

HOPEX TOGAF

User Guide

HOPEX V3



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INTRODUCTION TO HOPEX SUITE FOR TOGAF



HOPEX Suite for TOGAF is a software application created by **MEGA International** to assist:

- Project leaders to use the TOGAF 9 method.
- Method managers in a company to adapt the supplied components of the application to the company's context.

It can be used to:

- Describe the sets of standard phases of the TOGAF 9 method.
- Attach to each method phase, the types of deliverables that can be generated, be it documents, analyses or diagrams.
- Build TOGAF 9 projects while at the same time creating instances of phases and deliverables. These instances can be modified for adaptation to different project contexts without there being any impact on the model itself or on any other project.
- Facilitate the implementation of project follow-up via the features of the **HOPEX** platform.

What is TOGAF 9?

The Open Group Architecture Framework (TOGAF) is an Enterprise Architecture Modeling framework which provides a set of methods and tools for developing a broad range of IT architectures. TOGAF 9 is a version that provides the methods and tools to assist in the acceptance, production, use, and maintenance of an enterprise architecture. It is based on an iterative process model supported by best practices and a re-usable set of existing architecture assets.

TOGAF 9 uses the reliable and practical Architecture Development Method (ADM) which provides a tested and repeatable process for developing architectures. This method uses different phases which are quite helpful in:

- Defining business needs
- Developing architectures that meet to those needs
- Employing the TOGAF elements and the architectural assets available to the organization.

Project Managers and IT users of TOGAF are able to design, evaluate and build architectures that meet the organization's needs. The costs of planning, designing and implementing architectures are therefore reduced.

Implementing the TOGAF 9 ADM in HOPEX

HOPEX Suite for TOGAF is the implementation of the TOGAF 9 framework in the **HOPEX** Modeling Suite.

This application assists you in creating projects via:

- The ADM method formalization
- The initialization of TOGAF 9 projects
- A continuous guide at the different stages of the project
- The ability to filter TOGAF phases, according to the current user role.

The TOGAF 9 ADM phases are as follows:

- The **Preliminary Phase**: this phase describes the preparation and initiation activities required for preparing to meet the business directive for a new enterprise architecture. This includes the definition of an Organization-Specific Architecture framework and the definition of principles.
- **Phase A: Architecture Vision**: this phase describes the initial phase of an architecture development cycle. It includes information about defining the scope, identifying the stakeholders, creating the Architecture Vision and obtaining approvals.
- **Phase B: Business Architecture**: this phase describes the development of a Business Architecture to support an Architecture Vision that has been agreed on.
- **Phase C: Information Systems Architectures**: this phase describes the development of Information Systems Architectures for an

architecture project, which includes the development of Data and Application Architectures.

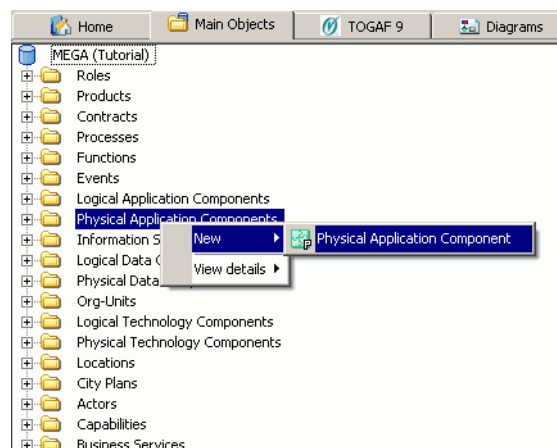
- **Phase D: Technology Architecture:** this phase describes the development of the Technology Architecture for an architecture project.
- **Phase E: Opportunities & Solutions:** this phase conducts initial implementation planning and the identification of deliverables for the architecture defined in the previous phases.
- **Phase F: Migration Planning:** this phase addresses the formulation of a set of detailed sequence of transition architectures with a supporting Implementation and Migration Plan.
- **Phase G: Implementation Governance:** this phase provides an architectural oversight of the implementation.
- **Phase H: Architecture Change Management:** this phase establishes procedures for managing changes to the new architecture.
- **Requirements Management:** this phase examines the process of managing architecture requirements throughout the ADM.

MEGA's implementation of the TOGAF 9 ADM extends over two different approaches to using the **HOPEX Suite for TOGAF** tool:

- As a **standard TOGAF implementation** for using the TOGAF application as a stand-alone tool.
- As an **extended MEGA implementation** that supports ADM-guided projects combined with the **HOPEX** metamodel and diagrams.

Standard TOGAF implementation

With this approach, the metamodel provided to support the ADM is strictly and fully compliant with the entire architecture content framework. All concepts, properties and associations can be accessed with their native names. The **HOPEX Suite for TOGAF** application can be used as a stand-alone tool, with no need for additional applications to start architecture projects. TOGAF concepts can be used with their native names.



The **HOPEX Suite for TOGAF** application is provided with a set of reports that are generated from the created TOGAF concepts.

New diagrams have also been delivered to support the TOGAF metamodel. These new diagrams supply the content architecture framework, therefore, allowing the creation of TOGAF concepts and associations.

Diagram Name	Actor	Business Service	Capability	Constraint	Control	Data Entity	Driver	Event	Function	Goal	Information System Service	Location (Site)	Logical Application Component	Logical Technology Component	Measure (Indicator)	Objective	Org-Unit	Physical Application Component	Physical Technology Component	Platform Service (IT Service)	Process	Product	Role (Business Function)	Work Package (Project)
Application and User Location Diagram																								
Application Communication Diagram																								
Business Footprint Diagram																								
Business Service/Information Diagram																								
Class Diagram																								
Class Hierarchy Diagram																								
Data Dissemination Diagram																								
Data Lifecycle Diagram																								
Data Migration Diagram																								
Data Security Diagram																								
Enterprise Manageability Diagram																								
Environments and Locations Diagram																								
Event Diagram																								
Functional Decomposition Diagram																								
Goal/Objective/Service Diagram																								
Networked Computing/Hardware Diagram																								
Organization Decomposition Diagram																								
Platform Decomposition Diagram																								
Process Flow Diagram																								
Process/System Realization Diagram																								
Processing Diagram																								
Software Distribution Diagram																								
Software Engineering Diagram																								
Use Case Diagram																								

List of diagrams and concepts proposed for the standard implementation of TOGAF

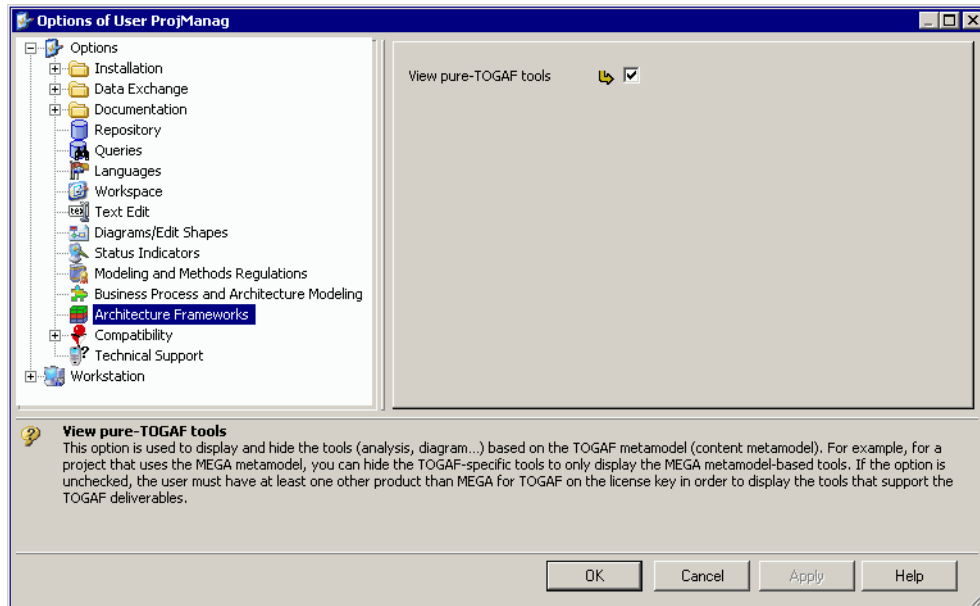
Extended TOGAF Implementation

With this approach, the ADM method is configured for using **HOPEX** templates to implement expected deliverables. The proposed templates are dependent on the availability of additional products, such as **HOPEX Business Process Analysis**, **HOPEX Architecture** and **HOPEX Planning**.

This approach relies on the complete **HOPEX** metamodel which includes the **HOPEX Business Process Analysis** and **HOPEX Architecture** metamodels. To be consistent, the diagrams proposed in this context are those supplied by the additional tools.

Filtering Native TOGAF Deliverables

The means of providing native TOGAF deliverables, such as document templates, diagrams, reports, etc. are provided by the **HOPEX Suite for TOGAF** application. As such, when this application is combined with another complementary application of the **HOPEX** Modeling Suite, the TOGAF tools as well as the extended set of tools from the other applications are visible. To allow users to filter the type of tools visible, an option has been added. By default, this option is checked, allowing users to only have access to TOGAF tools.



Prerequisites for Using HOPEX Suite for TOGAF

Before using the **HOPEX Suite for TOGAF** product, the **HOPEX** suite must be installed. You must then:

- Create the users of the product
- Import the TOGAF 9 solution pack
- Import the Metamodel Customizations solution pack
- Configure access to the TOGAF 9 libraries

Creating the main users

HOPEX Suite for TOGAF is intended for two kind of user profiles:

- The Method managers responsible for adapting the TOGAF 9 methods to the company's needs
- The Project managers who use the method phases recommended by the method managers to carry out their projects.

To create the different users for each profile:

1. In the **HOPEX** installation folder, start the administration tool **Administration.exe**.
2. Select the environment in which you want to work, for example, "Demonstration".
3. Log in with a user that has access rights to administer data, for example, "System".
4. Expand the environment and the **User Accounts** folders.
5. Right-click on **Authorizations** and select **Open Diagram**. The authorizations diagram opens.
6. Use the **Authorization** icon in the object toolbar to create a "Method Manager" and a "Project Manager" authorization.
7. Link these authorizations to the "System" authorization.
8. Create the users for each profile.
9. Save and close the authorization diagram. The diagram is automatically compiled.

Importing the TOGAF 9 - Data and Metamodel Customization Solution Packs

To access the TOGAF 8.1 and 9.0 components offered by **HOPEX** you must import the **TOGAF 9 - Data** and **TOGAF 9 - Metamodel Customizations**.

The solution packs are delivered in the **TOGAF.exe** compressed file and must be decompressed before they can be imported into a repository.

☛ *TOGAF 9 - Sample is an example of a project created with the TOGAF 9 method. You can import this example for the purposes of this guide, however, it does not need to be imported for **HOPEX Suite for TOGAF** to function.*

☛ *You are encouraged to also import the **HOPEX Architecture** solution pack (in the mega.exe compressed file) which allows you to share common IT objects, such as artifacts, communication protocols and resource architectures. These objects are usually provided with the **HOPEX Architecture** product. This import is not mandatory.*

To import a solution pack, see **HOPEX Administration - Supervisor** > Managing Objects > Importing Reference Frameworks in MEGA > Importing a Solution Pack.

Metamodel Customizations

The **HOPEX** Modeling tool comes with its own set of concepts and vocabulary. To minimize the differences between the names of concepts in this tool and in the **HOPEX Suite for TOGAF**, the **TOGAF 9 - Metamodel Customizations** solution pack can be imported into **HOPEX** that renames certain concepts using the TOGAF vocabulary. This renaming is only done in English. It is advised to import the metamodel customization file only if you want to strictly work with a TOGAF metamodel. To retrieve the list of renamed terms, refer to the paragraph ["MEGA Metamodel Customizations", page 48](#).

Configuring access to TOGAF 9 libraries

The aim of this step is to define the rights of the different profile users on the library objects imported.

☛ *You should have previously imported the **TOGAF 9 - Data** framework and created the users and profiles.*

To define these rights:

1. Start the **HOPEX** application, **MEGA.exe** and log in with a user that has administration rights.
2. Select the **Tools** menu > **Manage** > **Protect Objects**.
The **Object Protection** dialog box appears.
3. Select the **TOGAF** library in the **Objects** section and the authorization profile in the "Authorizations" section, for example, "Method Manager".
4. Click on **Apply**.
The confidentiality level changes.
5. If you have imported the **TOGAF 9 - Sample** framework, redo the steps above with the **TOGAF 9 - Sample** library and the "Project Manager" authorization.
6. Click **Close**.
7. Quit **HOPEX** by dispatching your transaction.

Additional Requirements

The **HOPEX** Modeling Suite offers the possibility of attaching objectives and requirements to architecture objects as well as indicators that can be used to determine to what extent objectives have been met.

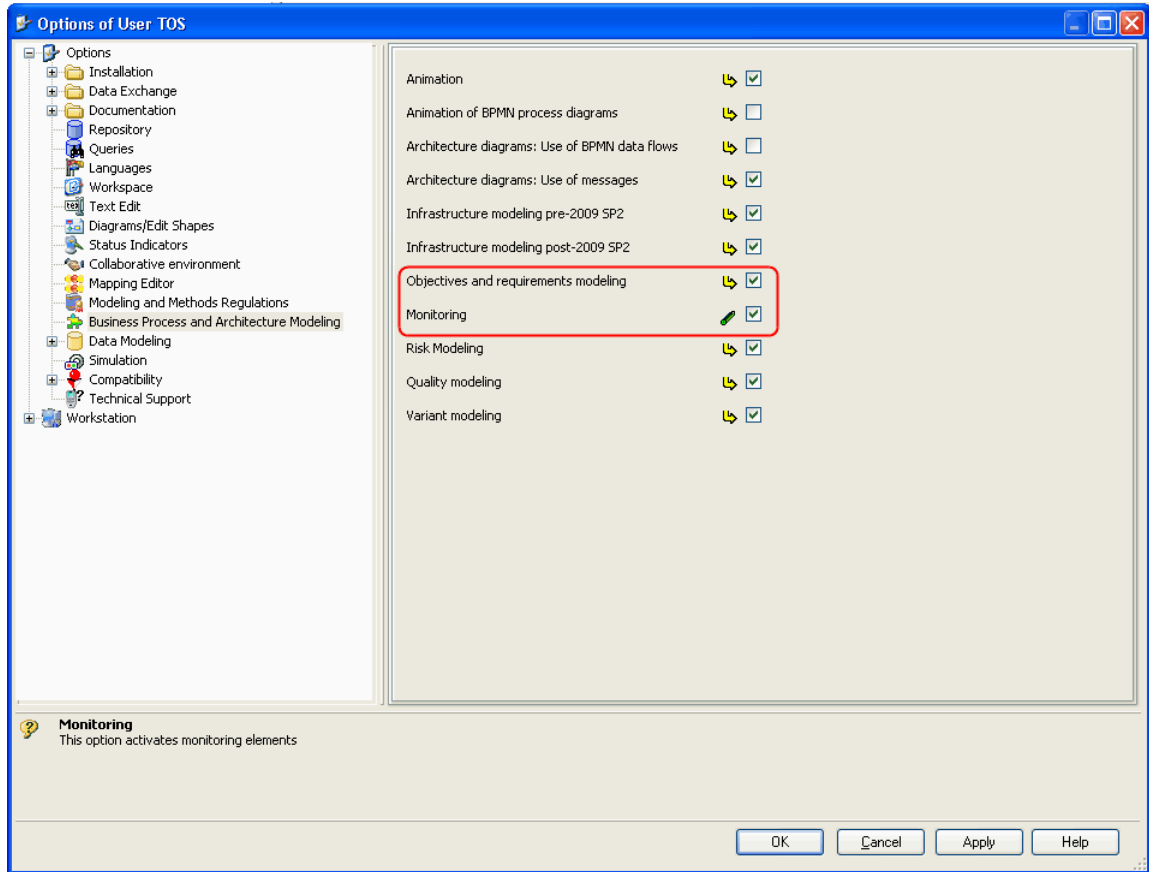
 See the **HOPEX Common Features** user guide for further information on objectives, requirements and indicators.

To ensure that objectives and requirements are displayed in the TOGAF 9 project, activate the **Objectives and requirements modeling** option:

- 1. Select **Tools** > **Option** > **Business Process and Architecture Modeling** > **Objectives and requirements modeling**.

To ensure that indicators are visible in the project activate the **Monitoring** option.

- 1 Select **Tools > Option > Business Process and Architecture Modeling > Monitoring**.



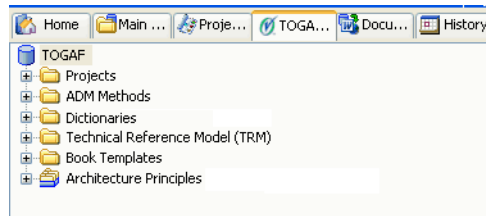
Discovering the TOGAF 9 navigation tree

The standard components provided by the TOGAF library of **HOPEX Suite for TOGAF** can be accessed from the dedicated TOGAF 9 navigation window. These components include the different TOGAF projects, the ADM methods, the TOGAF 9 dictionaries, etc.

To launch the TOGAF 9 navigation window:

- 1 In the **HOPEX** menu bar, click **View > Navigation Windows > TOGAF 9**.

The navigation window appears in the workspace.



By default, the TOGAF 9 navigation window displays the repository in which the TOGAF 9 framework has been imported.

It also displays other folders that are available for the framework.

- Expand any of the folders to see its content.

If the TOGAF 9 - Data framework was not imported into the repository, the "TOGAF - 9 Dictionaries", "Technical Reference Model (TRM)", "Book Templates" and "TOGAF 9 Architecture Principles" folders will be empty.

- **Projects**

The Projects folder contains the TOGAF projects of the repository. Each project is created with a "Contents" folder which contains the architecture objects that are attached to the particular project.

Each TOGAF project contains a first set of sub-projects that are linked to the phases of the method used for the project.

- **ADM Methods**

This folder displays all the ADM methods available in the repository. This includes the ADM method imported with the TOGAF 9 data add-on as well as any other variant of this method created for use in the repository. The system diagram as well as the phases for each method is also displayed. Each phase is displayed with its system diagram, the required deliverables of the phase as well as the steps to be followed to complete the phase.

- **Dictionaries**

This folder contains the different components of the TOGAF 9 dictionaries which include the abbreviations of terms, as well as terms and their definitions that can be attached to objects of the repository.

- **Technical Reference model (TRM)**

This folder contains the City plan that represents the Technical reference model used to provide the model and taxonomy of generic IT platform services.

- **Book Templates**

This folder contains the book templates used to create deliverables in the form of books. The different components of each book are also displayed, for example, chapters, paragraphs, diagrams, analyses, etc.

- **Architecture Principles**

This folder includes the different principles that apply to the TOGAF architecture. These principles represent different objectives that should be met by the architecture.

The principles are divided into seven categories: Application, Business, Data, Guiding, Integration, Security, Technology.

PRESENTATION OF THIS GUIDE

This guide introduces the basic features of **HOPEX Suite for TOGAF**. This application is intended for two kind of users: Method and Project managers.

The user guide successively presents:

- The **HOPEX** workspace
- The basic methodological components of the application and the different customization possibilities provided
- Step-by-step procedure on how to create a project that complies with the method recommended by TOGAF
- How to generate and access the different deliverable products

Conventions Used in the Guide

 *Remark on the preceding points.*

 *Definition of terms used in this guide.*

 *A tip that may simplify things.*

Commands are presented in this way: **File > Open**.

The names of **HOPEX** products and technical modules are presented in this way: **HOPEX**.

PRESENTATION OF THE CONCEPTS



This chapter introduces the basic components delivered with **HOPEX Suite for TOGAF** for implementing the TOGAF 9 methodology in an operational project. These components are based on the features of the **HOPEX** platform.

The following are successively presented:

- ✓ "The HOPEX Suite for TOGAF ADM Method", page 12
- ✓ "The Technical Reference Model (TRM)", page 15
- ✓ "The TOGAF 9 Metamodel", page 18
- ✓ "The TOGAF 9 Dictionaries", page 20

THE HOPEX SUITE FOR TOGAF ADM METHOD

TOGAF proposes, with the ADM (Architecture Development Method) a cyclic process for architecture development.

HOPEX proposes features that can facilitate the modeling of projects on processes and enterprise architectures, while particularly using the MEGA Open Kit Approach (MOKA) capacities to do this. As such, each project can be created from *methods* that describe the *phases* for project implementation.



A method represents a series of actions carried out to achieve a goal. A method is described by a series of phases.



A phase is an operational activity that participates in production of the deliverables of the approach. It can be an activity related to production, verification, delivery, etc.

Discovering the MOKA Framework

With MOKA (HOPEX Open Kit Approach), **HOPEX** proposes a framework for method formalization. MOKA allows you to describe the sequence of your projects (of organization, architecture, integration or application development).

MOKA is a project management structure managed in the **HOPEX** repository. It allows you to equip your approach using definition of *methods*, *phases* and *deliverables*.

A project can be considered as the implementation in **HOPEX** of a MOKA method. Sub-projects are aligned with method phases.



A method represents a series of actions carried out to achieve a goal. A method is described by a series of phases.



A phase is an operational activity that participates in production of the deliverables of the approach. It can be an activity related to production, verification, delivery, etc.



A deliverable is an element produced, modified or used by a phase or method (example:

In this context, **HOPEX** allows you to easily initiate a project by providing indications at each stage of its progression.

Discovering the Representation of the ADM Method

HOPEX integrates the TOGAF Architecture Development Method (ADM) in order to describe the sequence of projects (of organization, architecture, integration or application development).

HOPEX allows you to equip your approach through the definition of *methods*, *phases*, and *deliverables*. As such, with **HOPEX Suite for TOGAF**, a project can be initialized as the implementation of the ADM method. The sub-projects are linked to the method phases.

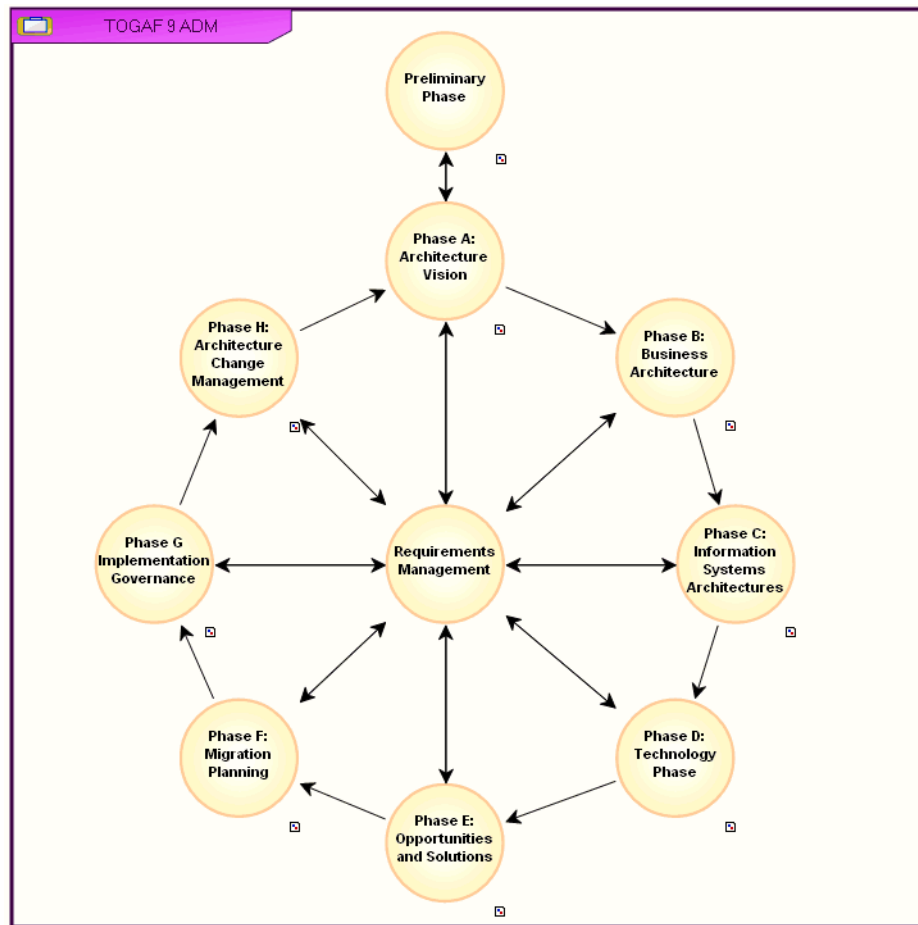
In this context, **HOPEX Suite for TOGAF** allows you to easily initiate a project by providing indications at each stage of its progression.

A phase scheduling diagram describes the sequence of the different *phases* of a *method*.

Accessing diagrams

To access the diagram that describes a method:

1. In the **TOGAF 9** navigation window, expand the **ADM Methods** folder.
 2. Right-click the desired method, for example, **TOGAF 9 ADM** and in its pop-up menu select **Phase Scheduling Diagram**.
- The phase scheduling diagram appears.

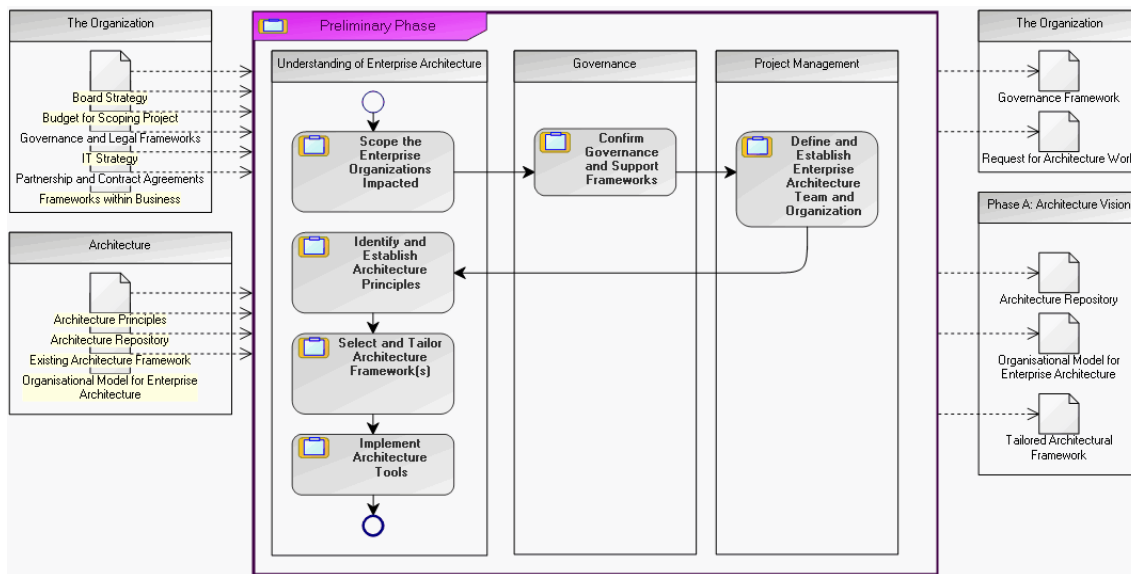


"TOGAF 9 ADM" Method Phase Scheduling Diagram

It presents the sequencing order of phases and the deliverables expected at input and output of each of these phases.

To access the diagram that describes a method linked to a phase:

- Double-click a phase, for example, **Preliminary Phase**. The phase scheduling diagram of the phase appears.



In the above example, the first phase of the method is "Scope the Enterprise Organizations Impacted" and the input deliverables of this "Preliminary Phase" are "Board Strategy", "IT Strategy" or "Architecture Principles".

➤ A phase scheduling diagram can be represented in standard notation or in BPMN notation, depending on the **Method Graphical Notation** defined in the **Characteristics** tab of a method.

THE TECHNICAL REFERENCE MODEL (TRM)

The Technical Reference Model (TRM) provides a model and taxonomy of generic IT platform services. It is a foundation on which more specific architectures and architectural components can be built. Based on the Integrated Information Infrastructure Reference Model (III-RM), the main use of such a reference model is to provide terminology and a checklist.

In **HOPEX Suite for TOGAF**, the TRM is implemented via the "City Planning" concept available in **HOPEX Architecture**.

➤ For more details on **HOPEX** features, see the **HOPEX Architecture** and **HOPEX Planning** user guides.

Understanding the City Planning Notion

City planning consists of grouping the different applications used in the information system into "city planning blocks" of similar functionality.

Several strategies for creating these groups can be defined. It is therefore possible to define several *city plans* that describe the information system from different points of view.

 *City planning is the splitting of the information system according to a particular criterion. This splitting can be by main enterprise functions, by origin of applications as the result of a merger, by type of system environment or by any other criterion pertinent to the context of the enterprise.*

The information system processing is broken down into different levels:

- **Area**
This is the highest level in the breakdown of the enterprise information system. For most companies, there is a data acquisition area, an information processing area, a management area, a repository area, etc.
- **District**
The district groups the processing that can correspond to an activity or a business function, and therefore to a type of information.
- **Block**
The block corresponds to the basic component of the city plan. A block is a homogeneous set of data and processings. Computer applications are grouped within the city planning blocks.
- **Etc.**

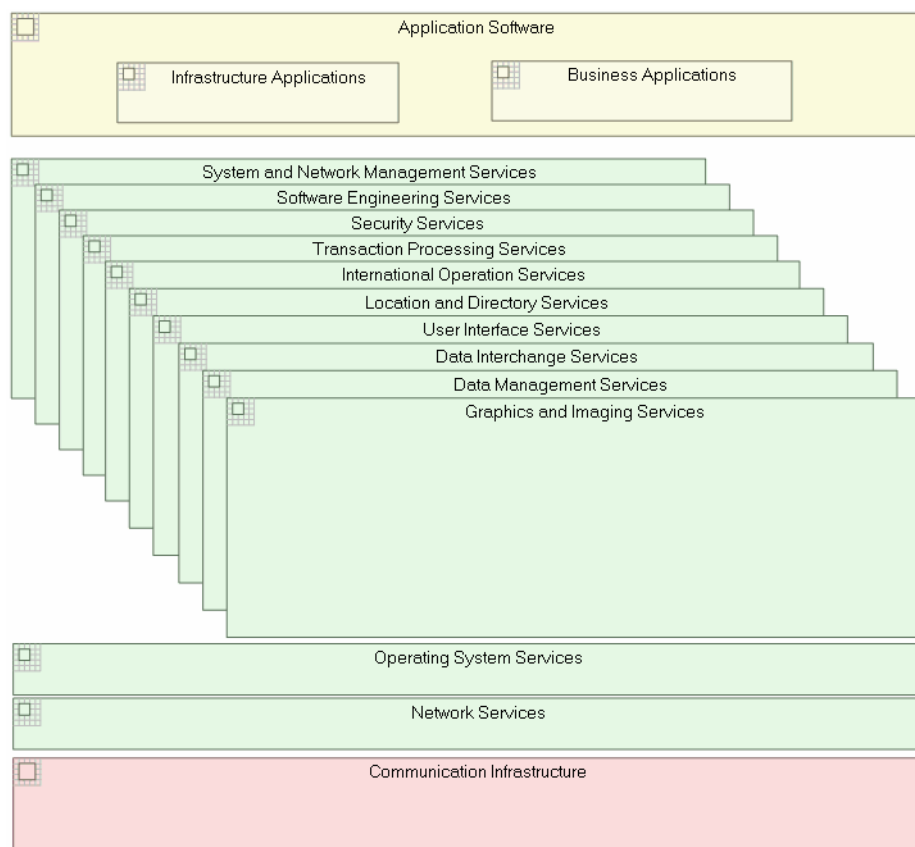
➤ Additional levels can be specified if required.

Accessing the Technical Reference Model (TRM)

Accessing TRM diagrams

The two diagrams below describe two implementation levels of the TRM. To access these diagrams:

1. In the **TOGAF 9** navigation window, expand the **Technical Reference Model (TRM)** folder.
2. Right-click the **Technical Reference Model** and in its pop-up menu select the **City Planning Zoning Diagram**.
3. From the list displayed, select the **Technical Reference Model (MEGA::TOGAF) - Detailed View** and click **OK** to open the diagram.



Areas and sub-areas

"Sub-areas" can be created from an area, regardless the city planning level ("area", "district" or "block").

- When you create a **Sub-area** from an "Area", the sub-area automatically becomes a "District".
- When you create a **Sub-area** from a "District", the sub-area automatically becomes a "Block".

☛ *The appearance of the area changes according its city planning level.*

THE TOGAF 9 METAMODEL

The graphical user interface provided with **HOPEX Suite for TOGAF** is based on the TOGAF metamodel. In order to match TOGAF concepts with **HOPEX** metaclasses, the TOGAF metamodel is entirely based on **HOPEX** abstract metaclasses.

➡ For more details on **HOPEX** facilities, see the **Studio** user guide.

Metamodel Concepts

Metamodel definition commands concern object types (MetaClasses), the links possible between these object types (MetaAssociations), the two ends of each of these links (MetaAssociationEnds) and the characteristics (MetaAttributes). Object comments are treated like characteristics of object types.

Concepts	Syntax
object type	MetaClass
link	MetaAssociation
leg	MetaAssociationEnd
link type	MetaAssociationType
characteristic	MetaAttribute
characteristic grouping	MetaAttributeGroup
characteristic value	MetaAttributeValue

Accessing the TOGAF Metamodel

To access the TOGAF 9 Metamodel diagram:

1. Check that you have "Advanced" access rights to the metamodel (**Tools > Options, Repository > Metamodel Access > Advanced**).
2. In the **MetaStudio** navigation window, expand the **MetaModel**.
3. Expand the **MEGA Modeling** and **TOGAF 9 Metamodel** folders.
4. Right-click **Full Metamodel** and in the pop-up menu select **MetaModel Diagram**.

THE TOGAF 9 DICTIONARIES

Three dictionaries are provided with the **HOPEX Suite for TOGAF** framework to ensure that the user can benefit from a shared and agreed-on vocabulary. The definitions of these dictionaries come from the TOGAF 9 framework.

To access the elements of the TOGAF 9 dictionaries:

1. In the **TOGAF 9** navigation window expand the **Dictionaries** folder. Three folders corresponding to the different dictionary components appear.



2. Expand any of the three dictionary components folder, for example, **TOGAF 9 Definitions**, to view the list of terms (or abbreviations) provided.
 - The **TOGAF 9 Abbreviations** folder contains the abbreviations of terms contained in the dictionaries. The term corresponding to the abbreviation is displayed in the **Properties** dialog box of the abbreviation, **Characteristics** tab.
 - The **TOGAF 9 Definitions** and **TOGAF 9 Supplementary Definitions** folders contain terms and definitions that can be attached to elements of the architecture. The definition text of terms is located in the **Properties** dialog box of the term, **Characteristics** tab

➡ For more details on how to use the dictionary, see the **HOPEX Common Features** user guide, "Using the Dictionary" paragraph.

PERSONALIZING THE TOGAF 9 METHOD



The **HOPEX Suite for TOGAF** framework uses a formalization of the ADM method. The **HOPEX** platform offers a set of standard features that allows users to personalize the components of the standard method.

This chapter introduces the procedures for:

DUPLICATING A METHOD

In order to keep the components of the method delivered as standard with **HOPEX Suite for TOGAF** the **HOPEX** platform offers features that can be used to duplicate a method by creating variants of it.

When duplicating a method it is best to do so from the library containing the method in question to avoid access right problems.

☛ *You must have the **Studio** or the **HOPEX Administration - Supervisor** module to be able to duplicate a library.*

Once duplicated the method and all the related items (phases, sub-methods, deliverables) are linked to the original source via a traceability link. This link is used to ensure that the new method is based on the TOGAF 9 ADM method and this new method will be proposed during the creation of new projects from the TOGAF 9 navigation window (see ["Creating Work Packages with TOGAF 9 ADM"](#), page 32).

To duplicate a method:

1. Open the **MetaStudio** navigation window (**View > Navigation Windows > MetaStudio**).
2. Expand the **System Library** folder and the **MEGA** library.
3. Right-click the **TOGAF 9** library and in the pop-up menu that appears select **Duplicate**.
The duplication dialog box appears.
4. Enter the **Name** of the duplicate library and click **Ok**.
5. When the duplication process is complete, expand the duplicate library and rename its **TOGAF 9 ADM** method.

Both TOGAF 9 ADM methods are now displayed and accessible in the TOGAF 9 navigation window.

CUSTOMIZING THE COMPONENTS OF A METHOD

A method is described by a series of *phases*. These phases are the operational activities that are performed in order to produce the different deliverables of the method.

 *A phase is an operational activity that participates in production of the deliverables of the approach. It can be an activity related to production, verification, delivery, etc.*

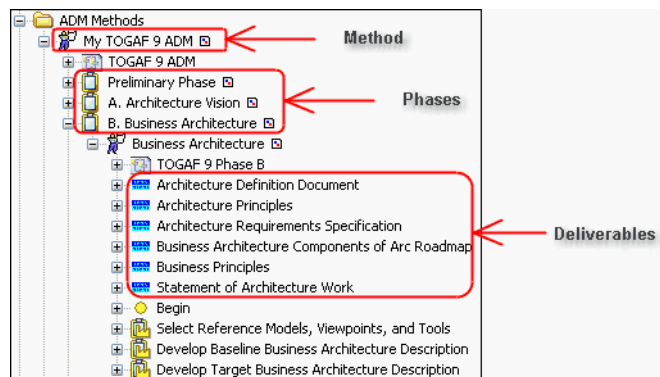
Phases can be customized.

Phase properties

From the properties dialog box of a phase, you can specify important information on project implementation.

To access the properties of a phase:

1. In the **Methodology** or **TOGAF 9** navigation window, expand a method.



Example of a method

2. Right-click the desired phase and select **Properties**.
3. In the properties dialog box that opens, select the **Characteristics** tab. In this tab you can indicate:
 - The **Phase Type** (for example, "Production"), as well as the Optional phase.
 - An **Implementing Method** list, which is the list of implementation methods for this phase suggested to the project manager during project creation.
4. Select the **Details** tab to specify the list of sub-phases that make up the phase.

 You can, for example, view the list of methods implemented in the "Business Process Mapping" phase. For more details on phase splitting, see ["Specifying phase composition", page 26](#).

 For more details on phase splitting, see ["Specifying phase composition", page 26](#).

5. Select the **Resources** tab to specify the list of resources required to execute the phase.
6. Select the **Deliverables** tab to specify the list of deliverables used and produced in the phase.

Phase resource type

In **HOPEX**, phase resources can be of different types: "Skill", "Software", "Documentation" or "Training", for example.

To specify a phase resource type:

1. Open the properties dialog box of the phase and select the **Resources** tab.
The list of resources required for executing the phase is displayed.
2. Right-click a resource and open its properties dialog box.
3. Select the **Characteristics** tab and select the **Resource Type**.
4. Click **OK**.

Deliverable properties

A *deliverable* is an element that is expected at the input or output of a phase. In **HOPEX**, these deliverables can be supported by different types of tools: **Analysis Template**, **Document Template**, **Book**, **Diagram** or **External Reference**.



A deliverable is an element produced, modified or used by a phase or method (example:

To determine the list of components of a deliverable:

1. Right-click the deliverable and select **Properties**.
2. In the properties dialog box, select the **Templates** tab to view the list of elements associated with the deliverable.

☛ *The list of deliverables expected at phase input or output is accessed from the **Deliverables** tab of the phase properties dialog box. For more details on phase properties, see ["Phase properties"](#), page 23.*

CUSTOMIZING PHASE SEQUENCE

Creating a method from the navigation tree

To create a *method* from the navigation tree:



A method represents a series of actions carried out to achieve a goal. A method is described by a series of phases.

1. In the **Methodology** navigation window, right-click the **Methods** folder and select **New > Method**.



The "Methods" folder contains all the methods included in the repository.

The **Creation of Method** dialog box appears.

2. Enter the **Name** of the new method.
3. Click **OK**.

The method is created and added to the list of methods.

A method is described in a phase scheduling diagram, but also through links between *phases*, through *deliverables* and through resources.



A phase is an operational activity that participates in production of the deliverables of the approach. It can be an activity related to production, verification, delivery, etc.



A deliverable is an element produced, modified or used by a phase or method (example:

Creating a phase in a method

You can create a phase in a method from in a navigation window:

1. In the **Methodology** or **TOGAF 9** navigation window, right-click the method concerned and select **New > Phase**.

You can also create phases in a method from the scheduling diagram of a method.

To create a phase in a method from the scheduling diagram of the method:

1. Depending on the type of phase you want to create, click one of the following buttons in the objects toolbar: **Begin** , **Production** , **End** , **Verification**, **Delivery** or **Milestone**.
2. Holding down the mouse button, click in the diagram workarea. The **Creation of ...** dialog box for creating the phase appears.
3. Enter the name of the phase and click **OK**.

Links between phases

In a method scheduling diagram, you can easily link different phases.

To link phases:

1. In the objects toolbar, click .
2. Click the first phase and, holding down the mouse button, draw a line to the second phase.

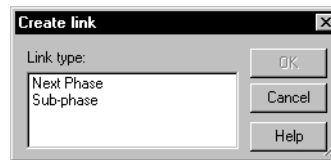
3. Release the mouse button.

☛ If the "Sub-Phases" view is activated, an intermediate dialog box appears in which you are asked to select a link type. For more details, see ["Specifying phase composition", page 26](#).

Specifying phase composition

To specify phase composition:

1. Select the **View** menu > **Views and Details**.
2. In the dialog box that appears, select the **Sub-phases** check box, then click **OK**.
3. Draw a link between two phases.
The **Create link** dialog box appears.



It offers a choice between a "Next Phase" link which indicates a sequence between two phases, and a "Sub-Phase" link which indicates that one phase is subset of the other.

4. Select the "Sub-Phase" link. A dotted arrow line is displayed between the two phases.

☛ The list of sub-phases of a phase is accessed from the **Details** tab of the phase properties dialog box.

☛ For more details on project creation from a method, see ["Creating Work Packages with TOGAF 9 ADM", page 32](#).

Adding a participant to a method

To graphically specify the participants in phase implementation, you can insert participants in the diagram.

To create a participant:

1. Click the **Participant**  button in the objects toolbar.
The participant appears in the diagram.
2. Click the name "System Participant", press key <F2> and change the name of the participant.

To assign a phase to a participant:

1. Position a phase within the frame of the participant.
The frame of the participant is highlighted.

☛ When positioned, the phase is connected to the participant, which indicates that this participant executes this phase.

HOPEX SUITE FOR TOGAF WORK PACKAGES



This chapter presents the basic features of **HOPEX Suite for TOGAF** to implement the TOGAF 9 ADM methodology in an operational project.

Herein you will learn how to:

- ✓ ["Viewing a TOGAF 9 Work Package", page 28](#)
- ✓ ["Creating Work Packages with TOGAF 9 ADM", page 32](#)
- ✓ ["Creating TOGAF 9 Work Package Documentation", page 35](#)

VIEWING A TOGAF 9 WORK PACKAGE

Work Package Scheduling Diagrams

The Scheduling Diagram allows you to describe the sequencing of your organization, architecture, integration or development projects in conjunction with a TOGAF 9 framework.

A project scheduling diagram shows the sequencing of the different phases of a *project*, or of the sequential linking of projects between themselves.



A project consists of a set of tasks entrusted to a team, which transforms a system or part of a system with the aim of achieving a given objective.

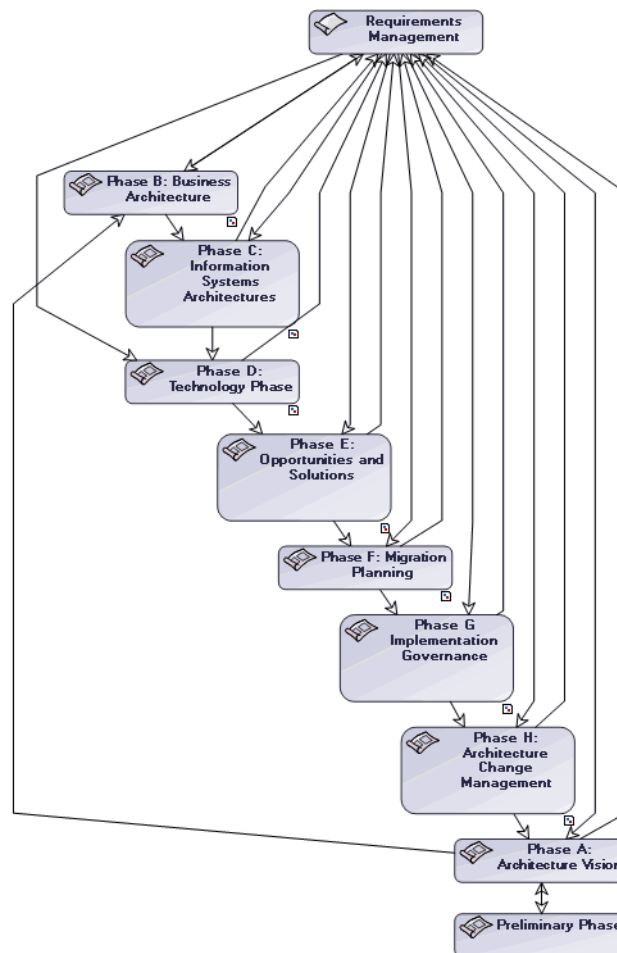
To access the diagram that describes a project:

- 】 In the **TOGAF** navigation window, expand the **Projects** folder and right-click the TOGAF Work Package you wish to navigate
- 】 select **Scheduling Diagram**.



*You must have imported the **TOGAF 9 - Sample** add-on provided with the TOGAF 9 framework. For more details, see ["Importing the TOGAF 9 - Data and Metamodel Customization Solution Packs"](#), page 6.*

The work package scheduling diagram appears presenting the various phases of the work package.



Work Package Characteristics

To open the properties dialog box of a work package:

- 1 Right-click the work package and select **Properties**.

To specify the characteristics of a work package:

- In its properties dialog box, select the **Characteristics** tab.

You can change the **Name** of the work package,

- the **Project Type** to which the method corresponds, and the **Method** selected for its implementation.

For more details on project types and methods, see ["Duplicating a Method", page 22](#).



A project type defines project typology such as description of a business process, mapping or development of applications, etc. A project type can be implemented using one or several methods.



A method represents a series of actions carried out to achieve a goal. A method is described by a series of phases.



A phase is an operational activity that participates in production of the deliverables of the approach. It can be an activity related to production, verification, delivery, etc.

You can specify:

- The **Workload** necessary for implementing the work package and its **Progress Percentage**.

Work Package Participants

In the **Participants** tab accessed in the work package properties dialog box, you can specify information concerning the participants of the work package.

There are three types of participant:

- **Org-unit**



An org-unit is an element of the enterprise structure such as a department, a service, or a workstation. An internal organization unit is defined based on how detailed you require your view of the enterprise to be. Example: financial management, sales management, marketing department, account manager. An external org-unit is an external entity

that exchanges flows with the enterprise. Example: customer, supplier, government office.

- **Person**

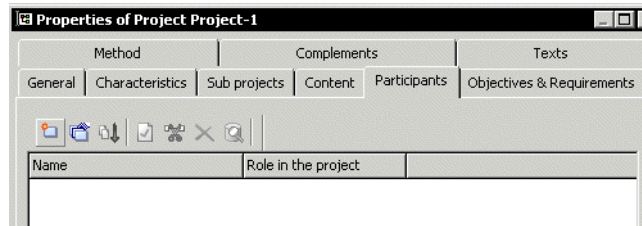


A person holds a position in an organization. It is designated by its name. Example: Mr. Smith.

- **User**



A user is authorized to access certain functions of the product and certain repositories. Each user has a specific desktop in each database, and can connect to this desktop from any workstation in a given environment. The code associated with the user is used to generate file names as well as a specific work folder for the user. At the time of installation, two users are automatically created: a user identified by the name you entered, and the "Administrator" user, which is used to manage repositories and create new users.



CREATING WORK PACKAGES WITH TOGAF 9 ADM

Creating a TOGAF 9 Work Package

Using elements described in **HOPEX Suite for TOGAF** you have available a project creation wizard that allows you to automatically initialize the structure of your project from the TOGAF 9 ADM method: steps, associated resources and deliverables to be produced.

This wizard can be of particular value for deployment of projects in your enterprise.

To benefit from assistance to create your work package:

1. Start creating a work package.
The work package creation wizard starts. This wizard helps you create the project menu tree and a project scheduling diagram. It links the project and its sub-projects to the corresponding *methods* and *phases*.
2. Indicate a **Name** for the work package.
3. If you have several methods, select the method on which the project is based from the list displayed. If only one method is available the work package is automatically based on this method.

 *This list is restricted in accordance with the previously selected project type.*

4. Click **Finish**.
The wizard creates as many sub-projects as there are phases in the selected method. If a phase is supported by just one method, the sub-project structure is also created.
For each phase supported by several methods, the wizard automatically proposes the selection of possible methods.
When the work package has been created, it contains as many sub-projects as there are phases in the method.

Modifying a Work Package Scheduling Diagram

You can modify the content of a work package created with the ADM method without there being any impact on the method itself.

Creating a work package in a diagram

To create a work package in a diagram:

1. In the objects tool bar, click the **Work Package** button .
2. Then click in the diagram workarea.
The **Add Work Package** dialog box appears.
3. Enter the name of the work package and click the **Create** button.
The **Creation of Work Package** dialog box appears.

4. Click **Finish**, if you do not want to base your work package on a project type or a method.

☛ Several objects can be given the same size. To do so, select the objects by holding down the <Shift> button and applying one of the options under **Drawing > Make Same Size**. You can also align these objects with the **Drawing > Align** command (the last object selected is the reference on which the alignment is based).

To create a new work package diagram:

1. Right-click a work package and select **New > Diagram**.
2. In the wizard that opens, select **Scheduling Diagram** and click the **Create** button.

An empty diagram appears.

Interconnecting Work Packages

In a scheduling diagram, you can easily interconnect different work packages.

To connect work packages (or projects):

1. In the objects toolbar, click .
2. Click on the first project and, keeping the mouse button pressed down, draw a line to the second.



☛ If the "Composition" view is activated, an intermediate dialog box appears in which you are asked to select a link type. For more details, see ["Specifying work package composition", page 34](#).

The direction of the link is important. In the case above, the link indicates that "Project 1" precedes "Project 2".

If you drew the arrow in the wrong direction, you must delete the link and redraw it in the correct direction.

To delete the link:

1. Right-click on the link.
2. In the pop-up menu that appears, select **Delete**.

Creating a work package by linking it with other work packages

To create a work package while linking it with two other work packages:

1. In the objects toolbar, click the **Work Package** button .
2. Click on the first work package and, keeping the mouse button pressed down, draw a line to the second.



The **Add Work Package** dialog box appears.

3. Add the name of the new work package and click **Create**.
4. In the work package creation dialog box that appears verify the name of the project and click **Finish** if you do not wish to specify the project type.

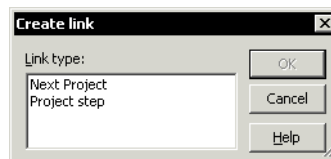
The new work package is created and connected to the two others.

☺ *This same mechanism is available for other objects, for example to create a message between two org-units, two operations, two applications, etc., in **MEGA Process** and **HOPEX Architecture**.*

Specifying work package composition

To specify work package composition:

1. Select **View > Views and Details**.
2. In the dialog box that opens, select the **Composition** check box, then click **OK**.
3. Draw a link between two sub-projects.
The **Create link** dialog box appears.



It offers a choice between a "Next Project" link which indicates a sequence between two projects, and a "Project Step" link which indicates that one project is a step to be carried out in another.

4. Select the "Project Step" link. A dotted arrow line is displayed between the two projects.



☺ *An alternative approach to specifying project composition is via **New > Sub-Project**.*

CREATING TOGAF 9 WORK PACKAGE DOCUMENTATION

HOPEX Suite for TOGAF can be used to create the deliverables of the work package, as it progresses. This ability is based on two main features of the **HOPEX** platform:

- The Help integrated in the projects through MOKA.
- The book concept, which allows users to easily create documents consisting of text, diagrams and reports. The result can be used to generate documents in RTF or PDF format.

Accessing Help at Each Work Package Stage

Work Package recommendations

In the Work Package editor or in the Work Package properties dialog box, you can obtain help at any time when this is linked to a phase and/or method.

Explanations are provided as a function of the method and/or phase indicated in the work package properties dialog box. These explanations appear in the **Method** tab. The information provided include explanations as to the deliverables that should be produced and the skills required.

When you modify methodological type information concerning the work package (its method or phase for example), this tab is automatically updated.

Phase 'Preliminary Phase '

The project step Preliminary Phase matches the Preliminary Phase phase of the TOGAF 9 ADM method.

Deliverables

Consumed Deliverables

This table lists the deliverables that should be requested to perform the project step.

Deliverables(10)			
Name	Comment	Template	Instance
 Architecture Principles (*)	Business principles Data principles Application principles Technology principles	 Principles Catalog	
 Architecture Repository (*)	Re-usable building blocks Publicly available reference models Organization-specific reference models Organization standards Architecture Framework Standards Information Base Architecture Landscape Reference Architectures Governance Log		
 Board Strategy (*)			
 Budget for Scoping Project (*)		 Financial Project Portfolio Analysis	
		 Financial Master Plan Overview	

Creating Deliverables Relating to the Work Package

Instances of work package deliverables can be created from templates attached to *deliverables* of the different phases.



A deliverable is an element produced, modified or used by a phase or method (example:

Deliverables related to the project can be of different types: **Report, Document, Book, Diagram** or **External Reference**.



For more details on phase deliverables, see "[Deliverable properties](#)", page 24.

You can create documents associated with each stage of your project from the **Method** tab of each sub-project.

To access the different deliverables:

1. Open the properties dialog box of the sub-project and select the **Method** tab.

2. In the "Deliverables" section of the page, click button  to create an instance of the deliverable template.
 The instance appears in the page and the template is selected.

 Budget for Scoping Project (*)		 Financial Project Portfolio Analysis	Created instance  Financial Project Portfolio Analysis
 Organizational Model for Enterprise Architecture (*)	In order for an architecture framework to be used successfully, it must be supported by the correct organization, roles, and responsibilities within the enterprise. Of particular importance is the definition of boundaries between different enterprise architecture practitioners and the governance relationships that span across these boundaries. Typical contents of an Organizational Model for enterprise architecture are: • Scope of organizations impacted • Maturity assessment, gaps, and resolution approach • Roles and responsibilities for architecture team(s) • Budget requirements • Governance and support strategy	 Organizational Model for Enterprise Architecture	 Organizational Model for Enterprise Architecture

Deliverables relating to a work package are automatically classified in the **Contents** folder of the work package.

You can create deliverables:

- From the **Method** tab of the work package.
- Via the pop-up menu of the work package by selecting the specific command.

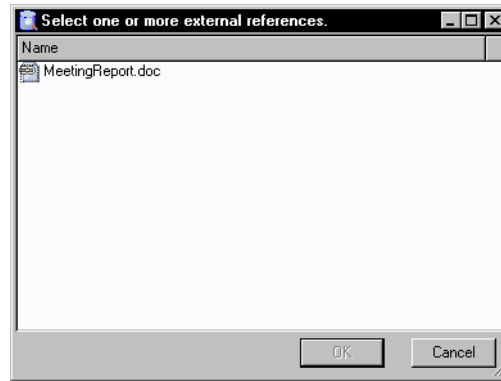
Creating external references

HOPEX enables association of external references with your project, based on those that exist for deliverables. External reference templates are proposed as a function of the method or phase selected for the project.

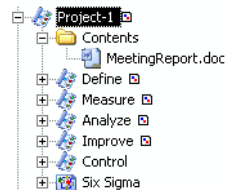
If your project is linked to a method or phase itself linked to an external reference, you have access to a menu that allows you to create an external reference specific to your project.

To create an external reference for a work package:

1. In the "Deliverables" section of the page, click the  button to create an instance of the external reference.
A list of available documents is proposed as a function of the selected method and phase.



2. Select an external reference and click **OK**.
3. Select a folder in which to place the copy of this document and click **OK**.
A copy of this document is placed in the folder that you indicated. The project external reference is created.



You can double-click on the document and modify it.

Creating a document

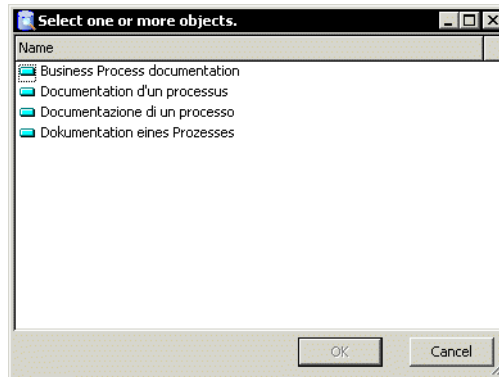
HOPEX advises you in the choice of documents to be generated as a function of the phases connected to your work package.

As an example, the **Method** tab of the "Identify problems in the process" sub-project proposes that you generate a document concerning business processes.

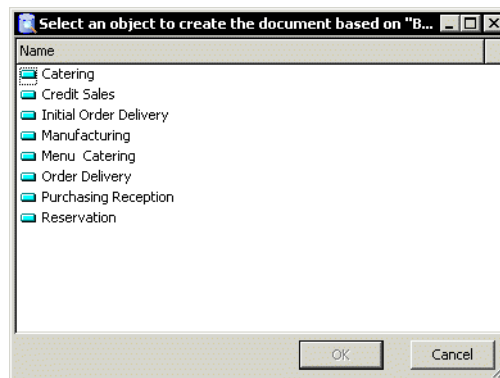
To generate this document:

1. In the "Deliverables" section of the page, click button  to create an instance of the document.

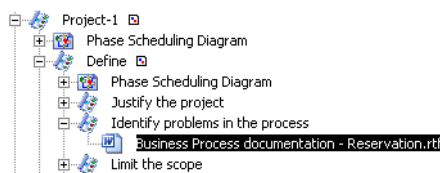
2. Select the document template that you wish to use.



3. Click **OK**.
4. Then select the object to be described in the document template.



5. Click **OK**.
 The document based on the selected document template appears in the navigator.
6. Double-click the document to start its generation.



Creating diagrams

HOPEX offers the possibility of creating a diagram relating to the work package, that is to produce a deliverable in the form of a diagram.

Creating Reports

Reports can be created as deliverables in relation to work packages that are required to produce deliverables in the form of reports.

To create a report:

1. Open the **Properties** dialog box of a work package.
2. Click the **Method** tab.
In this tab, a definition of the phase is displayed along with the requirements of the phase.
A list of the required deliverables of the phase and the types of objects that support these deliverables is also displayed in a matrix.
3. To create a deliverable that can be supported by a report, in the **Template** tab, click the **New** button  next to the report template.



4. If you wish to set the different parameters for the report, click **Next** and follow the instructions of the creation wizard, if not, click **Finish**.
The new report appears in the Instance column of the matrix.

TOGAF Books

The use of books simplifies collaborative work by offering possibilities of adding notes in paragraphs, by enabling automatic update of inserted components, and management of access to objects currently being modified. In addition, books use the capacities of **HOPEX** to manage several languages.

Accessing TOGAF 9 book templates

In order to create instances of deliverables, **HOPEX Suite for TOGAF** has integrated a documentation structure based on books. These book instances are created from TOGAF 9 book templates.

The TOGAF 9 book templates are only available if the "TOGAF 9 - Data" add-on has been imported.

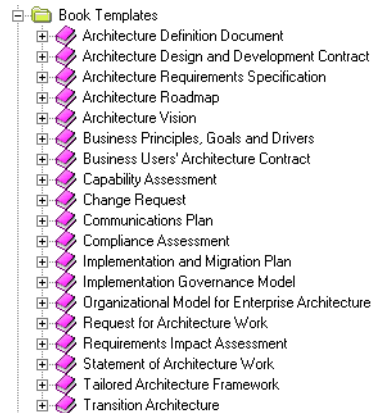
 *Templates must not be modified by the Project Manager! Only instances of books should be modified.*

A book is built using chapters and paragraphs. A book can also reference another book or reports.

The structure of a TOGAF 9 book is accessible from the **TOGAF 9** navigation window.

To view a book and its component elements:

1. Expand the **Book Templates** folder.
 The following window appears on the left of your workspace.



The text content of a chapter is defined in paragraphs. This content can be a text, a diagram, an object or an external reference.

Viewing the content of a book or chapter

Structuring in chapters and paragraphs enables flexible organization of presentation. **HOPEX objects** of different types can be dragged into the book, content of which is automatically updated.

The content of a book or chapter is visible in its properties dialog box.

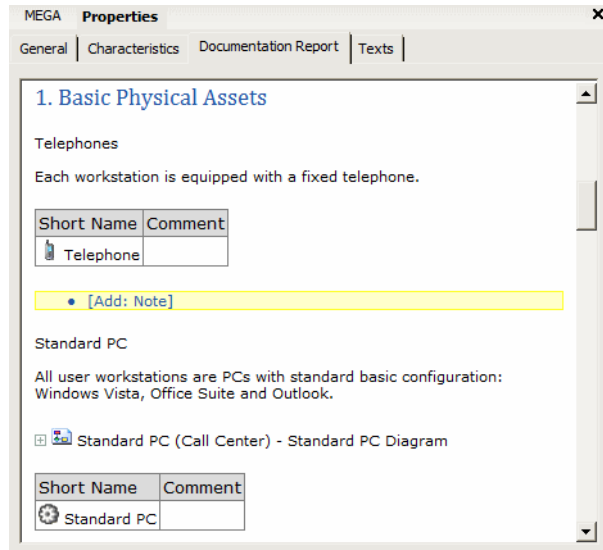
To view the content of a chapter:

1. Click the chapter in the navigation tree.
2. Then click the **Properties** button  in the toolbar of the workspace.
 A properties window appears.

*☛ To simplify your work, position the properties window in the central part of the edit area by right-clicking the window title bar and selecting **Integrate in Edit Window**.*

3. Select the **Properties** window and select the **Documentation Report** tab to view the text of the chapter.

☛ To avoid long display times, diagrams are replaced by a standard image. You can display the diagram by clicking its image.



☛ To view all diagrams and reports contained in a paragraph, click the **Expand All** button on the right .

☛ To view a report inserted in a book, click the **Display Report** button on the right .

Using books

In **HOPEX Suite for TOGAF**, book templates are delivered with standard structure. A book, attached to a work package, can be enriched with new elements.

To create a book from a book template:

1. Open the properties dialog box of the work package and select the **Method** tab.
2. In the "Deliverables" section of the page, click button  to create an instance of a book template.
The instance appears in the page and the template is selected.

 Organizational Model for Enterprise Architecture (*)	In order for an architecture framework to be used successfully, it must be supported by the correct organization, roles, and responsibilities within the enterprise. Of particular importance is the definition of boundaries between different enterprise architecture practitioners and the governance relationships that span across these boundaries. Typical contents of an Organizational Model for enterprise architecture are: • Scope of organizations impacted • Maturity assessment, gaps, and resolution approach • Roles and responsibilities for architecture team(s) • Budget requirements • Governance and support strategy	 Organizational Model for Enterprise Architecture	 Organizational Model for Enterprise Architecture
--	---	--	--

A new book is automatically classified in the **Contents** folder of the work package. You can expand the book to see the chapters.

Accessing the content of a paragraph

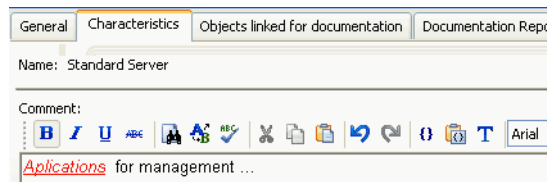
From the properties window of a book or chapter, it is possible to access objects contained in paragraphs.

To access a diagram or the objects it contains:

1. Click the diagram so that its components are displayed.
2. Right-click any component to open its pop-up menu and access its characteristics.

To access the text of a paragraph from the **Documentation Report** tab of the properties window of a chapter or book:

1. Click the **Edit**  button on the right of the paragraph that interests you.
The properties dialog box of the paragraph opens.
2. Select the **Characteristics** tab to access the text of the paragraph.
3. Modify the existing text.



 Note that the **Comment** area proposes features similar to those of MS Word, including a spelling checker.

4. Click **OK**.

Connecting objects to a paragraph

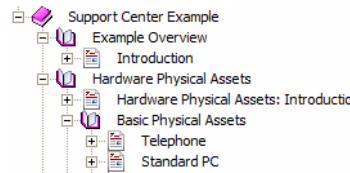
Several types of objects can be connected to a paragraph:

- Diagrams
- External references
- Objects

You can use the **Connect** command in the paragraph pop-up menu to connect new objects.

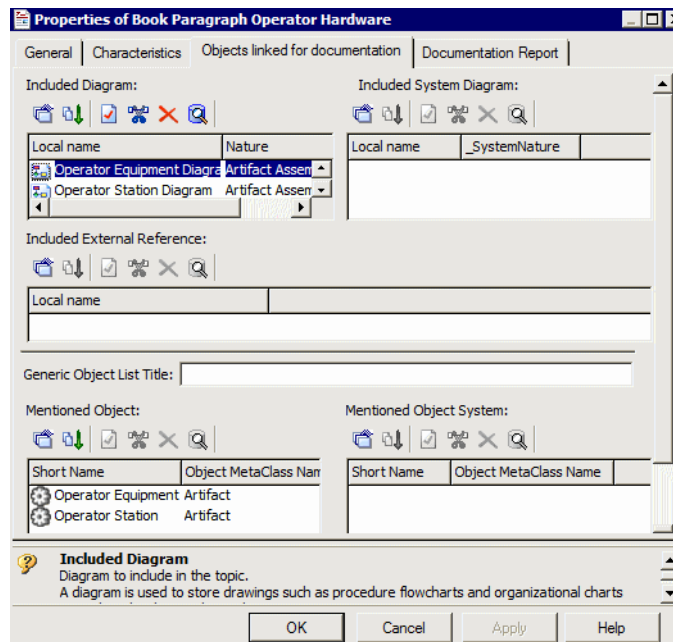
 It is also possible to connect an object to a paragraph by selecting the object and dragging it to the target paragraph.

The list of elements referenced in a paragraph is available from the navigation tree of the book.



An alternative method of access to all objects referenced in a paragraph:

1. Open the properties dialog box of the paragraph and select the **Objects linked for documentation** tab.
2. Use the **Connect** or **Reorganize** buttons to modify paragraph content. You can view the result of your modifications by selecting the **Documentation Report** tab.



3. Click **OK** to finish.

✎ The sections **Included System Diagram** and **Mentioned Object System** enable referencing of system objects such as descriptions, document templates and queries.

MEGA ADVISOR WEB SITE

HOPEX Advisor is a ready-to-use web application giving dynamic access to **HOPEX** repositories via the Internet. It addresses the major domains of enterprise architectures (strategy, operational, system, technical).

As a standard, **HOPEX Advisor** is provided with a set of roles which limit web site content to the scope of interest of the reader. In order to allow a TOGAF expert to retrieve the architectures designed in a **HOPEX** repository, a TOGAF role is introduced. It gives quick access to all the architectures as entry points.

A page dedicated to the TOGAF architectures details all the products and shows entry points to the reports corresponding to these products.

Using the MEGA Advisor Web Site

*Before the TOGAF expert can reap the full benefits of working with the **HOPEX Advisor** web site and be able to manipulate all the TOGAF affiliated objects, this web user must have "Expert" level access.*

To access **HOPEX Advisor**:

1. Log in to **HOPEX Advisor** with the appropriate user and password. The information displayed on the Home page corresponds to the role defined for the connected user.
2. In the main menu, pass the pointer over **Architectures** and click **TOGAF Architectures**.



The repository and the repository objects to which the user has access are visible. Your repository must have information in it for you to visualize anything.

You can also gain access to the main objects of the repository via their own menus.

For example, to view Work Packages.

For further information on using **HOPEX Advisor**, see the **HOPEX Advisor** user guide.

METAMODEL CUSTOMIZATION



It has been proven that difficulties arise when the TOGAF application is used with a mixture of both TOGAF and **HOPEX** vocabulary. These difficulties are perceived in the TOGAF navigation tree which uses TOGAF vocabulary while created objects have **HOPEX** metaclass names.

To bridge the gap between both worlds (**HOPEX** and TOGAF) and simplify the appropriation of the TOGAF application by a TOGAF expert, the **HOPEX** metamodel has been translated and the notions used renamed.

This section therefore details the mapping made between the **HOPEX** and TOGAF concepts used.

MEGA METAMODEL CUSTOMIZATIONS

This section indicates the concepts relating to TOGAF and the **HOPEX** concepts used to implement them.

The table below lists the concepts renamed with their standard definition (from the **HOPEX** perspective) and the TOGAF definition. The aim of this renaming is to make the mapping between the TOGAF concepts and the **HOPEX** concepts as invisible as possible for the user.

MEGA Concept	TOGAF Concept	Initial MEGA Definition	TOGAF Definition
Business Function	Role	A business function is a skill or grouping of skills of interest for the enterprise.	The usual or expected function of an actor, or the part somebody or something plays in a particular action or event. An actor may have several roles.
Functionality	Functional Behavior	A functionality is a service required by an org-unit in order to perform its work. This functionality is generally necessary within an activity in order to execute a specific operation. If it is a software functionality, it can be provided by an application.	Defines the behavioral characteristics of an architecture item.
Site	Location	A site is the geographical location of an organization. Examples: Boston subsidiary, Seattle plant, and more generally the headquarters, subsidiaries, plants, warehouses, etc.	A place where business activity takes place and can be hierarchically decomposed.

MEGA Concept	TOGAF Concept	Initial MEGA Definition	TOGAF Definition
Package + Data Model	Logical Data Component	A package partitions the domain and the associated work. It is used to organize elements into groups, particularly use cases and classes. Packages may be nested within other packages. Packages are linked by contractual relationships that define their interface. A data model is used to represent the static structure of a system, particularly the types of objects manipulated in the system, their internal structure, and the relationships between them. A data model is a set of entities with their attributes, the associations existing between these entities, the constraints bearing on these entities and associations, etc.	A boundary zone that encapsulates related data entities to form a logical location to be held. For example, external procurement information.
IT Service	Platform Service	An IT service is a component of an application that is available to the end user of the application. IT services are the breakdown of an application into its basic functional units. An IT service is a consistent, indivisible unit of processing that coordinates a set of messages and events in order to perform a task in the information system. In the application architecture, the IT service is the most basic functional unit.	A technical capability required to provide enabling infrastructure that supports the delivery of applications.

MEGA Concept	TOGAF Concept	Initial MEGA Definition	TOGAF Definition
Project	Work Package	A project consists in a set of tasks entrusted to a team that transforms a system, or part of a system, in order to achieve a specific objective.	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.

Some **HOPEX** concepts were already renamed in the **HOPEX** application to be used strictly in the TOGAF 9 context. For compatibility with TOGAF 9, these concepts were again renamed.

The table below lists the **HOPEX**-adapted TOGAF concepts that were renamed for compatibility purposes. They are presented with their definition.

Previous TOGAF Concept	New TOGAF Concept	TOGAF Definition
T9 Event	Event	An organizational state change that triggers processing events; may originate from inside or outside the organization and may be resolved inside or outside the organization.

Previous TOGAF Concept	New TOGAF Concept	TOGAF Definition
T9 Function	Function	Delivers business capabilities closely aligned to an organization, but not necessarily explicitly governed by the organization. Also referred to as "business function".
Enterprise Goal	Goal	A high-level statement of intent or direction for an organization. Typically used to measure the success of an organization.
T9 Process	Process	A process represents a sequence of activities that together achieve a specified outcome, can be decomposed into sub-processes, and can show operation of a function or service (at next level of detail). Processes may also be used to link or compose organizations, functions, services, and processes.

