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DIGITAL INFORMATION DESIGN FOUNDATION

Improving business performance
through better use of information
and technology

Brian Johnson
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Digital Information Design (DID) Foundation

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Digital Information Design (DID®) Foundation



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Colophon

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Foreword

Information, in modern times almost entirely digital, is critical for enterprises to operate. The ubiquity of IT means that digitized information not only helps you to manage your enterprise more effectively and efficiently but also, that this information has become totally integrated with the business of the enterprise. In order to manage the quality of information, and how to put it to good use, Digital Information Design (DID) was developed.

What is Digital Information Design (DID)? It is primarily a business information management (BIM) model and as with any model it is used to help you to describe problems and test potential solutions. DID is not like any other method or framework model; it is independent of any other existing model or framework and does not claim to manage the entirety of the design of business information services. DID identifies useful and widely used best practices that are designed specifically for use in any phase of business information service development from idea, conception, specification, design, test, handover, service management and operation, or managing architectural issues or hardware and software installation. The received wisdom that one specialized and well-marketed framework model will meet all your needs is simply wrong.

The DID model has been designed for you to identify what you need and when you need it when designing business information services and as a broad guide, identifies key points in existing frameworks that are particularly useful. The model is wholly independent of all other frameworks (including BiSL and BiSL Next in which the basic design is rooted). You can choose and use whatever you wish, the model will help you to assess the validity of your choice(s) and identify strengths and weaknesses in your approach.

The model is designed to be simple by focusing on the common languages to describe key elements of design (need and value, mission and capability), key business information perspectives (business, information/data, services and technology) and the high-level domains (governance, strategy, improvement and operation) that must be managed in order to effectively run any business.

A long-established enterprise where myriad frameworks, methods and standards are in constant use, can use the DID model to ensure that it is using such guidance effectively and appropriately and to identify gaps in what is needed. The DID model has already been tested in such a way for a major service provider to create a common language for enterprise-wide collaboration. Although focused on the business information needed by the enterprise (internal and external), its use identified duplication of 'common' software support tools, miscommunication between application development teams and operations teams and even software support tools unsuited to the domain in which they are used.

DID helps you to identify only what you need to ensure that business information design reflects what is needed by your enterprise. The model can be used entirely separately from the framework level guidance discussed and it can be used at any level in the organization.

What if you have no knowledge of frameworks and methods? Well, the DID guidance mentions most of the well-established and useful frameworks and instructs you about their most important features, and more than that, instructs you about how to use them in designing business-driven IT services. DID then becomes a framework of methods and you can use it throughout the software development lifecycle, agile or traditional.

The essentials of DID are explained in two books: the first is this book, Foundation. Later this year, the Practitioner book will be published. The DID Foundation book explains the DID model, DID foundation concepts and how to use DID in an enterprise. The DID Practitioner book will be focused on case studies and 'real-life' examples of using DID.

Brian Johnson and Léon-Paul de Rouw
January 2021

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1

WHY DO I NEED BIM?

■ 1.1 INTRODUCTION

The capabilities associated with managing the digital information assets of any enterprise, or government body, are many and diverse. Increasingly, however, enterprises take the view that information is an asset of the enterprise. Information is a critical resource for organizations. Without information or with information of low quality an organization can not function properly. So information should not be treated differently to the financial resources, capital equipment and building/estate assets of the enterprise. Digital assets, properly deployed and employed, create additional value with a measurable and demonstrable return on investment. Forward-thinking enterprises take this view a step further, considering information as a strategic asset that can be exercised as a competitive advantage in the markets they serve. Why use the term "digital"? All useful information no matter the storage medium is important, we use "digital" only because of the ubiquity of IT and to emphasize the need to address the speed of change resulting from the use of IT.

We exist in a digital economy and most of the information we use is digital. Digital information is the currency with which business is transacted within enterprises and exchanged between enterprises. The Information we have available influences our actions and thus the requirements for this information become increasingly stringent: information must be accurate, timely, complete, etc. The result is that standards for the functionality and quality of the information processing systems are similarly stringent. Information systems comprise both manual, non-automated and automated processes and numerous supporting IT components that together result in a business information service being provided¹.

¹ R.D. Austin, L.M. Applegate and D. Soule, *Corporate information strategy and management: text and cases 8th edition*, McGraw-Hill Education 2008; John Ladley, *Making EIM (Enterprise Information Management) work for business; a guide to understanding information as an asset*, Morgan Kaufmann 2010.

Digitization

Digitization is often beyond the traditional borders of IT and data. A number of enterprises include the management of telephones and other voice communications systems, intellectual property and other knowledge assets as part of the information ecosystem. And legislative issues can also drive the digitization of information; for example, in the USA medical prescriptions must be communicated electronically between the prescribing physician and the issuing pharmacist. Why? The US government wants to reduce the risk of issuing the wrong prescription. The widespread practice of prescribing pain killers is considered a major problem and moving to electronic information is seen as a tool that can provide information to change healthcare for the better. The reason is that with electronic communication there is the intrinsic capability of tracking the numbers and use of medical prescriptions more accurately.

There is a significant difference between the terms "data" and "information". Most pundits agree that information results from the processing (by whatever means) of information. Knowledge managers argue that the processed information needs to be placed in context in order to be fully understood. Superficially, information results from the processing of raw data. However, the specific issue is getting the correct information to the right person on a timely basis and in a usable form. Thus, perhaps the most critical issues facing information managers are requirements definition and aligning the focus of the information services with the enterprise goals. And requirements definition means becoming involved in the process of designing a business service, digital, IT-driven or not. Leaving things to a semi-random, non-coordinated approach leads to an *ad hoc* culture of requirements definition.

These are some of the questions that you as a business information manager may have in mind:

- What is our enterprise strategy with regard to IT?
- Where is our operating model?
- Who can advise about security?
- Do I have sufficient information about how IT services are provided?
- How much time do I have to think about the transformative impact of major changes?
- How do users perceive their experience of data-driven services (their user experience, UX)?
- Has risk assessment of the proposals taken place?
- Who is in charge of the programme of change?
- Will the change mean a change in business direction?
- What support processes will be affected?
- What is a cloud and where can I buy a couple?
- Will there be a change to my information needs?

- What new capabilities are required from the IT information processing services?
- Can the current IT infrastructure deliver what is required, or must I instigate technical IT changes with the CIO?
- What the hell is Agile?
- Can I insulate myself from IT failure?
- If not, how can I avoid IT failure?

■ 1.2 WHAT IS BIM?

Information management in general is considered to be the collection and management of information from one or more sources and the distribution of that information to one or more sources. You can formally define information management as: Information management is the management of processes that acquire, create, organize, distribute and use information². In this book, the scope also includes technology (increasingly difficult to separate from information and data gathering) and the construction and operation of software applications that process data. As such Information management encompasses information processes, information resources and information technologies.³

The short definition of information management is: *the management of the information services comprising functionality, data and technology.*

Business information management (BIM) is the management domain responsible for all of the tasks and activities that are aimed at governing, defining, improving and supporting the use of the information services (IS) needed for running the business and reaching the enterprise goals.

Most often, IT is the delivery mechanism of how business information is captured, processed and stored; using IT means that information services based on IT need to be designed with the user of the data in mind. BIM then, is wide ranging and its implementation will vary, possibly covering an enormous spectrum of scope, from enterprise to enterprise.

2 Chun Wei Choo, *Information management for the intelligent organization – the art of scanning the environment*, American Society for Information science and Technology (ASIST) 2002.

3 P. Ribbers (2014), Information Management, between supply and demand: challenges ahead, Valedictory Lecture, Tilburg School of Economics and management.

Information systems or information services?

The definition of information systems can be confusing. There is little consensus. For one thing, 'systems' and 'services' are used interchangeably because the outcome of designing a business information system based on IT is a service. . .

The definition often depends on the perspective of your role, for example whether you are a data analyst, systems analyst or business analyst----- or maybe you do not care about the definition because you consider yourself a user of services that rely on IT. Both business and systems analyst most often refer to information systems as the term used to describe *business information services* because most services are based on IT.

The difference is often the scope; a business analyst might include cultural issues, specific workplace issues because of a greater familiarity with working practices whereas a systems analyst often focused on the information being collected and processed and left the 'softer' issues to systems testing.

A formal definition for information systems is: *Information systems are formal, sociotechnical, organizational systems designed to collect, process, store and distribute information. Information Systems have four fundamental components that must work together to deliver information processing functionalities that a business requires to fulfill its information needs: Structure, IT, People and Process*⁴.

In the Netherlands 'information provision' was often used, sometimes from the business analyst perspective, sometimes from the system analyst perspective. The term is not used elsewhere.

IT may be the foundation of modern enterprises, but it is not necessarily the reason for being in business; an enterprise serves customers (no matter if these are public or private sector) and managing information services requires that strategic, tactical and operational staff fully understand all aspects of business information capture, processing, retrieval, security and management. Services designed and built within technology environments for technology environments are therefore not business information services.

⁴ See for example: Gabriele Picolli and Federico Pigni, *Information systems for managers, edition 3.0*, Prospect Press, Burlington 2016; Alter, S., (2013), *Work System Theory: overview of core concepts, extensions and challenges for the future*, Business analytics and Information Systems, Paper 35., *Journal of the Association for Information Systems (J ASSOC INF SYST)*, online: <http://repository.usfca.edu/at/35>.

In summary, BIM provides you with the opportunity to:

- Govern business information management;
- Concentrate on transformative data-driven services: be strategic with regard to the information needs of the enterprise and networked enterprises, and to direct data and information services design accordingly;
- Coordinate the development of digital business services by directing information needs throughout service development using programme, project and rapid development good practices;
- Ensure the required operational functionality will be delivered through the use of specific frameworks to address information and data management, functionality, software and infrastructure support.

BIM must coordinate strategic topics, such as:

- Business process management with regard to information;
- Developments in the information partner and supply chains;
- Technological developments;
- Market opportunities and risks;
- Agility, transformation and improvement of business information services.

These strategic topics affect all business activities. The topics can be either a risk or opportunity, depending on the need for information and the value of the information for both the business activities and the enterprise. Governance policies must be carefully interpreted at the strategic level to be effective in the operational environment.

The degree to which an enterprise succeeds in delivering effective and efficient information services depends to a large extent on how information is collected, analyzed, processed and exchanged at different levels, and where the information chain leads, both inside and outside of the enterprise.

BIM manages the portfolio of information services on behalf of the business or product managers. Thus, business information management should be responsible for the overall coordination of design and implementation of business information services. BIM is neither a technological framework nor a sourcing method, but a necessary *function* that runs as a common thread from governance to operation. That is why BIM is an integral part of both information and technological choices. The following tasks within the BIM domain are necessary to fulfill this responsibility:

- Carrying out strategic activities necessary to decide on the future of the business information services required for the provision of business activities and determining how these strategic activities are organized; this includes the formulation of information policy and strategy based on enterprise policy;

- Monitoring developments in the enterprise, business chains and IT, and translating these developments (opportunities and threats) into consequences for the information services;
- Managing, evaluating and improving metadata and master data, and monitoring the quality of the data used by the organization;
- Defining what information is needed to support business processes and business services;
- Ensuring that this information is collected and secured in accordance with company policy;
- Defining/specifying requirements for information systems and services;
- Accepting new or changed information systems and services;
- Preparing the enterprise for the use of new information services;
- Supporting users;
- Recognizing needs and demands within the enterprise regarding information use;
- Using, evaluating and improving data sources;
- Ensuring that information is collected and secured in accordance with current policies;
- Translating demand into solutions by changing existing services, participating in the design of new information services or changing information services. Not every requirement or request necessarily requires a solution with the help of BIM and not every delivery of a new information service or extension of an existing information service leads to an IT project, although the dependence of modern enterprises on IT makes it likely;
- Evaluating and managing projects, developments and activities in collaboration with the internal IT departments or IT supplier (s), and managing, monitoring and evaluating delivery or supply.

■ 1.3 BUSINESS INFORMATION SERVICES

Where does business information arise? Depending on your way of working, information appears via surveys, it comes from internal records, social media, articles, books, references and search engines, or through customers purchasing your services or products, or communicating with government departments or agencies; depending on the source and what you do with it, the information is used to guide planning in order to create revenue or perhaps to provide government services. Some common definitions are shown below; make sure everyone understands your description or terminology.

- A business information service is a service that provides the business with the necessary information for delivering business services to its customers;
- An information service is a service that provides any party with the necessary information for its activities. Information services comprise three components: functionality, data and technology;

- A business service is a service provided by the enterprise to its customers and other stakeholders, which comprises one or more products and/or services.

Information arises in all sorts of ways, via the Internet of Things (IoT) , from customers, information and supply chain partners, even from social media friends. Published sources may be the web, blogs, newspapers, magazines, databases, government statistics, directories, technical manuals, and many, many more. Information is often defined by context rather than by content, which is why many information specialists claim that information becomes knowledge because you know what to do with it.

In Digital Information Design, DID, a business information service is considered to be an IT-driven service aimed at providing necessary information, such as those services provided by government or banks to gather information from citizens so that they can to provide pensions or insurance policies or bank accounts. We specifically use business information services as a term because the most commonly used alternative, information services, is often used to describe services or systems that are used by IT professionals, such as provision of test environments or services relating to support systems. Lack of clarity often leads to confusion. Furthermore, a business information service need not necessarily be IT-driven, it may be entirely paper based, though in modern times that is a rarity.

A business service describes the purpose why necessary information and data are provided.

The main issues to consider for effective business information management are:

- Aligning portfolio and programme management or Agile/DEVOPS methods with the enterprise strategy;
- Designing information services that meet business needs;
- Organizing digital information needs;
- Assisting with the selection of the right technical (technology. . .) infrastructure;
- If you can't fulfill the above tasks yourself, find people you can trust.

Therefore, by focusing on BIM:

- Business information services are managed and strategically controlled;
- It is possible to focus on a transformation to data-driven services;
- The information needs of the organization and its ecosystem are strategically assessed and data and information services are designed accordingly;
- The development of business services, which are dependent on information, is directed towards the development of digital business services. The BIM team will guide the management of information needs throughout service development, using good practices in the field of programme and project management, or Agile methods;

- It will help to ensure that operational functionality is delivered through the use of frameworks and methods that are focused on information and data management, functionality, software and infrastructure support.

■ 1.4 DIGITAL INFORMATION DESIGN

DID has been developed to gain and maintain control of information within enterprises. DID is an abbreviation for “Digital Information Design”; it is a vendor-independent public domain library for the implementation of business information management. The library consists of publications that describe the process framework for business information management and a large number of good practices, white papers, articles and presentations. The ASI BiSL Foundation Digital Information Design family is the next generation of good practices for specifying, organizing, directing and managing the digital information services of enterprises. The core of the series consists of two books: the Foundation (book 1) and the Practitioner (book 2). This book explains the DID model and DID foundation concepts.

The DID framework has been developed to provide a tool for the information management aspects of all business services, with specific attention paid to IT-driven services. DID is the new generation of best practices for supporting the design, management and management of data, information and knowledge, including unstructured data such as that found on social networks or which have been recorded by chain partners⁵. The model is an “aide memoire” on how to structure and operationalize the various aspects of business information management so that it becomes more controllable. In this book the basic definitions of business information management are discussed, explanations are given about the substantive basis of business information management, how the DID framework is set up to provide substantive structure to information management and how to apply this model.

The focus of BIM has shifted from operational functions to focus on the mission and ability of the modern enterprise to deploy the appropriate resources with the appropriate capabilities.

BIM is about governance, the strategy, the improvement and the functioning of business information services from an enterprise perspective. The DID framework describes the activities required to determine many BIM responsibilities. The relationships between these activities are described from a conceptual perspective with examples used to illustrate practical applications.

5 Digital Information Design (DID) is the new modern and improved best practice that succeeds the BiSL (Next) library.

Why does the world still need a good practice like DID as the modern successor to BiSL⁶? Because relying on a single framework, good practice or standard cannot encompass the complete management of information and data collection, security, retrieval, processing and outcomes. The IT and enterprise perspective must be rationalized and properly interpreted to ensure enterprise objectives. In addition to DID, we refer to good practices that are relevant to BIM, such as governance, security and risk management, knowledge and data management and budgeting. But BIM is not the only perspective on these disciplines. Sometimes other frameworks are available that provide more specific practical guidelines. For example, privacy and security best practice may exist in IT, though ensuring it is relevant and enacted in line with business needs must be led by those with a clear understanding of business needs and BIM is the recommended home for ensuring policies are as needed.

DID has been developed to provide a resource for the information management aspects of IT-driven business information services. Just think of the problem of structured and unstructured data. Massive amounts of data reside "somewhere" in the enterprise, and most of it is unstructured and difficult to identify or search. That is why data is so important to BIM.

■ 1.5 BENEFITS OF DID

In today's markets CIOs are increasingly being asked to focus on business needs with regard to information processing and not solely upon technology. Thus the opportunity to ring fence a budget for BIM is clear, the first step is to provide a business case with a clear definition of benefits, costs, risks and the required budget.

It is difficult to be precise about BIM implementation costs, because of the variance of business transformation goals and information needs in different enterprises. It is, however, clear that implementing new processes and procedures costs time and money; though less cost is involved in influencing behavior, either through training or persuasion. And it is certainly possible to identify that even very small percentage improvements in efficiency will result in savings that more than offset these costs by, for example, avoiding catastrophic services outages caused by essential data being unavailable or not having to respond to problems created by a failure to manage information properly.

6 The BiSL library contains among others: R. van der Pols, R. Donatz and F. van Outvorst, *BiSL® - A Framework for Business Information Management - 2nd Edition*, Zaltbommel 2012; R. van der Pols, *ASL®2 - A Framework for Application Management*, Zaltbommel 2012; R. van der Pols and Y. Backer, *BiSL® Pocket Guide – 2nd Edition*, Zaltbommel 2012; R. van der Pols and Y. Backer, *ASL®2 Pocket Guide*, Zaltbommel 2014; Y. Backer, *ASL® and BiSL® Case Studies*, Den Haag 2014; R. Donatz, *BiSL® Self-assessment – 2nd Edition*, Zaltbommel 2012.

Budgeting for BIM and assessing the risks associated with either failing to introduce BIM or indeed introducing BIM without proper planning should be the responsibility of middle management. Discussions should take place with the Security and Financial divisions to establish overarching policies and budgets. BIM can and should advise on privacy and security.

As mentioned earlier, BIM strategists and owners will have specific goals that require budget and resources; these goals and resources must be reconciled with overall enterprise goals and policies. A business case for BIM is the best means of convincing CIOs, who are new to the discipline, of the need for BIM.

DID primarily enables you to reap the benefits of being in control of BIM. Without a tool, BIM is largely abstract and guidance is needed in order to grasp the picture of information flowing through the enterprise. Other frameworks are also tools, whether it is COBIT that elaborates on control objectives that can be identified and audited, or BABOK® or ITIL or indeed any of a hundred others.

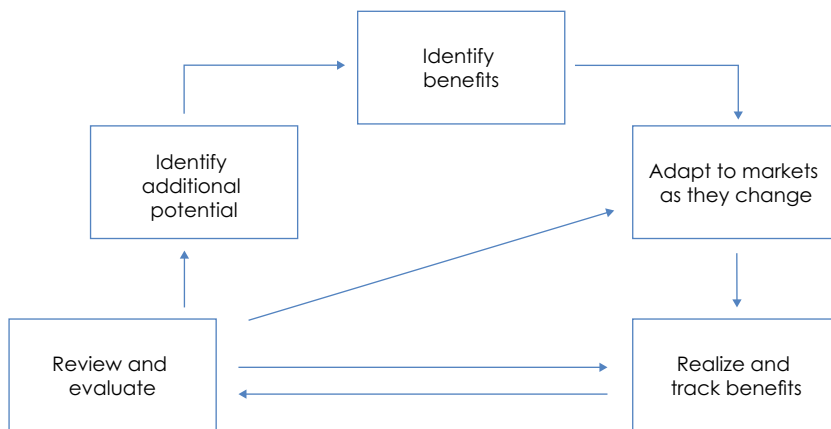


Figure 1.1 Thinking about the benefits of using DID

However, remember the proverb “A bad workman blames his tools. . .” DID is not a hammer with which you club every nail, though many useful frameworks are misused in such a way. DID benefits you by identifying the most common activities and resolutions to BIM. Used wisely, DID good practices will result in benefits such as your enterprise being in control of sensitive and vital information assets, reducing the costs incurred because of poor data quality, establishing a culture focused on the quality, integrity and availability of your information assets and ultimately becoming a digital enterprise. Business transformation using IT is multi-faceted and most often focused on IT professionals; DID focuses on the business professional.