



# Designing the information architecture of a complex website: A strategy based on news content and faceted classification



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## ABSTRACT

Information architecture (IA) is an essential component of a website, and its design significantly impacts the user experience. Within complex, large-scale organizational settings, the practice of IA must address a number of critical management issues. This paper describes a pilot action research project whose aim was to develop and test a model for designing the IAs of complex institutional websites. The resulting model is based on the strategic use of news content organized in accordance with a faceted classification approach. The model was piloted during the redevelopment of the website of the Istituto Zooprofilattico Sperimentale delle Venezie (IZSve), a large Italian healthcare and research organization. Based on the collected data, the proposed IA model was found to effectively manage the website and to greatly reduce the need for structural changes in the 12 months after the intervention. The model also permits the collection of web analytics data that can be useful for web content editors and organization managers. Further research will be needed to validate or improve the model.

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## 1. Introduction

Information architecture (IA) refers to the structuring of a digital information space to provide users with simple, intuitive access to content and functions (Garrett, 2010; Rosenfeld & Morville, 2006). The IA of a website significantly influences its usability and the user experience during navigation (Nielsen & Loranger, 2006). To quote Maloney and Bracke (2004), “website design adds presentation and graphical elements to Information Architecture to create the user experience” (p. 146). Thus, IA is the fundamental dimension that determines the ability to communicate effectively through a website.

Web analytics, i.e., the collection and analysis of website usage data, is one of the most widely implemented methods of capturing website performance (Järvinen & Karjaluoto, 2015). Web analytics is widely applied to e-commerce websites to measure their performance through a comparison between navigation data and sales data (Welling & White, 2006). By contrast, for institutional websites, where the goal is to communicate brand-building content and disseminate information, web analytics is used to determine the visibility and use of content (Plaza, 2009, 2011). Web analytics

data are useful for improving the IAs, editorial management practices and overall usability of websites (Fang, 2007; Shackel, 2009; Wiggins, 2007).

This paper describes a pilot action research project conducted with the aim of building a model for designing the IAs of institutional websites for large and complex organizations. The resulting model was piloted during the redevelopment of the website of the Istituto Zooprofilattico Sperimentale delle Venezie (IZSve), an Italian research and healthcare organization. After the intervention, the editorial management of the website was monitored for 12 months, both through participant observation by the researchers and through the use of web analytics tools.

## 2. Theoretical background: information architecture in complex organizations

Based on a widely shared definition in the literature (Garrett, 2010; Rosenfeld & Morville, 2006), this article uses the term IA to refer to the structural planning of a website's information space, which comprises three systems: 1) a system for organizing content into pages and managing the relationship between them (*organization system*), 2) a system for enabling users to move from one page to another (*navigation system*), and 3) a system for naming pages and navigation functions (*labeling system*).

Hierarchical and faceted classification are two of the main organization systems described in the IA literature (Garrett, 2010;

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Rosenfeld & Morville, 2006; Sklar, 2012). In a hierarchy (or taxonomy), web content is organized in pages and page groups (sections) that are linked to each other by relationships of parental or hierarchical dependency (mother page/child page, section/subsection). Users navigate from the most general, higher-level pages to more specific, deeper pages, or vice versa. The layout and labeling of the navigation elements for similar pages and sections must be coherent and consistent to facilitate navigation and avoid confusing users (Nielsen & Loranger, 2006). User navigation and orientation can be supported through the use of secondary menus and breadcrumb crumbs that specifically indicate the hierarchical position of the page on which the user has landed (Levene, 2010; Schall, 2014). Strict taxonomies are mutually exclusive, i.e., content published in one section cannot also be listed in another section; by contrast, polyhierarchies allow the same content to be listed in more than one place. Polyhierarchies are common in large-scale websites, although they can be challenging to clearly represent through their navigational elements (Rosenfeld & Morville, 2006) and can disorient and confuse users about the overall structure of a website (Batley, 2007; Nielsen, 2009).

In faceted classification, each content unit is associated with one or more metadata categories (Rosenfeld & Morville, 2006). Navigation elements enable users to view indexes of the content associated with specific metadata categories, which are presented according to various sorting criteria. Each content unit can be associated with various metadata categories and may appear in different indexes. The metadata categories can, in turn, be organized into hierarchically related groups to form metadata systems that classify particular content attributes. Metadata systems and faceted classification are central to e-commerce websites, which allow users to navigate product pages based on many different indexes, as determined by the metadata categories with which these pages are associated (e.g., product type, color, and size) and by various sorting methods (e.g., publication date, price, or popularity). Faceted classification is thus a method for effectively organizing content with multiple taxonomies and for avoiding the construction of polyhierarchies, although it has its own limitations. Faceted structures are, in fact, based on predetermined hierarchies of facets and controlled vocabularies; consequently, they cannot be used to manage heterogeneous or ambiguous information. Alternative organizational approaches are being developed in the IA literature and in practice to overcome this limitation (e.g., tagging and folksonomy; Rosenfeld & Morville, 2006), although in the model we propose in this paper, we chose to use only hierarchy and faceted classification.

From a different perspective, other researchers have also examined the implementation of IA within large organizations (Burford, 2011, 2014; Eschenfelder, 2003; Robertson, Hewlett, Harvey & Edwards, 2003). These field studies showed that, in practice, the IA of an institutional website is not based solely on the application of theoretical principles, guidelines and best practices but rather is the result of a continuous process of conflict and negotiation between the website designers and managers (e.g., communication and marketing offices, web teams) and other subunits or members of the organization (business units, departments, managers, heads, colleagues) who are concerned with defining what should be communicated through the website. In particular, Eschenfelder (2003) found that in large organizations whose various subunits have different clients and target groups, IA design and maintenance staff must mediate divergent, conflicting requests related to the definition of homepage content, content layout, page graphics and links in navigation menus. These studies have reappraised the role of the theoretical models and principles reported in the specialist literature on efficient IA development and have placed them in a broader practical, cultural and organizational setting (Burford, 2014).

However, this reappraisal does not detract from the usefulness of such guidelines and references for IA researchers and profession-

als. As emphasized by Morrogh (2002), IA design is the result of a deliberate process that may be based on knowledge and expertise acquired through professional practice but is also supported by the development of more theoretical and scientific design methods. Burford has also noted that “expertise in web IA and the knowing of theory and best practice methods will, at times, give way to negotiating with the business and conceding to the dictates of more powerful stakeholders” (Burford, 2014; p. 2032). General theories and models of website IA can aid designers and developers not only because they serve as reference guidelines but also because they give the designers and developers more power to manage negotiations, conflicts and operational activities related to the practice of IA.

Based on the above theoretical references, this paper defines a complex institutional website as a website of a large organization that is designed to promote a brand and/or to disseminate information and is characterized by 1) a wide, heterogeneous array of topics addressed and content provided; 2) heterogeneous target audiences and user groups to whom the content is directed; and 3) content produced by and/or relating to various subunits within the organization. The specialist literature on IA indicates that complex institutional website management is confronted with the following issues:

- Hierarchies often hinder user access to the site’s deepest content, where the most detailed and relevant information may be found. The IA literature thus encourages the adoption of a broad and shallow architecture (Rosenfeld & Morville, 2006). Large organizations that are concerned with complex, heterogeneous topics may nonetheless be forced to maintain a certain level of depth in the hierarchical organization of their content.
- Many website managers complain of long-term IA management problems resulting from the continual need to extend or modify the originally designed website architecture, stressing that said activity is subject to continuous redefinition, requires constant maintenance and places a strain on time and resources (Burford, 2014; Eschenfelder, 2003).
- The home page and navigation menus play an important strategic role in communicating the IA to users. However, the literature reveals that the task of defining the homepage content and the links provided in the menus constitutes the main focus of negotiations and compromises between IA managers and internal stakeholders (Eschenfelder, 2003). In practice, theoretical principles and best practices are often neglected, and the homepage becomes filled with links that redirect users to other pages, making it difficult to keep the homepage layout uncluttered and coherent (Nielsen & Loranger, 2006).
- Organizations struggle to identify indicators and approaches for measuring efforts to edit websites that are used as content marketing platforms to disseminate information (Lieb, 2011; Rancati & Gordini, 2014; Welling & White, 2006).

### 3. Proposed model: an effective IA model for complex institutional websites

The aim of the research project described in this paper was to develop an IA model that is designed to minimize the typical problems related to complex institutional websites while addressing the various needs of the stakeholders who are involved in communicating through this type of website (e.g., users, organization, subunits and staff, and web managers). The objective of the model is to enable the design of a website that is an effective, user-friendly communication tool that the organization can simultaneously manage efficiently. We developed the model based on the strategic use of news content and faceted classification. Specif-

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