



# Using Enterprise Architecture with TOGAF® 10 & SAFe 6.0 for Digital Transformation with *UNICOM® System Architect®*

December 2023

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## Overview

This workshop is an introduction to the practical application of Enterprise Architecture with TOGAF 10.

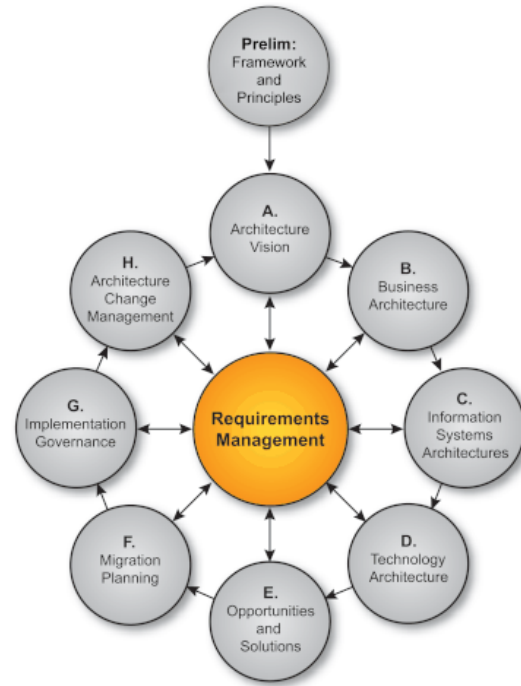
## Introduction

An enterprise architecture blueprint is an important resource to consolidate, link, and analyze organizational information. An enterprise architecture blueprint is created by capturing different domains of the organization, including:

- Missions, goals, strategies and tactics
- Business processes
- Information Systems: applications, services and data
- Technology infrastructures: networks, systems, and hardware components

The real value of possessing the blueprint comes from exploiting the relationships between these domains so that the complexity of the inter-relationships becomes exposed and usable by the technical and business communities to perform analyses and make informed decisions.

In this workshop, you are guided through various phases of a typical enterprise architecture engagement using UNICOM® System Architect®, using the TOGAF<sup>1</sup> ADM<sup>2</sup> lifecycle to model multiple domains of an enterprise architecture.




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<sup>1</sup> The Open Group Architecture Framework

<sup>2</sup> Architecture Development Method

## Requirements

The workshop is dependent upon:

- UNICOM System Architect 2024 – aka version 11.4.11 -- and upwards

You will use UNICOM System Architect to define and exploit the enterprise architecture blueprints.



### **Important!**

If you encounter problems during the course of this lab, please call the attention of the workshop instructor or any of the lab assistants.

## Scenario

JK Banking has decided to begin an EA effort to consolidate vital corporate information on infrastructure and business functions, so it can get a handle on where current information lies, how up to date it is, who owns it, where discrepancies lie, and use it to be agile and intelligent in planning changes to the organization. On top of that, the EA team has been tasked with an initial project – provide cause-effect analysis on a project that will provide the following new capabilities:





- Provide Loans to Customers for Vacations
- Allow Customers to apply for Vacation Loans via their Mobile Devices
- Introduce a Gold Star Points system that will provide Customers with lower rates on their Vacation Loan
- Enable Customers to Donate to Charities via their Mobile Devices

### **Your main objectives are to**

- Begin the EA effort to consolidate key sources of record
- Understand how these new Capabilities can be implemented, and how they affect current Functions, Processes, Applications, and Technologies

## Icons

The following symbols appear in this document at places where additional guidance is available.

Icon	Purpose	Explanation
	Important!	This symbol calls attention to a particular step or command. For example, it might alert you to type a command carefully because it is case sensitive.
	Information	This symbol indicates information that might not be necessary to complete a step, but is helpful or good to know.
	Troubleshooting	This symbol indicates that you can fix a specific problem by completing the associated troubleshooting information.
	Import	This symbol indicates importing information into the repository.

---

## Lab 1 Lab Preparation

1. Make sure **UNICOM® System Architect® 2024 – aka version 11.4.11** -- or later is installed.
2. Make sure the **UNICOM\_SA\_TOGAF\_Workshop** folder is available on the desktop.



## Lab 2 TOGAF Preliminary Stage

### Goals:

- Create EA Repository (Encyclopedia)
- Establish Metamodel
- Establish Sources of Record
- Establish EA Method

In TOGAF's preliminary stage, it is recommended that you establish the Enterprise Architecture Framework, metamodel, and Method. In our workshop, we have determined to not model Information Services or Platform Services -- we will just model Business Services.

We also want to capture:

- Disaster Recovery plans for Servers at Locations in the organization. We will adjust the metamodel to capture whether or not servers have a Disaster Recovery plan in place.
- Strategic importance of business functions. We'll adjust the metamodel to categorize functions as high, medium, or low in strategic importance.

### 2.1 Create the EA Repository

#### Objectives of this Section:

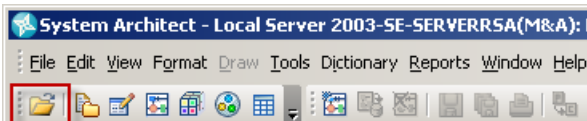
- Understand what the underlying technology the EA is stored in
- Create the EA Repository



An encyclopedia is the **UNICOM System Architect** repository of information that you store about your enterprise architecture. The encyclopedia includes all components of your enterprise architecture, namely, the diagrams and definitions that make up your architecture, and references to any external documents or internal documents.

#### 2.1.1 Create a New 'Encyclopedia'

1. In System Architect, select **File, Open Encyclopedia**, or click upon the **New or open an existing encyclopedia** icon on the toolbar.

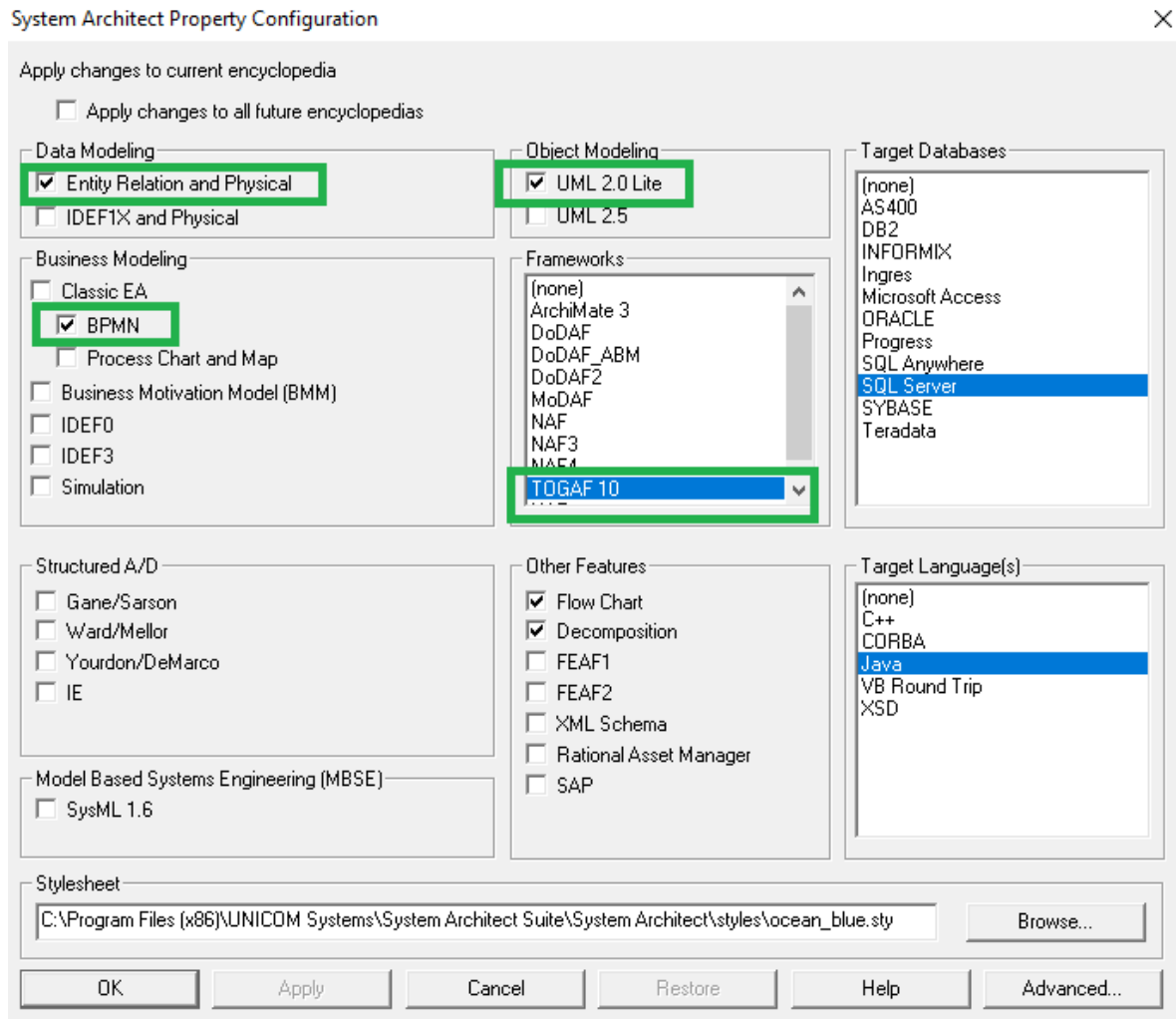


2. In the **Open Encyclopedia** dialog, select the **New** button on the left.

3. In the **Connection** property, choose the existing server connection from the drop-down list. The connection serves as a pointer between the server and the encyclopedia (database) that you are creating.

4. Type in **TOGAF 10 Workshop** in the **New encyclopedia name** field and select **OK**.

5. In the System Architect Property Configuration dialog, toggle on TOGAF 10 as a framework. Note that other selections are automatically turned on when you do this – Entity Relation and Physical (for data modeling), BPMN (for business process flow modeling), and UML 2.0 Lite (for software engineering).



6. Click OK to create the encyclopedia.

## 2.2 Establish Metamodel

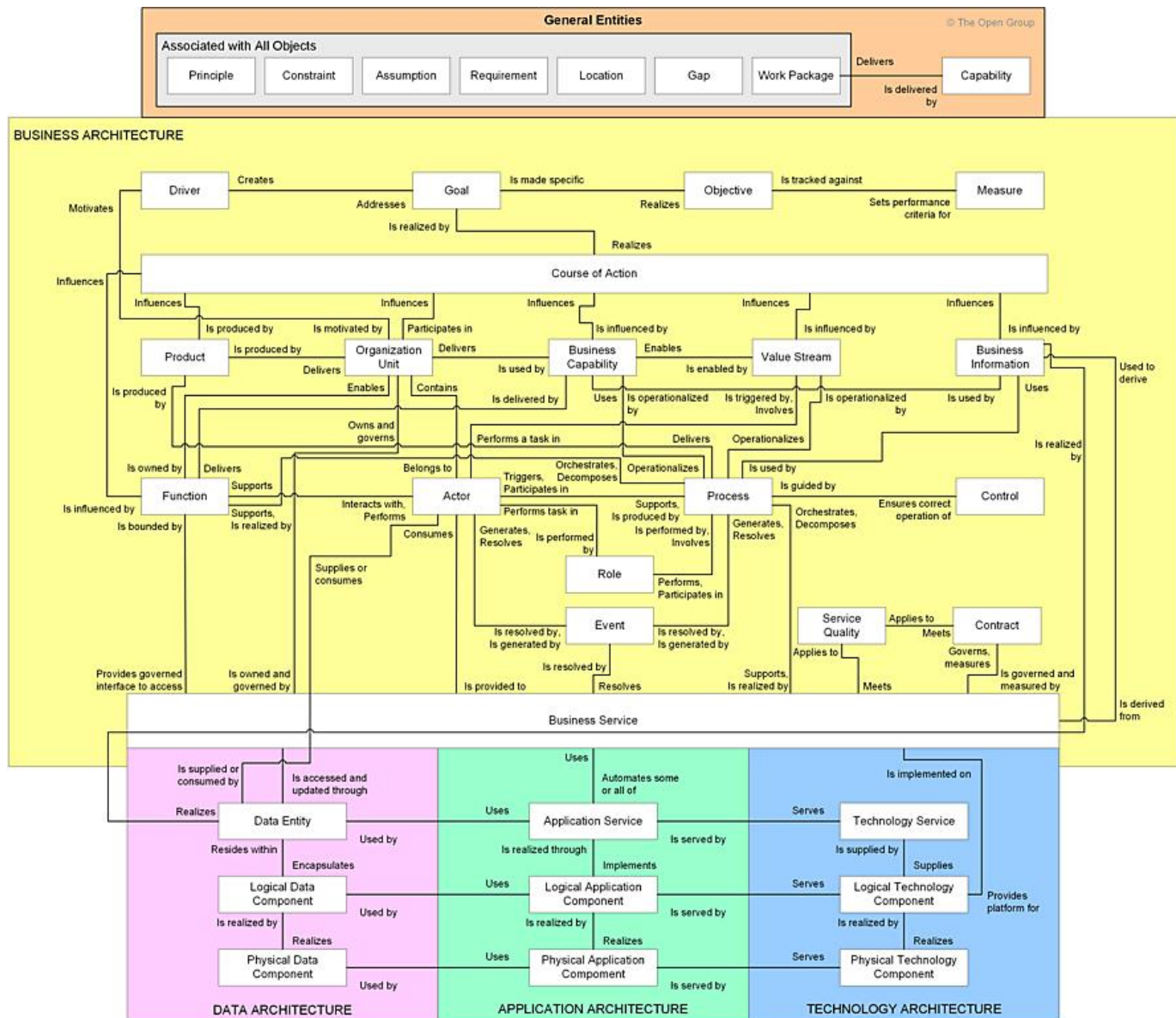
### Objectives of this Section:

- Examine the TOGAF 10 Metamodel
- Understand how to customize the metamodel

#### 2.2.1 Read Only: Understanding the TOGAF 10 Metamodel

We have turned on the TOGAF 10 metamodel.

1. Examine the TOGAF 10 metamodel in the figure below.
2. Notice that:
  - At the top of the metamodel graphic, you can see that TOGAF 10 highlights **Course of Action** as a main driver for the enterprise architecture. Not shown in the chart is that Course of Action consists of **Strategy** and **Tactics**. This comes from work done originally by the Business Rules group that created the Business Motivation Model (BMM) – now a standard owned by the Object Management Group (OMG).
  - Course of Action realizes **Goals** and **Objectives**. This also comes from the BMM.
  - Course of Action influences **Business Capabilities** and **Value Streams** and the capture of **Business Information**.
  - In the very middle of the metamodel graphic, you can see that there are three types of Services modeled -- **Business Service**, **Application Service**, and **Technology Service**,
  - Business Service provides a layer between the business elements (above it in the metamodel figure), such as **Functions**, **Processes**, and **Roles**, and IT (below it) such as **Application Components** and **Technology Components**,
  - Applications (or Software) are captured as Application Components,
  - There are **Logical Application Components** (examples: Word Processing software, Video Capture program, Enterprise Architecture tool) and **Physical Application Components** (examples: Microsoft Word, Camtasia Studio, System Architect),
  - Application Components are *served by* Technology Components,
  - There are **Logical Technology Components** (examples: Database, laptop, Programming Language) and **Physical Technology Components** (examples: Microsoft SQL Server 2022, Dell Inspiron, C++, etc)
  - Data at a high level is captured in the element called Data Entity, which is refined **by Logical Data Components** and **Physical Data Components**.

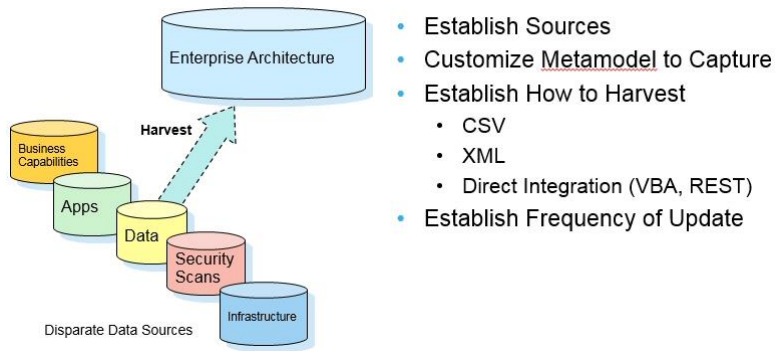


TOGAF Enterprise Architecture Metamodel

## 2.2.2 Add Metamodel Changes

We want to capture the following for our organization:

- Disaster Recovery (DR) plans of Applications
- Flood Plain Risk of Locations
- Specify which processes are Customer Facing
- Strategic importance of each Function its -- information garnered during Application Portfolio Analysis in a tool such as Unicom Focal Point, or a home grown solution
- Specify for each Application its Application Ranking after APM analysis



## Import Usrprops File to Modify Metamodel



### IMPORT INTO REPOSITORY

1. In System Architect, select **Tools, Customize User Properties, Import USRPROPS.TXT (Encyclopedia)**.
2. Browse to and select the **USPROPS.TXT** file provided in the Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\k. usrprops directory, and import it.
3. Reopen the encyclopedia for the changes to take effect.
4. **Read** the next section to see what the metamodel extensions the USRPROPS.TXT added to the encyclopedia.

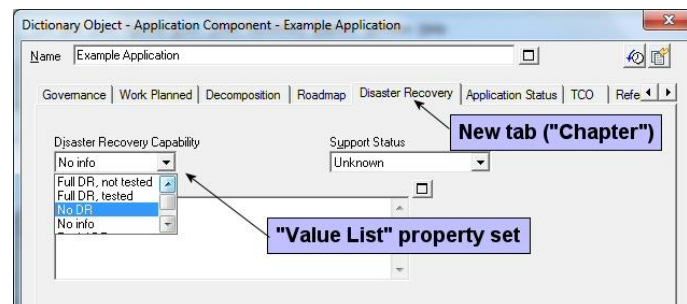
## Disaster Recovery (DR) of Applications

The IT department establishes a disaster recovery plan for each application -- what to do when it fails -- if its license runs out, if the app itself crashes, if its server crashes, does it have a backup application to switch to, etc. We want to import this information from IT into the EA -- capturing the status of each application -- whether a full or partial disaster recovery plan has been put in place for it or not.

The IT dept captures the following for each app:

Disaster Recovery Capability:

- Full disaster recovery plans in place, and tested
- Full disaster recovery plans in place, not tested
- Partial disaster recovery plans
- No disaster recovery plans in place
- No information



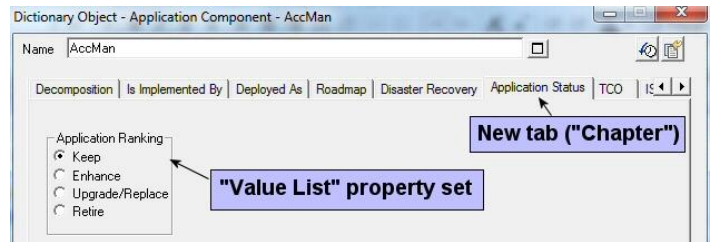
## Application Portfolio Analysis

During Application Portfolio Management (APM), the APM team did comparative analysis of the applications in the organization in a decision analysis tool (such as Focal Point, CA Clarity, Planview, or a home-grown system). We want to port that information into the EA. We make room for it by creating an Application Ranking property for every physical Application Component:

The IT dept captures the following for each app:

Application Status:

- Keep
- Enhance
- Upgrade/Replace
- Retire



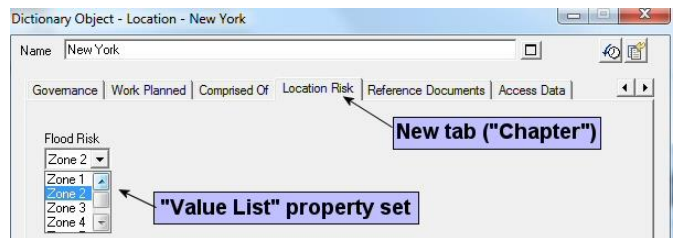
## Flood Plane Risk of Locations

The organization operates out of a number of main locations. Each of these physical locations has a flood plane specified for it. We want to capture this information; we adjust the metamodel so that the Location definition has a Flood Risk property.

FEMA tracks flood risk for locations based on the following zones:

Flood Risk:

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5



## Strategic Importance of Functions

The organization performs many functions. The business analysis team has prioritized the functions into their strategic importance -- high, medium, or low. We want to capture this in the EA.

Examine the example Function pictured to the right -- notice that there is a Strategic Importance tab that includes a list property that will be used to track the strategic importance of Functions -- High, Medium, and Low.



## Customer Facing Processes

We want to capture which of the business processes are customer facing processes, which by their nature would be important processes.

The usprops we imported added a Customer Facing tab to a Process that includes a simple check box property that will be used to track customer-facing processes.



We will populate these properties later. Our job for the Preliminary Phase of TOGAF 10 is complete -- we have created our EA repository, decided upon what portions of the TOGAF Extended Content Metamodel to use, and extended the metamodel to capture properties specific to our organization's needs.

## Lab 3 Phase B: Business Architecture

### Goals of this Lab:

- Gather Functions of the Business; Establish Functional Hierarchy
- Understand Function Owners
- Examine How Certain Functions Break Down into Processes
- Understand how some Processes enable numerous Functions across Organizations
- Align Functions with Business Services
- Align Functions with Logical Application Components

### 3.1 Capturing Functions of the Business

#### Objectives of this Section:

- Import business Functions
- Auto-Build Functional Decomposition Diagram

The enterprise architecture team has acquired from the business team a spreadsheet that lists Functions of the business and their owners (in terms of what department in the organization is responsible for the Function).

#### 3.1.1 Import Spreadsheet of Functions

1. If you opened the spreadsheet functions.csv (no need to for this course) you would see the following:

1	Name	Description	Stereotype	Component Functions	Parent Function	Is Realized	Orchestrated	Organization Unit
2	Accounting	Accounting entails accounting for assets, liabilities, and equity.	Function Depiction		"Financial Management"			Accounts
3	Administrative Management	Administrative Management involves the day-to-day operations of the organization.	Function Depiction	"Help Desk Services"	"Management of Resources"			"Business Oper
4	Advising and Consulting	Advising and Consulting involves the guidance and advice provided to clients or internal departments.	Function Depiction		"Knowledge Creation and Management"			
5	Asset and Liability Management	Assets and Liability Management provides accounting and reporting for assets and liabilities.	Function Depiction		"Financial Management"			
6	Benefits Management	Benefits Management designs, develops, and administers employee benefit programs.	Function Depiction		"Human Resource Management"			
7	Budget and Performance Integration	Budget and Performance Integration involves aligning financial goals with operational performance.	Function Depiction		"Planning and Budgeting"			"Business Oper
8	Budget Execution	Budget Execution involves the legal apportionment of resources to various departments.	Function Depiction		"Planning and Budgeting"			"Business Oper
9	Budget Formulation	Budget Formulation involves all activities undertaken to prepare the budget.	Function Depiction		"Planning and Budgeting"			"Business Oper
10	Capital Planning	Capital Planning involves the processes for ensuring the organization has sufficient capital.	Function Depiction		"Planning and Budgeting"			"Business Oper
11	Checking Accounts		Function Depiction	"Open Checking	Sales			"Commercial Se
12	Close Checking Accounts		Function Depiction		"Checking Accounts"			"Commercial Se
13	Close Savings Accounts		Function Depiction		"Savings Accounts"			"Commercial Se
14	Collections and Receivables	Collections and Receivables includes deposits, payments, and other financial transactions.	Function Depiction		"Financial Management"			"Business Oper

2. Notice that the spreadsheet includes the following columns:

- Name -- any spreadsheet imported into System Architect MUST have Name as the first column, even though this is a spreadsheet of functions -- the property of the name of each function is, Name -- and you are trying to match properties.
- Description
- Component Functions
- Parent Function
- Organization Unit



These column names have been adjusted so that they are the same as relevant property names in the Function definition in System Architect.



## IMPORT INTO REPOSITORY

3. Select **Dictionary, Import Definitions**.

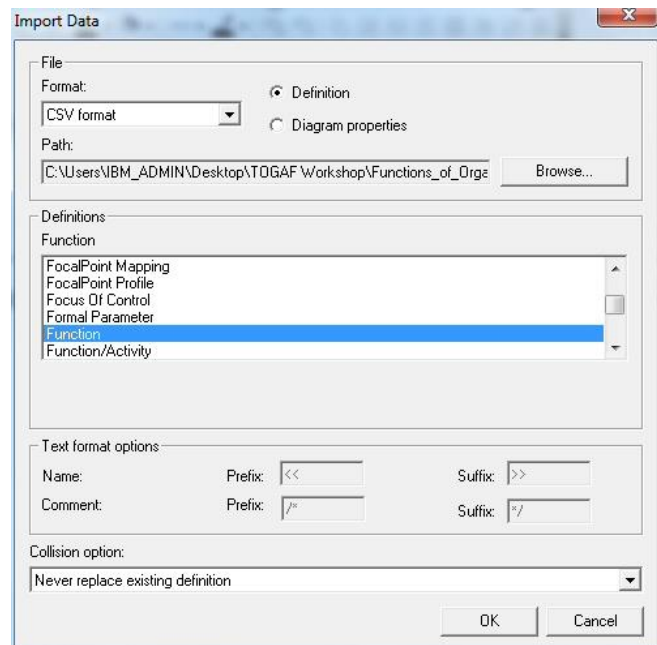
4. In the **Import Data** dialog, browse to the directory of the course files --  
C:\Users\UNICOM\_SA\_ADMIN\Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\  
**a. FunctionalHierarchy**, and select to import the **functions.csv** file.

5. Select **Function** as the Definition type to import the spreadsheet to.

6. Leave the **Collision Option** at its default. Click **OK** to import the spreadsheet.

Notice that once the spreadsheet is finished importing you receive a message of how many definitions were imported.

Click the x box in the top right of the message dialog to close it.



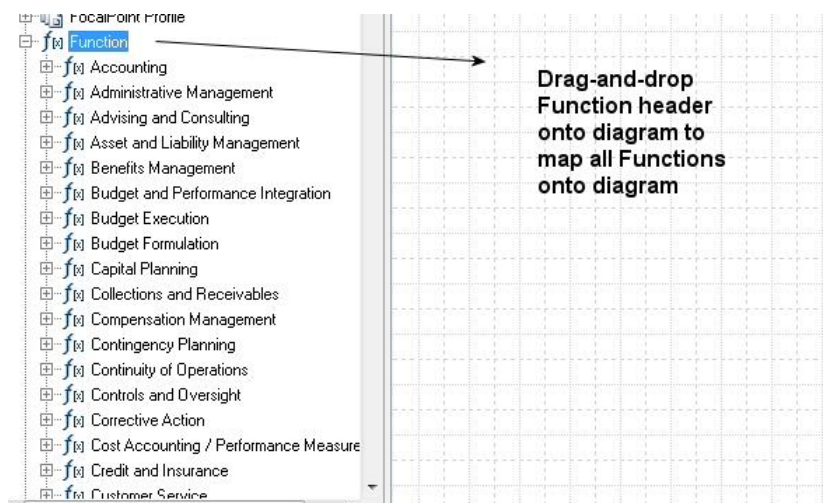
### 3.1.2 Auto-Create Functional Decomposition Diagram

1. Create a new **Functional Decomposition** diagram named **JK Banking Functional Decomp** (right-mouse click on Diagrams in the Explorer on the left-hand side and select New, then select Functional Decomposition as the type).

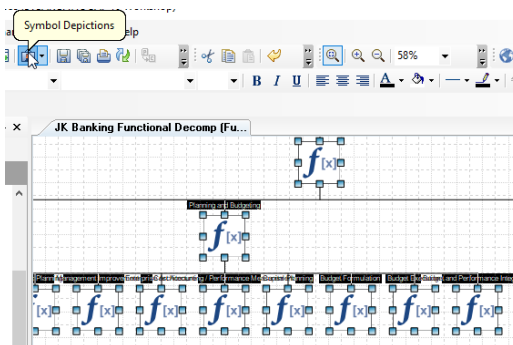
2. Drag-and-drop the **Functions** header in the Explorer onto the diagram. This will map all Functions in the encyclopedia onto the diagram.

3. Select **View, Used Area** to see the Functions on the diagram. Use the zoom tool to zoom in.

4. The function symbols default to



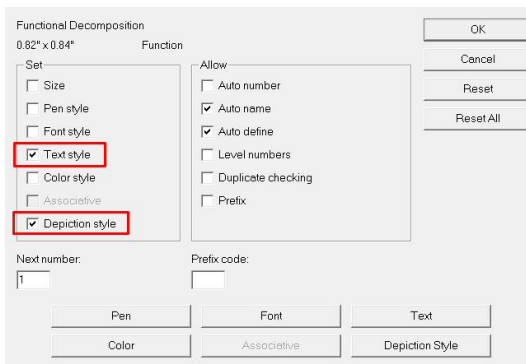
being drawn as a picture. Change to a rectangle with icon in upper right corner -- select all the symbols (**Edit, Select All** or lasso them), and click the **Symbol Depictions** button on the top menu – it looks like a picture frame and is informally called the “**Mona Lisa button**”. Click the button again, and the symbols turn into straight rectangles (no icon).



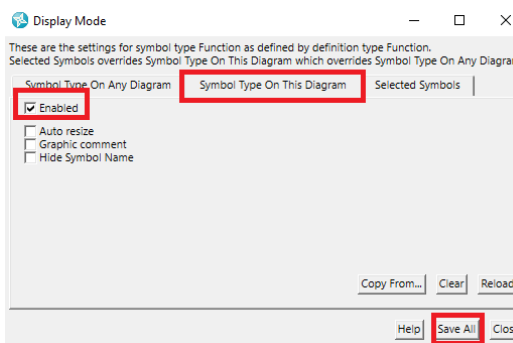
An alternative method for clicking the “Mona Lisa button” is to right-mouse click and choose **Display Selected Symbols Conventionally** then right-mouse click and select **Symbol Format, Text Position** and toggle OFF the **Place name outside** property.



5. Select any Function symbol on the diagram, and choose **Format, Symbol Format, Symbol Style**. Toggle on **Text style** and **Depiction style** and click **OK**. *This sets the style going forward.*

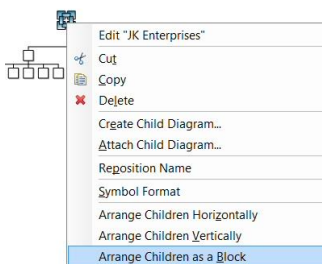


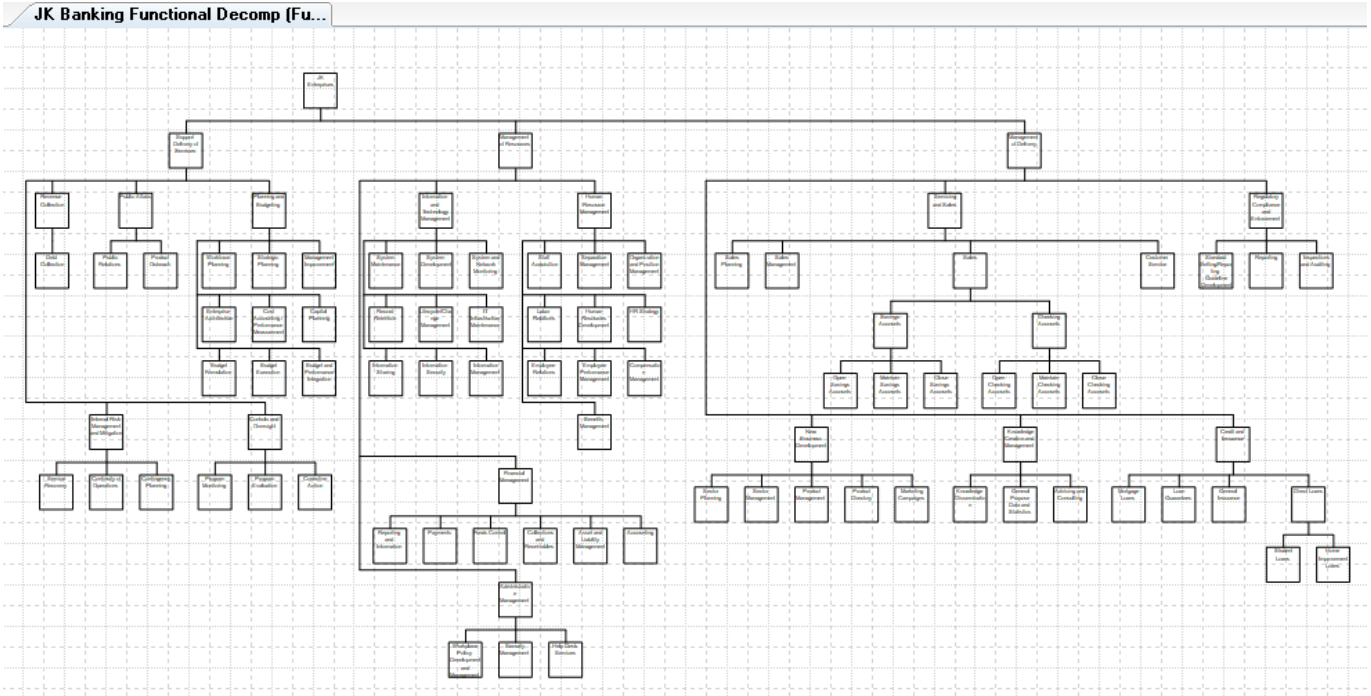
6. Right-mouse click on any Function symbol on the diagram, and select **Display Mode**.



7. In the Display Mode dialog that comes up, select the middle tab (**Symbol Type on this Diagram**), toggle ON the **Enabled** choice, make sure all properties below it are toggled **OFF** (Auto-resize, Graphic comment, and Hide Symbol Name) – and select **Save All**. Click the X in the upper right corner of the dialog to close it.


8. You can optionally experiment with right-mouse clicking on any single function at the **top of any hierarchy group**, and select **Arrange Children As Block**, or **Arrange Children Vertically**, or **Arrange Children Horizontally**.

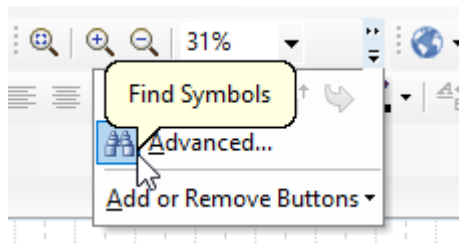




### 3.1.3 Add New Functions

1. Select via **Edit, Find Symbols**

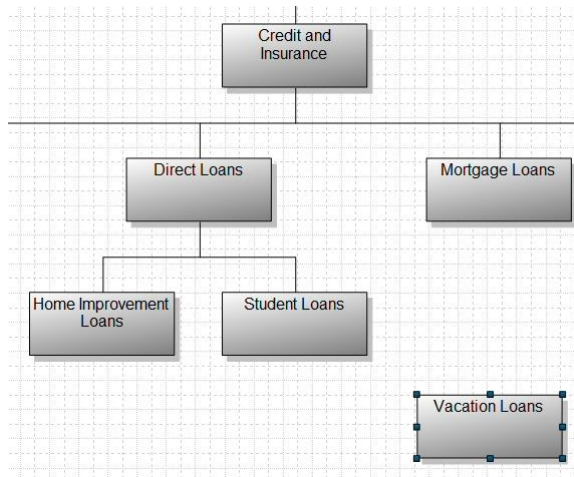
(or use the Find Symbol  binocular button at the top of the menu – it is on a drop-down in the zoom group) -- and type in **Direct Loans** to find this particular function.



2. Zoom to the area.

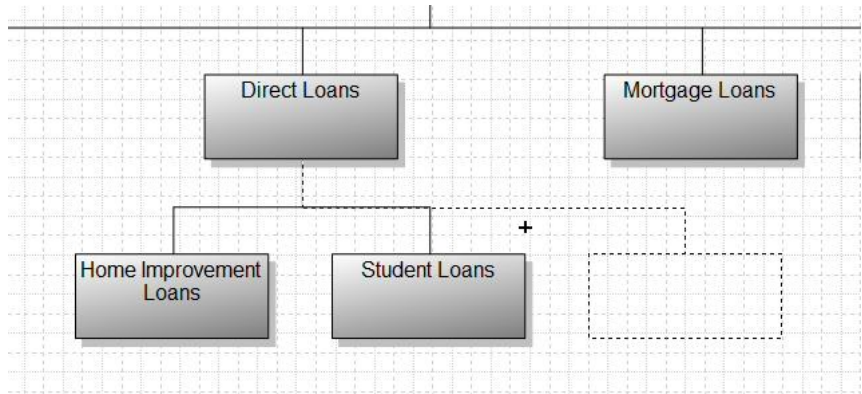
3. Add a new function to the diagram, **Vacation Loans**

4. Switch to pointer symbol (on Draw toolbar), select the Vacation Loans function and move it underneath Direct Loans so that it auto attaches.



5. Once connected, open the definition of Vacation Loans (double click on the symbol or right-mouse click on it and select Edit).

6. Notice that on the Decomposition tab, the Parent Function property is automatically filled in -- the relationship between the two functions has been automatically added to the underlying model.



Dictionary Object - Function - Vacation Loans

Name: Vacation Loans

Introduction | **Decomposition** | Business Capability | Cou

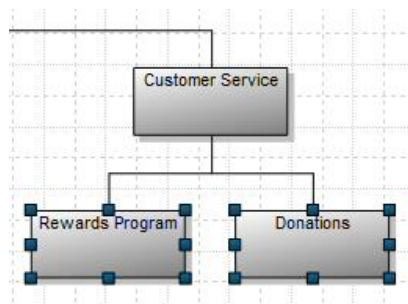
Component Functions

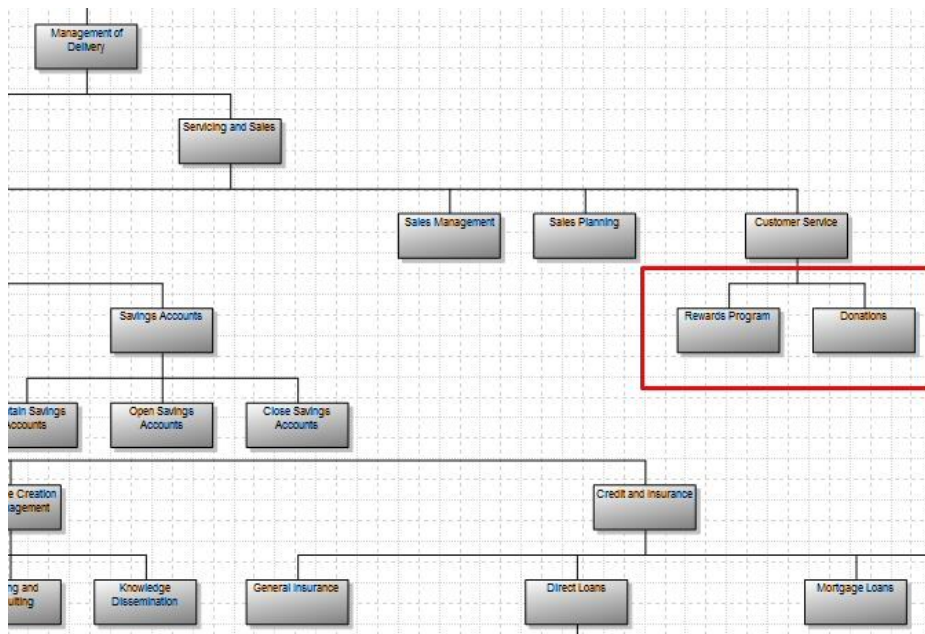
Parent Function: Direct Loans

See Functional Decomposition diagram

7. Using the same technique as above, find the function **Customer Service** – and then add 2 new Functions to the model as sub-functions to it -- **Rewards Program** and **Donations**.

8. Save the diagram (it should look like the diagram pictured below).





**What did you just do?**

You have visualized the Functions of the business in a data centric Functional Decomposition diagram.

## 3.2 Understand Use of Process Hierarchies

### Objectives of this Section:

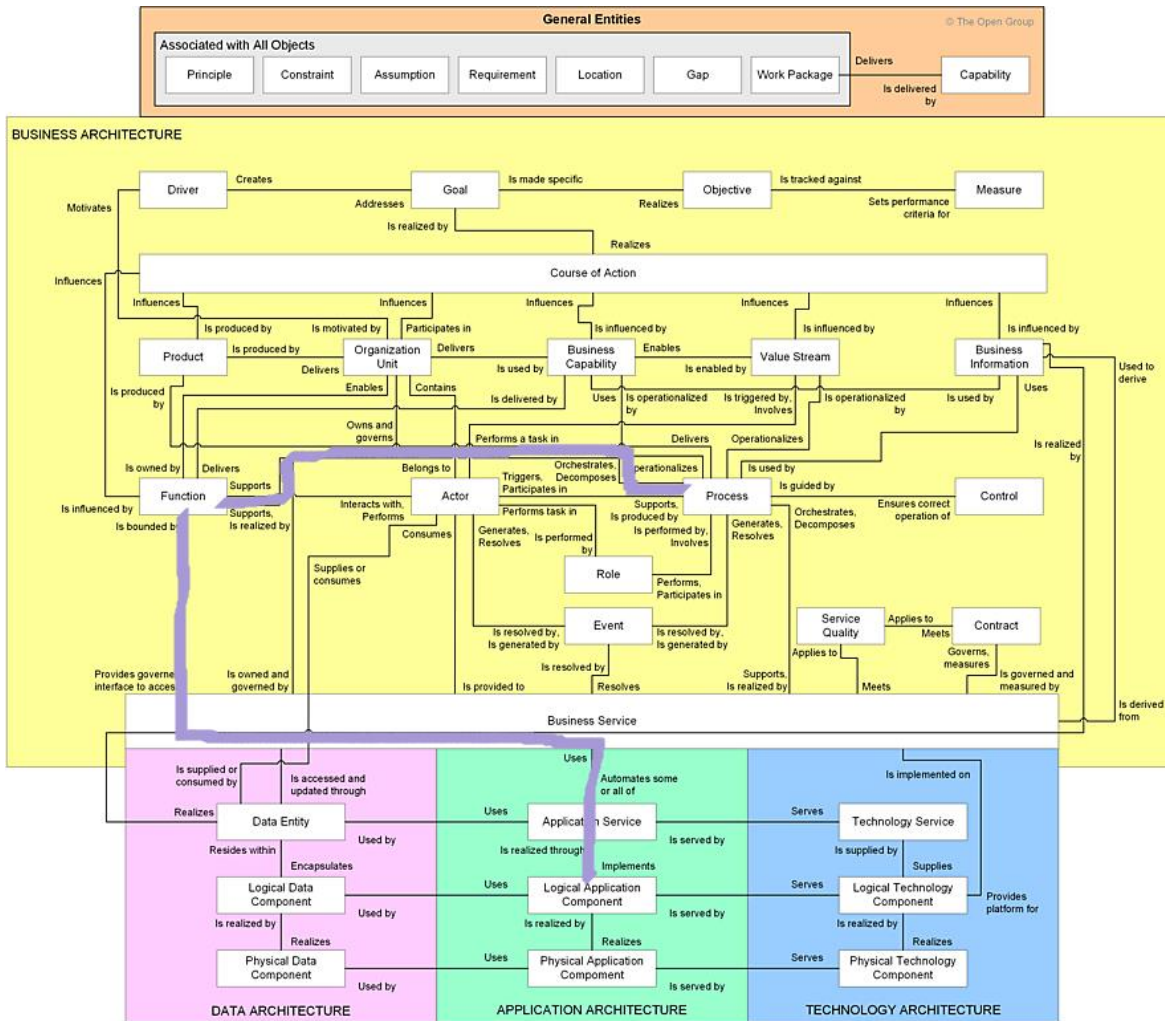
- Understand difference between a Function, Process, Application, & Service
- Understand use of Process Hierarchies
- Learn how to use APQC Processes

### 3.2.1 Understand difference between Function, Process, Application, & Service

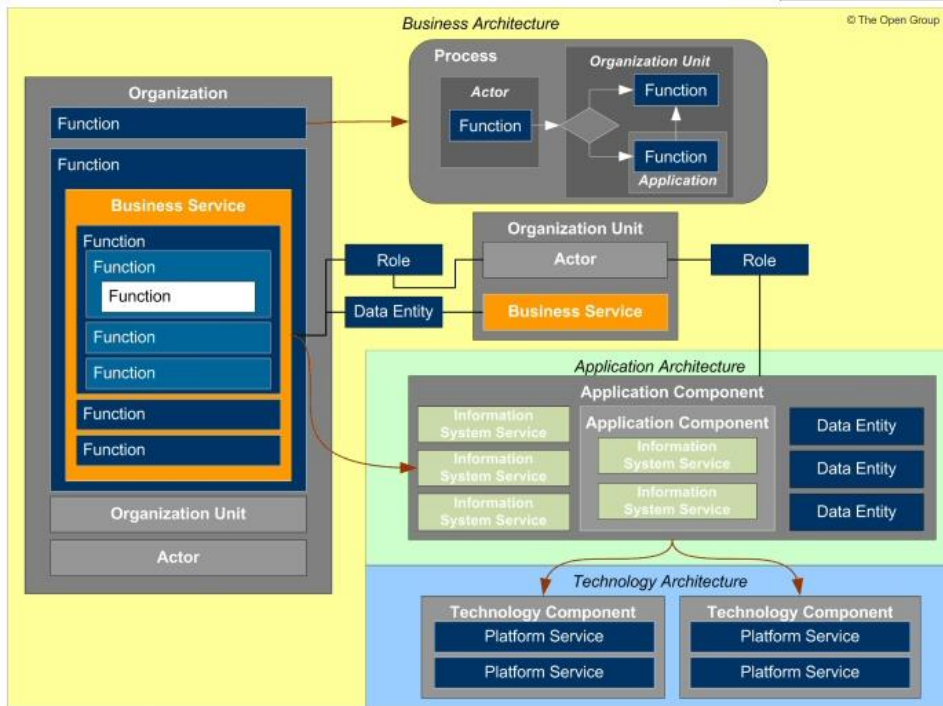
The difference between Process and Function:

- **Function** = something *that* an organization does. According to TOGAF, a function "delivers business capabilities closely aligned to an organization, but not explicitly governed by the organization."
- **Process** = *how* the organization performs a function. There are many cross function processes, and cross organizational processes. According to TOGAF, a process "is a flow of interactions between functions and services that cannot be physically deployed. All processes should describe the flow of execution for a function and therefore the deployment of a process is through the function it supports; i.e., an **application** implements a **function** that has a **process**, *not* an application implements a process."

You can see this described in the TOGAF 10 metamodel -- if you follow the purple crayon path below, Function is realized by Process. Function is bounded by a Business Service which may be automated by an Application Service, which is further implemented by an Application. In this workshop we are not specifically modeling Business Services or Application Services; we use the direct relation between Function and Application.



Another TOGAF 10 graphic describes the relationship between Function and Process, and Function and Application (with Business Service bounding the business service):



Function (bounded by Business Service) is implemented by Application Component (which can be broken out into Application Services).

### 3.2.2 Understand Use of APQC Processes

The American Productivity and Quality Center (APQC) offers Process classification frameworks that have been developed by the industry, for numerous vertical industries. Process classification frameworks have been developed for:

- Retail
- Consumer Product Goods
- Consumer Electronics
- Electric Utilities
- Healthcare Payer
- Banking
- Aerospace and Defense
- Automotive
- Broadcasting
- Petroleum Downstream Back-Office
- Petroleum Upstream
- Pharmaceuticals
- Telecom

Each process classification framework lists common processes found in each industry, and provides five levels of process delineation:

- Level 1 -- Category (can be considered a Function)
- Level 2 -- Process Group (high-level grouping of processes. (Examples: Accounts payable, Recruit, and Develop sales strategy.)



- Level 3 -- Process (Indicates key events performed when executing a process. Examples: Receive customer requests, Resolve customer complaints, and Negotiate purchasing contracts.)
- Level 4 -- Activity (Key events performed when executing a process.)
- Level 5 -- Task (Generally much more fine grained than Activities and may vary widely across industries.)
- Level 6 -- Sub Task (The most fine grained process element.)

### 3.2.3 Examine APQC Process Framework for Banking

1. Optionally open the pdf supplied with the workshop, K04844\_PCF\_Banking\_Ver\_6\_1\_0.pdf

2. Examine section 4.3 Deliver banking services to customers (17416) – or view picture to right.

We'll use these processes as a guide to modeling a process for opening a checking account via a mobile device, as long as the customer has an existing savings account or mortgage.

According to APQC's [John Tessmer](#), "*The PCF was originally envisioned and is still based on the premise that it is a classification system or taxonomy of business processes, similar to how a dictionary classifies words. The categorization does not imply that organizations structure their internal operations according to the taxonomy; it merely provides a facility to help define processes so that they can be understood and referenced in a consistent manner. Similarly, a dictionary won't instruct you in proper grammar or sentence construction—you would have to refer to a style guide for that.*"

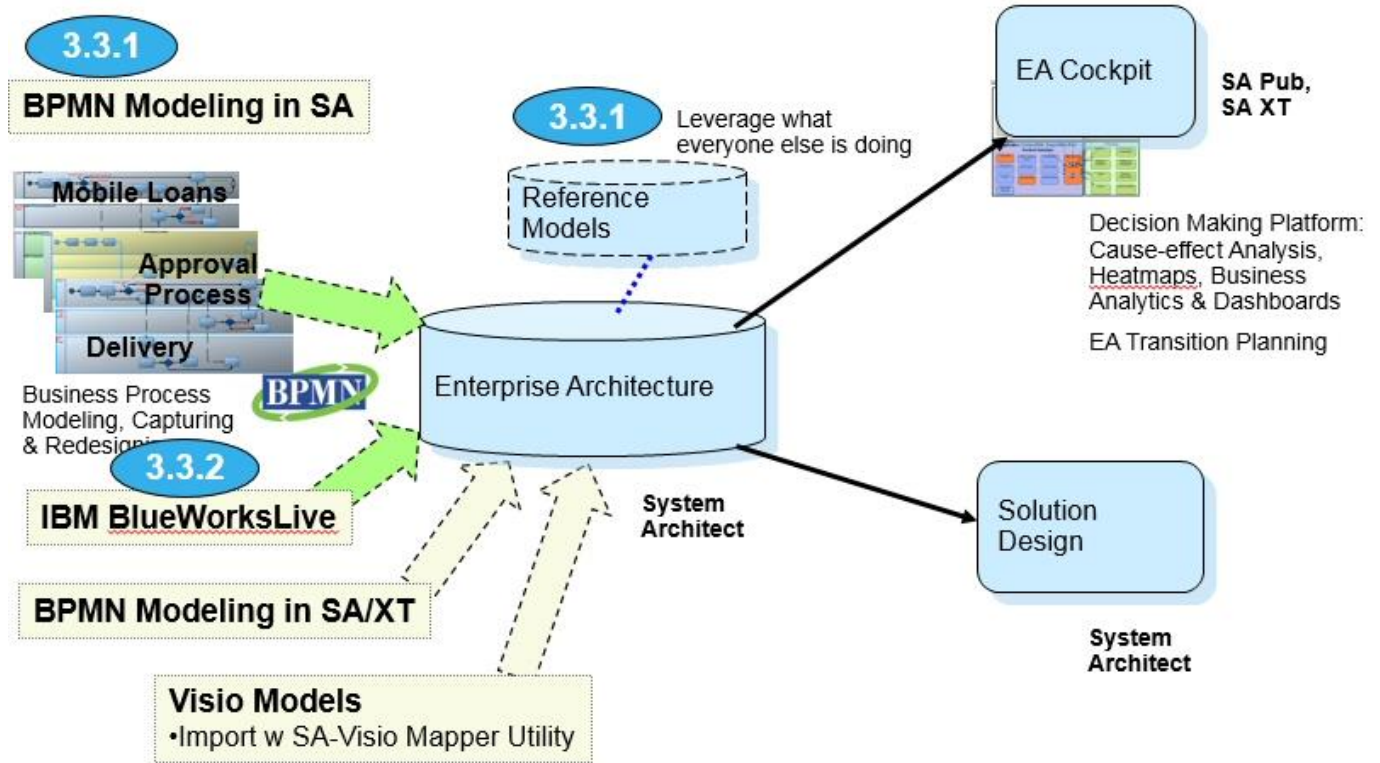
4.3 Deliver banking services to customers (17416)	
4.3.1	Open Accounts (17417)
4.3.1.1	Analyze customer creditworthiness (13964)
4.3.1.2	Apply Anti-Money Laundering (AML) policy (13953)
4.3.1.3	Apply customer identification policy (13957)
4.3.1.4	Apply product conditions (17418)
4.3.1.5	Apply product pricing (17419)
4.3.1.6	Evaluate collateral/guarantee (17420)
4.3.1.7	Create customer profile (10325)
4.3.1.8	Set up and activate an account (17421)
4.3.1.9	Fund and disburse proceeds (13961)
4.3.2	Maintain accounts (17422)
4.3.2.1	Monitor account status (13962)
4.3.2.2	Manage fees/interest/commissions (17423)
4.3.2.3	Monitor account transactions (17424)
4.3.2.4	Review collateral/guarantee periodically (17425)
4.3.2.5	Maintain internal accounts (17426)
4.3.2.6	Reconcile accounts (13950)

### 3.3 Understand Core Business Process Flows

#### Objectives of this Section:

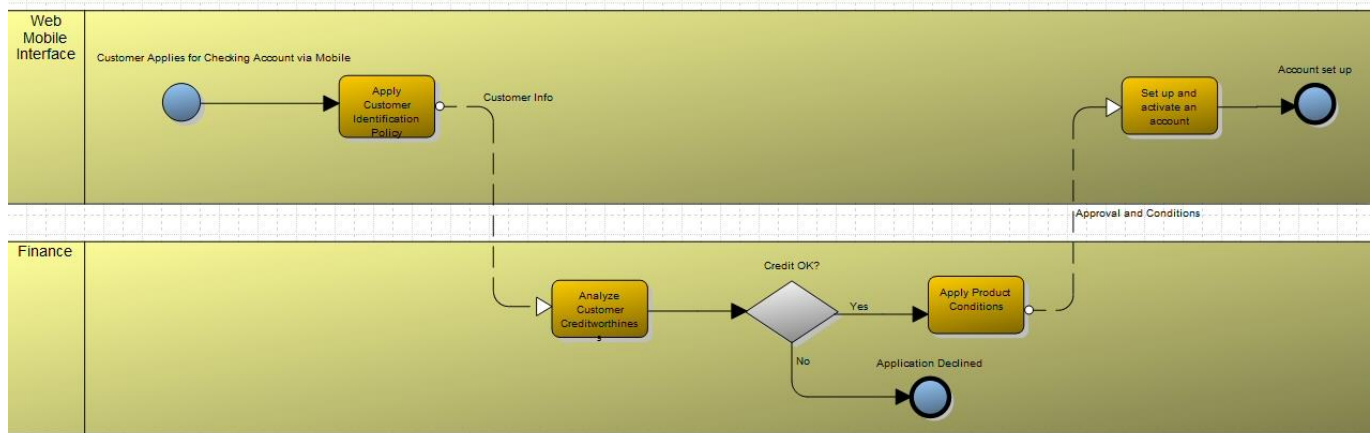
Model a Process Flow with BPMN 2.0 in System Architect

Utilize BPMN 2.0 Interchange to Import Process Flow from Another Tool (IBM BlueWorks Live)



#### 3.3.1 Model a Process Flow with BPMN 2.0

In this section we will create the following BPMN diagram:



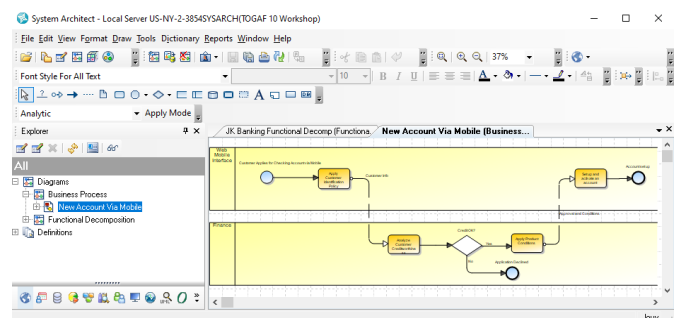
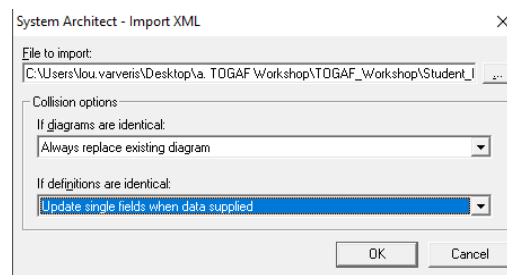
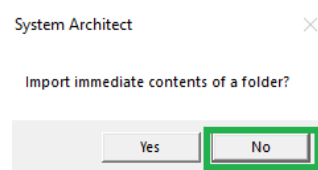
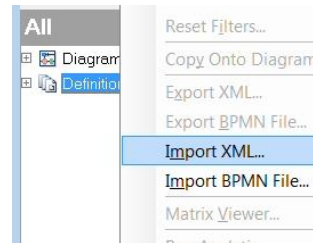
## Option A:

The instructions in Option B are intended to help you **learn drawing** in System Architect. If this lab is being given in 2-hour face-to-face workshop, save time by importing this diagram already drawn per steps of Option A. If you have time – do Option B.



**OPTION:** You have the option of simply importing this BPMN diagram, or manually drawing it as described in the next section.

1. Right-mouse click in the Explorer (browser), and select **Import XML**.
2. For the Import Immediate Contents to a Folder” dialog – select **NO**.
3. Navigate to the **Student\_Files\c. BPMN\_ProcessFlows** folder and select **BPMN\_Diagram\_Drawn\_in\_SA.xml**.
4. For the Collision options choose:
  - Always replace existing diagram**
  - and
  - Update single fields when data supplied.**
5. You will receive a message that says the diagram was imported successfully. Close the dialog, and find and open the diagram in the Explorer tree on the left, under Diagrams, Business Process.



## Option B:

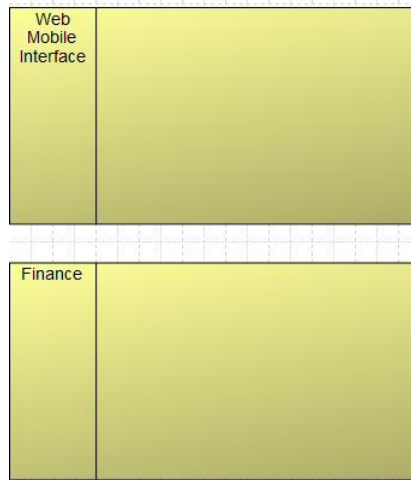
To manually create this diagram:

1. Create a new diagram of type **Business Process**, and name it **New Account Via Mobile**

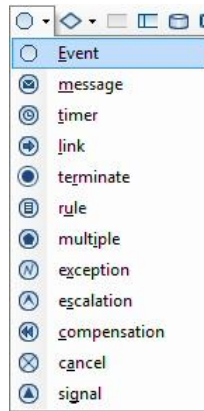
**Note:** by default on a BPMN diagram, lines are set to straight-orthogonal (Format, Symbol Format, Line -- Straight - Orthogonal) and center-to-center routing is turned off (Format, Center-to-Center toggled off).

2. Set Line drawing style -- Format, Diagram Auto Routing, Retain Connections

3. Select the Pool symbol on the Draw toolbar and draw two pools -- **Web Mobile Interface** and **Finance**.



4. Select the Event symbol from the Draw toolbar and draw one on the diagram named **Customer Applies for Checking Account via Mobile**



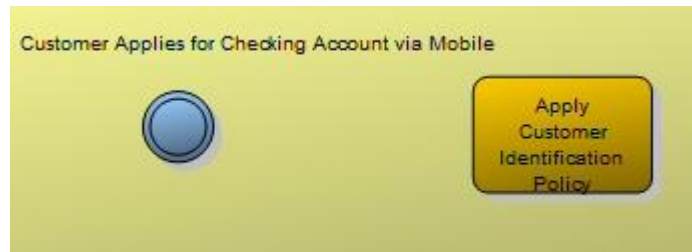
5. Once drawn, change your cursor to the pointer (by selecting it on the Draw toolbar) and then double click on the symbol to open its definition. View the information you can capture about an event, and click **OK**.



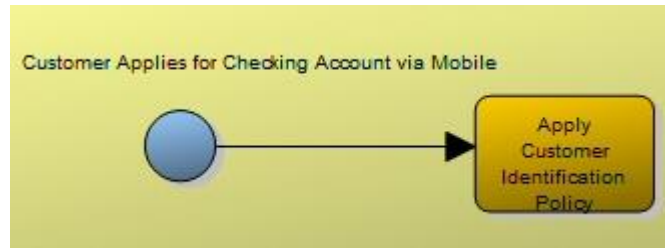
6. Select the Process symbol on the Draw menu and draw a process named **Apply Customer Identification Policy**. The definition dialog should automatically come up after naming it.



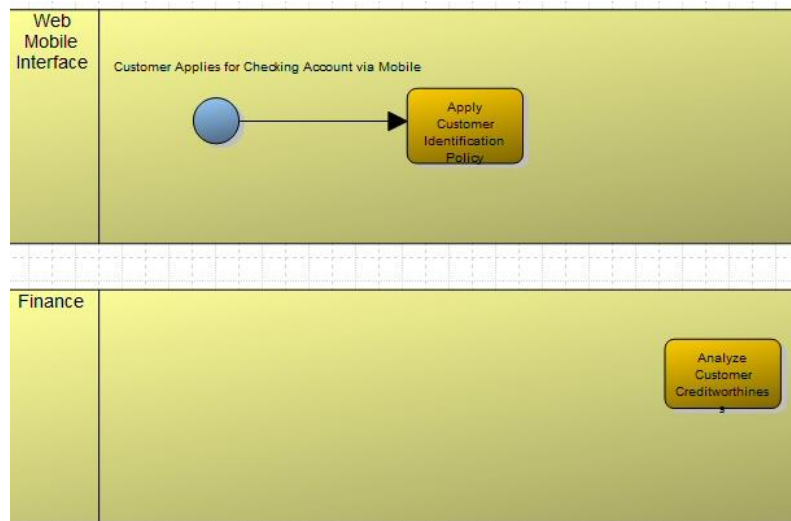
7. Click **OK** to accept the default definition.



8. Select the **Sequence Flow** symbol from the Draw toolbar and draw a line from the event to the process -- the line must be attached on both sides.

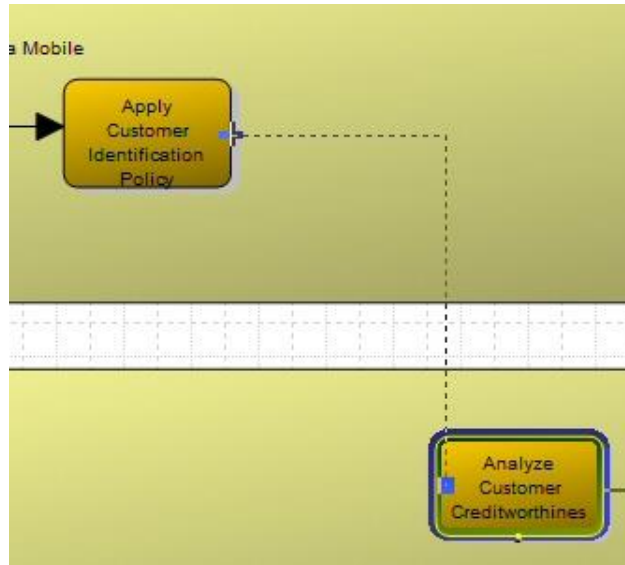


9. Draw a second process on the diagram, in the **Finance** pool, named **Analyze Customer Creditworthiness**.

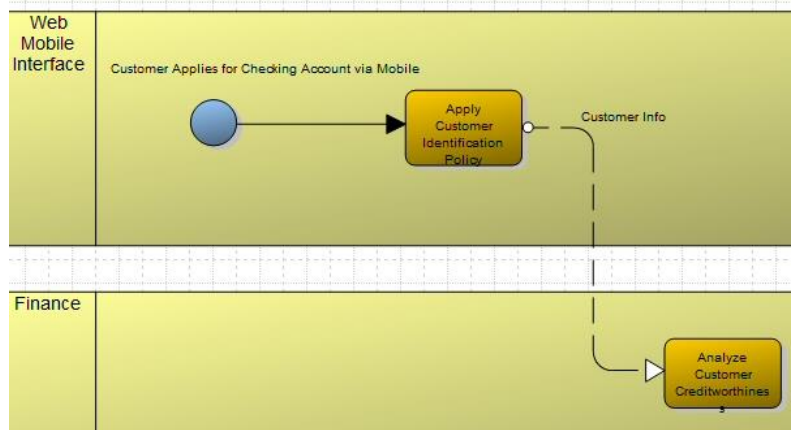


10. Select the Sequence **Flow** symbol from the Draw toolbar and try to draw a line between the two processes. Notice that you are not allowed to -- a ghostbuster symbol prevents you from attaching the Sequence flow line between two processes in different pools.

**Note:** According to BPMN rules, you must use a Message Flow line to model flow between processes of different pools.

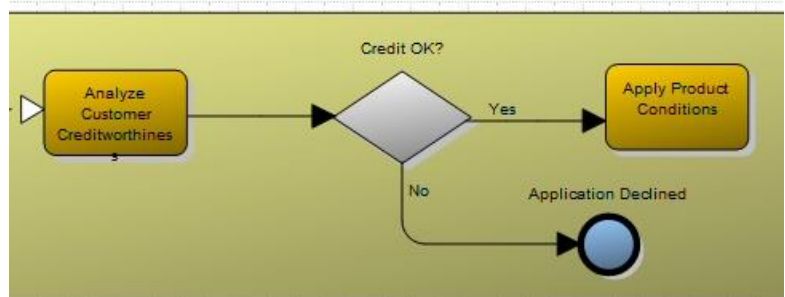


11. Select the Message Flow line and draw a line called **Customer Info** between the two processes.



12. Draw the part of the diagram to the right:

- a gateway symbol named **Credit OK?**
- a process symbol called **Apply Product Conditions**
- an event symbol called **Application Declined**
- a Sequence Flow from the process **Analyze Customer Creditworthiness** to the gateway **Credit Ok?**
- a Sequence Flow from the gateway **Credit Ok?** to the process **Apply Product Conditions**, double click on the

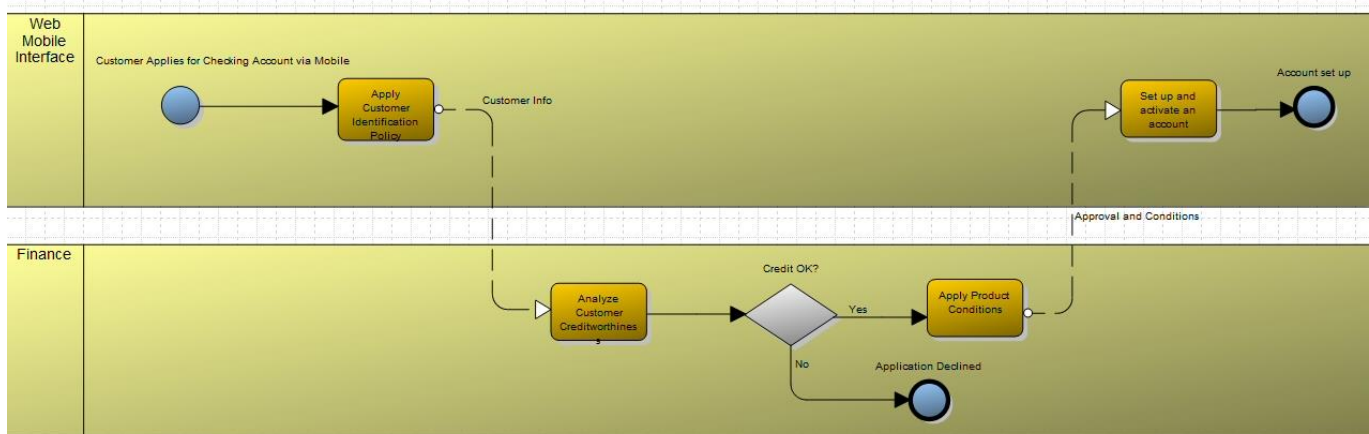
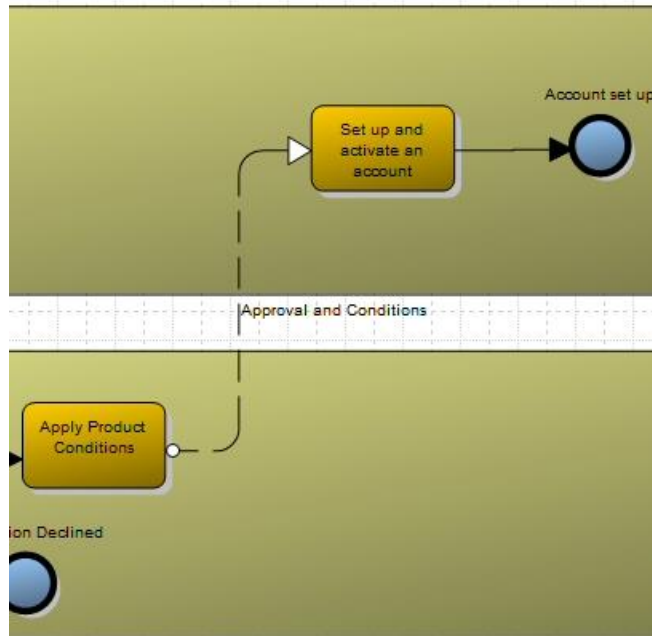


Sequence Flow and name it **Yes** (overtyping the default Sequence\_Flow\_1)

- f) a Sequence Flow from the gateway **Credit Ok?** to the event **Application Declined**, double click on the Sequence Flow and name it **No** (overtyping the default Sequence\_Flow\_2)

13. Continue drawing the BPMN diagram as shown to the right and below.

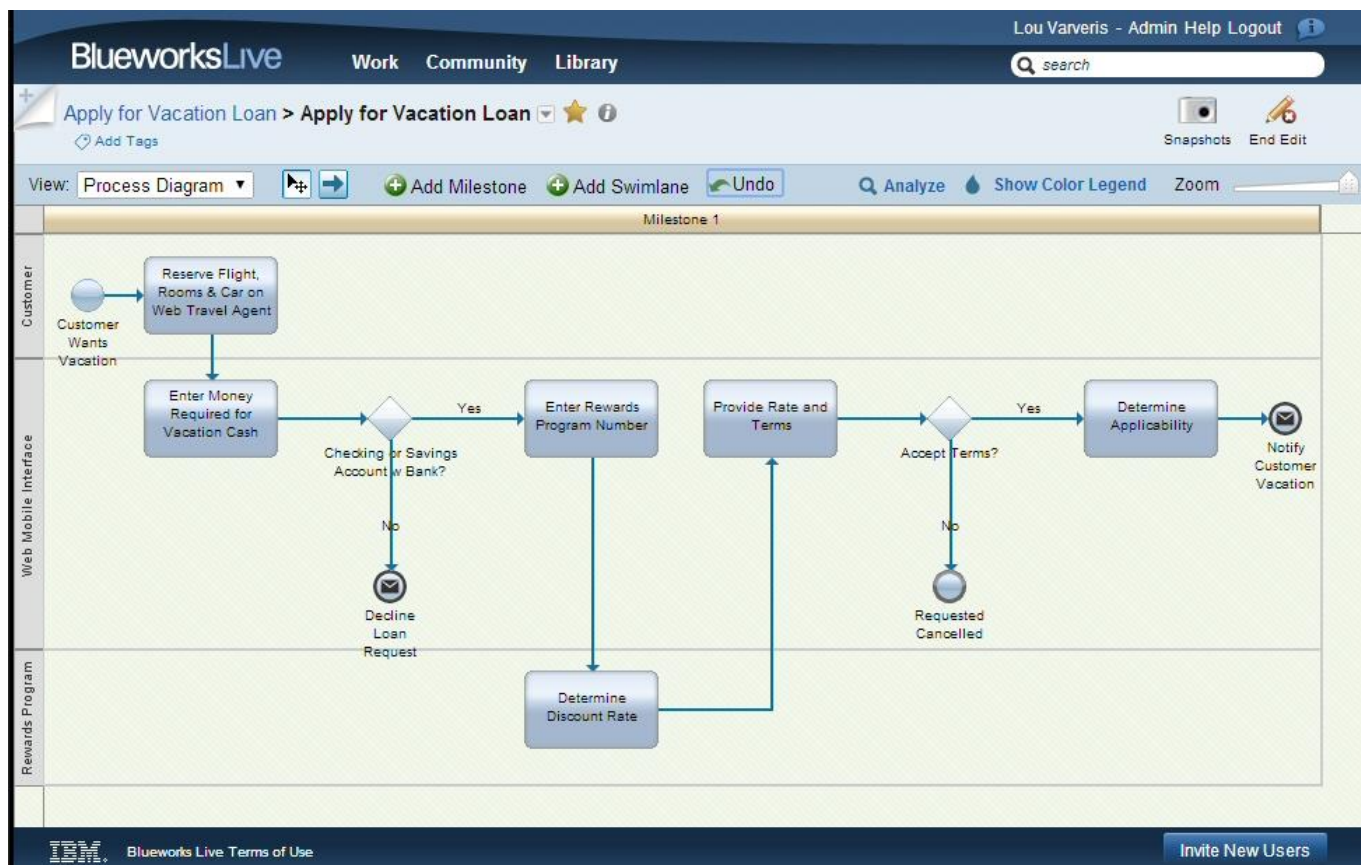
14. Save the diagram.



### 3.3.2 Utilize BPMN 2.0 Interchange to Import Process Flow from Another Tool

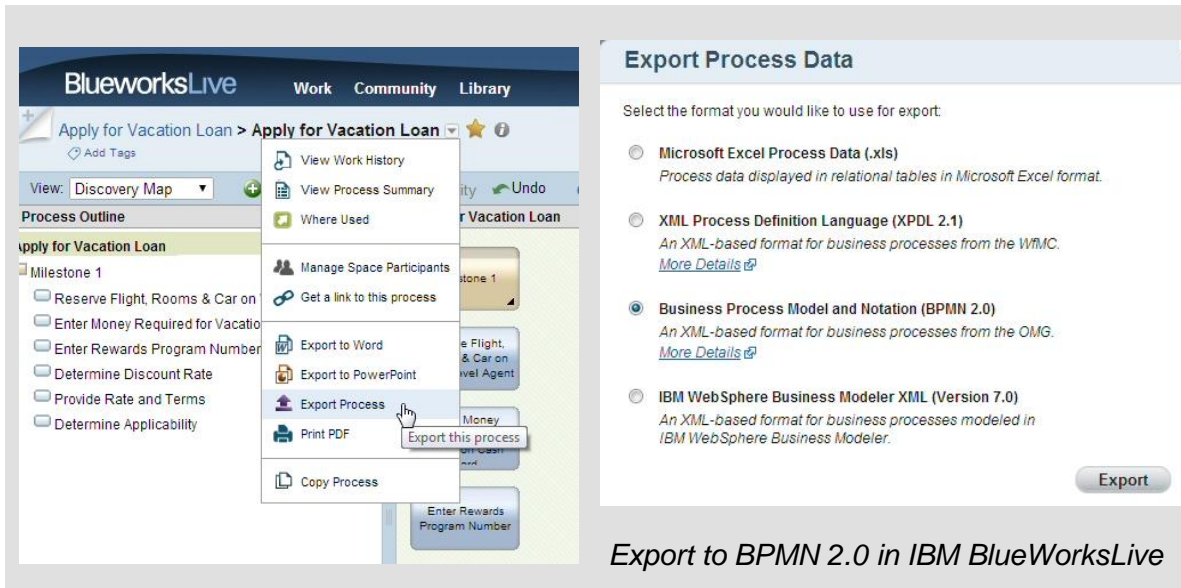
There are many tools on the market that support BPMN 2.0. The BPMN 2.0 specification also specifies an interchange format -- known as BPMN 2.0 interchange. BPMN process flows can be exchanged between tools supporting the interchange spec.

For this workshop, we are providing an XML file of BPMN 2.0 interchange produced by IBM BlueWorks Live. BPMN 2.0 interchange files are always produced in an XML file wrapped in a .zip file. For this workshop, a .zip file is provided that was generated from the following diagram in IBM BlueWorks Live:



The diagram above was generated to BPMN 2.0 interchange file by selecting Export Process in IBM BlueWorks Live, shown on left-hand side of graphic below.

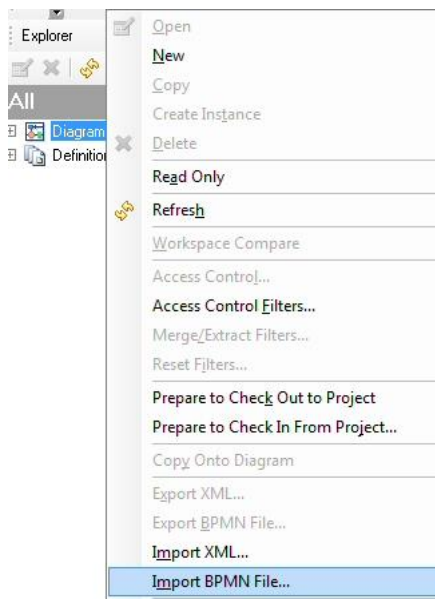




### IMPORT INTO REPOSITORY

In IBM BlueWorks Live, you can export to BPMN 2.0, XPDL 2.1, or other interchange formats, as shown below. We choose BPMN 2.0, as shown in the graphic above right.

1. In System Architect, select Diagrams (or Definitions it doesn't matter), right-mouse click, and choose Import BPMN 2.0.



2. Select the provided file, **Apply for Vacation Loan.zip** in the directory  
 ..\Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\c. BPMN\_ProcessFlows

3. For the Collision options choose:

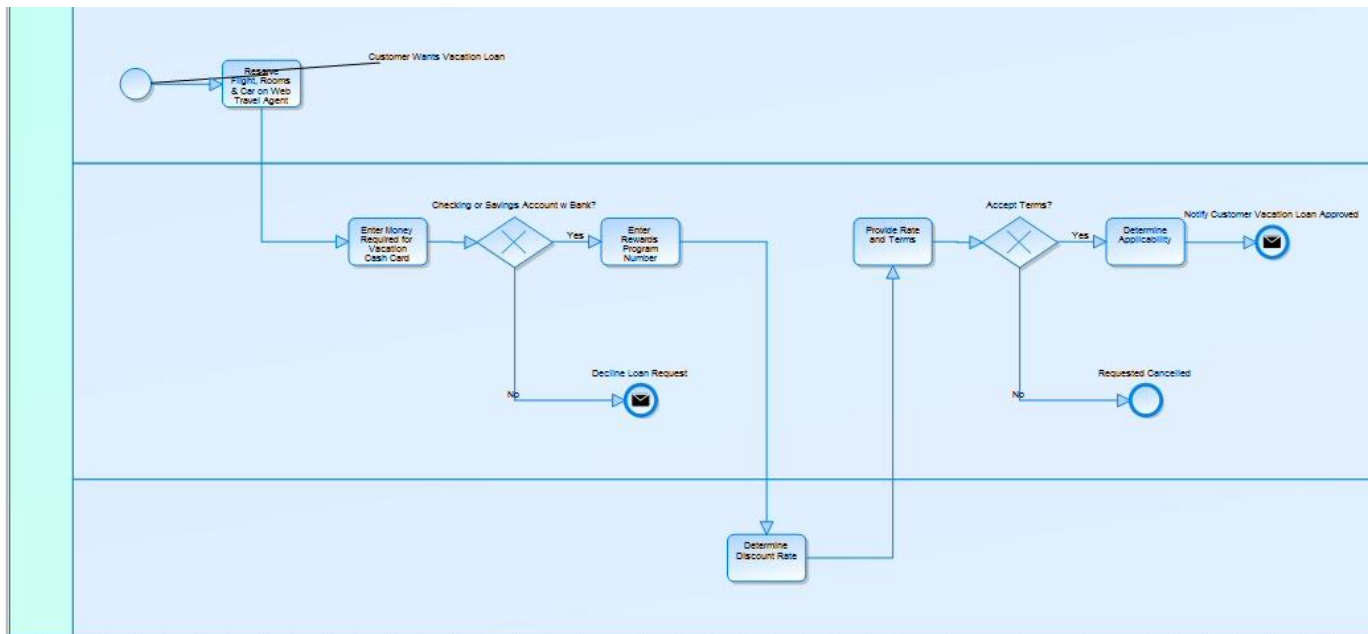
**Always replace existing diagram**

and

**Update single fields when data supplied.**

4. Click OK. The diagram from BlueWorks Live is imported. Even position information of symbols is retained.

5. Find the Apply for Vacation Loans diagram under Business Process diagrams and open it. Zoom in on the main part of the diagram to view it.



### 3.4 Link Processes with Functions they Orchestrate

#### Objectives of this Section:

- Create parent-child diagram links from Functions to the BPMN diagrams that show orchestration

As discussed in the previous lab:

- a Function is something that an organization does to deliver a business capability;
- a business process describes a flow of execution that enables a function.
- A function does not change often, whereas a business process might -- for example, an organization performs the function of Marketing. How marketing is performed is a process

or sets of processes that will change from time to time due to introduction of new technologies, organizational re-orgs, etc.

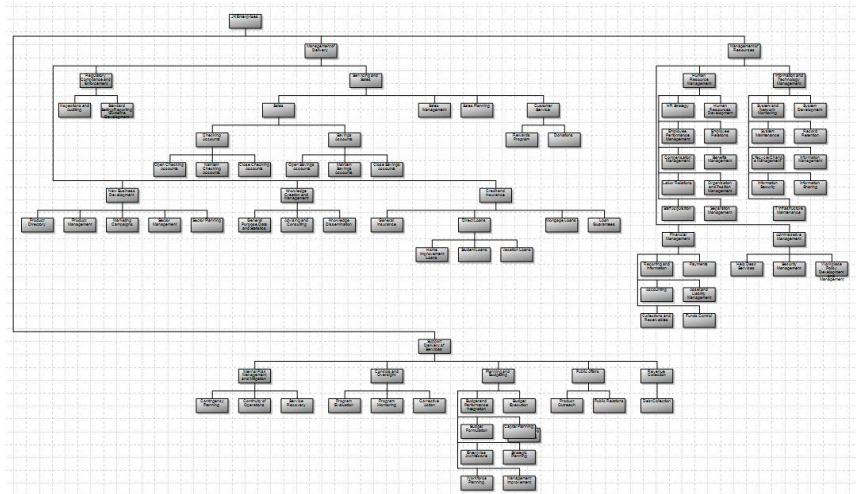
In the EA, we link Functions to the high-level Processes that enable them. Processes themselves may be decomposed, into lower-level processes. creating a hierarchy of processes.

Most importantly -- a Process may belong to many parent Functions. Some processes are cross organizational, and enable multiple Functions during their orchestration.

### 3.4.1 Create Parent-Child Link Between Function and BPMN Diagram

In this section we will create parent-child links from functions to BPMN diagrams. This is just an aid for navigation. To relate the functions to the process definitions on that diagram, you'd need to go the extra step of relating them in a matrix or in the respective definition of a process or function.

1. Reopen or return to the Functional Decomposition diagram we created, **JK Banking Functional Hierarchy**.



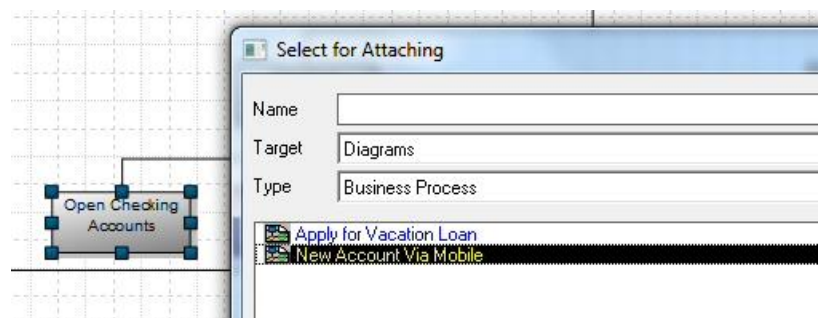
2. Select Edit, Find Symbols or click the binoculars tool on the top menu, and type in the name of the function **Open Checking Accounts** to find it.



3. Click the **Find** button to locate the function on the diagram.

4. Right-mouse click on the function **Open Checking Accounts** and select **Attach Child Diagram**.

5. Select Type as Business Process to filter the list, and select the Business Process diagram **New Account Via Mobile**. Click Attach.



6. Click **Yes** when asked **Do you want to save changes to the diagram?**

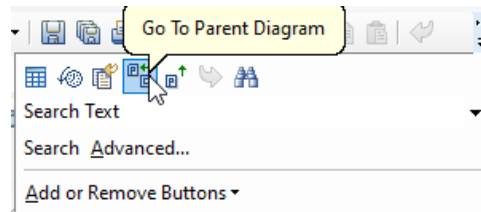
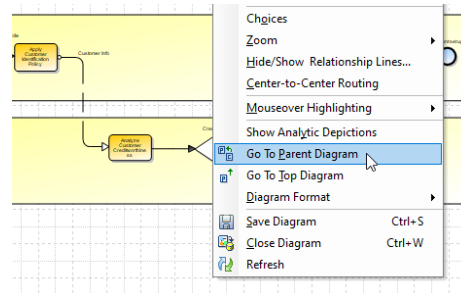
You must click **Yes** to save changes to the diagram -- to click No would be like saying you don't want to attach a child.

7. On the child diagram (which is the BPMN diagram we created earlier), select **Edit, Go to Diagram, Go to Parent Diagram,**

Alternate methods:

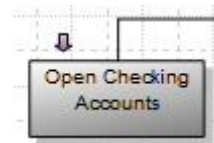
Right-mouse click in the diagram workspace and select Go to Parent Diagram, or

Find and click on the Go to Parent button on the top menu, under the scissors button.



Note that a diagram could have many parents; if it did, you'd get a list of diagrams to choose.

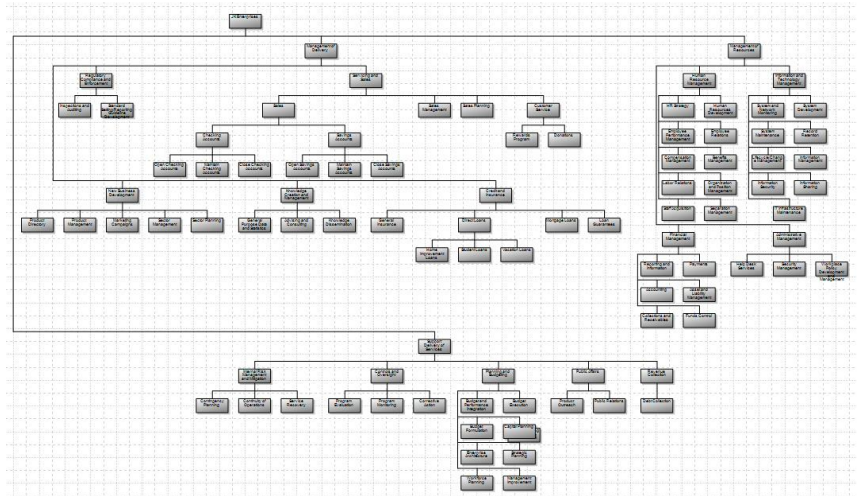
8. Note that on the Functional Decomposition diagram, the function **Open Checking Accounts** now has a symbol annotation above -- a downward facing arrow -- it to show it is decomposed by a child diagram.



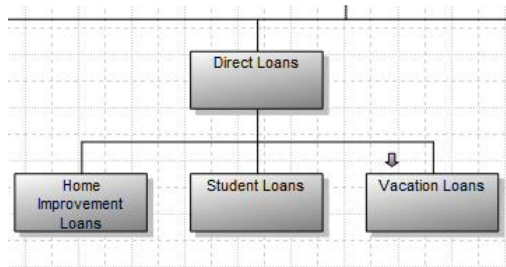
### 3.4.2 Create Another Parent-Child Link Between Function and BPMN Diagram

In this section we hook up the other BPMN diagram to a function via a parent/child link.

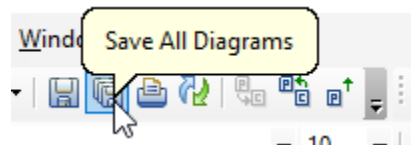
1. Reopen or return to the Functional Decomposition diagram we created, **JK Banking Functional Hierarchy**.



2. Repeat the steps of the above section to find and connect the function **Vacation Loans** to the Business Process diagram **Apply for Vacation Loan**.



3. Save all diagrams by selecting **File, Save All Diagrams** or clicking the **Save All Diagrams** button on the top menu.



#### What did you just learn?

You just learned how to create parent-child diagram links to enable easy navigation of relevant concepts in the architecture.



Please wait for the next lecture before proceeding to the next lab.

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## **Lab 4 Phase B: Business Service Layer**

### **Goals of this Lab:**

- Establish Business Service Layer
- Understand usage of US Federal Enterprise Architecture (FEA) Reference Model Service Reference Model (SRM)
- Add a Business Service to the architecture
- Tie Certain Functions to Business Services

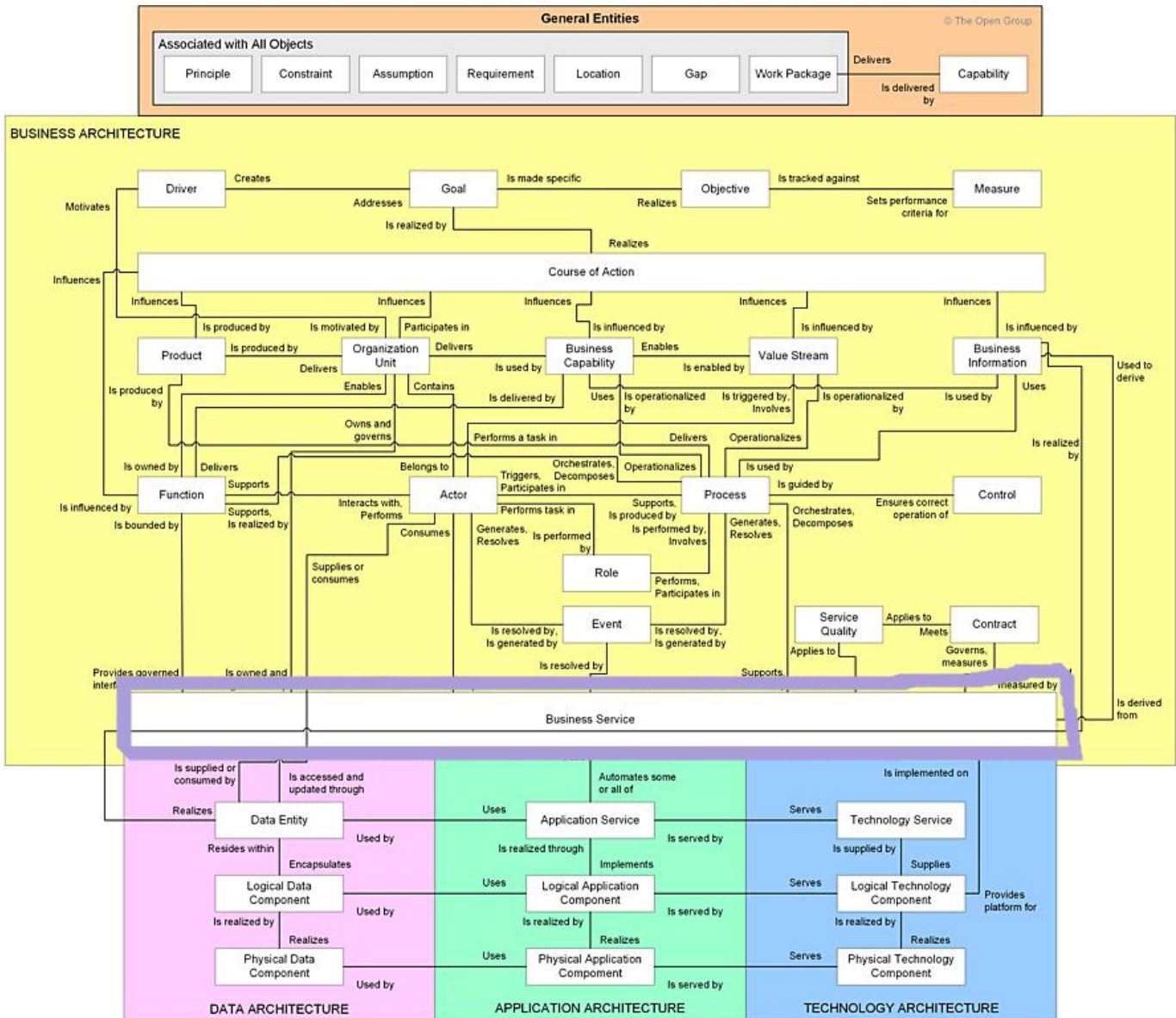
### **4.1 Jumpstart the EA Effort by Importing the SRM**

#### **Objectives of this Section:**

- Establish Business Service Layer
- Jump start the EA by importing the FEA Service Reference Model (SRM)

#### **4.1.1 Examine the TOGAF 10 Metamodel for Business Services**

1. Examine the TOGAF 10 metamodel for Business Services -- highlighted in purple crayon below:



2. Note that a Business Service can be **manual or automated**. It:

- provides governed interface to access Functions
- supports business Processes
- is implemented by an Application Service -- a fully automated service, and is implemented on a Logical Technology Component (examples: Server, Cloud, etc).

**Note:** in practical architectures, the EA team decides which parts of the TOGAF metamodel they will implement. Sometimes Business Services are used, linked directly to Physical Application Components - - and the Application Service and Logical Application layers are not used. Sometimes Business Services are indirectly related to Physical Apps, and the Logical Application layer is used to categorize Physical Application Components.

### 4.1.2 Import Service Reference Model (SRM)



#### IMPORT INTO REPOSITORY

1. Right mouse click in empty space of the Explorer browser and select Import XML.
2. For File to Import, choose the **SRM.XML** file in the **UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\d.SRM** folder.
3. For the Collision options choose:

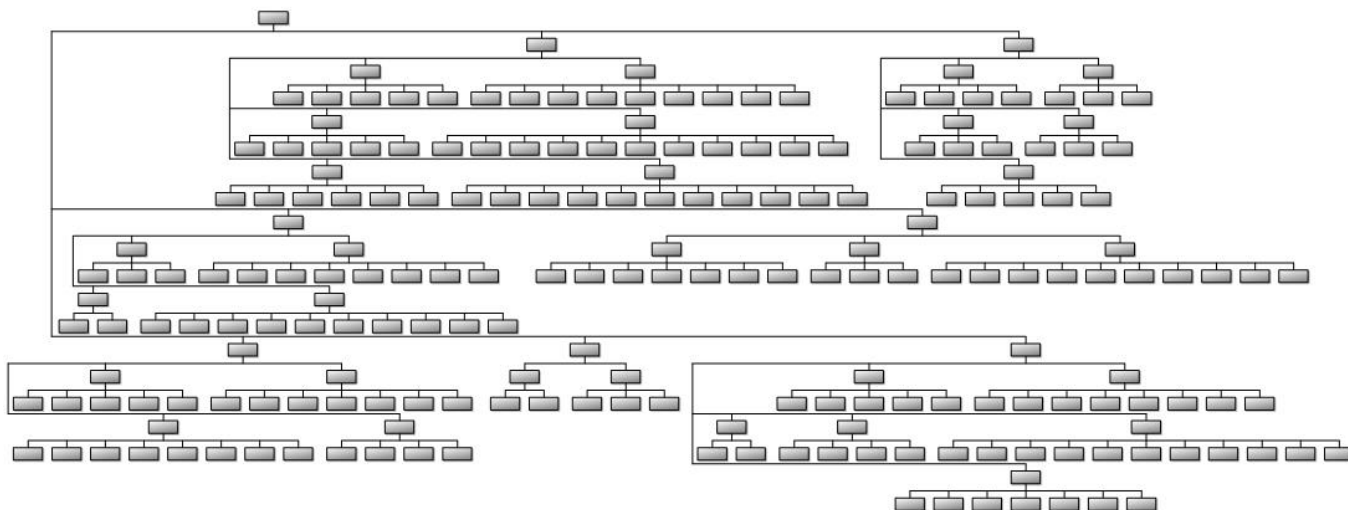
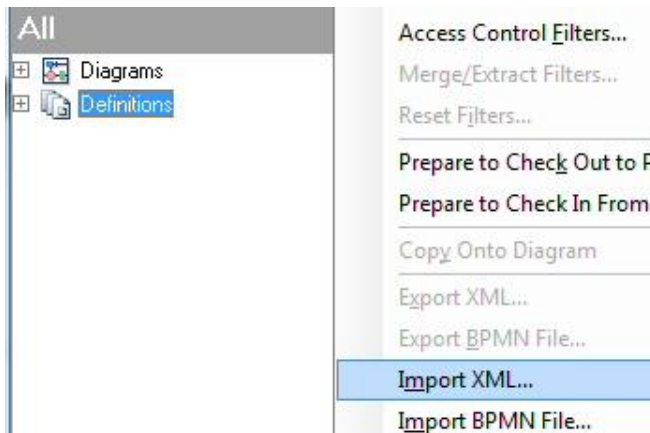
**Always replace existing diagram**

and

**Update single fields when data supplied.**

4. Click OK to import the Services Reference Model.

5. In the Explorer tree on the left, find and open the new Business Service Hierarchy diagram that has been added to the encyclopedia.





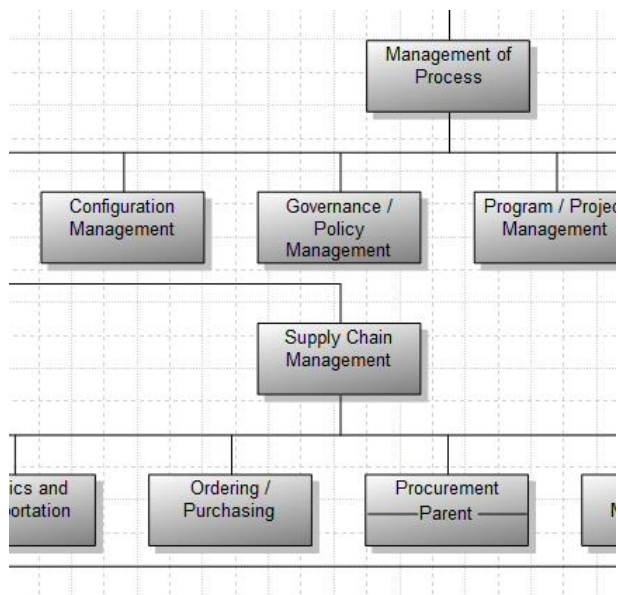
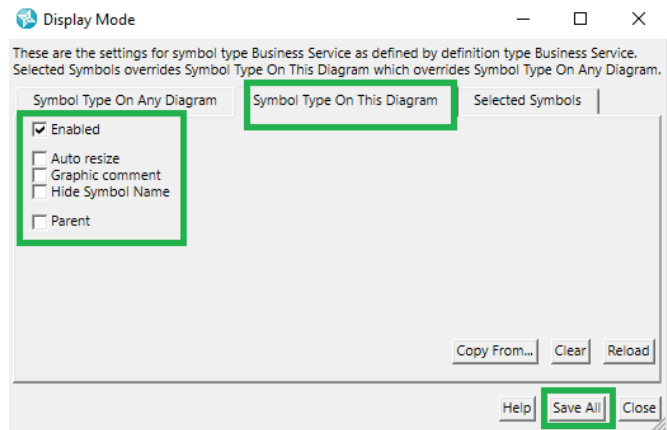
6. Right-mouse click on a service on the diagram – any service – and select Display Mode from the popup menu.

7. In the Display Mode dialog, select the middle tab (Symbol Type On This Diagram) and toggle on Enabled, leaving all the choices below it unselected. Click Save All and close the dialog by clicking the X in the upper right-hand corner.

8. Briefly examine the SRM:


- It contains a taxonomy of all of the services performed by all agencies of the United States government, as specified by the US Office of Management and Budget (OMB).
- Agencies must show that any system they wish funded support a service in the SRM.
- The commercial industry has adopted the SRM as a guide to what their business is doing/should be doing.

**Note:** the metamodel of the SRM we are importing has been modified from the SRM provided by the US government. In this metamodel, the decomposition property of the Service definition has been utilized to provide the hierarchy of services. In the US government's SRM, the metamodel starts with highest level Service Domain, then breaks down into Service Type, and then Service Component (lowest level). The SA FEA Reference model add-in allows you to import that SRM (provided by the US government via an xml file on [whitehouse.gov](http://whitehouse.gov)), align your architecture with it, and produce reports mandated by the OMB.



**Best Practice:** After importing the SRM, the Enterprise Architect can delete Business Services not used in the organization, and add Business Services that are used. The SRM is used to jump start the EA effort.

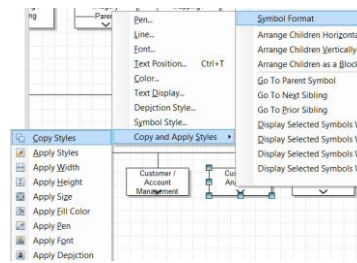
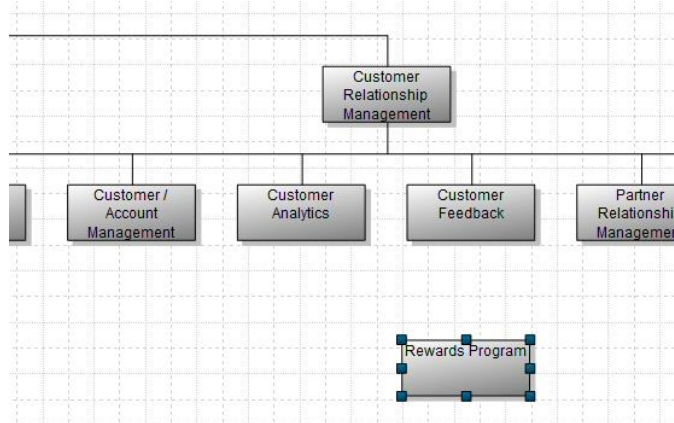
### 4.1.3 Add a Business Service to the Architecture

1. Use the Find Symbol  binocular button at the top of the menu (or Edit, Find Symbols) and type in **Customer Relationship Management** to find this particular Business Service.

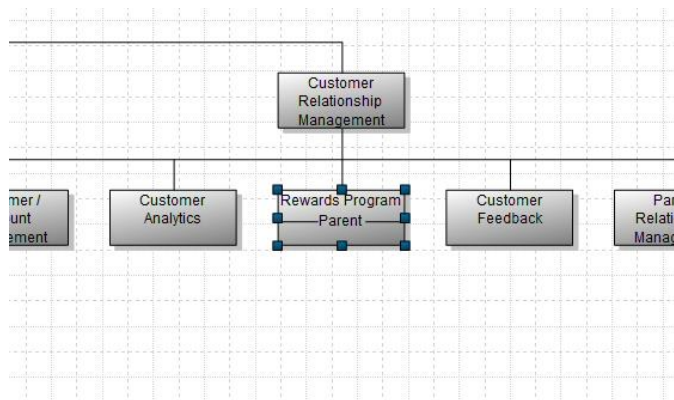
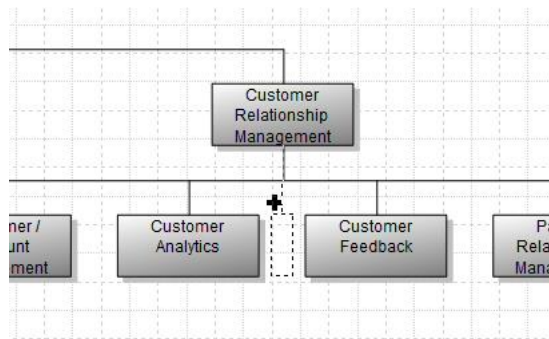
2. Zoom into the area, and add a new Business Service to the model, named **Rewards Program**

3. Note: the service is represented by an icon – you can leave it as is (especially in the 2-hour version of this lab). To optionally change it to a rectangle, there are several ways – here’s one:

- right-mouse click on any existing service on the diagram, and choose **Symbol Format, Copy and Apply Styles, Copy Styles**. Then select the Rewards Program service and select **Symbol Format, Copy and Apply Styles, Apply Styles**.



4. Add **Rewards Program** as a child service to **Customer Relationship Management**, by moving it underneath the parent service until it auto-connects.



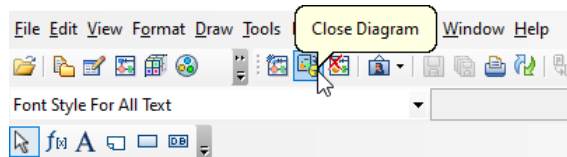
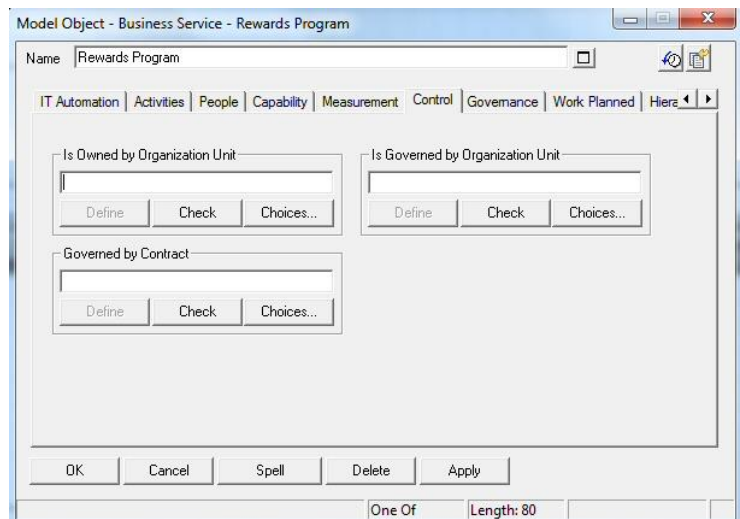
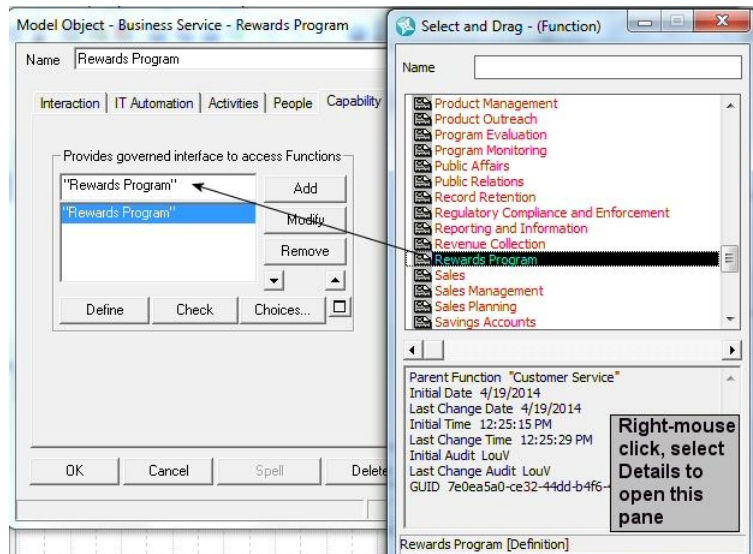
5. Open the definition of the Rewards Program business service.

6. On the **Capability** tab, click on Choices and drag-and-drop in the Function named **Rewards Program**.

7. Before clicking OK to close the definition -- optionally tour the other tabs -- notice, they reflect relationships of the TOGAF metamodel – for example:

- on its **Control** tab, you can specify the organization that owns, and that governs the business service, and the contract it is governed by
- on its **Capability** tab, you can specify what **Functions** it provides a governed interface to
- on its **Activities** tab, you can specify what business processes the Service realizes or orchestrates
- on its **IT Automation** tab, you can specify lower-level Application Services, Applications, and Technologies that implement the Business Service
- on its **Interaction** tab, you can specify how it interacts with other Business Services
- on its **Information** tab, you can specify data it consumes & provides

8. Close and save the diagram – you can select **File, Close Diagram** (and click Yes to Save), click the 'x' in the upper right corner of the diagram, or find and click the Close Diagram button at the top of the menu structure.



### **EA Work – Establishing a Business Service Layer**

A business service layer enables flexibility in the architecture. You can establish the services that the organization 'gets satisfied' by internally built applications and systems, externally purchased off-the-shelf applications, which are hosted on internal or external environments including cloud environments.

It is your work, as an Enterprise Architect, to align Business Services to the Functions and/or Processes they enable, the Organizations that control them, and the Applications, Technologies, and/or Application Services that enable them. Because of the time limitations of this lab, we established some relationships already in the functions.csv spreadsheet you imported.

## Lab 5 Phase C: Information Systems Architecture

### Goals of this Lab:

- Visualize Physical Applications in the Organization
- Understand interfaces between Physical Applications

### 5.1 Visualize the Physical Applications in the Organization

#### Objectives of this Section:

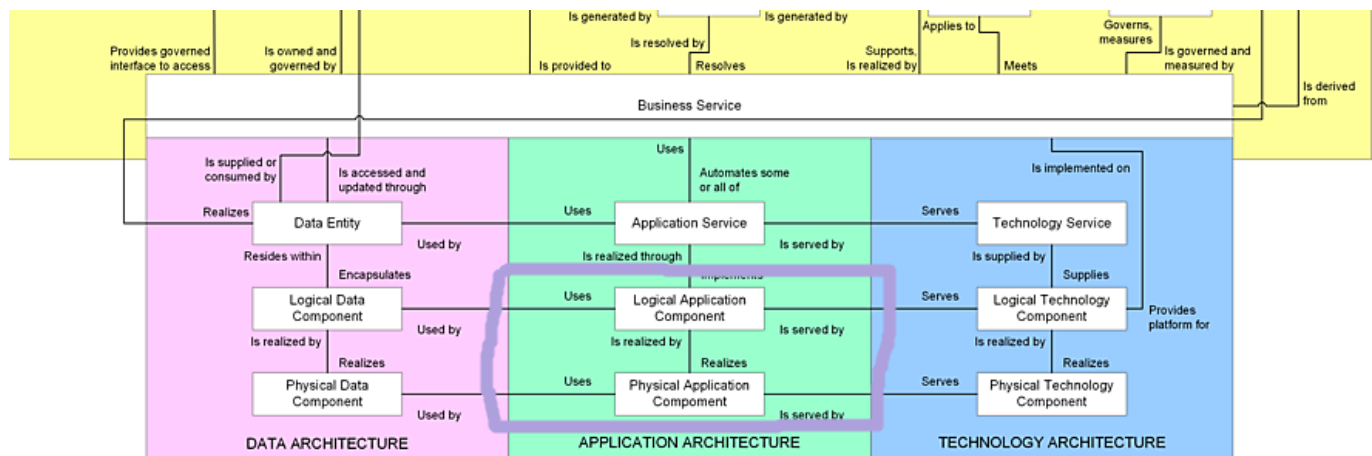
- Understand TOGAF 10 Metamodel for Applications
- Import Spreadsheet of Applications
- Visualize the Spreadsheet Information within the EA

The EA team has queried the IT department and gotten a spreadsheet of the list of Applications in the organization. In TOGAF 10, an actual application is categorized as an Application Component of type Physical.

The enterprise architect assigned to the job modifies the headings of the spreadsheet to match the property set for Application Components of type Physical so it can be ingested into System Architect.

#### 5.1.1 Examine the TOGAF 10 Metamodel for Applications

1. Examine the TOGAF 10 metamodel in the area of Applications -- highlighted in purple crayon below:




2. Note that a Business Service (which can be manual or automated) is implemented by an Application Service, is implemented by a Logical Application Component, is realized by a Physical Application Component.

In System Architect, there is one definition -- Application Component -- which has a stereotype property called "Is Physical" that tracks whether an Application Component is Logical or Physical. We'll take a look at that in the next section.

3. Note that a Business Service is implemented by a Logical Technology Component which is realized by a Physical Technology Component.

### 5.1.2 Import Spreadsheet of Applications

The enterprise architecture team has acquired from the IT team a spreadsheet that lists the applications of the business.

	<p>Note that often times, the EA team may harvest this kind of information in other forms -- such as an application map diagrams developed in something like Microsoft Visio. If that were the case, the EA team would use the System Architect-Microsoft Visio Mapper tool (available on the <a href="#">UNICOM Customer Portal</a>) to automatically map the applications and their interfaces into System Architect. For this workshop, we'll import a spreadsheet.</p>
---	--



#### IMPORT TO REPOSITORY

1. Select **Dictionary, Import Definitions.**

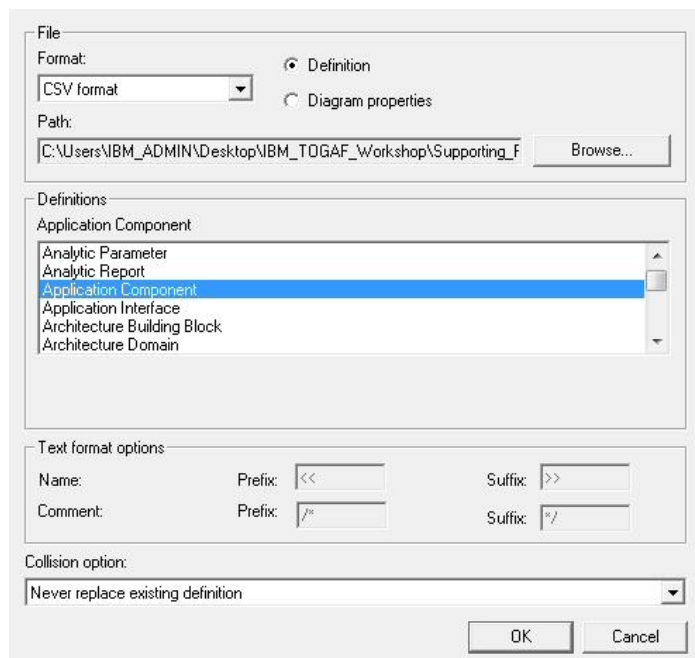
2. Select Browse, and choose to import the **PhysicalApplications.csv** file in the Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\le. PhysicalAppSpreadsheet folder.

3. Select to map to the Definitions type **Application Component.**

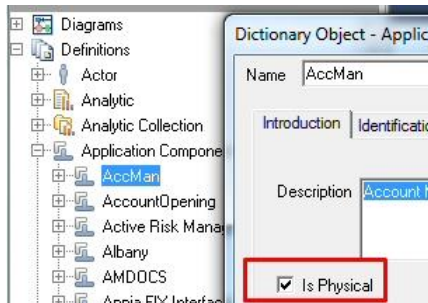
4. Accept default collision options and click OK to import the spreadsheet of Applications. Wait for the applications to import – watch the bottom of the screen to view completion status. It should take a full minute.

5. Close the dialog that pops up telling you the status of the Applications imported – click on the window's shell first and then the 'x' in the upper right-hand corner.

6. In the Explorer (Browser), expand Definitions, and then expand **Application Components.** The Applications that you imported are listed.



7. Double-click on one of the Applications. Note that on the Introduction tab, the **Is Physical** property is toggled on.



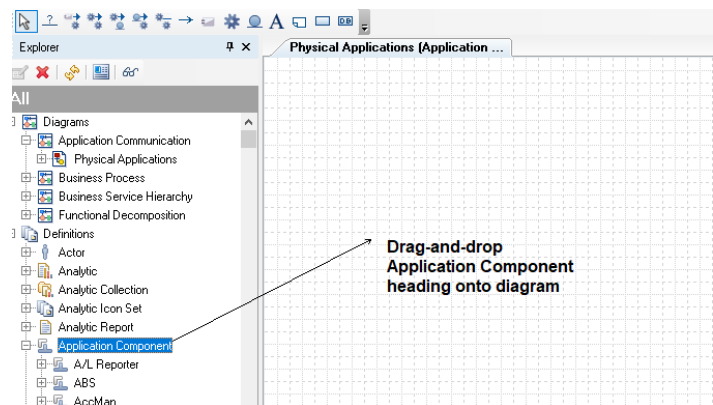
Name	Description	Stereotype	Is Physical
AccMan	Account Management app	Application Component Depiction T	T
AccountOpening		Application Component Depiction T	T
Active Risk Manager	Pro Active and Pre-Emptive C	Application Component Depiction T	T
Albany		Application Component Depiction T	T
AMDOCS	Leading provider of Business	Application Component Depiction T	T

If you opened the Excel spreadsheet (view picture above right), you would see that there is a column called "**Is Physical**" with a value of **T** (true) for each Application. The Enterprise Architect added this column to the spreadsheet of apps provided by IT. In addition, the name of the column that lists the app names was changed to "**Name**" -- to import a list of definitions into System Architect, the column name must be "**Name**".

### 5.1.3 Visualize Physical Application Interfaces with TOGAF-Specified Diagram

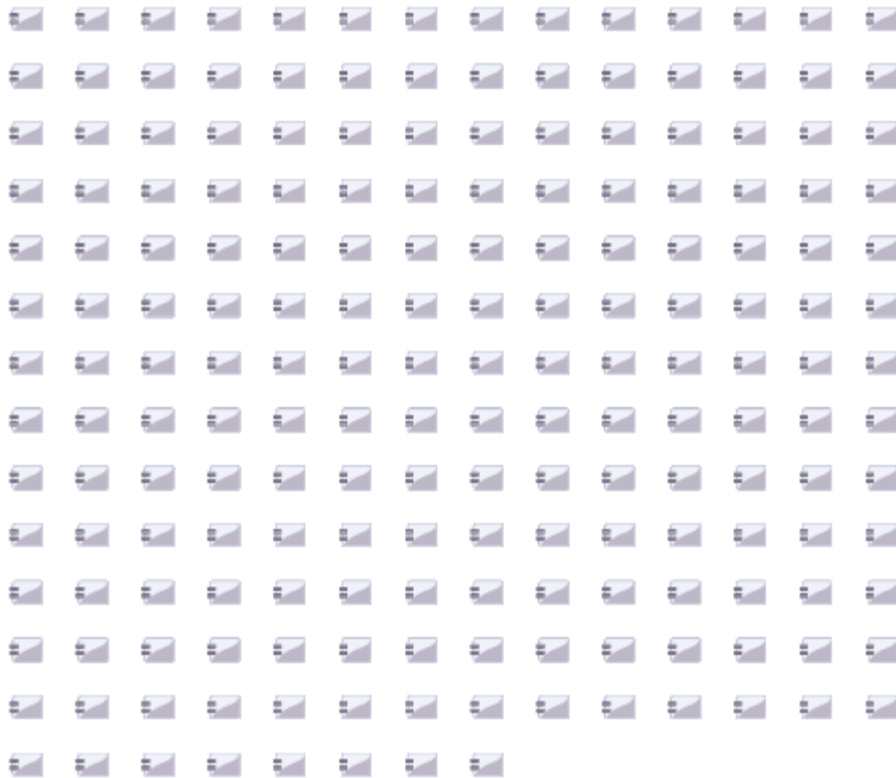
Let's use a TOGAF 10 diagram to visualize the Applications imported and then show their interfaces.

1. Create a new diagram of type **Application Communication**, named **Physical Applications**
2. From the Explorer (Browser), expand Definitions, and find and select the **Application Component** group -- drag the Application Component heading onto the diagram. All Applications in the repository are drawn on the diagram.
3. Click **Yes** to the message "You are about to attempt to drop X symbols on the diagram. OK to continue?"



The applications appear on the diagram. If you mouse over an app, its name will pop up.

Physical Applications (Application ...)



### EA Work

It is the Enterprise Architect's work to establish what Applications have interfaces to other Applications. In our workshop, we'll import a csv file of Application Interfaces already specified.



### IMPORT INTO REPOSITORY

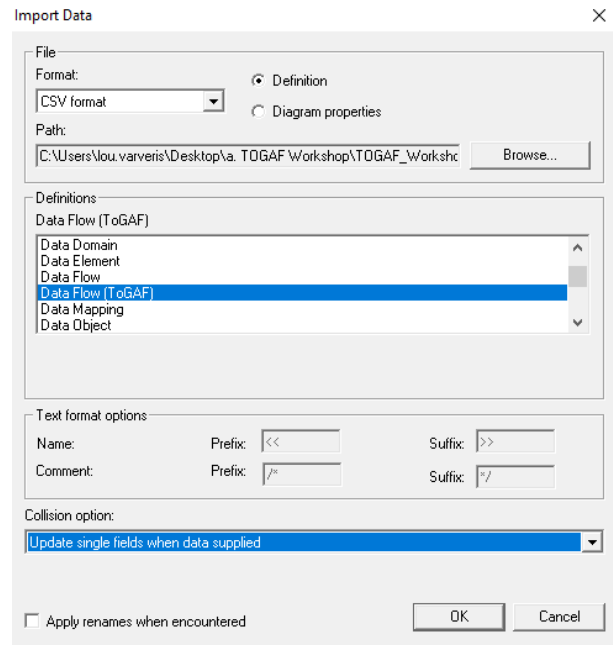
1. Select **Dictionary, Import CSV**.
2. Select Browse, and choose to import the **DataFlowTOGAF.csv** file in the Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\le. PhysicalAppSpreadsheet folder.
3. Select to map to the Definitions type **Data Flow (ToGAF)**.
4. Select the collision **option Update single**



### fields when data supplied,

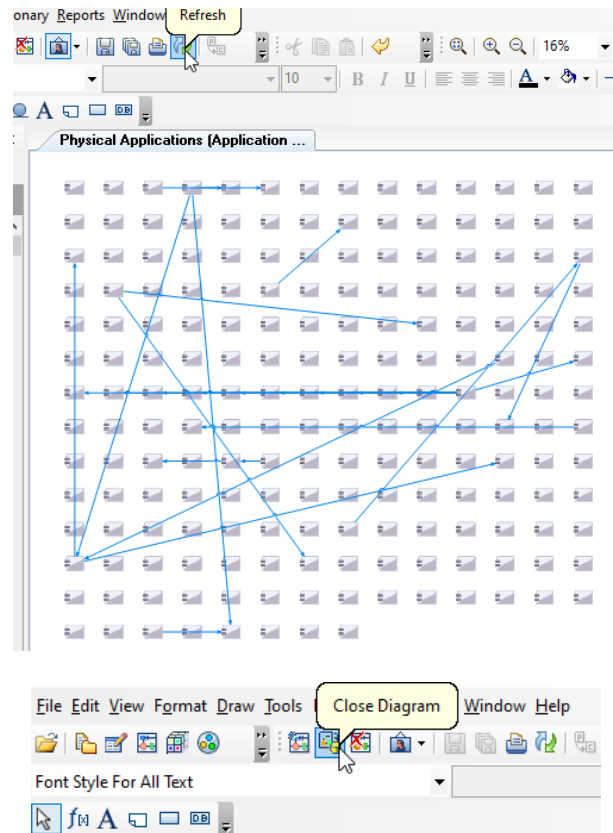
5. Click OK to import the spreadsheet of Application Interfaces.

6. Select Format, Symbol Format, Line, and select **Straight – Any Orientation**. Click OK to close the dialog.



7. Click the **Refresh** button to view the Application Interfaces – which are the Data Flow (TOGAF) relationships that were just imported.

8. Close and save the diagram – you can select **File, Close Diagram** (and click Yes to Save), click the 'x' in the upper right corner of the diagram, or find and click the Close Diagram button at the top of the menu structure.



The Data Flow (TOGAF) relationship is an example of an **explicit** relationship – it carries information while relating Application Component definitions – sometimes called their *interface*. The Data Flow (TOGAF) definition has a property set within which you specify information about the interface.

### Different Types of Relationships

There are three types of relationships as far as data centrality is concerned:

- Implicit Relationships -- a simple reference; one thing has a list of another thing, and vice versa.
- Explicit Relationships -- the relationship is a definition in of itself, which captures information about the relationship. Think of a relationship between a Process and an Entity, where at the intersection you are capturing if the Process creates, reads, updates, and/or deletes the entity (a CRUD matrix). That info is captured in the relationship itself -- a definition type called Entity/Process.
- Inferred Relationships -- provided via navigation of several definitions -- if X is related to Y is related to Z, then X is related to Z. This is the output of a report, that in System Architect can be visualized on the diagram (especially on an Explorer diagram but also on most diagram types).

These three types of relationships are separate in concept from other lower-level 'types' of relationship, such as Contains, Uses, Is Performed By, etc etc



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## Lab 6 Phase C: Application Portfolio Management

### Goals of this Lab:

Understand Application Portfolio Analysis and Its Impact on EA  
Understand TOGAF 10 Metamodel for Logical Apps vs Physical Apps

### 6.1 Create Groupings of Logical Applications

#### Objectives of this Section:

- Understand Use of Logical Applications
- Import Spreadsheet of Logical Applications
- Visualize the Spreadsheet of Logical Apps vs Physical Apps
- Align Functions with Applications

#### 6.1.1 Understand Use of Logical Applications

Some Enterprise Architects introduce a Logical Application layer into their architecture. Although it introduces a layer of complexity into the architecture, there are advantages to it.

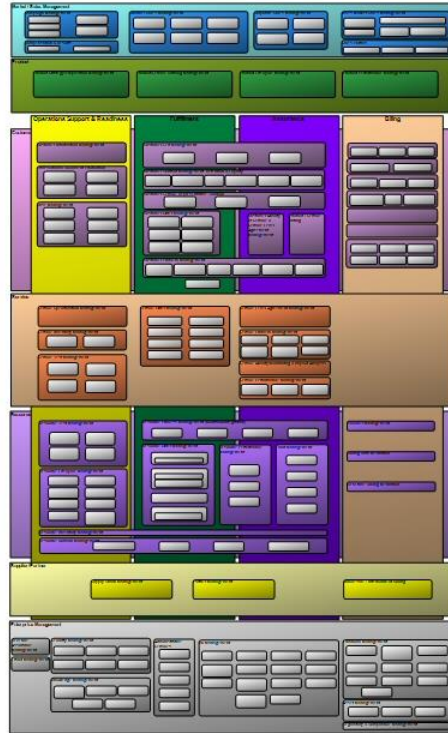
- Oftentimes the name of a physical application means nothing to you or the business user. It is helpful in understanding the architecture to know the role of a physical application.
- Categorizing physical applications by logical application type enables you to quickly see where you have redundancies -- for example, three billing applications, etc.
- There are many ways to build a logical application layer into your architecture. One popular framework is the Telecom Application Mapping (TAM) of the TMForum's Framework. The TMForum Framework provides three frameworks:
- Telecom Application Mapping (TAM): The TAM provides a taxonomy and grouping of logical application components that support Telecom and media company operational and business support systems.
- Shared Information/Data (SID): A taxonomy of data (entities or classes) with data model patterns.
- Enhanced Telecom Operations Mapping (eTOM): a taxonomy of business processes with BPMN process flow patterns for the Telecom industry.

The TAM is not ideal for our Banking architecture, but we'll import it and use some of it as a guide to establish our logical application layer. We would then remove parts of it not applicable to our bank, and add logical Application Components we need.



### IMPORT INTO REPOSITORY

1. Right-mouse click on an empty space in the Explorer (browser), select **Import XML** and import the **TAM\_12.5.xml** file in the Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\g. TAM directory. (Select NO to the message, "Import Immediate Contents of a Folder?", and leave all collision options at their default).
2. Notice that a new Explorer diagram is added to the repository -- open the **Explorer** diagram named **TAM**.
3. Zoom in and examine the TAM framework. Notice how Logical Applications are grouped by business areas of a company, and at the same time by operations areas of a company.




### 6.1.2 EA Work

The work of the Enterprise Architect is to categorize Physical Applications by Logical Application grouping, and to map Logical Applications to Functions or Business Services. We'll cheat in our short workshop by importing a spreadsheet that aligns Functions to Logical Apps to Physical Apps.

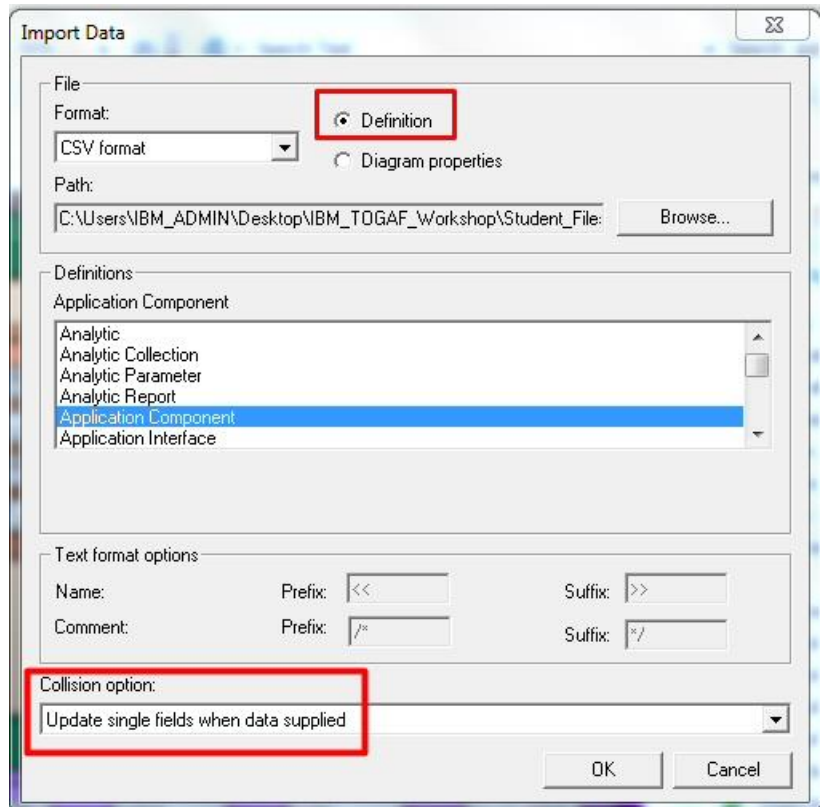


## IMPORT INTO REPOSITORY

1. Select **Dictionary, Import Definitions**.
2. Choose to import the file **Log\_Apps\_w\_Functions\_and\_Phys\_Apps.csv** in the **Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\g.TAM** directory
3. In the middle of the dialog, select the definition type **Application Component**.
4. At the bottom of the dialog, select the Collision Option **Update single fields when data supplied**.

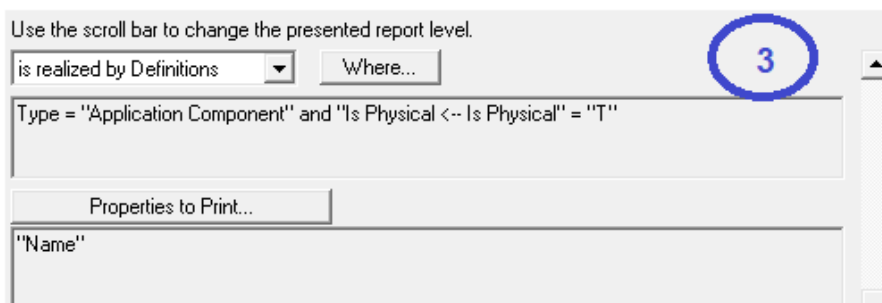
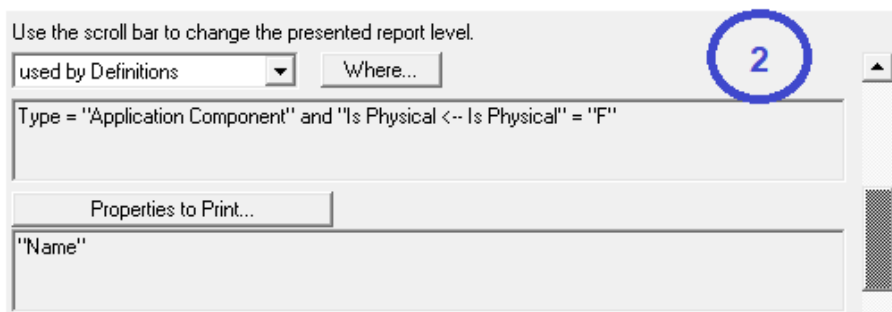
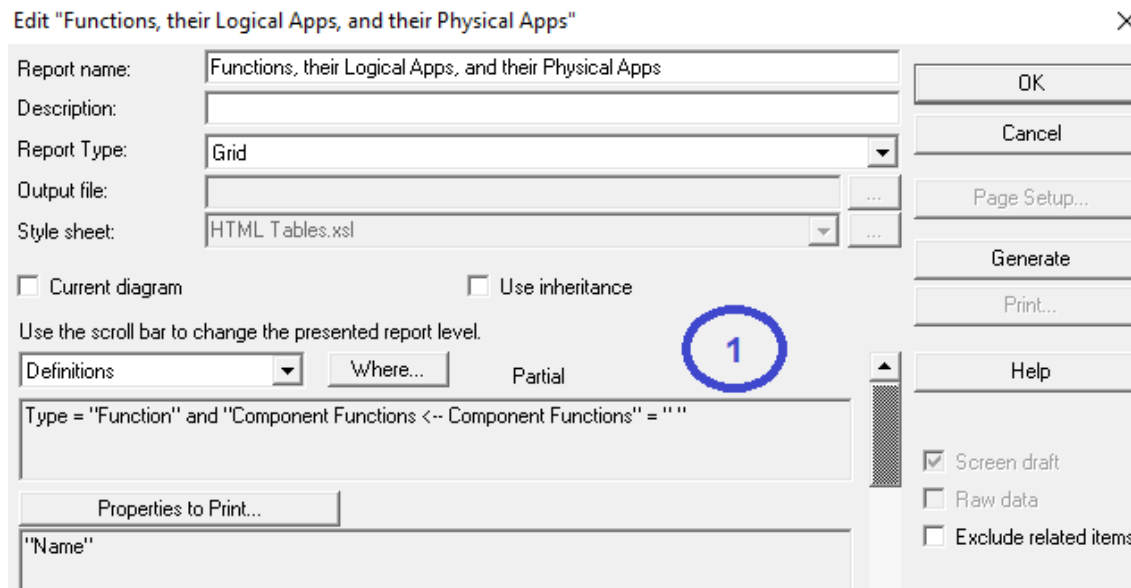
 **IMPORTANT:** It is important that you specify the **Application Component** definition – you don't want to import the material into the wrong definition type.

 It's also **very important** to specify Collision Options of **Update single fields when data supplied**.



Let's take a look at what Functions are related to what Logical Applications are related to what Physical Applications. We'll build a report.

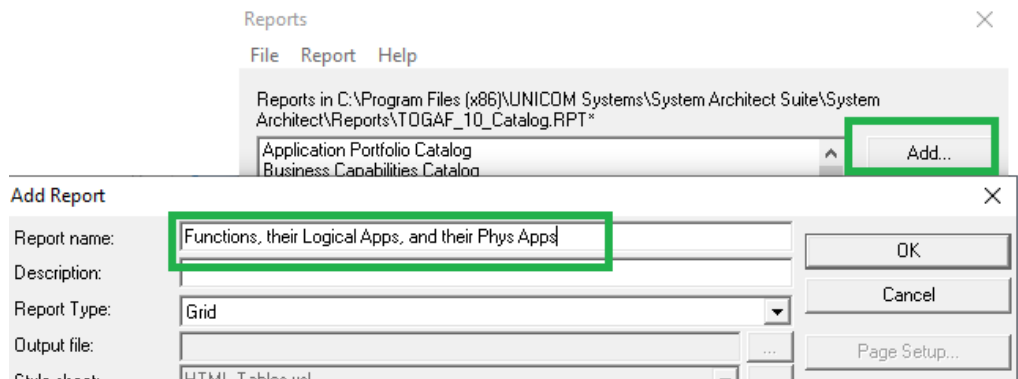
### 6.1.3 Build a Report



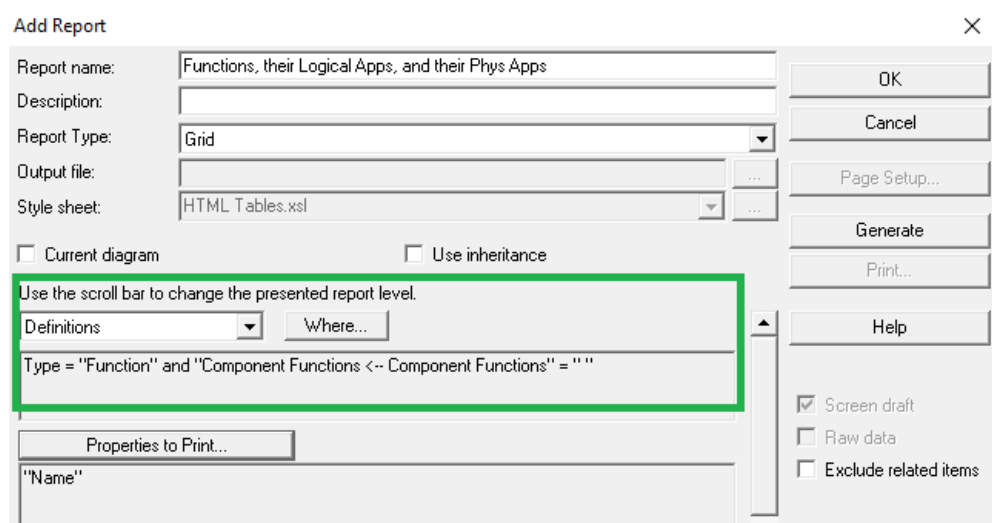
*Note: In this section we will build the report above, using the scrollbar slider on the right side to move to each new SQL join.*

1. Select **Reports, Report Generator**.
2. Make sure the TOGAF\_10\_Catalog.rpt file is open -- if not, select File, Open Report File, and open it from the <C>:\Program Files (x86)\UNICOM Systems\System Architect Suite\System Architect\Reports directory.

3. Click the **Add** button in the Report dialog to add a new report.

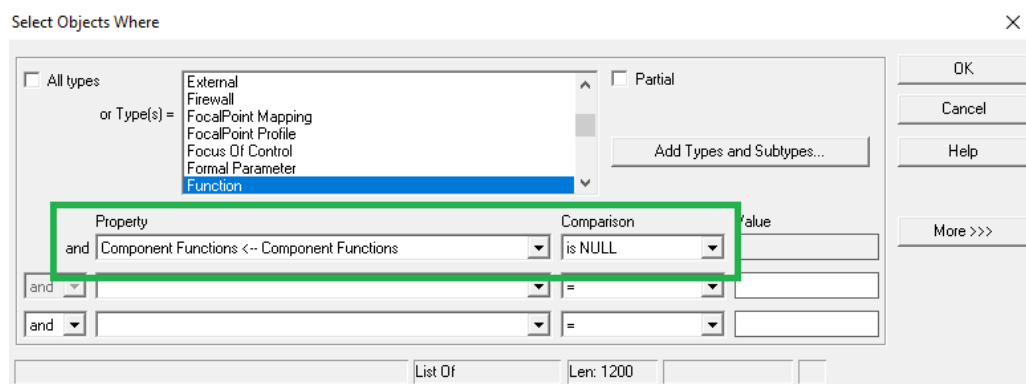


4. Name the new report **Functions, their Logical Apps, and their Phys Apps**.



5. On the first level of the report, specify to get Definitions -- click the Where button and specify **Function** (toggle off All Types).

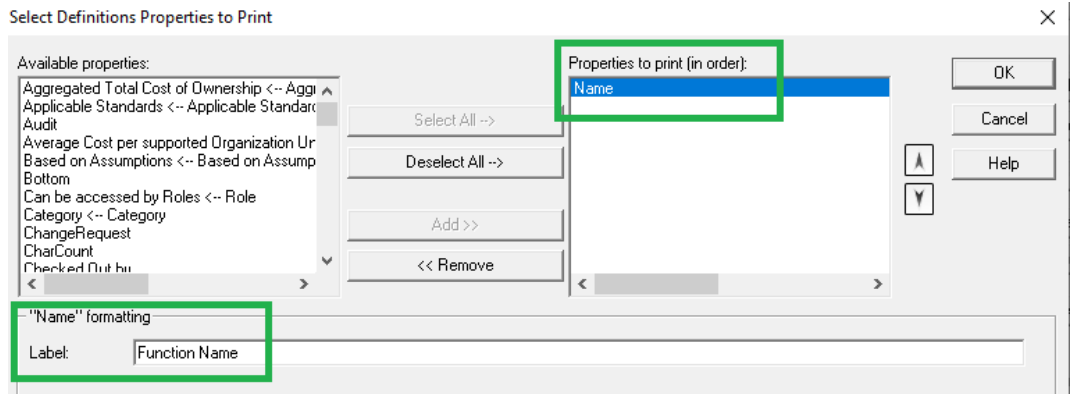
6. At the bottom of the dialog, select Property **Component Functions** and select Comparison **is NULL**. Click OK.



7. Click OK to return to the main report dialog.

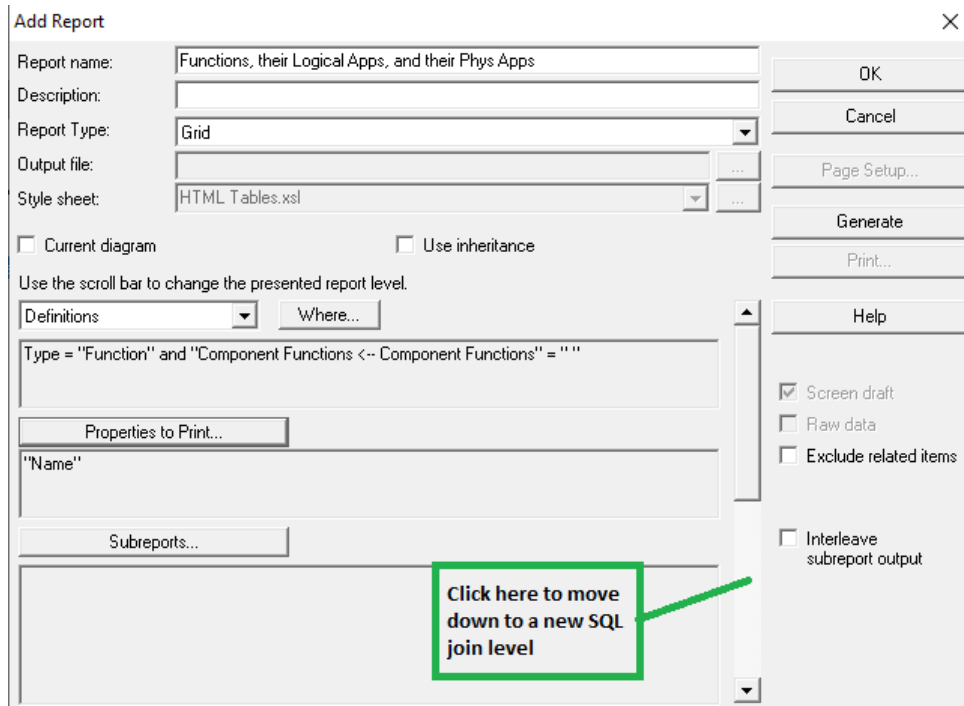
*We want to only get leaf-level Functions -- those are not decomposed further. We specify that the report get Functions whose "Component Functions" property is empty -- no further decomposition.*

8. Click Properties to Print, and find and select Name -- move it to the right side. Select the **Name** property and type **Function Name** in the Label property.

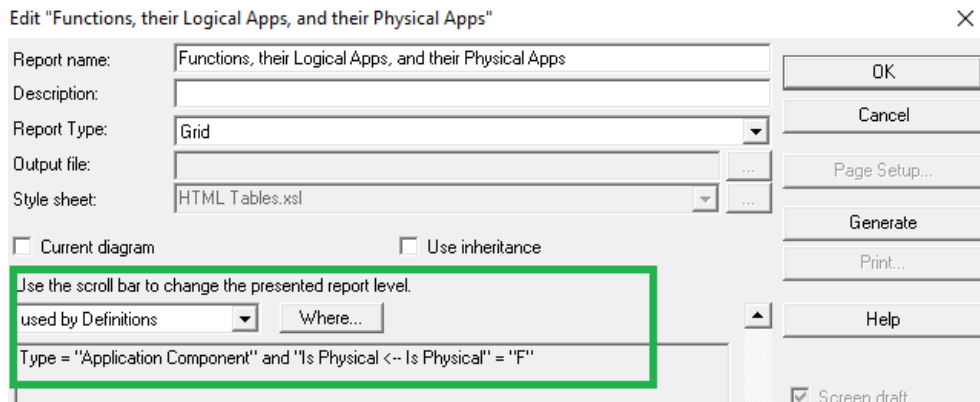


9. Click OK to return to the main report dialog.

10. Click the scroll bar to move to a new SQL level.

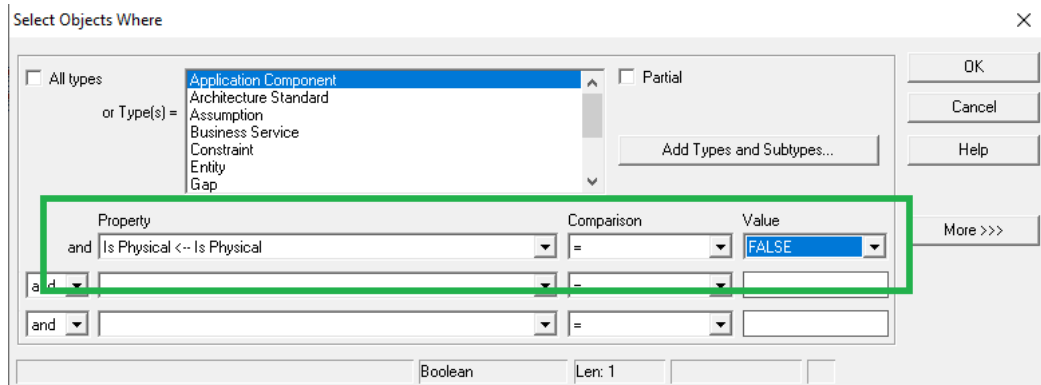


11. For the second layer of the report, select **used by Definitions** relationship from the drop-down list and click the **Where** button.



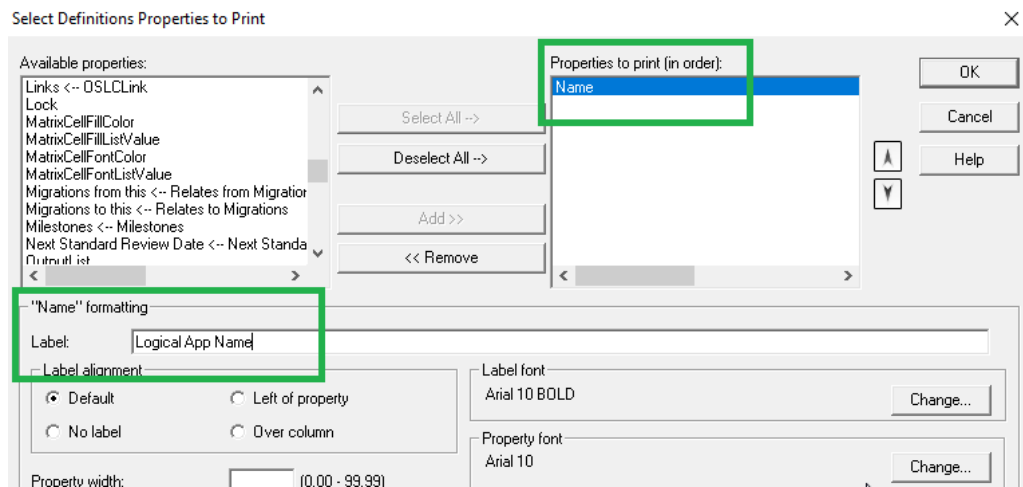


12. In the Select Objects Where dialog, click off All types and select **Application Component**.



13. At the bottom of the dialog, specify property **Is Physical = FALSE**. This will get all Logical Application Components. Click OK.

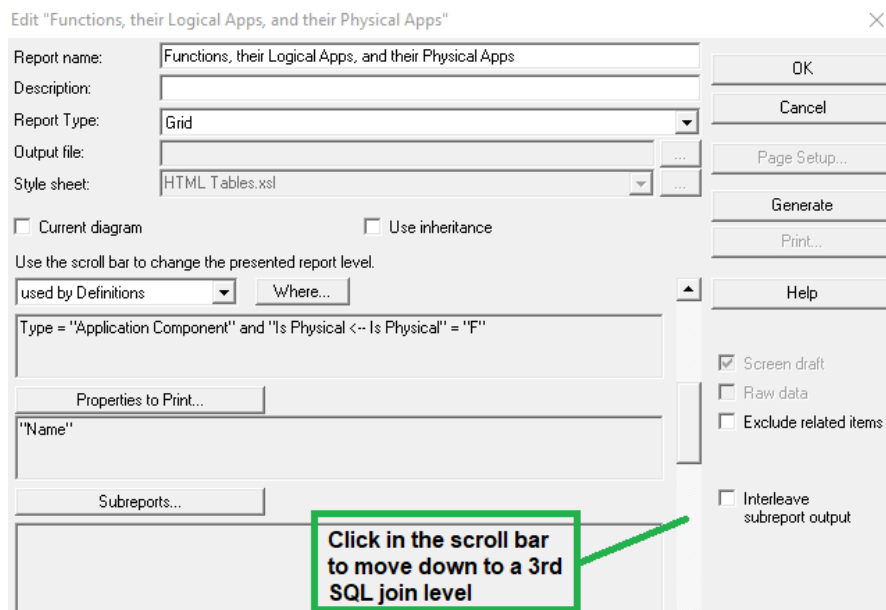
14. In the main report dialog, specify **Properties to Print** and again select **Name**. Select Name and provide a Label at bottom of dialog -- **Logical App Name**.



15. Click the scroll bar to move down to a third and final layer of the report.

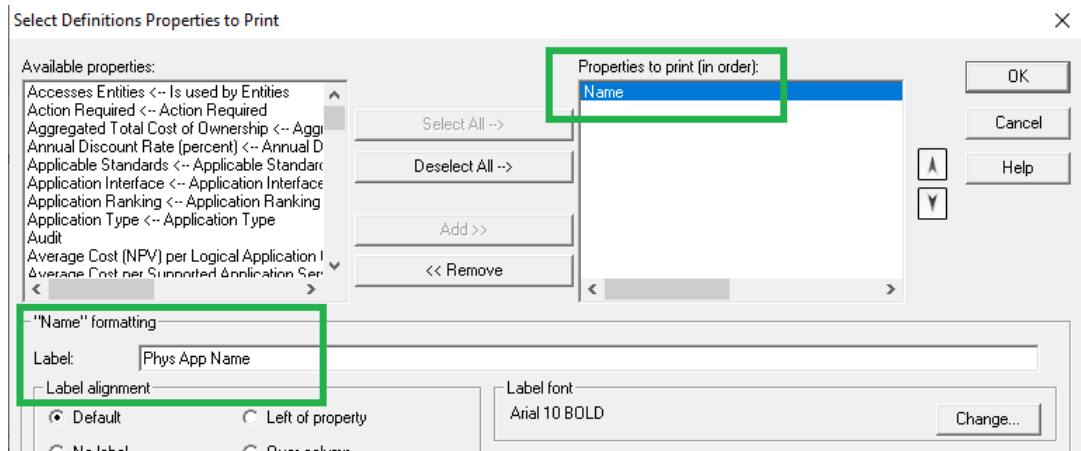
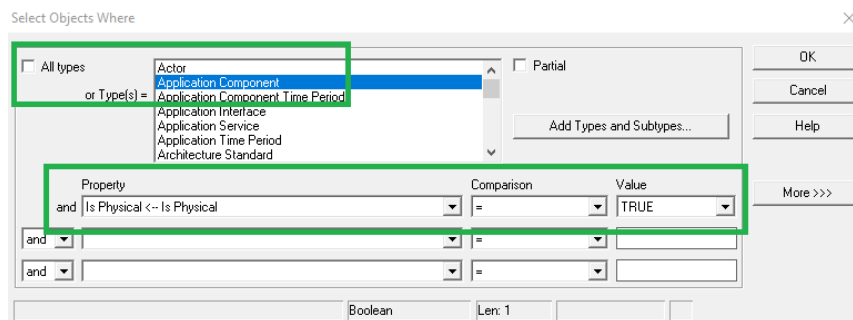
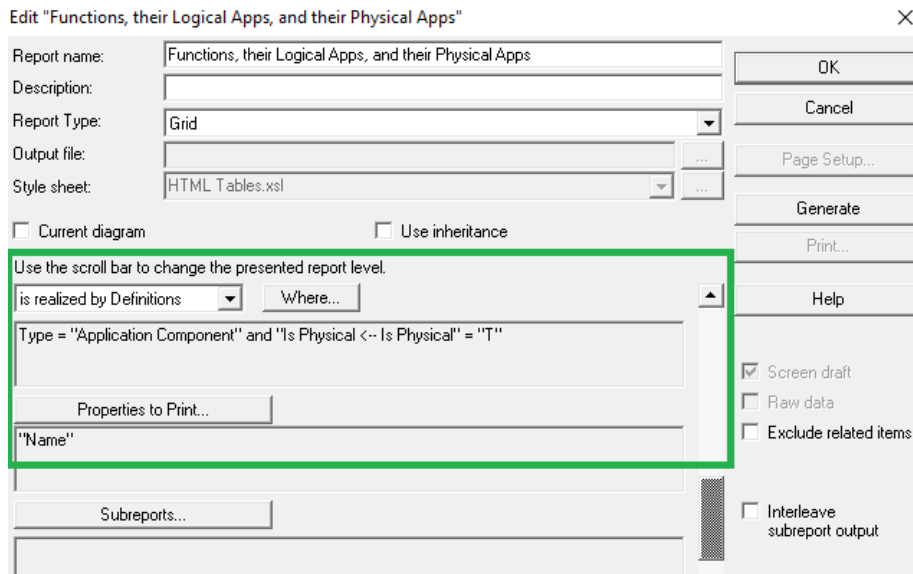
16. Select **use Definitions** and click the **Where** button.

17. Toggle off All Types and select **Application Component**. At the bottom of the dialog, select the property **Is Physical = TRUE**.



18. Back in the main report dialog, click Properties to Print and select **Name** --

specify a label of Phys App Name.



19.

**Generate the Report to Grid**

20. Back in the main report dialog, note that the Report Type = **GRID**.

Add Report

Report name: Functions, their Logical Apps, and their Phys Apps

Description:

Report Type: **Grid**

Output file:

Style sheet: HTML Tables.xsl

Current diagram  Use inheritance

21. Click **Generate**. The report will generate to Grid (see below).

22. Click the button “Click to merge/unmerge cells” in the upper left corner to group items.

Function Name Logical Apps

Found 35 items.

Function Name	Logical App Name	Physical App Name
Accounting	Account Management	SmarterCommerce
Accounting	Accounts Receivables	FICD Dept Manager
Accounting	Accounts Receivables	FISA Enterprise
Accounting	Accounts Receivables	IPBS
Collections and Receivables	General Ledger Account Reconciliation	Canopus EpaySuite
Collections and Receivables	General Ledger Account Reconciliation	Datamatrice
Collections and Receivables	General Ledger Account Reconciliation	GOLedger
Collections and Receivables	General Ledger Account Reconciliation	SimplicityCollect
Collections and Receivables	General Ledger Account Reconciliation	WebAR
Collections and Receivables	General Ledger Account Reconciliation	Wincollect
Enterprise Architecture	Enterprise Architecture	System Architect
Funds Control	General Ledger Account Reconciliation	Canopus EpaySuite
Funds Control	General Ledger Account Reconciliation	Datamatrice
Funds Control	General Ledger Account Reconciliation	GOLedger
Funds Control	General Ledger Account Reconciliation	SimplicityCollect
Funds Control	General Ledger Account Reconciliation	WebAR
Funds Control	General Ledger Account Reconciliation	Wincollect
Help Desk Services	Customer Problem Lifecycle Management	WebSphere Customer Center
Help Desk Services	Customer Problem Management	Blue Messenger
Help Desk Services	Customer Problem Management	BroadcastByPhone
Help Desk Services	Customer Problem Management	Callview 360
Help Desk Services	Customer Problem Management	Monet Live

The report outputs all Functions -- that have a Logical App assigned that have a Physical App assigned.

23. Click OK to close the report, and then in the Reports main dialog, select **File, Save Report File.**

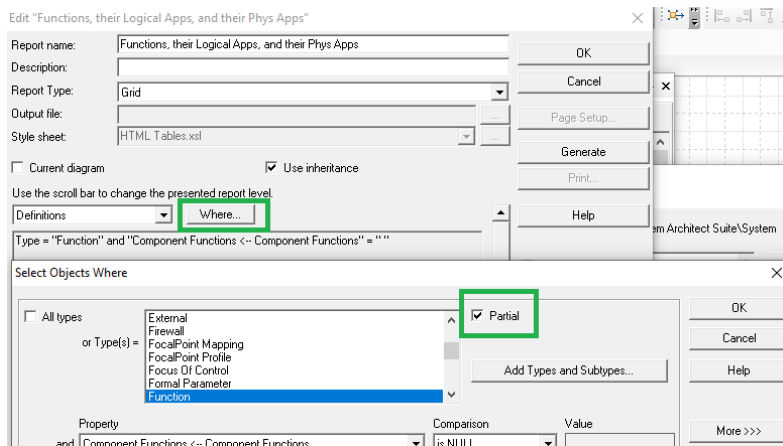
Function Name	Logical App Name	Physical App Name
Accounting	Account Management	SmarterCommerce
		FICD Dept Manager
	Accounts Receivables	FISA Enterprise
Collections and Receivables	General Ledger Account Reconciliation	IPBS
		Canopus EpaySuite
		Datamatrice
		GOLedger
		SimplicityCollect
		WebAR
		Wincollect
Enterprise Architecture	Enterprise Architecture	System Architect
Funds Control	General Ledger Account Reconciliation	Canopus EpaySuite
		Datamatrice
		GOLedger
		SimplicityCollect
		WebAR
		Wincollect
Help Desk Services	Customer Problem Lifecycle Management	Websphere Customer Center
	Customer Problem Management	Blue Messenger
		BroadcastByPhone
		Callview 360
		Monet Live

This report is only showing info where there has been a 'hit' at each level – there may be Functions that do not have Logical Apps assigned, and Logical Apps that do not have Physical Apps assigned – they are not shown.

**Make the Report "Partial"**

Let's get a more complete report -- all Functions with their Logical and Physical Apps no matter if one has been assigned or not.

1. Reopen the report -- select it in the reports dialog and click Edit.
2. Click the **Where** button for the first layer of the report.
3. In the Select Objects Where dialog (for the Function definition) -- toggle on the **Partial** command and click OK.
4. Click Generate in the main report dialog.
5. Note that you can double click on any cell in the Grid to open the relevant definition. The Grid can also be saved to csv or Microsoft Excel XLS format.



Functions, their Logical Apps, and their Phys Apps

Found 121 items.

Function Name	Logical App Name	Phys App Name
Accounting	Account Management	SmarterCommerce
Accounting	Accounts Receivables	FICO Dept Manager
Accounting	Accounts Receivables	FISA Enterprise
Accounting	Accounts Receivables	IPBS
Advising and Consulting		
Asset and Liability Management		
Benefits Management		
Budget Execution		
Budget Formulation		
Budget and Performance Integration		
Capital Planning		
Close Checking Accounts		
Close Savings Accounts		
Collections and Receivables	General Ledger Account Reconciliation	Canopus EpaySuite
Collections and Receivables	General Ledger Account Reconciliation	Datamatrice
Collections and Receivables	General Ledger Account Reconciliation	GOLedger
Collections and Receivables	General Ledger Account Reconciliation	SimplicityCollect
Collections and Receivables	General Ledger Account Reconciliation	WebAR
Collections and Receivables	General Ledger Account Reconciliation	Wincollect
Compensation Management		
Contingency Planning		

**Double Click on any cell to open its definition**

The 'partial' report tells us that we have work to do as an Enterprise Architect – there are numerous Functions that do not have a Logical Application Component assigned. We can double click on the Function in the grid to examine it.



### Why Is this Useful?

The Grid enables you to double click in any cell and access the definition for editing. It is a useful tool for updating the architecture. You can create any kind of report, and directly access the definitions in it.

1. At the bottom of the grid, find the function Vacation Loans, and double click on it to open its definition.

2. Go to the **Automation** tab of the function, click Choices to the **Supported by Logical Application Components** property, and drag-and-drop in the logical applications:

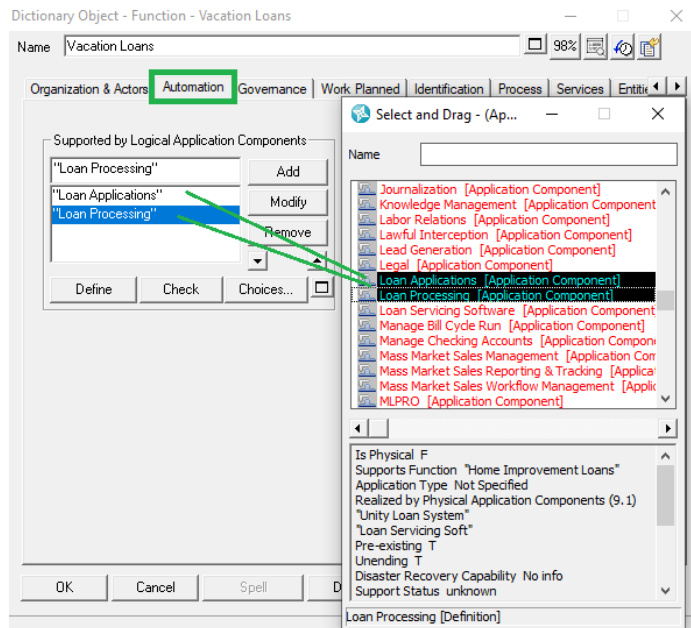
- **Loan Applications**, and

Functions, their Logical Apps, and their Physical Apps

Found 100 items.

Function Name	Logical App Name	Physical App Name
System Development		
System Maintenance		
System and Network Monitoring		
Vacation Loans		
Workforce Planning		
Workplace Policy Development and Management		

- **Loan Processing**

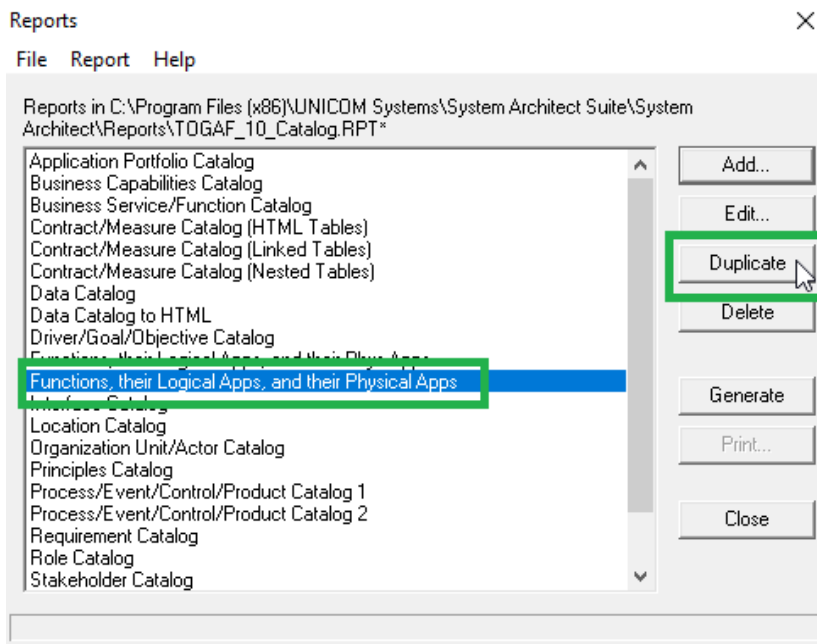


**Generate the Report to HTML**

1. Back in the main report dialog, select the report and push the Duplicate button. The report will be duplicated with a “-1” suffix to its name.

2. Open the new duplicate report by clicking the Edit button, and then at its top level, select the Where button – and toggle off the Partial choice. Click OK.

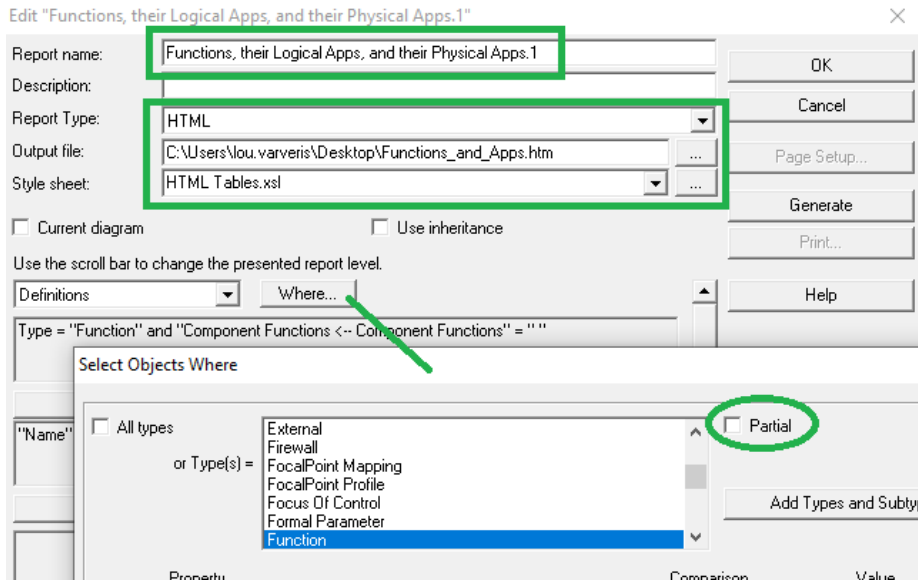
3. Back in the main report body – select Report Type = **HTML**, then specify a directory and name of an output file -- for example, **Functions\_and\_Apps.html** to your



Desktop.

Leave the default Style sheet at HTML Tables.xml.

4. Click **Generate**.  
The report will automatically open in your default web browser.



Function Name	Logical App Name	Physical App Name
Accounting	Account Management	SmarterCommerce
	Accounts Receivables	FICO Dept Manager FISA Enterprise IPBS
Collections and Receivables	General Ledger Account Reconciliation	Canopus EpaySuite
		Datamatrix
		GOLedger
		SimplicityCollect
		WebAR Wincollect
Enterprise Architecture	Enterprise Architecture	System Architect
Funds Control	General Ledger Account Reconciliation	Canopus EpaySuite
		Datamatrix
		GOLedger
		SimplicityCollect
		WebAR Wincollect
Help Desk Services	Customer Problem Lifecycle Management	Websphere Customer Center
	Customer Problem Management	Blue Messenger BroadcastByPhone Callview 360 Monet Live Websphere Customer Center
	Loan Processing	Unity Loan System
	Content Management	Filenet Content Manager
	Campaign Management	MobilePush
Open Checking Accounts	Manage Checking Accounts	RMS

## Lab 7 Phase E: Opportunities & Solutions

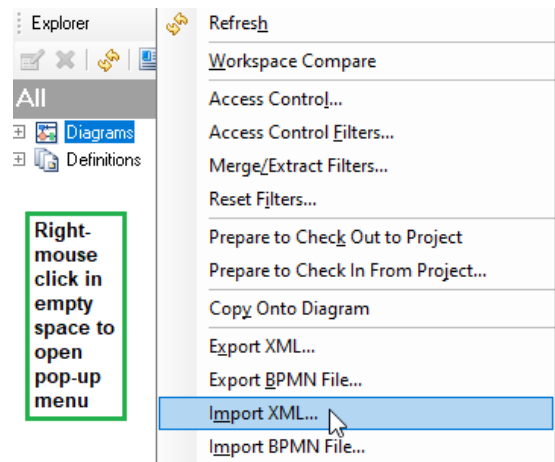
### Goals of this Lab:

- Analyze our organization with Customer Journey Maps.
- Add a new Application to allow customers to use their cell phone to get a loan to pay for a vacation.

### 7.1 Import Customer Journey Map



#### IMPORT INTO REPOSITORY

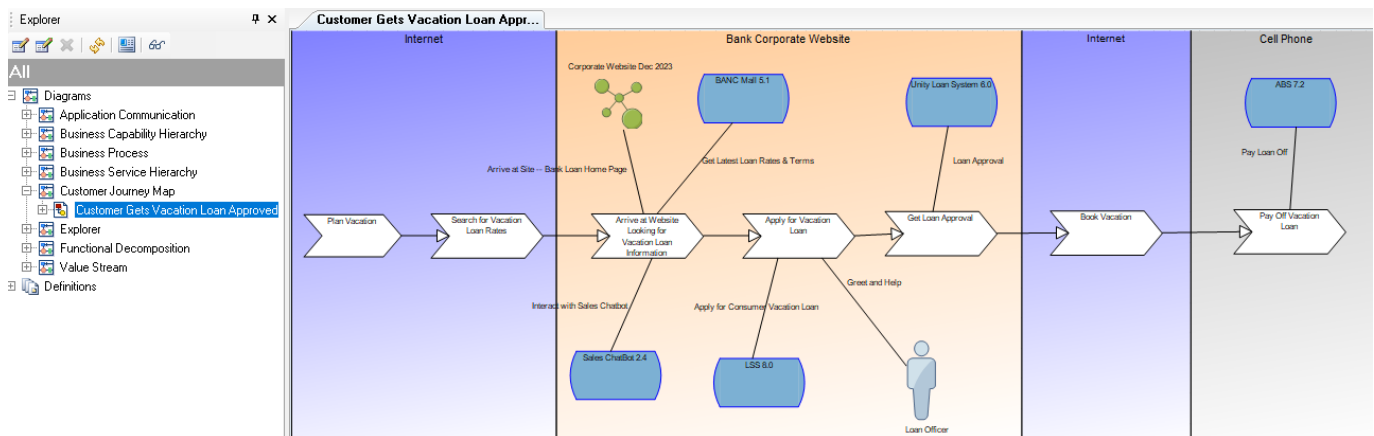


1. In the Explorer (browser) pane, right-mouse click in empty space and select XML Import. Select the file **Customer\_Journey\_Map.xml** in the desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\m.SAFe directory.

2. Select **NO** to the question “Import Contents of a Folder?” and leave the collision options at their default.

3.  **IMPORTANT** -- on Collision Options, choose **Update single fields when data supplied**.

4. The Customer Journey Map below will be imported into the tool. Find and open it using the **Explorer** tree.

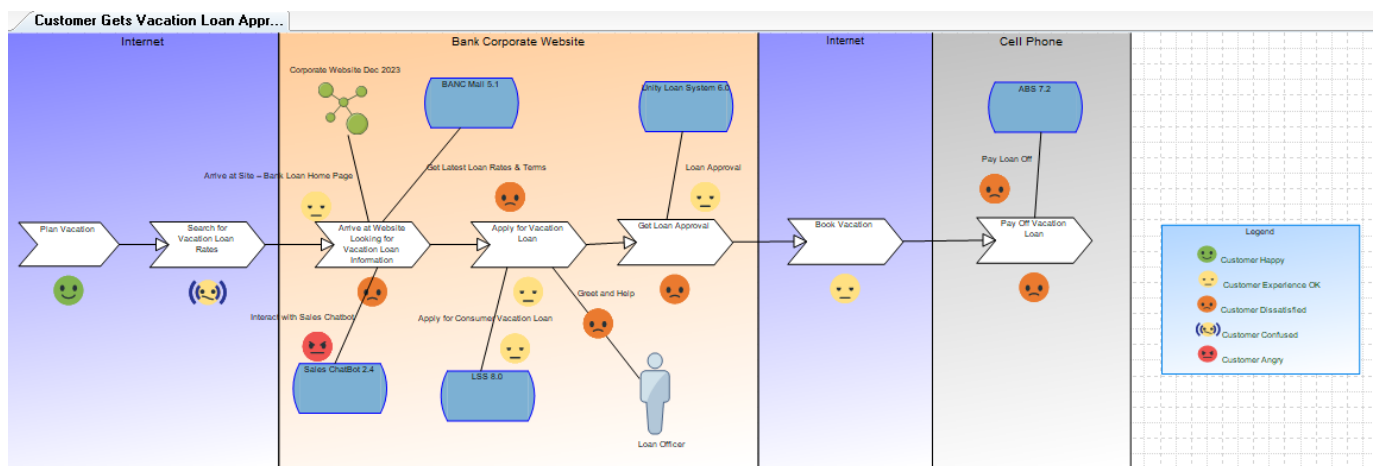
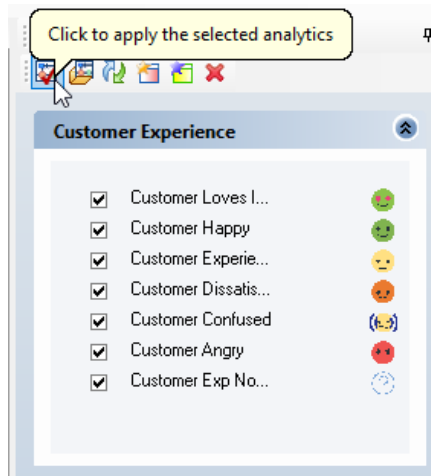




### 7.1.1 Run Analytics & Review the Customer Journey Map

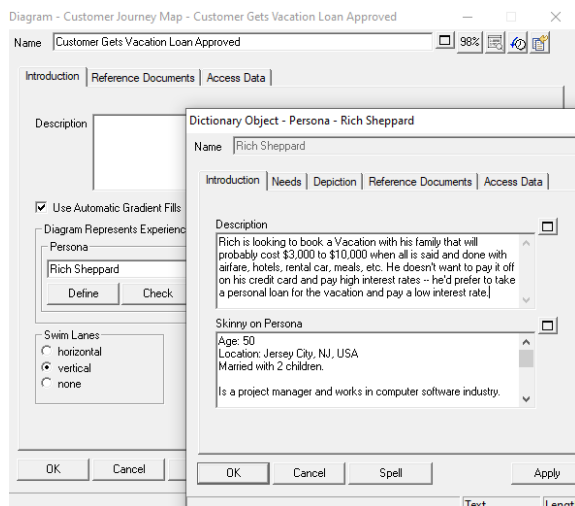
To save time, we'll import a Customer Journey Map already built.

1. Select **View, Heatmap Manager**. The Heatmap Manager will open on the right side of the diagram.
2. Toggle on all of the analytics in the Customer Experience grouping, and click the check-mark button “Click to apply the selected analytics”.
3. The analytics will run and place Customer emotion icons next to each relationship line and underneath each Customer Journey Step on the diagram – showing the customer happiness at each step in his/her journey.



### Examine the Customer Journey Map

4. Right-mouse click on an empty space of the diagram, and click **Diagram Properties** (or select Edit, Diagram Properties).
5. In the middle of the Diagram Properties dialog, click on the **Define** button for the Persona, Rich Sheppard.
6. Note that Rich’s Description, Skinny, and Needs are provided in his persona. The Customer Journey Map we have open, tracks his journey.



Rich is looking to get a Vacation loan.

7. Close the persona definition dialog, and view the diagram. Note that the vertical swimlanes represent marketing channels that the customer is in.

8. Double click on the step “**Arrive at Website Looking for Vacation Loan Information**”

9. Note that at each step, we are tracking

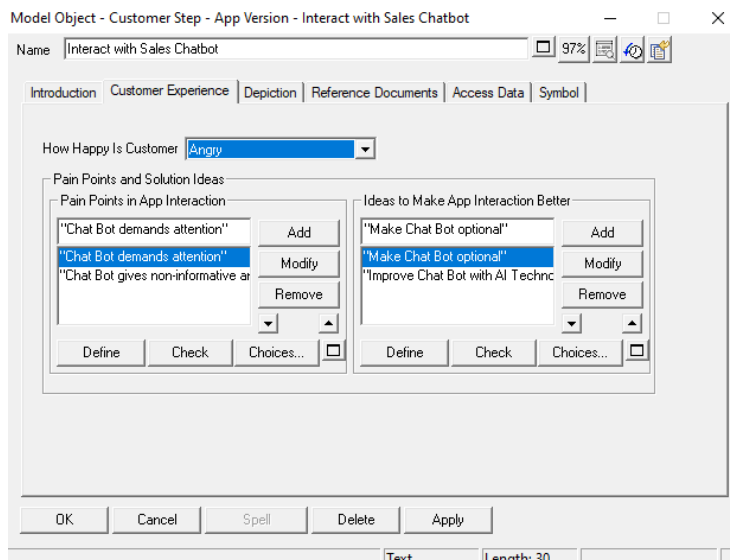
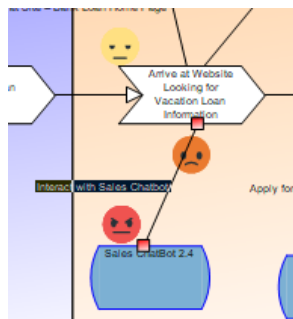
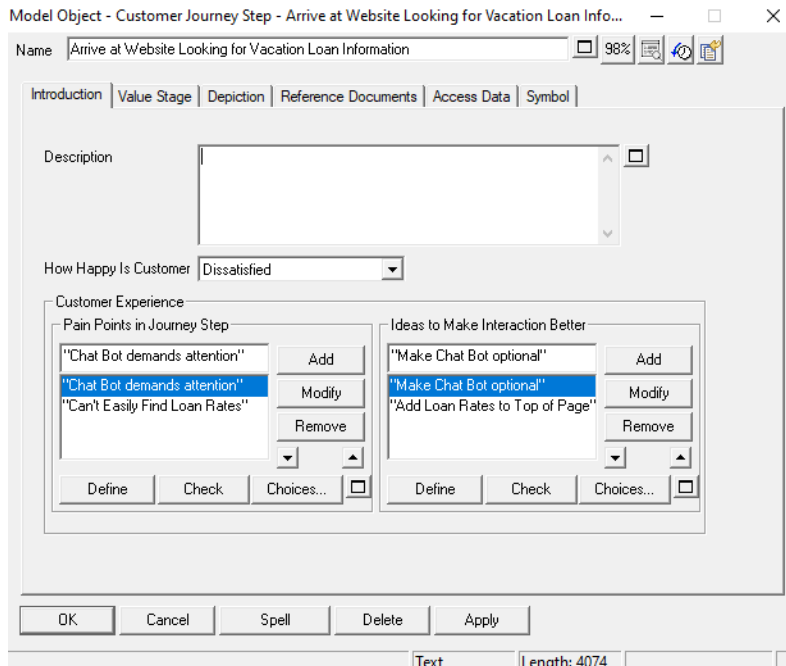
- How Happy the customer is,
- the Pain Points in the Journey Step, and
- Ideas to make the interaction better.

10. Open the definition of the relationship line “Interacts with Sales Chat Bot”.

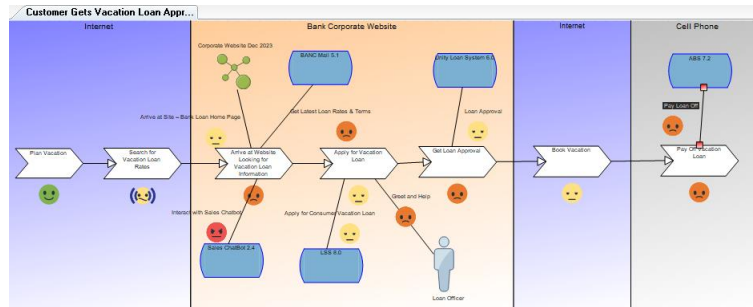
11. Note that through the relationship lines, we are tracking the customer interaction with versions of Systems, Application Components, Products, or People (Actors).

12. Briefly examine the diagram – opening definitions of steps or relationships -- to note the following:

- Rich – our persona – is happy when he is planning his vacation.
- But he is then confused when he searches the internet for a loan – at the difference between a Consumer Loan and a Vacation Loan.
- We have ideas to fix this – advertising our Vacation Loans with a lower interest rate than Consumer Loans (because of a recent surge in travel).
- When Rich gets to our website, he is dissatisfied – the Chat Bot demands attention and isn’t very helpful. We have ideas to fix this



- make the Chat Bot optional and introduce one that uses AI.
- Rich also can't easily find the Vacation Loan rates, and when he does find them he notices they are 2 days old.
- When Rich applies for a vacation loan, he has to fill out a tedious long form, and is dissatisfied with the Loan Officer he deals with, who does not provide much value add.
- Rich has to use the website for all of this work – the functionality is not available on his cell phone.
- Once approved, Rich books the vacation but is unhappy once he starts paying off the loan because our Loan Software dashboard is confusing – it takes 3 clicks to find the Loan Payoff info.



## 7.2 Improve the Customer Journey with Digital Transformation Initiative

### 7.2.1 Add a New Application to Improve the Customer Journey

We have a lot of room for improvement.

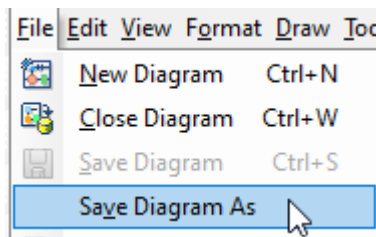
We can build an Ideas Hierarchy diagram or run an Ideas report to start looking and prioritizing ideas for improvement.

We won't do that in this workshop – but one of the recurring ideas that would fix a lot of problems with Rich's journey is to create a new phone App of our Loan Submission and Approval software.

These ideas are vetted with Product Management, who agrees to build a new app -- **Money that Matters (MTM)** -- an application that will enable users to apply for a Vacation Loan via their mobile phone, track the approval status, then even allow them to integrate with travel sites to book the vacation, and also provide a dashboard to pay the loan off. It will supersede and eventually replace several of the software applications already in use.

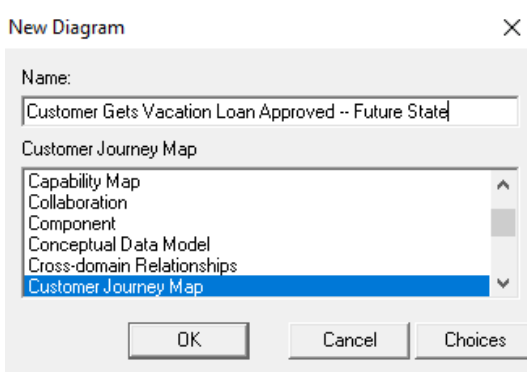
We'll add this new application to our Customer Journey Map – and to the architecture as a whole.

1. Select **File, Save Diagram As**, (click Yes to save changes to current diagram), and name the new version of the diagram, **Customer Gets Vacation Loan Approved – Future State**.

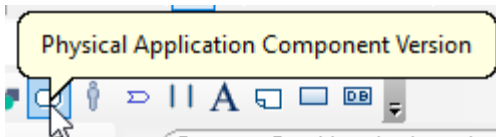


Note that normally we might use Workspaces for proper Current- and Future-State analysis but in this workshop we'll keep it simple.

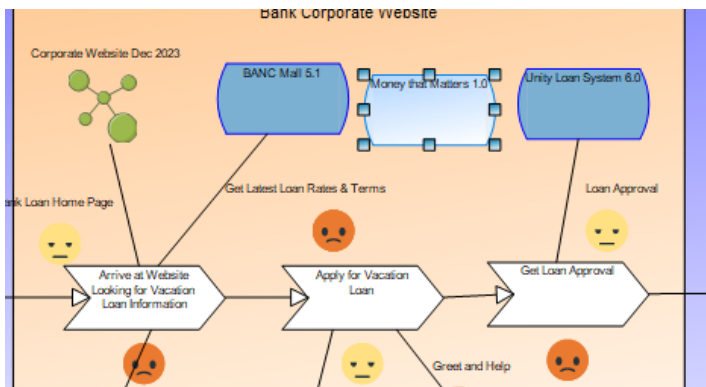
2. Select the **Physical Application Component Version** symbol from the Draw toolbar and add one to the diagram, named **Money that Matters 1.0**.



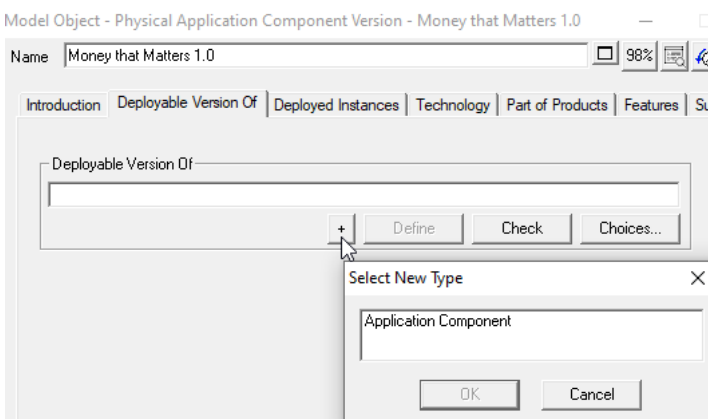
3. Type in the name **Money that Matters** in the Dictionary Object -- Application Component dialog.



4. Open the definition of Money that Matters 1.0 by getting into cursor mode (hit Esc or click the cursor on the toolbar) and double clicking on it, or right-mouse clicking on the symbol and selecting Edit Object.



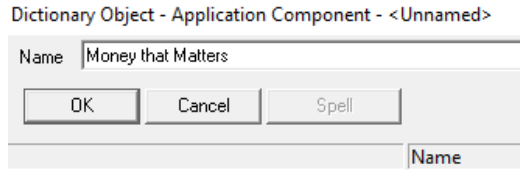
5. In the definition dialog that opens, go to the **Deployable Version Of** tab, and click the + mark under the Deployable Version Of property.



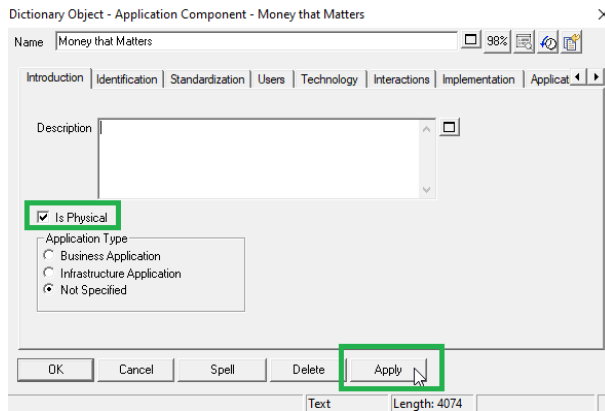
6. In the dialog that pops up – select **Application Component** and click **OK**.

7. In the dialog that opens, type in the name of the new application – **Money that Matters** and click **OK**.

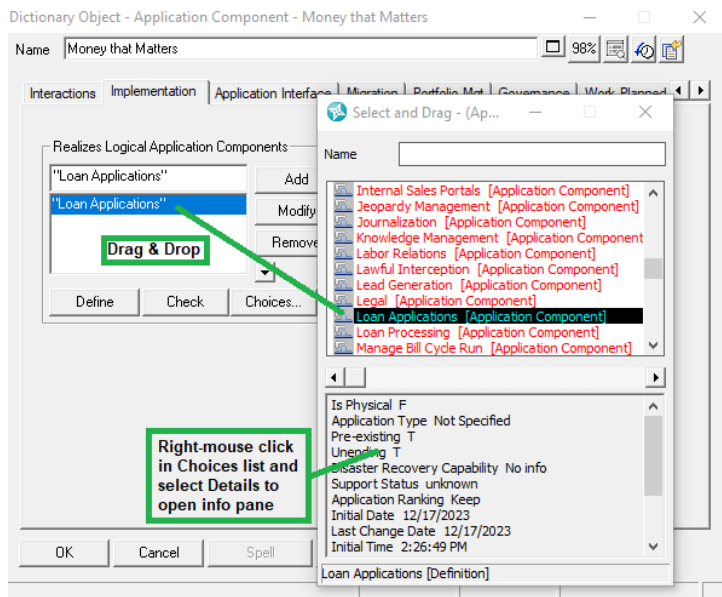
8. In the Money that Matters definition that opens, toggle on the property **Is Physical**.



9. In the **Implementation** tab of the Money that Matters definition, click **Choices** and drag-and-drop in the logical Application **Loan Applications**.



10. Click **OK** to all dialogs to close them.

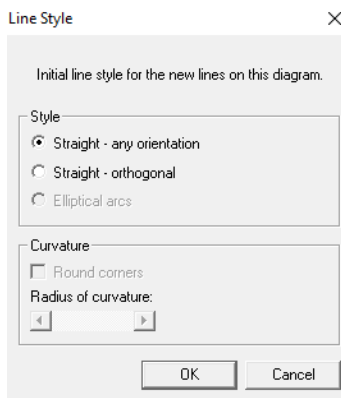
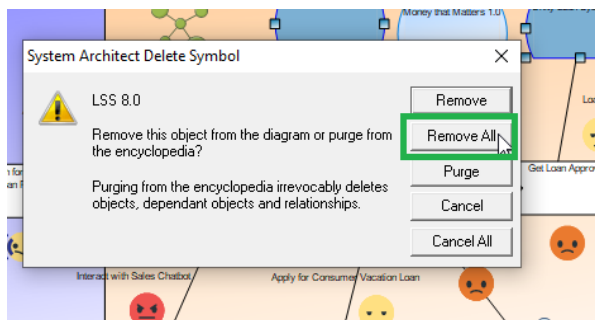
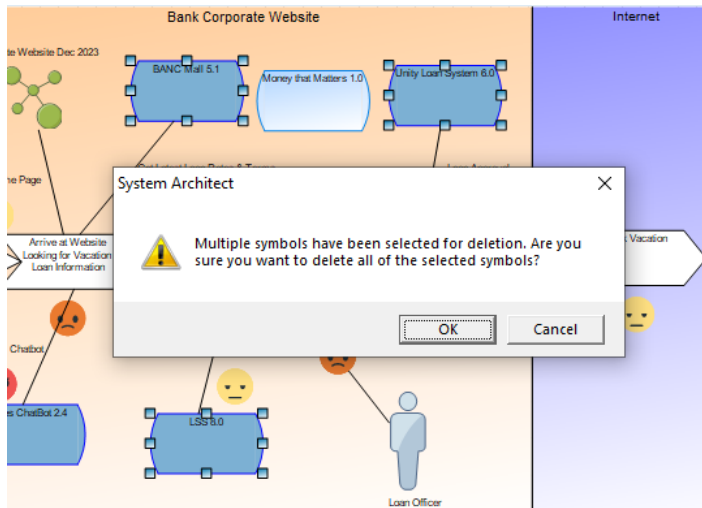


11. Select the following existing Applications on the diagram and click your Delete key on your keyboard to remove them:

- BANC Mall 5.1
- LSS 8.0
- Unity Loan System 6.0

12. Click **OK** to the dialog that comes up telling you that **Multiple symbols have been selected for deletion.**

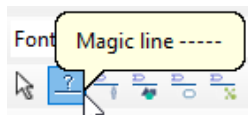
13. Click **Remove All** to the next dialog. You do not want to purge them – you are just removing them from this diagram.



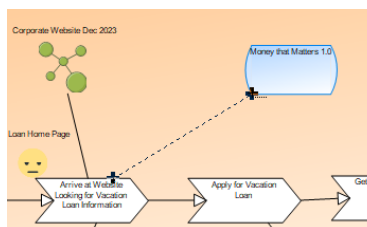
### Create New Relationships to New App

1. Select **Format, Symbol Format, Line** – and toggle on **Straight – Any Orientation.**

2. Select the **Magic Line** from the Draw toolbar.

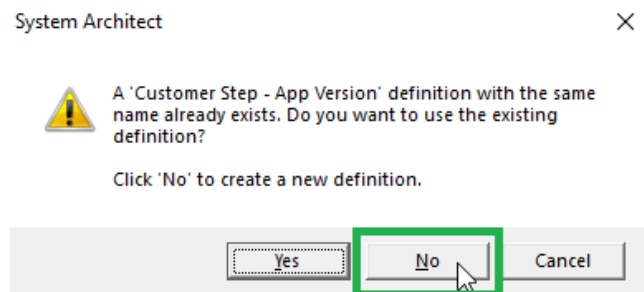


Note: to draw a line between two symbols – select the line drawing tool from the Draw menu, release your mouse button, hover over one symbol until you get a + mark – and click your left mouse button – then release your mouse button – hover over the 'to' symbol until you get a + mark, and click your left mouse button.



3. Draw a line between the Customer Journey Step **Arrive at Website Looking for Vacation Loan Information**, and the App Version **Money that Matters 1.0**, and name it **Get Latest Loan Rates & Terms**.

4. In the dialog that comes up telling you this named relationship already exists, select **No** to create a new relationship definition (see picture to right).



5. Draw a line between the Customer Journey Step **Apply for Vacation Loan**, and the App Version **Money that Matters 1.0**, and name it **Apply for Consumer Vacation Loan**.

6. Again select **No** to the popup message, to create a new relationship definition.

7. Draw a line between the Customer Journey Step **Get Loan Approval**, and the App Version **Money that Matters 1.0**, and name it **Loan Approval**.

8. Again select **No** to the popup message, to create a new relationship definition.

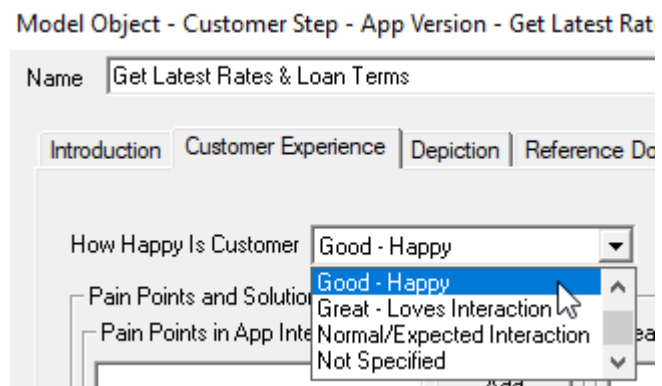
9. Draw a line between the Customer Journey Step **Pay Off Vacation Loan**, and the App Version **Money that Matters 1.0**, and name it **Pay Loan Off**.

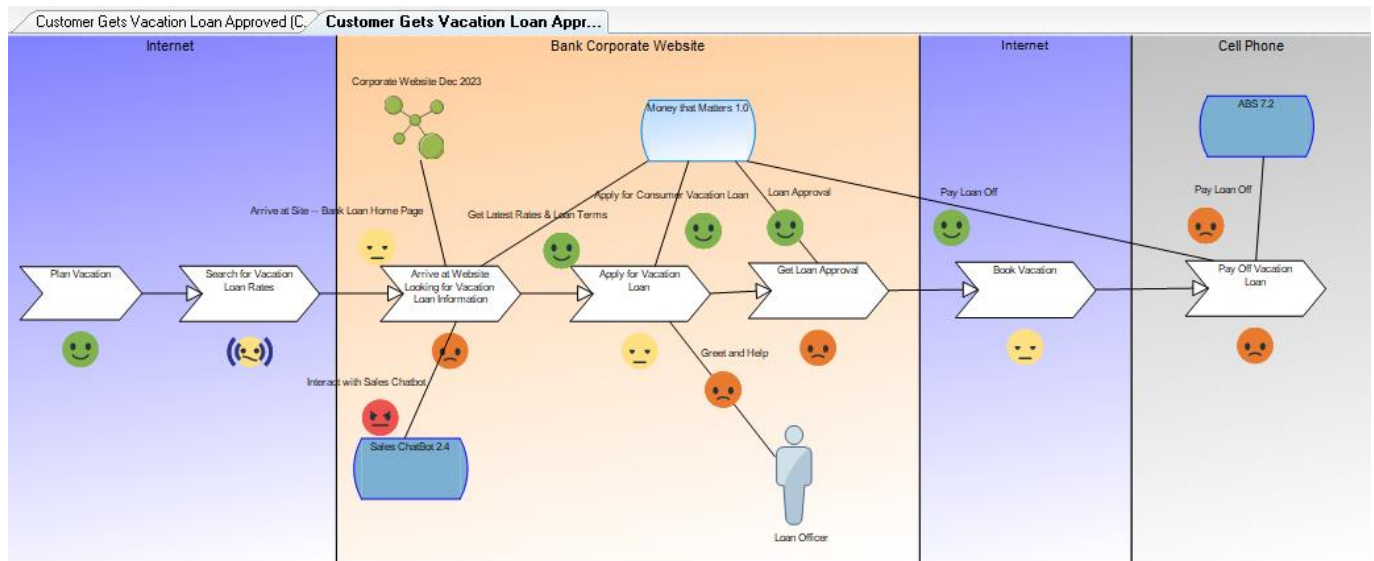
10. Again select **No** to the popup message, to create a new relationship definition.

11. Hit ESC or click the Cursor tool in the Draw toolbar to get out of draw mode.

12. Open each line definition in turn, and on the Customer Experience tab, select that the customer is now **Good – Happy**.


13. In the Heat Map Manager, re-run the Analytics. Your diagram should look like the one below.





14. Close the Heatmap Manager by clicking the x in the upper right-hand corner.

15. Save and close all diagrams.



### Why Is this Useful?

Customer Journey Maps are part of the essential configuration of the Scaled Agile Framework (SAFe) version 6.0. They allow you to apply Design Thinking to your organization – to understand the Customer Journey and their immediate needs. This helps you prioritize digital transformation enhancements.



## Lab 8 Phase E: Opportunities & Solutions – Analysis

### Goals of this Lab:

Analyze the information we have brought into our EA so far to answer strategic questions on the business, and to discover opportunities for improvement and build solutions for improvement.

### 8.1 Import APM Analysis Information from APM Tool



**IMPORT INTO REPOSITORY**

#### Import Functions (Tied to Logical Apps)

To speed up the lab, we'll import some work done tying Functions to Logical Applications.

1. Select **Dictionary, Import Definitions**.
2. Import the file **function\_portfolio\_analysis.CSV** in the Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\j.**REPORTS\_and\_Analytics** directory as a **Function**.



**IMPORTANT** -- on Collision Options, choose **Update single fields when data supplied**.

#### Import Locations

3. Select **Dictionary, Import Definitions**.
4. Import the file **locations.CSV** in the Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\j.**REPORTS\_and\_Analytics** directory as a **Location**.



**IMPORTANT** -- on Collision Options, choose **Update single fields when data supplied**.

### 8.1.1 Import Pre-Built Explorer Reports and Analytic Collections

To save you time, we've pre-built some Explorer Relationship and Explorer Object reports. You can import them now.

#### Import Pre-Built Explorer Reports



**IMPORT INTO REPOSITORY**

1. In the Explorer (browser) pane, right-mouse click in empty space and select XML Import. Select the file **Workshop\_Explorer\_Reports.xml**, in the directory C:\..\Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\j.REPORTS\_and\_Analytics

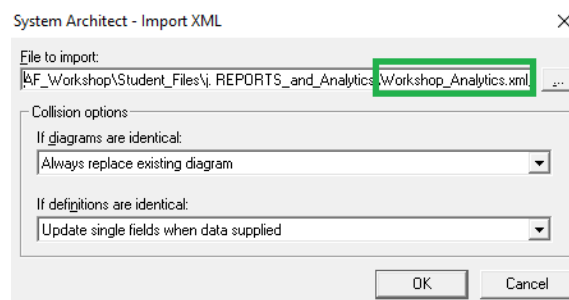
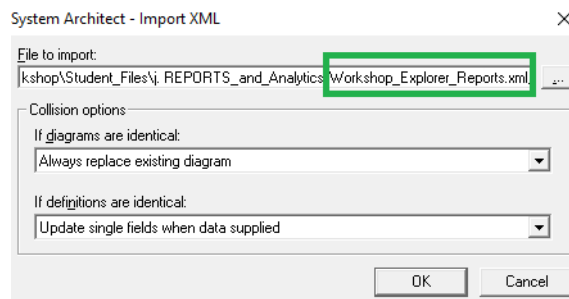
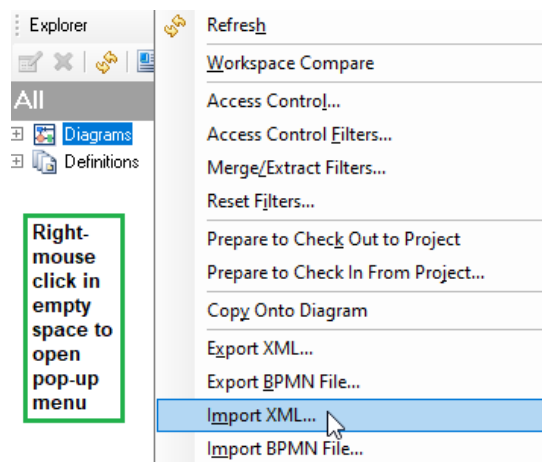
2. Again, select **NO** to the question “Import Contents of a Folder?” and leave the collision options at their default.

#### Import Pre-Built Analytic Reports



**IMPORT INTO REPOSITORY**

Using the same technique as above, do an XML import of the file **Workshop\_Analytics.xml** in the directory C:\Users...\Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\j.REPORTS\_and\_Analytics. Leave all default collision options and click **OK**.

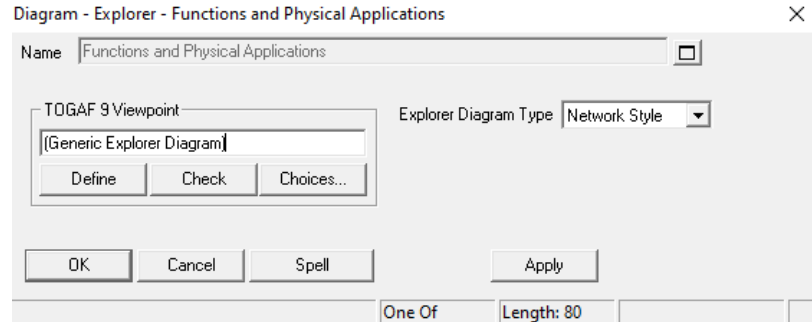


## 8.2 Cause-Effect Analysis

### 8.2.1 Build Explorer Diagram of Style 'Network'

1. Create a new diagram of type **Explorer** – and name it **Functions and Physical Applications**.

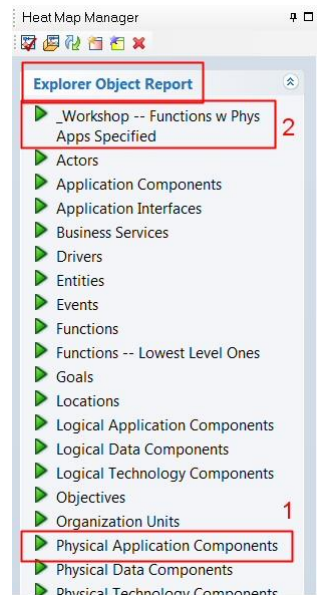
2. In the dialog that opens when you create the new diagram, click Choices for TOGAF Viewpoint and drag-and-drop in **Generic Explorer Diagram** and leave the Explorer Diagram Type at its default **Network Style**.



2. Select **View, Heat Map Manager**.

3. In the Heat Map Manager that opens on the right side of the screen, scroll down until you see **Object Reports**.

4. Click the Explorer Object Report, **Physical Application Components** to run it.



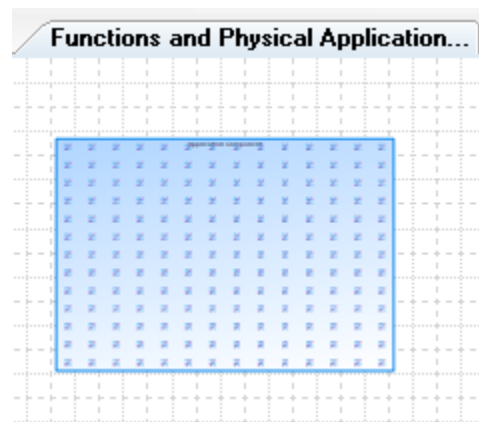
You will receive a message alerting you that you are about to draw over 180 applications – click Yes.

For layout, choose **Both Right and Down**. (Note: if you don't see this report, click the Refresh button at the top of the Heatmap Manager, or reopen it.)

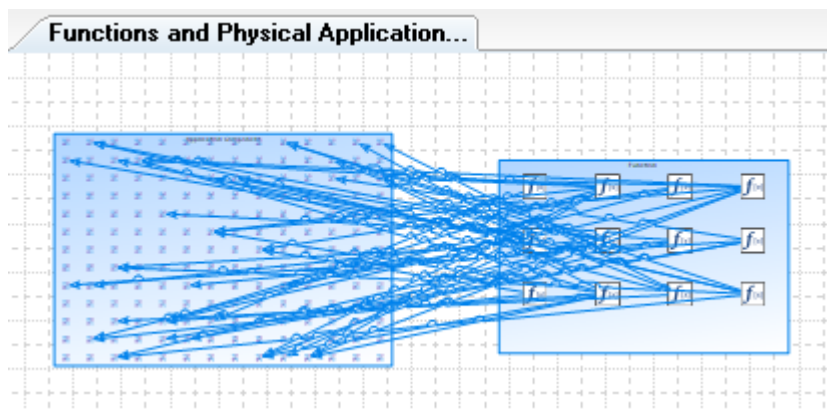
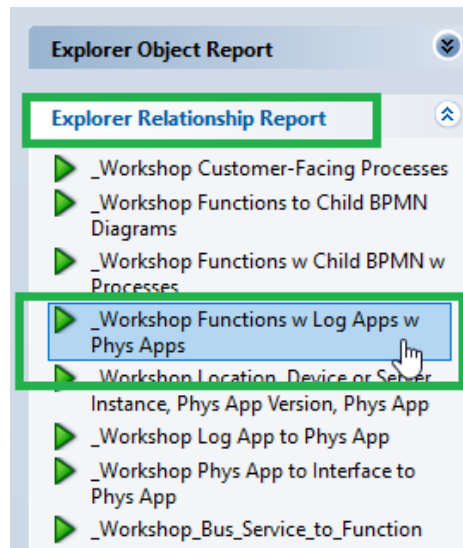
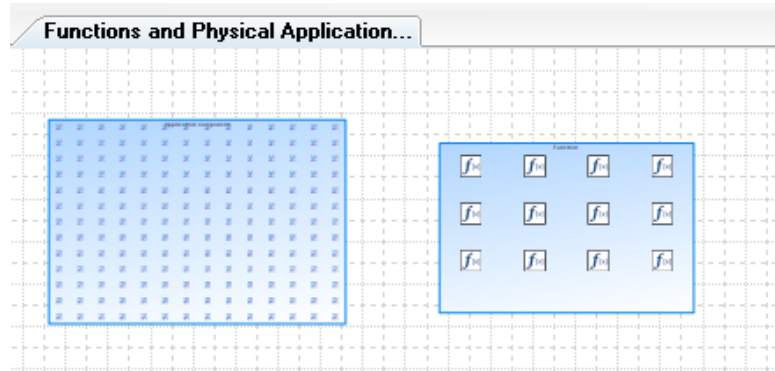
It will take a minute to add the apps.

(Note: if you don't see this report, refresh the Heatmap Manager)

5. In the Heat Map Manager, run the Explorer Object report **\_Workshop -- Functions w Phys Apps Specified**.



6. In the Heat Map Manager, scroll down until you see **Explorer Relationship** reports.
7. Run the **Explorer Relationship** report **\_Workshop Functions w Log Apps w Phys Apps**.

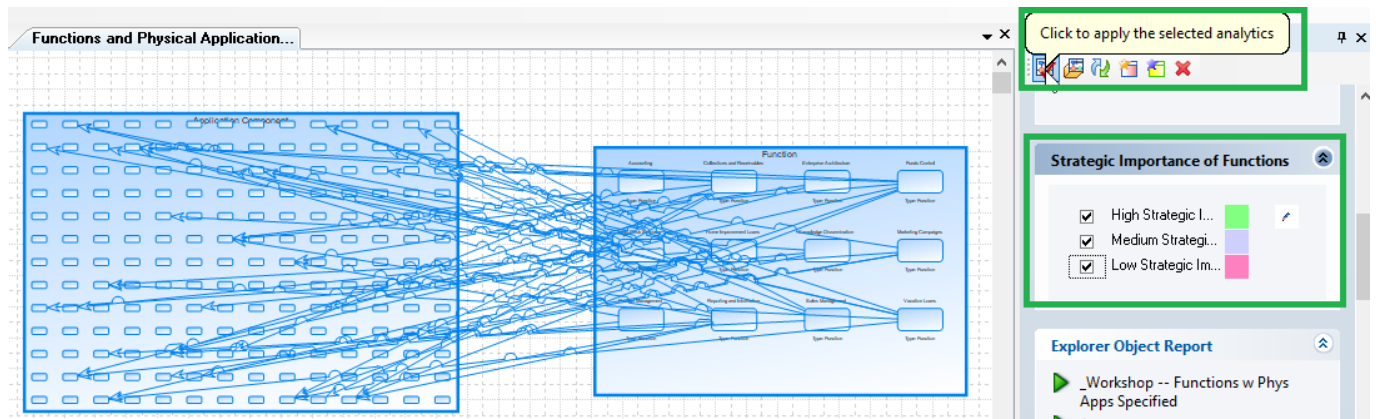
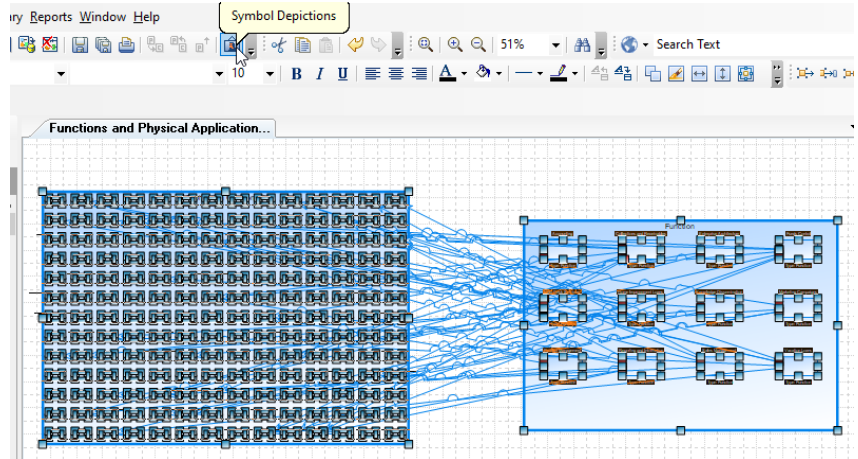


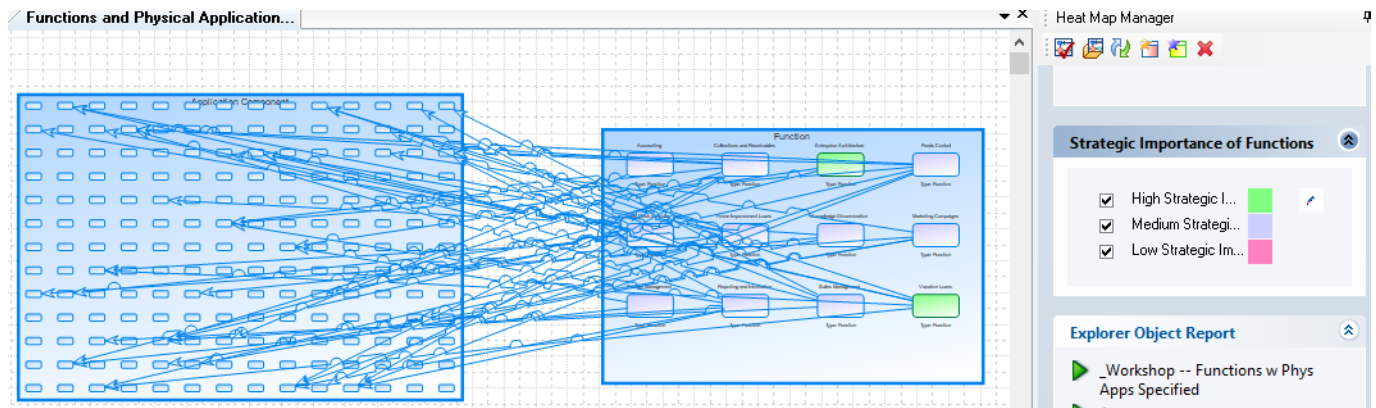
8. NOTE: if you optionally double clicked on one of the relationship lines on the diagram, you will get a message: **That object has no properties to be edited.** The lines simply reflect the running of reports -- you can delete anything on this diagram and it does not affect the architecture -- it is a report.

9. Select all symbols (Edit, Select All) and toggle **off** the Symbol Depictions button in the top menu. We want all symbols to be rectangles, not denoted by their picture.

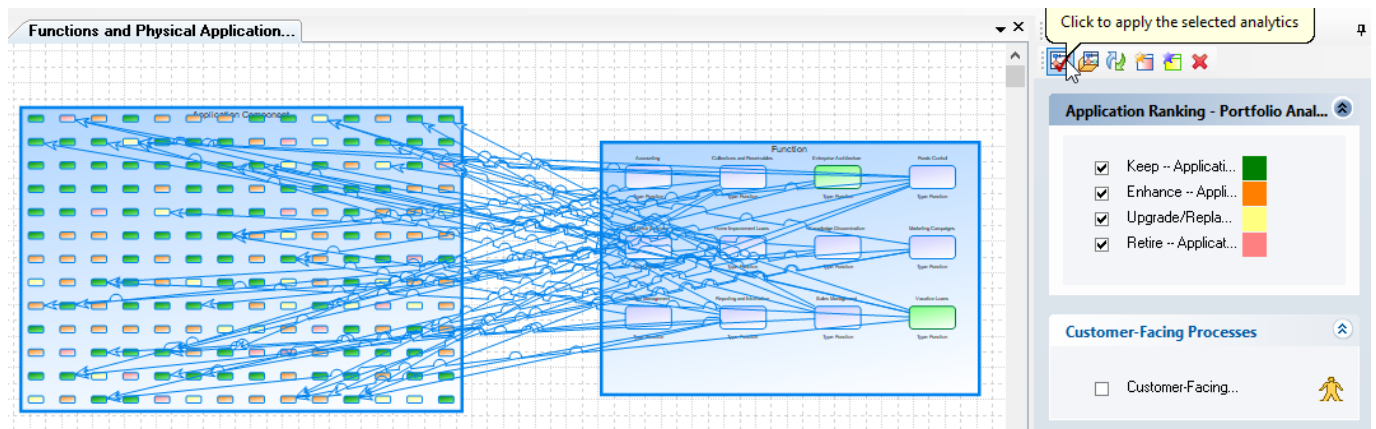
10. In the Heatmap Manager, scroll to the top to find the Analytic reports.

11. Toggle ON all the reports for the **Strategic Importance of Functions** group and click the check-mark button in the upper left corner of the Heatmap Manager to run them (see below).

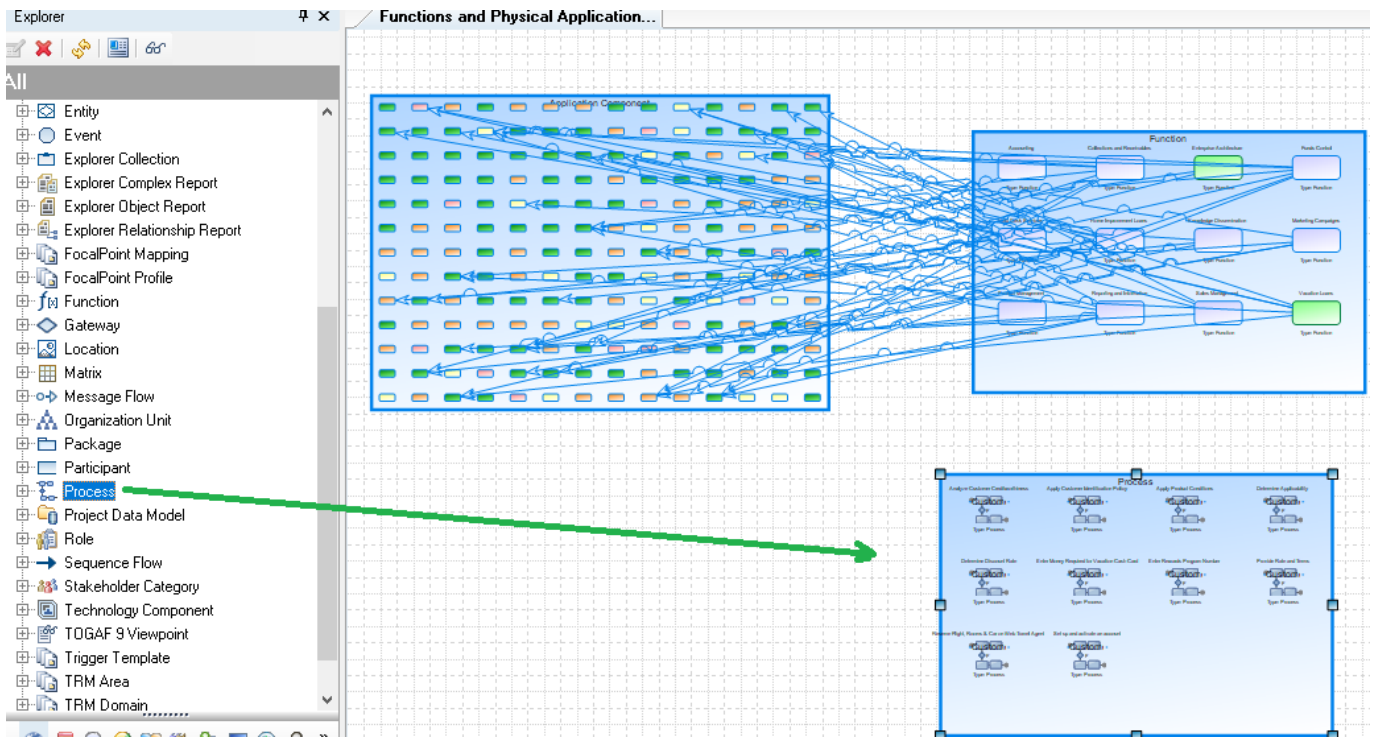




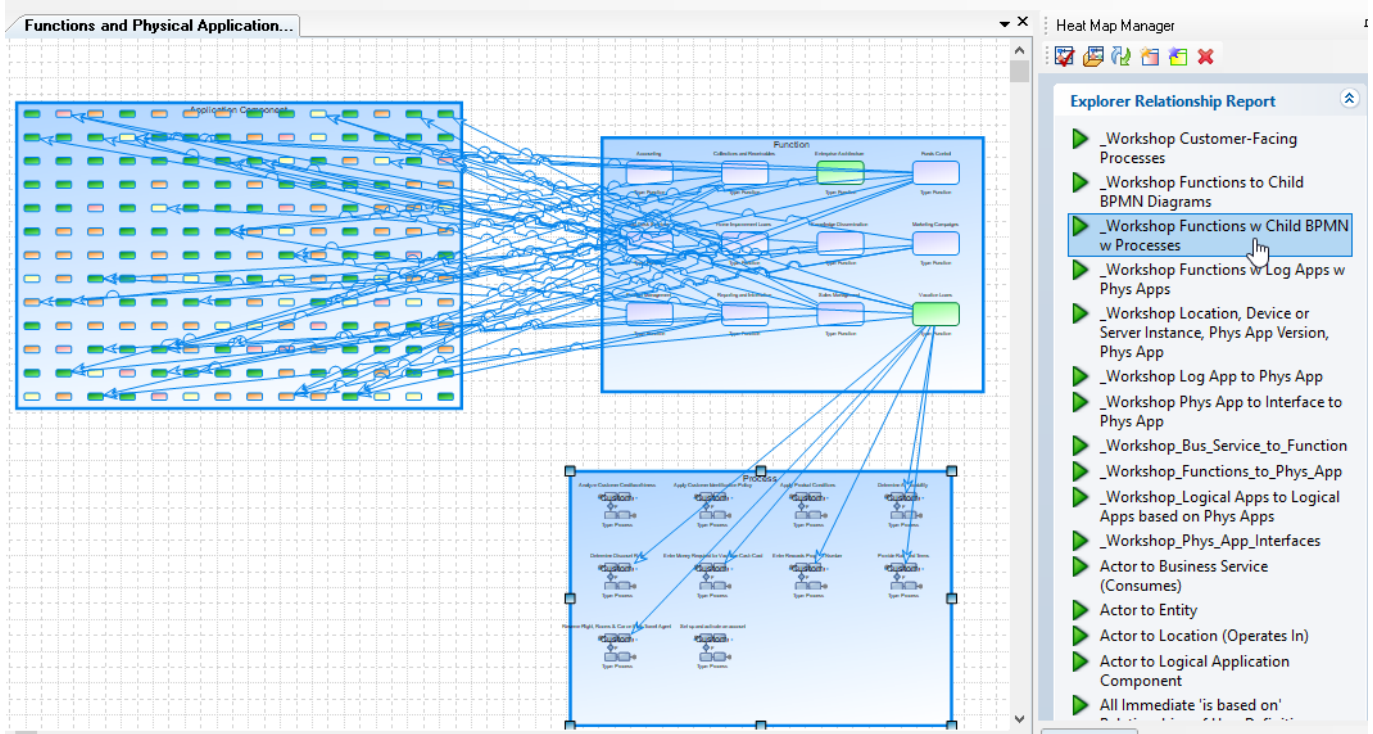
12. Toggle on and run all the reports for the **Application Ranking -- Portfolio Analysis** and **Strategic Importance of Functions** group (see below).



13. From the Explorer (Browser), in the Definitions section, find the Process header and drag it onto the diagram workspace, underneath the Functions group.



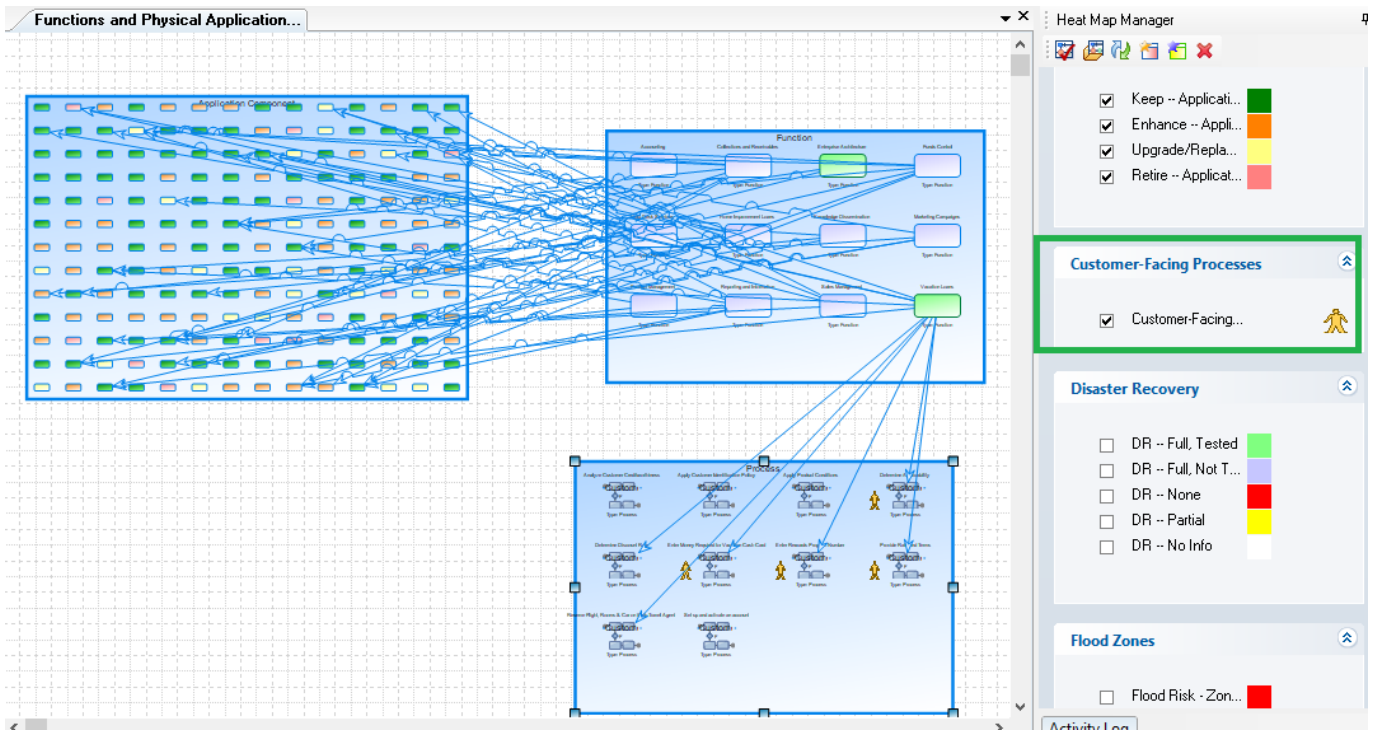
14. From the Heat Map Manager, run the Explorer Relationship report **\_Workshop Functions w Child BPMN w Processes**



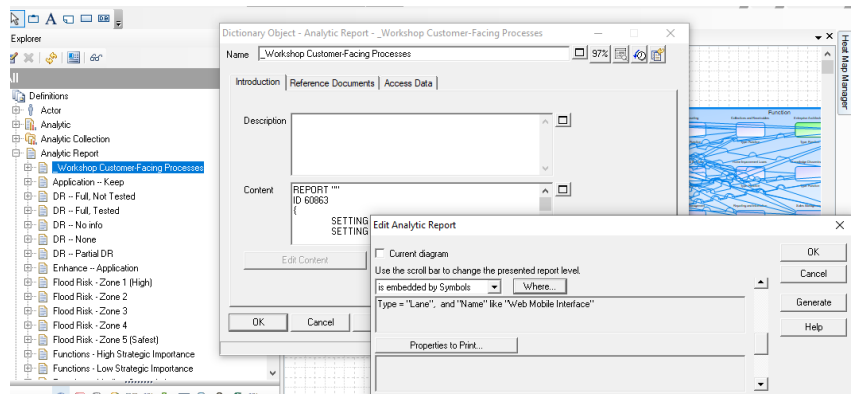
15. Save the diagram.

16. From the Heat Map Manager, toggle on the analytic **Customer-Facing Processes** and run it. Notice it puts the picture of a person next to a customer-facing process.



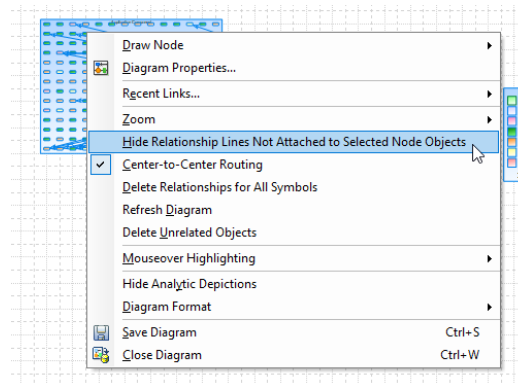


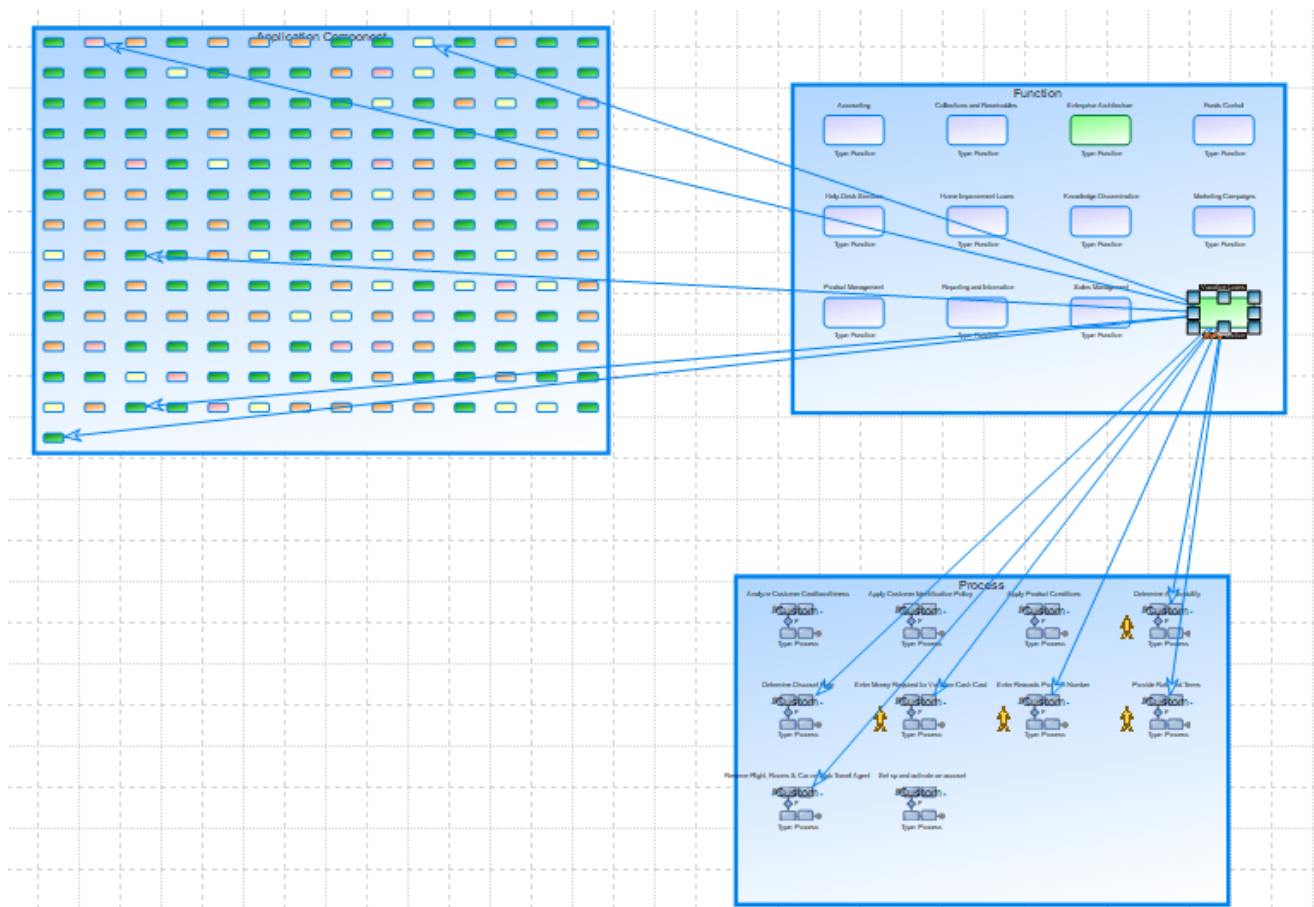
NOTE: If you examined the report that this analytic runs (you can open it under Analytic Reports under Definitions in the Explorer tree), you will see it reports on any process placed in the swimlane named Mobile Web Interface.



17. Right-mouse click on the diagram workspace, and choose **Hide Relationship Lines Not Attached to Selected Node Objects**.

18. Select the function Vacation Loans (see below).





19. Save the diagram.

### Why Is this Useful?



Explorer diagrams provide a 50,000 foot view of the architecture. So far we have built a view that shows direct relationships between Apps and their Locations -- but we could build any combination of Explorer Object and Relationship Reports to show inferred relationships -- for example, show Functions performed at Locations -- leaving out the Logical and Physical Applications that are part of the relationship chain.

In many customer architectures, the Explorer diagram is the central diagram used to expose the architecture.

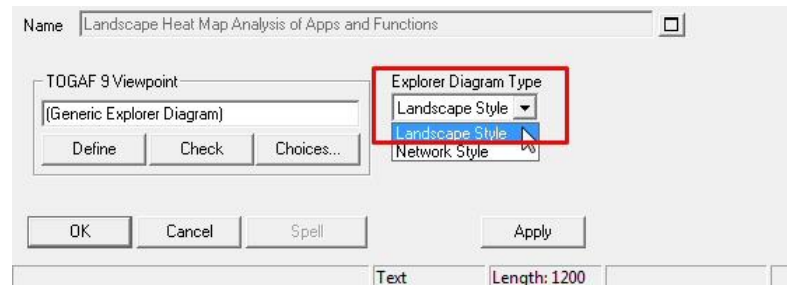
## 8.3 Landscape and Heatmap Analysis

Let's now use a Landscape-style Explorer diagram to visualize the Applications imported their Locations.

### 8.3.1 Build Landscape Explorer Diagram

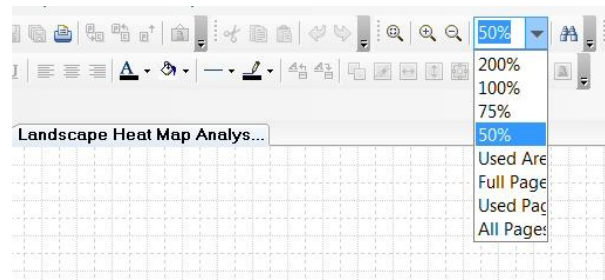
1. Create a new diagram of type Explorer, named **Landscape Heat Map Analysis of Apps and Functions**.

2. **IMPORTANT:** In the dialog that opens, select **Landscape Style** as the Explorer Diagram Type. Also, within the TOGAF 10 Viewpoint property, click **Choices** and drag-and-drop in (**Generic Explorer Diagram**).

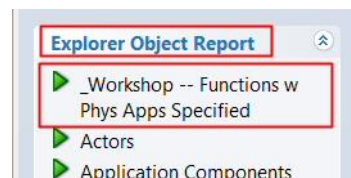


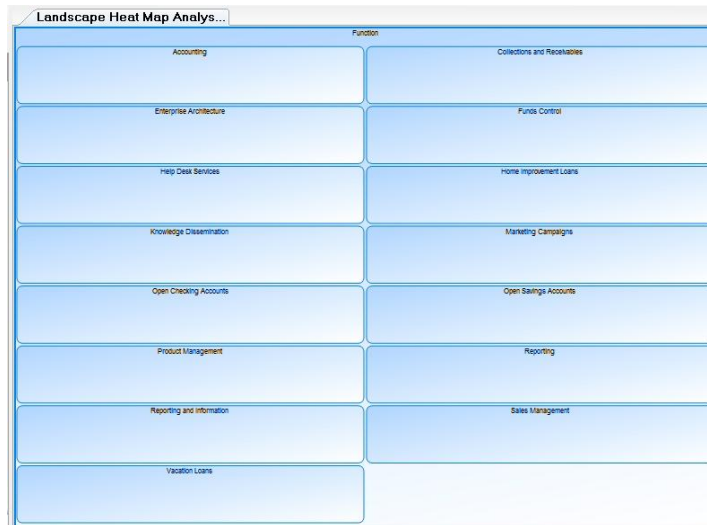
3. Once the diagram is created, right-mouse click on the diagram workspace and choose Diagram Properties.

4. **IMPORTANT:** Select **50%** view.



5. From the Heat Map Manager, run the Explorer Object report **\_Workshop -- Functions w Phys Apps Specified**.

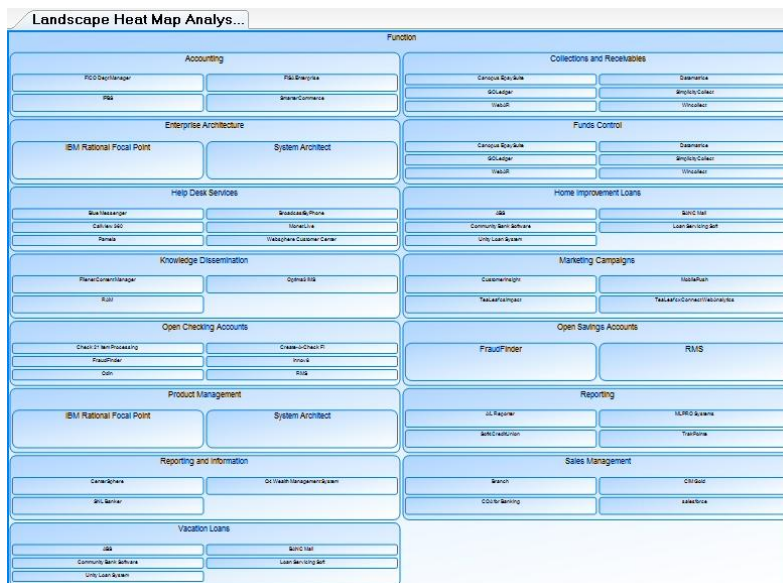




6. From the Heat Map Manager, run the Explorer Relationship report **Workshop Functions w Log Apps w Phys Apps.**

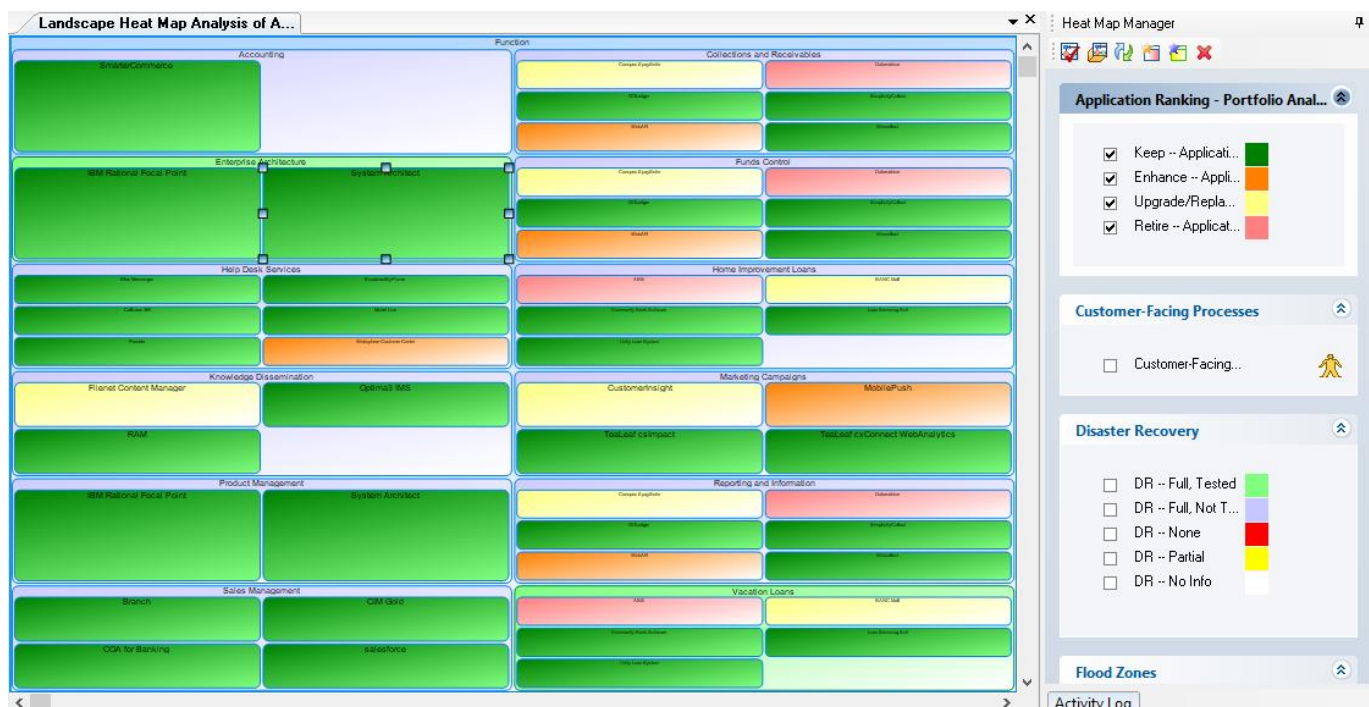
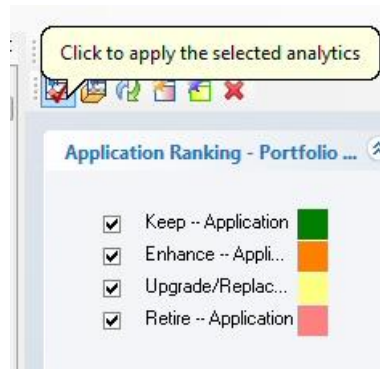
7. Right-mouse click on one of the Applications that auto-draws into the Function boxes, and choose Display Mode.

8. In the Display Mode dialog, select the middle tab (Symbol Type on this Diagram), toggle on Enabled, and leave all choices below it untoggled. This will remove all displayable properties to make the diagram look cleaner. Click **Yes to All**, and then the X button in the top right to close the dialog.



9. From the Heat Map Manager, toggle on all of the reports for **Application Ranking** and for **Strategic Importance of Functions**.

10. Click the **Click to apply selected analytics** button.



Note that you can use this **heatmap** to visually examine, or have other readers and executives visually examine, where there are issues -- for example:

- The Vacation Loans function – colored green to denote high strategic importance -- includes our new application, Money that Matters – but also includes several other applications, one set to be retired (colored red due to analytic report), one set to be upgraded or replaced (yellow), and two others that are in good standing. We may want to examine how and why these other apps are being used and by whom.

- The Reporting and Information function above (which has Medium strategic importance – analytic colored blue) is enabled through three applications which are all scheduled to be retired (colored in red) -- a danger point.

11. Save and close all diagrams.

## Lab 9 Phase D: Capture Infrastructure via CMDB

### Goals of this Lab:

The phases of the TOGAF Architecture Development Method (ADM) do not have to be done in order. Building an Enterprise Architecture is a iterative process and journey – and you can start at any phase of the ADM and continue building.

In this section, we'll look at how to capture infrastructure information through Configuration Management Database (CMDB) tools and relate it to the EA.

### 9.1 Import Infrastructure Information from CMDB Tool



IMPORT INTO

#### REPOSITORY

1. In the Explorer (browser), right-mouse click anywhere, and select **Import XML** from the popup menu.

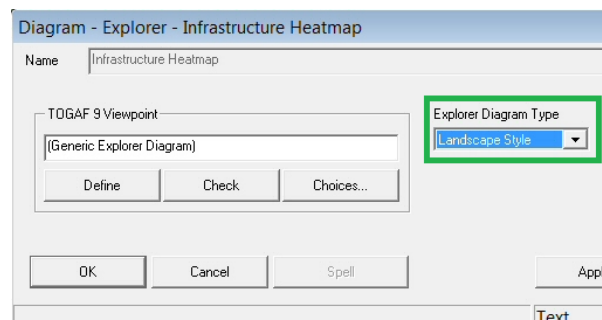
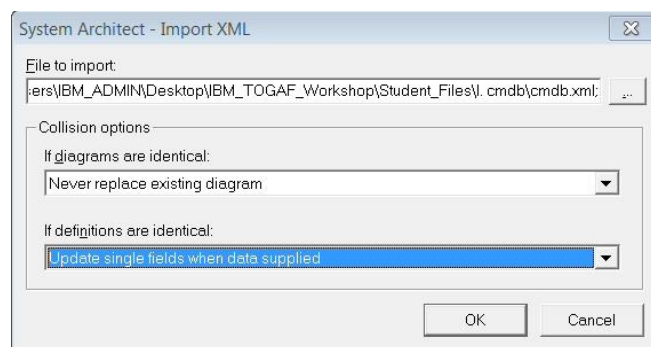
2. Select the file **cmdb.xml**, in the directory Desktop\UNICOM\_SA\_TOGAF\_Workshop\Student\_Files\l.cmdb.



**IMPORTANT:** Make sure to select the collision option for definitions – **Update single fields when data supplied**. Click OK.

**Note:** It will take a few minutes to import the file of infrastructure information garnered by the CMDB tool sniffing the network.

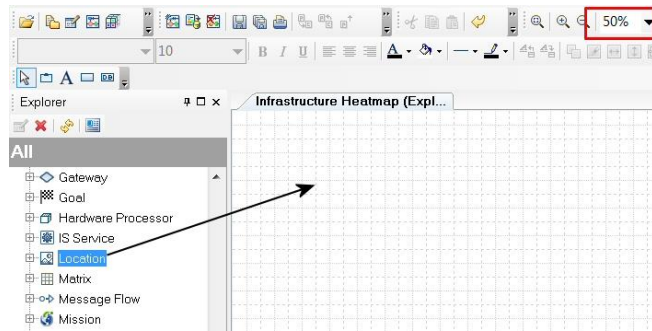
3. Create a new Explorer diagram named **Infrastructure Heatmap** -- select **Landscape Style** as the Explorer Diagram Type. Also, within the TOGAF 10 Viewpoint property, click **Choices** and drag-and-drop in (**Generic Explorer Diagram**).



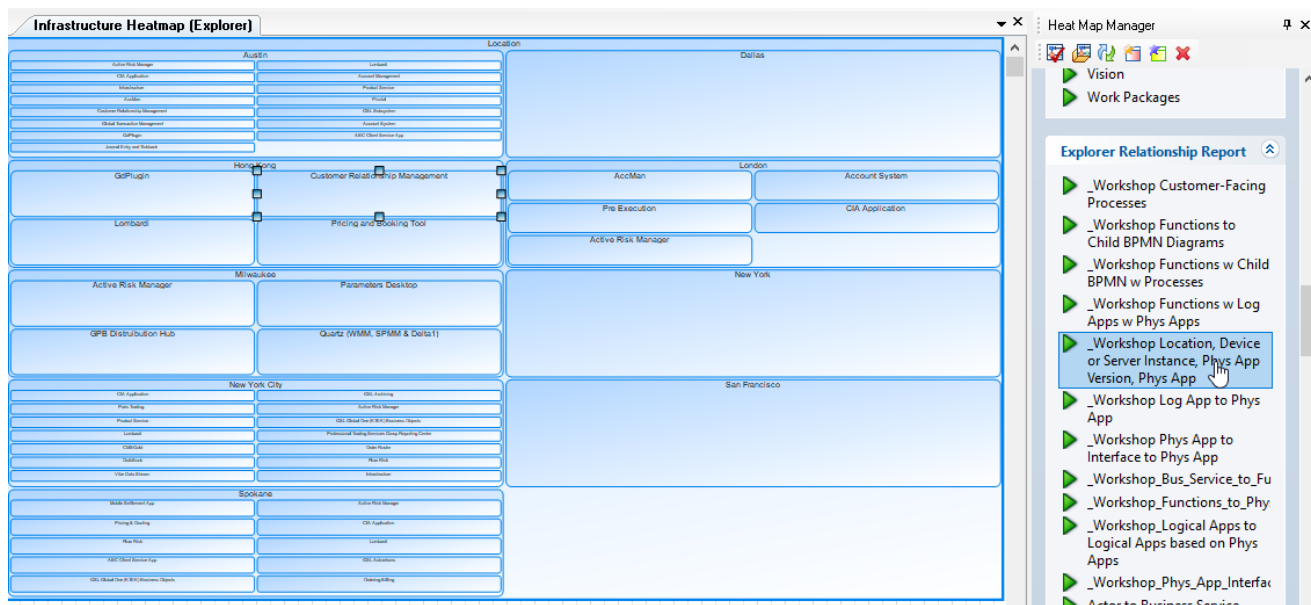


4. Set the diagram to 50% view (see red rectangle at right).

5. From the Explorer (browser) find the **Locations** group of definitions and drag them onto the diagram.



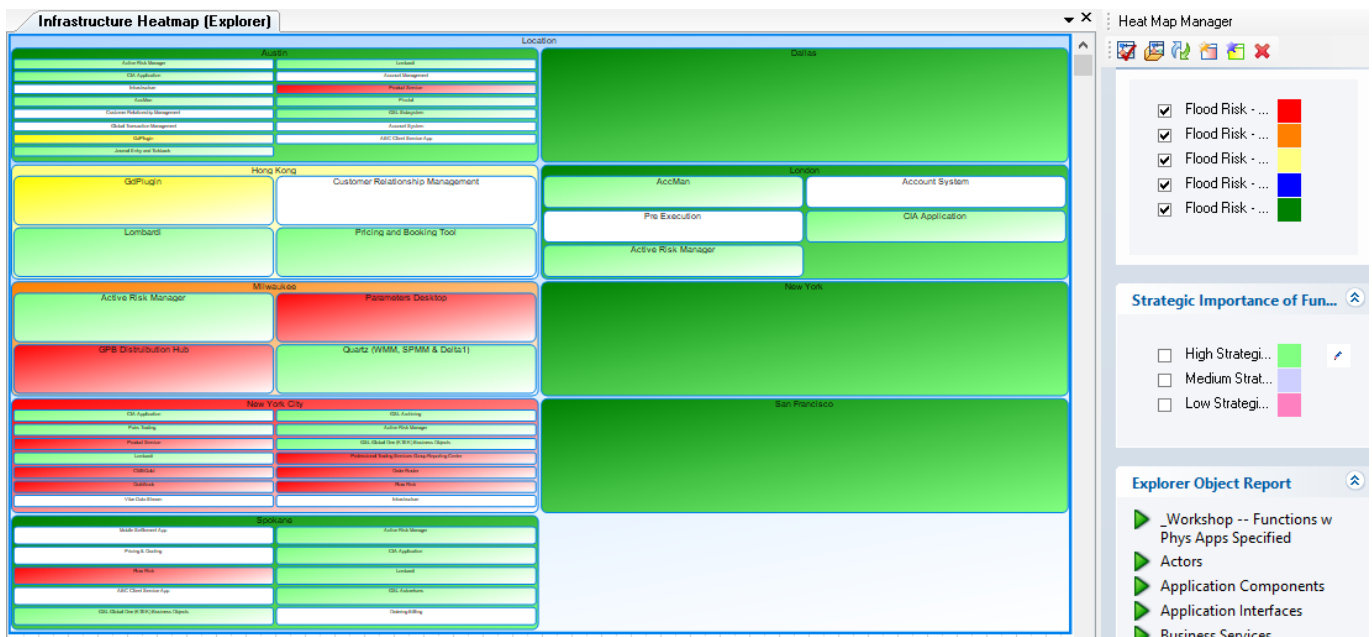
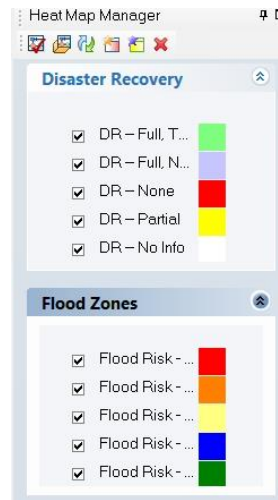
6. In the Heatmap Manager, run the Explorer Relationship Report **\_Workshop Location, Device or Server Instance, Phys App Instance, Phys App**





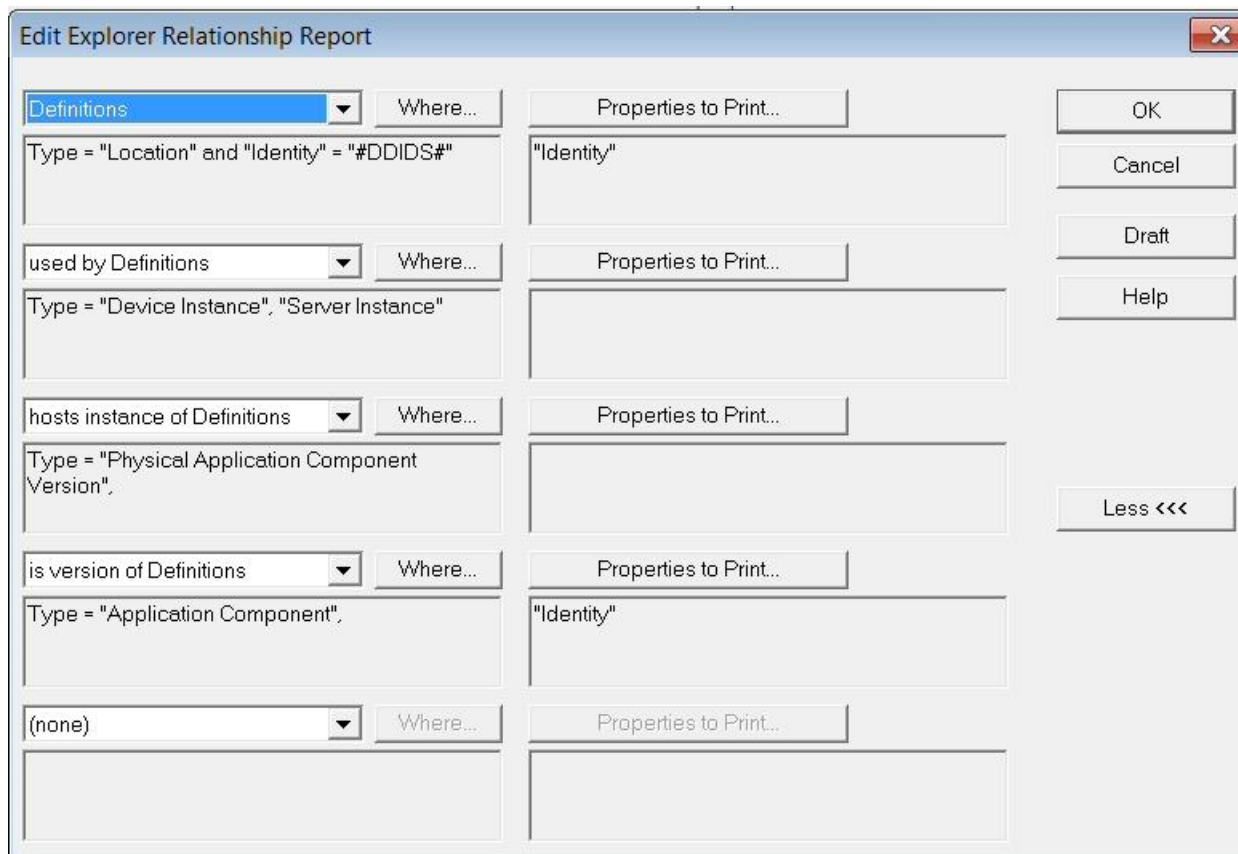
7. In the Heatmap Manager, toggle on all of the reports for Disaster Recovery, and all of the reports for Flood Zones and click the check mark in Heat Map Manager to run them.

All applications on the diagram will be colored according to their Disaster Recovery status, and all Locations on the diagram will be colored with their Flood Zone analytic color.



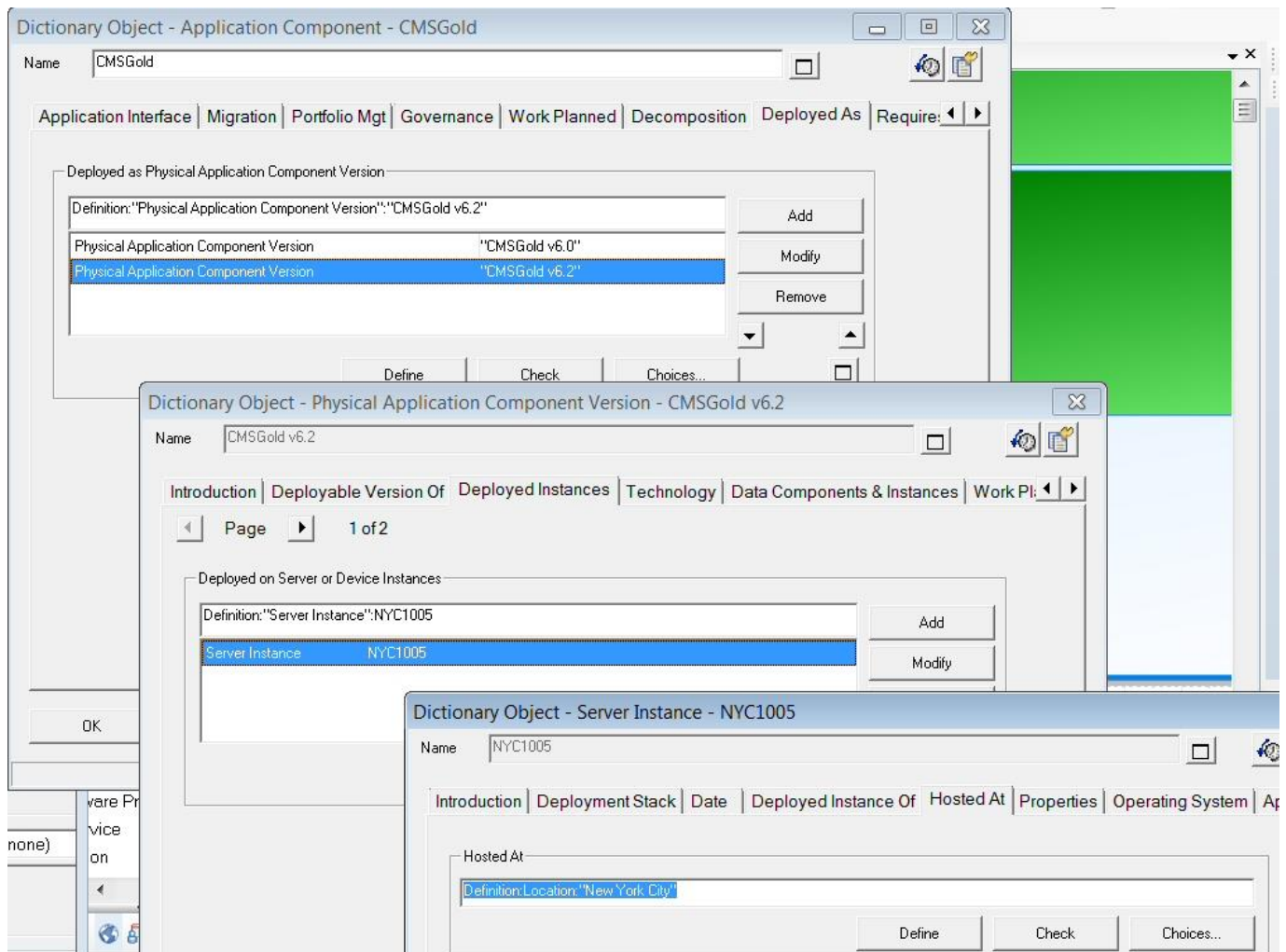
If you open the Explorer Relationship Report **\_Workshop Location, Device or Server Instance, Phys App Version, Phys App**, you can see that selects Location, that have Device Instance or Server Instance installed, which host Physical Application Version, which is a version of Physical Application.

The report simply starts with Location and places Physical Applications in them (not showing the in-between information of Server Instances or Physical Application Versions). This is the power of reporting – hiding unnecessary details.



If you opened any of the Applications on the diagram, you can navigate through its definition to see that an **Application (Physical)** is deployed as a **Physical Application Component Version**, is deployed on a **Server Instance** or **Device Instance** (which has an Operating System version installed), is hosted at a **Location**.

This metamodel is more fine-grained than standard TOGAF 10 – it is provided by UNICOM® Systems based on its work with customers implementing TOGAF 10 in real-world architectures.



### What did you just do?



- Imported a spreadsheet from a network sniffing tool, which provided information on Server and Device instances at locations, and the application versions running on them, and then
- Merged that into EA information concerning the Flood Risk at those Locations and the Disaster Recovery Plans of the Applications
- From this we gained a quick head's up of issues – Applications with no Disaster Recovery Plans being hosted at Locations with high risk of flooding.



You have finished the lab. We hope it has been useful for you.









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