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IT4IT™

The IT4IT™ Standard, Version 3.0

A Reference Architecture for Managing Digital

The IT4IT™ Standard, Version 3.0

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A Reference Architecture for Managing Digital

Title: The IT4IT™ Standard, Version 3.0
Subtitle: A Reference Architecture for Managing Digital
Series: The Open Group Series
A Publication of: The Open Group

Publisher: Van Haren Publishing, 's-Hertogenbosch - NL, www.vanharen.net
ISBN Hardcopy: 978 94 018 0940 5
ISBN eBook: 978 94 018 0941 2
ISBN ePub: 978 94 018 0942 9
Edition: First edition, first impression, December 2022

Layout and Cover Design: The Open Group

The IT4IT™ Standard, Version 3.0

Document Number: C221

Published by The Open Group, December 2022.

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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. With more than 870 member organizations, we have a diverse membership that spans all sectors of the technology community – customers, systems and solutions suppliers, tool vendors, integrators and consultants, as well as academics and researchers.

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.

The IT4IT™ Forum

The IT4IT Forum is a group of member organizations that work together to solve shared challenges in Digital Product Management in the digital enterprise.

The mission of the IT4IT Forum is to continuously develop and drive the adoption of an open standard that:

- Provides a vendor-neutral reference architecture that delivers value-driven improvement to business outcomes
- Accelerates the adoption and delivery of end-to-end management of Digital Products and services

A key objective of the IT4IT Forum is to drive adoption of the IT4IT Standard through a variety of activities including publishing how-to guides in the IT4IT extended body of knowledge.

The IT4IT Forum is composed of a diversity of member organizations, such as technology vendors, service providers, consulting companies, end-user organizations, training companies, academic

institutions, and other digital enterprises. All come together in a technology independent, industry independent, and vendor-neutral environment to work together in a non-competitive, consensus-driven environment governed by The Open Group Standards Process.

Member organizations and their employees that participate in the Forum activities can expect benefits, including:

- Gaining competitive advantage through early access to pre-publication thought leadership
- Realizing more reliable outcomes by solving shared challenges with other like-minded professionals
- Establishing personal and professional relationships and a network of contacts for use long into the future
- Expanding digital management business insight through collaboration with other member organizations
- Establishing credibility as a thought leader in the industry by becoming a named contributor or co-author on standards of The Open Group and other publications
- Growing professional capabilities and promotion through dynamic learning exchanges in Forum discussions with other members

Proposals from IT4IT Forum members drive the strategy and content for successive versions of the IT4IT Standard. If you would like to contribute to future versions of the IT4IT Standard, we invite you to explore membership in The Open Group IT4IT Forum.

For further information about membership in the IT4IT Forum, visit http://www.opengroup.org/it4it-forum.

For further information about the IT4IT Standard itself, visit http://www.opengroup.org/it4it.

The IT4IT Name

The business is increasingly dependent upon IT to enable their business capabilities and optimize their business value streams. IT is part of any business process and/or business product.

As a result, IT management is becoming a critical capability to ensure sustainable business success. To manage the increasing complexity of IT and digital, an organization needs to optimize their end-to-end IT management activities involved in the planning, development, delivery, and operations of Digital Products.

A more integrated approach is needed to optimize these IT value streams. The name “IT4IT” refers to this integrated approach of managing the IT specifically needed to enable and automate IT itself, such as portfolio and product backlog management, source code management, testing, deployment, identity management, monitoring, etc. “IT4IT” refers to all digital management capabilities and practices needed to manage the IT/Digital Product Portfolio and thus ultimately be efficient in optimizing business outcome.

This Document

This document is the specification of The Open Group IT4IT Standard, Version 3.0, a standard of The Open Group.

The IT4IT Standard addresses a critical gap in the Digital Transformation toolkit: the need for a unifying architectural model that describes and connects the capabilities, value streams, functions, and operational data needed to manage a Digital Product Portfolio at scale.

Traditional management paradigms, in which the technology budget is a combination of one-off projects and keep-the-lights-on operations, have constrained the value that could be delivered by technology. A fundamentally different approach is needed.

In recent years, this need continues to evolve rapidly as business management itself has become digital management. In other words, as the business delivers Digital Products, IT becomes the business.

By showing how to shift the focus of digital investment from project expense to product-based value delivery, the IT4IT Standard provides a powerful model for standardizing the digital automation fabric to support constant innovation and accelerated digital service delivery.

The ultimate target is a new style of technology management – “managing digital” – in which the primary metric for measuring IT investment value (and for measuring the performance of IT leaders) is the level of innovation and measurable business value delivered by a well-managed Digital Product Portfolio.

The Transformation Journey

The principle of product centricity shifts the focus of technology management away from the details of frictional project delivery and operations silos to a more holistic model focused instead on value-based consumption, customer focus, strong collaboration with consumers on end-to-end journeys, scalable automation, greater cost transparency, and the multi-sourced delivery of a broad Digital Product Portfolio.

Crucially, the IT4IT Standard provides a practical roadmap and blueprint for moving away from traditional practices and transitioning to a modern ability to manage digital at scale. The transition to managing digital typically includes several relevant journeys, such as moving from:

- Project-based to product-based technology investment management
- Waterfall methodologies to Agile planning and development
- Silo-oriented automation models to integrated, automated DevSecOps at scale
- Reactive order-taking to effectively managed and measured service brokerage
- Opaque operational and financial reporting to effective full-lifecycle, end-to-end visibility, and control of technology investment outcomes

Who Benefits from the IT4IT Standard?

"Building a new fully integrated approach for managing IT – going beyond the traditional process models and disjointed solution landscapes – based on a common industry data model will give an important boost to our effort of becoming a world-class IT provider."

Hans van Kesteren, VP & CIO Global Functions, Royal Dutch Shell, at the launch of The Open Group IT4IT Forum

The IT4IT Standard provides an approach to making digital investment decisions and managing digital outcomes that is particularly useful for:

- C-level executives responsible for Digital Transformation, as a top-down view of digital value creation
- Product Managers and Product Marketing Managers whose portfolios include significant digital content, as a way to integrate marketing priorities with product delivery practices
- Governance, risk, and compliance practitioners, as a guide to controlling a modern digital landscape
- Enterprise and IT Architects, as a template for IT tool rationalization and for governing end-to-end technology management architectures
- Technology buyers, as the basis for Requests for Information (RFIs) and Requests for Proposals (RFPs) and as a template for evaluating product completeness
- Consultants and assessors, as a guide for evaluating current practice against a well-defined standard
- Technology vendors, as a guide for product design and customer integrations
- Technical support staff, as a guide for automating and scaling up support services to deal with modern technology deployment velocity

Evolution of the Standard

The approach put forward over the lifetime of this standard has been based on the long-standing thought experiment of "running IT as a business", a common theme in IT management discussions for the past 40 years (see Betz, p.10 for extensive citations).

A history of the IT4IT Standard, including references to related standards, concepts, and industry themes, is published as a separate case study in the IT4IT Body of Knowledge; see The Open Group Case Study: *On the Origin of the IT4IT™ Standard* [Y202].

As part of the ongoing evolution of the IT4IT Standard, the IT Value Chain concept from Version 2.1 of the IT4IT Reference Architecture has been retired in favor of a focus on Digital Product Portfolio Management and the set of associated IT4IT Value Streams.

The Value Network metaphor has been proposed to describe the broad collaboration needed to connect core practices described in the IT4IT Standard to non-technology business domains such as

Human Resources (HR), Finance, Vendor Management, Customers, Partners, and Suppliers. It is consistent with the approach taken in the release to describe the standard in those terms; however, the Value Network concept has not been formally adopted by the IT4IT Forum at this time.

The IT4IT Standard, Version 3.0 Release Highlights

The following topics have been included/enhanced in Version 3.0 of the IT4IT Standard:

- Introduction of Digital Product

  A standard definition for “Digital Product” has been introduced. The Digital Product concept underpins and strengthens the traditional emphasis of the IT4IT Standard on treating the enterprise portfolio of IT applications/services as the primary metaphor for understanding and managing IT investment. As this thinking has matured, a “shift to product” has become a mainstream objective in IT strategy.

  The updated terminology and extended Digital Product definition reflect and support this trend and its implications for financial planning, value management, organization around Agile/DevOps teams, and the exploitation of modern automation options across the Digital Product lifecycle, from strategy to support.

- Introduction of Digital Product Backbone

  The concepts of service and a service backbone have been significantly improved in two ways. First, as part of the shift to product semantics, the term “service” is used primarily to describe the delivery of products “as a service” when the Digital Product is purely an act that is performed. The service backbone found in prior versions of the IT4IT Standard has been renamed “Digital Product Backbone” to account for a larger variety of topics that includes smartphones and other physical products, automated workflows, and even Robotic Process Automation “bots”. Second, the backbone has been simplified and made more straightforward, with a single primary data object at each stage.

- Move from Value Chain to Digital Value Network

  The use of “Value Network” as a concept for managing IT has been introduced. In the move to Digital Product semantics, Value Network replaces the Porter Value Chain [Porter] as the top-level, business view of the IT4IT Standard.

- New value streams

  The introduction of seven new value streams has replaced the four value streams of the IT4IT Value Chain of the IT4IT Standard, Version 2.1. Essentially, two value streams, “Evaluate” and “Explore”, are derived from Strategy to Portfolio. Requirement to Deploy is replaced with the “Integrate”, “Deploy”, and “Release” value streams; the “Consume” value stream replaces Request to Fulfill; and Detect to Correct is replaced with the “Operate” value stream. These new value streams are much more consistently and formally defined.

A common question is: what is the relationship between the new value streams in Version 3 and the value streams in Version 2.1?

Although strongly connected by data integrations and data flows, the original four IT4IT Value Streams are aligned to traditional IT organizational structures, which in most companies represented functional and cultural silos.

As the IT4IT Standard evolved into Version 3, IT organizations were also evolving and the old silos were giving way to concepts such as cross-functional development teams, new IT investment models, and DevOps integrations of development, deployment, and operations.

The new value streams in Version 3 take this evolution of industry into account, and align with modern IT management directions that are moving ever more strongly away from silos and toward the end-to-end integration of managing digital.

A close examination of both versions of the standard will quickly reveal the relationship between the old and new value stream definitions, and point the way to a migration path for those who have already implemented against the older version:

- Four functional groups derived from the value streams of the earlier IT4IT Standard, Version 2.1

  In the IT4IT Standard, Version 2.1 the four value streams – Strategy to Portfolio, Requirement to Deploy, Request to Fulfill, and Detect to Correct – were also defined to represent the groupings of the IT4IT Functional Components. We have preserved the groupings, but no longer refer to the groups as value streams:

  - Updated Strategy to Portfolio functional components

    In Strategy to Portfolio, a Strategy functional component is introduced and significant updates have been made to the way strategy, architecture, and Digital Product work together.

  - Updated Requirement to Deploy functional components

    Requirement to Deploy has been upgraded significantly to reflect modern Agile and DevOps operating practices. This includes renaming some data objects and functional components to reflect the typical terms used in Agile.

  - Updated Request to Fulfill functional components

    Change Management has been moved from Detect to Correct to Request to Fulfill to reflect that change is an activity managed by the Deliver functions. Furthermore, Request to Fulfill sees the introduction of Identity Management, as well as the better formalization of the Service Offer Catalogs and Consumption Experience.

  - IT Financial Management (ITFM) Support functions

    The IT4IT Reference Architecture has been updated to improve the description of how Financial Management capabilities are supported by the standard. Financial Management is one of the

Supporting Functions in the overall Digital Value Network, and its impacts on core functions and data objects have been updated to more effectively describe these impacts and interactions.

- Use of the ArchiMate® modeling language as the standard notation

  The ArchiMate Specification has replaced most instances of the “informal notation” used in previous releases. This generally improves the rigor of the diagrams. It also enables the automatic creation of these diagrams from the data held in the ArchiMate model of the IT4IT Reference Architecture that is available for download with the IT4IT Standard, Version 3.0. This ensures a high level of consistency across the model.

- Removal of the Key Performance Indicator (KPI) lists

  The lists of KPIs associated with the four value streams in the previous release have been removed. The creation and management of appropriate metrics and KPIs for activities described in the IT4IT Standard are addressed at various points in the text of the standard. The Open Group Guide: *Intelligence & Reporting Supporting Activity in the IT4IT™ Reference Architecture* [G18E] describes a recommended way of approaching metrics and KPIs.

- General consistency and flow of the overall standard

  Inconsistencies of terminology and structure that were reported against prior versions of the IT4IT Standard have been resolved.

Related Industry Standards

The IT4IT Reference Architecture provides the overall framework for managing a “digital factory”, covering the value streams, capabilities, and data flows needed to manage the entire Digital Product lifecycle. The IT4IT Standard can be combined with other practices and standards providing additional guidance for specific capabilities or functions. Therefore, the IT4IT Reference Architecture can be complemented with other practices and standards, such as those listed below.

Enterprise Architecture

- The Open Group ArchiMate® Specification
- The Open Group Open Agile Architecture™ Standard
- The Open Group TOGAF® Standard

(Scaled) Agile Development

- Kanban
- Large Scale Scrum – LeSS
- Nexus™ for Scaling Scrum
- Scaled Agile Framework® (SAFe®)
- Scrum

Project Management

- PRINCE2® for Project Management
- The Project Management Body of Knowledge (PMBOK™) Guide

IT Service Management

- ISO/IEC 20000: Information Technology – Service Management
- ITIL® for IT Service Management from AXELOS
- The VeriSM™ Framework

IT Governance

- COBIT® for IT Governance by ISACA
- ISO/IEC 38500: Corporate Governance of Information Technology

Software Asset Management

- ISO/IEC 19770: Software Asset Management

Security and Risk Management

- ISO/IEC 27000 : Information Security Management systems
- NIST Cybersecurity Framework

Other Practices

- Capability Maturity Model Integration (CMMI®)
- DevOps
- OASIS™ Topology and Orchestration Specification for Cloud Applications (TOSCA™)
- Object Management Group® (OMG®) Unified Modeling Language™ (UML®)
- Site Reliability Engineering
- The Open Group Digital Practitioner Body of Knowledge™
- The Open Group FACE™ Technical Standard
- The Open Group Healthcare Enterprise Reference Architecture (HERA)

Referenced Documents

The following documents are referenced in this Standard.

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

Normative References

Normative references for this standard are defined in Section 1.3.

Informative References

The following documents are referenced in this standard or provide further information:

[Agile Manifesto]	*Manifesto for Agile Software Development*, by Beck et al. 2001; refer to: http://agilemanifesto.org/principles.html
[Allspaw & Robbins]	*Web Operations: Keeping the Data On Time*, by John Allspaw and Jesse Robbins, July 2010, published by O'Reilly Media
[Behr et al.]	*The Visible Ops Handbook: Implementing ITIL® in Four Practical and Auditable Steps*, by Kevin Behr, Gene Kim, and George Spafford, June 2005, published by Information Technology Process Institute
[Benson et al.]	*From Business Strategy to IT Action: Right Decisions for a Better Bottom Line*, by Robert J. Benson, Thomas L. Bugnitz, and William B. Walton, April 2008, published by Wiley
[Betz]	*Architecture and Patterns for IT Service Management, Resource Planning, and Governance (Making Shoes for the Cobbler's Children)*, by Charles T. Betz, November 2011, 2nd Edition, published by Morgan Kaufmann
[Bourque & Fairley]	*Guide to the Software Engineering Body of Knowledge (SWEBOK®): Version 3.0*, edited by Pierre Bourque and Richard E. Fairley, January 2014, published by IEEE Computer Society Press
[C119]	*SOA Reference Architecture (C119)*, a standard of The Open Group, December 2011, published by The Open Group; refer to: www.opengroup.org/library/c119
[C155]	*The Open Group IT4IT™ Reference Architecture, Version 2.0 (C155)*, a standard of The Open Group Standard, October 2015, published by The Open Group; refer to: www.opengroup.org/library/c155
[C171]	*The Open Group IT4IT™ Reference Architecture, Version 2.1 (C171)*, a standard of The Open Group, January 2017, published by The Open Group; refer to: www.opengroup.org/library/c171
[C19C]	*ArchiMate® Model Exchange File Format for the ArchiMate Modeling Language, Version 3.1 (C19C)*, a standard of The Open Group, November 2019, published by The Open Group; refer to: www.opengroup.org/library/c19c
[C19E]	*Open Messaging Interface (O-MI), The Open Group Standard for the Internet of Things (IoT), Version 2.0 (C19E)*, December 2019, published by The Open Group; refer to: www.opengroup.org/library/c19e
[C202]	*O-DEF™, the Open Data Element Framework, Version 2.0 (C202)*, a standard of The Open Group, February 2020, published by The Open Group; refer to: www.opengroup.org/library/c202
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[COBIT] *ISACA: Control Objectives for Information and Related Technology (COBIT®)*; refer to: www.isaca.org

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[G160] *IT4IT™ for Managing the Business of IT, A Management Guide (G160)*, The Open Group Guide, January 2016, published by The Open Group; refer to: www.opengroup.org/library/g160

[G18E] *Intelligence & Reporting Supporting Activity in the IT4IT™ Reference Architecture (G18E)*, The Open Group Guide, October 2018, published by The Open Group; refer to: www.opengroup.org/library/g18e

[G18F] *Service Brokering with the IT4IT™ Standard (G18F)*, The Open Group Guide, December 2018, published by The Open Group; refer to: www.opengroup.org/library/g18f

[G191] *Tool Rationalization using the IT4IT™ Reference Architecture Standard (G191)*, The Open Group Guide, April 2019, published by The Open Group; refer to: www.opengroup.org/library/g191

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[ISO/IEC 21] *ISO/IEC Guide 21-2:2005 Regional or National Adoption of International Standards and Other International Deliverables – Part 2: Adoption of International Deliverables other than International Standards*; refer to: https://www.iso.org/standard/39800.html

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