



Understanding Information Architecture

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Introduction

The practice of information architecture (IA) is famously tough to describe, ironic for a practice that is fundamentally about, as its pioneer Richard Saul Wurman said, “making the complex clear.”¹ This is due in no small part to the fact that over the past several decades, different groups of professionals have independently arrived at the term “information architecture” to describe what they do. Furthermore, although many people acknowledge the value in the strategic vision that information architecture brings to any project, it can be a challenge to situate IA in the design process or to understand how an upfront investment in structuring and organizing one’s information can reap benefits far into the future.

As emerging professionals new to practicing information architecture at Precision Content Authoring Solutions Inc., we sought to better understand the current state of the practice and how to apply its tools, methodologies, and perspectives to current problems in the digital sphere. We accomplished this by revisiting the foundational texts in the discipline, attending conferences, as well as interviewing noted experts.

In this article, we will delve into the history of information architecture, explore tactics for overcoming difficulties in aligning this important work with a bigger picture strategy, and discuss the role IA plays in developing content for a variety of emerging technologies.

The Evolution of Information Architecture

Information architecture has changed significantly since it was first defined by Richard Saul Wurman in 1976.¹ In this article, we want to look at how information architecture has evolved over the decades, its current practice, and what the future looks like to better position ourselves as industry leaders.

Let us begin with a brief overview at the evolving nature of the field and see how the modern understanding of information architecture synthesizes a variety of approaches to guiding the user toward useful and understandable information.

Information Design (1970s)

Humans have been organizing information for as many years as there have been documents and artefacts, but it was not until 1976 that the phrase “information architecture” first emerged.² Richard Saul Wurman, an architect in the traditional sense, first used the term during an address to the American Institute of Architecture. This term came to refer to the practice of arranging pieces of information on a page to best explain a concept to a reader.

In 1997, when Wurman finally expanded on this idea in his book *Information Architects*, he described such an architect as one who “makes the complex clear.” Wurman filled his book with many artefacts from this approach: visually appealing charts, maps, graphs, and infographics.

Although Wurman titled his idea “information architecture,” it would be best understood nowadays as information design, a subdiscipline of visual design. However, Wurman’s broad definition of information architecture was cogent and would end up proving worth returning to in the coming decades.

Information Systems (1980s)

In the 1980s, another group of professionals began using the term “information architecture” to describe their work. The explosion in businesses and organizations adopting information technology for the first time led to a need for careful planning and organization of computer systems so information



could be reliably accessed and shared throughout an organization.³ Nowadays, this work would be more readily referred to as systems analysis or enterprise architecture, although to this day there is no shortage of job listings with the title “information architect” that refer to this understanding of the term.

Information Architecture for the World Wide Web (1990s)

During the dot-com boom in the late 1990s, library school graduates Peter Morville and Louis Rosenfeld established a consultancy called Argus Associates Inc. Their novel approach was to use library science principles such as taxonomy and wayfinding to help organizations make sense of and organize the information on their websites. Morville and Rosenfeld found that using the metaphor of architecture best helped them explain their work to clients. With an eye for users, content, and context, a given website’s “information architecture” created the foundational structures that allow users to successfully navigate and find the information they need.⁴ The two published their book *Information Architecture for the World Wide Web* in 1998 (one year after Wurman’s *Information Architects*—although Morville and Rosenfeld would not learn about Wurman or his coining of the phrase until later) to great success; it was named *Amazon.com*’s “best computer book of 1998.”⁵ Affectionately referred to as the “Polar Bear book” because of the animal on its cover, *Information Architecture for the World Wide Web* has since gone through several editions and remains the foundational textbook for the discipline. Its success wrested the term “information architecture” away from the IT-oriented systems architecture world and established it as a necessary phase of any website’s user experience design. (Sometimes this narrow, library science-focused side of information architecture is referred to as “little IA.”)

Pervasive Information Architecture (2010s)

Information architecture went through a bit of an identity crisis in the 2000s with the wild success of search engines. If users could easily find what they needed with a quick Google search, was there still a need for consultants to thoughtfully label items on a website’s navigation? This led to an expanded conception of information architecture, this time leaning into the “architecture” metaphor. As described in *Pervasive Information Architecture: Designing Cross-Channel User Experiences* by Andrea Resmini and Luca Rosati, careful use of language and labelling does more than merely help users find the content they are looking for; it also creates a “sense of place,” orienting users in a digital ecosystem where a website may only be one channel in the overall experience. (Sometimes this broad, UX-focused conception of information architecture is referred to as “big IA.”)



Comparison of the Perspectives on Information Architecture

	Information Design	Information Systems	IA for the Web (or “little IA”)	Pervasive IA (or “big IA”)
Decade	1970s	1980s	1990s	2010s - Present
Concerned with...	<ul style="list-style-type: none">• Infographics• Page layout	<ul style="list-style-type: none">• IT functions• Information management	<ul style="list-style-type: none">• Labeling• Navigation• Search• Findability	<ul style="list-style-type: none">• Usability• Placemaking• Omnichannel coherence
Paradigm	Visual design	Business analytics	Library science for the internet	User experience design
Goal	Understanding	Access	Wayfinding	Experience

Information architecture, as it is defined and understood today, draws from each one of these perspectives. Tools have changed as time and technology have progressed, but the discipline is still fundamentally about, as Richard Saul Wurman put it, “making the complex clear.” This is accomplished by researching user and stakeholder needs, and then labeling, categorizing, and organizing information across an ever-expanding digital ecosystem, which might include a website, mobile app, and beyond. Alongside its sister discipline of content strategy, the work of information architecture today involves identifying and developing detailed content models that ensure designers can architect experiences persisting across any and all channels, including ones that may not yet exist.

Two Approaches to Information Architecture

An information architect’s job is not only complex, it also changes with each project. There are two general approaches to practicing information architecture: “outside-in” and “inside-out.”

Outside-in

The most common model of IA is outside-in. This is where the information architect attempts to anticipate the users’ needs. The information architect structures information to enable users to find content through increasingly specific menus, hierarchies, or other navigational aids. User research techniques are indispensable to carrying out this work. If the information architect joins an organization that already has a large website and plenty of existing content, this is the approach they are most likely to take.

Inside-out

The other approach, inside-out, is when the information architect begins by developing a detailed domain model of the project. The 2017 book *Designing Connected Content: Plan and Model Digital Products for Today and Tomorrow* by Mike Atherton and Carrie Hane has advanced this approach. The information architect works with stakeholders to identify and define the “things” that make up the environment (e.g. the actors, objects, and interactions). The methodologies of this approach overlap a great deal with content strategy; there is nothing like a thorough content audit to help one get a grasp on the “things” in an environment. In the inside-out approach, questions of presentation are secondary to questions of how best to represent an environment with platform-agnostic metadata structure that will eventually enable users to freely traverse content within and across channels.



Comparison of Outside-in and Inside-out Approaches to Information Architecture

	Outside-in	Inside-out
Perspective	User-driven	Content-driven
Goal is to make content...	Findable	Understandable
Methodologies	<ul style="list-style-type: none">• Mind mapping• User research	<ul style="list-style-type: none">• Structured authoring• Domain modeling
Examples of tools	<ul style="list-style-type: none">• OptimalSort• Treejack	<ul style="list-style-type: none">• EasyDITA• Acrolinx
Examples of deliverables	<ul style="list-style-type: none">• Sitemap• Wireframe• Taxonomy• User research report	<ul style="list-style-type: none">• Content audit• Metadata strategy• Content model
Related disciplines	<ul style="list-style-type: none">• User experience design• Human-computer interaction• Library science	<ul style="list-style-type: none">• Content management• Technical communication

The Outside-in and Inside-out Approaches are Both Indispensable

Joe Gollner, managing director at Gnostyx Research Inc., compares the two approaches to the digging of the English Channel Tunnel: one side started digging from England, the other from France. But eventually they met in the middle.⁶ Likewise, practicing information architecture is not a matter of choosing either the outside-in or inside-out approach; the reality is that you need both.

The information architecture approach best understood by the majority is the outside-in approach. It reflects the perspective of user experience design and aims at improving findability and navigation. After all, if the content is not findable, however useful the content is, it is of no value to the users.

However, the outside-in approach does not address questions of how to

- manage content efficiently
- enforce content standards
- establish interoperability between different platforms, or
- deliver content to multiple platforms and still maintain consistency.

The inside-out approach tackles content from the content creation and content management perspective. In this approach, content models are built on an XML- or DITA-based platform. Here, a structured writing methodology and component content management system (CCMS) work together. The benefits of this approach are:

- Content management is automated with help from rich, structured, and controlled metadata.
- Writing standards are built into the writing tool.
- XML standard lays the foundation for interoperability for different platforms.
- Content is separate from format, so that delivering to multiple platforms and managing single sourcing can be automated.

[The two approaches are two sides of the same coin.](#) Both need to start from understanding user experience, and both need to be under the guidance of a set of cohesive content strategies. We would



like to advocate the close collaboration of information architects working with these two different approaches. Without such collaboration, we cannot have a systematic and holistic way to make the content more effective, adaptive, and manageable.

A Note on Terminology

The distinction between what we have called the “outside-in” and “inside-out” approaches to information architecture is widely acknowledged, but the industry as a whole has not yet settled on the terms to use. Amber Swope of DITA Strategies Inc., for example, refers to “delivery IA” vs. “management IA.” Noz Urbina of Urbina Consulting prefers to use the term “content design” to describe what we have called “inside-out IA.” Another dichotomy that has been used is “top-down” vs. “bottom-up” IA, although those terms are not entirely synonymous with what we are describing. The important point is that while various experts may have their preferred labels for these different types of work, there is agreement that this distinction does exist.

The Challenges in Managing Information Architecture Projects

Managing information architecture projects is inherently challenging as the field expands across multiple disciplines and the problems information architects strive to solve can vary from project to project. The practitioners in this field often must innovate as they go along.

Working in an Agile Environment

Working in an Agile environment brings some challenges to information architecture work. In the ConVEx 2020 conference, information architects Jennifer Fell and Amber Swope shared their experience working in an Agile team.⁷ The first challenge is often this: Everybody knows about Agile these days, but everybody understands and practices it differently. To maximize the effectiveness of the Agile process, it is important to establish a common understanding of the process between stakeholders and customers at the very beginning of a project.

For information architects embedded in a team that delivers products and services that are not content, it is the information architect’s job to educate scrum masters and project managers about information architecture.⁷

Another challenge an information architect might face is to chunk deliverables into backlogs that have appropriate granularity. A good place to start is to map product story to content, then define the information architecture activities and deliverables needed to support the content. When you have an initial design that does yet not have a defined shape, it is better to have it done before the formal sprint begins.⁷

Measuring the Success of Information Architecture

Building an information architecture is a messy process; the work is often not clean and structured. This makes establishing metrics to measure success even more important. A successful information architecture enables users to understand where they are, what they can do, and where to find the content they need. Usability testing is often used to measure the success of an information architecture.

Some information architects apply marketing metrics such as brand awareness and conversion rate to measure the success of projects.⁸ However, as each project is different, marketing-oriented user experience metrics are not always relevant or sufficient. At Precision Content, we measure our project’s



success using metrics such as utility, usability, maintainability, and accessibility. Another approach is to use the project objectives as a guide to decide what to measure. Establishing the baseline early in the project lifecycle may be a good rule of thumb.⁹

Advice from the Experts: Dos and Don'ts in Information Architecture

We interviewed several experts in the information architecture discipline. Below, we have paraphrased some of the advice we collected that we think is worth sharing.

Do:

- pull the stakeholders into the process as much as possible, so that it's easier to get support and buy-in from decision makers. – [Grace Lau, co-president of World Information Architecture Day](#)
- communicate with anyone in UX and content strategy. Information architecture lies between those two disciplines. An information architect can inform a UX designer how to operate. – [Rob Hanna, CEO of Precision Content Authoring Solutions Inc.](#)
- read widely and have a deep understanding in selected subjects. As information architecture is multi-disciplinary, an information architect needs to have a broad understanding of every related subject. But you also need depth to stand out. – [Peter Morville, co-author of *Information Architecture for the World Wide Web*](#)
- familiarize yourself with analytics. Become an expert in taxonomy and SEO. – [Michael Priestley, pioneer of the DITA standard](#)
- collaborate. Find other content strategists or information architects to work with. One person's view is never enough. – [Amber Swope, information architect at DITA Strategies, Inc.](#)

Don't:

- become too attached to a specific product or CMS. Some people's careers or mindset get limited by a particular tool. – [Joe Gollner, managing director of Gnostyx Research Inc.](#)
- make assumptions; always verify with users. – [Grace Lau](#)
- be afraid to ask for more time or resources if you need them; the people you are reporting to might not understand what you do. – [Rahel Bailie, senior consultant and founder at Content, Seriously](#)
- think that you need to have all the answers right away. And there are no "right" answers. – [Amber Swope](#)
- create content without a purpose. Everything should be tested against the requirements. – [Noz Urbina, founder of Urbina Consulting and co-founder of OmnichannelX](#)

Looking Forward

Information architecture has evolved considerably since its genesis in 1976.² The evolution of information architecture has made possible some of the current emerging technologies storming the market. With the rise of machine-learning and augmented reality, the field of information architecture is enabling expansion in multiple new directions.¹⁰

Augmented Reality

Augmented reality introduces a new landscape for information architecture to enable navigation. Augmented reality refers to an interactive real-world environment that has been enhanced by computer-generated graphical design.¹² Cameras embedded in the goggles collect visual data and show



relevant information to the user.¹² This is where information architecture becomes involved with augmented reality.

To connect data to context, the organization of content requires the structured administration offered by effective information architecture.¹³ Proper adherence to metadata schemas ensures proper categorization of content to identify and provide users with relevant information on what they are viewing.¹³ Metadata structures also ensure the re-usability of augmented reality content and interoperability.¹³ Augmented reality introduces new design challenges that can potentially be solved by effective information architecture.¹⁰

Machine Learning

Machine learning and artificial intelligence have become buzzwords; the applications of these emerging technologies remain seemingly endless.¹⁰ Machine learning is an area of artificial intelligence concerned with using statistics to mimic the processes of the brain to enable technology to learn and improve from experience.¹⁴ Machine learning involves the organization of vast databases and algorithms to derive conclusions.¹⁴ Information architecture lies in defining the data in ways algorithms can process. Well-defined metadata ensures the success of effective machine learning.¹⁴

Augmented reality and machine learning are among the emerging technologies that are aided by information architecture. To properly apply these new technologies, structurally sound information architecture is required. We all must ensure that content is being prepared to be future ready for these and other new disrupting technologies.

Conclusion

We have reviewed the state of information architecture to learn about how this discipline evolved into an interdisciplinary field that provides the backbone needed to create and sustain dynamic and complex content across all channels. Making information findable, understandable, and useable is not only important for serving the needs of the end users, but also for supporting communications among different technologies. Continuous communication and knowledge sharing within the information architecture community is the key to deepening the understanding on the role information architecture plays in accelerating technological innovations.



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