

BEST PRACTICE

DIGITAL INFORMATION DESIGN

A PRACTITIONER GUIDE

Improving business performance
through better use of information
and technology

Brian Johnson
Léon-Paul de Rouw
Chris Verhoef

Digital Information Design (DID®)
A Practitioner Guide

Other publications by Van Haren Publishing

Van Haren Publishing (VHP) specializes in titles on Best Practices, methods and standards within four domains:

- IT and IT Management
- Architecture (Enterprise and IT)
- Business Management and
- Project Management

Van Haren Publishing is also publishing on behalf of leading organizations and companies: BRMI, CA, Centre Henri Tudor, CATS CM, Gaming Works, IACCM, IAOP, IFDC, Innovation Value Institute, IPMA-NL, ITSq, NAF, KNVI, PMI-NL, PON, The Open Group, The SOX Institute.

Topics are (per domain):

IT and IT Management

ABC of ICT
ASL®
CMMI®
COBIT®
e-CF
ISM
ISO/IEC 20000
ISO/IEC 27001/27002
ISPL
IT4IT®
IT-CMF™
IT Service CMM
ITIL®
MOF
MSF
SABSA
SAF
SIAM™
TRIM
VeriSM™
XLA®

Enterprise Architecture

ArchiMate®
GEA®
Novius Architectuur
Methode
TOGAF®

Project Management

A4-Projectmanagement
DSDM/Atern
ICB / NCB
ISO 21500
MINCE®
M_o_R®
MSP®
P3O®
PMBOK® Guide
Praxis®
PRINCE2®

Business Management

BABOK® Guide
BiSL® and BiSL® Next
BRMBOK™
BTF
CATS CM®
DID®
EFQM
eSCM
IACCM
ISA-95
ISO 9000/9001
OPBOK
SixSigma
SOX
SqEME®

For the latest information on VHP publications, visit our website: www.vanharen.net.



Digital Information Design (DID®) A Practitioner Guide

Improving business performance through better
use of information and technology



Brian Johnson

Léon-Paul de Rouw

Chris Verhoef



Colophon

Title:	Digital Information Design (DID®) – A Practitioner Guide
Subtitle:	Improving business performance through better use of information and technology
Series:	Best Practice
Authors:	Brian Johnson, Léon-Paul de Rouw and Chris Verhoef
Reviewers:	Marco Dumont (Assessie) Maarten Hillenaar (Centric) Jan Ploeg (jPAD) Maaïke van Putten (Bright Boost)
Contributing editor:	Jasper Maas (Fontys University of Applied Sciences)
Text editor:	Steve Newton (Galatea)
Publisher:	Van Haren Publishing, 's-Hertogenbosch-NL, www.vanharen.net
ISBN Hard copy:	978 94 018 0994 8
ISBN eBook (pdf):	978 94 018 0995 6
ISBN ePUB:	978 94 018 0996 2
Edition:	First edition, first impression, June 2023
Lay-out and design:	Coco Bookmedia, Amersfoort-NL
Copyright:	© Van Haren Publishing, 2023

For further information on Van Haren Publishing, e-mail to: info@vanharen.net.

Copyright:

All rights reserved. No part of this publication may be reproduced in any form by print, photo print, microfilm or any other means without written permission by the publisher.

Although this publication has been composed with much care, neither author, nor editor, nor publisher can accept any liability for damage caused by possible errors and/or incompleteness in this publication.

Trademark notices

ASL®, BiSL® and DID® are registered trademarks of Van Haren Publishing.

COBIT® is a registered trademark of ISACA.

Gateway™ is a registered trademark of OGC.

ITIL®, P3O® and PRINCE2® are registered trademarks of AXELOS Limited.

TOGAF® is a registered trademark of The Open Group.

CONTENTS

1	BUSINESS INFORMATION MANAGEMENT	1
1.1	Information management	1
1.2	Business services are IT-driven	3
1.3	Digital Information Design framework for BIM	4
1.4	Management of business services	6
1.5	Coordinating BIM: 'the intelligent customer'	7
1.6	Who should read this book?	9
1.7	Using the book	10
2	DIGITAL INFORMATION DESIGN (DID)	15
2.1	The Digital Information Design model	16
2.1.1	The DID framework	16
2.1.2	Drivers: business model	19
	Need & Value	20
	Mission & Capability	20
2.1.3	Domains: operating model	20
2.1.4	Perspectives: enterprise architecture	21
2.2	The Plan-Do-Check-Act cycle and DID	22
2.3	Using the model to support analysis	22
2.4	Draw DID framework yourself	26
2.5	An example of how to use the DID framework	28

3	PRACTITIONER GUIDANCE FOR STRUCTURING BIM	33
3.1	The need for information management	33
3.2	Information flow and information lifecycle	36
3.2.1	Information flows between demand and supply	36
3.2.2	From business vision to operation	37
3.3	The business model as starting point	39
3.4	Success of BIM and the role of practitioners	40
4	MANAGING BUSINESS INFORMATION	47
4.1	Stakeholders rule	47
4.1.1	Executive management (the Board)	48
4.1.2	The business/line of business (LoB)	48
4.1.3	Users	49
4.1.4	Service providers	49
4.2	Making BIM possible	52
4.2.1	Managing information and data	53
4.2.2	Identification of business requirements	53
4.2.3	Guidance about the intelligent customer capabilities	54
4.2.4	Requirements for IT	54
4.3	A generic BIM decision framework	55
4.3.1	Business management	55
4.3.2	BIM Coordination (BIMC)	56
4.3.3	IT department (or directorate)	58
4.3.4	Users	59
4.3.5	External forces	59
4.4	BIM planning and control	61
4.5	Information service capabilities	63
5	BIMC AND ENTERPRISE ENVIRONMENT	71
5.1	BIMC supports the business	71
5.2	BIMC and domain dependencies	73
5.2.1	Domain: Governance	74
5.2.2	Domain: Strategy	74
5.2.3	Domain: Improvement	74
5.2.4	Domain: Operation	75

5.3	BIMC and customers.....	77
5.3.1	Insight into the needs, behavior and motivation of the user	77
5.3.2	Creating insight into the products and services package	78
5.3.3	Segmenting and filling in the environment	79
5.4	BIMC and enterprise policy and innovation	83
5.5	BIMC and contract management	84
5.6	BIMC and management control	85
5.6.1	Measuring is knowing	85
5.6.2	Quality and risk management	86

6 BIM COORDINATION 89

6.1	Organizing BIMC.....	89
6.2	Strategic and tactical tasks within BIMC	93
6.2.1	Tasks within policy, innovation and advisory management (PIA) ...	94
6.2.2	Tasks within contract management.....	96
6.2.3	Tasks within management control	98
6.2.4	Tasks within user management	100
6.3	How to structure BIMC within the enterprise	103
6.4	BIMC competences	107
6.5	How many people are needed in BIMC?	109

7 IMPLEMENTATION OF BIM 111

7.1	Practicing BIM	111
7.2	Step 1: Understand the business model	112
7.2.1	Identify your business drivers	112
7.2.2	Analyzing underlying topics and issues.....	113
7.3	Step 2: Governance, strategy and business transformation.....	114
7.3.1	Essential questions for your strategy.....	114
7.3.2	Gather essential supporting information	115
7.3.3	IT planning.....	116
7.3.4	Architectural issues	116
7.4	Step 3: Identify capabilities needed	118
7.5	Step 4: Present the business case	118
7.6	Step 5: Secure the transformation	119
7.6.1	Delegating responsibilities for functional management	119
7.6.2	Performance.....	122
7.6.3	Compliance with policy, strategy and performance	122
7.6.4	Quality and efficiency	123
7.7	Don't give up	124

Part 2: Implementing business information management using DID

127

8	CREATING THE INFORMATION SYSTEM STRATEGY	129
8.1	Information System strategy	129
8.2	Scoping and studying strategy	129
8.3	Strategy definition	136
8.3.1	Using the capabilities	136
8.4	Implementation planning and monitoring	137
8.4.1	Monitoring, tuning and reviewing	138
8.4.2	IT infrastructure planning	138
8.5	What we do in the shadows	139
9	IMPLEMENTING BIMC	141
9.1	A roadmap for BIMC	141
9.2	Opening up BIMC: four responsibilities	142
9.3	Building BIMC using DID guidance	144
9.4	Results of analysis in the different DID domains	146
9.4.1	User management	146
9.4.2	Policy, innovation and advice	148
9.4.3	Contract management	149
9.4.4	Management control	150
9.5	Quantifying the added value of BIMC	150
10	CREATING A BIM STRATEGY	153
10.1	Focus on outcome	153
10.1.1	Creating a strategic BIM vision	153
10.1.2	Strategic issues	154
10.1.3	Strategic themes	155
10.1.4	Creating and managing the strategy	156
10.2	Agenda of strategic themes:	
	analysis and decisions	157
10.2.1	Analysis using DID model	158
10.2.2	Business strategy	158
10.2.3	Data strategy	159
10.2.4	Service strategy and service integration	160
10.2.5	Technology strategy	161
10.3	To conclude	161

11 PROVIDING STRATEGIC GUIDANCE: A CASE STUDY FROM INDUSTRY. 163

11.1 Strategic investment in IT..... 163

11.2 Governance, Strategy, Improvement and Operation..... 164

11.3 Upgrading technology in line with business information needs166

11.4 Implementation issues 168

11.5 Practical implementation 170

12 A DID BOOT CAMP. 173

12.1 A DID boot camp session in four phases173

12.2 Preparation (Step 1) 174

12.3 Analysis and results (Step 2)178

12.4 Reporting and aftermath (Step 3) 183

12.5 Conclusion..... 185

Appendix A: Terms and definitions187

Appendix B: The DID canvas.....193

About the authors 194

1. BUSINESS INFORMATION MANAGEMENT

■ 1.1 INFORMATION MANAGEMENT

To execute a strategy, you first need to build a foundation. Enterprises function better when they have a sounder foundation for that execution. They have taken actions and measures that secure efficiency and enable them to reliably execute the core operations of the enterprise. An enterprise needs to transact business at the right time, at the right place, and with the right information. To effectively manage the enormous amounts of data available in the digital world of today, we need business information management (BIM). Failure to meet the demands of those needing the data, your customers (both internal and external), results in a negative customer experience.

The proliferation of data, by which we mean the huge amounts of electronic 'information' and the never-ending push to make all information digital, means IT is integral to success. Paper will not disappear just yet, though the business world (and government) increasingly drives everyone to electronic access and delivery of data.

A rough definition of **information management** is the management of the information services comprising functionality, data and technology. 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. In this book, the scope also includes technology since it is increasingly difficult to separate this from information and data gathering; and the construction and operation of software applications that process data.

Forget 'business information' and 'IT'; most information is now held as bits and bytes in massive data warehouses. Pretending that business information is a protected species is failing to recognize the dependence (good or bad) on technology.

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 needed for running the business and achieving the enterprise goals. Most often, IT is the delivery mechanism for how business information is captured, processed and stored; using IT means that information services are based on IT need. The importance of these activities demonstrates that BIM must be strategic and underlines the recommendation that every enterprise needs a Business Information Management Coordination, also called Coordinator (BIMC).

Success in the modern world depends on IT. Financial drivers have increased the move to outsourcing and business success might be the result of successfully outsourcing IT (or elements thereof) and retaining a business function to manage the business/IT interface, or it may wholly rely on 'in-house' management - or any combination in between.

IT deficiencies can stop your business operating effectively. In times of change, you must still operate because of the need to run your business on a day-to-day basis; operation often depends on managing small scale changes that frequently get in the way of long-term thinking.

In 2005, the ASL BiSL Foundation created an operationally-focused first version of the BiSL framework, based on the practical principles of ITIL, to manage day-to-day issues. DID expands this guidance into the critical areas of strategy and design of digital information management. This book focuses on practitioners and expands DID Foundation guidance in the areas of applying and implementing BIM on both a tactical and strategic level.

The guidance will cover all aspects of operational management and strategic management, from operational management through to data governance and strategy. The new guidance has been merged with operational practices current in the BIM world.

To be agile in the sense that the term DID should be used in the context of best practice, it means that you still need to know what you are doing and the potential pitfalls which enable you, as an expert, to decide which elements of best practices are most relevant, which can be put aside and how to accelerate improvements without causing chaos and rework.

■ 1.2 BUSINESS SERVICES ARE IT-DRIVEN

How many business services can you identify that are neither entirely dependent on IT, nor at the very least IT-driven, where the critical elements of strategy and design have been overlooked and where the daily management of data therefore suffers?

Business information services produce and use 'business information' to achieve business goals and to provide a good experience for those who need to make use of data. Business goals differ from one market sector to another and are markedly different between government and private sector enterprises. What is common to both is that IT is used to collect, process and store most of the data and turn it ultimately into knowledge; in the majority of cases IT is also needed to keep it safe. Think about 'the right to be forgotten'¹ and the consequences of when the securing of data is overlooked. In the modern age most people are unaware of the value of their data and how social media businesses make money from their data².

The capabilities associated with managing any digital information assets of an enterprise or government body, are many and diverse. Increasingly, however, enterprises take the view that information is an asset of the enterprise and should, therefore, 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.

BIM is about the governance, strategy, improvement and operation of information services from a business perspective. The purpose is to help you manage business information and technology securely and efficiently, control IT and to integrate it within your business, precisely when you may feel you have other things on your mind.

Hence BIM should encapsulate the capability of the enterprise to set up an expert interface between all business information activities and the users and suppliers of that information. The capability ensures strategic design for the governance and management of the BIM organization and will require a BIM coordinator (or team)

1 In May 2014, the European Court of Justice ruled against Google in Costeja, a case brought by a Spanish man, Mario Costeja González, who requested the removal of a link to a digitized 1998 article in La Vanguardia newspaper about an auction for his foreclosed home, for a debt that he had subsequently paid. The court ruled in Costeja that search engines are responsible for the content they point to and thus, Google was required to comply with EU data privacy laws: https://en.wikipedia.org/wiki/Right_to_be_forgotten

2 See for example Shoshana Zuboff, *The age of surveillance capitalism: the fight for the future at the new frontier of power*, 2019.

that we will term the **BIMC**, (and after this, we will drop the 'the', unless it is needed to clarify our writing style).

Focusing on business information management 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 coordinate data and information services design accordingly;
- Address the development of business services that depend on information by controlling the development of digital business services via the coordination of information needs throughout services development using program and project good practice;
- Ensure the required operational functionality will be delivered through the use of good practices to address information and data management, functionality, software and infrastructure support.

The key strategic issues for effective business information management are:

- Portfolio and program management in line with your enterprise strategy;
- Designing business information services that meet business needs (business process developments related to information);
- Organizing your digital information needs (information partner and supply chain developments);
- Selecting appropriate technical (technology...) infrastructure (technology developments);
- If you can't 'do it yourself', finding people you can trust (market opportunities and risks).

■ 1.3 DIGITAL INFORMATION DESIGN FRAMEWORK FOR BIM

To support you in the area of business information management, Digital Information Design (DID) guidance has been developed as a good practice. At the Foundation level (renewed in 2020 by the APM Group to reflect the need to develop strategic thinking about data) we focused on understanding the DID framework and explored the different subjects and key issues to be addressed in a consistent and coherent approach. But to bring the disparate parts together it has to work as a consistent entity. As a consequence, the DID practitioner needs to understand the context in terms of where BIM adds value.

Understanding the context means understanding the processes that need to be in place in order to make something work or function optimally. For example, think

about a laptop, just an unremarkable little flat box that now has more computing capability than the supercomputers of 30 years ago. But this little box only functions because of the wider context in which it operates. Think about the capability grid that needs to be in place, including an operating system that connects to different surrounding assets. See for example the development of supercomputers the size of a credit card. The supercomputer will serve high-performance applications that are constrained by size and weight, such as small commercial robot drones, or high-resolution industrial IoT sensors³.

Understanding the context of information needs helps you to understand how to execute BIM and add value. DID good practices then enable you to analyze, organize, synthesize, and implement the appropriate solutions.

Applying this knowledge and educating the people in the enterprise how to use the proposed solutions are the essential components that makes you a practitioner. The overarching capability that you need to master is that of **the intelligent customer**. The intelligent customer capability focuses on:

- An understanding of the information processes between demand (customers) and supply (service suppliers).
- A BIM focus on business, data, technology and service.
- A BIM focus on business model, operating model (enterprise architecture), operational model, service design.
- Understanding that the benefits approach appraises the full investment in business information service change and is not simply a validation of the IT components.
- Understanding contractual, performance, technology and customer issues in relation to service delivery.
- Information lifecycle management.
- Understanding functional management, at the strategic, tactical and operational levels.

The intelligent customer concept is not a 'new invention'. It is not a creation of the DID Foundation or the authors of this book, it is in fact a long-standing and well documented best practice created by the originators of the ITIL and PRINCE2 best practices. We have simply followed the guidance of these practices and adapted them for the digital age to improve the operational management of BIM.

3 <https://www.techerati.com/news-hub/nvidia-supercomputer-ai-edge-iot/>

■ 1.4 MANAGEMENT OF BUSINESS SERVICES

To manage data strategically, the overarching capability can be viewed as a variation of the intelligent customer best practices. As mentioned above, the central topic of this book is the understanding and application of the intelligent customer in coordinating information services, or in other words, the role of the intelligent customer in an enterprise. Tools are provided for the correct application of business information management (BIM) based on the necessary outcomes of these services, which may for example (as a result of total outsourcing or the placement of services in a shared service enterprise) be managed at a distance from the parent enterprise.

Almost all enterprises, other than those working with small pieces of paper (or small brain cells) and notebooks, will sooner or later have to deal with the question of how the tasks associated with the implementation of IT or IT service provision should be organized. This concerns both the supporting services (such as facilities, IT) and (parts of) the primary processes. Some enterprises continue to provide these services internally, others choose to use external service providers. The way in which implementation is organized (and this can be done in many different ways) is called sourcing and the 'source' can be in-house or from a large number of different suppliers.

The reason for sourcing is almost always the need to strengthen the relationship between the client and the service provider following some form of 'out' sourcing. It often appears that problems which existed before the commercialization are still present after the commercialization and sometimes have become even greater due to increased transparency or the lack of substantive knowledge or lack of proper management. The enterprise is then still responsible for managing the agreements, for example in contract form, and for ensuring that its own customer enterprise gets what it needs. In general, most of the time is spent on the sourcing process.

Too often, insufficient time is spent on thinking about the commissioning activity and its consequences. Certainly, when the sourcing process is more difficult than anticipated and is delayed. Only during or after the sourcing process do we become more aware of the necessity to manage the result of the activities that are placed at a distance and to arrange for a more business-like relationship between client and service provider. The enterprise gradually realizes that there is a need for a component or central point that can properly manage questions from the business-related services that are related to quality and costs, both before, during and after the sourcing process. More often than not, this central point relies totally on information and is frequently the least educated in regard to any form of BIM.

Added to this is the fact that the issues of information design and management are generally neglected until IT is engaged to design applications, which illustrates

one of the reasons why so many projects that rely on data capture, processing and exchange either fail completely or fail to deliver as promised. For instance, in the Netherlands the failure rate of IT-outsourcing amounts to 40%⁴.

Questions that the enterprise then has to deal with include:

- How to focus on the quality of outsourced services and how do we organize the management function within the enterprise?
- What are the policies regarding digitization, data and information in the business?
- Do we need to manage the design of business information strategically or are we confident it is a task that can be left to IT?
- How do we need to design day-to-day operational data handling?
- How do we organize control and management to maintain the quality of services?
- What does this mean for our employees?
- And how do we deal with cultural change?

These are some prominent questions that are related to the management of business services, perhaps arising as a result of outsourcing or internal charging to make costs transparent. In other words, there is a need for management to control the result of work carried out by internal or external parties. But what is the structure of that management and how do you organize the coordination function in your own enterprise?

■ 1.5 COORDINATING BIM: 'THE INTELLIGENT CUSTOMER'

The word *coordination* has many different meanings, often depending on the context in which it is used. But all coordination functions have similar characteristics:

- Focus on results;
- Ensure that the service is provided;
- Ensure coherence and offer coordination;
- Monitor quality and costs.

BIM coordination is no different. Various labels are used within enterprises for coordinating or assembling services. For example, we hear about the retained enterprise, commissioning, demand and supply bundling and control, contract holder consultation, service management, contract management, demand

4 Delen, G.P.A.J., Peters, R.J., Verhoef, C., & Van Vlijmen, S.F.M. (2016). Lessons from Dutch IT-outsourcing success and failure. *Science of Computer Programming*, 130, 37-68 and Delen, G.P.A.J., Peters, R.J., Verhoef, C., & Van Vlijmen, S.F.M. (2019). Foundations for measuring IT-outsourcing success and failure. *Journal of Systems and Software*, 156, 113-125.

management, management office, intelligent customer function, technical coordination team or service integration team, and vendor control.

Each enterprise, therefore, may use a different name for coordinating and controlling both internal, and remote services, or parts thereof. The term *intelligent customer* is the one used most often to cover the activities and is now so well understood that current publications as diverse as the Guardian and Private Eye use it without any explanation. Although primarily created to assist in managing the complexities of outsourcing, most of the intelligent customer guidance is generally applicable to any strategic management function. In particular, it is applicable where the strategic function is central to the business, as is the case with the issues facing modern business regarding the huge amounts of data that must be processed.

Figure 1.1 helps you understand the position of BIM in the context of the supply and demand of information services needed to manage enormous amounts of data. In this book we have adapted the intelligent customer guidance to suit the tactical coordination and strategic support of all business information activities and processes. We will demonstrate how to use the DID model, and provide guidance on how to build and operate a tactical BIM coordination role as well as perform a strategic support and advisory role.

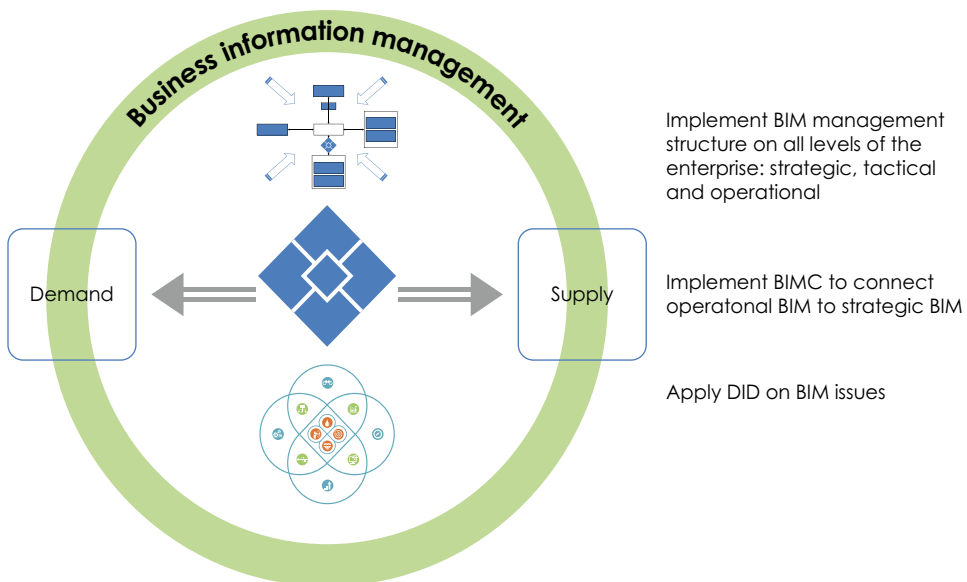


Figure 1.1 Organizing BIM in the context of the supply and demand of information services

As ever, the role can be created in many ways to suit your enterprise; it might be one person or a team of 20 in a purpose-built office as discussed in the next section; it might be a part time role or all consuming. It is up to the enterprise to execute the role depending on its specific needs. We will introduce the role of BIM Coordinator,

BIMC; it is up to the enterprise to decide how best to deploy that role once its value is understood. BIMC might be one person or a team; it is the role that takes all responsibility for business information in the enterprise and where BIM and intelligent customer expertise is to be found.

In all cases, the measures required to fulfill the associated management duties must be enacted as roles in different places, in different departmental units. Effectively coordinating outsourced implementation requires insight into the measures to be taken, into the resulting roles and the coherence of measures and roles within the enterprise. This also is true wherever business information is involved, for example in the supply chain, and leads to an issue in relation to the scope of the intelligent customer function. It is recommended that information and data policies that require DID processes (we believe this to mean all business processes) should be brigaded under intelligent customer auspices to ensure consistency.

Effective coordinating both strategic and tactical information management, on a daily, weekly, monthly or annual basis, is carried out by BIMC. BIMC is the intermediary between the enterprise with its internal customers on the one hand and the suppliers of service on the other. BIMC can be considered as operational management on a tactical and strategic level, and a means of ensuring that operational activities are carried out as contracted or agreed. Effective here does not necessarily mean a fully formal approach. In fact, when an enterprise struck a balance between formal and informal decision making, it increases the odds of IT-outsourcing success⁵.

BIMC should be set up with a clear goal: effective management of the results of both internal and remote BIM services throughout the business. This applies both on the demand-side, where demand bundling takes place within the enterprise and demand management, and on the supply-side, where requested services are bundled and managed using internal or external service providers.

■ 1.6 WHO SHOULD READ THIS BOOK?

This book is primarily about the design and functioning of enterprise-wide business information management using intelligent customer principles, with particular regard to digitization. The DID framework is used to describe, position and provide tools for the design of the BIMC function focusing on the enterprise information assets. This framework has been set up to effectively shape BIM within an enterprise, with the aim of ensuring a better use of information and technology in the enterprise.

5 Delen, G.P.A.J., Peters, R.J., Verhoef, C., & Van Vlijmen, S.F.M., *Demystifying a priori ITO-success determinants* (unpublished manuscript, 2023).