

# ASSIGNMENT COVERSHEET FOR INDIVIDUAL WORK

## Faculty of Design and Creative Technologies

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**Week 1 (8%):**

Part I and the Introduction to your textbook provides the context for services and the current digital scope.

How does your mobile phone demonstrate these key points? (Half page)

There are three crucial elements, also referred to as three layers:

1. **Human User:** Mobile phones are designed with user-friendliness in mind, ensuring that people of all ages can easily utilize them. Presently, it is common for individuals to own a mobile phone equipped with a touch screen, a simple on/off button, and voice command functionality, which greatly simplifies phone usage. This is in stark contrast to the situation 20 years ago, when phones with physical buttons were the norm. The primary functions of these mobile phones include making calls, sending text messages, and utilizing various applications to stay connected with friends, family, and educational institutions.
2. **Application:** Modern smartphones are equipped with a pre-installed digital marketplace. For instance, iPhones are equipped with the App Store, while Android phones have the Play Store. These digital marketplaces not only function as a platform for purchasing and downloading apps, but they also offer a diverse array of supplementary features. They provide specialized camera applications like Ulike and Camera360 for individuals passionate about photography, as well as gaming applications such as PUBG Mobile and Flappy Bird. Additionally, these digital marketplaces offer a wide range of tools that facilitate collaboration and the sharing of information among users.
3. **Technology:** In the present era, mobile phones have significantly evolved compared to their counterparts from two decades ago. Modern phones are equipped with a CPU, memory, storage, sensors, cameras, and communication features, resembling those found in computers but in a much smaller form factor. Similar to computers, mobile phones also require an operating system to function effectively. Currently, the prevailing operating systems for mobile phones are IOS and Android. These operating systems play a crucial role in managing hardware resources, applications, and security.

How can UML be used to model the service stack of User Interface, Applications, and Infrastructure?  
(Half page)

1. **Use case diagrams:** Use case diagrams in UML are utilized to define and visually depict the interactions between users (UI), applications, and infrastructure components. These diagrams offer a clear representation of how different actors engage and communicate with the system. By employing use case diagrams, it becomes feasible to effectively illustrate the flow of interactions within a system, highlighting the various methods by which users and components interact with one another.
2. **Class Diagrams:** Class diagrams can show the classes that make up the user interface, application logic, and infrastructure components as well as the system's overall structure. Relationships inside the stack are defined by associations and dependencies between classes.
3. **Component Diagrams:** The physical arrangement of system components is the main subject of component diagrams. They can show the hierarchy and connectivity of user interface elements, application modules, and infrastructure components.
4. **Deployment Diagrams:** Deployment diagrams can be used to replicate the real installation of software components on hardware. This enables visualization of how servers, databases, and other infrastructure pieces support the application and user interface levels.
5. **Sequence Diagrams:** Sequence diagrams offer a live picture of the interactions between the various elements of the stack throughout time. They show how information and actions move between UI, application, and infrastructure components.
6. **Activity Diagrams:** The workflow and procedures within the application layer can be modeled using activity diagrams. They aid in putting the software's logic and behavior into visual form.
7. **State Machine Diagrams:** State machine diagrams are helpful for simulating the actions of certain UI elements or application components that have different states.
8. **Package Diagrams:** Package diagrams play a crucial role in organizing and visually presenting different modules and subsystems within an application or infrastructure. They serve as valuable tools for comprehending the structure and architecture of a system by depicting its components and their interconnections. By utilizing package diagrams, developers and system architects can effectively communicate the arrangement and composition of the system, thereby enhancing collaboration and streamlining the development process.

Developers and architects may produce concise and thorough models that simplify communication, design, and execution of complex software systems by utilizing these UML diagrams and customizing them for the context of UI, Applications, and Infrastructure.

The following sites provide information about the aforementioned UML:

[Learn About All Types of UML Diagrams with Examples](#)

[Introducing Types of UML Diagrams](#)

**Week 2 (8%):**

Enterprise Architecture contains many models and modelling systems.

Describe how ArchiMate (3 Layers + 3 Aspects) models an enterprise system. (Half page)

ArchiMate is a modeling language created primarily for corporate architecture. It divides business system modeling into three tiers and three aspects:

**1. Layer:**

- a. Business Layer: The Business Layer encompasses the modeling of business processes, organizational structure, and concepts such as products, services, and actors. It serves as a representation of the enterprise's business features through components like business processes, roles, and collaborations.
- b. Application Layer: The elements of the Application Layer are commonly utilized to represent the Application Architecture, which defines the arrangement, functionality, and communication of an enterprise's applications.
- c. Technology Layer: The Technology Layer represents the underlying technology infrastructure, which includes hardware, software, and network components. Elements such as servers, databases, and communication networks are depicted within this layer to illustrate the technological foundation.

**2. Aspects:**

- a. Active Structure Aspect: This component is concerned with the enterprise's organizational structure, players, and roles. It aids in understanding who in the company performs particular functions.
- b. Behavioral Aspect: The behavioral aspect encompasses the enterprise's dynamic characteristics, including as processes, events, and interactions between actors and applications. It provides answers to inquiries regarding how activities are carried out and how they are related to one another.
- c. Passive Structure Aspect: The following section primarily emphasizes static components, encompassing data, objects, and their interrelationships. Its primary objective is to facilitate comprehension of the organization's data and its underlying structure.

ArchiMate utilizes a visual language to proficiently communicate various levels and characteristics, empowering enterprise architects to create comprehensive models of their organizations. These models enable the examination, analysis, and improvement of complex business architecture.

### What does an Enterprise Architect do in their work? (Half page)

An Enterprise Architect plays a crucial role in the success of an organization by aligning business objectives with technology strategies. With a deep understanding of both business and technology domains, they bridge the gap between various stakeholders and ensure that the IT infrastructure supports the company's long-term goals.

One of the primary responsibilities of an Enterprise Architect is to develop and maintain the organization's enterprise architecture framework. This framework outlines the structure and relationships between business processes, information systems, applications, and infrastructure components. By leveraging industry best practices and standards, the architect creates a roadmap for technology implementation and evolution.

The Enterprise Architect collaborates closely with business leaders, project managers, and technical teams to help them achieve their goals. They gather requirements, analyze existing systems, and identify opportunities for improvement. Through effective communication and involving all stakeholders, they ensure that the architecture aligns with business needs and provides a competitive advantage.

An Enterprise Architect not only plans strategically but also manages the implementation and governance of the architecture. They collaborate with development teams to ensure that solutions adhere to established standards. Through regular reviews and assessments, they identify risks and suggest strategies to uphold system integrity and security.

Furthermore, an Enterprise Architect keeps a pulse on emerging technologies and industry trends. They assess the relevance and potential impact of new innovations, providing recommendations on how to leverage them to drive business value. By staying up-to-date with the latest advancements, they enable the organization to make informed decisions and stay ahead of the competition.

To excel in their role, an Enterprise Architect must possess a blend of technical expertise, business acumen, and leadership skills. They must be able to communicate complex concepts to both technical and non-technical stakeholders, fostering a collaborative and inclusive environment. By driving innovation and aligning technology investments with business goals, they contribute to the long-term success and growth of the organization.

### **Week 3 (8%):**

Cloud services provide the opportunities for enterprise systems to pivot and respond in an agile way to market forces.

Explain how Cloud services help a business to be cost effective. (Half page)

Cloud services have transformed the business landscape by providing a multitude of cost-saving benefits that enhance overall cost-effectiveness. Below are several pivotal ways in which cloud services aid businesses in minimizing expenses and enhancing their financial efficiency:

**Reduced capital expenses:** Cloud services have transformed the business landscape by providing a multitude of cost-saving benefits that enhance overall cost-effectiveness. Below are several pivotal ways in which cloud services aid businesses in minimizing expenses and enhancing their financial efficiency.

**Scalability and adaptability:** Cloud services enable businesses to scale their IT resources up or down as needed. This scalability ensures that organizations can meet fluctuating demands without incurring unnecessary costs during periods of low demand. It allows for agile responses to market forces and changing business requirements.

**Work and Collaboration from a distance:** Cloud services facilitate remote work and collaboration, thereby decreasing the necessity for physical office space. This, in turn, can result in cost savings related to office rental fees, utilities, and other associated overhead expenses. Additionally, cloud services expand the potential talent pool by enabling businesses to recruit from a geographically diverse workforce.

**Pay-as-You-Go Model:** Numerous cloud services function under a pricing model where businesses are billed based on their usage, either on a pay-as-you-go or subscription basis. This approach enables businesses to solely pay for the resources and services they actively utilize. By adopting this model, businesses can accurately predict costs and eliminate the necessity of excess resource allocation, thereby ensuring the optimal utilization of resources.

**Business continuity and Disaster recovery:** Cloud-based disaster recovery solutions are frequently more economical compared to traditional disaster recovery plans. Providers of cloud services offer redundancy, data replication, and automated failover capabilities, thereby mitigating the potential for data loss and minimizing downtime in the event of disasters.

**Cost Reduction in Maintenance Services:** Cloud providers are responsible for the maintenance, updates, and security of the underlying infrastructure. This relieves businesses from the task of managing and maintaining hardware and software components, resulting in significant time and cost savings related to IT maintenance.

**Improved Productivity:** Cloud services offer access to advanced productivity and collaboration tools, which can significantly enhance employee efficiency while minimizing the requirement for multiple software licenses.

- ⇒ Cloud services offer businesses the opportunity to optimize their IT spending, reduce capital expenditures, and achieve operational efficiency, making them a financially wise choice for modern enterprises. By utilizing cloud services, businesses can efficiently allocate resources, minimize initial investments, and streamline operations, ultimately leading to enhanced cost-effectiveness.

[Amazon Web Services \(AWS\) explains the advantages of cloud computing, including cost benefits.](#)

[IBM provides insights into how cloud computing can drive business value, including cost savings.](#)

### How can the three layers for Cloud services help a gaming platform? (Half page)

Cloud services provide numerous benefits to a gaming platform by offering a versatile and expandable infrastructure that allows for quick adjustments to meet market needs. The three layers of cloud services - Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) - can together contribute to the triumph of a gaming platform in the following manners:

1. Infrastructure as a Service (IaaS) serves as a foundational layer of Cloud services, providing the fundamental hardware resources necessary for gaming platforms. With IaaS, game developers can effortlessly acquire virtual servers, storage, and networking infrastructure as and when required. This level of adaptability empowers developers to align resources with the demands of the gaming community, resulting in uninterrupted gameplay and minimized latency issues.
2. Platform as a Service (PaaS) empowers game developers to concentrate on the creation and enhancement of their gaming applications, freeing them from concerns regarding the underlying infrastructure. PaaS offers a comprehensive development and deployment environment that encompasses various tools, frameworks, and middleware. Through the utilization of PaaS, developers can optimize their workflow, foster collaboration, and expedite the game launch process.
3. Software as a Service (SaaS): SaaS brings convenience and accessibility to gamers by offering cloud-based gaming experiences. Through SaaS, users can access games directly through their web browsers or dedicated applications, eliminating the need for downloads or installations. This layer also enables game operators to provide updates and new content seamlessly, ensuring players always have access to the latest features and improvements.

The incorporation of these three tiers can offer substantial advantages to a gaming platform. It enables game developers to efficiently create, launch, and expand their games, thereby diminishing infrastructure expenses and development intricacies. Moreover, the flexible nature of the Cloud enables platforms to effectively manage unexpected surges in user engagement during peak periods, guaranteeing a seamless and gratifying gaming experience for all participants.

To further explore the topic, i have compiled a list of informative resources. Below are a few of the titles I researched in order to gather information:

- Understanding the Three Layers of Cloud Services
- Advantages of Infrastructure as a Service for Gaming Platforms
- Leveraging Platform as a Service for Game Development
- Exploring the Benefits of Software as a Service in Gaming

By leveraging the three tiers of Cloud services, gaming platforms can optimize user experiences, capitalize on fresh possibilities, and sustain a competitive advantage in the gaming sector.

#### Week 4 (8%):

ArchiMate is one of many tools that can be used for service design and modelling in enterprise systems.

Choose another service design tool and define the capability. (Half page)

1. **Diagram creation:** Flowcharts, process diagrams, organizational charts, network diagrams, floor layouts, and other diagrams may be made with Visio. It has a vast array of templates and forms for several different diagram formats.
2. **Templates:** It provides a vast array of templates to simplify the production of various diagram kinds, making it much simpler for beginners to get used to it right away.
3. **Collaboration:** Visio offers real-time collaboration in Microsoft 365, allowing several users to collaborate on a diagram at the same time. Changes are automatically synced across devices and users.
4. **Integration:** Visio interacts smoothly with other Microsoft 365 programs such as Word, Excel, PowerPoint, and Teams, allowing users to incorporate diagrams in documents and presentations.
5. **Cloud storage:** Users may save their Visio diagrams to Microsoft OneDrive or SharePoint for convenient access and sharing across devices and with collaborators.
6. **Cross-platform:** Visio can be accessed on a vast array of platforms, such as Windows, MacOS, and web browsers, providing the convenience for users on various devices.
7. **Data visualization:** It enables data-driven diagrams, which allow users to connect forms to data sources and have diagrams continuously update as data changes.
8. **Customization:** Visio also provides significant customization opportunities, and allowing users to create their own distinctive shapes, templates, and stencils to adapt diagrams to their particular requirements.
9. **Export and sharing:** Users can export Visio diagrams to PDF, picture files, and other formats, making it simple to share diagrams with users who do not use Visio.
10. **Security:** Visio benefits from the Microsoft 365 platform's security capabilities, which ensure safeguarding information and complying with security standards.
  - ⇒ Microsoft Visio capacity refers to the set of tools and capabilities that allow users to create, modify, and visualize diagrams and flowcharts. This includes the ability to link with other Microsoft 365 products like Excel and PowerPoint, allowing for easier collaboration and data sharing. Visio is available on a variety of platforms, including Windows, Mac, and web browsers, guaranteeing user accessibility and ease across devices. It also offers configurable templates, stencils, and shapes, as well as powerful diagramming tools for producing professional and aesthetically appealing diagrams.

Here are some links I use to obtain information:

1. [Microsoft Visio - Official Website](#)
2. [Visio Features - Service Descriptions](#)
3. [All About Microsoft Visio for Diagrams - Lucidchart](#)
4. [Types of diagrams that are supported in Visio in Microsoft 365](#)



Compare ArchiMate with your other tool. (Half page)

The other tool I choose is Visio from Microsoft 365

The comparison is based on four factors:

1. Purpose
2. Specialization
3. Intergration
4. Cost

	<i><b>ArchiMate</b></i>	<i><b>Visio</b></i>
<b>Purpose</b>	This modeling language and tool is specifically made for enterprise architecture. It provides a standardized framework for modeling different parts of an organization's architecture, such as the business, application, and technology layers.	A flexible diagramming program that can be used to create a variety of diagram types, including flowcharts, org charts, network diagrams, and architectural diagrams. It meets a wide range of diagramming requirements in addition to corporate architecture.
<b>Specialization</b>	ArchiMate is a highly sophisticated business architectural modeling software. It provides a distinct collection of symbols, notations, and notions specialized to this unique area.	Visio is a general-purpose diagramming program. While it may be used for architecture modeling, it lacks the specialization and specific symbols that ArchiMate provides.
<b>Intergration</b>	Depending on the tools and systems in use throughout an organization, ArchiMate may require additional plugins or extensions to interface with other applications or platforms.	Visio interacts perfectly with other Microsoft 365 apps such as Excel, PowerPoint, Word, and Outlook, allowing for easy collaboration, efficient data sharing, and seamless workflows throughout the vast Microsoft ecosystem.
<b>Cost</b>	The cost of utilizing ArchiMate can vary greatly based on various aspects, including the individual tools and platforms used, the level of customisation required, and the license arrangements negotiated with ArchiMate tool suppliers.	Visio is accessible as part of Microsoft 365 subscription plans, with varying cost tiers based on the capabilities and functionality required. Visio Standard, Visio Professional, Visio Plan 1, and Visio Plan 2 are among the available options.

⇒ To summarize, ArchiMate is a specialist enterprise architectural modeling tool with a defined framework, whereas Visio is a flexible diagramming tool that can be used for a variety of diagram kinds. The decision between them is dictated by the specific modeling requirements, as well as whether a dedicated enterprise architecture tool or a more general-purpose diagramming tool is necessary.

The findings and conclusions shown above were gleaned from the websites of two software companies:

[Learn more about ArchiMate](#)

[Learn more about Visio Microsoft365](#)

**Week 5 (8%):**

Quality of Service (QoS) is critical for customer experience and business continuity.

List the elements that make QoS. (Half page)

Quality of Service (QoS) is often defined by several key factors that contribute to the overall customer experience. These factors include effectiveness, efficiency, learnability, satisfaction, and errors. Let's discuss these terms in the context of QoS:

**Effectiveness:** This refers to how well the service fulfills the customer's needs or solves their problems. A highly effective service directly addresses the customer's needs and leaves them feeling satisfied with the resolution.

**Efficiency:** Efficiency in a service context pertains to the timeliness and ease with which customers can accomplish their objectives. A service is considered efficient when it is well-organized and user-friendly, minimizing the number of steps required for customers to obtain the desired outcome.

**Learnability:** This factor evaluates how easy it is for a customer to learn how to use the service. A service with high learnability is intuitive and user-friendly, even for first-time users.

**Satisfaction:** Customer satisfaction is a crucial metric used to gauge the level of contentment customers have with a particular service. It is influenced by multiple factors and offers a comprehensive assessment of the overall customer experience.

**Errors:** This refers to the number of mistakes or problems encountered by the customer while using the service. A high-quality service aims to minimize errors to keep the customer experience smooth and frustration-free.

These various factors collectively contribute to a holistic assessment of Quality of Service (QoS). By prioritizing attention to these aspects, organizations can gain a clearer understanding of their strengths and areas that require enhancement in order to provide exceptional service quality.

### What software services improve customer experience? (Half page)

Several software services have been created with the aim of enhancing the customer experience. Presented below are a selection of notable examples:

1. **HubSpot:** HubSpot is renowned for its extensive array of services, coupled with its robust platform designed to effectively manage customer experiences. This platform serves as a catalyst for business growth, enhancing sales processes, fostering lead generation, and elevating customer service standards.
2. **Zendesk:** This robust customer experience management software aids businesses in delivering efficient customer support by offering a wide range of features that guarantee a seamless customer service experience.
3. **SurveyMonkey Enterprise:** This tool allows businesses to gather customer feedback, an important aspect of understanding and improving the customer experience.
4. **Medallia Agent Connect:** This software helps businesses capture customer feedback, understand it in real-time, and take action to improve the customer experience.

### [24 Best Customer Experience Management Software & Tools in 2023](#)

#### [Customer Experience Software](#)

#### [Best Experience Management Software](#)

### **ArchiMate Model (10%)**

Mum's Cake store is a standalone retail outlet with 50,000 customers per day. The satisfy customers and to meet service demand Mum's has adopted the latest digital technologies for security and Information Services. There is a mix of robots, integrated information services, automated checkouts, and friendly human help services. Model this enterprise system using the three layers (Business, Application, and Technology), and the three Aspects (Passive, Behavioural, and Passive) using the ArchiMate design tool. (1 Page)

#### **Business Layer**

- Customers (active structure) use the Sales Process (behavioral aspect) to purchase Products (passive structure).
- Employees (active structure) assist in the Sales Process (behavioral aspect) and handle Products (passive structure).

#### **Application Layer**

- The Sales Process (business layer, behavioral aspect) is realized by the Checkout Process (application layer, behavioral aspect).
- The Checkout Process (application layer, behavioral aspect) accesses and updates Sales Data (application layer, passive structure).
- The Information System (application layer, active structure) is used by Employees (business layer, active structure) and realizes the Checkout Process (application layer, behavioral aspect).

#### **Technology Layer**

- The Security System (technology layer, active structure) is used by Employees (business layer, active structure) and realizes the Data Protection Process (technology layer, behavioral aspect).
- The Data Protection Process (technology layer, behavioral aspect) accesses and updates Security Data (technology layer, passive structure).
- Robots (technology layer, active structure) are used by Employees (business layer, active structure) and assist in the Sales Process (business layer, behavioral aspect).

To ensure the smooth functioning of the entire system:

- The Information System (application layer, active structure) interacts with the Security System (technology layer, active structure) to ensure secure transactions.
- Robots (technology layer, active structure) interact with the Information System (application layer, active structure) for coordination of tasks.

