

ARCHIMATE MODELS: VIDEO GAMES SHOP (IT-VGS) OPTIMIZE YOUR BUSINESS

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TION.**

**2017 JULY 22 BOZEN
HEIDER JEFFER**

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Big thanks go to: “[ArchiMate® 3.0.1 Specification, an Open Group Standard](#)” and “[IT Service Management | Harvard University Information Technology](#)”. They help us with details on: ArchiMate tutorial, definitions, examples, logic relations and structures.

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1 ARCHIMATE MODELS: VIDEO GAMES SHOP (IT-VGS)

In this project we developed ArchiMate models for Video Games Shop(VGS).

Please find in the attached file the following:

- ArchiMate model for ASIS Video Games Shop
- ArchiMate model for TOBE Video Games Shop
- ArchiMate model for Video Games Shop's Motivation
- ArchiMate model for Deliverable
- ArchiMate model for the Implementation & Migration
- ArchiMate model for Migration Planning Analysis
- ArchiMate model for Analysis - Impact of Change
- Pdf The project documentation, and Archi models
- Tables represent the logical relations between the IT elements

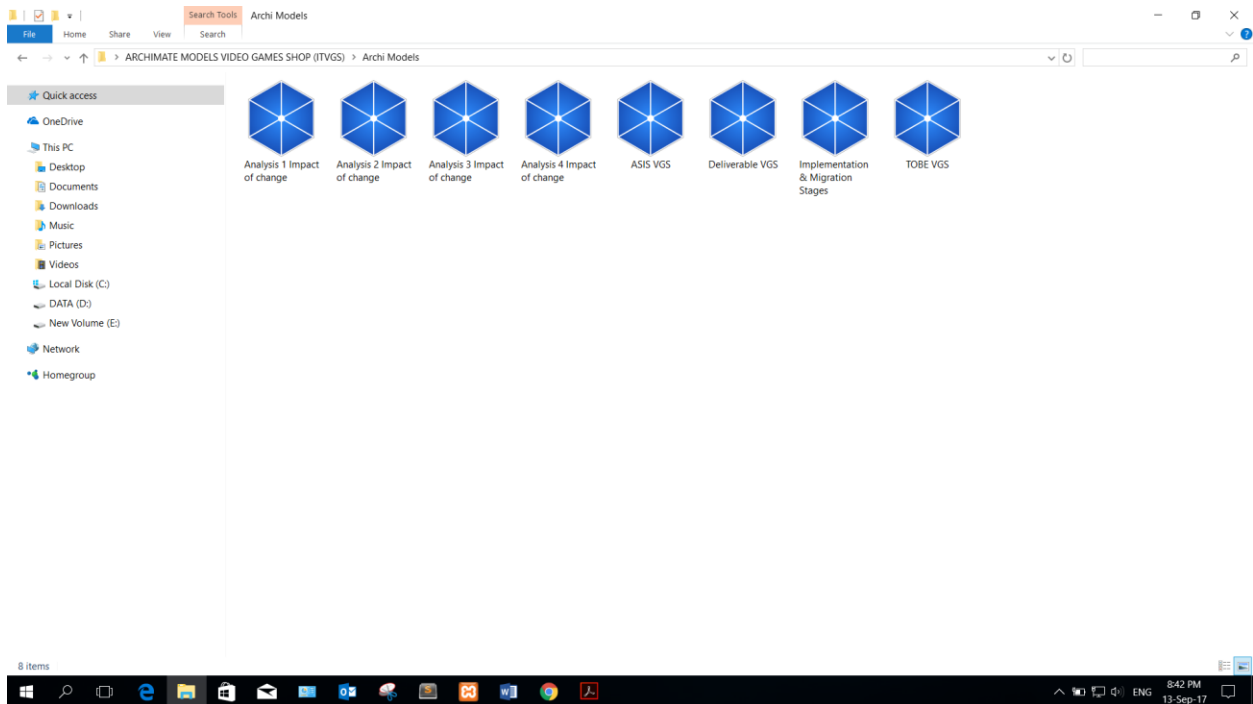


FIGURE 1 ARCHIMATE SOFTWARE BY HEIDER JEFFER

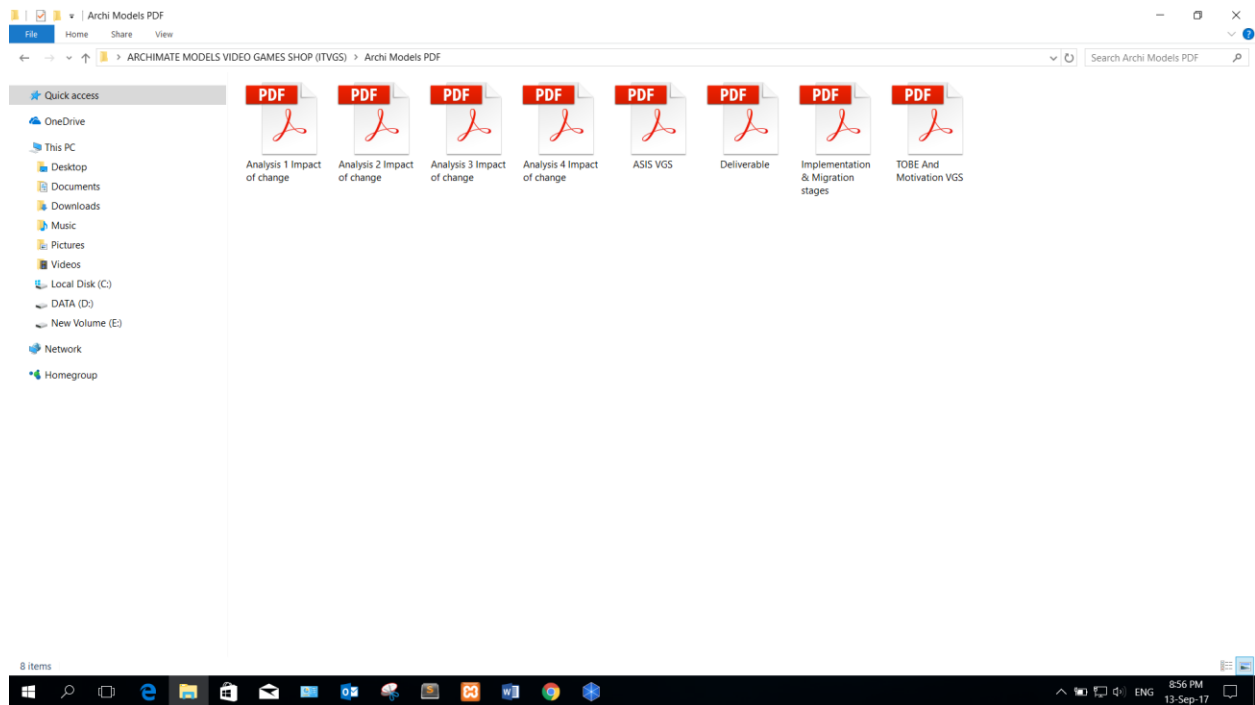


FIGURE 1 ARCHIMATE PDF VERSION BY HEIDER JEFFER

2 Requirements

ArchiMate® 3.0.1 Specification, an Open Group Standard <https://goo.gl/oyvTaS>

ArchiMate: <https://goo.gl/DccHPW>

Microsoft Office: <https://goo.gl/hSb6ed>

Operating System AMD-Windows 10 Bit-64

3 ARCHIMATE MODELS: VIDEO GAMES SHOP (IT-VGS)

(IT-VGS) model is the name of our project. The (IT) means IT and Service management, and the (VGS) means Video Games Shop.

IT Service Management is a general term that describes a strategic approach for designing, delivering, managing and improving the way information technology (IT) is used within the Video Games Shop.

In the global worldwide the market and the globe are moved from the physical reality to the digital reality, the information technologies, Advance Internet Technologies (AIT), Human Machine Interaction they are very important topics to optimize your business and maximize the profit with minimum cost. The major goal of using IT Service Management framework for your Video Games Shop is to ensure that the right processes, people and technology are in place so that our Video Games Shop (VGS) can meet its business goals. In this project we will explain step by step the ASIS, TOBE, and the Motivation Models. We will explain briefly the gap analysis. We will give an overview of the ASIS, TOBE and Motivation elements and their relationships. Finally we want your Video Games Shop move forward and to be a part in Worldwide marketing.

4 Project Tooltip - ArchiMate

4.1 Project Files and Folders

This image shows the files of our projects with ArchiMate software

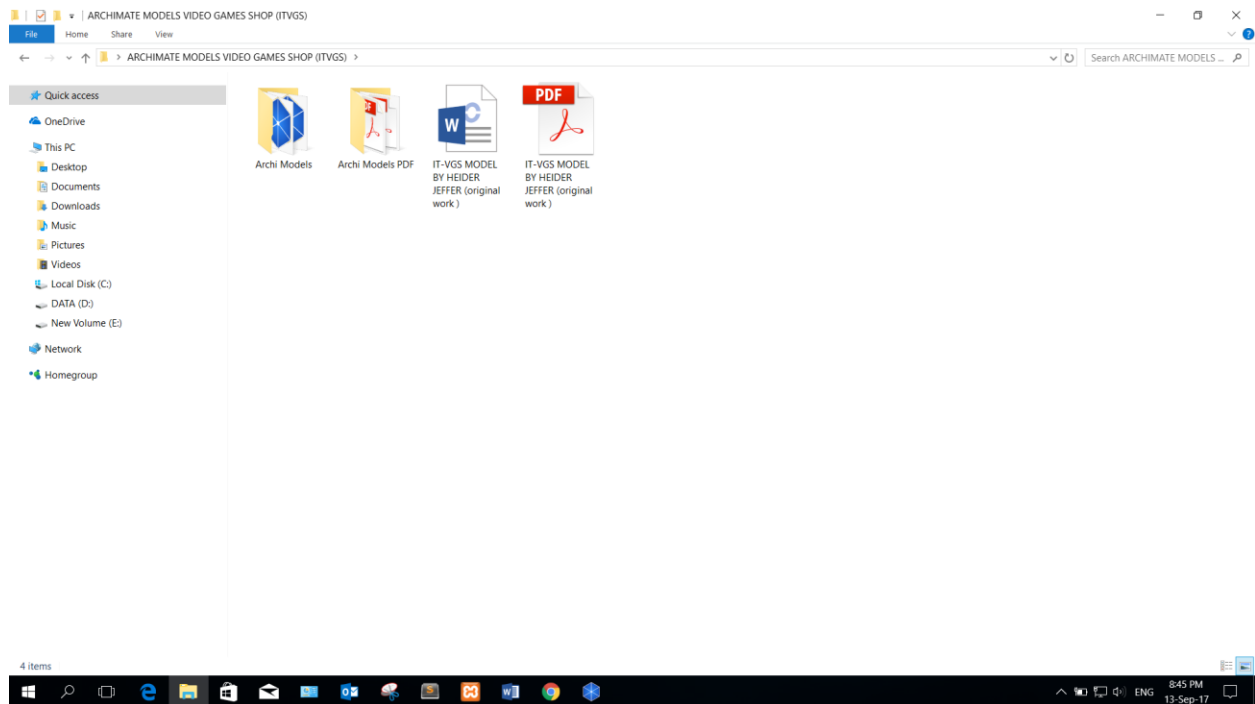


FIGURE 2 1.1 PROJECT FILES AND FOLDERS BY HEIDER JEFFER

4.2 Project Model's "Views"

This Image show the VGS models. Click on model's "Views" to see the model's elements and the logic relations between these elements.

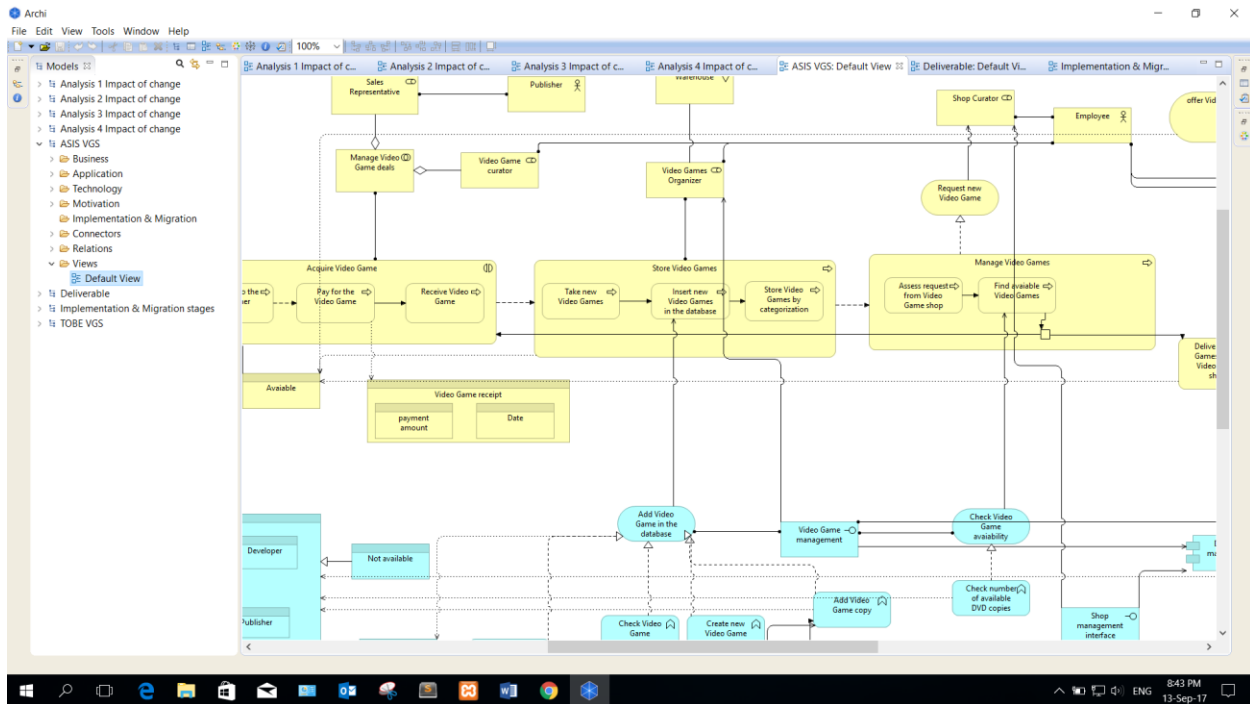
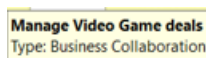
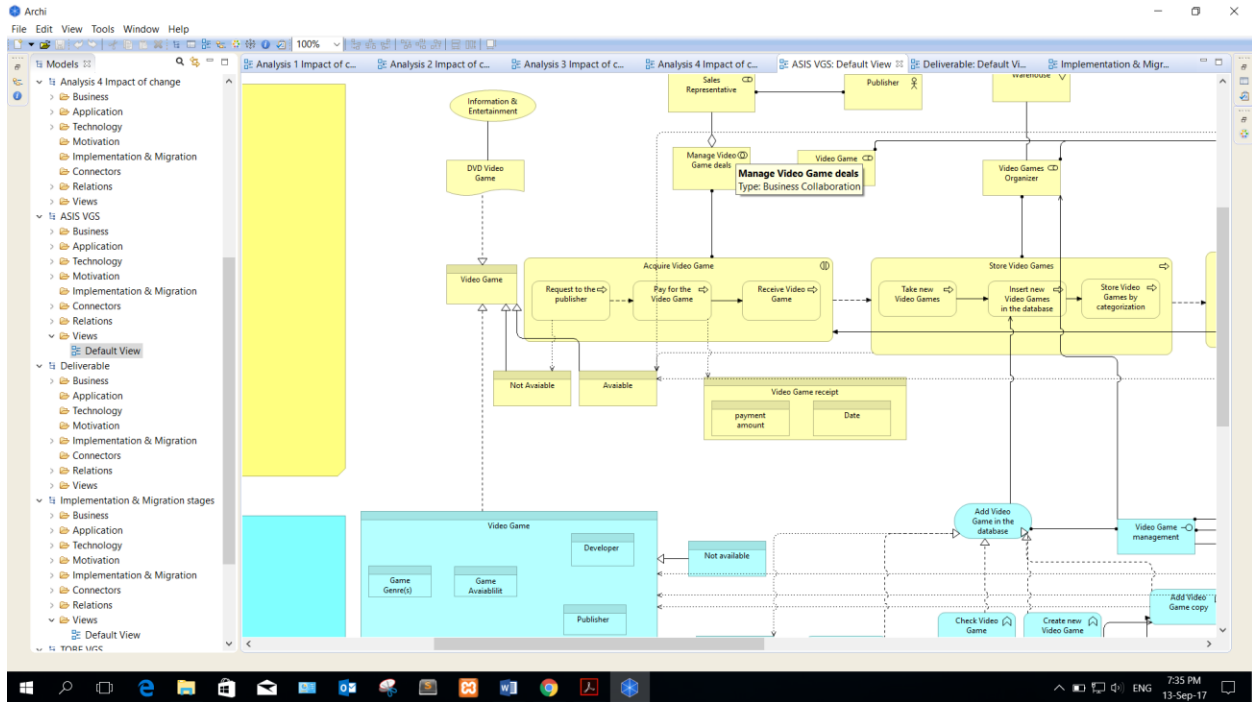


FIGURE 1 ARCHI VGS BY HEIDER JEFFER

4.3 Project Hover Box ArchiMate Figures

See the image. Here we will explain ArchiMate user interface element. The user hovers the pointer over an item "Manage Video Game deals" without clicking it, and a tooltip may appear—a small "hover box" with information about the item being hovered over.





4.4 Project Hover Box ArchiMate Relations

See the image. Here we will explain ArchiMate user interface element. The user hovers the pointer over an relation between two elements “Manage Video Game deals” and “Video Game curator” without clicking it, and a tooltip may appear—a small "hover box" with information about the relation being hovered over.

Aggregation relation
Type: Aggregation relation
Manage Video Game deals aggregates Video Game curator

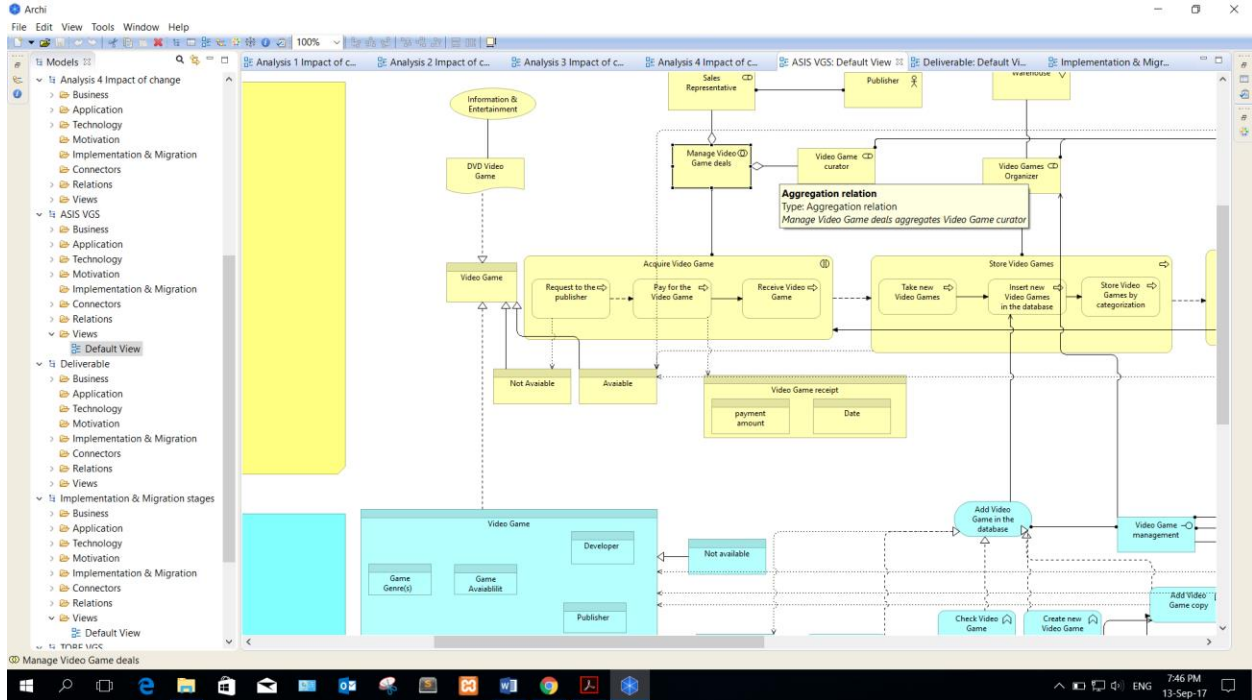


FIGURE 3 ARCHIMATE RELATIONS BY HEIDER JEFFER

4.5 Project Control + F – Find/Replace Element

See image. Click Control + F , and type the figure that you looking for press enter than you will find the figure that you are looking for.

This tool is very helpful to find element, to modify (element/relation) or to update/improve the system

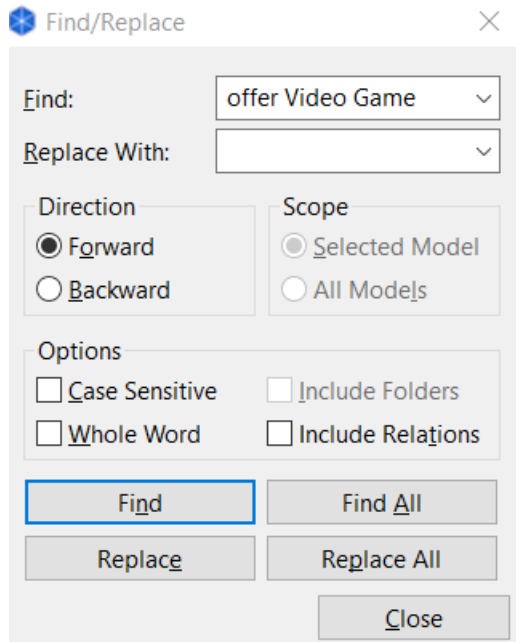


FIGURE 4 PROJECT CONTROL + F – FIND/REPLACE ELEMENT BY HEIDER JEFFER

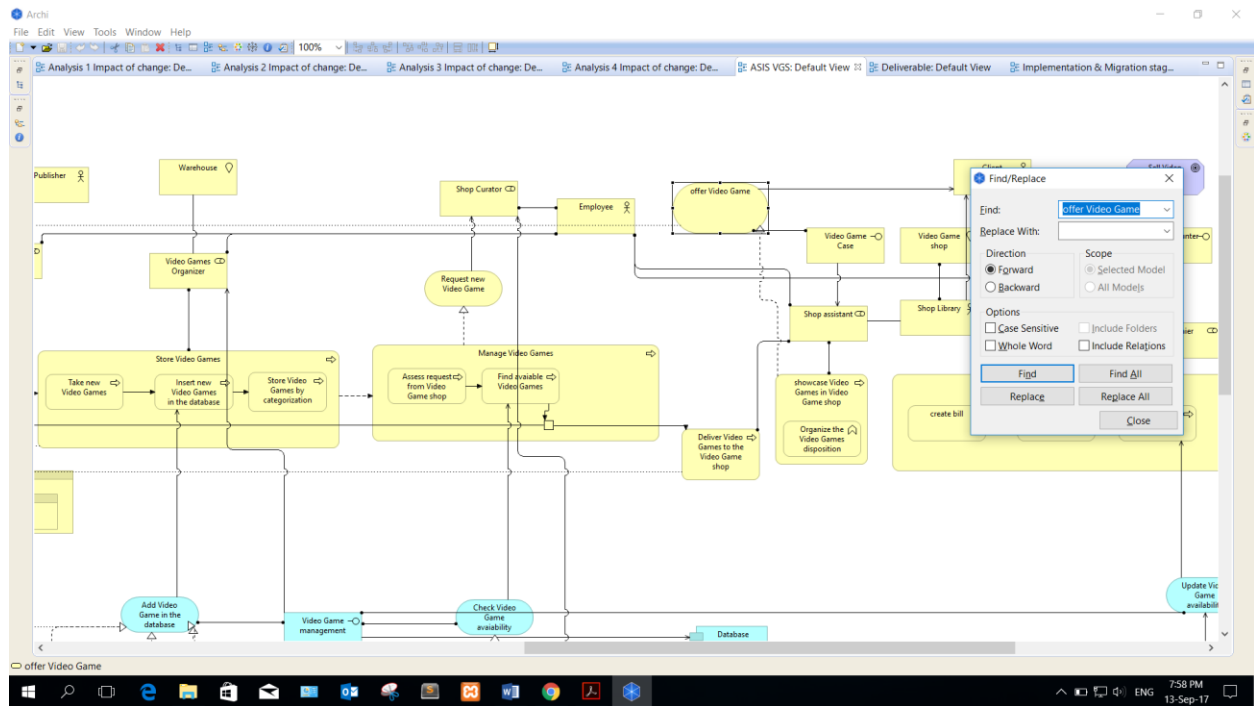


FIGURE 5 FIND/REPLACE ELEMENT BY HEIDER JEFFER

5 THE CURRENT ARCHITECTURE (ASIS)

This is Archimate ASIS model snap shot for our video games shop developed by Heider Jeffer

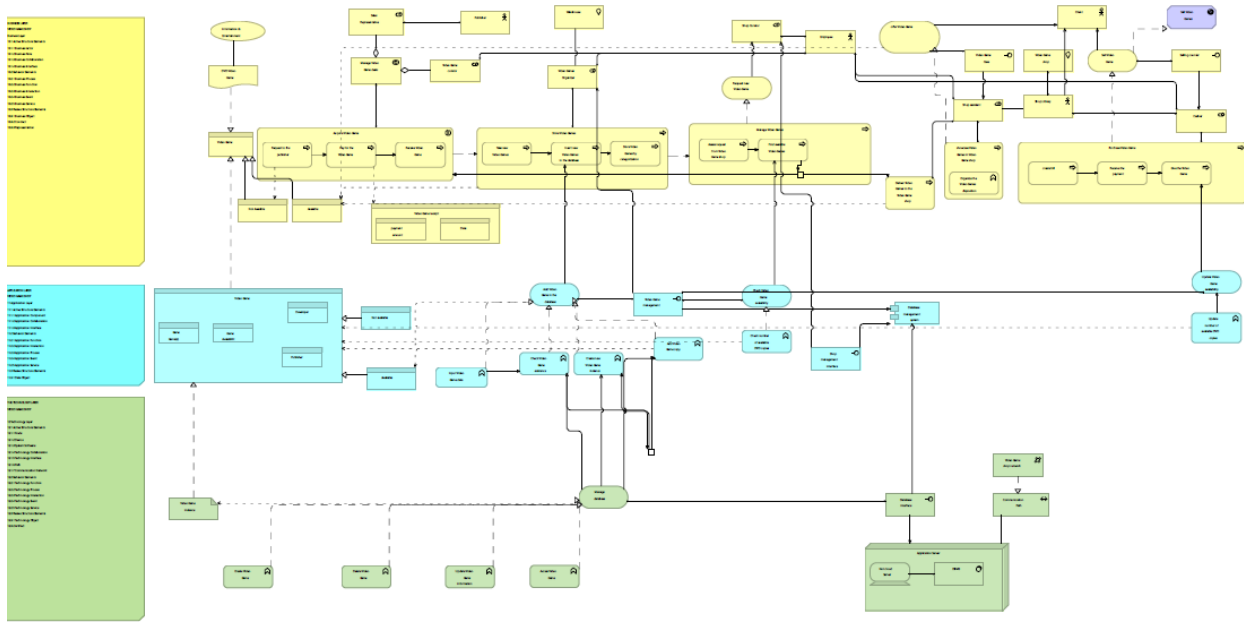


FIGURE 3 THE CURRENT ARCHITECTURE (ASIS) BY HEIDER JEFFER

6 ASIS: Business Layer

FIGURE 2 gives an overview of the Business Layer elements and their relationships

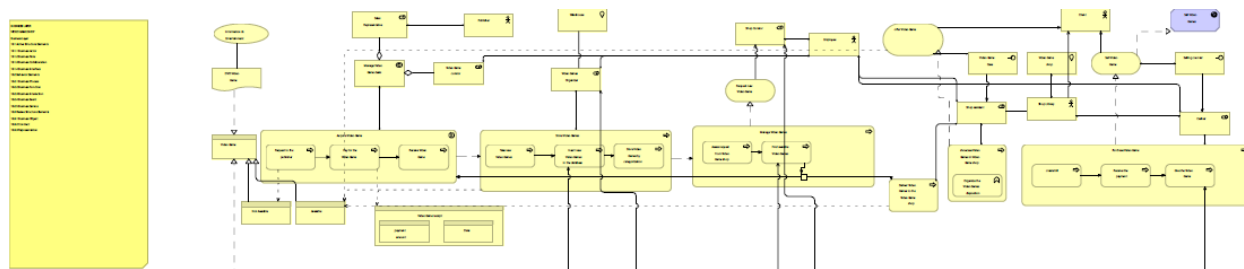


FIGURE 4 ASIS: BUSINESS LAYER BY HEIDER JEFFER

6.1 Active Structure Elements

The active structure aspect of the Business Layer refers to the static structure of an organization, in terms of the entities that make up the organization and their relationships.

6.1.1 Business Actor

A Business Actor is a business entity that is capable of performing behavior.

MODEL: Business Actor		
Element	Relation	Element
Business service “Sell Video Game “	Is Used By	Business Actor “Client”
Business service “offer Video Game”	Is Used By	Business Actor “Client”
Business Actor “Shop Library”	Is Used By	Business Actor “Client”
Business Actor “Employee”	Is Assigned To	Business Role “Shop assistant”
Business Actor “Employee”	Is Assigned To	Business Role “Shop Curator”
Business Actor “Employee”	Is Assigned To	Business Role “Cashier”
Business Actor “Employee”	Is Assigned To	Business Role “Video Games Organizer”
Business Actor “Employee”	Is Assigned To	Business Role “Video Game curator”
Business Actor “Shop Library”	Is Used By	Business Actor “Client”
Business location “Video Game shop”	Is Assigned To	Business Actor “Shop Library”
Business Role “Shop assistant”	Is Associated With	Business Actor “Shop Library”
Business Actor “Shop Library”	Is Used By	Business Actor “Client”
Business location “Video Game shop”	Is Assigned To	Business Actor “Shop Library”
Business Role “Shop assistant”	Is Associated With	Business Actor “Shop Library”
Business Actor “Shop Library”	Is Assigned To	Business Role “Cashier”

6.1.2 Business Role

A Business Role is the responsibility for performing specific behavior, to which an actor can be assigned, or the part an actor plays in a particular action or event.

MODEL: Business Role		
Element	Relation	Element
Business Role “Cashier”	Is Assigned To	Business Process “Purchase Video Game”

Business Interface “Selling counter”	Is Used By	Business Role “Cashier”
Business Actor “Employee”	Is Assigned To	Business Role “Cashier”
Business Actor “Shop Library”	Is Assigned To	Business Role “Cashier”
Business Role “Shop assistant”	Is Associated With	Business Actor “Shop Library”
Business Role “Shop assistant”	Is Assigned To	Business Process “showcase Video Games in Video Game shop”
Business Role “Shop assistant”	Is Assigned To	Business Process “Deliver Video Games to the Video Game shop”
Business Interface “Video Game case”	Is Used By	Business Role “Shop assistant”
Business Actor “Employee”	Is Assigned To	Business Role “Shop assistant”
Business Role “Video Games Organizer”	Is Assigned To	Business Process “Store Video Games”
Business Actor “Employee”	Is Assigned To	Business Role “Store Video Games”
Business Role “Video Games Organizer”	Is Associated With	Business Location “Warehouse”
Business Application Interface “Video Game management”	Is Used By	Business Role “Video Games Organizer”
Business Collaboration “Manage Video Game deals”	Aggregate	Business Role “Video Game curator”
Business Actor “Employee”	Is Assigned To	Business Role “Video Game curator”
Business collaboration “Manage Video Game deals”	Aggregates	Business Role “Sales Representative”
Business Actor “Publisher”	Is Assigned To	Business Role “Sales Representative”

6.1.3 Business Collaboration

A business collaboration is an Aggregate of two or more business internal active structure elements that work together to perform collective behavior.

MODEL: Business Collaboration		
Element	Relation	Element

Business Collaboration “Manage Video Game deals”	Aggregates	Business Role “Video Game curator”
Business collaboration “Manage Video Game deals”	Aggregates	Business Role “Sales Representative”

6.1.4 Business Interface

A Business Interface is a point of access where a business service is made available to the environment.

MODEL: Business Interface		
Element	Relation	Element
Business Interface “Selling counter”	Is Used By	Business Role “Cashier”
Business Interface “Video Game Case”	Is Assigned To	Business Service “offer Video Game”

6.2 Behavior Elements

Based on service-orientation, a crucial design decision for the behavioral part of the ArchiMate metamodel is the distinction between “external” and “internal” behavior of an organization

6.2.1 Business Process

A business process represents a sequence of business behaviors that achieves a specific outcome such as a defined set of products or business services.

MODEL: Business Process		
Element	SEE MORE ON ARCHI	Element
Business Process “Find available Video Games”	or Triggers or junction the following:	-Business Interaction “Acquire Video Game” -Business Process “Deliver Video Games to the Video Game shop”
Application Service “Update Video Game availability”	Is Used By	Business Process “Give the Video Game

6.2.2 Business Function

A business function is a collection of business behavior based on a chosen set of criteria (typically required business resources and/or competencies), closely aligned to an organization, but not necessarily explicitly governed by the organization.

MODEL: Business Function		
Element	Relation	Element
Business Functions: “Check number of available DVD copies” “Add Video Game copy” “Update number of available DVD copies”	Are Access	Application Data Object "video games"

6.2.3 Business Interaction

A business interaction is a unit of collective business behavior performed by (a collaboration of) two or more business roles, e.g.

MODEL: Business Interaction		
Element	Relation	Element
Business Interaction “Acquire Video Game”	flows to	Business Process “Store Video Games”
Business Process “Find available Video Games”	or triggers or junction	Business Interaction “Acquire Video Game” Business Process “Deliver Video Games to the Video Game shop”
Business Collaboration “Manage Video Game deals”	Is Assigned To	Business Interaction “Acquire Video Game”

6.2.4 Business Service

A business service represents an explicitly defined exposed business behavior.

MODEL: BUSINESS SERVICE		
Element	Relation	Element
Business Service “Sell Video Game”	Is Used By	Business Actor “Client”

Business Service “Sell Video Game”	Realises	Business Goal “Sell Video Games”
Business Interface “Selling counter”	Is Assigned To	Business Service “Sell Video Game”
Business Process “Purchase Video Game”	Realises	Business Service “Sell Video Game”
Business Service “Request New Video Game”	Is used by	Business Role “Shop Curator”
Business Process “Manage Video Games”	Realises	Business Service “Request New Video Game”
Business Service “offer Video Game”	Accesses	Business Contract “Available”
Business Interface “Video Game Case”	Is Assigned To	Business Service “offer Video Game”
Business Service “offer Video Game”	Is Used By	Business Actor “Client”
Business Process “show case Video Games in Video Game shop”	Realises	Business Service “offer Video Game”

6.3 Passive Structure Elements

The passive structure aspect of the Business Layer contains the passive structure elements (business objects) that are manipulated by behavior, such as business processes or functions. The passive entities represent the important concepts in which the business thinks about a domain.

6.3.1 Business Object

A business object represents a concept used within a particular business domain.

MODEL: Business Object		
Element	Relation	Element
Business Contract “Available”	Is A Specialization Of	Business Object “Video Game”
Business Contract “Not Available”	Is A Specialization Of	Business Object “Video Game”
Business representation “DVD Video Game”	Realises	Business Object “Video Game”

Business Data object “Video Game”	Realises	Business Object “Video Game”
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6.3.2 Contract

A contract represents a formal or informal specification of an agreement between a provider and a consumer that specifies the rights and obligations associated with a product and establishes functional and non-functional parameters for interaction.

MODEL: Business Contract		
Element	Relation	Element
Business Contract “Available”	Is A Specialization Of	Business Object “Video Game”
Business Contract “Not Available”	Is A Specialization Of	Business Object “Video Game”
Business Service “offer Video Game”	Accesses	Business Contract “Avaible”
Business processes “Request to the publisher”	Accesses	Business Contract “Not Avaible”
Business Processes “Pay for the Video Game”	Accesses	Business Contract “Video Game receipt”

6.3.3 Representation

A representation represents a perceptible form of the information carried by a business object.

MODEL: Business Representation		
Element	Relation	Element
Business Representation “DVD Video Game”	Realises	Business Object “Video Game”
Business Value “Information & Entertainment”	Is Associated With	Business Representation “DVD Video Game”

7 ASIS: Application Layer

Screenshot gives an overview of the Application Layer elements and their relationships. Whenever applicable, inspiration has been drawn from the analogy with the Business Layer.

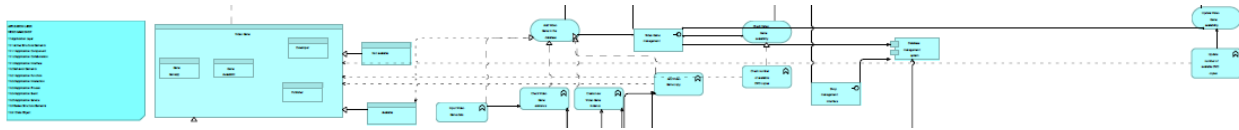


FIGURE 5 ASIS: APPLICATION LAYER BY HEIDER JEFFER

7.1 Active Structure Elements

The main active structure element for the Application Layer is the *application component*.

7.1.1 Application Component

An application component represents an encapsulation of application functionality aligned to implementation structure, which is modular and replaceable. It encapsulates its behavior and data, exposes services, and makes them available through interfaces.

MODEL: Application Component		
Element	Relation	Element
Application Interfaces: “Video Game management” “Shop management interface”	Are Used By	Application Component “Database management system”
Technology (Infrastructure Interface) “Database interface”	Is Used By	Application Component “Database management system”

7.1.2 Application Interface

An application interface represents a point of access where application services are made available to a user, another application component, or a node.

MODEL: Application Interface		
Element	Relation	Element
Application Interface “Video Game management”	Is Assigned To	Application Service “Add Video Game in the database”
Application Interface “Video Game management”	Is Assigned To	Application Service “Check Video Game availability”
Application Interface “Video Game management”	Is Assigned To	Application Service “Update Video Game availability”
Application Interface “Shop management interface”	Is Used By	Business Role “Shop Curator”
Application Interface “Shop management interface”	Is Used By	Application Component “Database management system”

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7.2 Behavior Elements

Behavior in the Application Layer is described in a way that is very similar to Business Layer behavior. Also here, a distinction is made between the external behavior of application components in terms of *application services*, and the internal behavior of these components; i.e., *application functions* that realize these services.

7.2.1 Application Function

An application function represents automated behavior that can be performed by an application component.

MODEL: Application Function		
Element	Relation	Element
Application Function “Input Video Game data”	Triggers	Application Function “Check Video Game existence”
Application Function “Input Video Game data”	Realises	Application Service “Add Video Game in the database”
Application Function “Check Video Game existence”	Triggers or Junction:	- Application Function “Create new Video Game instance” - Application Function “Add Video Game copy”
Application Function “Check Video Game existence”	Realises	Application Service “Add Video Game in the database”
Application Function “Input Video Game data”	Triggers	Application Function “Check Video Game existence”
Technology (Infrastructure Service) “Manage database”	Is Used By	Application Function “Check Video Game existence”
Application Function “Create new Video Game instance”	Realises	Application Service “Add Video Game in the database”
Technology (Infrastructure Service) “Manage database”	is Used by	Application Function “Create new Video Game instance”
Application Function “Add Video Game copy”	Realises	Application Service “Add Video Game in the database”
Application Function “Add Video Game copy”	Accesses	Data Object “Video Game”
Technology (Infrastructure Service) “Manage database”	Is Used By	Application Function “Add Video Game copy”
Application Function “Update number of available DVD copies”	Accesses	Data Object “Video Game”
Application Function “Update number of available DVD copies”	Accesses	Data Object “Video Game”
Application Function “Update number of available DVD copies”	Realises	Application Service “Update Video Game availability”

7.2.2 Application Service

An application service represents an explicitly defined exposed application behavior.

MODEL: Application Service		
Element	Relation	Element
Application Functions: “Input Video Game data” “Check Video Game existence” “Create new Video Game instance” “Add Video Game copy” “Check number of available DVD copies” “Update number of available DVD copies”	Are Realises	Application Service “Add Video Game in the database” respectively.
Application Service “Add Video Game in the database”	Access	Data Object “Available”
Application Service “Add Video Game in the database”	Is Used By	Business Process “Insert new Video Games in the database”
Application Interface “Video Game management	Is Assigned To	Application Service “Add Video Game in the database”

MODEL: Application Service		
Element	Relation	Element
Application Service “Check Video Game availability”	Is Used By	Business Process “Find available Video Games”
Application Interface “Video Game management”	Is assigned To	Application Service “Check Video Game availability”
Application Function “Check number of available DVD copies”	Realises	Application Service “Check Video Game availability”
Application Service “Update Video Game availability”	Is Used By	Business Process “Give the Video Game” Application Service “Update Video Game availability”
Application Interface “Video Game management”	Is Assigned To	Application Service “Update Video Game availability”
Application Function “Check number of available DVD copies”	Realises	

7.2.3 Passive Structure Elements: Data Object

The passive counterpart of the application component in the Application Layer is called a data object. A data object represents data structured for automated processing.

MODEL: Data Object		
Element	Relation	Element
Application Data Object "video games"	Realises	Business Object "Video Game"
Application Data Object(s) "Available" and "Not Available"	Are Specialization of	Application Data Object "video games"
Technology (Artifact) "Video Game instance"	Realises	Application Data Object "video games"
Business Functions "Check number of available DVD copies" "Add Video Game copy"	Are Access	Application Data Object "video games"
"Update number of available DVD copies"		Application Data Object "video games"

8 ASIS: Technology Layer

The Figure gives an overview of the Technology Layer elements and their relationships. Whenever applicable, inspiration is drawn from the analogy with the Business and Application Layers.

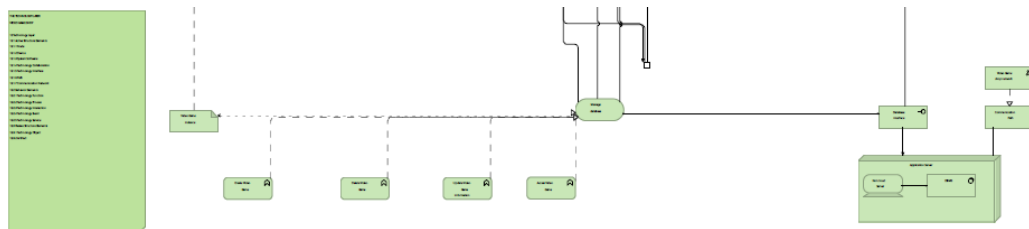


FIGURE 6 ASIS: TECHNOLOGY LAYER BY HEIDER JEFFER

9 Motivation

Figure below gives an overview of the motivation elements and their relationships.

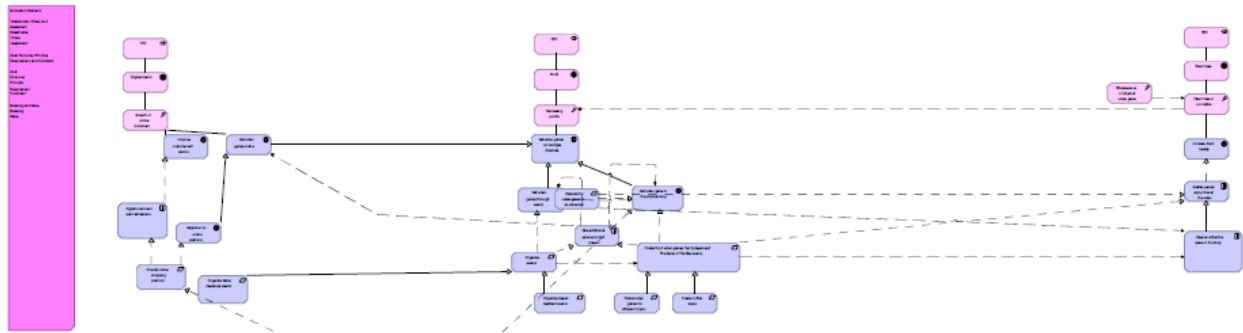


FIGURE 7 MOTIVATION BY HEIDER JEFFER

9.1 Stakeholder, Driver, and Assessment

We have three stakeholder “CIO” (Chief information officer) , “CFO” (The chief financial officer) and “CEO” (The chief executive officer) (are associated with three driver “Digital clients” , “Profit”, and “Client base” respectively.

10 THE FUTURE ARCHITECTURE (TOBE)

We have developed 1 main service: “purchase Video Games online”, it is different from the service in the as-is document because this is more interesting in the application and infrastructure layer than the other. This service realizes the “Provide online shopping platform” requirement, is used by Business Actor “Online client”, and the Business Process that we developed “Handle the purchasing” Realises “purchase video games online”. “purchase video games online” is the main service that come from the migration plan we have done.

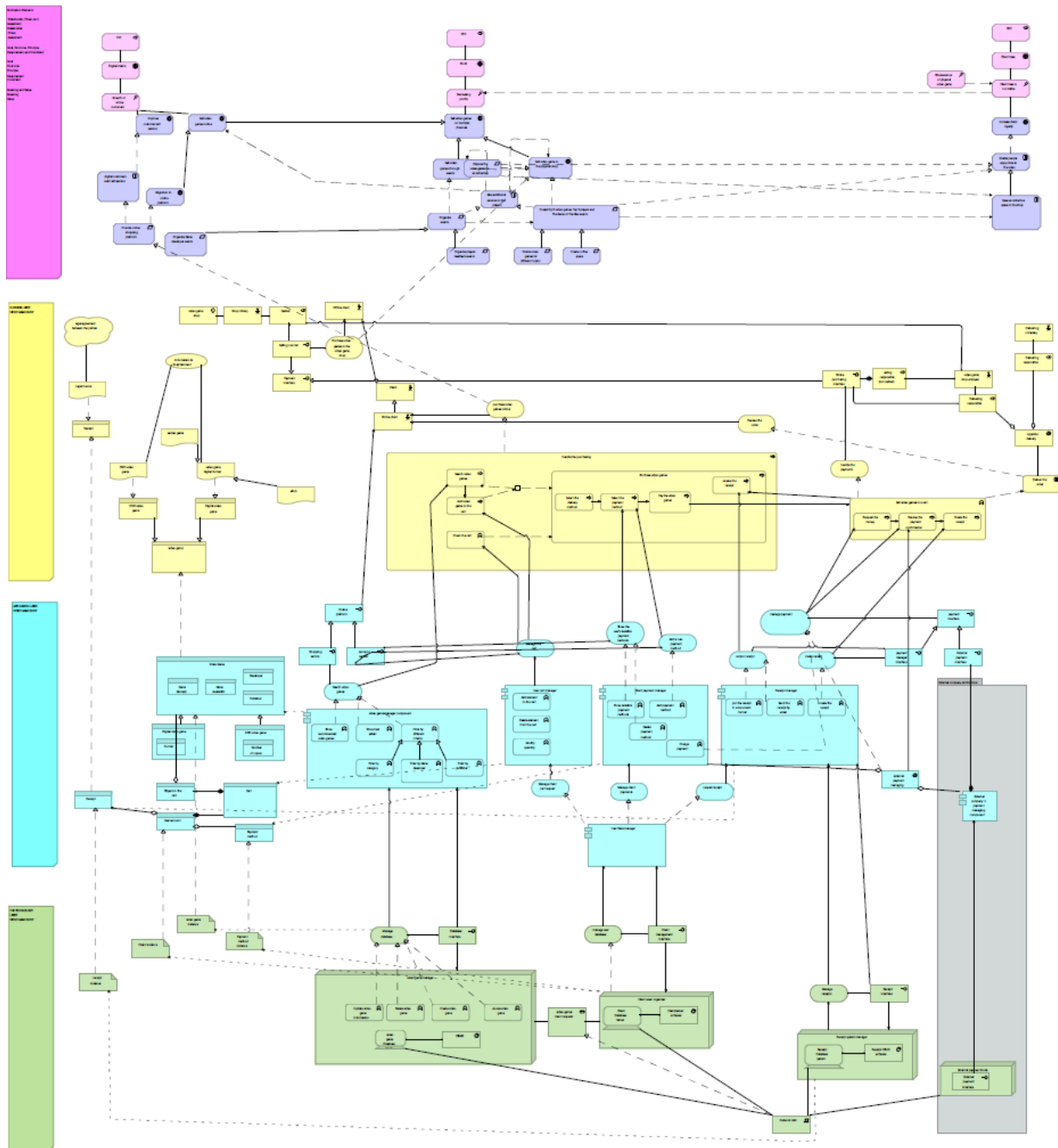


FIGURE 8 THE FUTURE ARCHITECTURE (TOBE) BY HEIDER JEFFER

10.1 TOBE: Business Layer

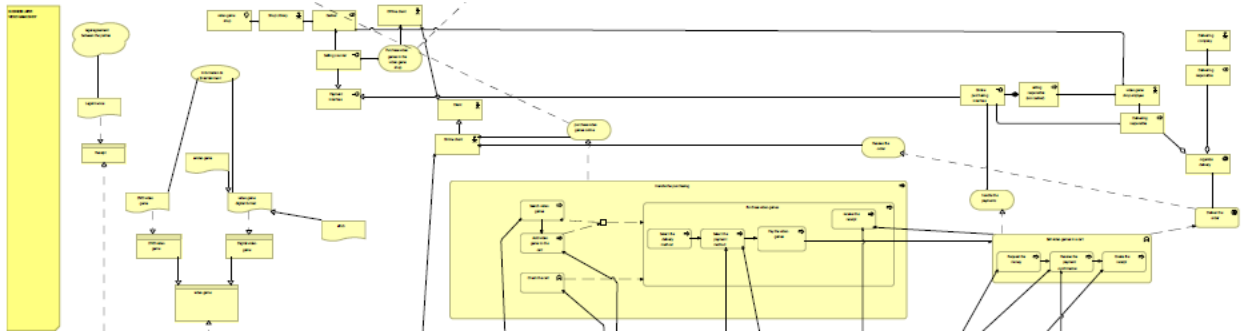


FIGURE 9 TOBE: BUSINESS LAYER BY HEIDER JEFFER

10.2 TOBE: Application Layer

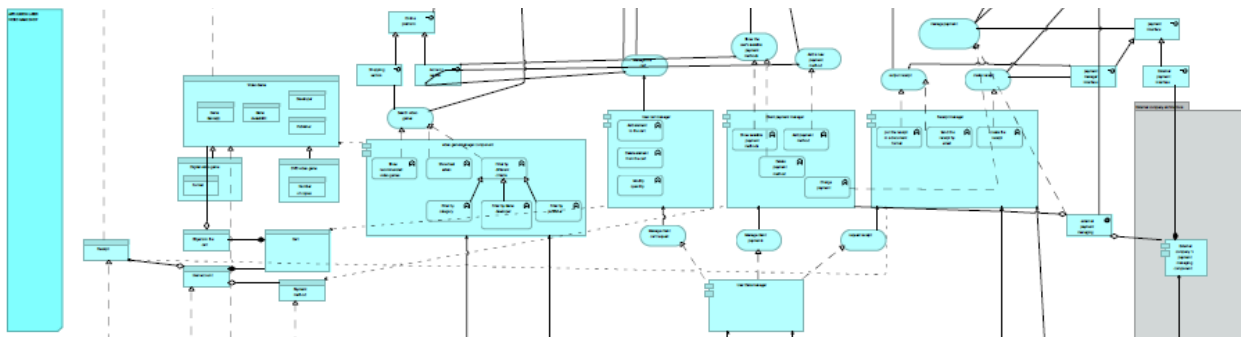


FIGURE 10 TOBE: APPLICATION LAYER BY HEIDER JEFFER

10.3 TOBE: Technology Layer

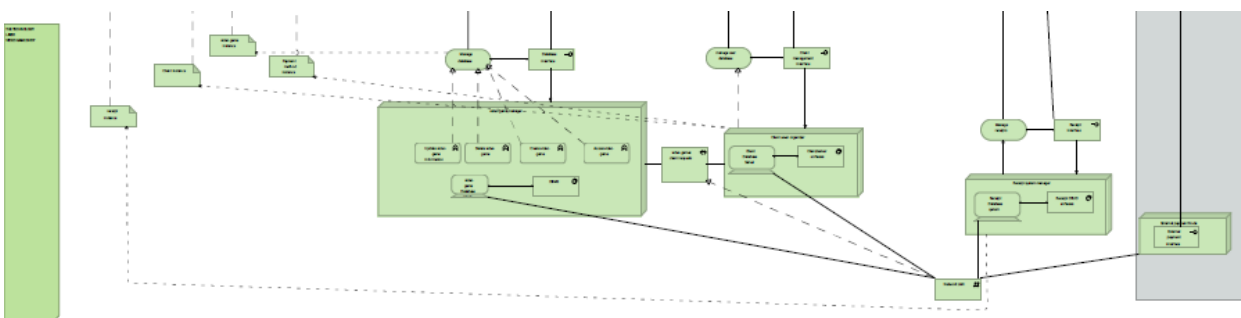


FIGURE 11 TOBE: TECHNOLOGY LAYER BY HEIDER JEFFER

10.4 User account object

The “user account” object is:

- composed by 1 “cart” that has multiple objects which can change dynamically
- Aggregated by multiple “payment methods” which can change dynamically
- Aggregated by “receipts” which can only be added and never deleted.

10.5 Service: “Offer video game” & “sell video game”

“Purchase video games in the video game shop” refers to the “offer video game” and “sell video game” service in the as-is document. It has been integrated with the new applications, but the only part that changes for them is the “database management system” that become the “Video game manager component” and the infrastructure part is upgraded with the new video game database.

11 Implementation & Migration Stages

11.1 Migration Planning

We have 4 plateaus that represent the relatively stable state of the architecture that exists during a limited period of time. And 3 gaps represent a statement of difference between two plateaus. e.g from the snapshot: Gap “Implementation of the client /server system with standard user account features” represent a statement of difference between these two plateaus: Plateau “Baseline architecture” and Plateau “Online video game access introduced to the system”

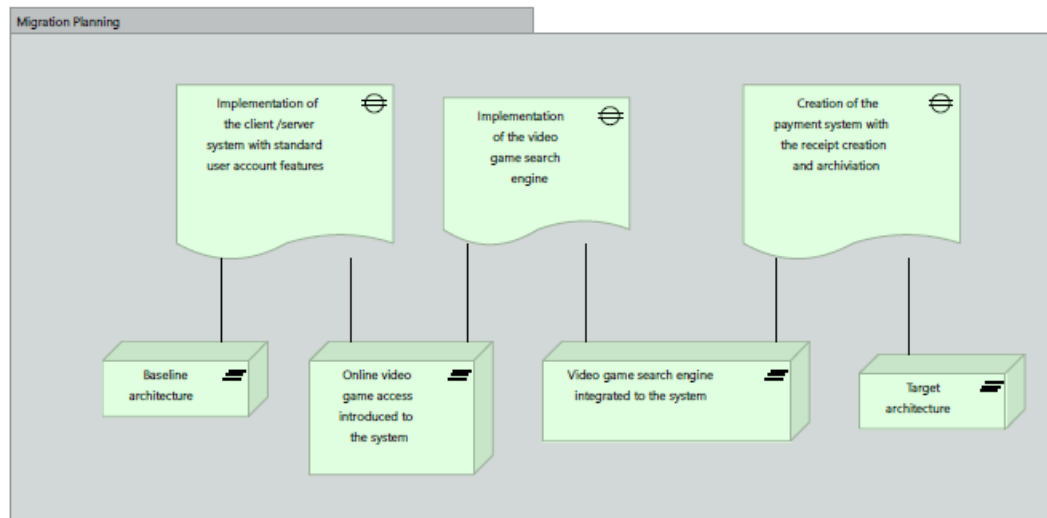


FIGURE 12 MIGRATION PLANNING BY HEIDER JEFFER

11.2 The Implementation and Migration is undertaken under three stages

Stage 1 We have two Plateaus and one Work Package. The Work Package “Implementation of client server system” represents a series of actions identified and designed to achieve specific results within specified time and resource constraints, our two plateaus (Plateau “Baseline architecture” and Plateau “Online Video Game Access Introduced to the System”) Are associated with Work Package “Implementation of client server system” We add the server space which is core addition to the system on which we will build additional features such as search engine and recommender systems, and payment integration and validation – necessary for the Target architecture. Once the server space is added, we can easily set up a listing of video games online and allow a simple login logout for users to access the listed video games from the inventory. Thus, in the first stage, from the Baseline architecture we travel to the next plateau where we introduce online video game access in the system. The snapshot gives an overview of the implementation and migration elements and their relationships.

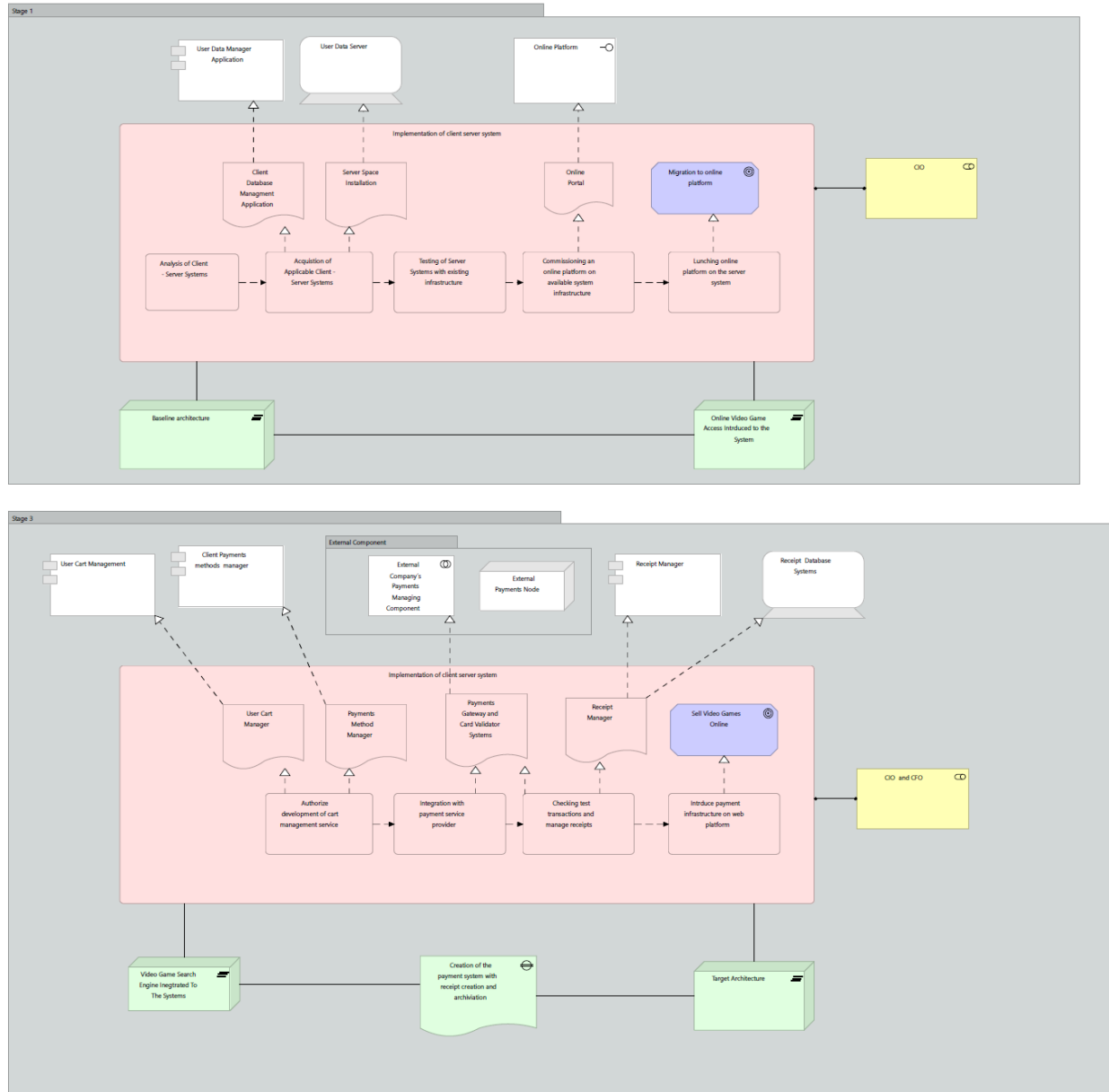


FIGURE 13 THE IMPLEMENTATION AND MIGRATION IS UNDERTAKEN UNDER THREE STAGES BY HEIDER JEFFER

Stage 2: Implement the search features and recommender systems and move to the next plateau.

Stage 3 Integrate our systems with an external payment gateway (handling the transaction on our web platform) to reach the Target architecture. Gap "Creation of the payment system with receipt creation and archaization" represents a statement of difference between "Video Game Search Engine Integrated To The Systems" and "Target Architecture" which are (the two plateaus) associated "Implementation of client server system".

11.3 Deliverable

represents a precisely-defined outcome of a work package, e.g. “Online platform” aggregates “Hardware”, “Hardware” aggregates “Receipt database server” and “Server space installations”.

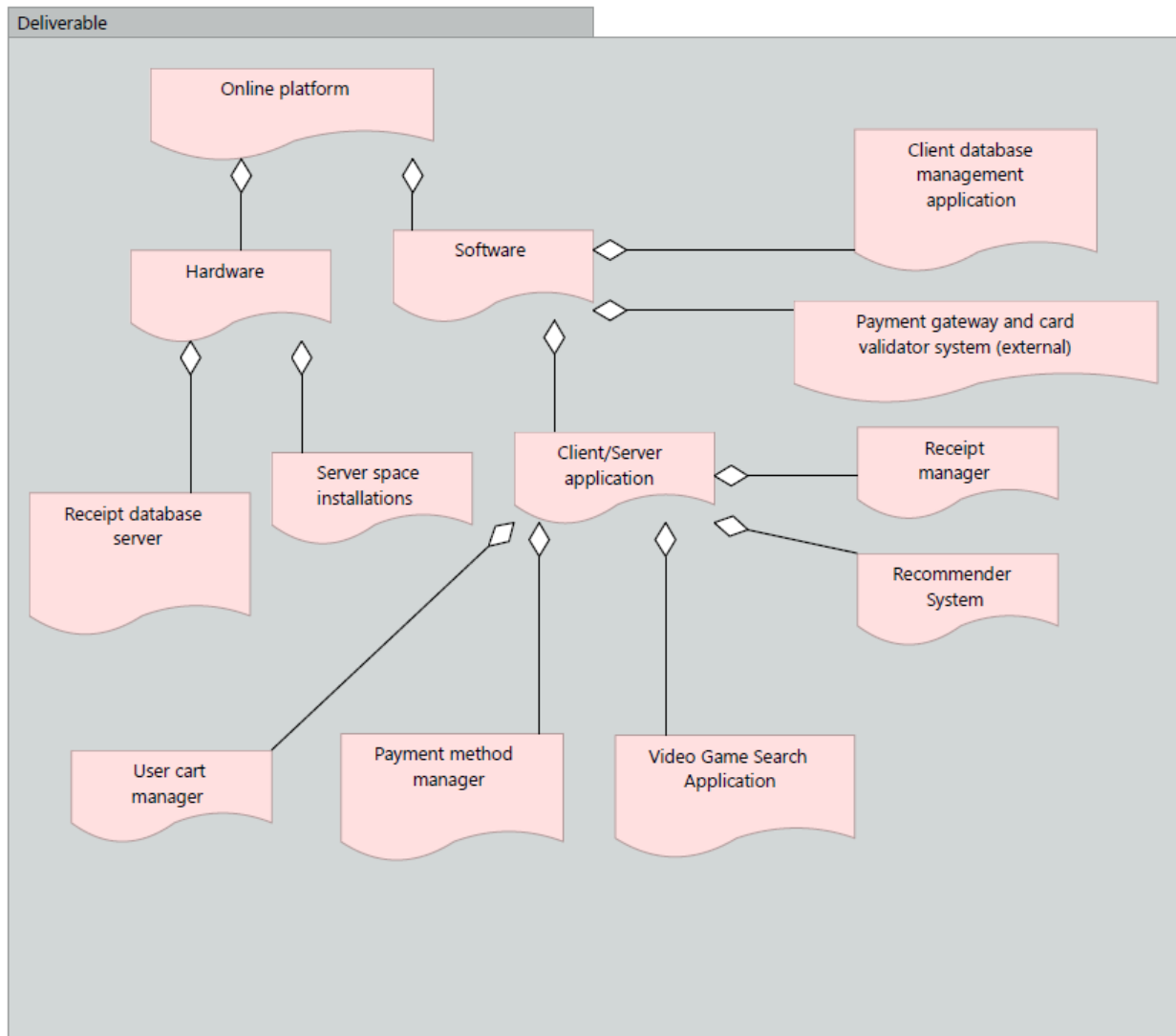


FIGURE 14 DELIVERABLE BY HEIDER JEFFER

12 Analysis - Impact of Change

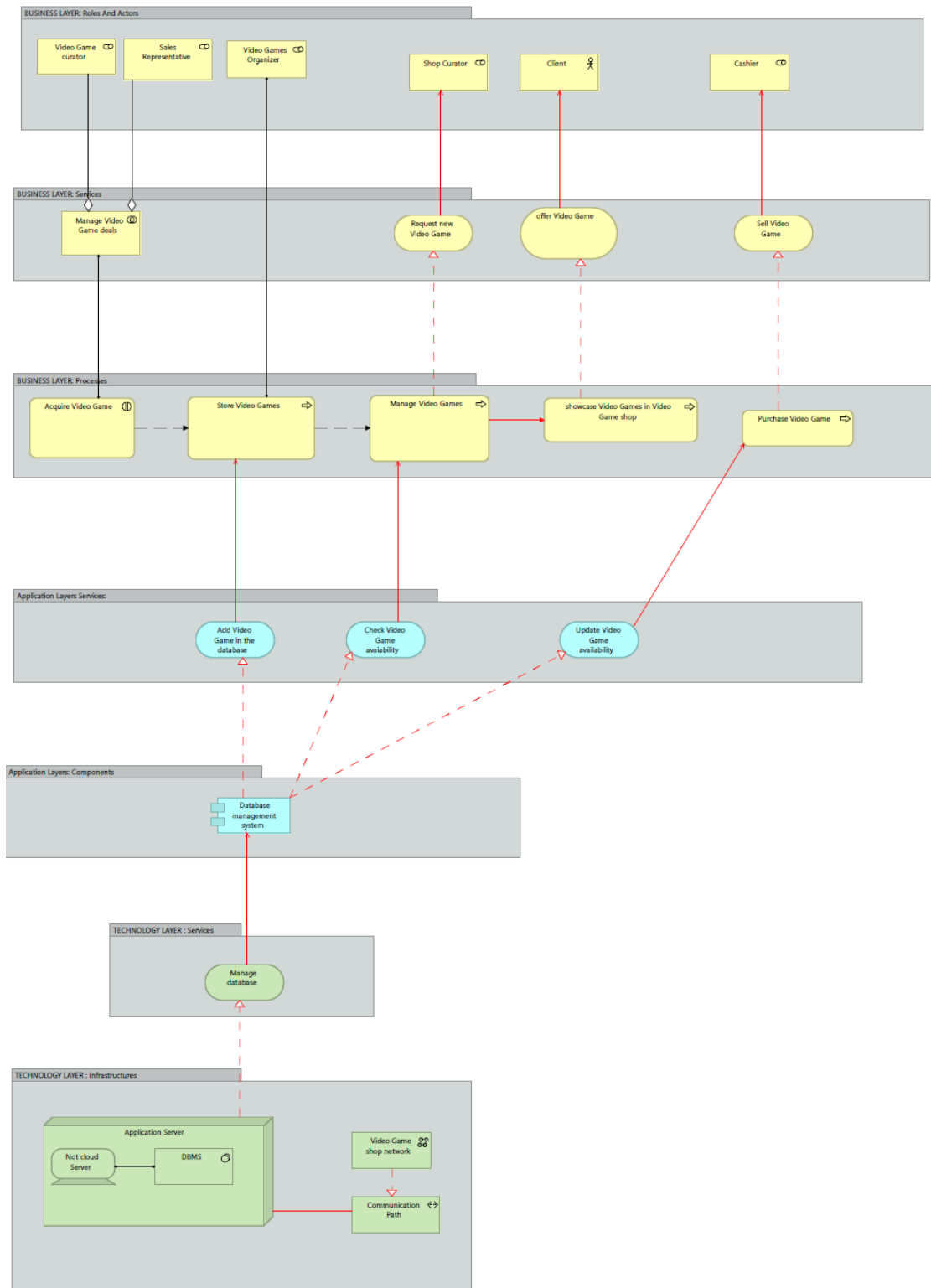


FIGURE 15 ANALYSIS - IMPACT OF CHANGE BY HEIDER JEFFER

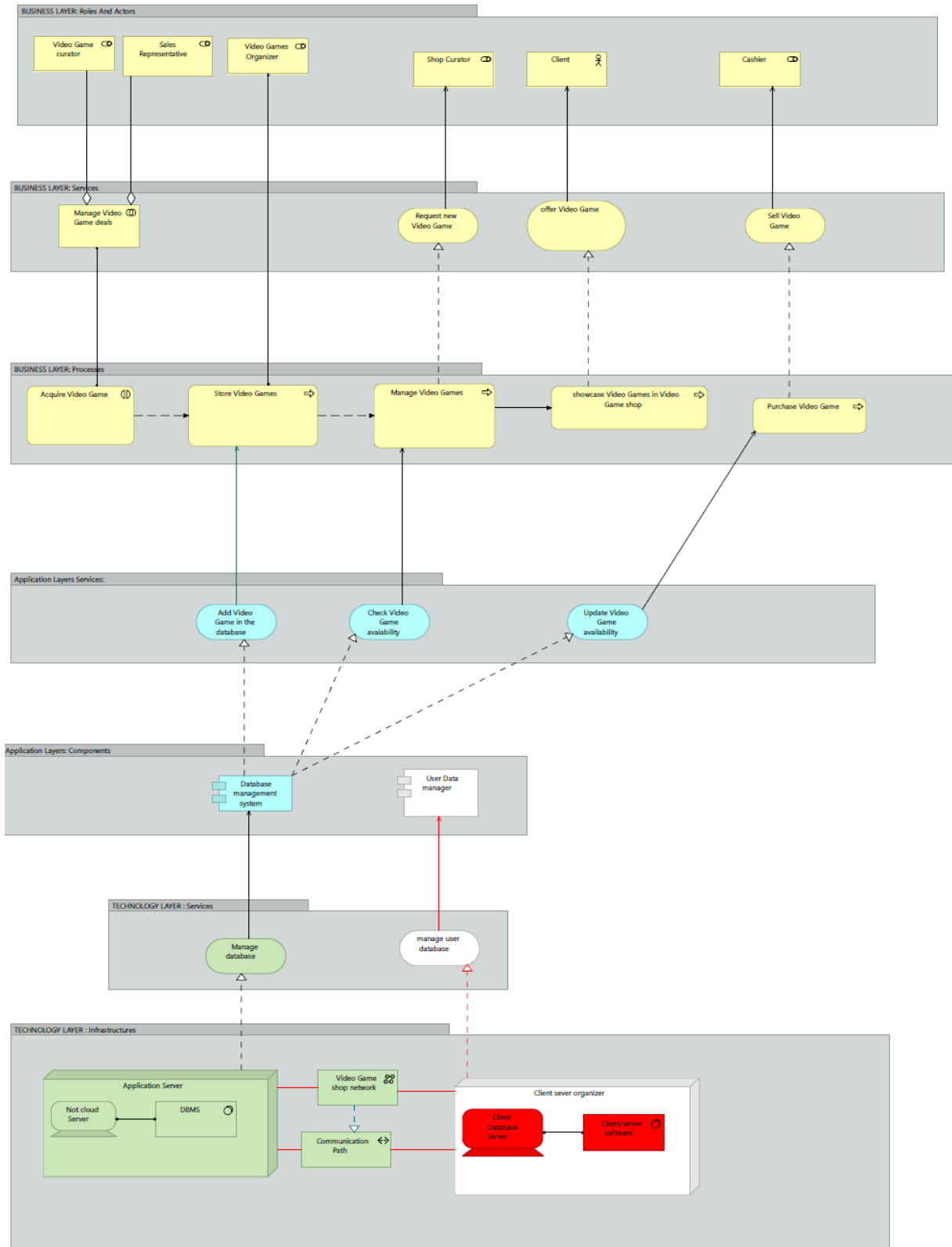


FIGURE 16 ANALYSIS - IMPACT OF CHANGE BY HEIDER JEFFER

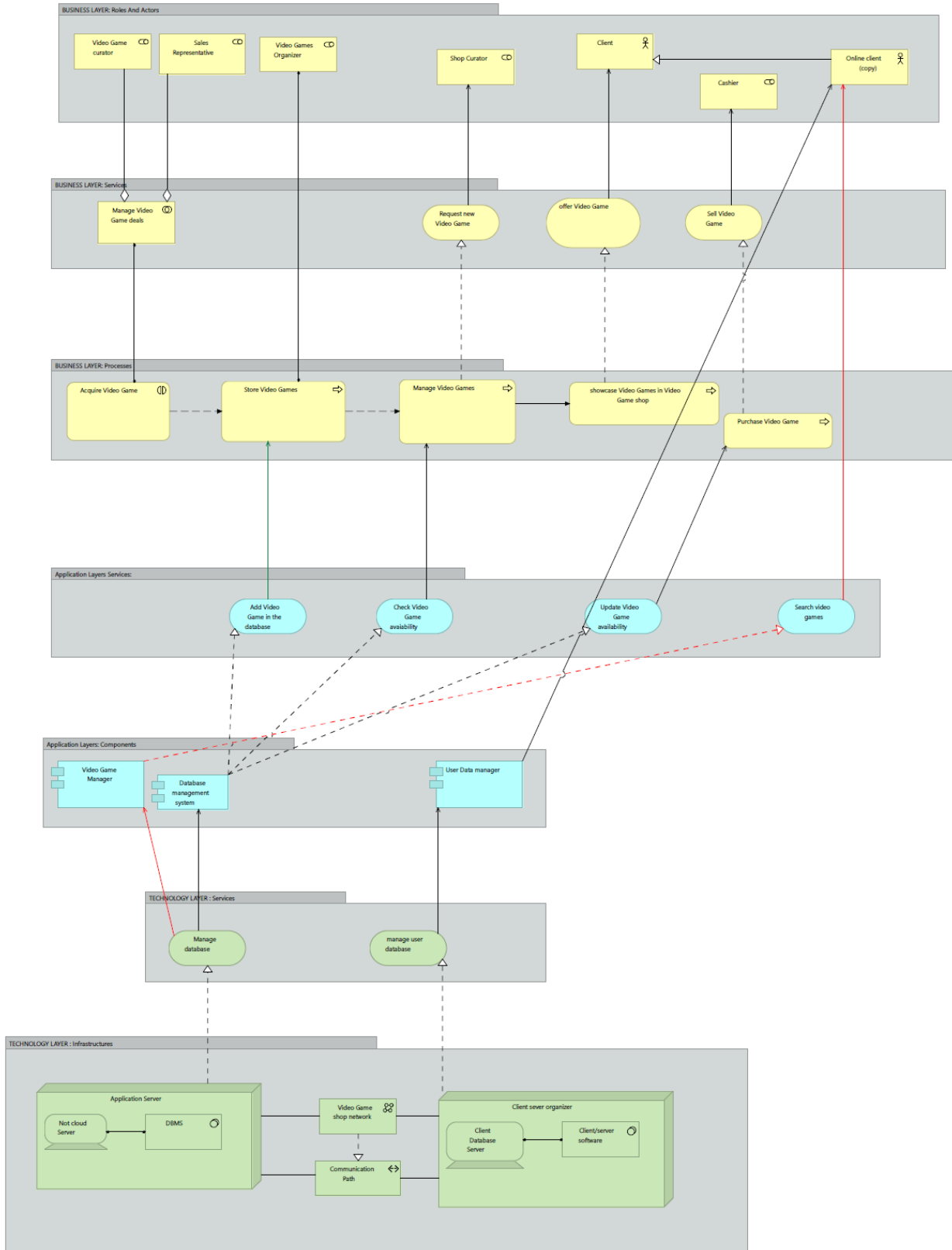


FIGURE 17 ANALYSIS - IMPACT OF CHANGE BY HEIDER JEFFER

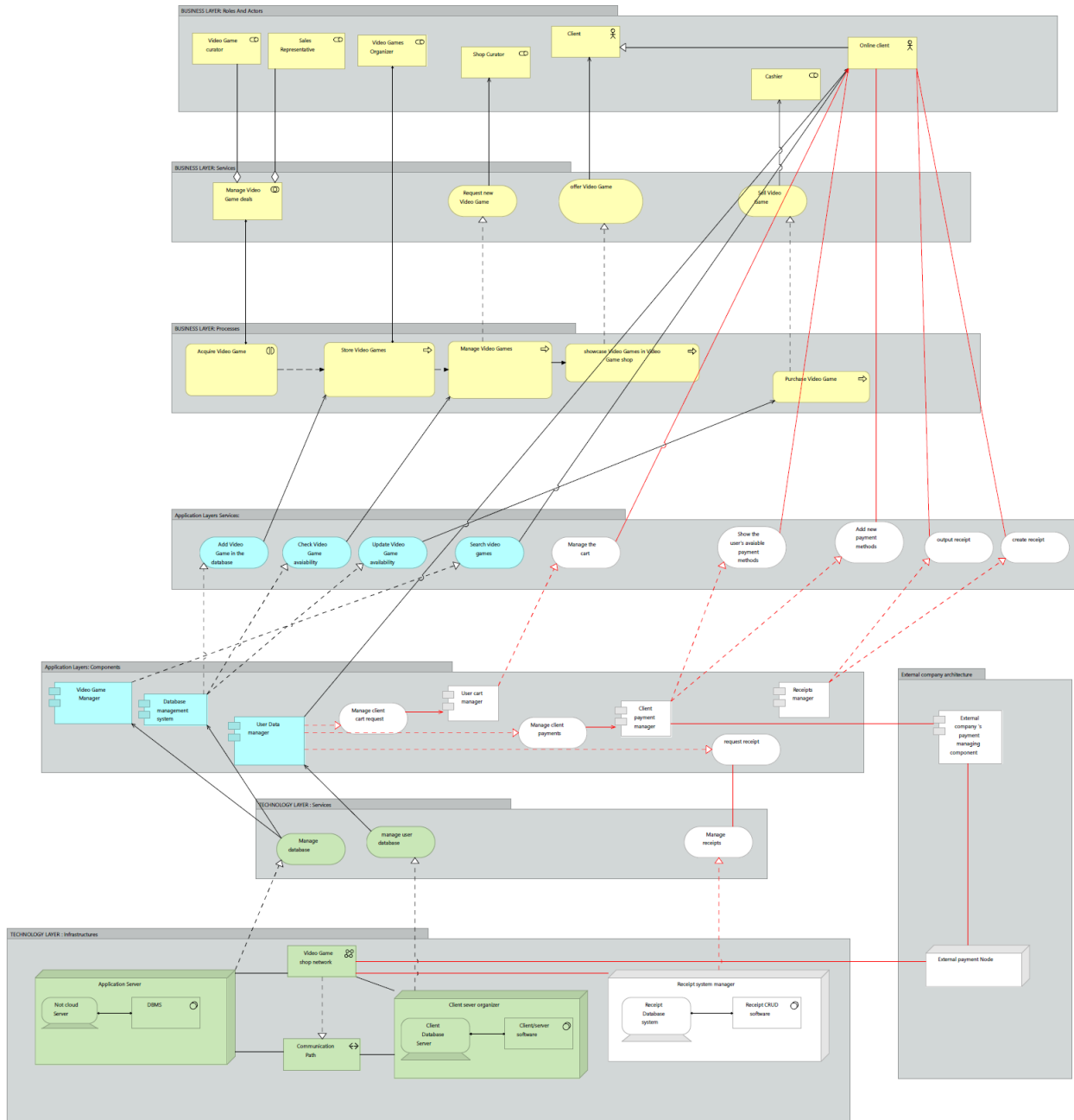


FIGURE 18 ANALYSIS - IMPACT OF CHANGE BY HEIDER JEFFER

13Archi Models: ASIS and TOBE And Motivation Video Games Shop

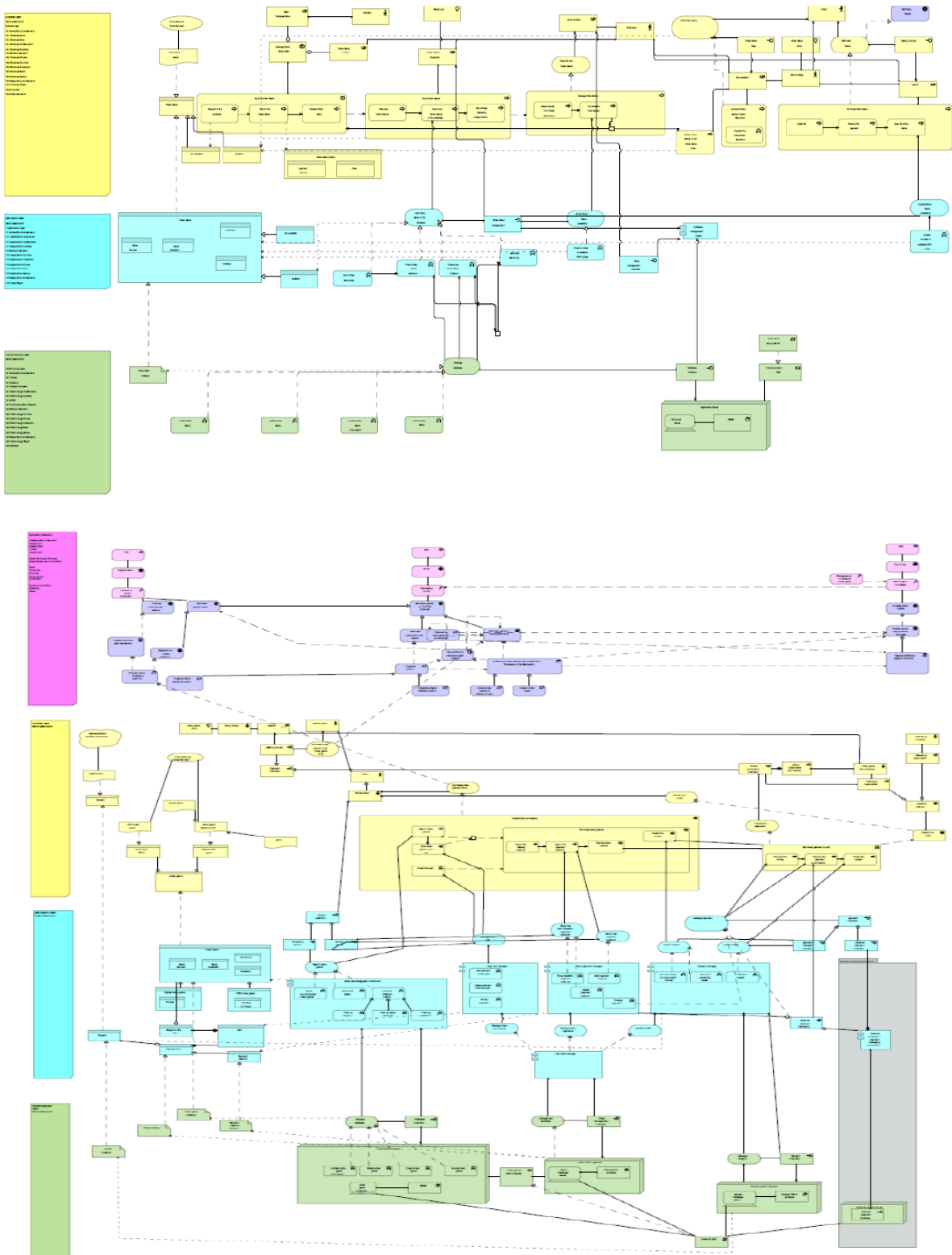


FIGURE 19 ARCHI MODELS: ASIS AND TOBE AND MOTIVATION VIDEO GAMES SHOP BY HEIDER JEFFER

14 Experience and Difficulty Report

I had undergone a nasal surgery. Not being able to take the lectures of any courses and also not being able to be in any project team. Since I was in the hospital. I had to do 4 major projects on my own including the IT and Service Management project on the same basis and policy of the Teamwork (e.g. students worked in group of five or eight) which effect my ranks, this is not only question of equal opportunity but it is a question of morality, which is something to do with the Free University of Bolzano policy.

However, I enjoyed working on the project very much, overall it is a good experience for my academic career and future job.

Heider Jeffer

15References

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