

*TOGAF® Series Guide*

## **Architecture Project Management**

**How to Manage an Architecture Project using  
the TOGAF® Framework and Mainstream Project Management Methods**

Prepared by The Open Group Architecture Forum



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TOGAF® Series Guide

**Architecture Project Management**

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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 600 organizations includes customers, systems and solutions suppliers, tools vendors, integrators, academics, and consultants across multiple industries.

The Open Group aims to:

- Capture, understand, and address current and emerging requirements, establish policies, and share best practices
- Facilitate interoperability, develop consensus, and evolve and integrate specifications and open source technologies
- Operate the industry's premier certification service

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The Open Group publishes a wide range of technical documentation, most of which is focused on development of Open Group 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](http://www.opengroup.org/library).

## The TOGAF® Standard, a Standard of The Open Group

The TOGAF standard is a proven enterprise methodology and framework used by the world's leading organizations to improve business efficiency.

## This Document

This document is a TOGAF® Series Guide to Architecture Project Management. It has been developed and approved by The Open Group.

The document supersedes Architecture Project Management, White Paper (W16B), August 2016, published by The Open Group.

More information is available, along with a number of tools, guides, and other resources, at [www.opengroup.org/architecture](http://www.opengroup.org/architecture).

## About the TOGAF® Series Guides

The TOGAF® Series Guides contain guidance on how to use the TOGAF framework. They form part of the TOGAF Body of Knowledge.

The TOGAF® Series Guides are expected to be the most rapidly developing part of the TOGAF document set. While the TOGAF framework is expected to be long-lived and stable, guidance on

the use of the TOGAF framework can be industry, architectural style, purpose, and problem-specific. For example, the stakeholders, concerns, views, and supporting models required to support the transformation of an extended enterprise may be significantly different than those used to support the transition of an in-house IT environment to the cloud; both will use the Architecture Development Method (ADM), start with an Architecture Vision, and develop a Target Architecture on the way to an Implementation and Migration Plan. The TOGAF framework remains the essential scaffolding across industry, domain, and style.

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- Sonia Gonzalez, The Open Group
- Kirk Hansen, Kirk Hansen Consulting

## Referenced Documents

The following documents are referenced in this TOGAF® Series Guide.

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

- A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 5th Edition, Project Management Institute (PMI), 2013; refer to [www.pmi.org](http://www.pmi.org)
- ArchiMate® 3.0.1 Specification, an Open Group Standard (C179), published by The Open Group, August 2017; refer to: [www.opengroup.org/library/c179](http://www.opengroup.org/library/c179)
- Managing Successful Projects with PRINCE2®, 2009 Edition, AXELOS, 2009
- Practice Standard for Project Risk Management, Project Management Institute (PMI), 2009; refer to [www.pmi.org](http://www.pmi.org)
- The PRINCE2® Foundation Training Manual, Frank Turley, 2013
- The TOGAF® Standard, Version 9.2, a standard of The Open Group (C182), published by The Open Group, April 2018; refer to: [www.opengroup.org/library/c182](http://www.opengroup.org/library/c182)

The following documents are not directly referenced in the text, but may be useful:

- A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 3rd Edition, Project Management Institute (PMI), 2004
- A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 4th Edition, Project Management Institute (PMI), 2009
- Understanding PRINCE2®, Ken Bradley, 2002
- Directing Successful Projects with PRINCE2®, AXELOS, 2009



# 1 Introduction

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## 1.1 Overview

Architecture Projects are typically complex in nature. They need proper Project Management to stay on track and deliver on promise. This Guide is intended for people responsible for planning and managing Architecture Projects. We explain how the TOGAF® Architecture Development Method (ADM) can be supplemented with de facto methods and standards such as PRINCE2® or PMBOK® to strengthen Project Management and improve the probability of success for Architecture Projects.

This Guide provides Architecture Project Teams with an overall view and detailed guidance on what processes, tools, and techniques of PRINCE2 or PMBOK can be applied alongside the TOGAF ADM for project planning, monitoring, and control. Further, a detailed mapping of the processes and deliverables of the TOGAF framework against PRINCE2 and PMBOK is provided to visualize how those concepts come together.

This Guide is not intended to serve as a Project Management method guidance book. We explain what Project Management tools and techniques should be applied to Architecture Projects, but we rely on specific PRINCE2 and PMBOK publications for detailing those techniques or tools.

We hope that the introduction of Project Management techniques to Architecture Projects will improve the chances for success of delivered value and solutions in a mature and professional way, supporting The Open Group vision of Boundaryless Information Flow™.

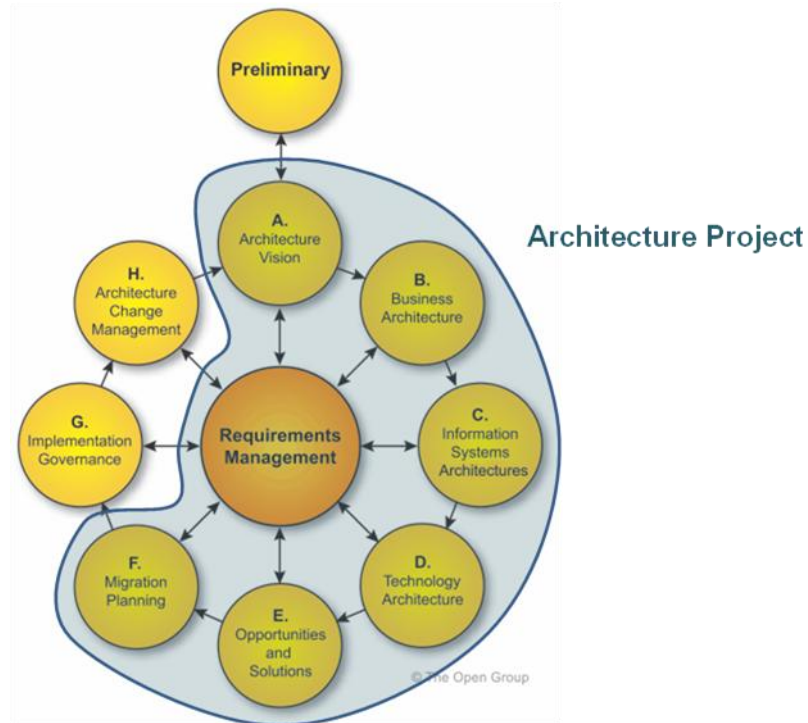
## 1.2 Background

According to the TOGAF standard, Enterprise Architecture is the structure of enterprise components, their inter-relationships, and the principles and guidelines governing their design and evolution over time. Enterprise is the highest level of description of an organization and typically covers all missions and functions; it can span multiple organizations.

The TOGAF standard includes the Architecture Development Method (ADM) that aims to be an industry standard method for developing and implementing an Enterprise Architecture. This method focuses on delivery of architecture products.

In the TOGAF standard, architecture products are delivered through execution of tasks described in the ADM. These tasks are grouped into inter-related phases, each of which includes a number of steps. Completing an ADM cycle can be a complex task. Therefore, architecture products delivery is often executed as a project.

Architecture Project is not a term defined in the TOGAF standard; however, it is used often for a project undertaken to define and describe an Enterprise Architecture to be implemented. Therefore, in this Guide, the term “Architecture Project” encompasses all activities undertaken within Phases A to F, and Requirements Management.



**Figure 1: Architecture Project Relationship to the TOGAF ADM (Adapted from the TOGAF Standard)**

A key result of Phases A to F is an Architecture Definition Document, which describes the Enterprise Architecture to be implemented in Phase G and maintained in Phase H. Therefore, at the end of Phase F the Enterprise Architecture to be implemented is defined and described – and the Architecture Project, by our definition, is completed.

The Preliminary Phase, Phase G, and Phase H are out of scope for the Architecture Project. The Preliminary Phase is concerned with ensuring an Enterprise Architecture capability of the organization. The goal of Phase G is to govern implementation of the Enterprise Architecture. Typically, it is run as a separate endeavor (a project or a set of projects). The goal of Phase H is to maintain the Enterprise Architecture implemented – it is related to operational business (or process) rather than project management.

### 1.3 Why do we need a Guide on Architecture Project Management?

The TOGAF ADM details objectives, approach, inputs, steps, and outputs of the Enterprise Architecture development phases. However, it is not specific on how to manage an Architecture Project and leaves that to methods that focus on Project Management.<sup>1</sup>

Project Management is the planning, delegating, monitoring, and control of all aspects of the project, and the motivation of those involved, to achieve the project objectives within the

<sup>1</sup> The TOGAF standard, Phase A (Establish the Architecture Project): “Each cycle of the ADM should normally be handled as a project using the project management framework of the enterprise.”

expected performance targets for time, cost, quality, scope, benefits, and risks.<sup>2</sup> Market-leading Project Management methods include PRINCE2 and PMBOK. They can be used to enhance an Architecture Project's chances of success.

Not all TOGAF practitioners are familiar with Project Management methods. Even for those who are, there is no guidance on how to use and align the TOGAF framework with these methods.

The intent of this Guide is to provide guidelines for TOGAF architects on how to manage an Architecture Project. We suggest an approach that supplements the TOGAF ADM with selected Project Management techniques. The goal of this approach is to enhance an Architecture Project's chances of success through better planning, monitoring, and communication.

## 1.4 Document Scope and Structure

This Guide is structured in the following sections, with a specific target audience in each case:

- Managing Architecture Projects (Chapter 2) describes a high-level Project Management approach for developing an Enterprise Architecture

The target audience for this section is Enterprise Architects, Project Management professionals, and stakeholders of Architecture Projects who want to understand the key relationships between the TOGAF standard and Project Management areas.

- Detailed Guidance (Chapter 3) describes a detailed Project Management approach for developing an Enterprise Architecture

It includes a step-by-step guide to Architecture Project initiating, planning, monitoring, and closing. The target audience of this section is Enterprise Architects who are familiar with the TOGAF standard and who lead Architecture Projects.

- PRINCE2 to ADM Mapping (Chapter 4) and PMBOK to ADM Mapping (Chapter 5) present detailed mappings between the phases of the TOGAF ADM and PRINCE2 and PMBOK processes, respectively

These sections provide a foundation on which the guidance was built and are included for reference.

## 1.5 Constraints

This Guide explores how Project Management methods can supplement the TOGAF ADM in Architecture Project delivery. It focuses on PRINCE2 and PMBOK as proven practices in the Project Management area.

Agile Project Management methods are out of scope for this Guide. In our experience, the TOGAF framework can be tailored to use an agile approach. Such tailoring can provide important benefits. However, it is not explored in this Guide.

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<sup>2</sup> This is a PRINCE2 definition. According to the more general PMBOK definition, Project Management is an application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

## 2 Managing Architecture Projects

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This section describes a general, high-level Project Management approach for developing an Enterprise Architecture. The target audience for this section is Enterprise Architects, Project Management professionals, and stakeholders of Architecture Projects who want to understand the key relationships between the TOGAF standard and Project Management areas.

### 2.1 Architecture Project Definition

An Architecture Project is an endeavor undertaken to define and describe the Enterprise Architecture to be implemented. In TOGAF terms, as shown in Figure 1, it encompasses all activities undertaken within the Phases A to F and Requirements Management of the ADM. Practically, it can be a stand-alone project or part of a larger effort (e.g., a program).

An Architecture Project does not include the Preliminary Phase, Phase G, or Phase H of the ADM.

The Preliminary Phase focuses on establishing an Architecture Capability rather than delivery of an Architecture Definition. It can initiate an Architecture Project when necessary (outputs from the Preliminary Phase, especially Request for Architecture Work, are treated as an input to the Architecture Project).

- ① Phase G (Implementation Governance) is about implementing the architecture, not defining it. It can be a separate project or a program (or even a part of the same program as the Architecture Project), but it is not concerned with delivery of an architecture (outputs from the Architecture Project are treated as inputs to Phase G).

Phase H (Change Management) is a continuous process concerned with maintaining the architecture and initiating Architecture Projects when necessary and it should be treated as an operational activity.

An Architecture Project starts with a Request for Architecture Work, which – according to the TOGAF ADM – is an input initiating Phase A. It delivers an Architecture Definition, a Roadmap, and an Implementation Plan. It is finished when these outputs are handed over for implementation.

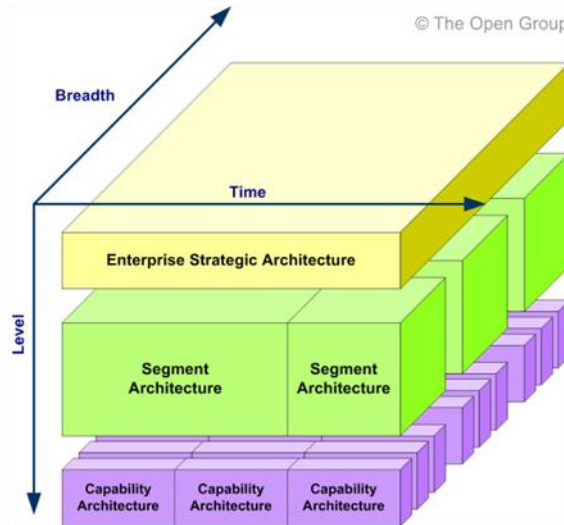
An Architecture Project can concern one or more architecture domains. The TOGAF standard defines four architecture domains (Business, Data, Application, Technology) – an Architecture Project typically covers a few or all of them.

An Architecture Project can concern different levels of architecture. The TOGAF standard defines three levels of architecture – an Architecture Project typically covers exactly one of these:

- Strategic Level: covers the entire enterprise and defines the high-level vision, principles, and strategic directions for the entire Enterprise Architecture
- Segment Level: defines the Enterprise Architecture for a segment (business domain) of the enterprise



- **Capability Level:** defines the Enterprise Architecture for a single business capability  
Enterprise Architecture at this level is the most detailed and leads directly to capability implementation.



**Figure 2: Levels of Enterprise Architecture (the TOGAF Standard: Summary Classification Model for Architecture Landscapes)**

Architecture developed by an Architecture Project on the strategic level typically is an input to a segment-level Architecture Project. Similarly, segment-level Architecture Projects provide input for capability-level Architecture Projects.

An Architecture Project can be executed as a stand-alone endeavor or as part of a larger effort:

- A stand-alone Architecture Project is usually executed as a separate project (in line with the Project Management regulations of the enterprise)  
It has its own set of goals that can be achieved by the project itself (i.e., the Architecture Definition not its implementation). Stand-alone Architecture Projects are often executed on the strategic and segment architecture level.
- Part of a larger effort means that the Architecture Project is a part of a project or program, typically a work stream or a group of tasks  
Its key goal is to develop the architecture for implementation within the larger effort. Architecture Projects that are a part of a larger effort are usually executed on the capability architecture level and sometimes on the strategic and segment levels.

① An Architecture Project that is a part of a larger effort does not have to be recognized as a project in terms of the Project Management regulations of the enterprise. More often, it can be a work stream or simply a group of tasks. The approach recommended in this Guide can be applied to both stand-alone Architecture Projects and architecture work that is part of a larger effort.

Table 1 presents a few examples of real-world Architecture Projects. These examples cover different possible characteristics of an Architecture Project (e.g., level, domains, relationship to other projects).

**Table 1: Examples of Architecture Projects**

Overall Goal	Architecture Project Overview
<p>(A) Assess current application portfolio and recommend improvement options</p>	<p>Describe application landscape and identify IT improvement options. There are about 50 applications of different scales (precise number to be determined), mostly custom-built. Key concerns are:</p> <ul style="list-style-type: none"> <li>• Determining relationships and data flows between applications</li> <li>• Mapping application capabilities (overlaps and gaps)</li> <li>• Identification of key technological constraints for application development</li> </ul> <p>Required views are to be determined. Improvement options should include initiatives with assigned priorities. Timeframe is flexible within 22 weeks maximum.</p>
<p>(B) Improve logistics process efficiency and shorten time-to-order</p>	<p>Project scope is to model and plan target logistics process improvements to:</p> <ul style="list-style-type: none"> <li>• Provide current information on parcel location, resource use, and process bottlenecks</li> <li>• Optimize resources usage through more accurate planning and use of the above information</li> <li>• Shorten order-to-delivery through faster resource allocation and use of preallocated resources</li> </ul> <p>The logistics process is one of the core business processes of a transportation company. Three large business units play key roles in the process, each of them divided into about five subunits.</p> <p>The team, apart from a business analyst and an Enterprise Architect, includes a subject matter expert who already understands some parts of this process.</p>
<p>(C) Consolidate IT environment of recently merged businesses</p>	<p>Define target IT architecture and a three-year roadmap to consolidate merged businesses.</p> <p>Power &amp; Utilities holding includes eight recently merged business units, which distribute and sell energy. These units operate in different areas geographically. They are similar, but each of them has its own business processes and IT applications. Nothing is shared between them.</p> <p>The Architecture Project goal is to formulate a consolidation roadmap, which would include common business services, IT applications, and infrastructure. The approach includes three stages: as-is analysis, to-be modeling, and roadmapping.</p> <p>The Architecture Project must meet defined budget and timeframe constraints.</p>

Overall Goal	Architecture Project Overview
(D) Define a solution architecture for a Customer Information System supporting a new operating model in a retail sales area of a P&U company	<p>Analyze changes in an operating model in a retail sales area of a P&amp;U company and requirements for a solution architecture resulting from it.</p> <p>Identify issues with current IT systems supporting this area that prevent the implementation of a new operating model.</p> <p>Develop a solution architecture for a Customer Information System that addresses identified issues and supports the operating model along with a map of data exchange between the system and other IT solutions located in its environment.</p> <p>Develop a tender documentation for a Customer Information System containing the description of the solution architecture.</p>
(E) New management information system to address expanding bank reporting needs	<p>Define and implement new elastic management information system that will address expanding bank reporting needs and shorten information delay. Project scope includes:</p> <ul style="list-style-type: none"> <li>• Analyze current state – old data warehouse inbound and outbound interfaces, data processing logic and report types</li> <li>• Define target architecture including moving deprecated functionality to other solutions</li> <li>• Prepare High Level Design documentation</li> </ul>

These examples were chosen to encompass different kinds of Architecture Projects. Generally, they can be characterized by:

- Levels of architecture<sup>3</sup> covered: Strategic (A, C), Segment (B, D), Capability (E)
- Architecture domains<sup>4</sup> covered: Business (B, C, D, E), Data (B, C, D, E), Application (A, B, C, D, E), Technology (C, D, E)
- Relationship to other projects: stand-alone (A, B, D), part of a larger program (C, E)

These project examples are used throughout Detailed Guidance (Chapter 3) to enhance presented guidance with a practical context. Examples that refer to these projects are denoted using gray boxes.

## 2.2 Architecture Project Lifecycle

The Architecture Project can be executed as a single, preplanned stage, but usually it is divided into a few stages. Use of stages allows for a more elastic approach, as each of the stages is typically planned in detail just before it starts (rather than at the start of the whole project). The TOGAF standard advocates iterative execution of Architecture Projects – in this case, each iteration can be considered a separate stage.

<sup>3</sup> For guidance on architecture levels, refer to the TOGAF standard, Part III: Applying the ADM Across the Architecture Landscape.

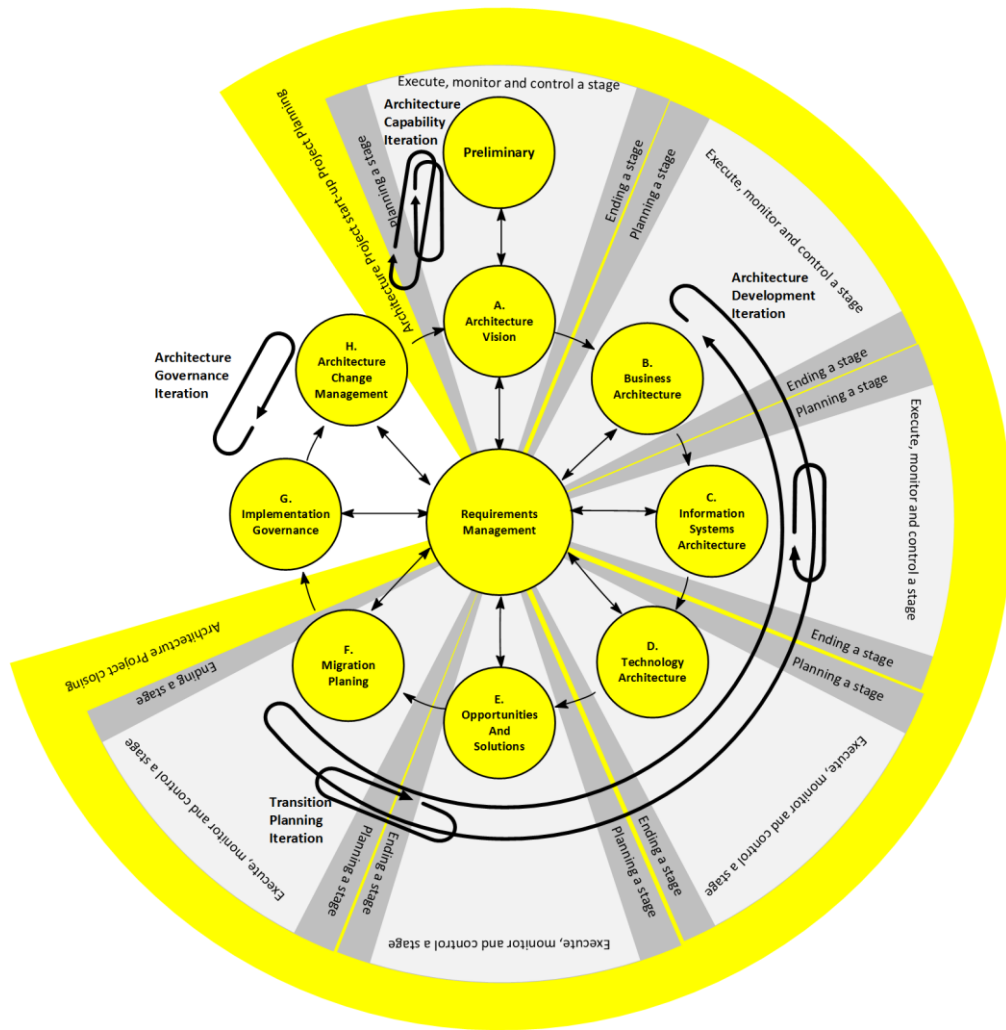
<sup>4</sup> For guidance on architecture domains, refer to the TOGAF standard, Part I: Core Concepts (What Kind of Architecture Does the TOGAF Standard Deal With?).

① Dividing the Architecture Project into stages is discussed in detail in this Guide. For more information on the iterative approach, refer to architecture development in the TOGAF standard, Part III: Applying Iteration to the ADM.

The Architecture Project encompasses management activities that can be grouped and sequenced as follows:

- Architecture Project start-up, which raises issues related to appointing the Executive and Project Manager, as well as the Project Management team, capturing previous lessons, selecting the project approach, assembling the project brief, and planning the following stage
- Architecture Project planning, which describes project scoping and planning activities based on Project Management methods
- Planning a stage, which describes how to split an Architecture Project into stages and plan a stage in alignment with an overall Project Plan
- Execute, monitor, and control a stage, which describes how to monitor and control architecture development activities of the ADM Phases B to F using Project Management methods
- Ending a stage, which describes key steps performed at a stage end
- Architecture Project closing (and handover of architecture deliverables for implementation), which describes the project closing activities and handover of the Architecture Project products to implementation programs and projects, and also the approach for documenting lessons learned

The above sequence forms an Architecture Project lifecycle, which is used as the basic structure to discuss Architecture Project Management in this Guide. This lifecycle maps into the TOGAF ADM (which describes architecture development phases and steps). It can be represented by Figure 3.



**Figure 3: Architecture Project Lifecycle from the TOGAF ADM Perspective**

Please note: to simplify Figure 3 it assumes Architecture Project is divided into stages that resemble the ADM phases (each stage covers one ADM phase). Usually, this is not the case – and in most cases should not be; the TOGAF standard recommends an iterative approach, in which a stage can cover a few phases and can be executed repeatedly.

①

Dividing the Architecture Project into stages is discussed in detail in this Guide. For more information on the iterative approach to architecture development, refer to the TOGAF standard, Part III: Applying Iteration to the ADM.

The Architecture Project lifecycle also maps to Project Management methods. Generally, these methods abstract from actual subject matter work in the project (i.e., architecture development), as they focus on management processes and steps needed for successful project execution.

①

Detailed mapping of the TOGAF ADM and most popular Project Management methods is presented in Chapter 4 and Chapter 5 of this Guide.

High-level mapping of the Architecture Project lifecycle to the TOGAF ADM phases and Project Management methods is presented in Table 2. Please note that the TOGAF standard focuses on architecture development activities in the Architecture Project, and Project Management methods focus on managing successful execution of this endeavor.

**Table 2: Architecture Project Lifecycle Mapped to the TOGAF ADM and Project Management Methods**

Architecture Project Lifecycle	TOGAF ADM Phases	PRINCE2	PMBOK
Architecture Project start-up	Phase A (Architecture Vision) – Establish an Architecture Project step	Starting up the Project Process – all steps	Initiation Process group: 4.1 Develop Project Charter 13.1 Identify Stakeholders
Architecture Project planning	Phase A (Architecture Vision) – Develop a Statement of Architecture Work step and previous steps	Initiation Process – Create the Project Plan, Assemble the Project Initiation Documentation	Planning processes from all process groups – create and collect Project Management plan
Planning a stage	No direct mapping, but can be thought of as a closing step of the preceding phase	PRINCE2 highlights the concept of project stages more than PMBOK. The concept described in this Guide is mostly based on PRINCE2 processes, but it is also consistent with PMBOK.	
Execute, monitor, and control a stage	Each of the Phases B to F	The Execute, Monitor, and Control a Stage section maps to the Execute and Monitor and Control process groups defined in PMBOK.	
Ending a stage	No direct mapping, but can be thought of as a closing step of the preceding phase		
Architecture hand-over	Phase F (Migration Planning) – closing steps	Closing the project process – hand over products	Closing the project section

(Source: Derived from the TOGAF standard, PRINCE2, and the PMBOK Guide, 5th Edition)

To sum up, the Architecture Project lifecycle consists of six types of activities, which can be mapped to both the TOGAF ADM phases and Project Management method processes and steps. It is used to structure the detail presented in Detailed Guidance (Chapter 3).

## 2.3 Architecture Project Management Concepts

Every method or framework defines its own set of core concepts and definitions. Sometimes they overlap. Sometimes the meaning of overlapping concepts is similar, sometimes not – and they can be considered “false friends” for people who go from one subject matter world to another.

The TOGAF standard is more recent<sup>5</sup> than the most popular Project Management methods and uses some of the terms and concepts defined by them. In some cases, it gave these terms a new life and there are significant differences in the meaning of some key definitions used throughout the TOGAF standard and Project Management methods. They are discussed in detail throughout this Guide.

Table 3 presents the TOGAF and Project Management concepts that are key from the perspective of Architecture Project Management. It discusses definitions presented in the TOGAF standard, PRINCE2, and PMBOK and presents how each term is used throughout this Guide.

**Table 3: Key Concepts of the TOGAF Standard, PRINCE2, and PMBOK for this Guide**

Concept	Discussion and Definitions
Architecture Project	<p>As defined earlier in this Guide, an Architecture Project is an endeavor undertaken to define and describe the Enterprise Architecture to be implemented. In TOGAF terms, it encompasses all activities undertaken within the ADM Phases A to F, and Requirements Management for these phases. Practically, it can be a stand-alone project or part of a larger effort (e.g., a program).</p> <p>It has not been defined explicitly in the TOGAF standard; however, it is used in the framework on a few occasions.</p> <p>There are no corresponding definitions for this concept in Project Management methods.</p>
Deliverables	<p>Deliverables are unique and verifiable products, results, outputs that are required to be prepared to complete the project or particular phase of the project. Deliverables may be part of the final product, any auxiliary products, or Project Management products. This term is similar in both the TOGAF standard (where it is more specific, by defining more of the characteristics, acceptance process, etc.) and Project Management methods (more generic), so the most appropriate is the definition from the TOGAF standard; however, the definitions from Project Management methods are also applicable.</p> <p><b>TOGAF Standard:</b> “An architectural work product that is contractually specified and in turn formally reviewed, agreed, and signed off by the stakeholders.</p> <p>Note: Deliverables represent the output of projects and those deliverables that are in documentation form will typically be archived at completion of a project, or transitioned into an Architecture Repository as a reference model, standard, or snapshot of the Architecture Landscape at a point in time.”</p> <p><b>PRINCE2:</b> Synonymous with “Output”, which is defined as: “A specialist product that is handed over to a user(s)”.</p> <p><b>PMBOK Guide, 5th Edition:</b> “Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.”</p>

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<sup>5</sup> This statement refers to Enterprise Editions of the TOGAF standard (Versions 8 and above), which became popular and are a *de facto* standard for Enterprise Architecture. The TOGAF 8 standard was published in 2003 (with the latest revision of the TOGAF 9 standard published in 2018), PRINCE2 in 1996 (with a major refresh in 2009), and PMBOK in 1996 (with a major revision in 2004 which was the 3rd Edition; this Guide is based on the 5th Edition published in 2013).

Concept	Discussion and Definitions
Executive	<p>The Executive is the owner of the business goal, responsible for realization of expected benefits, and ultimate success of the project. Its role is comparable with the roles of Sponsor and Executive (which can be considered synonymous with Architecture Sponsor from the Skills Framework) in PMBOK and the TOGAF standard, respectively, though in the case of PMBOK the involvement of the Sponsor <i>versus</i> Executive is more limited. For the sake of clarity, in this document we will use “Executive” to define such enabling role, no matter what method we refer to in a particular context.</p> <p><b>TOGAF Standard:</b> No explicitly stated definition, but has named key concerns as “On-time, on-budget delivery of a change initiative that will realize expected benefits for the organization”.</p> <p><b>PRINCE2:</b> “The single individual with overall responsibility for ensuring that a project meets its objectives and delivers the projected benefits. This individual should ensure that the project maintains its business focus, that it has clear authority, and that the work, including risks, is actively managed.”</p> <p><b>PMBOK Guide, 5th Edition:</b> (Sponsor) “A person or group who provides resources and support for the project, program, or portfolio and is accountable for enabling success.”</p>
Phase	<p>In this Guide, we use the term “phase” for the TOGAF ADM phases. This is different from the “project phase” term used throughout PMBOK – we use the term “stage” for project phases (see Stage below).</p> <p><b>TOGAF Standard:</b> Used extensively to describe a collection of logically-related work within the ADM, which is divided into specified phases; e.g., Phase A – Architecture Vision.</p> <p><b>PRINCE2:</b> No special meaning.</p> <p><b>PMBOK Guide, 5th Edition:</b> “A project may be divided into any number of phases. A project phase is a collection of logically-related project activities that culminates in the completion of one or more deliverables.”</p>
Project Manager	<p>In this Guide, we use the term “Project Manager” to describe a person responsible for ensuring that the project (in this case, Architecture Project) delivers the required product that satisfies the stakeholders’ needs.</p> <p>This constitutes the common part of the definitions from both Project Management methods. The TOGAF standard does not explicitly define Project Manager, so use of the term based on the Project Management methods was necessary.</p> <p>Please note that the role of Project Manager can be appointed to an Enterprise Architect or to a Project Management professional; refer to the Appoint the Project Manager (Section 3.1.2) for details.</p> <p><b>TOGAF Standard:</b> No special meaning.</p> <p><b>PRINCE2:</b> “The person given the authority and responsibility to manage the project on a day-to-day basis to deliver the required products within the constraints agreed with the Project Board.”</p> <p><b>PMBOK Guide, 5th Edition:</b> “The person assigned by the performing organization to lead the team that is responsible for achieving the project objectives.”</p>



Concept	Discussion and Definitions
Risk	<p>Project risk management is an important aspect of Project Management. According to the PRINCE2 and PMBOK, risk management is one of the key knowledge areas in which a Project Manager must be competent.</p> <p>Project risk is defined by PRINCE2 as “a set of events that, should they occur, will have an effect on achieving the project objectives”,<sup>6</sup> and by PMBOK as “an uncertain event or condition that, if it occurs, has a positive or negative effect on a project’s objectives”.<sup>7</sup></p> <p>It is important to note that risk impact on a project can be either negative (and actions taken should be focused on minimizing the effect or probability of occurrence) or positive, when we would like to increase the impact or probability of occurrence of such an event.</p> <p>Risk and compliance are an inherent part of any business activity or transformation, thus the TOGAF standard requires proper consideration throughout the ADM, as defined in the Architecture Capability Framework.</p> <p>The key difference is that the TOGAF standard understands risk as a potential threat of the transformation to the technical environment and compliance, while PRINCE 2 and PMBOK are also considering risk as an event that can affect the project itself (timeline, budget, quality, etc.).</p>
Scope	<p>In this Guide, we use the term “scope: as defined in the Project Management methods. This is a broader meaning than described in the Define Scope step of the TOGAF ADM Phase A, and it means the scope of work that is to be performed in order to achieve projects goals. In contrast, the TOGAF standard restricts use of the term scope to the scope of the architecture to be defined.</p> <p><b>TOGAF Standard:</b> The Define Scope step of the ADM Phase A restricts the scope definition to the scope of architecture: “what is inside and what is outside the scope of the Baseline Architecture and Target Architecture efforts”.</p> <p><b>PRINCE2:</b> “The scope of a plan is the sum total of its products and the extent of their requirements. It is described by the product breakdown structure for the plan and associated product descriptions.”</p> <p><b>PMBOK Guide, 5th Edition:</b> “The sum of the products, services, and results to be provided as a project.”</p>
Stage	<p>In this Guide, we use the term “stage” for stages (as defined in PRINCE2) or project phases (as defined in PMBOK). We do not use the term “project phase” as we reserve it for the TOGAF ADM phases (see Phase above).</p> <p><b>TOGAF Standard:</b> No defined meaning.</p> <p><b>PRINCE2:</b> “A section of a project.”</p> <p><b>PMBOK Guide, 5th Edition:</b> No defined meaning.</p>

<sup>6</sup> The PRINCE2 Foundation Training Manual, by Frank Turley.

<sup>7</sup> Practice Standard for Project Risk Management, PMI.

Concept	Discussion and Definitions
Stakeholder	<p>The meaning of stakeholder in the TOGAF standard and Project Management methods is generally the same. The TOGAF standard, as an architecture lifecycle standard, highlights that the stakeholder focuses on the outcomes of the architecture.</p> <p><b>TOGAF Standard:</b> “An individual, team, organization, or class thereof, having an interest in a system.”<sup>8</sup></p> <p><b>PRINCE2:</b> “Any individual, group, or organization that can affect, be affected by, or perceive itself to be affected by, an initiative (program, project, activity, risk).”<sup>9</sup></p> <p><b>PMBOK Guide, 5th Edition:</b> “An individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project.”<sup>10</sup></p>
Work Package	<p>The TOGAF standard uses the term work package to describe change initiatives that will be implemented in the enterprise. These initiatives are typically large groups of tasks (i.e., they may encompass a whole program).</p> <p>Project Management methods use the term work package to describe a low-level part of work to be performed – the most granular part of work that needs the Project Manager’s authorization before it is started by the team.</p> <p>The two meanings are vastly different. In this Guide, we use the term “Project Work Package” for project tasks (in line with the PRINCE2 use of the term and the PMBOK definition below) and “work package” for change initiatives identified by Architecture Projects (in line with the TOGAF definition below).</p> <p><b>TOGAF Standard:</b> “A set of actions identified to achieve one or more objectives for the business. A work package can be a part of a project, a complete project, or a program.”</p> <p><b>PRINCE2:</b> “An input or output, whether tangible or intangible, that can be described in advance, created, and tested.”</p> <p><b>PMBOK Guide, 5th Edition:</b> “The work defined at the lowest level of the work breakdown structure for which cost and duration can be estimated and managed.”</p>

(Source: Derived from the TOGAF standard, PRINCE2, PMBOK Guide, 5th Edition)

In this Guide we use concepts from both Enterprise Architecture (TOGAF) and Project Management (PRINCE2, PMBOK) disciplines. As this Guide is addressed primarily to architects, in case of conflicts, we usually stick to the TOGAF definitions. If you have a different background, please keep Table 2 in mind.

## 2.4 Project Management Documentation

Project Management is about communication. The Project Manager is responsible for communicating project plans, statuses, and risks to project stakeholders – the Project Sponsor, Steering Committee, and other stakeholders. This can be effectively achieved formally or informally, and in many forms – such as phone calls, meetings, presentations, or written reports.

<sup>8</sup> The TOGAF standard, Part I: Definitions (Stakeholder).

<sup>9</sup> Managing Successful Projects with PRINCE2, Glossary.

<sup>10</sup> PMBOK Guide, 5th Edition, Glossary.

It depends on project size, organizational culture, and stakeholder requirements among other things.

In this Guide, we often refer to plans, reports, and other artifacts that can or should be documented. This does not mean every such artifact should be a separate document. In smaller projects and more agile organizations, very little documentation may be required or necessary. However, we do recommend that Project Management artifacts are documented in a written form, even as simple as email. This allows for tracing back plans, important decisions, and project milestones. In addition, documentation that is more formal can be prepared based on it, if necessary.

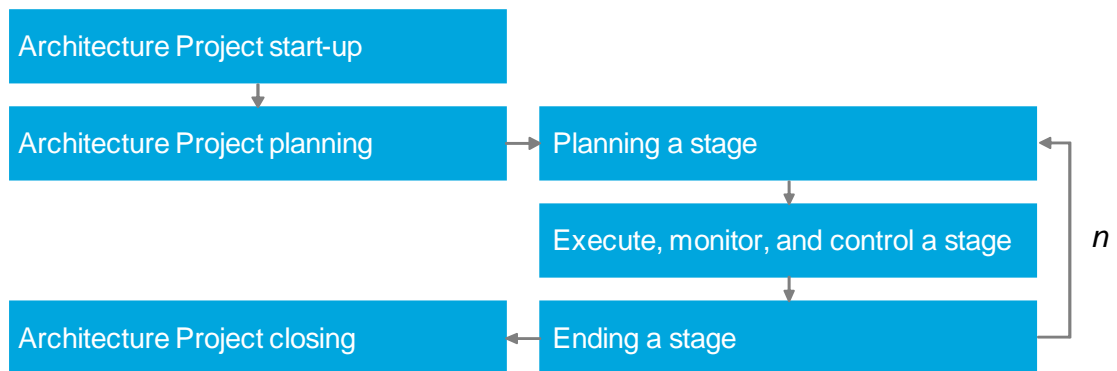
### 3 Detailed Guidance

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This section describes a detailed Project Management approach to use when developing Enterprise Architecture. The target audience of this section is Enterprise Architects who are already familiar with the TOGAF standard and who lead Architecture Projects.

This section is organized into subsections which describe the approach to:

- **Architecture Project start-up**, which includes the Project Management activities of the ADM Phase A and the project start-up and “Initiation” activities of the Project Management methods
- **Architecture Project planning**, which includes project planning activities based on the Project Management methods
- **Planning a stage**, which describes how to apply the Project Management methods to plan an Architecture Project stage
- **Execute, monitor, and control a stage**, which describes how to monitor and control the architecture development activities of the ADM Phases B to F using the Project Management methods
- **Ending a stage**, which describes how to apply the Project Management methods at the end of an Architecture Project stage
- **Architecture Project closing**, which includes project closing activities of the Project Management methods and the ADM Phase F, including handover of architecture deliverables for implementation



**Figure 4: Structure of this Section and Architecture Project Flow (arrows)**

Where appropriate, guidance refers to one or more real-world examples. These examples are presented in gray boxes. They refer to selected projects from our examples list (see Table 1).

① The approach in this Guide covers most of the Project Management responsibilities related to an Architecture Project; however, some areas – such as schedule management, procurement management, cost management, and others – are not covered. We assumed that the purpose of this Guide is not to explain the Project Management methods in full detail, but to provide guidance on how to apply them in the reality and characteristics of Architecture Projects. Since areas related to procurement, cost, etc. are not different from other projects, they are not detailed in this Guide.

## 3.1 Architecture Project Start-Up

The first step of Phase A of the ADM cycle is defined in the TOGAF standard, Phase A: Establish the Architecture Project. The chapter is very concise and refers the reader to other sources, by stating: “execution of ADM cycles should be conducted within the Project Management framework of the enterprise”. It does not detail steps to be undertaken at the very beginning of the Architecture Project, but leaves it to the Project Manager and other bodies within the enterprise to decide on what has to be done based on their experience and a set of organizational standards.

According to PRINCE2 to ADM Mapping (Chapter 4), the ADM step Establish the Architecture Project can be mapped to the PRINCE2 Starting up a Project process. PMBOK, due to its different nature, does not provide such elaborate systematic processes, nevertheless its Develop Project Charter process can be mapped to this TOGAF step as well (see PMBOK to ADM Mapping, Chapter 5). Therefore, the following activities are necessary for starting up a project:

- Appoint the Executive and Project Manager
- Capture Previous Lessons
- Prepare Outline Business Case
- Select the Project Approach
- Design and Appoint the Project Management Team
- Assemble the Project Brief
- Define the Management Approach

The above-mentioned activities form a basis for the following subsections.

### 3.1.1 Appoint the Executive

The project should be a response to an identified business need, as its execution is connected with tangible and usually quantifiable costs for the organization, in the form of, for example, cash expenditure, man-hours of employees, and even disruptions in normal operations. The project can only be executed when there are necessary resources provided, usually on the assumption that they will achieve some business goal and provide sufficient return in some form (like business benefits, ability to continue operations, etc.).

There are multiple possible benefits of Architecture Projects; for example:

- A more efficient operation
- Better return on existing investment
- Reduced risk for future investment
- Faster, simpler, and cheaper procurement
- Improved ability to respond to threats and opportunities identified from a context analysis, as well as competitor pressure, through design of new business models and identification of new business lines
- Improved customer experience through different channels

which all stem from having good, thoroughly planned Enterprise Architecture (or, at the very least, are facilitated by it) or undertaking architectural efforts. In other cases, Architecture Projects are enablers of other initiatives, projects, and programs, and do not deliver value on their own, or are just necessarily grounded in external factors (like compliance with regulatory requirements).

The Executive is the owner of the project's business goal, and therefore an incarnation of organizational support for the initiative at hand, responsible for realization of expected benefits. Depending on the organization (especially its Project Management framework) and the project itself (its type), the Executive can have different names and structures. The term was originally taken from the PRINCE2 method, where it is the name of the role representing the "Customer", who is the ultimate resource provider for the project.<sup>11</sup> A very similar role, though more limited, is played by the "Sponsor" in PMBOK. The same is the case with the TOGAF standard, where the Executive is responsible for ensuring "on-time, on-budget delivery of a change initiative that will realize expected benefits for the organization".<sup>12</sup>

The TOGAF standard does not elaborate on the Executive much. It is named as a stakeholder organizational role, which can be played by, for example, a sponsor or program manager. It defines the necessary skill set (see the TOGAF standard, Part VI: Architecture Skills Framework (Goals/Rationale)) in its skills framework, provides information on the sponsorship of the initial Enterprise Architecture effort (namely that it is usually a CIO or other Executive), names the sponsor of the architecture (Architecture Board), as well as the "sponsor of sponsors" (Executive sponsor from the highest level of the corporation).

As pointed out earlier, there can be no project without an Executive, who provides the necessary resources for the project's execution and represents the need to be addressed. The Executive is the person that appoints the Project Manager and tasks them with Architecture Project execution at the operational level.

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<sup>11</sup> The two can be, of course, the same person.

<sup>12</sup> See the TOGAF standard, Part III: Stakeholder Management (Template Stakeholder Map).

Examples of Architecture Project Executives are:

	<b>Overall Goal</b>	<b>Architecture Project Goal</b>	<b>Architecture Project Executive</b>
Example	(B) Improve logistics process efficiency and shorten time-to-order	Determine and design possible improvements in the business processes in the area of logistics	CIO
	(E) Implement new data warehouse and management information system to address expanding bank reporting needs	Enable efficient and successful implementation of the solution	Program Manager, responsible for Management Information System transformation program

### 3.1.2 Appoint the Project Manager

As stated in the Appoint the Executive step above, the Project Manager is appointed by the Executive to lead the Architecture Project on the operational level.

A Project Manager is a person responsible for ensuring that the project delivers the required product that satisfies the stakeholders' needs. Therefore, a Project Manager must have strong leadership, communication, and negotiation skills in order to lead the stakeholders to the project's successful outcome.

- i According to PRINCE2, the Project Manager is a person given the authority and responsibility to manage the project on a day-to-day basis to deliver the required products with the constraints agreed with the Project Board. The Project Manager's prime responsibility is to ensure that the project produces the required products within the specified tolerances of time, cost, quality, scope, risk, and benefits. The Project Manager is also responsible for the project delivering a result capable of achieving the benefits defined in the business case.<sup>13</sup>
- According to PMBOK, the Project Manager is a person assigned by the performing organization to lead the team that is responsible for achieving the project objectives. In general, Project Managers have the responsibility to satisfy the needs: task needs, team needs, and individual needs.<sup>14</sup>

A common question is: who should be an Architecture Project Manager? Project Management methods advocate assigning such a role to a Project Management professional.

The TOGAF standard does not answer this question, but its Architecture Skills Framework<sup>15</sup> provides an assessment of the skills required to deliver a successful Enterprise Architecture. According to the framework, the Enterprise Architect is responsible for ensuring the completeness (fitness-for-purpose) of the architecture, in terms of adequately addressing all the pertinent concerns of its stakeholders; and the integrity of the architecture, in terms of connecting all the various views to each other, satisfactorily reconciling the conflicting concerns

<sup>13</sup> Managing Successful Projects with PRINCE2, Section C.5 (Project Manager).

<sup>14</sup> Guide to the PMBOK, Section 1.7 (Role of the Project Manager).

<sup>15</sup> The TOGAF standard, Part VI: Architecture Skills Framework.

of different stakeholders, and showing the trade-offs made. Therefore, for most Architecture Projects, the role of an Enterprise Architect satisfies the definition of the Project Manager. In addition, excellent communication with stakeholders required from the Enterprise Architect lowers the need to designate a dedicated Project Manager that is typical for IT projects.

However, in some cases there may be a need to delegate Architecture Project Management and control to a dedicated Project Manager. The decision to include a dedicated Project Manager in an Architecture Project will depend on the Project Management rules and principles adopted in the organization, the scale of the Architecture Project, the number of internal entities and external suppliers involved in the project, the number of project streams, its timeframe, etc. You may find that the Architecture Project is so complex that combining an Enterprise Architect role with the Project Manager role may not be effective because the workload connected with managing and controlling the project according to the organization's Project Management rules and principles limits the Enterprise Architect to focus on core architecture work.

Example	<p>In Project B, an Enterprise Architect served as a Project Manager. This was possible due to the low complexity of the project – it covered only one business domain, engaged people from three business units, and five to ten IT systems. Moreover, the Project Management rules and principles adopted in the organization were focused only on reporting issues and risks associated with delivering the project within the specified tolerances of time and cost.</p> <p>In Project D, there was a need to include a dedicated Project Manager due to the complexity of the project – it consisted of five work streams (architecture was one of them) whose products were inter-dependent, covered over 25 IT systems, and engaged over 50 people from various business units. The Enterprise Architect was responsible for managing the work in the architecture stream and reporting its status to the Project Manager who was, among others, responsible for consolidating status reports from all streams and presenting an overall status of the project to its stakeholders on a weekly basis.</p>
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In the rest of this Guide, we use “Project Manager” for a role responsible for the execution of the Architecture Project. This role can be assigned to an Enterprise Architect or to a Project Management professional, as discussed above.

### 3.1.3 Capture Previous Lessons

One of the first things the Project Manager is expected to do after being appointed, as per the PRINCE2 method, is preparation of a Lessons Log.<sup>16</sup> This document should function as an informal repository of knowledge about the current project. At the very beginning, it should be completed with all relevant information available about similar projects, including key information from previous projects' Lessons Logs (or Lessons Reports, if these exist) and other relevant documentation, experiences of people involved in such endeavors, and all other potential sources of knowledge (in case of Architecture Projects, the input should be obtained, among other sources, from the lessons learned documented in Phase F.<sup>17</sup>) It enables the Project Manager to gain better insight into the nature of the project and better prepare and execute the project by avoiding mistakes made previously by others and using developed know-how.

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<sup>16</sup> In this Guide we refer to the Lessons Log as a repository filled continuously during the project, as opposed to Lessons Learned or a Lessons Report, which are the documents concluding the project and containing only the most important information.

<sup>17</sup> The TOGAF standard, Phase F (Complete the Architecture Development Cycle and Document Lessons Learned) and Phase H (Drivers for Change).



The document should undergo regular updates when it should be filled in with additional information acquired as well as developed good and best practices, which will support the Project Manager in his duties on this and other projects.

The level of detail in this document should be adequate to the requirements of the project (its scale and complexity) and compliant with the internal regulations of the particular organization. There is no need to create sophisticated Lessons Logs for small projects. In some cases even a bullet list, containing the most important observations, might be sufficient.

The Project Manager has been appointed to manage the project focusing on the architecture design and implementation of a new Data Warehouse and Management Information System (Project E). As a first step, the Project Manager gathered information about the project at hand and interviewed the Sponsor.

Example In order to ensure integrity, completeness, and constant availability of potentially useful information, he created the Lessons Log, where he intended to put all the information he considered useful at the beginning, and where he will include all the insights gained during the project execution. As it turned out, there was another project executed in the company, which resembled the current project in scope and budget and ended in failure due to not being completed in the estimated time. The documented reason for that was tasking the main architect with Project Management duties, which proved to be too much to handle for one person in this project type and set-up. The Project Manager included the note in the Lessons Log: “In projects with such scope, the Project Management and Enterprise Architecture duties should be separated; otherwise, there is a risk of neither of these functions being executed properly due to the excessive workload.”

### 3.1.4 Prepare Outline Business Case

Simultaneously, the PRINCE2 method expects the preparation of an outline business case, which will be an integral part of the Project Brief, providing information on expected costs, risks, and benefits of the project. The outline business case is an attempt at providing quantitative and qualitative assessment of the project, enabling the decision-makers (i.e., the Executive or similar body) to make a more informed choice about whether the project is feasible and beneficial, and whether it is the best project to undertake from the whole portfolio of project ideas.

The document is a responsibility of the Executive, though it does not mean that they prepare it. This task might be delegated to, for example, business analysts or the Project Manager.

This document should become more detailed later on, as additional planning efforts are conducted, and should be regularly verified and continuously maintained to provide the current state of knowledge about all factors that might affect the outcome of the project. This constitutes a basis for strategic decisions regarding the project, including a decision on whether the continuing project is still beneficial, feasible, and needed (see Execute, Monitor, and Control a Stage, Section 3.4). After the completion of the project, the business case should also be confirmed, to see whether the forecasts regarding benefits were correct (see Architecture Project Closing, Section 3.6).

Example

The Project Manager has been tasked with creating the business case for Project C (*Consolidate IT environment of recently merged businesses*). The newly created IT environment is largely redundant, allowing for a significant reduction of IT costs through application and infrastructure consolidation. Possible savings are estimated at 20-50M EUR yearly. The Architecture Project that will define the target model and consolidation roadmap is estimated to involve four FTE of Enterprise Architects and eight FTE of other staff for six months (total cost of 0.5M EUR including expected risk materialization costs). The resulting roadmap implementation is estimated to cost between 40M and 100M EUR.

The Project Manager has documented these preliminary findings in an outline business case and communicated them to the Executive, mentioning that these require further analysis, but the project looks promising and should be, in his opinion, continued, at least until a more precise cost benefit analysis can be prepared based on Architecture Project findings.

### 3.1.5 Select the Project Approach

PRINCE2 expects the Project Manager to select the approach to project execution. Decisions to be made mentioned by the PRINCE2 method are, among others: what resources to use (internal or external), whether to build a solution from scratch or modify existing solutions, or whether to base it on a Commercial Off-The-Shelf (COTS) solution, or create a tailor-made one.

In the case of Architecture Projects, only the first decision is relevant. However, from the perspective of Architecture Project Management, the approach should be understood more broadly: what methods and frameworks should be used to manage the Architecture Project and how to plan the project.

The choice of methods and frameworks used in the Architecture Project Management should stem from the characteristics of the problem the project aims to solve and be connected with the adopted planning approach. Since the area of Architecture Project Management is a composite of Project Management and Enterprise Architecture fields, decisions should be made regarding tools used in each of these domains.

#### 1. Choosing the Resources to Use

From our experience, the decision on whether to use internal or external resources should be made taking into consideration at least the following:

- Estimated complexity of the project and amount of work needed
- Time and budget constraints
- Necessary skills – note that knowledge of the existing architecture may be highly relevant; cost of obtaining it (i.e., current state analysis) should be carefully considered for external consultants
- Available resources inside the organization
- Previous experiences and organizational guidelines

Example

The Project Manager tasked with managing Project E has concluded that due to broad estimated scope, high complexity, and difficulty of the project, as well as strict time constraints resulting from legal obligations of the bank, the project requires multiple architects with high competency in the data domain. The resources at hand were assessed as insufficient and there was neither possibility to recruit more people in time, nor to train the available architects to the adequate skill level.

The Project Manager has decided to approach the project using external resources by engaging a group of architects from the consulting firm, with which the bank has a longstanding, positive relationship and has successfully completed other projects.

## 2. Choosing a Planning Approach

The decisions regarding planning approach and methods/frameworks are inter-dependent, as each may influence the other. The TOGAF standard advocates an iterative approach with iterations repeated until the product achieves the expected quality and consistency, which many people equate with the agile approach and methods. This is not the case, and there is no fundamental contradiction between the proposed approach and the waterfall methods. Nevertheless, it might require tailoring of the TOGAF framework to fit within the constraints of the Project Management methods and particular projects. For more information on how to plan the project, with particular focus on dividing it into stages, refer to Architecture Project Planning (Section 3.2) and Planning a Stage (Section 3.3).

## 3. Choosing a Method

Useful in the case of choosing the best approach (from the Project Management method viewpoint) to the particular problem could be the Cynefin Framework. It divides the so-called problem domain into four main categories: complex, complicated, obvious (simple), and chaotic.<sup>18</sup> Depending on the category of the problem, different methods are recommended, due to them being best suited for different circumstances as they have different strengths and weaknesses. In our experience, the following methods are recommended for particular problem categories:

- Complex – SCRUM method, specifically designed to deal with a high level of volatility and uncertainty
- Complicated – e.g., Kanban and SCRUM methods, as the category covers sophisticated problems, requiring careful analysis, highly expert knowledge to solve, and some amount of probing different solutions, as there is no one best solution
- Obvious (simple) – all of the waterfall approaches, as the category covers known problems and has best practices prepared, enabling use of a carefully preplanned approach
- Chaotic –no method recommended, due to complete unpredictability of the systems' behavior

Problems in the area of Enterprise Architecture tend to fulfill the criteria for simple and complicated categories, especially when architecture is already present in the organization, as it aims at increasing the level of order and predictability. The cause-and-effect relationships are

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<sup>18</sup> There is multitude of resources on this framework on the Internet, covering different applications. However, the *clou* is the same everywhere. We would like to restrain from recommending any particular resource.

present and possible to discern, and the only case in which the problems might become complex or chaotic is high volatility of the environment (usually combined with lack of knowledge about the organization at hand and its exterior). To which domain a particular problem belongs depends, *inter alia*, on the expertise in the organization, its architecture maturity, scope of the project, and additional constraints imposed. The task to classify the problem is up to the Project Manager.

#### 4. Choosing an Enterprise Architecture Framework

In the area of Enterprise Architecture, the choice to be made is between one of different architecture frameworks. There are at least a few different major frameworks which provide tools and resources for Enterprise Architects (including the Zachman Framework and the Federal Enterprise Architecture (FEA)). However, not all of them are useful in the case of Architecture Project Management. This is the consequence of the different focus of each of the frameworks. As Architecture Project Management is, in fact, a process of creating an architecture, only the frameworks which provide methods of creating architectures should be taken into consideration. This is where the TOGAF framework, as compared to other frameworks, excels, thanks to its detailed description of the ADM.

In Project A, the Project Manager has no clear understanding what views are necessary to achieve the goals of the project, making it a complicated problem. He therefore has decided to include on “overview” stage at the beginning, enabling him to determine scope, which will allow completion of the project in the set timeframe and with set resources. After the thorough analysis of two applications during this phase, he confirmed with the Executive what is feasible to do in the following stages and will address the existing business need of the Executive. Later on, the Project Manager has decided to adopt an iterative approach by splitting the 50 applications used into groups of eight, which will be assessed in every two-week iteration.

**Example** In Project E, the Project Manager has to deliver precisely described artifacts and products to a set date, making the problem a simple one, assuming the presence of necessary resources. Failure to do so will result in potentially costly delays in the project, including fines for not complying with regulatory requirements, as the architecture stream is on the critical path. Therefore, the Project Manager has adopted the preplanned approach with time-bound stages with some buffer, focusing initially on the baseline (baseline first approach). This plan has been assessed as feasible by the external consulting experts involved in the project, who have participated in similar projects in the past. Nevertheless, the risk has been assessed and communicated, and its significant part has been transferred to the consulting firm in the form of additional provisions in the contract.

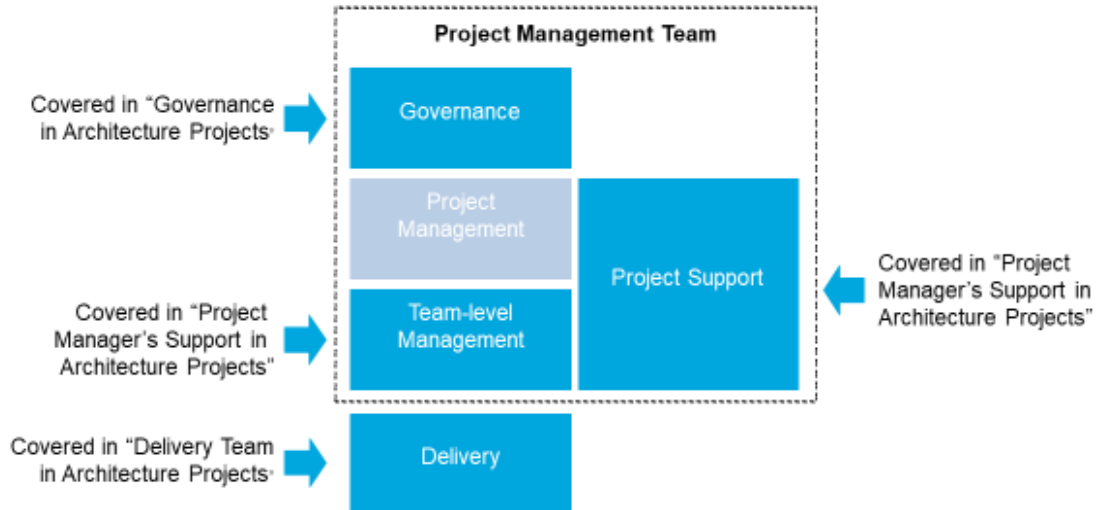
In this Guide we assume the Architecture Projects are conducted according to the TOGAF framework, supplemented with practices stemming from the most popular Project Management methods.

#### 3.1.6 Design and Appoint the Project Management Team

Project Managers of Architecture Projects do not operate in a void and do not deliver products singlehandedly. They use support provided by other institutions within an enterprise and are regulated by them in order to ensure that the goals of the organization are met. They are part of the team, working together to deliver the products and realize the benefits for the organization.

In PRINCE2, they are part of a Project Management Team, which provides them with oversight and support. These Project Management Teams are the whole Project Management structure

comprising bodies responsible for governance,<sup>19</sup> management, and support. There are also Project Management Teams in PMBOK, but, in comparison to PRINCE2, they are limited to Project Management and leadership activities, and do not include governance bodies (they only cooperate with them).



**Figure 5: Simplified Chart Representing Model Project Team Based on the PRINCE2 Method**

## 1. Governance in Architecture Projects

The bodies which are responsible for successful delivery of the product should naturally be the ones most interested in “ensuring that the business is conducted properly” (which is the most general definition of governance, found also in the TOGAF standard). This is exactly the case: the governing body in the case of PMBOK is the Sponsor, in PRINCE2 it is the Steering Committee, led by an Executive (who is the ultimate decision-maker, only advised by optional representatives of users and suppliers), and in the TOGAF standard it is the Architecture Board (which is a sponsor of architecture in an enterprise).

It is necessary to bear in mind, though, that there is a difference in the type of governance provided by the Architecture Board (i.e., Architecture Governance) and the other two bodies mentioned (i.e., Project Governance). Architecture Governance is the practice and orientation by which Enterprise Architectures and other architectures are managed and controlled at an enterprise-wide level, while Project Governance (according to PMBOK) is an “oversight function that is aligned with the organization’s governance model and that encompasses the project lifecycle ... providing a comprehensive, consistent method of controlling the project and ensuring its success”. As a result, Architecture Projects should be subject to both types of governance, first allowing to provide alignment with strategic architecture and sub-architectures, second to ensure that the project delivers expected results in terms of quality, budget, and time.

Does this mean that the Project Manager on the Architecture Project should be overseen by two different bodies? Often yes. However, it depends on the Project Management and Enterprise Architecture organization. Is the architecture governance body (such as the Architecture Board)

<sup>19</sup> Since we are discussing Architecture Project Management, the governance of the project is two-fold – both architecture governance and project governance are applicable.

already established in the organization? If it is, can the architecture governance body take the role of project governance as well? If it is not and the project is the organization's initial Enterprise Architecture effort, can the Steering Committee transform into an Architecture Board after the project is completed? There are many possibilities and the approach should be different depending on project and organization characteristics.

**Example** The Project Manager has been tasked with managing Project B (improve logistics process). The project is sponsored by the CIO of the company, who has been tasked by the business to provide current information to allow for better planning and resource allocation, to shorten order-to-delivery time as an end result. The CIO presides over the Architecture Board, which also includes some leaders of business units involved in the company's logistics process.

The CIO decided there is no need to set up additional bodies to provide project governance, as most of the key stakeholders are already part of the body providing architecture governance. There are no inter-dependencies or planned follow-ups at the moment, and all decisions will be made on the basis of its outcome.

As a result, the Project Manager turns to the Architecture Board and CIO in particular to provide not only architecture governance, but also project governance as a Sponsor of the project, and, if possible, to include the rest of the affected business leaders on the Board.

**Example** The Project Manager has been ordered to lead Project E, aiming to design the to-be architecture in a bank, which includes new data warehouse and management information systems. The Architecture Project is part of a larger program of new solution implementation, making architecture effort only one of multiple streams, which are closely related and dependent on each other. This is especially true for the Architecture Project, which functions as an enabler for further work. The project has been initiated by the Program Management of the whole information system transformation initiative, which is not in any way connected with the Architecture Board. It is strictly bound by budget, timeframe, and scope, requiring strict adherence to the plans and requirements.

The Project Manager is responsible in this case to the Program Management, while simultaneously has to adhere to the rules and constraints imposed by the Architecture Board in the organization. Depending on the type of issue, whether it is connected with architecture, or Project Management and execution, he is obliged to follow different escalation routes.

## 2. Project Manager's Support in Architecture Projects

Sometimes, Architecture Projects are too big and complex for a single Project Manager to undertake and manage, even with support provided from the enterprise leadership. Furthermore, some projects may require specific skills and competencies, which are not possessed by the Project Manager designated to lead the project. This creates the need for additional people, other than those in the Architecture Board or other governing body, who ultimately become the core of the Project Management Team.

The TOGAF standard describes the roles that are usually part of an "architecture team" in Part VI, Architecture Skills Framework: Enterprise Architecture Role and Skill Categories, and Enterprise Architecture Role and Skill Definitions. These include both roles responsible for governing the architecture and supporting the project and roles responsible for operational management and delivery (architects for different domains and solution designers). These roles are part of the Architecture Capability Framework and are separate from the structure of a Project Management Team. The TOGAF standard does not describe how the Project

Management Team supporting the project should be staffed or organized. However, some hints are provided in the Project Management methods.

PMBOK provides general information about Project Teams<sup>20</sup> in Section 2.3 and hardly any regarding Project Management Team (a subset of Project Team responsible for the Project Management and leadership activities). It says that the only constant with regards to the Project Team is Project Manager's role as its leader, giving a lot of freedom to the Project Manager. Among the factors which should be considered while devising the Project Team structure, PMBOK mentions culture, scope, location, and organizational structure. It does not provide guidelines on how it should be organized, other than giving information on some of possible roles within the Project Team (for more information, see Section 2.3 of the PMBOK Guide) and tools supporting the Project Manager's decision-making and management processes (see Chapter 9 of the PMBOK Guide).

PRINCE2 is more specific and points out team managers, who are people responsible for delivery of products assigned by the Project Manager, as defined in the Project Work Packages later on (for more information on Project Work Packages and Work Packages see Architecture Project Management Concepts, Section 2.3) and people being part of Project Support (usually as part of the Project Management Office), whose duties are limited to support in administration and operations and providing guidance regarding Project Management tools and techniques).

The decision on whether to appoint team managers, how to define their roles and duties, is entirely up to the Project Manager (but this decision should be approved by the bodies providing project governance), but shouldn't be made without serious consideration, as it impacts how the work will be divided during the project. The factors, which should be considered are, among others:

- Estimated scope of the project, with regard to both domains and segments, that will be affected by the project
- Project constraints, especially with regard to timeframe
- Size of the team involved

Based on what we know about Architecture Projects and having a general knowledge of Project Management methods, it is possible to propose at least two ways of selecting team managers:

- By architecture domain, where particular team managers are architects responsible for either business, data, application, or technology architecture
- By enterprise continuum level, where particular team managers are architects responsible for different segments or solutions, which are affected by the project (however, we recommend that the Architecture Project has a clear scope restricted to one of the levels: strategic, segment, or capability)

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<sup>20</sup> This term is used in the PMBOK to describe the "Project Manager and the group of individuals who act together in performing the work of the project to achieve its objectives". As mentioned earlier, this term differs from the Project Management Team used in PRINCE2, because it does not include the body providing oversight (herein called the Project Owner), as opposed to the Project Management Team, but includes all the operational people – something which is not covered in the other method.

Example

In Project E, architecture is just one of work streams of a large project. The architecture work stream can use a general Project Support team (PMO) for administrative tasks such as setting up meetings or managing the work stream repository. Therefore, the architecture work stream leader decided he would not need any separate support staff.

The team structure is established in the Project Start-up stage. However, after the initial stages of the project, the Project Team structure should be reviewed and may be adapted to changing needs.

### 3. Delivery Team in Architecture Projects

The last group (but no less important than those mentioned earlier) are people engaged in operational execution by working on project deliverables. They are organized in teams, managed by the Project Manager directly or team-level managers, depending on the Project Management structure in a particular project.

Selection of people to be involved in the project is critical to its success. It depends mainly on the goals and scope of the Architecture Project, and the resources available. The TOGAF Architecture Skills Framework can be helpful in planning and selecting delivery team members. More general techniques in this area are described in the PMBOK Guide, Chapter 9.

Example

In Project B, the delivery team was selected among available resources. The aim was to ensure the team has skills strong enough to cover each of the business subunits with a single workshop. This required careful planning and the right mix of skills and knowledge of current information flows and systems within the team.

The delivery team consisted of:

- Enterprise Architect – who was also the Project Manager; responsible for planning the project, engaging stakeholders, preparing templates, reviewing work products, and preparing final deliverables; would also take an active part in business workshops to ensure they are fit-for-purpose
- Business Process Analyst – who would facilitate business workshops and document their results in line with the approach developed with the Enterprise Architect
- Logistics Information Systems Architect – who would take an active part in business workshops and provide knowledge on the current IT systems capabilities and their development potential

#### 3.1.7 Assemble the Project Brief

According to PRINCE2 and PMBOK, the project becomes authorized when a document summarizing the project's assumptions is assembled and approved. At minimum, the document should define the high-level boundaries of the project.



According to PRINCE2, the Project Brief is a statement that describes the purpose, cost, time, and performance requirements, and constraints for a project.<sup>21</sup>

- ① According to PMBOK, the project becomes authorized when the Project Charter is approved. The Project Charter documents the business needs, assumptions, constraints, the understanding of the customer's needs and high-level requirements, and the new product, service, or result that it is intended to satisfy.

The document is issued by the Executive that formally authorizes the existence of a project and provides the Project Manager with the authority to apply organizational resources to project activities. It is recommended that the Project Manager participates in the development of the Project Charter to obtain a foundational understanding of the project requirements. This understanding will better allow for efficient resources allocation to project activities.

The information from the document is relevant for the Project Manager to plan key milestones, a detailed schedule, as well as key resources essential to perform particular tasks in the planning phase. They are also important at the end of the project in order to verify whether the project delivered the desired results within the specified tolerances of time, cost, quality, and scope. The information included in the document may be updated along with the progress of work in the planning phase.

The type and scope of the information needed at the beginning of an Architecture Project, as well as documents that they will be included in, depends on the Project Management rules and principles adopted in the organization conducting the project.

Example In Project D, the Project Manager utilized the information presented in the Project Brief to develop a kick-off presentation and conduct a meeting informing key stakeholders of the Architecture Project about its scope, business needs to be addressed, as well as imposed constraints. Furthermore, the information was utilized by the Project Manager to plan key milestones and develop a detailed schedule for the Architecture Project.

### 3.1.8 Define the Management Approach

After initial project start-up – selecting the project approach and appointing the Project Management Team – the Project Manager determines how the project will be managed. In PRINCE2, it is called preparing a Management Strategy. In PMBOK, it is a part of the Develop Project Charter process.

The Define the Management Approach step includes determining an approach to:

- Risk management
- Quality management
- Stakeholder and communication management
- Project controls

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<sup>21</sup> See the PRINCE2 Glossary of Terms.

## 1. Risk Management Approach

As part of project initiation, the Project Manager determines the risk management approach and confirms it with the project governance body. Typically, an approach to risk management includes the following steps:

- Risk identification and classification
- Risk analysis (qualitative and quantitative)
- Risk mitigation and response strategy design
- Risk monitoring

The Project Manager also performs an initial risk assessment, which includes risk identification, classification, analysis, and design at the beginning of the project. The key result of this activity is a risk log, which documents identified risks and their characteristics together with designed responses. The risk log will be used throughout the project to monitor and manage risk; see Execute, Monitor, and Control a Stage (Section 3.4) for details.

For more information on project risk management techniques, refer to the PMBOK Guide, Chapter 11.

### Example

In Project E, initial risk assessment is performed first on a work stream level, then on the project level (the project consists of a few work streams). In the architecture work stream, initial risk assessment is performed on a deliverable level, then consolidated and extended on the work stream level.

For a risk log example, refer to the example in Capture and Examine Issues and Risks, in Section 3.4.5.



Risk management from the Project Management perspective is concerned with risks to meeting projects goals. Please note that the Architecture Project has to deal with another key type of risk – risk to the enterprise associated with the Architecture Vision and related to implementing it. This type of risk – we can call it “architecture risk” – has to be managed and mitigated. Techniques of managing architecture risk are similar to that applied to project risk; they are described in the TOGAF standard, Part III: Risk Management.

## 2. Quality Management Approach

As part of project initiation, the Project Manager determines the quality management approach and confirms it with the project governance body. The quality management approach should be compatible with the organization’s quality management system. Typically, it should establish:

- Key quality characteristics of the project deliverables – conditions that would be used to assess conformance when the deliverable is handed over
- Documentation requirements – how these quality characteristics would be documented to allow for conformance checks
- Quality assurance processes – how these quality characteristics would be checked for conformance (before and on deliverable handover)

The quality management approach will be used throughout the project. Established criteria are key for stage and project closing activities (see Ending a Stage, Section 3.5, and Architecture Project Closing, Section 3.6).

For more information on project quality management techniques, refer to the PMBOK Guide, Chapter 8.

In Project E, each of the project deliverables is described with a Deliverable Charter. The Deliverable Charter defines the deliverable name, its scope, required inputs, acceptance criteria, and acceptance process. Two types of acceptance processes are designed – one for documentation deliverables (analysis, architecture, etc.) and one for software deliverables which includes the system testing approach.

**Example** The document acceptance process consists of five steps: initial hand over of the deliverable, initial deliverable review (two weeks), review meeting (one day), deliverable revision (two weeks), final deliverable review (one week). It is assumed that the final deliverable review confirms the deliverable’s conformance to quality requirements.

Acceptance processes and Deliverable Charters are discussed and accepted by the project governing body.

### 3. Stakeholder and Communication Management Approach

TOGAF ADM Phase A includes stakeholder identification and determining an approach to stakeholder communication. It is one of the core activities that the Project Manager has to assure during the Architecture Project initiation.

Specifically, the Project Manager should:

- Identify all stakeholders and their concerns about the resulting Enterprise Architecture
- Determine the stakeholder communication management approach
- Determine the stakeholder engagement deliverables
- Document all the above information in a form of stakeholder map and communication plan

The TOGAF stakeholder management technique fulfils needs related to the proper stakeholder management approach. This technique is described in the TOGAF standard, Part III: Stakeholder Management. PMBOK uses a similar approach, which is described in Project Stakeholder Management (Chapter 13).

**Example** In Project A, during initiation of the project and Phase A of the ADM, the Project Manager uses the approach described in the TOGAF standard to manage stakeholders. At first he identified the stakeholders, then he grouped the stakeholders with common concerns into stakeholder groups (e.g., C-level management, IT operations), then he defined the stakeholder communication approach using the power-interest matrix. He defined for each of four groups how and how often the Project Team would communicate with each of the four groups. (e.g., the stakeholders with low level of interest and low power receive only the weakly project brief on their emails). At the end, the Project Manager defined the stakeholder engagement deliverables and created the stakeholder map matrix. He added this matrix to the project communication plan.

The output deliverables stakeholder maps and communication plans are used by the Project Manager during project execution and control. The stakeholder map is also the important source of knowledge about engagement deliverables (catalogs, matrices diagrams) for Enterprise Architects that participate in the project.

#### 4. Project Controls Approach

Project controls define the level of control that is demanded to ensure proper project execution and the effectiveness of Project Management. Project controls should be defined during initiation of the project.

PRINCE2 defines the project controls as:<sup>22</sup>

- The frequency and format of communication between the Project Management levels
- The number of stages and hence end stage assessments
- Mechanisms to capture and analyze issues and changes
- Mechanisms to escalate exceptions
- Tolerances for delegated authority
- How delegated authority from one level of management to another will be monitored

Project controls should be defined as part of the management approach. They are executed throughout the project (see Execute, Monitor, and Control a Stage, Section 3.4).

Example

During the initiation of Project A, the Project Manager defined several project controls:

- He set up weekly status report meetings for the Architecture Project Team.
- He decided to divide the analyzed applications to tree packages and assign the responsible application architect for each package.
- He stated that all issues will be registered in a shared issue log and all changes will be registered in a shared change log in the form of Excel<sup>®</sup> spreadsheets in the project intranet repository.

### 3.2 Architecture Project Planning

Project planning is about defining and splitting the project's scope into manageable tasks with a defined schedule and quality criteria. Arguably, it is the most important task of the Project Manager at the project start. According to PRINCE2, a plan is necessary to control anything – and we agree with regard to Architecture Projects.

TOGAF ADM Phase A ends with development and approval of the Statement of Architecture Work, which includes a “project plan and schedule”. It does not go into detail and omits a planning techniques description. In this Guide, we recommend a sequence of activities that allows creation of a schedule and includes it in the Statement of Architecture Work.

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<sup>22</sup> Managing Successful Projects with PRINCE2.

We recommend the following sequence of activities to develop the Architecture Project schedule and Statement of Architecture Work:

- Define the Architecture Project Scope
- Define the Final Product of the Architecture Project and its Acceptance Criteria
- Define the Project Deliverables
- Define the Project Exclusions, Constraints, and Assumptions
- Detail the Architecture Project Scope
- Create the Work Breakdown Structure
- Develop the Architecture Project Plan and Schedule (sequence activities, estimate activity resources and durations, develop schedule)
- Consolidate the Statement of Architecture Work and Secure Approval

These activities are described in the following subsections.

In the TOGAF standard, there are quite a few essential (non-management) work products delivered throughout Phase A. These work products can have a great impact on the Architecture Project Scope and should be completed before working on the Work Breakdown Structure and Project Plan. They include:

- Evaluate Capabilities and Assess Readiness for Business Transformation – project planning should be based on this preliminary assessment of change complexity and readiness for change
- Confirm and Elaborate Architecture Principles, including Business Principles – project planning should take into account Architecture Principles
- Develop Architecture Vision – project planning should be based on baseline and target architectures outlined in the Architecture Vision
- Define the Target Architecture Value Propositions and KPIs and Identify the Business Transformation Risks and Mitigation Activities – while not directly related to Project Scope, some of the value propositions and business transformation risk mitigation activities may impact the Project Scope and should be taken into account in project planning

The above work products can have a great impact on the Architecture Project Scope and should be completed before working on the Work Breakdown Structure and Project Plan. These work products are wide in scope, but they are usually produced at a very high level, to allow just enough information to plan further work and get to a more detailed level.

### **3.2.1 Define the Architecture Project Scope**

Defining the Architecture Project and its scope is the most important activity which should be performed with great care and awareness. The output of this activity will have significant impact on the understanding and achievement of the project's goals.

①

Note that the definition of an Architecture Project Scope is broader than described in the *Define Scope* step of the TOGAF ADM Phase A. The *Define Scope* ADM step describes what is in the scope of the Baseline Architecture and Target Architecture efforts. The Architecture Project Scope, in line with the Project Management methods, means the scope of work which is to be performed in order to achieve the project's goals. Of course, performing the *Define Scope* ADM step is a critical initial task to understand and define the Architecture Project Scope.

The scope of the Architecture Project should be defined using the ADM scope definition activities and other essential Phase A outputs, such as the Architecture Vision (see the list in Architecture Project Planning, Section 3.2). According to the TOGAF standard, it is critical to define what level of the Architecture Landscape, breadth and time will be covered (as shown in Figure 2).<sup>23</sup>

The Project Management methods provide tools and techniques which too can be used during definition of the detailed Project Scope and Project Plan; the most important of them are presented in the following subsections.

As part of the scope definition, a summary Architecture Project Description should be created. The Architecture Project Description is a short summary of the work that will be performed under the project along with the project's goals. All outputs from the above ADM tasks should be gathered and analyzed together in order to prepare the Project Scope Statement that is the description of the scope, major deliverables, assumptions, and constraints.

In Project A, after completion of the essential tasks from the ADM Phase A, the Project Manager had enough knowledge to prepare a description of the Architecture Project. He decided to start by defining the main goal of the project and came up with the following: *Assess current application portfolio and recommend improvement options.*

After that, he defined the main goal, he prepared a more detailed description of the Architecture Project:

Example *Describe the application landscape and identify IT improvement options. There are about 50 applications of different scales (precise number to be determined during project execution), mostly custom-built. Key concerns are:*

- Determining relationships and data flows between applications
- Mapping application capabilities (overlaps and gaps)
- Identification of key technological constraints for application development

*Required views are to be determined. Improvement options should include initiatives with assigned priorities.*

### 3.2.2 Define the Final Product of the Architecture Project and its Acceptance Criteria

The final product of the Architecture Project is the main output resulting from all work that will be performed during the project realization. Depending on the project goal it may be a document or a set of related documents that describes the current situation of, for example, the corporate architecture, results of analysis, recommendations, description of target architecture and roadmap, etc.

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<sup>23</sup> The TOGAF standard, Phase A (Define Scope) and Part III: Applying the ADM Across the Architecture Landscape.

**Example** In Project A, the Project Manager decided that the final product of the Architecture Project he is managing is: *Report summarizing current application portfolio analysis along with key observations and improvement recommendations.*

The acceptance criteria are a set of conditions that must to be met before the final product of the Architecture Project will be accepted. It is important to involve all projects stakeholders in the definition of project acceptance criteria in order to avoid any unexpected, mismanaged expectations at the end of the project.

In Project A, after reviewing all documentation, and after consultation with the Project Sponsor and other stakeholders, the Project Manager prepared a list of conditions that the final product should meet in order to gain acceptance. He decided to include both essential criteria of the final product content as well as technical details of the report itself.

*The main final product acceptance criteria are as follows:*

- Example**
- *The report should be written in Polish and should be prepared in accordance with company templates.*
  - *The precise number of applications that are going to be analyzed is to be determined during project execution (initially it is 50), but it may not be less than 45.*
  - *Relationships and data flows between applications should be prepared in common notation; e.g., using the ArchiMate® modeling language.*

*Recommendations for improvement should include a roadmap with all initiatives along with assigned priorities, estimated cost, and timeframe.*

### 3.2.3 Define the Project Deliverables

Deliverables are unique and verifiable products, results,<sup>24</sup> and outputs that are required to be prepared to complete a project or particular phase of the project. Deliverables may be part of the final product, any auxiliary products, or Project Management products. The aim of defining the list of deliverables is to better plan the work and gain their acceptance right after they are completed rather than at the end of the project. This approach (acceptance of smaller deliverables) is the best way to reduce the risk of not meeting the expectations at the end of the project. During this activity it should be defined which of the TOGAF documents should be also delivered; e.g., Architecture Definition Document, Architecture Requirements Specification, Implementation and Migration Plan, Architecture Roadmap, etc.

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<sup>24</sup> PMBOK Guide, 5th Edition.

In Project A, the Project Manager prepared a list of deliverables that will be prepared during execution of the project. He decided to divide the final product into smaller deliverables and also included additional deliverables that are important to be agreed during the execution of the project. Moreover, he included management deliverables such as status reports.

*Project essential deliverables:*

- *Agreed list of applications that will be subject of the analysis*
- *Agreed list of required views that will be prepared*
- *Relationships and data flows between applications*
- *Mapping application capabilities (overlaps and gaps)*
- *Identification of key technological constraints for application development*
- *Key observations from analysis*
- *Improvement recommendations*

Example

*Project management products:*

- *Report highlights*
- *End stage report*
- *Risk log*
- *Issue log*
- *Change log*

*Project final report*

### 3.2.4 Define the Project Exclusions, Constraints, and Assumptions

*Project exclusion* is a statement saying what is out of scope for the project and it is used to acknowledge and make stakeholders aware of what is excluded from the project.

*Constraint* is a statement about the limitations of the project that affect its execution.

*Assumption* is a statement about facts that are considered to be true.



In Project A, the Project Manager prepared a list of exclusions, constraints, and assumptions based on the results from previous analysis. Examples are listed below.

*Exclusions:*

- *Recommendations for improvement will contain initiatives along with only estimated cost*  
*There will be no RFI process in order to gain more reliable cost data.*
- *The goal of the project is to analyze the current application portfolio along with key observations and improvement recommendations*  
*The Target IT Architecture is excluded from the Project Scope.*
- *Identification of key constraints for application development will be performed from a technological perspective*  
*Other perspectives – e.g., knowledge capabilities, human resources, organizational constraints – are excluded from the Project Scope.*

Example

*Constraints:*

- *The project is being performed mostly by internal resources, but the maximum five FTEs can be dedicated to this project*
- *Due to limited budget there is no possibility to subcontract work outside the organization*
- *The final work product should be completed within 22 weeks*

*Assumptions:*

- *Deliverables will be accepted within five working days after completion*
- *Any change requests affecting Project Scope, budget, or resources will be approved by the Steering Committee of the project*
- *Management and employees, with the appropriate knowledge, will devote sufficient time in order to collect the appropriate information and make the necessary decisions*

### 3.2.5 Detail the Architecture Project Scope

The Project Management methods provide tools and techniques which can be used during definition of the detailed Project Scope and Project Plan.

### 3.2.6 Create the Work Breakdown Structure

This is the process of subdividing project deliverables and project work into smaller, more manageable components.<sup>25</sup>

It should be determined which architecture domains should be developed, to what level of detail, and which architecture views should be built prior to creating the Work Breakdown Structure, and the result of this task should be an input to the Work Breakdown Structure.

During this task, the following TOGAF ADM activities should be also performed:

- Assess work products that are required to be produced against the set of business performance requirements, ensuring performance metrics are built into the work products, and specific performance-related work products are available

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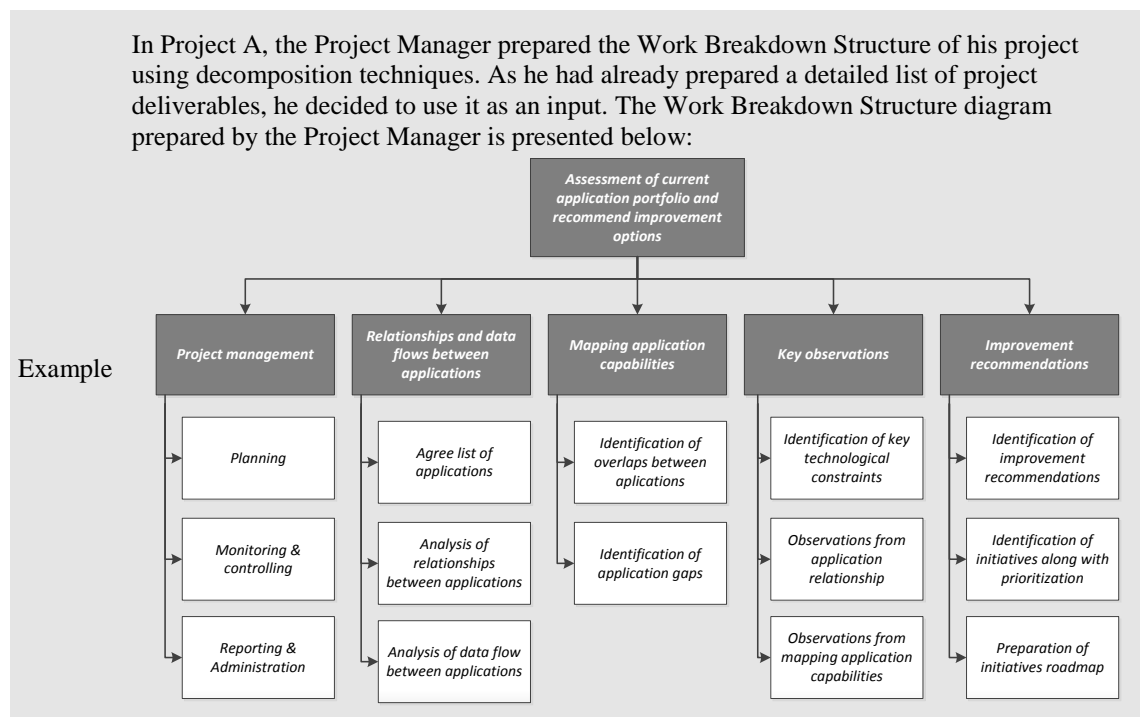
<sup>25</sup> PMBOK Guide, 5th Edition.

- Identify new work products that will need to be changed
- Provide direction on which existing work products will need to be changed

There are two common tools used to create the Work Breakdown Structure:

- Decomposition is a technique used for dividing and subdividing the Project Scope and project deliverables into smaller, more manageable parts<sup>26</sup>
- Expert Judgment is often used to analyze the information needed to decompose the project deliverables down into smaller component parts in order to create an effective Work Breakdown Structure.<sup>27</sup>

The Work Breakdown Structure is often presented as a diagram that graphically presents the decomposition of work products.



### 3.2.7 Develop the Architecture Project Plan and Schedule

After the detailed scope is defined, the following Project Management tools and techniques can be used in order to define the Project Plan. During this phase it is recommended to prepare a schedule; a detailed schedule for each phase should be prepared during the Planning a Stage activity (see Planning a Stage, Section 3.3).

<sup>26</sup> PMBOK Guide, 5th Edition.

<sup>27</sup> PMBOK Guide, 5th Edition.

## 1. Define Activities

This activity is used to identify any specific tasks that need to be executed in order to produce deliverables.

The key benefit of this process is to break down work packages into activities that provide a basis for estimating, scheduling, executing, monitoring, and controlling the project work.<sup>28</sup>

In this process the Project Manager should use the prepared Work Breakdown Structure that divides deliverables to the lower level; i.e., work packages. In this process work packages are decomposed into smaller components called activities, that will be later sequenced and estimated.

It should be clarified that in terms of the Project Management methods, the definition of “work packages” has a different meaning to the TOGAF standard (e.g., in the ADM Phase E). In order to avoid ambiguity, later in this chapter we will use term “work packages” defined as in the previous paragraph.

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<sup>28</sup> PMBOK Guide, 5th Edition.

In Project A, the Project Manager used defined work packages from the Work Breakdown Structure and decomposed them into activities. The results for relationships and data flows between application deliverables is presented below.

ID	Activity Name
1	Start of the project
<b>2</b>	<b>Relationships and data flows between applications</b>
<b>2.1</b>	<b>Agree list of applications</b>
2.1.1	Workshop with architecture team to get initial list
2.1.2	Summary of the workshop with architecture team (initial application list)
2.1.3	Workshop with stakeholders to discuss list of applications
2.1.4	Prepare final list of applications
2.1.5	Secure approval of list
<b>2.2</b>	<b>Analysis of relationships between applications</b>
2.2.1	Overall analysis of relationships
<b>2.2.2</b>	<b>Detailed analysis of applications</b>
2.2.2.1	1st package of applications
2.2.2.2	2nd package of applications
2.2.2.3	3rd package of applications
<b>2.3</b>	<b>Analysis of data flow between applications</b>
2.3.1	Overall analysis of data flow
<b>2.3.2</b>	<b>Detailed analysis of applications</b>
2.3.2.1	1st package of applications
2.3.2.2	2nd package of applications
2.3.2.3	3rd package of applications
2.4	Prepare final report from analysis
2.5	Approval of analysis results

Example

## **2. Sequence Activities**

This activity is used to define all relationships between project activities.

The key benefit of this process is that it defines the logical sequence of work to obtain the greatest efficiency given all project constraints.<sup>29</sup>

Please refer to the Project Evaluation and Review Technique (PERT) method which is a commonly used, network diagram-based technique supporting the process of sequencing tasks.

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<sup>29</sup> PMBOK Guide, 5th Edition.

In Project A, the Project Manager sequenced all defined activities using the Precedence Diagramming Method. To do this, the Project Manager used a scheduling tool that enabled him to do it easily. For each activity on the lowest level the Project Manager defined the preceding activity, so that all of the tasks had defined dependencies which will allow him to build the schedule. The Results for relationships and data flows between application deliverables is presented below.

Example

ID	Activity Name	Predecessors
1	Start of the project	
<b>2</b>	<b>Relationships and data flows between applications</b>	
<b>2.1</b>	<b>Agree list of applications</b>	
2.1.1	Workshop with architecture team to get initial list	1
2.1.2	Summary of the workshop with architecture team (initial application list)	2.1.1
2.1.3	Workshop with stakeholders to discuss list of applications	2.1.2
2.1.4	Prepare final list of applications	2.1.3
2.1.5	Secure approval of list	2.1.4
<b>2.2</b>	<b>Analysis of relationships between applications</b>	
2.2.1	Overall analysis of relationships	2.1.5
<b>2.2.2</b>	<b>Detailed analysis of applications</b>	
2.2.2.1	1st package of applications	2.2.1
2.2.2.2	2nd package of applications	2.2.1
2.2.2.3	3rd package of applications	2.2.1
<b>2.3</b>	<b>Analysis of data flow between applications</b>	
2.3.1	Overall analysis of data flow	2.2.1
<b>2.3.2</b>	<b>Detailed analysis of applications</b>	
2.3.2.1	1st package of applications	2.3.1;2.2.2.1
2.3.2.2	2nd package of applications	2.3.1;2.2.2.2
2.3.2.3	3rd package of applications	2.3.1;2.2.2.3
2.4	Prepare final report from analysis	2.2[FF];2.3[FF]
2.5	Approval of analysis results	2.4

### 3. Estimate Activity Resources and Duration

Each identified activity should be estimated in the context of needed resources (e.g., human resources, equipment) and duration (time needed to complete the individual activity with estimated resources).

Refer to PMBOK to gain further information about the following commonly used duration estimation techniques:<sup>30</sup>

- Expert judgment
- Analogous estimating
- Parametric estimating
- Three-point estimating
- Group decision-making techniques
- Reserve analysis

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<sup>30</sup> PMBOK Guide, 5th Edition.

In Project A, the Project Manager estimated the necessary resources and duration of each activity. He also used a common method to make the milestones stand out – they are marked as 0 days duration.

ID	Activity Name	Resource Names	Duration
1	Start of the project	PM	0 days
<b>2</b>	<b>Relationships and data flows between applications</b>		<b>25 days</b>
<b>2.1</b>	<b>Agree list of applications</b>		<b>10 days</b>
2.1.1	Workshop with architecture team to get initial list	PM IT Architect	1 day
2.1.2	Summary of the workshop with architecture team (initial application list)	PM; IT Architect	4 days
2.1.3	Workshop with stakeholders to discuss list of applications	PM; Stakeholders	2 days
2.1.4	Prepare final list of applications	PM; IT Architect	3 days
2.1.5	Approval of list	PM; Stakeholders	0 days
<b>2.2</b>	<b>Analysis of relationships between applications</b>		<b>10 days</b>
2.2.1	Overall analysis of relationships	IT Architect	5 days
<b>2.2.2</b>	<b>Detailed analysis of applications</b>		<b>5 days</b>
2.2.2.1	1st package of applications	IT Architect	5 days
2.2.2.2	2nd package of applications	IT Architect	5 days
2.2.2.3	3rd package of applications	IT Architect	5 days
<b>2.3</b>	<b>Analysis of data flow between applications</b>		<b>10 days</b>
2.3.1	Overall analysis of data flow	IT Architect	5 days
<b>2.3.2</b>	<b>Detailed analysis of applications</b>		<b>5 days</b>
2.3.2.1	1st package of applications	IT Architect	5 days
2.3.2.2	2nd package of applications	IT Architect	5 days
2.3.2.3	3rd package of applications	IT Architect	5 days
2.4	Prepare final report from analysis	IT Architect	5 days
2.5	Approval of analysis results	PM; Stakeholders	0 days

Example



#### **4. Develop Schedule**

This activity is the process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.<sup>31</sup> For this task it is recommended to use one of the available scheduling tools that enable a schedule to be built easily.

Please refer to the Critical Path Method (CPM) which is a commonly used technique supporting the process of scheduling tasks.

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<sup>31</sup> PMBOK Guide, 5th Edition.

In Project A, the Project Manager developed a schedule using a scheduling tool. He agreed with the Project Sponsors that it would start at 2016-01-04. He set the start date for start of the project activity and set the scheduling tool property to automatically schedule all tasks based on needed resources and duration of all activities. The results of developing the schedule is presented below:

ID	Activity Name	WBS Predecessors	Resource Names	Duration	Start	Finish
1	Start of the project		PM	0 days	2016-01-04	2016-01-04
<b>2</b>	<b>Relationships and data flows between applications</b>			<b>25 days</b>	<b>2016-01-04</b>	<b>2016-02-05</b>
<b>2.1</b>	<b>Agree list of applications</b>			<b>10 days</b>	<b>2016-01-04</b>	<b>2016-01-15</b>
2.1.1	Workshop with architecture team to get initial list	1	PM; IT Architect	1 day	2016-01-04	2016-01-04
2.1.2	Summary of the workshop with architecture team (initial application list)	2.1.1	PM; IT Architect	4 days	2016-01-05	2016-01-08
2.1.3	Workshop with stakeholders to discuss list of applications	2.1.2	PM; Stakeholders	2 days	2016-01-11	2016-01-12
2.1.4	Prepare final list of applications	2.1.3	PM; IT Architect	3 days	2016-01-13	2016-01-15
2.1.5	Approval of list	2.1.4	PM; Stakeholders	0 days	2016-01-15	2016-01-15
<b>2.2</b>	<b>Analysis of relationships between applications</b>			<b>10 days</b>	<b>2016-01-18</b>	<b>2016-01-29</b>
2.2.1	Overall analysis of relationships	2.1.5	IT Architect	5 days	2016-01-18	2016-01-22
<b>2.2.2</b>	<b>Detailed analysis of applications</b>			<b>5 days</b>	<b>2016-01-25</b>	<b>2016-01-29</b>
2.2.2.1	1st package of applications	2.2.1	IT Architect	5 days	2016-01-25	2016-01-29
2.2.2.2	2nd package of applications	2.2.1	IT Architect	5 days	2016-01-25	2016-01-29
2.2.2.3	3rd package of applications	2.2.1	IT Architect	5 days	2016-01-25	2016-01-29
<b>2.3</b>	<b>Analysis of data flow between applications</b>			<b>10 days</b>	<b>2016-01-25</b>	<b>2016-02-05</b>
2.3.1	Overall analysis of data flow	2.2.1	IT Architect	5 days	2016-01-25	2016-01-29
<b>2.3.2</b>	<b>Detailed analysis of applications</b>			<b>5 days</b>	<b>2016-02-01</b>	<b>2016-02-05</b>
2.3.2.1	1st package of applications	2.3.1;2.2.2.1	IT Architect	5 days	2016-02-01	2016-02-05
2.3.2.2	2nd package of applications	2.3.1;2.2.2.2	IT Architect	5 days	2016-02-01	2016-02-05
2.3.2.3	3rd package of applications	2.3.1;2.2.2.3	IT Architect	5 days	2016-02-01	2016-02-05
2.4	Prepare final report from analysis	2.2[FF];2.3[FF]	IT Architect	5 days	2016-02-01	2016-02-05
2.5	Approval of analysis results	2.4	PM; Stakeholders	0 days	2016-02-05	2016-02-05

Example

### 3.2.8 Consolidate the Statement of Architecture Work and Secure Approval

The schedule resulting from the above activities, together with elements developed in the steps of the ADM Phase A, should be included in the Statement of Architecture Work. To complete ADM Phase A, the Project Manager obtains the sponsor's approval of the Statement. For details refer to the TOGAF standard, Phase A (Develop Statement of Architecture Work; Secure Approval), and Part IV: Architecture Deliverables (Statement of Architecture Work).

## 3.3 Planning a Stage

### 3.3.1 What is a Stage? – Dividing an Architecture Project into Stages

PRINCE2 advocates dividing a project into manageable and controllable stages. PMBOK says that stages<sup>32</sup> can be broken down “by functional or partial objectives, intermediate results or deliverables, specific milestones within the overall scope of work, or financial availability”. Stages are generally time-bound, with a start and ending or control point.

What stages should the Architecture Project be split into? The TOGAF standard recommends an iterative approach in the ADM.<sup>33</sup> It suggests use of architecture development iterations that cycle through Phases B to F to deliver architecture. In such a case, each architecture development iteration would be executed as a separate stage.

In general, a few options for how to split an Architecture Project into stages can be considered, depending on the project goal. Here are a few frequently used approaches:

- Splitting the baseline architecture definition, target architecture definition, and transition planning into separate stages (note that the TOGAF standard advocates both baseline-first and target-first approaches, depending on context<sup>34</sup>)
- Splitting into iterations based on a level of detail (e.g., the first iteration delivers a high-level outline that is detailed in the next iterations)
- Splitting into iterations based on a level of consultation (e.g., the first iteration delivers an internal Enterprise Architecture draft, refined in the next iterations through consultation with groups of stakeholders)
- Using a sequence of ADM phases, where each stage includes a single phase, or a number of phases (e.g., Architecture Vision, Business/IS/Technology Architecture, Opportunities & Solution/Migration Planning)
- Single stage approach; i.e., the whole Architecture Project is executed as a single stage
- A mix of these

The approach should be chosen carefully to ensure it meets the Architecture Project goal and constraints such as time and budget. The TOGAF advice on choosing the right approach can be found in the TOGAF standard, Part III: Applying Iteration to the ADM.

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<sup>32</sup> The PMBOK uses the word “phase”. In this Guide, we use the word “stage” when referring to PRINCE2 “stages” and PMBOK “phases”. We use the word “phase” according to its TOGAF definition (the ADM consists of phases, which do not necessarily equal Architecture Project stages).

<sup>33</sup> Refer to the TOGAF standard, Part III: Applying Iteration to the ADM (Iteration Considerations) for more information on applying iteration to the ADM.

<sup>34</sup> Refer to the TOGAF standard, Part III: Applying Iteration to the ADM (Approaches to Architecture Development) for more information on approaches to architecture development.

In Project B, a complex business process is to be analyzed and optimized. The process scope is not fully understood, but it is known that three business units play key roles in the process, each of them divided into five subunits on average. After the process is analyzed, the team is going to model to be state for the process. Then, it is going to define and prioritize initiatives that will move the company to the target state.

The architect leading the project decides on an approach based on splitting the baseline architecture definition, target architecture definition, and transition planning. He also decides to work on the baseline iteratively, with the first iteration goal to understand the whole process and plan detailed work. His plan includes the following stages:

Example

1. Process Overview (2 weeks) – preliminary analysis and general business process views definition, based on existing documentation and meetings with business unit leaders; approach and schedule confirmation based on process overview.
2. Process Analysis (5 weeks) – thorough workshops with each of the subunits to define detailed process views including collaboration with other departments and external organizations, and IT systems support (15 workshops; 5 workshops per week); summary meetings with business unit leaders; process models review with subunits.
3. Process Modeling (4 weeks) – target process modeling; new and changed logical IT components definition; target model review with subunits and business unit leaders.
4. Transition Planning (3 weeks) – initiatives definition, prioritization, and roadmap preparation.

Note that Stage 1 can be mapped to the ADM Phase A, Stages 2 and 3 cover activities from the ADM Phases B and C, and Stage 4 includes activities from the ADM Phases E and F.

### 3.3.2 Planning a Stage

According to PRINCE2, a stage should be planned before it starts; i.e., at the end of the previous stage. This enables use of earlier project results, risks, and lessons learned in stage planning. It also allows for task execution and monitoring from the beginning. Typically, stage boundaries are already set in the Project Plan (refer to Architecture Project Start-Up, Section 3.1), so when planning a stage, we already know:

- What products are to be delivered by the stage; i.e., what views
- What level of detail is expected
- What architecture elements are in scope; e.g., processes and/or applications list for segment architecture
- What the timeframe is
- What the key tasks to be completed are
- What resources are allocated

If the above are unclear, use techniques described in Architecture Project Planning (Section 3.2) to determine them.

Depending on the overall Project Plan level of detail, the stage plan can already be a part of it (i.e., the level of detail is sufficient to proceed with the work) or it may be needed to create a more detailed plan for the stage.

PRINCE2 recommends planning the work stage by stage (see PRINCE2, Section 2.4). This approach is suitable in most Architecture Project cases, in our view. It is practical to have a general Project Plan that clearly defines stages and their boundaries, but does not go too deep – it should only outline the major activities and their timeframes within each stage. Therefore, a detailed stage plan has to be prepared before each of the stages.

To create a stage plan, you can follow the guidelines on the Project Plan presented in Architecture Project Planning (Section 3.2). The approach is the same – defining activities, sequencing them, estimating efforts, and scheduling. However, effort and schedule should stay within the stage boundaries set by the Project Plan.

In Project B, after the Process Overview stage, the Project Manager prepared the next stage (Process Analysis) plan.

The Project Manager's work was based on an earlier prepared Project Plan, which outlined the stage schedule:

- 3 weeks for workshops with the subunits
- 1 week for analysis consolidation and internal review
- 1 week for analysis review by the subunits
- 1 week for addressing issues identified through reviews

Additional information was collected in the previous stage (Process Overview), including:

- There are 13 subunits that take an important part in the logistics process execution; 3 others have a supporting role
- Contact persons were established for each of the subunits. Based on this input, the Project Manager detailed the stage plan with a daily granularity
- There will be 13 workshops, one for each of the subunits that take part in the process, with supporting units included in 3 of the workshops

- Example
- One full day was allocated for each of the workshops (13 days overall); workshops are led by a business analyst with a logistics systems architect support (16 hours effort per workshop); the product of each workshop day is a BPMN process model agreed at the meeting and a worksheet with a process description including the IT systems role in the process steps
  - 2 days were allocated for workshops scheduling, templates, and other materials preparation
  - 2 days were allocated for business analyst to consolidate the whole material and 3 days for the leading architect to review. The product of these activities are refined process model and descriptions
  - 1 week was allocated for subunit reviews that would be conducted in parallel (16 hours effort of the Project Team for subunits support during the review period)
  - 4 days were allocated for addressing issues
  - 1 day was allocated for a workshop with subunits to discuss how the issues were addressed and communicate plans for the next stage (Process Modeling)

This stage plan was documented in a dedicated worksheet, listing the activities, resources performing these activities, timeframes, and work products. It was later supplemented with workshop details – dates, locations, and subunit representatives.

### 3.3.3 Adjusting a Project Plan

Ideally, there would be no changes to the Project Plan after planning a stage – i.e., the stage plan would match the schedule, scope, and budget restrictions implied by the Project Plan. However, if needed, the Project Plan should be updated to reflect the stage plan.

The project still has to meet its time/budget/scope boundaries – or the change has to be handled as an exception. Please refer to Execute, Monitor, and Control a Stage (Section 3.4) for how to manage such exceptions.

Example

In Project B, after the Process Overview stage it was identified that there is another business unit engaged in the logistics process execution. The Project Manager assessed that an extra week will be needed for additional workshops in the Process Analysis stage. The Project Manager also noted that the Process Modeling stage schedule was very tight and additional reviews could make it impossible to close the stage in four weeks.

Project B was governed by an Architecture Board. Its Sponsor was the CIO. After completing the Process Overview stage, the Project Manager reported the stage end to the Sponsor and the Architecture Board, presented its results, and requested a change in the project schedule (plus two weeks) and budget (plus 120 hours) to reflect the extra effort needed.

After discussion, the governing body agreed for an extra one week (and 60 hours) in the Process Analysis stage. A risk of insufficient time to complete the Process Modeling stage was registered. It would be reassessed after the Process Analysis stage. Also, it was agreed that each of the subunits would select a single representative for reviews in the Process Modeling stage to reduce the above risk.

Stage planning activities are described as part of the Managing Stage Boundaries process in PRINCE2. PMBOK recommends performing its Initiating processes at the start of each stage when using a staged approach. Refer to the mappings presented in PRINCE2 to ADM Mapping (Chapter 4) and PMBOK to ADM Mapping (Chapter 5) and the Project Management methods themselves for further information.

## 3.4 Execute, Monitor, and Control a Stage

① Both PRINCE2 and PMBOK distinguish between monitoring and controlling the stage and directing or executing the work. These groups of processes serve a different purpose and focus on different individual processes; however, from daily Project Management routines they are executed in parallel. For practical reasons in this Guide we decided to present both groups – directing (PRINCE2) or executing (PMBOK) and monitoring and control – as a one chapter covering both areas.

For more details, please refer to the PRINCE2 and PMBOK methods.

Execution, monitoring, and controlling a stage is a core activity of the Project Manager within every stage of the project. This means making sure that the work is being properly assigned, tracking work progress, and reacting to unforeseen situations, as well as making sure that the proper information is being distributed to the required parties.

There are few activities assigned to this process by the PRINCE2 method. From the PMBOK perspective, these activities are a part of Monitor & Control, just narrowed down to the specific phase of the project. Since most of the actions are ongoing throughout the stage it is difficult to set the sequence or describe the order.

### **3.4.1 Authorize the Project Work Package**

According to the key rule, no Project Work Package should be worked on unless clear authorization is given by the Project Manager. The purpose is to prevent the project going off track by working on some deliverables or tasks until all prerequisites are completed and properly processed through approval. Otherwise, the risk of rework or delivery of a product that does not comply with quality requirements is high.

The authorization to start the work should be explicitly received from the Project Manager along with the following information:

- What should be delivered, the scope, and expected product of the Project Work Package
- The cost and time of work on the delivery of the product and its tolerances that often come from the free-float of the schedule or other constraints that need to be identified and communicated by the Project Manager
- Specific information about quality requirements and configuration management required for this process
- Specific information about required reporting and distribution of information that would support the control and monitoring of progress

It should also be clearly communicated to the team that authorization is required before they can start any activity related to the Project Work Package. Even if the team feels like all prerequisites are completed, there might be – and often are – situations where there are additional questions that need to be addressed before the work can continue and all details related to the product are properly defined.

### **3.4.2 Review Project Work Package Status**

As defined in the Project Plan and Project Work Package authorization step, the team that is carrying out the work should submit the reports (checkpoint reports) to the Project Manager at regular, agreed intervals to allow for continuous control of progress and to identify risks related to timely completion of the Project Work Package.

The input received from teams is the base for the Project Manager to report the progress to stakeholders and make decisions for required adjustments for schedule, budget, and other relevant forecasts. This is also a key point for identification of risks and problems that may impact assumed deadlines, quality, or cost baseline.

In practice, the review of the Project Work Package status is carried out in a form of status meetings with the Project Management team and Project Work Package team working on the particular package. It is highly recommended to perform the status review in meeting form in addition to written form, since more information and details can be obtained and any unclear points can be discussed.

Reviewing the status of the Project Work Packages also allows identification of the areas of the project or products where work is not being progressed as originally planned. This may happen due to multiple internal and external factors. It might be a case of underestimation of the time and effort needed to complete the work, or any other change in the Project Scope, schedule, or effort (budget). Any change should be subject to the formal change control procedure.

The change control procedure is extremely important from a Project Management perspective. It is to ensure that whatever was agreed to be delivered as project products, schedule, or cost baseline is under control, and can be changed only in a formal way. The procedure varies between projects and organizations: sometimes the Project Manager has certain authority to make decisions for changes in the project (for example, not exceeding a certain cost threshold), and in some cases only the Steering Committee of the project can approve the change requested. It is very important that the change is not incorporated in the project until it is approved.

### **3.4.3 Review Completed Project Work Package**

Once the work on the Project Work Package is completed and the final product of the package is ready and approved, the Project Work Package is marked complete by the Project Manager, and related successor Project Work Packages can be authorized as described in the Authorizing Project Work Package task.

### **3.4.4 Review Stage Status**

The Project Manager must review the overall status of the stage in order to ensure control over the progress being made. To effectively do that, the Project Manager should review all management products such as checkpoint reports, the current stage plan, the various registers and logs (quality register, issue register, risk register, and daily log), also including the benefits review plan. Based on these inputs, the overall project status is estimated and recorded (for example, using the MS Project<sup>®</sup> tool). This should present the overall stage or project status to stakeholders.

### **3.4.5 Capture and Examine Issues and Risks**

Risk management becomes even more critical during the project execution and control phase. It is important for the Project Manager to regularly conduct risk assessments. Particular attention should be paid to risks prior to production cutover.

Following the strategy, processes, and procedures established during project start-up, the Project Manager must make sure that all project issues are carefully and accurately logged, prioritized, and assigned for closure. Moreover, it is the Project Manager's responsibility to drive open issues to a closure that fulfills the requirements.

On a regular basis, the Project Manager should perform risk assessments. The following steps should be performed:

- Revisit risks defined in the risk log and include new risks as appropriate
- Categorize, assess, and analyze the probability and severity of each risk
- Determine symptoms that would indicate that risks may be occurring
- Prepare a mitigation and response plan for each risk
- Report results of risk assessment



The Project Manager decides to hold a weekly status meeting to keep track of the stage progress and control the process. Since the project timeline extends over a few months, he decides that a weekly meeting is sufficient. In case of more aggressive schedules more frequent meetings may be better to allow for faster information flow and shorter reaction time to any unplanned situations. A weekly meeting does not replace a daily routine for communication and information exchange, but is the best tool to ensure unified communication to the team and collecting feedback.

The Project Manager prepares the agenda for the meetings around a common schema:

- Review of progress to date – this allows the Project Manager to collect and discuss information about the status of the stage, some details on Project Work Packages completion, and to identify and discuss risks that may impact the assumed work plan

At the same time, completed Project Work Packages are confirmed and the Project Manager makes sure that the final versions of the Project Work Packages are delivered for the approval process.

- Confirm the plan for next period of time (usually a week) – this is part of the status control in terms of confirmation of tasks to be worked on during the following week.

In case of tasks that are a continuation of current Project Work Packages, this serves as information about what progress is expected to be achieved over the period. If the Project Plan defines a new Project Work Package to start in the next period, this needs to be clearly communicated to the team; if there is a “green light” to start the work, or what needs to happen before the green light is given.

Example

- Identify and examine risks and issues – most risks and issues come from team members.

They can identify most potential situations (missing input data, additional work, misunderstandings and mismanaged expectations, etc.) that may impact the project, but also information from project surroundings that is shared by the Project Manager based on his sources of information is discussed as a potential risk or issue. Once identified, risks or issues (issue is a materialized risk) are documented in a simple spreadsheet by the Project Manager for further tracking.

ID	Date Raised	Risk Description	Likelihood	Impact	Severity	Mitigation Plan	Owner	Status	Date Closed
3	04.03.2014	There is a risk that billing capabilities of the target solution will be defined in a way that no existing COTS solution can support. Architecture Project team has no knowledge of such solutions available on the market.	3	2	5	Hire an external consultancy with knowledge on billing capabilities of market available solutions. OR: Extend the project plan with an RFI to gain knowledge of solutions available on the market.	CRM solution architect	Identified - mitigation plan to be agreed	
4	05.03.2014	Architecture Project has the responsibility for solution performance, but it is the Infrastructure who decides on the hardware technology and sizing. Therefore, Architecture Project may be unable to ensure performance of the solution.	2	2	4	1. Perform performance tests on development environment and extrapolate results to estimate performance. Development environment has to be filled with test data. 2. Expected infrastructure needs will be passed to the Infrastructure team. 3. Consult solution provider on the recommended hardware after the performance tests.	Architecture Project manager	Managed - mitigation plan agreed	

- The Project Manager decides what needs to be done next – usually he holds a quick meeting with all parties that are affected by the risk or issue to examine it further and plan for mitigation

### 3.4.6 Report Highlights

Based on collected information, the Project Manager should build the proper and tailored message that should be communicated to the project stakeholders. This involves creating the time-driven Highlight Report, which presents the current achievements and actual progress of the project, and also describes any corrective actions that the Project Manager may intend to carry out, as well as forecasts for the remainder of the stage and the project.

The level of detail that should be provided to stakeholders varies between projects and each particular stakeholder. It should be defined per particular situation taking into account the actual requirements and particular preferences of each and every stakeholder. In practice, the minimum set of details should be:

- Achievements and tasks completed over the last reporting period to explain what was done and how it related to the original project schedule and plan
- Key activities planned for the next period – it is important, and helps to keep track of progress made, to keep both points integral by showing the same list of achievements that was presented in the last period as the planned tasks
- Key risks and problems identified, especially these that require the attention of the stakeholders or escalation
- Quite often the report contains also some tracking for changes unapproved and approved that were introduced to the project (using the formal change control process), open issues, or decisions that need to be made by stakeholders

Example

Based on the information collected during the weekly status meeting, the Project Manager prepares the status report for management and stakeholders, as defined in the communication plan. The form and content of the report depends on the expectations and preferences of the report audience. Some prefer a simple one-page summary of progress to date, key activities for the next period of time, key risks, and issues; while other stakeholders expect detailed presentations with a deep-dive on risks and content of the delivered Project Work Packages.

For this project, the Project Manager discussed the expectations with key stakeholders, and he is expected to prepare a one-page weekly report, highlighting the key activities and risks, and to discuss it with stakeholders on the weekly briefing within 15 minutes. The Project Manager decides to present three bullets per area: achievements to date, plans for the next period, three or four of the most important risks and issues, and also the most important decisions to be made by the stakeholders.

Once per month a more detailed report is prepared and presented to the Steering Committee of the project during a 45-minute meeting. More discussion and details are presented, including a plan for team interaction meetings with other employees of the company for the next period of time (1 month in this case), to confirm the schedule with decision-makers and ensure their awareness and support, and more details on risks and issues especially if escalation is required.

### 3.4.7 Escalate Issues and Risks

In cases where handling a risk or problem exceeds the authority of the Project Manager, it is necessary to escalate to the Project Board/Steering Committee. This must be done especially when a risk or problem exceeds the tolerance assigned to it. PRINCE2 defines this as an exception and triggers an Exception Report, which is written by the Project Manager and submitted to the Steering Committee for further action.

Example

The 15-minute status meetings with key stakeholders and the Steering Committee are the perfect occasion to escalate risks or issues that need to be taken up in the chain of command. Of course most of these issues are discussed by the Project Manager with stakeholders before the meeting, once risks are identified, but these meetings present a good opportunity to discuss them further and perhaps get the involvement and support of someone else from the management team or Steering Committee. For risks and issues that were not identified as exceeding the authority of the Project Manager, but may still impact the project heavily, the Project Manager decides to share his mitigation plan as well to communicate such a situation, but also – quite often – he is given support by Steering Committee board that makes the mitigation process easier.

In Project E, the architect identifies that some of the data warehouse calculations should be done in a COTS calculation engine solution possessed by the bank. However, the business analyst team does not have any knowledge of this solution. There is a risk that they would be unable to model the calculations process adequately to the calculation engine capabilities. Therefore, the architect collaborates with the Project Manager to describe the risk. It is recorded in the risk log.

### 3.4.8 Take Corrective Action

During this stage, the Project Work Package is revised in comparison with the existing plan. Evaluation of risks, problems, and discrepancies between the plan and the Project Work Package are done as part of this review. The stage status often ends with a conclusion that certain actions need to be taken to bring the project back on track. These are corrective actions and they should become the integral part of the Project Plan and schedule. The goal is to address all situations that already did or are expected to impact the plan and schedule in negative form.

Example

Based on risk or issue evaluation and discussion with the Steering Committee or stakeholders, a plan is created to make sure the risk or issue has a minimal negative (or maximum positive) impact on the project. The Project Manager adds these tasks to the Project Plan in the Project Work Package that is affected by the risk or issue. Tasks are also put on the timeline and the task owner is assigned as for every other task of the project. Corrective action becomes an integral part of the project and from here on is being tracked, reported, and controlled in the same way as any other task in the plan.

In reference to the previous example, the Project E Project Manager collaborates with the architect and the business analysis leader to design a risk mitigation. They recommend that two of the business analysts would be trained on the calculation engine solution capabilities. Then, they will use this knowledge to guide the calculations process analysis to make use of the calculation engine capabilities.

Later on, the Project Manager collaborates with the management team to formally accept this mitigation and proceed with it.

## 3.5 Ending a Stage

A stage ends when stage deliverables are done and, typically, handed off and approved. According to PMBOK, stage end is a natural milestone that allows reassessment of the work being done and necessary changes to be made, or even termination of the project if needed.<sup>35</sup> PRINCE2 is much more specific on the topic – it defines the Managing a Stage Boundary

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<sup>35</sup> PMBOK Guide, 5th Edition, Section 2.4.2.

process whose purpose is to review the finished stage and approve next stage plan, making sure the project is still justifiable and viable.<sup>36</sup>

### 3.5.1 Stage Deliverables Hand-off and Approval

At the stage end, the Project Manager makes sure all of the stage deliverables are handed off and approved appropriately. This may include internal Project Team reviews (for example, those who will use the deliverables as inputs in further project execution), external parties' reviews (such as business users), and stakeholders' approval (for example, Project Sponsor or Steering Committee members).

Stage hand-off and approval activities may be very limited, if each of the deliverables was separately approved earlier.

**Example** In Project B, after completing workshops and internal reviews of the Process Analysis deliverables (process models and descriptions), the Project Manager sent these deliverables to business units for review. A one-week deadline was set for comments and change suggestions. After that, the Project Team assessed and addressed the reviews received. A meeting was held to discuss major issues. Then, the deliverables were presented to the Project Sponsor for final approval (see next example).

### 3.5.2 Managing a Stage Boundary

When stage exit criteria are met, the stage end should be reported by the Project Manager to the Architecture Project Oversight (i.e., Architecture Board or Project Sponsor; see Architecture Project Start-Up, Section 3.1). Typically, the report should include:

- A summary of the completed stage – it should show how all stage products were delivered and how the stage has performed against targets for time, cost, quality, scope, risk, and benefit
- Impact on the project – if the Project Plan needs to be updated
- Plan of the next stage – refer to Architecture Project Planning (Section 3.2) for stage planning

**Example** In Project B, after completing reviews with the business units and addressing their comments, the deliverables were presented to the Project Sponsor for final approval. The meeting was also meant to close the Process Analysis stage. Therefore, the Project Manager reported on-time delivery of the stage, presented the Process Modeling stage plan, and recommended its execution, which was approved by the Project Sponsor.

Any issues identified should be handled according to the description in Escalate Issues and Risks (Section 3.4.7).

The Architecture Project Oversight decides on further execution of the project – its continuation, change, or termination. It can take into account factors that are internal (such as timeliness and costs) and external (such as enterprise goals and priorities change) to the project.

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<sup>36</sup> PRINCE2, Chapter 17.

**Example** In Project E, after the High-Level Architecture stage, the deliverables were presented to the Project Sponsor for final approval. However, the Project Manager noted that the detailed business analysis stream identified gaps that needed a lot of extra work and may impact the High-Level Architecture. He presented associated risks for the project and recommended an adjusted Project Plan that included revisiting the High-Level Architecture stage after the detailed business analysis is fully completed two months later. The Steering Committee accepted the proposed resolution.

## 3.6 Architecture Project Closing

Architecture Project closure includes all activities that formally close the project. The Project Manager starts closing the project when all iterations or stages are finished and all project products or Project Work Packages are finished and approved by the Executive. It can also be started if the project's business case is no longer valid and project governance decides to close the project.

Architecture Project closing includes the following activities:

- Products handover
- Prepare and recommend closure
- Evaluate the project and document lessons learned

### 3.6.1 Products Handover

The Architecture Project delivers a definition of an architecture to be implemented. The final step leading to this architecture implementation is handing the deliverables over to the body responsible for implementation.

At the end of Phase F, the Architecture Project delivers several deliverables that together form the final product. These deliverables, including the Architecture Definition Document, Implementation and Migration Plan, and Architecture Roadmap, should be used as inputs to the program and Project Management activities that are typically executed by another organizational unit (and governed by the ADM Phase G).

Project deliverables should be transferred to the organizational unit that will implement the architecture (e.g., PMO or business owner of the implementation). From our experience, it is crucial to ensure that these deliverables are sufficient to start the implementation project (or program) right away. It is a common issue to have the architecture finished, but the implementation start is delayed due to some additional documentation needed, especially for strategic and segment-level projects.

This issue can be mitigated with careful quality management based on quality criteria agreed with the organizational unit that will implement the architecture (see the Define the Management Approach step in Architecture Project Start-Up (Section 3.1) for quality management planning). The TOGAF standard also highlights the need to coordinate the Implementation and Migration Plan with the management frameworks within the organization.<sup>37</sup>

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<sup>37</sup> The TOGAF standard, Phase F (Steps).

Architecture Project deliverables can also include new Requests for Architecture Work (that will start a new Architecture Project) and/or change requests for architecture capability.

The detailed mapping of Architecture Project products is presented in Figure 6.

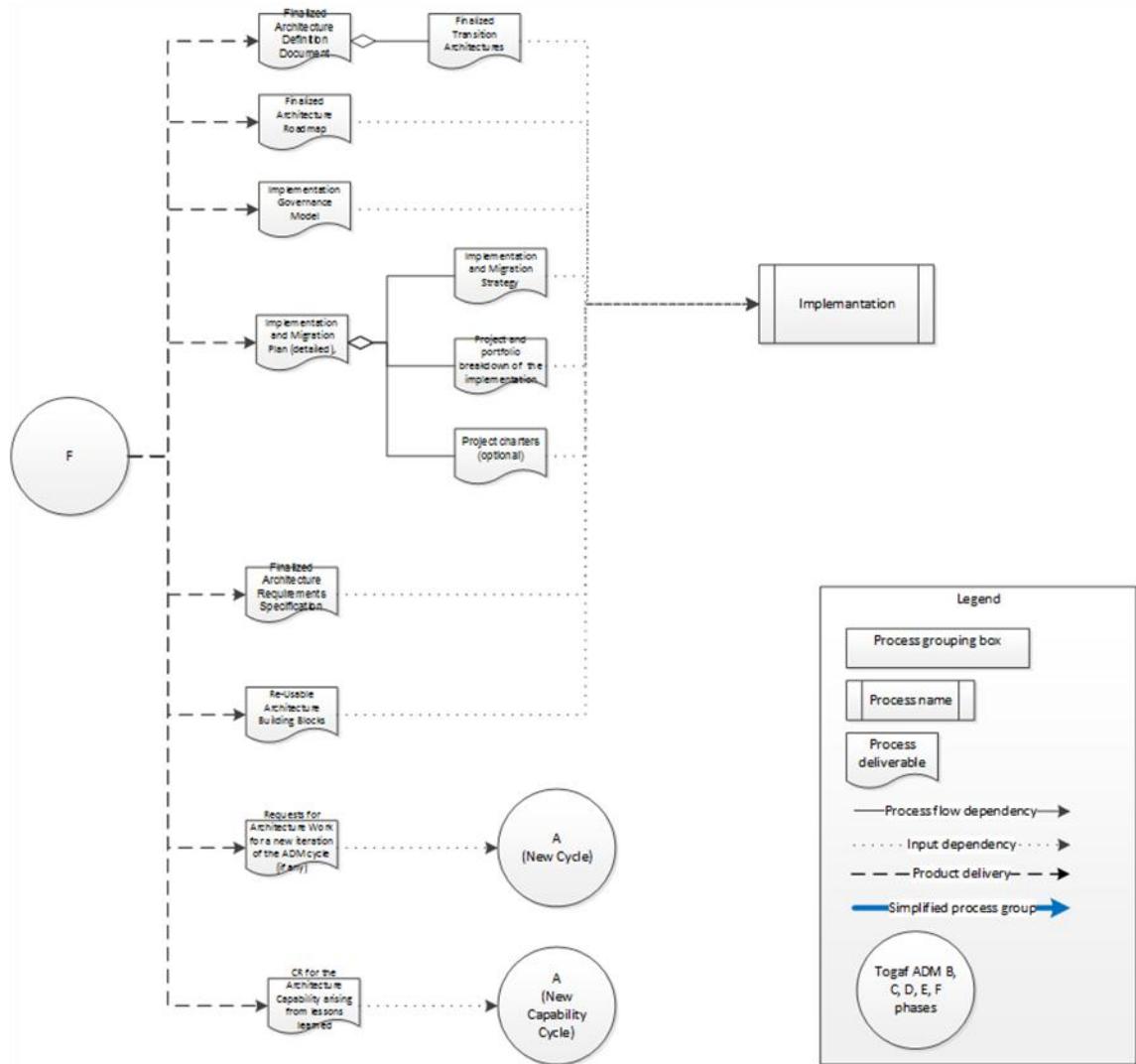


Figure 6: Architecture Project Final Deliverables

### 3.6.2 Prepare and Recommend Closure

To close the project formally, the Project Manager has to prepare a closing report and recommend project closure to the project governance.

The project closing report should contain information collected throughout all stages of the project. The report should summarize:<sup>38</sup>

- Products that were delivered by the Architecture Project

<sup>38</sup> PMBOK Guide, 5th Edition.

- Work performance – how did the project perform against targets for time, cost, quality, scope, and benefit
- Risks and issues summary, and how were they mitigated
- Architecture capability performance information

The report should be presented to the project governance.

Closing the project needs formal acceptance of the Executive. This is typically obtained after presenting the project closing report. The Project Manager should also confirm with the Executive and stakeholders that all Architecture Project deliverables are reviewed and accepted by them.

### **3.6.3 Evaluate the Project and Document Lessons Learned**

The final step of an Architecture Project should be its evaluation. The team should document the lessons learned for further Architecture Projects and recommend architecture capability improvements.

This step is very important from the perspective of knowledge management and continuous improvement of architectural practice. Lessons learned documentation should always be considered as an input to further Architecture Projects.

Lessons learned should document project assumptions about product quality, project performance data (e.g., time and costs), and comparison with project results. If there are any deviations, lessons learned should contain the analysis of factors that impacted these deviations and deduction of how to improve the Architecture Project management practice.

Based on lessons learned, the Project Team can define recommendations for architecture capability improvement. According to the TOGAF standard, these recommendations should include change requests that will be handled in the ADM Phase H (Architecture Change Management).

In Project A, the Project Manager established a project evaluation meeting with his team. During this meeting he recommend an After Action Review (AAR) approach to evaluate the project. During this meeting all project performance-related information was gathered.

The meeting had a structured agenda – after the Project Manager introduction that explained the meeting goals, the team discussed and answered the following questions:

- What were we supposed to achieve at the end of the project?
- What did we achieve?
- Why is there a difference?
- What did we learn and what can we improve in our future projects?

They documented the meeting results using the following lessons learned template:

Example

No.	Issue Name	Issue Description	Impact on Project	Recommendation
	Agreement of application list takes more time than planned.	We had a problem with agreement on the list of applications with stakeholders. It took 1 month instead of 10 days. We found that there was a lack of formalized and systematic approach to this task.	We have to provide the changes in schedule and assign extra resources to meet the project deadline.	We need to prepare a set of common templates for our stakeholders that will improve the efficiency of their work.
	The CFO stated that his concerns about the costs of applications were not addressed properly.	The CFO stated that he would like to know potential financial savings on application portfolio optimization as a decision factor.	We have to modify some views affected by CFO concerns.	We recommend adding the cost of the application license and maintenance cost to the application function matrix.



## 4 PRINCE2 to ADM Mapping

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The aim of this section is to present a mapping of the TOGAF ADM to PRINCE2. This section is assumed to provide general information about the mapping, not detailed information about the TOGAF ADM phases and PRINCE2 processes; therefore, the standard terms are used without description. For more detailed information, please refer to the TOGAF standard and Managing Successful Projects with PRINCE2.

In general, the TOGAF ADM Phase A (Architecture Vision) can be mapped to the PRINCE2 processes “Starting up the project” and “Initiation”. The TOGAF ADM Phase B (Business Architecture), Phase C (Information Systems Architectures), Phase D (Technology Architecture), Phase E (Opportunities and Solutions), and Phase F (Migration Planning) can be grouped together and considered substantive Architecture Project phases, which – according to PRINCE2 – should be considered work delivery stages.

Division of the TOGAF ADM Phase B to F into PRINCE2 work delivery stages depends on the scale and constraints of the Architecture Project.

### 4.1 High-Level Mapping Description

Figure 7 presents the results of the TOGAF ADM mapping into PRINCE2 Project Management processes at a high level. In order to ensure clear understanding of the mapping, some tasks and processes were aggregated and simplified. Furthermore, only the main deliverables are presented.

#### 4.1.1 TOGAF ADM Phase A (Architecture Vision)

Figure 7 should be read from top to bottom starting from the first task of the ADM in Phase A: Establish the Architecture Project. In this TOGAF task architecture activities should be planned and managed using accepted practices for the enterprise.

In order to manage the Architecture Project using the PRINCE2 method during “Establish the Architecture Project” it is recommended to execute following tasks from the PRINCE2 “Starting up the project” stage:

- Appoint Project Executives and Project Manager
- Design a Project Management Team
- Prepare Outline Business Case
- Select Project Approach & Assemble
- Plan the Initiation Stage

The Stage Plan (initiation) is the result of the “Starting up the project” stage and is considered an input to the next TOGAF ADM Phase A tasks and PRINCE2 “Initiation” stage, which should be performed in parallel. The following ADM Phase A tasks:

- Identify Stakeholders, Concerns, and Business Requirements
- Confirm and Elaborate Business Goals, Business Drivers, and Constraints
- Evaluate Capabilities
- Assess Readiness for Business Transformation
- Define Scope
- Confirm and Elaborate Architecture Principles, including Business Principles
- Develop Architecture Vision
- Define the Target Architecture Value Propositions and KPIs
- Identify the Business Transformation Risks and Mitigation Activities
- Develop Statement of Architecture Work

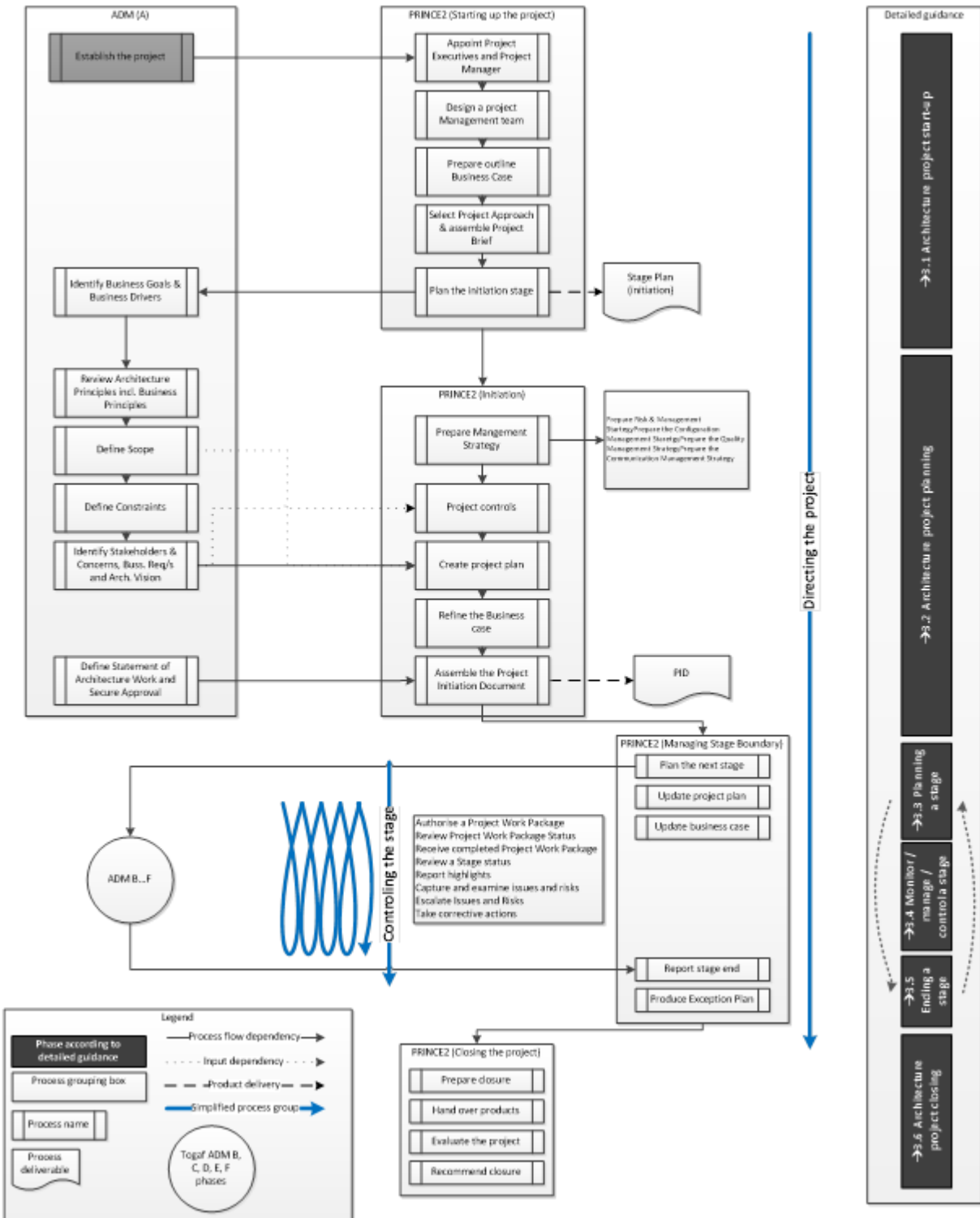
should be performed in parallel with the following PRINCE2 “Initiation” stage tasks:

- Prepare Management Strategy, Business Case, and Project Controls
- Create Project Plan
- Refine the Business Case

Be aware that some of the TOGAF ADM Phase A tasks produce Project Management deliverables which are used in PRINCE2 processes as shown in Figure 7 with a dotted line. The final task in ADM Phase A is the Statement of Architecture Work Definition and Approval, which along with deliverables should be included in the Project Initiation Document, which is the main deliverable from the PRINCE2 “Initiation” stage assembled in the last process (Assemble the Project Initiation Document).

#### **4.1.2 TOGAF ADM Phases B to F**

The TOGAF ADM Phase B (Business Architecture), Phase C (Information Systems Architectures), Phase D (Technology Architecture), Phase E (Opportunities and Solutions), and Phase F (Migration Planning) are considered as PRINCE2 work delivery stages and should be planned under the PRINCE2 Managing Stage Boundary, controlled under PRINCE2 “Controlling the Stage” and delivered under PRINCE2 “Managing Product Delivery”.



**Figure 7: TOGAF ADM and PRINCE2 Mapping (High-Level) (Derived from the TOGAF Standard and PRINCE2)**

## 4.2 Detailed Mapping Description

Figure 8 presents the results of the TOGAF ADM mapping into PRINCE2 Project Management processes on a detailed level. The aim of this diagram is to present a detailed mapping, including all tasks from the TOGAF ADM Phase A (Architecture Vision) and the PRINCE2 “Starting up the project” and “Initiation” stages, along with deliverables. This section describes additional elements or changes to the high-level mapping that were included in the detailed mapping and therefore should be read along with the description of the high-level mapping.

### 4.2.1 TOGAF ADM Phase A (Architecture Vision)

The following processes/stages were detailed to exactly reflect the TOGAF ADM and PRINCE2.

All of the ADM Phase A tasks were included in the detailed mapping, along with the main deliverables:

Establish the Architecture Project, which is input to the PRINCE2 “Starting up the project” stage

Identify Stakeholders, Concerns, and Business Requirements – results from this task should be used during PRINCE2 “Set up the project controls” process

- Confirm and Elaborate Business Goals, Business Drivers, and Constraints – resulting in refined statements of business principles, goals, and drivers
- Evaluate Capabilities
- Assess Readiness for Business Transformation – resulting in a Capability Assessment
- Define Scope, which has an impact on the PRINCE2 “Refine the Business Case” process
- Confirm and Elaborate Architecture Principles, including Business Principles – resulting in Architecture Principles
- Develop Architecture Vision – resulting in a Draft Architecture Definition Document and Architecture Vision which are inputs to the PRINCE2 “Create the Project Plan” process
- Define the Target Architecture Value Propositions and KPIs
- Identify the Business Transformation Risks and Mitigation Activities – resulting in a Communications Plan
- Develop Statement of Architecture Work; Secure Approval – resulting in an Approved Statement of Architecture Work, which should be part of the PRINCE2 Project Initiation Documentation that is to be completed during the PRINCE2 “Assemble the Project Initiation Documentation” process

All of the PRINCE2 “Starting up the project” processes were included in the detailed mapping, along with all deliverables:

- Appoint the Executive & Project Manager, which should be started after the “Establish the Architecture Project” task from the ADM, resulting in the Project Management team role descriptions (part of the Project Brief)

- Capture previous lessons – resulting in a Lessons Log
- Prepare the outline Business Case – resulting in the Outline Business Case and Project Product Description (both part of the Project Brief)
- Design and appoint the Project Management team – resulting in the Project Management team structure and updated Project Management team role descriptions (both part of the Project Brief)
- Select the project approach & assemble the Project Brief – resulting in the Project Approach (part of the Project Brief)
- Plan the initiation stage – resulting in the Initiation stage plan

All of the PRINCE2 “Initiation” processes were included in the detailed mapping, along with all deliverables.

Development of Project Management Strategies, that can be executed in parallel:

- Prepare the Risk Management Strategy – resulting in the Risk Management Strategy (part of the Project Initiation Documentation) and Risk Register
- Prepare the Quality Management Strategy – resulting in the Quality Management Strategy (part of the Project Initiation Documentation) and Quality Register
- Prepare Configuration Management Strategy – resulting in the Configuration Management Strategy (part of the Project Initiation Documentation), Configuration Item Records, and Issue Register
- Prepare the Communication Management Strategy – resulting in the Communication Management Strategy (part of the Project Initiation Documentation)

Development of Project Plan and project controls, that can be executed in parallel after completion of the Project Management Strategies:

- Set up the project controls – resulting in the Project Controls (part of the Project Initiation Documentation)

Results from the ADM step Identify Stakeholders, Concerns, and Business Requirements should be used during this process to ensure the integrity of the project control mechanisms.

- Create the Project Plan – resulting in the Project Plan (part of the Project Initiation Documentation)

The Draft Architecture Definition Document prepared during Develop Architecture Vision should be considered as input to planning all activities during the Architecture Project.

The following tasks should be executed sequentially after completion of the previous “Initiation” stage processes:

- Refine the Business Case – resulting in the Detailed Business Case (part of the Project Initiation Documentation) and Benefits Review Plan

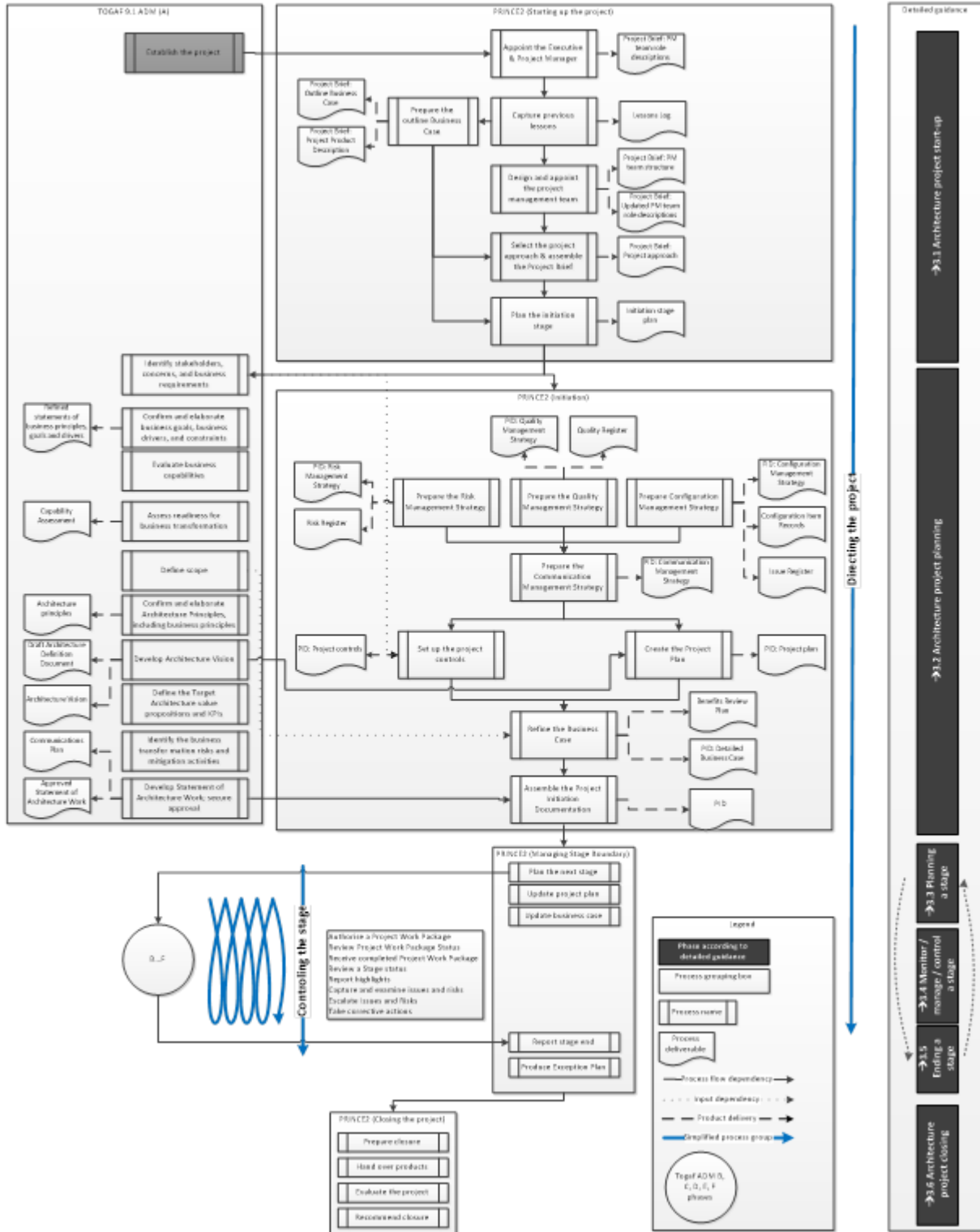
Results from the ADM step Define Scope should be considered during this process.

- Assemble the Project Initiation Documentation – resulting in the Project Initiation Documentation

The approved Statement of Architecture Work (resulting from the ADM step Develop Statement of Architecture Work; Secure Approval) should be included in the Project Initiation Document.

#### **4.2.2 TOGAF ADM Phases B to F**

As described in Architecture Project Management Concepts (Section 2.3), the TOGAF ADM Phases B to F are considered as PRINCE2 work delivery stages and should be planned under the PRINCE2 Managing Stage Boundary, controlled under the PRINCE2 “Controlling the stage”, and delivered under the PRINCE2 Managing Product Delivery. Phases B to F do not specify any Project Management activities; therefore, should be managed according to the PRINCE2 method.



**Figure 8: TOGAF ADM and PRINCE2 Mapping (Detailed) (Derived from the TOGAF Standard and PRINCE2)**

## 5 PMBOK to ADM Mapping

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The aim of this section is to present the TOGAF ADM mapping to PMBOK processes. This section is intended to provide general information about the mapping, not detailed information about the TOGAF ADM phases and PMBOK processes; therefore, the standard terms are used without description. A detailed description can be seen in the TOGAF standard and the PMBOK Guide, 5th Edition.

In general, the TOGAF ADM Phase A (Architecture Vision) can be mapped to the PMBOK initiation and planning process groups. The TOGAF ADM Phase B (Business Architecture), Phase C (Information Systems Architectures), Phase D (Technology Architecture), Phase E (Opportunities and Solutions), and Phase F (Migration Planning) can be grouped together and considered delivery stages. Project closing should be considered as the last step of Phase F.

The TOGAF standard provides the ADM that defines the Enterprise Architecture lifecycle. In this ADM there are distinct phases that are divided into steps that describe the processes related to architecture planning, development, implementation, and architecture change management.

PMBOK describes the processes divided into knowledge areas and process groups. The knowledge areas contain: integration management, scope management, time management, cost management, quality management, human resource management, communication management, risk management, procurement management, and stakeholder management. The process groups are divided into: initiating, planning, executing, monitoring, and closing.

The TOGAF standard recommends managing the ADM cycle as a project and using for this purpose the Project Management framework that is implemented in the enterprise.<sup>39</sup> Based on the ADM phases and Project Management process groups we could initially map the PMBOK Project Management processes into the TOGAF ADM.

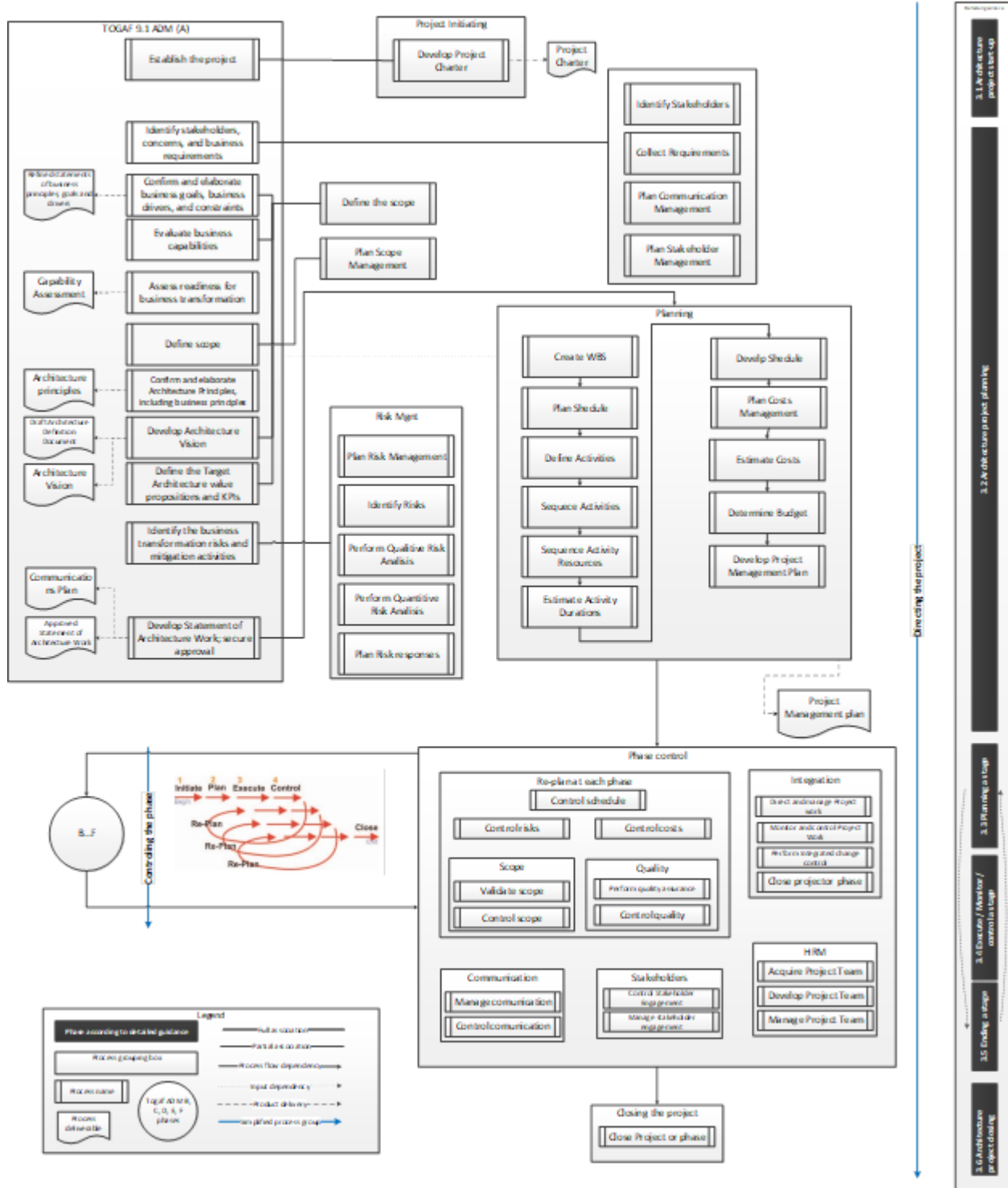
A detailed description of the mapping of the Project Management processes to the ADM steps follows. Process activities are covered fully or partially in the TOGAF ADM steps. Some processes are not covered in the TOGAF standard so we discuss them as additional Project Management processes.

Figure 9 presents the high-level mapping between the TOGAF ADM and PMBOK processes. In order to ensure clear understanding of mapping, some tasks and processes were aggregated and simplified.

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<sup>39</sup> The TOGAF standard, Preliminary Phase, Approach (Management Frameworks, and Relating the Management Frameworks).





**Figure 9: TOGAF ADM and PMBOK Mapping (High-Level) (Derived from the TOGAF Standard and the PMBOK Guide)**

The following part of this section presents the detailed description of the PMBOK processes mapping to the TOGAF ADM cycle. First, Phase A is being assessed. In this section each step is mapped to the PMBOK processes. Then, Phases B to F are assessed. The last part presents the closing part of the Architecture Project. The mapping covers an explanation of why and how specific processes are mapped to each of the steps.

## **5.1 Phase A: Architecture Project Initiation and Planning**

### **5.1.1 Establish the Architecture Project**

In this step we should consider the use of the following PMBOK process:

- Develop Project Charter

According to the TOGAF standard, we have to apply the Project Management framework to the execution of the ADM. We have to select the Project Manager that could be an external Project Manager from the PMO or a Lead Architect responsible for execution of the ADM cycle.

Then we have to determine the company culture and existing processes and procedures. And understand the business case for the project. In this step we should develop the Project Charter that will address the stakeholder concerns expressed in the Request for Architecture Work.

### **5.1.2 Identify Stakeholders, Concerns, and Business Requirements**

In this step we should consider the use of the following PMBOK processes:

- Identify Stakeholders
- Collect Requirements
- Plan Communication Management
- Plan Stakeholder Management

According to PMBOK, we have to identify stakeholders and develop a stakeholder management strategy. This approach is also covered in the TOGAF standard as a stakeholder management technique. The TOGAF stakeholder management technique defines how to identify, classify, and categorize the stakeholders according to communication needs in the form of a Stakeholder Map that should be developed in this step.

The TOGAF approach fulfills all the needs related to stakeholder management here. The Stakeholder Map should also be an input to the Communication Plan.

The TOGAF standard also recommends the business scenario technique to gather the stakeholder requirements.

### **5.1.3 Confirm and Elaborate Business Goals, Business Drivers, and Constraints**

In this step we should consider the use of the following PMBOK process:

- Define the Scope

This step will have an impact on the vision of the project scope.

#### **5.1.4 Evaluate Capabilities**

In this step we should consider the use of the following PMBOK process:

- Define the Scope

This step will have an impact on the vision of the project product scope. The identification of current and demanded business capabilities will help the architects to develop the Architecture Vision.

The Architecture Vision defines the target architecture that could be considered as a project product scope.

#### **5.1.5 Assess Readiness for Business Transformation**

Business transformation readiness assessment is not covered by the PMBOK processes, but this technique is useful to identify the project risks.

#### **5.1.6 Define Scope**

In this step we should consider the use of the following PMBOK process:

- Plan Scope Management

The TOGAF standard recommends determining the scope in terms of breadth of coverage of the enterprise, level of detail, covered architectural domains, and time period. In PMBOK, such activities are covered in the scope management plan.

#### **5.1.7 Confirm and Elaborate Architecture Principles, including Business Principles**

This step is not related directly to Project Management processes, but principles will have an impact on the scope of the Architecture Project. Principles should be taken into account when defining the target architecture in the Architecture Vision document.

#### **5.1.8 Develop Architecture Vision**

In this step we should consider the use of the following PMBOK process:

- Define the Scope

The Architecture Vision describes the high-level target state of the architecture so we could treat it as a project product scope.

#### **5.1.9 Define the Target Architecture Value Propositions and KPIs**

In this step we should consider the use of the following PMBOK process:

- Define the Scope

In this step we define the quality measures of the project product.

### **5.1.10 Identify the Business Transformation Risks and Mitigation Activities**

In this step we should consider the use of the following PMBOK processes:

- Plan Risk Management
- Identify Risks
- Perform Qualitative Risk Analysis
- Perform Quantitative
- Plan Risk Responses

The risk management approach in the TOGAF standard is similar to the approach recommended by PMBOK.

### **5.1.11 Develop Statement of Architecture Work; Secure Approval**

In this step we should consider the use of the following PMBOK processes:

- Develop Project Management Plan
- Create Work Breakdown Structure
- Plan Schedule
- Define Activities
- Sequence Activities
- Sequence Activity Resources
- Estimate Activity Durations
- Develop Schedule
- Plan Costs Management
- Estimate Costs
- Determine Budget

The Statement of Architecture Work is a plan for architecture work that is accepted by the stakeholders. An integral part of this document is a work plan. To develop this document, we should perform processes from the Project Time Management knowledge area that will help us to perform the important planning activities.

The TOGAF standard does not say anything about cost management, so after project planning we should estimate the costs and determine the budget.

## **5.2 Phases B to F: Architecture Project Execution and Monitoring**

In general, the main goal of the TOGAF ADM Phases B, C, D, E, and F is to prepare complete work packages with a migration plan of how the target architecture can be achieved. The first

three – Phases B, C, and D – are assigned to the decomposition solution by looking into the business, application, and technology layer and detailing both the baseline and target architecture solution. Phase E concentrates on how to deliver the architecture. It takes into account the complete set of gaps between the baseline and target architectures in all architecture domains, and logically groups changes into work packages within the enterprise’s portfolios. Phase F brings finalization of the Architecture Roadmap and the supporting Implementation and Migration Plan. At the beginning of each phase, there is a reassessment and revalidation of whether they are properly planned. When needed, the Project Management Plan is amended. Planning of the next phase should be prepared in great detail, especially in terms of activities and risk assessment. The following phases can be kept more general. Detailed planning of the closest phase only ensures that the business value, cost of work packages, and transition architectures are both optimal and understood by key stakeholders.

From the project point of view, we can assume that actions from Phases B to F are the next phases of the project and the end of each phase can be understood as a milestone which delivers an important functionality. The following PMBOK processes should be considered:

- Direct and Manage Project Work
- Perform Integrated Change Control
- Close Project or Phase
- Validate Scope
- Control Scope
- Control Quality
- Perform Quality Assurance
- Manage Communication
- Manage Stakeholder Engagement

In order to better understand this, we should look at the entire knowledge area of Execution and Monitoring and controlling where we can find processes from all areas.

Integration Management (4.3, 4.4, and 4.5):

- Direct and manage project execution is a process of performing specific work by the Project Manager (or leader of the work) with an intention to reach intended project goals.

Scope Management (5.4 and 5.5)

Time Management (6.4):

- Keep the plan in sync with intended milestones

Cost Management (7.3):

- The TOGAF standard does not provide a way to control costs, but it is an essential part of each project.

Quality Management (8.1, 8.2, and 8.3):

- Set and control quality standards but also ensure that the intended work with appropriate level of detail has been performed.

HR Management (9.2, 9.3, and 9.4):

- Working with the team is critical when approaching a topic as broad as Enterprise Architecture. It is very possible that in each phase the team would be changed as the each phase requires a different set of competencies.

Communication Management (10.3, 10.4, and 10.5):

- With the various stakeholders and their concerns, we will not only need to know who and when to inform, but also to identify the information level that needs to be maintained through to project resolution.

Risk Management (11.5):

- As risk is something which can seriously damage an Architecture Project, the Project Manager should have a way to identify and mitigate risk. Risk monitoring and controlling management processes can help.

Stakeholder Management:

- Managing stakeholder expectations is a process of communication and cooperation with stakeholders in order to meet their needs and manage their future concerns.
- These activities are strongly related to the ADM step Conduct Formal Stakeholder Review.

## **5.3 Phase F: Architecture Project Closing**

Complete the Architecture Development Cycle and Document Lessons Learned

Close Project or Phase (4.6)

This last step of Phase F is related to the PMBOK process closing project or phase. The use of the PMBOK approach is recommended.

## **Glossary**

See also Architecture Project Management Concepts (Section 2.3) for Architecture Project Management concepts that are key to understanding this Guide.

### **Architecture**

The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time. [Source: the TOGAF Standard; one of two definitions provided]

### **Enterprise**

The highest level (typically) of description of an organization and typically covers all missions and functions. An enterprise will often span multiple organizations. [Source: the TOGAF Standard]

### **Project**

A temporary endeavor undertaken to create a unique product, service, or result. [Source: PMBOK Guide]

### **Project Management**

Application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. [Source: PMBOK Guide]

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