

The Digital Practitioner Pocket Guide

Prepared by Andrew Josey



The Digital Practitioner Pocket Guide

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The Digital Practitioner Pocket Guide

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Comments relating to the material contained in this document may be submitted to:

The Open Group

Apex Plaza

Reading

Berkshire, RG1 1AX

United Kingdom

or by electronic mail to: ogspeccs@opengroup.org

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Preface

The Open Group

The Open Group is a global consortium that enables the achievement of business objectives through technology standards. Our diverse membership of more than 700 organizations includes customers, systems and solutions suppliers, tools vendors, integrators, academics, and consultants across multiple industries.

The mission of The Open Group is to drive the creation of Boundaryless Information Flow™ achieved by:

- Working with customers to capture, understand, and address current and emerging requirements, establish policies, and share best practices
- Working with suppliers, consortia, and standards bodies to develop consensus and facilitate interoperability, to evolve and integrate specifications and open source technologies
- Offering a comprehensive set of services to enhance the operational efficiency of consortia
- Developing and operating the industry's premier certification service and encouraging procurement of certified products

Further information on The Open Group is available at www.opengroup.org.

The Open Group publishes a wide range of technical documentation, most of which is focused on development of Standards and Guides, but which also includes white papers, technical studies, certification and testing documentation, and business titles. Full details and a catalog are available at www.opengroup.org/library.

This Document

This is the Digital Practitioner Pocket Guide. It is based on selected parts of the Digital Practitioner Body of Knowledge™ Standard. It is designed to help:

- Those who require a first introduction and basic understanding of the Digital Practitioner Body of Knowledge Standard
- Individuals who wish to create and manage product offerings with an increasing digital component, or lead their organization through Digital Transformation
- IT professionals working within any size organization, from a startup through to a large enterprise, that has adopted digital approaches

The audience for this document is:

- Senior digital business professionals, up to and including C-level, who need an increased awareness of digital practices

- Mid-career IT professionals who need retraining to stay relevant and validate their digital Subject Matter Expert (SME) status in specific domain areas
- Entry-level computing and digital business professionals
- College-level students and computing and digital business majors

The high-level structure of the document is summarized as follows:

- Chapter 1, *Introduction* provides a brief introduction to the Digital Practitioner Body of Knowledge Standard
- Chapter 2, *An Introduction to the Body of Knowledge* provides a first introduction to key terminology, key concepts such as digital-first, Digital Transformation, and also the structure of the Body of Knowledge
- Chapter 3, *Digital Fundamentals* describes the basic concepts employed by the Digital Practitioner, such as why people want digital, computing, or IT services; the general outlines of their structure; how they come into being; and how they change over time
- Chapter 4, *Digital Infrastructure* describes the overall capabilities of digital infrastructure and initial concerns for its effective, efficient, and secure operation
- Chapter 5, *Application Delivery* describes the fundamental objectives and activities of application development
- Chapter 6, *Product Management* describes why product management is formalized as a company or team grows, and the differences between product and project management
- Chapter 7, *Work Management* describes the key concerns and practices of work management as a team increases in size
- Chapter 8, *Operations Management* describes the basic concepts and practices of operations management in a digital/IT context
- Chapter 9, *Coordination and Process* describes how to coordinate as the organization grows into multiple teams and multiple products
- Chapter 10, *Investment and Portfolio* describes aspects of IT investment and portfolio management, including finance, sourcing, portfolio management, Service Catalogs, and project management
- Chapter 11, *Organization and Culture* describes various aspects of organizational structure, human resources, and cultural factors, as an organization goes through the “team of teams” transition
- Chapter 12, *Governance, Risk, Security, and Compliance* describes the core aspects of governance, risk, security, and compliance, as an organization operates at enterprise scale
- Chapter 13, *Information Management* describes the basic aspects of information and data management on a large scale; this involves the establishment of formal governance, control, and management techniques for information
- Chapter 14, *Architecture* describes key practices and methods for managing complexity using Enterprise Architecture

Conventions Used in this Document

The following conventions are used throughout this document in order to help identify important information and avoid confusion over the intended meaning:

- **Ellipsis (...)**

Indicates a continuation; such as an incomplete list of example items, or a continuation from preceding text.

- **Bold**

Used to highlight specific terms.

- *Italics*

Used for emphasis. May also refer to other external documents.

In addition to typographical conventions, the following convention is used to highlight segments of text:



Note

A Note box is used to highlight useful or interesting information.

About the Author

This document builds on materials from the Digital Practitioner Body of Knowledge Standard published by The Open Group. The author listed here has prepared this document. See the Acknowledgements section for more information.

Andrew Josey, The Open Group

Andrew Josey is VP Standards and Certification, overseeing all certification and testing programs of The Open Group. He also manages the standards process for The Open Group. Since joining the company in 1996, Andrew has been closely involved with the standards development, certification, and testing activities of The Open Group. He has led many standards development projects including specification and certification development for the ArchiMate®, TOGAF®, POSIX®, and UNIX® programs. Most recently he has led the development of the TOGAF Business Architecture Level 1 certification credential and DPBoK Foundation certification. He has led the automation of The Open Group standards development using a GitLab-based automated build toolchain. He is the lead author of this document.

He is a member of the IEEE, USENIX, and the Association of Enterprise Architects (AEA). He holds an MSc in Computer Science from University College London.

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- Chris Frost
- Paul Homan
- Robert Weisman

Referenced Documents

The following documents are referenced in this Guide.

(Please note that the links below are good at the time of writing but cannot be guaranteed for the future.)

- [1] M. L. Abbott, M. T. Fisher, and T. Keeven, *The Art of Scalability, Scalable Web Architecture, Processes, and Organizations for the Modern Enterprise*, June 2015, published by Addison-Wesley
- [2] G. Adzic, *Impact Mapping: Making a Big Impact with Software Products and Projects*, October 2012, published by Provoking Thoughts
- [3] D. J. Anderson, *Kanban: Successful Evolutionary Change for your Technology Business*, April 2010, published by Blue Hole Press
- [4] K. Beck, *Extreme Programming Explained: Embrace Change*, 2000, published by Addison-Wesley
- [5] K. Beck et al., *Manifesto for Agile Software Development*, 2001; refer to www.agilemanifesto.org/
- [6] K. Beck et al., *Principles behind the Agile Manifesto*, 2001; refer to www.agilemanifesto.org/principles.html
- [7] C. Betz, *The CMDB is Not a Data Warehouse*, 2011, Integrated IT Management, published by Enterprise Management Associates
- [8] J. Bezos, *2016 Letter to Amazon Shareholders*, April 2017; refer to www.blog.aboutamazon.com/company-news/2016-letter-to-shareholders
- [9] S. Blank, *The Four Steps to the Epiphany: Successful Strategies for Products That Win*, July, 2013, published by K & S Ranch
- [10] F. P. Brooks, *The Mythical Man-Month: Essays on Software Engineering*, April 1975, published by Addison-Wesley
- [11] M. Buckingham and A. Goodall, *Reinventing Performance Management*, Harvard Business Review, Vol. 93, No. 4, 2015
- [12] J. Carlzon, *Moments of Truth*, 1987, published by Ballinger Pub Co
- [13] M. E. Conway, *How Do Committees Invent?*, April 1968, published in Datamation Magazine; refer to www.melconway.com/research/committees.html
- [14] J. DeLuccia, J. Gallimore, G. Kim, and B. Miller, *The DevOps Audit Defense Toolkit*, March 2015, published by IT Revolution
- [15] A. Edmondson, *Psychological Safety and Learning Behavior in Work Teams*, Administrative Science Quarterly, Vol. 44, No. 2, June 1999, published by the Johnson Graduate School of Management, Cornell University

- [16] P. Harpring, *Introduction to Controlled Vocabularies: Terminology for Art, Architecture and other Cultural Works*, April 2010, published by Getty Publications
- [17] L. Hassi and M. Laasko, *Design Thinking in the Management Discourse: Defining the Elements of the Concept*, June 2011, published by the 18th International Product Development Management Conference
- [18] D. Hornford, S. Sabesan, V. Sriram, and K. Street, *The Seven Levers of Digital Transformation (W17d)*, September 2017, published by The Open Group; refer to www.opengroup.org/library/w17d
- [19] M. Housman and D. Minor, *Toxic Workers*, 2015, published by Harvard Business School
- [20] ISACA, *COBIT® 5*, 2012; refer to m.isaca.org/cobit/Documents/COBIT-5-Introduction.pdf
- [21] W. A. Kahn, *Psychological Conditions of Personal Engagement and Disengagement at Work*, *Academy of Management Journal*, Vol. 33, No.4, December 1990, published by Academy of Management
- [22] G. Kim, J. Humble, P. Debois, and J. Willis, *The DevOps Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations*, December 2016, published by Trade Select
- [23] T. A. Limoncelli, S. R. Chalup, and C. J. Hogan, *The Practice of Cloud System Administration: Designing and Operating Large Distributed Systems*, September 2014, published by Addison-Wesley
- [24] T. Malone and K. Crowston, *The Interdisciplinary Study of Coordination*, *ACM Computing Surveys*, Vol. 26, No. 1, March 1994
- [25] S. S. McChrystal, T. Collins, D. Silverman, and C. Fussell, *Team of Teams: New Rules of Engagement for a Complex World*, November 2015, published by Penguin
- [26] P. Mell and T. Grance, *The NIST Definition of Cloud Computing*, Special Publication 800-145, September 2011, published by the National Institute of Standards and Technology; refer to nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-145.pdf
- [27] K. Morris, *Infrastructure as Code: Managing Servers in the Cloud*, June 2016, published by O'Reilly Media
- [28] A. Osterwalder and Y. Pigneur, *Business Model Generation*, July 2010, published by Wiley
- [29] D. Parkhill, *Challenge of the Computer Utility*, September 1966, published by Addison-Wesley
- [30] M. Poppendieck and T. Poppendieck, *Implementing Lean Software Development: From Concept to Cash*, September 2006, published by Addison-Wesley
- [31] D.G. Reinertsen, *Managing the Design Factory: a Product Developer's Toolkit*, March 1998, published by Free Press
- [32] E. Ries, *The Lean Startup: How Constant Innovation Creates Radically Successful Businesses*, October 2011, published by Portfolio Penguin
- [33] E. Rogers, *Diffusion of Innovations*, November 2003, published by Free Press

- [34] W. E. Schneider, *The Reengineering Alternative: a Plan for Making Your Current Culture Work*, September 1999, published by McGraw-Hill
- [35] K. Schwaber, *The Enterprise and Scrum*, June 2007, published by Microsoft Press
- [36] K. Schwaber and M. I. Beedle, *Agile Software Development with Scrum*, October 2001, published by Pearson
- [37] C. Sims and H. L. Johnson, *Scrum: a Breathtakingly Brief and Agile Introduction*, April 2012, published by Dymaxicon
- [38] P. G. Smith and D.G. Reinertsen, *Developing Products in Half the Time: New Rules, New Tools*, October 1997, published by Wiley
- [39] D. E. Strode and S. L. Huff, *A Taxonomy of Dependencies in Agile Software Development*, 2012, 23rd Australasian Conference on Information Systems
- [40] D. E. Strode, S. L. Huff, B. Hope, and S. Link, *Coordination in Co-located Agile Software Development Projects*, The Journal of Systems and Software, Vol. 85, June 2012.
- [41] The Open Group, *ArchMate® 3.1 Specification*, a standard of The Open Group (C197), November 2019, published by The Open Group; refer to www.opengroup.org/library/c197
- [42] The Open Group, *The Digital Practitioner Body of Knowledge™ Standard, (The DPBoK™ Standard)*, a standard of The Open Group (C196), July 2019, published by The Open Group; refer to www.opengroup.org/library/c196
- [43] The Open Group *IT4IT™ Reference Architecture, Version 2.1*, a standard of The Open Group (C171), January 2017, published by The Open Group; refer to www.opengroup.org/library/c171
- [44] The Open Group, *TOGAF® Series Guide: Business Models (G18A)* June 2018, published by The Open Group; refer to www.opengroup.org/library/g18a
- [45] The Open Group, *The TOGAF® Standard, Version 9.2*, a standard of The Open Group (C182), April 2018, published by The Open Group; refer to www.opengroup.org/library/c182
- [46] W. Royce, *Managing the Development of Large Software Systems*, August 1970, published by Proc. IEEE WESCON
- [47] M. Treacy and F. Wiersma, *The Discipline of Market Leaders: Choose Your Customers, Narrow Your Focus, Dominate Your Market*, January 1997, published by Basic Books

Chapter 1. Introduction

The Digital Practitioner in today's work environment encounters a confusing and diverse array of opinions and diverging viewpoints. This document aims to introduce the practitioner to a foundational set of concepts to make sense of the landscape they find in any organization attempting to deliver digital products. It is based on the Digital Practitioner Body of Knowledge Standard. It is not intended as a replacement for the standard, but a first introduction.

Topics addressed in this chapter include:

- An introduction to the Digital Practitioner Body of Knowledge Standard
- An overview of the content of the standard

1.1. Introduction to the Standard

The Digital Practitioner Body of Knowledge Standard is intended broadly for the development of the Digital Practitioner or professional. It seeks to provide guidance for both new entrants into the digital workforce as well as experienced practitioners seeking to update their understanding on how all the various themes and components of digital and IT management fit together in the new world.

The standard is intended to assist individuals and organizations who wish to create and manage product offerings with an increasing digital component, or lead their organization through Digital Transformation. It is a synthesis of practices and guidance from a wide variety of practitioners and professional communities active in digital technology. It integrates concepts from diverse sources such as business model innovation, product research and monetization, behavioral economics, Agile, DevOps, Enterprise Architecture, organizational development, service management, product management, data management, operations management, and corporate governance.



Naming of the Standard

The Digital Practitioner Body of Knowledge Standard is also known as the DPBoK™ Standard [42]. In this document we refer to the standard using the shorter of the two names, or simply as the Body of Knowledge.

1.2. The Content of the Standard

The high-level content of the standard is summarized as follows:

- Chapter 1, *Introduction* includes the objectives and overview, conformance requirements, and terminology definitions
- Chapter 2, *Definitions* includes the terms and definitions for this document
- Chapter 3, *Digital Transformation* describes the key concept of Digital Transformation

- Chapter 4, *Principles of the DPBoK Standard* describes the principles by which the document will evolve and be maintained, and how Digital Practitioner competencies will be defined
- Chapter 5, *Structure of the Body of Knowledge* describes how the Body of Knowledge is structured
- Chapter 6, *The Body of Knowledge* contains the Body of Knowledge, divided into four stages, called Contexts, which correspond to the stages of evolution of a digital practice.
- *Appendices* contains the list of abbreviations used in the standard