

THE WAY AHEAD FOR INFORMATION MANAGEMENT

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Peter Drucker, management guru of the 20th century, is credited with the following insight into leadership and management: “Management is doing things right, leadership is doing the right thing.”³ Doing things right often involves following established processes, abiding by directives, and seeking the right endorsements, validations and approvals. Doing the right thing involves setting the right target, from the start, for any given programme, project or activity. Bureaucracy can, when properly implemented, represent an optimal trade-off between “doing the right thing” and “doing things right.”⁴ However, no amount of management can compensate for a failure to set the right target.

In the field of Information Management (IM), the importance of setting the right target is paramount. The sheer size of investments in information management and information technology⁵ by National Defence and the Government of Canada makes leadership in information management a serious issue. IM leadership could benefit from a clear, down to earth and immediately useful model to organize information management transformation efforts. The objective of this article is to present such a model in the form of an “information architecture.”

The context of information management will be discussed first, including strategic information management frameworks. This will be followed by an information architecture model and a brief comment on meta-architectures.

The Context of Information Management

Information management, as a high-level management activity, is often disconnected from low-level information activities performed by knowledge workers.⁶ Such disconnection is a natural consequence of the lack of a linkage between strategic information management considerations and day-to-day information management activities. The linkage between these two realms is difficult to create, and especially so to sustain.

The following two perspectives illustrate this dichotomy. Management is typically concerned with compliance issues, such as compliance with legislation and policies – for example: the Government Security Policy, Management of Government Information policy, Access to Information Act, Privacy Act, Security of Information Act, and so on. Management also knows that information management represents a key business enabler on the strategic level. Users, however, are concerned with empowerment issues. Knowledge workers are satisfied and perform well in information environments that are responsive to their information requirements.⁷

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Able Seaman Karense Blerot, a Naval Combat Information Operator monitors one of HMCS *Winnipeg's* many sensors in the ship's Operations Room.

In spite of those different perspectives, information or knowledge-based organizations should strive to introduce and sustain comprehensive information management. What then *is* information management?⁸

This question is difficult to answer. By contrast to other mature disciplines, such as financial management, project management, and even younger disciplines, such as business management, information management has no standard definitions, methodologies, tools or frameworks. The world of accounting has *Generally Accepted Accounting Principles*, or "GAAP"; project management has a "Project Management Body of Knowledge" (the PMBOK), known concepts and tools, such as work breakdown structures and the triangle of scope, resources and time. Information management, on the other hand, is somewhat of an orphan in the world of management disciplines. While there have been attempts to come up with elements of shared understanding in the field of information management, these attempts typically come from particular vantage points or directions, and mostly provide value from just those specific areas.

We can gain insights into approaching information management as a discipline with the following analogy. Consider naval ships. Sound "Navy management" seeks to deliver the ability to deploy and maintain a military force at sea. Navy management encompasses all necessary efforts to define ship specifications, acquire, accept, commission, exploit, maintain, upgrade and ultimately decommission ships, stripping them of their military equipment. It is concerned with the acquisition of ships according to sets of design specifications and naval architectural plans, the configuration management of all systems throughout their life cycle, the exploitation of their operational capability, the conduct of preventive and corrective maintenance, and, at some point, their decommission, and, in some cases, their disposition. In order to conduct this wide range of activities, the navy relies on, among other things, qualified and trained navy personnel and other personnel, operations and maintenance resources. It also relies on standardized requirements definition and procurement processes, on architectural plans, on regularly updated operational doctrine, on maintenance schedules, and so on.

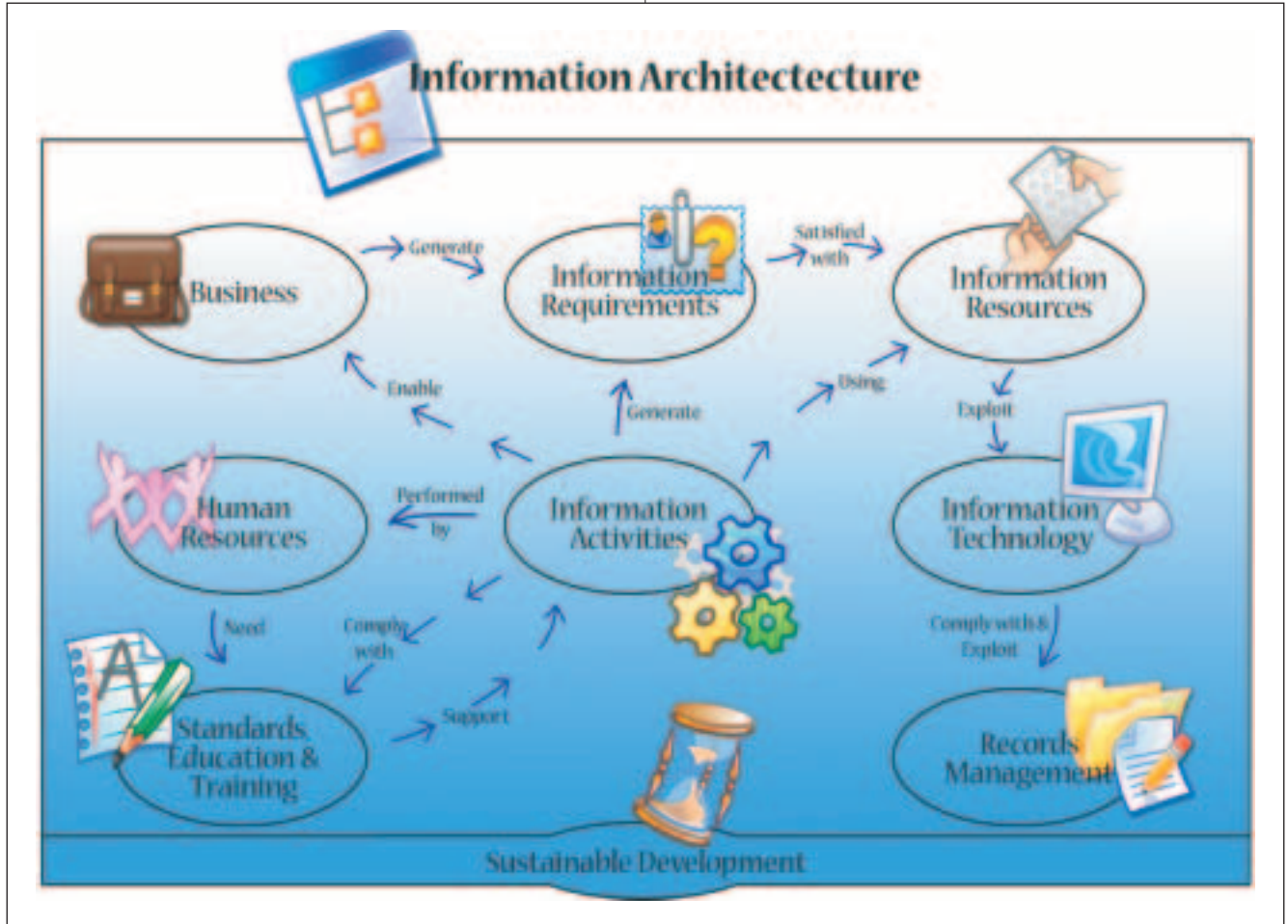
"In the field of Information Management (IM), the importance of setting the right target is paramount."

Information management should be approached similarly. It seeks to deliver an optimized information environment in which knowledge workers are both effective (i.e., they do the right thing) and efficient (i.e., they do it right). Information management would encompass all information activities conducted in an organization, including how information is found, created, received, acquired, monitored, classified for records management, indexed for content management, safeguarded for security, verified for accuracy, organized, used, distributed, published, transferred, disposed of and archived. This list is not exhaustive. All information-related verbs have the potential to represent information activities within the scope of information management. Information management would be concerned with the conduct of these information activities according to a collection of guidelines, policies, constraints, resources, references, and so on. Accountability structures would be put in place for the management of information. Education and training opportunities would be available to personnel in order to live up to their responsibilities and roles. Both the paper and the electronic environments would be coordinated for optimal exploitation.

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In short, information management is best understood in terms of its inherent activities. Such activities describe information management: find, create, receive, acquire, monitor, classify for records management, index for content management, safeguard, verify, organize, store, access, use, collaborate, send, route, disseminate, publish, transfer, archive and dispose. An organization that explicitly supports these activities, *from the point of view of end users*, offers a superior information environment.

In order to develop this information environment, an “information architecture” should promote an environment in which all activities are identified, described and facilitated.⁹ These activities are always performed, whether the information architecture exists or not. If guidelines and directives are unavailable, or little known to end users, it is left to personal ingenuity to make these activities occur. The extent to which an organization provides guidance, direction, support and resources for the conduct of information management constitutes the reach, or scope, of the information management programme. The basis of this programme is the *information architecture*.



An information architecture explicitly connects *information requirements* to *information resources* by way of *information activities* performed by trained people, all of which occurs in a business context, leveraging records management and information technology, according to an ongoing philosophy of sustainable development. Embedded in this definition are the nine components of the information architecture model proposed here. Before they are presented, we will examine a fundamental question: What elements should be considered when developing information architectures?

“In short, information management is best understood in terms of its inherent activities.”

Information architectures are not ends in themselves – they *support* sound information management. Before an organization is positioned to optimize its usage of knowledge, an underlying information environment must be in place. This information environment rests on an information architecture, itself designed

and continuously updated, taking into account six categories of inputs:

- Legislation and policy: What is needed for compliance;
- Business Mandate: What is needed by the organization;
- Empowerment: What is needed by end users;
- Interdependencies: What is needed so as not to duplicate the work of others;
- Constraints: What is needed to ensure cost effectiveness; and
- Opportunities: What is needed to stay current with the rest of the world.¹¹

Each of these categories of inputs can be detailed further down in a hierarchical format¹² until precise items are derived. At that detailed level, each item should be analyzed for impact on any or all of the nine architectural components.

Information Architectures: Getting Them Right

Before information architectures are designed, it is useful for an organization to adopt its own strategic information management framework. This framework, as a minimum, should state: the organization IM vision; four to six principles, depending on the organization; descriptions of these principles; and high level directives under each principle, ensuring that the vision and principles do not remain empty words in the boardroom. Equally important, organizations must provide the necessary information environment and resources to managers and end users if they are to be able to abide by these high level directives.¹⁰ The information architecture takes the information management strategic framework and makes it sufficiently detailed for business transformation and optimization.

Information Architectures: Components

We will now consider each architectural component in turn:

- First, an information architecture requires an understanding of the *business context* in which information requirements originate. Organizational processes should be mapped and business lines considered in order to facilitate later analysis and to enable the optimization of information flows and holdings;
- The business context shows *information requirements*, describing *information needs*. Information requirements should be inventoried and that inventory should be maintained. An information requirement is always stated without any reference to its medium. Such requirements are derived from the business context, described in terms of business lines and business process maps;
- *Information resources* are, in turn, connected to information requirements. They represent whatever resources are used to satisfy the requirement. Information resources should also be inventoried and, again, the inventory should be maintained. Resources, for example, could be online databases, books, corporate information systems, or hard copy files;



- Information management *activities* describe information management: find, create, receive, acquire, monitor, classify for records management, index for content management, safeguard, verify for accuracy, organize, store, access, use, collaborate, send, route, disseminate, publish, transfer, archive and dispose. The information architecture should promote an information environment in which these activities are identified, described and facilitated;
- People undertake information management activities. As a result, the information architecture should map all information management responsibilities and tasks to *human resources* in their terms of reference and work descriptions. In other words, one must imagine what comprehensive information management would be like, state it in the form of a Concept of Operations (CONOPS), and project that CONOPS on to human resources;
- The information architecture recognizes that people need *standards, education and training* if they are to efficiently conduct information management activities: they are therefore recognized as core architectural components;
- The information architecture should recognize *information technology*¹³ as a core enabler to information management;
- *Records management*¹⁴ should also be recognized as a core enabler to information management, and it should be effectively leveraged;
- Finally, the information architecture will be maintained according to a philosophy of *sustainable development*, through the use of the following planning layers: business strategy, information management strategy, architectural inputs, information architecture, guidance and direction, training, platforms, environments, security, and information. The objective of sustainable development is to continuously optimize the information environment and information management programme.

Information architectures in the form previously described work well in settings with a unity of purpose.

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However, at higher levels of the organization, a single information architecture would not work. Hence, the concept of meta-architectures and meta-IM programs.

Meta-Programmes and Meta-Architectures

Although outside the scope of this article, it is worth noting that information architectures naturally find a home at the right levels of an organization.

Information architectures provide added value only if there is relative stability, simplicity and unity to the business context. For example, National Defence Headquarters is too broad in scope to be effectively supported by a single information architecture. However, a smaller entity, such as the Office of the Judge-Advocate General, would benefit from a single information architecture.

IM meta-programmes and corresponding meta-architectures, with the sole objective of standardizing and promoting the development of information architectures at the right levels of government, Departments and agencies, should be developed.

Conclusion

The information architecture model presented in this article enables information management leaders and advisors to think through what is right for their organizations (vision & leadership) and how to do it right (sound management) *from a user-centric point of view*.¹⁵ This model allows any knowledge worker to intuitively leverage and use information architectures to conduct information activities and provide structured feedback for architectural optimization.

This information architecture model is under review in the Office of the Judge-Advocate General for permanent use. It has been prepared under the auspices of the *Comprehensive Information Management Project*, National Defence capital project 00000758. Questions about this architecture model can be directed to the Project Director Office at (613) 992-2703.



NOTES

- The opinions expressed in this article are those of the author. They do not necessarily reflect current IM practices or doctrine neither in National Defence nor in the Office of the Judge-Advocate General. Specifically, the information architecture suggested in this article is in draft format and still awaits approval by management of the Legal Branch. Although the opinions expressed herein are personal, I would like to thank the following people for their suggestions and comments: Ms. Julia Lelik (Chief Knowledge Officer at the Office of the Auditor General), Ms. Margaret Fallis (NDHQ//DEA), Capt(N) James Jollymore (NDHQ//DIMSP), Cdr Martin Pelletier (JAG) and Ms. Elizabeth Tremblay-Lewicki.
- The JAG CIMP is the *Comprehensive Information Management Project*, National Defence Capital Project 00000758. More information on the project can be found on the Defence Intranet Network at <http://cimp.dwan.dnd.ca/>
- Peter F. Drucker, *The Effective Executive* (New York: HarperBusiness Essentials, 1985).
- For an excellent introduction into such issues, see Barry Bozeman, *Bureaucracy and Red Tape* (New York: Prentice Hall, 2000).
- The distinction between information management and information technology could benefit from a shared understanding in National Defence and the Government of Canada. For example, in the Functional Planning Guidance issued by ADM(IM) last year, the two terms were often used interchangeably. For the purposes of this article, information technology is an enabler to information management. Information management, on the other hand, enables the business and programme areas. Information management has a much larger scope than IT and can be conducted entirely without it.
- The 'knowledge worker' is the worker of the Third Wave, as coined by futurist Alvin Toffler in his book, *Powershift: Knowledge, Wealth and Violence at the Edge of the 21st Century*. A knowledge worker is a worker adding value to his own endeavours or to his organization as a direct result of his knowledge rather than his manual labour.
- Drucker, *supra* Note 33, p. 4: "[t]he motivation of the knowledge worker depends on his being effective, on his being able to achieve. If effectiveness is lacking in his work, his commitment to work and to contribution will soon wither, and he will become a time-server going through the motions from 9 to 5." See also J. Ang & S. Koh, "Exploring the Relationship Between User Information Satisfaction and Job Satisfaction," *International Journal of Information Management*, Vol. 17, No. 3 (1997), p. 169.
- The boundaries and internal components of information management in the Department of National Defence and in the Government of Canada are not well defined. In DND, conceptual and semantic clarification efforts were completed by the *ad hoc IM Policy & Doctrine Working Group*, see Cdr (as he then was) Jollymore, IM P&D WG SITREP to IMRC, 14 January 2004, briefing notes to the *Information Management Review Committee* (chaired by DGIMSD).
- Such is the purpose and deliverable (to the Office of the Judge-Advocate General) of the JAG Comprehensive Information Management Project – more information at <http://cimp.dwan.dnd.ca/>
- An example of such a bilingual Strategic Information Management Framework, for the Office of the JAG, in the form of a two-sided 11" x 17" colour chart, can be found in the Resources page of the JAG *Comprehensive Information Management Project* web site on the Defence Intranet Network: <http://cimp.dwan.dnd.ca/>
- In the Department of National Defence, there is room for improvement with respect to seizing opportunities. For example, 42 per cent of Canadian web sites and 33 per cent of worldwide sites use an open source technology called PHP to develop dynamic web sites. NASA, the US Army, the Montreal Stock Exchange and other federal Government Departments use PHP, and yet, it is barely known in DND despite its huge potential for total-cost-of-ownership (TCO) savings.
- For an example, please see the JIA hierarchical page, after logging into the following JAG *Comprehensive Information Management Project* web site on the Defence Intranet Network: <http://cimp.dwan.dnd.ca/>
- For example, the JAG *Comprehensive Information Management Project* recognized four key IT enablers and will deliver them to the Office of the JAG as part of its information architecture deliverable: Virtual Private Networks (VPNs), Document Management/Records Management (RDIMS – see <http://www.rdims.gc.ca/>), Case Management and a Legal Portal.
- For example, the Office of the JAG, through the Defence Subject Classification and Disposition System (DSCDS), will manage its records according to new record groups and record series adapted to the practice of law in the Office of the JAG.
- By contrast, there are other views of information architectures considered by the Directorate of Enterprise Architecture (DEA) in ADM(IM) that have a different focus (*i.e.* the BOSTIS framework) considering their main purpose: "[a]nalysts will use the [BOSTIS framework] to scope/produce recommendations, in support of decision makers, based upon products that represent the holistic enterprise from various integrated perspectives such that the risk is explicitly known and can be managed", A/DEA briefing at the ADM(IM) *Information Management Review Committee* – IMRC (14 Jan 04). Enterprise-centric views (Business, Operational, System, Technical, Information & System) are necessary and useful for such purposes; however, a distinct user view remains necessary to enable knowledge workers to flourish in their information environments.



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1914 – 2005