.

There is consistency in presentation

- Social media within an organisation should:
  - be consistent in presentation, layout and user interface design; and
  - have a clear, organisationally-aligned visual identity.

Users are taken on a journey

- The uninitiated must be assisted and made able to find what they are looking for.
  - The experienced user should be able to fast-track their interactions as required.
  - Information must be easily discoverable through content aggregation, classification (assisted self-classification\(^{48}\)), navigation, tagging and search.

There is clear governance

- Information sensitivity and risk should be assessed to determine the need for moderation.

Useful social information architecture references


- *Social Information Architecture Workshop* ([www.slideshare.net/gsmith/social-information-architecture-workshop](http://www.slideshare.net/gsmith/social-information-architecture-workshop))


---

\(^{48}\) Assisted self-classification can be achieved through a self classification ‘history’, for example providing users with predetermined tags or categories.
### Glossary of terms and abbreviations

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Australian Government Locator Service (AGLS)</strong></td>
<td>The Australian Government Locator Service (AGLS) metadata standard (AS5044) recommends and outlines the use of descriptive metadata elements. These elements are used by government departments and agencies to describe resources published on the internet. AGLS is based on Dublin Core (ANSI/NISO Z39.85-2001), the leading international standard for interoperable online metadata.</td>
</tr>
<tr>
<td><strong>Authority file</strong></td>
<td>An authority file is a controlled vocabulary containing preferred and variant terms. For example, an authority file might contain the terms ‘ABC’, ‘Australian Broadcasting Corporation’ and ‘Aunty’ with ‘Australian Broadcasting Corporation’ identified as the preferred term and the other terms identified as variant terms.</td>
</tr>
<tr>
<td><strong>Card sorting</strong></td>
<td>Card sorting is an exercise that can be used to help create a controlled vocabulary. In a card sort, users are asked to group cards into like categories or to name categories of like items. Card sorting can be used to compile lists of variant terms or to verify the relationships in a hierarchy. (^{49})</td>
</tr>
<tr>
<td><strong>Content inventory</strong></td>
<td>A content inventory is the process and result of cataloguing the contents of a website. (^{50})</td>
</tr>
<tr>
<td><strong>Controlled vocabularies</strong></td>
<td>Controlled vocabularies are lists of standardised and approved terms that can be used to assist in categorising information, classifying content, developing navigational elements, indexing and the retrieval of information.</td>
</tr>
<tr>
<td><strong>DC</strong></td>
<td>See Dublin Core.</td>
</tr>
<tr>
<td><strong>Discoverability</strong></td>
<td>The extent to which a website and its content is able to be found by users, independent of the method employed i.e. whether using the website’s search tool/navigation or an external search engine.</td>
</tr>
<tr>
<td><strong>Dublin Core</strong></td>
<td>A small group of metadata elements that can be used to describe and catalogue resources, e.g. web pages.</td>
</tr>
<tr>
<td><strong>HTML</strong></td>
<td>Hyper Text Markup Language - a markup language used in the creation of web pages.</td>
</tr>
</tbody>
</table>

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\(^{49}\) [www.boxesandarrows.com/view/controlled_vocabularies_a_glosso_thesaurus](http://www.boxesandarrows.com/view/controlled_vocabularies_a_glosso_thesaurus)

\(^{50}\) [en.wikipedia.org/wiki/Content_inventory](http://en.wikipedia.org/wiki/Content_inventory)
<table>
<thead>
<tr>
<th>Information architecture (IA)</th>
<th>The Information Architecture Institute defines IA as:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>■ the structural design of shared information environments;</td>
</tr>
<tr>
<td></td>
<td>■ the art and science of organizing and labelling web sites, intranets, online communities and software to support usability and findability; and</td>
</tr>
<tr>
<td></td>
<td>■ an emerging community of practice focused on bringing principles of design and architecture to the digital landscape.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interaction design</th>
<th>The process and result of creating an interface that facilitates users’ goals and tasks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labelling</td>
<td>Labelling is the systematic application of terms used to describe content objects. Labelling is performed in conjunction with grouping and is part of the process of organising.</td>
</tr>
<tr>
<td>Metadata</td>
<td>Data which describes the content or information displayed on a website page.</td>
</tr>
<tr>
<td>Schema</td>
<td>A schema is a model for describing the structure of information.</td>
</tr>
<tr>
<td>Site map</td>
<td>A site map lists or diagrams all pages within a website. Site maps can be used in the planning stages of a website, e.g. to inform the information architecture, and as another form of navigation within an active website.</td>
</tr>
<tr>
<td>Storyboards</td>
<td>Storyboards are a series of graphic representations displayed sequentially to convey interactions and options throughout an activity.</td>
</tr>
<tr>
<td>Synonym ring</td>
<td>A synonym ring is a controlled vocabulary containing equivalent terms, e.g. David, Dave and Davo.</td>
</tr>
<tr>
<td>Task analysis</td>
<td>Task analysis is the evaluation of what steps and actions a user takes to achieve a particular goal. In a user-testing setting, an analyst observes a user completing a task from starting point to end point and makes observations and recommendations aimed at increasing efficiency and usability.</td>
</tr>
<tr>
<td>Taxonomy</td>
<td>A taxonomy is a controlled vocabulary organised into a hierarchical structure.</td>
</tr>
</tbody>
</table>

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| **Thematic/portal website** | A thematic website contains content focused on a particular topic.  
A portal website presents information from diverse sources in a unified way, often providing outbound links for users to access further information.  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thesaurus</strong></td>
<td>A controlled vocabulary that contains both preferred and variant terms. Thesauri exhibit hierarchical (broader to narrower), associative (related) and equivalent (similar) relationships between terms.</td>
</tr>
<tr>
<td><strong>Usability</strong></td>
<td>Usability is the study of the ease with which people can use a thing, e.g. a website, to achieve a goal.</td>
</tr>
<tr>
<td><strong>Use case</strong></td>
<td>A (business) use case describes the process a real world actor, e.g. a person, organization, or external system, follows to achieve a goal, e.g. make a payment.</td>
</tr>
<tr>
<td><strong>User profile</strong></td>
<td>A user profile is a collection of data/information which identifies a user or user type.</td>
</tr>
<tr>
<td><strong>Wireframe</strong></td>
<td>Wireframes are graphical representations of layout, page level navigation, content types and functional elements. Wireframes are used to provide an indication of the users' visual and navigation experience and to inform the visual design.</td>
</tr>
<tr>
<td><strong>WMF</strong></td>
<td>Website Management Framework.</td>
</tr>
<tr>
<td><strong>WMT</strong></td>
<td>Website Management Taskforce. Each department and inner-budget agency (Environmental Protection Agency, State Revenue Office, VicRoads and Victoria Police) maintains a WMT to manage their internal web activity and administer the WMF.</td>
</tr>
<tr>
<td><strong>XML</strong></td>
<td>Extensible Markup Language – a flexible language / specification used to share structured data between systems.</td>
</tr>
</tbody>
</table>

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54 Adapted from *Controlled Vocabularies: A Glosso-Thesaurus*, Leise, Fast and Steckel, Boxes and Arrows 2003 ([www.boxesandarrows.com/view/controlled_vocabularies_a_glosso_thesaurus#thesaurus](http://www.boxesandarrows.com/view/controlled_vocabularies_a_glosso_thesaurus#thesaurus)).

Appendix A – Example diagrams

Site map

Figure 4 - Site map example (www.orarian.com/documents/Sample_Sitemap.pdf)
Flow diagram

Figure 5 - Flow diagram example 1 (www.leacock.com/deliverables/flow_ext.pdf)
AIM - Sign-Up, Download, and Sign-in | Block Flow Diagram
Rich Fuller
10 June 2012

START:
User goes to get a screen name at www.dtf.vic.gov.au/cio or is directed there by clicking "Get a Screen Name" from AIM client's Sign-On window.

1. Create Your Screen Name (normal)

User enters:
Desired Screen Name
Password and confirmation
Email address
Birthdate

Password and confirmation match and password is valid

1. Create Your Password (password in AIM)

User enters password and confirmation

Is user under age 18?

Children under 18 may not register for AIM without notification

Process Ends

Is email address in valid name@domain format?

There is a problem with the email address you entered

User enters email address

Is screen name available? 

1. Create Your Screen Name (PREVIOUS CHOICE PLEASE)

Choose another screen name or use keywords to get suggestions

User enters screen name

Email: Thanks! Please reply to confirm registration

Is AIM client installed?

Congratulations, you are registered for AIM

Download and install AIM client

No download option

Congratulations, you are registered for AIM

Download and install AIM client

Add new screen name to AIM client?

Process Ends

Figure 6 - Flow diagram example 2 (www.leacock.com/deliverables/block_diagram_ext1.pdf)
Wireframes

Figure 7 - Hand Drawn Wireframe (http://netdna.webdesignerdepot.com/uploads/wireframes/1.jpg)

Figure 8 - Graphic Mock-up (www.flickr.com/photos/activeside/2192411612/)
### Typical Wireframe

Figure 9 - Wireframe example ([tainstitute.org/tools/download/LombardiWireframe.pdf](http://tainstitute.org/tools/download/LombardiWireframe.pdf))
Use case

This scenario describes normal elevator operation when the user desires to go to another floor.

1. User presses Up floor button on bottom floor to request elevator. User wishes to go to floor 2.
2. Up floor button is turned on.
3. Elevator arrives at bottom floor.
4. Up floor button is turned off.
5. Elevator doors open, and the user enters.
6. User presses button for floor 2.
7. etc.

Figure 10 - Use case diagram example (www.agilemodeling.com/artifacts/useCaseDiagram.htm)

<table>
<thead>
<tr>
<th>Scenario Number</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Active</td>
</tr>
<tr>
<td>Creation Date</td>
<td>10/06/09</td>
</tr>
<tr>
<td>Last Update</td>
<td>10/06/10</td>
</tr>
</tbody>
</table>

Description

This scenario describes normal elevator operation when the user desires to go to another floor.

Step | Action
--- | ---
1   | User presses Up floor button on bottom floor to request elevator. User wishes to go to floor 2.
2   | Up floor button is turned on.
3   | Elevator arrives at bottom floor.
4   | Up floor button is turned off.
5   | Elevator doors open, and the user enters.
6   | User presses button for floor 2.
7   | etc.

Figure 11 - Use case scenario template
Sequence

Figure 12 - Sequence Diagram
(www.conceptdraw.com/products/img/Screenshots/uml/UML_Sequence-diagram.gif)
Interaction model

Figure 13 - Interaction Model example, prepared by iFocus for Consumer Affairs Victoria
Appendix B – References

Governing standard


Related guidelines

- None

Related policies and standards

- Discoverability (WEB/STD/01)
- Accessibility (WEB/STD/05)
- Consistent User Elements (WEB/STD/06)
- Minimum Information Provision (WEB/STD/09)