# ASSIGNMENT COVERSHEET FOR INDIVIDUAL WORK

## Faculty of Design and Creative Technologies

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# Week 1

## About my phone

My mobile phone is categorized as a smartphone. It helps me a lot on my day-to-day basis with technology-related tasks:communication *(Phone, Messenger, Zalo, etc.)*, commute *(Google Maps, Grab, BusMap)*, banking *(MB Bank, eBanking, Momo)*, shopping *(Shopee, Lazada, AliExpress)* and more. Beside that, it also provides entertainment media via online platforms such as *YouTube, Netflix, FPT Play,* games, etc.
All of those applications are working smoothly thanks to a decent processor with plenty of memory, and I can store a lot of photos with the 512GB internal storage. The phone can last a full working day so I can leave my charger at home, which helps lessen the devices I need to bring with me.
It brings me convenience and enjoyment while using it.

## UML for modelling service stack

Both types of UML diagram — structural and behavioral, can be used to model a service stack of User Interface, Applications, and Infrastructure. Structural diagram can be used to show the objects within the stack and how they are related to each other. Meanwhile, behavioral diagram can be used to describes how the objects interact with each other and show what will/should happen in the stack.
UML can provide a clear and intuitive demonstration of the stack's processes and design for every parties.

- Case diagram: Describes the *Experience* layer
- Class diagram: Describes the *Application* layer
- Summary class & Actitvity diagram: Describes the *Infrastructure* layer

# Week 2

## ArchiMate to model an enterprise system

Models built with ArchiMate can have three layers: *Business, Technology, Application*; and three aspects: *Active, Passive, Behavioural*.
The Business layer can include departments whose role related to money, law, resource, management, strategy and operation. Meanwhile, the Technology layer can include departments and components that helps to provide communication and means to work with data to aid the Business layer to be more interconnected and improve efficiency. Lastly, the Application layer helps to present the data and provide interaction between the Business and Technology layer. As we can see, these three layers represents the real world structure of an enterprise system.
Within each layer, there are three aspects. The Active aspects includes things that will be processed. The Passive aspects includes things that are more static, like processed data. The Behavioural aspect includes actions that will be done within the layer.

## Enterprise Architect's work

Enterprise Architects are people who are responsible for:

- Analyze, design and validate changes to the architecture following the principles and needs of the enterprise.
- Provide consultancy on architecture and solution design for departments within the enterprise.
- Formulating and enhancing the strategies of the enterprise.

In short, they are the people who proposes the overall structure and process of an enterprise to match its needs.

# Week 3

## How cloud services help a business to be cost effective

Most business will have many employees from many departments interacting with its data. This requires the business to have a server to serve and collect the data from its employee. However, owning a server (or cluster of servers) can be very costly, both to acquire and maintain them. The cost and complexity will also scale up for large and international corporations. Therefore, instead of owning servers, business can rent them from third parties that provide the necessary services. This helps the business to save money on many aspects: infrastructure, human resource, R&D, maintenance, and more. It can also save money if the business provides laptops and/or workstations for their employees as they don't need to need as much overhead specification-wise, since most processing power and data will be provided by the server.

## How the three layers of Cloud services help a gaming platform

The three layers of Cloud services are: SaaS, PaaS and IaaS. For a better visualization, let's use one of the more popular MMO game titles – *World of Tanks*, as an example.

**SaaS**: *World of Tanks* has a large user-base and an active online community forum. The publisher, *Wargaming*, doesn't need to build this by their own. Instead, they can build one on top of a forum framework. This help them to save time and resources by avoiding the need to develop and maintain the software themselves.

**PaaS**: The game also provide ways to sign up and login with third-party authentication methods. This can be achieved by using the APIs provided by third-party to link with the user's account, help them to access their account with ease and flexibility. The account link can also provide additional benefits for the user: for example, when linked with a *Twitch* account, user can receive rewards for joining the publisher's official livestreams on the platform. This helps to improve the user experience, thus improve the business' reputation.

**IaaS**: Since *World of Tanks* is a globally available game, they must have many physical servers and data centers around the world to reduce the latency and spread out the computational load. Instead of investing in these themselves, they can instead rent the required infrastructure and lower the cost of acquiring and maintain them.

# Week 4

## A service design tool

NVivo 12 is a general purpose modelling software, one of which is service modelling. One of the key feature of NVivo compare to other service modelling tool is that it can handle large-scale and high complexity project, both process-wise and data-wise. NVivo divides a project into multiple areas, the main ones are *Data Codes* and *Maps*. *Data* is where all of the data related to the project and its metadata is stored. The files that hold the data are stored in *Files* and can be in many types: image, video, audio, text, numerical, dataset. Meanwhile, the metadata for data files are stored in *File Classification*, each can hold multiple attributes. Inside *Codes* area, *Node*s folder stored nodes, which represents the componenets, aspects or processes in our system. Each of these node can hold multiple related files and references, and they can also have child nodes. Finally, *Maps* area is where user can construct the models of relationships between the nodes can be visualized. User can also add notes and descriptions inside a preset of shapes within the map.

## Comparision with ArchiMate

NVivo focuses more on modelling a structure or relationships between components with complex data within a system, while ArchiMate focuses on the architecture and process of a system.
NVivo has a very robust support data organizing and processing. For example, it has built-in tools to change audio playback speed and generate transcription. This make NVivo suitable for researchers, or people who needs to structuralize a large set of data in/for their projects.
ArchiMate provides complete set of tools, shapes and connections to model a business structure as layers and aspects. This make ArchiMate suitable for enterprise architects, or people who needs to model the structure of a business, whether its an overview or detailed analytic.

# Week 5

## Elements that make QoS

Quality of Service, or QoS for short, represents the quality of business service perceived by the customer when they use it. The better the usability of these services, the more positive feedbacks business will received, which benefits the business and its brand as a whole. Therefore, to determine whether the QoS is good or not, we should look into the usability metrics of each service.
Two of the most important metrics are *Effectiveness* and *Efficiency*. Effectiveness metric tells us the rate at which the intended result is achieved when the customer use the service. Efficiency metric, on the other hand, shows how long the process of reaching the intended result is needed, in terms of time and steps. Another metric that measures the frequency of system-related problem or rejection is *Errors*. These three metrics can make a direct impact on the fourth metric: *Satisfaction*. Lastly, the fifth metric is *Learnability*. This metric is very important for services that the customer needs to use regularly.

## Software service that improve customer experience

One of the most common service that is used to improve customer experiece silently is background telemetry data collection. The data collected can be both anonymous or identifiable. For anonymous data, the overall interaction of the whole userbase is take into considered. This is a very powerful tool for usability testing since it can act as an Observer for every user of the service. The easier it is for business to have an overview of the usability of their service, the faster and more focused improvements can be made to improve its QoS. However, for identifiable data, the identity of each user is use mostly to provide a more pin-point advertisement serving for online services. This raises some concerns among people as they can feel uncomfortable knowing that the actions they made using the service can lower their anonymity. Therefore, if enforced, identifiable telemetry data collection can lower the customer experiece among people who needs to lower their Internet footprints.

# ArchiMate Model