information
architecture

designing information environments for purpose

edited by **Alan Gilchrist** and **Barry Mahon**

facet publishing

Managing Information in the Knowledge Economy is a unique new series that provides current thinking and practice relevant to the management of information in knowledge-based organizations.

Contents

Acknowledgements

Editors and contributors

Bob Bater is Principal Associate of InfoPlex Associates, which specializes in the design and development of systems for the organization and use of knowledge and information. His most recent series of articles – for *Managing Information* in 2002 – examined how a new generation of software applications can support knowledge transfer when considered from the viewpoint of complexity theory. Bob is a Member of CILIP.

Rob Davies of MDR Partners is an independent project manager, consultant and researcher, with wide experience of the library and information policy area and of associated technical and service developments. He is project manager for the SeamlessUK project. Recently he has been the project manager of the EU-funded PULMAN and ISTAR projects, and co-ordinator of the PULMAN-XT project. He has conducted a number of major studies for the British Library and the Library and Information Commission (LIC) in the United Kingdom, and has worked on libraries and learning resources projects for the Asian Development Bank, DFID, World Bank and the European Commission European Development Fund.

Cathy Day began working for Essex Libraries in 1979 and held a number of information service posts. She was Deputy Area Librarian for the Brentwood area, and later was responsible for Information Services in the South Group covering libraries over a wide area of Essex. Since 1998 Cathy (with Jo Morris) has been part of the Community Information Network Team for Essex County Council and has worked on the Seamless Project since

its inception, responsible for developing the SeamlessUK thesaurus and metadata application profile.

Stella G. Dextre Clarke is an independent consultant specializing in the design and implementation of knowledge structures, including thesauri, classification schemes and taxonomies. Acting for the Office of the e-Envoy, she developed the GCL (Government Category List) described in this book. She is the convenor of a working group that is currently revising the British Standards for construction of thesauri. Stella is a Member of CILIP.

Mike Fisher of the Neil Cameron Consulting Group has an engineering degree and is an IT consultant to professional services organizations. Mike joined the law firm Freshfields in 1982 and led its systems development for over 15 years. More recently Mike led the development of an information model for the post-merger Freshfields Bruckhaus Deringer.

Janice Fraser is a founding partner of Adaptive Path, a world-leading user experience firm. She has worked in high-tech media as a designer, writer and educator for over a decade with clients around the world. She teaches design at conferences around the world, and is on the faculty of San Francisco State University. Her clients include the United Nations, PeopleSoft, Intel, News International and LineOne.

Alan Gilchrist's information management consultancy firm has recently celebrated its 25th year. He is also a senior association consultant with TFPL Ltd. He has published widely and is co-author of the extensively used manual *Thesaurus Construction and Use*, now in its fourth edition. He is a Certified Management Consultant, an Honorary Fellow of CILIP and editor of the *Journal of Information Science*.

Angela Greenwood has been working for the past three and a half years as a knowledge management expert in a global management consultancy company in southern Europe. Before this she gained a BScEcon in Information and Library Studies at the University of Wales in Aberystwyth.

John Gregory has managed the MarketTracks intranet contract for the US Postal Service for the past four years. Specializing in online information retrieval, he has set up systems for government agencies, universities, foundations and corporations in the Washington DC area. He holds a BSFS from Georgetown University's School of Foreign Service and an MSLS from the Graduate School of Library and Information Science at Simmons College.

Manfred Hauer has a diploma in Information Science, Sociology and Political Science and now teaches at universities of applied sciences in Austria, Switzerland and Germany. He has been Manager of AGI – Information Management Consultants since 1983, a German-based company developing software in information and knowledge management, using programmers in India. The company focuses on indexing, machine indexing, retrieval, workflow management and design and implementation.

Sabine Kruse has been working at Henkel KGaA in Düsseldorf (Germany) since 1988. She is currently Manager of Library Services at the Henkel InfoCenter. The Centre provides the Henkel group worldwide with scientific and business information. Sabine is responsible for the library, document delivery centre and periodicals department.

Catherine Leloup was trained as a telecommunications engineer. For about 15 years she has been undertaking projects as a specialized consultant in information management and systems for large French and other European companies. Her main skills are in the fields of document and content management.

Liz MacLachlan is currently Director of Information Policy and Services at the UK Department of Trade and Industry, responsible for information content services. Her most recent achievement is the DTI's successful electronic records and document management programme. Liz sits on CILIP Council and has published and spoken on project management, change management, information audit and Electronic Records and Document Management (EDRM).

Barry Mahon holds an MSc in Information Science. He ran an information service for industrial users in Ireland before being seconded to the EU in

1978 to manage the first telecommunications network dedicated to online information. From 1991 to 1996 he was Executive Director of Eusidic, the European Association of Information Services. He now works as a freelance consultant, specializing in knowledge management, particularly on new software products and their effect on information delivery. He is an associate consultant at TFPL and also the Executive Director of ICSTI, the International Council for Scientific and Technical Information.

Ruth McLaughlin has been working for the past three and a half years as an information specialist in a global management consultancy company in southern Europe. She completed her MSc in Information Science at City University, London, and before that had worked in Japan and England.

Jo Morris spent ten years working for EEV Ltd, a leading UK electronics company, where she was an information scientist, then becoming Head of Library and Information Services. Since 1998 Jo (with Cathy Day) has been part of the Community Information Network Team for Essex County Council and has worked on the Seamless Project since its inception, responsible for developing the SeamlessUK thesaurus and metadata application profile.

Peter Morville is President of Semantic Studios and co-author of the international best-seller *Information Architecture for the World Wide Web*. He is widely recognized as a founding father of information architecture and a passionate advocate for the importance of findability in shaping the user experience.

Mary Rowlatt is Strategic Information Manager for Essex County Council where she is part of the e-Government team. She is responsible for leading and co-ordinating the development of a county-wide community information network and building an Essex portal – *Essex Online*. Within the Council she is also responsible for information and knowledge management, and web services. She has a particular interest and expertise in interoperability, distributed information services and the use of metadata and thesauri, and is a member of the office of the UK government e-Envoy's Metadata Working Group.

Elizabeth Scott-Wilson was born and educated in Christchurch, New Zealand. In 1988 she co-founded the Records Management Branch Consulting and Training Service for National Archives of New Zealand and in 1997 she founded SWIM Ltd, New Zealand's leading independent information management consulting company. She now leads the Advisory and Knowledge Services team at The Stationery Office in the UK.

Camille Sobalvarro is the creative director and chief information architect of PeopleSoft.com. With equal passion for business and user-centred design, Camille has played an integral role in shaping and implementing PeopleSoft's web strategy. Prior to joining PeopleSoft in May 2000, Camille worked in design management at publishing Fortune 500 and other start-up companies.

Derek Sturdy is the Managing Director of Granite & Comfrey, a company he set up in 2000 to do the actual work of knowledge management. Previously he ran the Primary Law division at the legal publishers Sweet & Maxwell, where he developed major electronic publishing initiatives; before that he was the Sales and IT Director of Legal Information Resources, which provided electronic abstracting and indexing databases.

Amy J. Warner of Lexonomy currently works as an independent consultant advising organizations on information architecture and taxonomy design. She was formerly affiliated with Argus Associates, where she was Thesaurus Design Specialist. She holds a PhD degree from the University of Illinois in library and information studies, and has written many articles and a book in her areas of expertise.

Bob Wiggins of Cura Consortium Ltd has worked in information management as a manager and latterly as an independent consultant for a wide range of private and government organizations in the UK and abroad. He is the author of *Effective Document Management - Unlocking Corporate Knowledge*, published by Gower.

Preface

A brief history of information architecture

PETER MORVILLE
Semantic Studios, USA

> What we recall is not what we actually experienced, but rather a reconstruction of what we experienced that is consistent with our current goals and our knowledge of the world.
>
> *Memory, Brain, and Belief* by Daniel L. Schacter and Elaine Scarry, Harvard University

History is written by the writers. And as websites, blogs and search tools transform our information landscape, history will increasingly be chosen by the readers. In the past decade, I've had the good fortune to have played a role in the emergence of information architecture as a discipline and a community of practice. As a reader, writer, user, architect, activist, manager and entrepreneur, I have experienced first-hand the tumultuous childhood and adolescence of the profession. It was fun. It was painful. It was exciting. It was a lot of work. And it's over. For better or worse, information architecture has entered a new stage of maturity. So, before senility sets in, I'd like to tell you a story about what really happened. Of course, built upon the imperfect foundation of false memory, this story is horribly biased and tragically flawed. My only hope is that you, gentle reader, will also find my story to be interesting, persuasive, and perhaps a little contagious. After all, like I said, history is chosen by the readers.

The Argonauts set sail (1994)

Immediately after graduating from the University of Michigan's School of Information and Library Studies, I joined a start-up internet training firm named Argus Associates. I didn't want to be an entrepreneur. I simply couldn't find any jobs in established companies where I could design information systems.

Argus was owned by faculty member Joseph Janes and doctoral student Louis Rosenfeld. As employee number one, I had a difficult first year. I worked mostly alone, for little pay and no benefits. I lived in a cardboard box in the middle of a busy road. Okay, I exaggerate, but these truly were tough days to be an 'information architect', particularly since we didn't yet have a label to hang our hats on.

We did do some interesting work though. We taught people to use state of the art internet tools such as Gopher, Archie, Veronica, FTP and WAIS. We created a guide to nanotechnology resources on the internet. And, as NCSA Mosaic launched the web as a multimedia medium for the masses, we began to design websites.

We found ourselves using the architecture metaphor with clients to highlight the importance of structure and organization in website design. Lou got a gig writing the *Web Architect* column for *Web Review* magazine, and I soon joined in.

In 1996, a book titled *Information Architects* appeared in our offices. We learned that a fellow by the name of Richard Saul Wurman had coined the expression 'information architect' in 1975. After reading his book, I remember thinking 'this is not information architecture, this is information design'.

And so, while some folks adhered to the Wurman definition, we became evangelists of the LIS (library and information science) school of information architecture. We argued passionately for the value of applying traditional LIS skills in the design of websites and intranets. We hired 'information architects' and taught them to practise the craft. We embraced other disciplines, integrating user research and usability engineering into our process. And, along the way, we built one of the world's most admired information architecture firms.

A polar bear is born (1998)

Lou pitched the idea of an information architecture book to Lorrie LeJeune at O'Reilly in 1996. She didn't bite. But a year later, she called us back. At industry conferences, Lorrie kept hearing web developers complain about a pain with no name. Users couldn't find things. Sites couldn't accommodate new content. It wasn't a technology problem. It wasn't a graphic design problem. It was an information architecture problem, we explained, and so began the book.

In February 1998, after countless nights and weekends spent writing, the O'Reilly book on information architecture was published. Sales began slowly but grew steadily as increasing numbers of people discovered the name for their pain. Jakob Nielsen called it 'the most useful book on web design on the market' and Amazon named it 'Best Internet Book of 1998'. Information architecture had arrived.

A community takes shape (2000)

In April 2000, a very special event took place at the Logan Airport Hilton in Boston, Massachusetts. Lou worked closely with Richard Hill of the American Society of Information Science and Technology (ASIST) to organize the first annual Information Architecture summit, bringing together people from universities, libraries, web consultancies and Fortune 500 firms to share perspectives.

The energy at this conference was incredible. This was the first large scale gathering of the information architecture community in history. And we were at the pinnacle of the internet revolution. Stock valuations and salaries were going through the roof. We were all overworked, living on internet time, but loving it all the same. The SIG-IA discussion group spun out of this event, and a community was born.

Back in Ann Arbor, business was booming for Argus Associates. We created a new community-oriented business unit called the Argus Center for Information Architecture and organized a wonderful IA2K conference in La Jolla, California.

Along the way, we had become a 40-person company with roughly $4 million in revenues and a world-class client list. Information architecture had lifted us to heights that were exhilarating and just a bit terrifying. At such times, life is great, provided you don't look down or ahead.

The valley (2001)

We all know what happened next. The bubble burst. A few trillion dollars disappeared into thin air. Budgets were slashed. People lost jobs. Companies folded. As a firm specializing in this new-fangled, near-invisible thing called information architecture, Argus was a canary in the coal mine for much of the IT industry, and it all happened real fast. After seven profitable years, it took only five months to move from feeling the pinch to closing the company.

Upon announcing that Argus had ceased operations, we received hundreds of heart-warming messages from all over the world. People told us how our book had changed their lives, giving them the confidence and credibility needed to jump-start a new career. This outpouring of support was truly the silver lining in a dark cloud.

But many saw the fall of the house of Argus as an ominous symbol for the entire profession. We tried to combat this pessimism, but it was tough to sell a positive, long-term vision while many in the community trudged through the valley of shadows.

Emergence (2002)

2002 was a big year for information architecture. We emerged from the valley with new strength and maturity. We connected top-down and bottom-up. We reached out to our colleagues in user experience, visual design and content management.

Boxes and Arrows (http://boxesandarrows.com/) burst onto the scene, triggering a wonderful cross-disciplinary resurgence of writing and discussion. We launched the Asilomar Institute for Information Architecture (http://aifia.org/), an international professional association dedicated to advancing the design of shared information environments.

And we collectively published an impressive array of new books. In *The Elements of User Experience*, Jesse James Garrett explored strategy and structure within the context of user-centered design. In *Information Architecture: blueprints for the web*, Christina Wodtke brought Richard Saul Wurman back into the story, unifying the LIS and RSW schools of thought. In *Information Architecture: an emerging 21st century profession*, Earl Morrogh tackled the history and future of the field. And, of course, we completed a second edition of *Information Architecture for the World Wide Web*, featuring a heavier, wiser polar bear.

Tomorrow's architects (2094)

So, where do we go from here? How will the landscape of information architecture change between today and 2094?

Certain trends are already visible. For instance, the leadership of the discipline is becoming increasingly international. This book, edited by Alan Gilchrist and Barry Mahon of TFPL, is but one example, injecting a distinctly European perspective into the global dialogue that will shape the future of information architecture practice.

On a higher plane, a strange blend of social, economic, environmental and technological factors will shape our future in an unpredictable manner. Today, as an information architect, I earn my living in ways I could barely have imagined just ten years ago. If I'm still around in 2094, I expect to inhabit a radically different world. That said, I bravely and perhaps arrogantly predict the practice of information architecture will be alive and well on its 100th birthday.

Well, that's my story. You decide whether or not to make it history. And if you disagree with my bold prediction, let me know; let's make a long bet (http://longbets.org/) and I'll see you in 2094. In the meantime, read this book, become a better information architect, strengthen the practice, foster findability, make the world more usable and, whatever you do, don't forget our bet. I intend to collect.

Introduction

BARRY MAHON
TFPL Ltd, UK

ALAN GILCHRIST
TFPL Ltd, UK

In this paper we argue that a core ontology is one of the key build-ing blocks necessary to enable the scalable assimilation of information from diverse sources. A complete and extensible ontology that expresses the basic concepts that are common across a variety of domains and can provide the basis for special-ization into domain-specific concepts and vocabularies is essential for well-defined mappings between domain-specific knowledge representations (i.e. metadata vocabularies) and the subsequent building of a variety of services such as cross-domain searching, browsing, data mining and knowledge extraction.

<div align="right">Towards a Core Ontology for Information Integration, Journal of Digital Information, 4 (1), http://jodi.ecs.soton.ac.uk/Articles/v04/i01/Doerr/</div>

This extract illustrates well the area where information architecture is expected to be applied. While in no way criticizing the paper, the complex-ity of the description is, while academic in nature, a good example of the range of real issues to be addressed in trying to integrate information gen-eration, organization and use in organizations (in this case, in the comparatively more esoteric area of ontologies).

In the context that information is now recognized as a valid and valu-able resource in the management of an organization, the function described as information management has grown from being a library, filing or computing function – or, in some more progressive organizations,

a documentation function – to a mainstream management activity. With this recognition new concepts have arisen. One of these is information architecture (IA).

There have been essentially sterile arguments about a precise definition of IA, which will not be rehearsed here, but we may be allowed to quote two of them. In our research report for TFPL (Mahon, Hourican and Gilchrist, 2001) we created a pragmatic definition – 'a coherent set of strategies and plans for information access and delivery **inside** organisations'. The Asilomar Institute for Information Architecture (AIfIA) defines information architecture as 'the structural design of shared information environments', and we have no quarrel with this. We choose to emphasize in our discussions on IA the architecture aspect, the process of designing for purpose.

In that sense, implementing IA is a pragmatic activity. The result will not be seen as a whole, except by the architects, but will be used by many requiring information as part of their work. IA is a work in progress, given the rate of change in modern organizations, but with an overall plan and vision, its aim being to provide the relevant information to the right people at the right time.

This volume is a snapshot of the IA situation in mid-2003. Morville says in the Preface 'we [staff of Argus Associates] became evangelists of the LIS (library and information science) school of information architecture' referring to 1996. We have always tended to take the LIS view – even before we began to look at IA, in dealing with the management issues arising as a consequence of the widespread introduction of IT and associated networking in organizations. That is not to say we have always felt that LIS had all the answers but there were, and are, skill sets in LIS that lend themselves efficiently to IA. This volume attempts to describe how LIS skills can fit with other technical and skill requirements to achieve the overall objective: the efficient use of information.

Although we have chapters in this volume on information modelling and associated activities, we are not so naïve as to think that anyone starts from a clean sheet when implementing IA. Even brand new enterprises have other priorities, although some, for example those in the leading edge IT area and pharmaceutical companies looking for drug approvals, need to install formal information control systems. Everyone would like to 'stop the world' as the management issues become problematical but few, if any, can.

Therefore we have conceived this volume as a tool that can provide inspiration, examples, advice and experience for those who are either implementing IA or contemplating it.

The driving force behind the move to IA is the fact that all, or almost all, the information in an organization is now digital in creation and use. Thus the boundaries that traditionally and for pragmatic reasons existed between different kinds of information have been eroded. This drive is accelerated by the move to networking, originally justified as a means of sharing resources but more and more justified today as a means of co-ordinating functions. Thus the roles of records managers, archivists, and library and information personnel are converging, not necessarily in terms of their specific skills but because the basic commodity they deal with is or can be handled in a common fashion through IT facilities.

The other pressure behind IA is the need to 'get organized'. As more and more information is electronically created within organizations and is fed in through e-mail and other electronic means, the phenomenon generally described as information overload or, to be more precise, a feeling shared by users and systems administrators alike of loss of control of information, has become prevalent. The simplistic approach to dealing with this is to assume that the IT investment can be put to use to deal with it. Thus enterprise management suites such as SAP and other organization-wide applications have been introduced, with some success it must be said, to deal with the 'flow control' aspects of organizing information – primarily those related to financial management. Attempts have been made to extend these approaches to more generalized information control but, to date, there has been little success.

One of the reasons why generalized enterprise management tools have not been applicable is that such systems do not lend themselves to dealing with unstructured data. Control systems generally deal with information as structured records, information such as stock levels, production capacity, sales, and so on. Much of the 'other' information in organizations, which is recognized now as being of importance, is unstructured, such as messages from the market, technical developments, economic changes. These information types are generically described as business information or business intelligence. Their management has traditionally been in the realm of LIS professionals. The need for IA has arisen because of the need to inte-

grate this latter information into the other types of information in use in the organization.

Unfortunately, this fundamental mismatch has not inhibited some software producers from claiming that they have created solutions to the information overload issue. Some of the offers work for some of the problems but, as can be seen in the case studies in this volume, they are not panaceas.

Some of the papers in this volume are complex. The activity of actually implementing IA is far from trivial, combining serious analysis with future proofing and flexibility. The other element that becomes clear from the work described here is that few attempts to develop integrated, coherent information spaces work the first time; several iterations are needed and should be planned for. The overall impression one gets is that practitioners should not try to 'stop the world' in the sense of re-engineering the information processes completely but should not be afraid to start at the bottom of the problem and get agreement on what to do. Tackle the relatively easy wins, but have a wider plan, in short – an information architecture.

Reference

Mahon, B., Hourican, R. and Gilchrist, A. (2001) *Research into Information Architecture: the roles of software, taxonomies and people*, London, TFPL.

Reading guide

We have tried to make this book as practical as possible. We felt at the outset that information professionals would welcome a compilation that attempted to put many of the daily topics faced by professionals in context. Consequently we have mixed direct information on techniques and technologies associated with information architecture with case studies, written by professionals, which tell the story as it is (or was) with commendable honesty.

While we are not so presumptuous as to suggest how you should read this book, we do not expect that it will be read from beginning to end like a novel! So, we thought we would provide you with a short guide to what you might want to do.

- Few if any professionals get the chance of creating an IA from scratch, but many organizations are now finding that their initial forays into 'content' and its control lead them to reassess their situation – it could be the right time to suggest an appraisal of the basics. For those of you who need to read yourself into this may we suggest you read Part 1, which provides two complementary views of how to set about designing a system and a case study of how to ensure it remains relevant.

- Unfortunately organizations don't always do things in the right order from an information professional's point of view. Typically this applies to buying software for dealing with IA-related matters. More often than not the information professionals find themselves entering the software selection process at a late stage, if not after the event! For those who need to be aware of the pitfalls we suggest you read Part 2, where you will find some practical guidelines, a checklist of what to look out for and a good example of how an existing software environment can be adopted and adapted to an organization's needs.

- There are always new technical developments and it seems that the rate of invention of new ways of dealing with information moves at warp speed. Much of what is written is intended for the IT professional and is couched in terms that assume a significant knowledge of 'how to' at the code-writing level. In Part 3.1 we attempt to demystify this. We have tried in the introduction to provide a practical take on what has become probably the most commonly used buzzword in IA – 'metadata' – and in the rest of Part 3.1 we provide practically written contributions on some of the most important contemporary technical developments so that readers can evaluate their relevance to their own situation.

- Many of the questions we get in TFPL concern taxonomy so, if you are interested in taxonomy and how to go about creating one, then we suggest you read Part 3.2. This provides some valuable background information and two contrasting case studies, which provide very practical advice.

- In the end the success of any information system will depend on the quality of its interface. It has now become *de rigueur* to use the web when looking for information. In Part 4 there are three contributions that will help readers to avoid having to give negative answers to the question posed on the front cover of *EContent Magazine*, June 2003 edition: 'So, you've built it, now what?'

We had thought of providing a 'further reading' section, as many compilations of this kind have. Not wanting to avoid the work involved, we reviewed the many, many references we had noted in the course of creating this book and came to the conclusion that there was so much material that any selection would be invidious. Our own experience is that many of our sources were relevant at the time of writing but then quickly overtaken by new developments. So, by the time you read this book, many of the references that we might suggest, while not obsolete, would be partially or completely out of date.

Finally, we want to thank TFPL, CILIP and Facet Publishing for the opportunity to do this work. We would not be honest if we said it was all plain sailing, but it was interesting.