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**Title of the ECA: HYPERAUTOMATION**

**Course Code: ANL505**

**1a)**

* Shifting economic power

In the near future, world economy trajectory is set to shift and make Asia as the most critical trading region in the world. This is the process of power diffusion from ‘West’ to ‘Rest’ which dictates how the power shift is happening from the West region to developing countries/economies such as China, Indonesia, Philippines and so on.

* Technological breakthroughs

The world is entering a new era of digitalization with technological breakthroughs such as machine learning and artificial intelligence changing the business and social landscapes of the world. This is evident from various real world scenarios such as the development of 5G technology which affects all forms of connectivity such as in autonomous vehicles to augmented reality and smart home and personal devices.

**1b)** A shift in economic power plays a key role in today’s role especially amongst developed countries where one tries to assert dominance over the other. A key example can be seen between US and China where China has overtaken USA based on GDP growth in terms of Purchasing Power Parity (PPP) and is on track to be the largest economy in the world by 2030. On the other hand, developing countries such as Vietnam could be the fastest growing large population economy in the world by 2050. Such developing countries are striving to boost their market share in term of world GDP in the long run. With such shifts in economic powers and growths, the world economy growth rate could be almost doubled by 2042 and economies of developing countries could be amongst the largest in the world by 2050.

Technological breakthroughs play a key role in the development of a country’s economy as the progress in technology in one sector would benefit another by creating opportunities. Economic growth and innovation in technology grow hand in hand whereby if one economy plays the role of a technology innovator, another nation economy would be the adopter of the technology.

* **Three threats of a Shifting Economic Power**

Firstly, a shift in global economic power would result in a redistribution of wealth among nations. This would in turn cause currency valuation to be affected whereby the currency in growing economies would appreciate and economies that are decreasing in size would have their currencies depreciated.

Secondly, although such a shift can generate more revenue streams for a country which can in turn lead to increased industrial activity, it could also indirectly lead to environmental damage. This could be seen as a necessity for economic development in a country but at the expense of environmental damage consequences such as pollution due to the increased need for factory output, construction and also raw materials.

Lastly, a power shift in economic powers could potentially lead to a destabilization in power-balance which could cause conflicts involving territorial disputes. This can be further exemplified by the ongoing Russia-Ukraine war whereby one country exerts dominance over the other. Such conflicts would then lead to disruption in the economy.

* **Three opportunities of a Shifting Economic Power**

Firstly, power shift in economies is beneficial as people are provided with proper work and wages. This could also help reduce the poverty rates not only internally within countries but also globally.

Secondly, besides helping to reduce poverty rates, it also helps provide educational opportunities whereby corporations are able to invest more into education and training for workers and also children. These investments could help boost the economy in the long term.

Lastly, it can provide countries with more room to attract global investors which can help fuel economic and industrial growth in various sectors.

* **Three threats of Technological Breakthroughs**

In a world that is hyper-connected on every level, it brings with it a concern of cyber-security from an individual to national level. This is especially true for societies that are the most connected as it provides more opportunities for cyber-attacks.

Another threat of advanced technology is a concern that the rapid advancement of technology might soon replace the work of certain job functions in the near future. This might cause a concern of job unemployment due to the redundancy of employees required to perform such roles.

The third major concern of technological advancement is regarding privacy. With the evolution of big data and digital monitoring. For example, data is collected from IoT devices that uses facial recognition, AI and machine learning that tracks user data to recommend relevant personalised ads. The sheer volume of personal data involved heightens security risks due to the intrusive nature of such methods which makes it hard to control.

* **Three opportunities of Technological Breakthroughs**

Firstly, technological advancement can help businesses save time and money. With processes being automated more and more, higher data loads can be processed in shorter periods of time thereby enabling key business decisions to be made quickly. And by utilizing automation, this can help reduce the number of resources involved and this can help save on organisational costs.

Secondly, with progress in technologies these days, it allows businesses to become more innovative with their processes and further enable employees to focus efforts on other tasks that further enables their skillsets.

Thirdly, advancement in technologies creates healthy competition between organisations as it empowers a company to outdo its competitor. This in turn would lead to companies providing better products and services, ultimately improving their sales.

**1c)**

With regards to the megatrend on Technological Breakthroughs, it is a trend that is ongoing and will eventually form a part of our lifestyle in the future. Personally, an aspect of this trend has got to do with the various automation tools that I have picked up from this course.

Having equipped myself with the knowledge of these tools, I would look to harness the knowledge learned in this module together with other essential analytics skills to pursue a career in the analytics field.

Being able to incorporate the use of various automation tools into a data analytics process can greatly facilitate every stage of an analytics flow from start to end. This can be further elaborated through the various stages of the data analysis.

Collection and exploration of large data sets can be enhanced through the use of API-based databases, thereby ensuring that updated datasets are being utilized at all times.

With the aid of UiPath robots, data processing, preparation and loading can be automated. Unstructured data like images and emails can be formatted and processed. Semi-structured data such as XML and JSON files can also be processed and stored in a data warehouse.

Finally, robots can also be deployed to trigger data visualization activities as per scheduled and accelerate the process of decision making through the data visualizations.

Downstream processes such as dashboarding generation for data storytelling can also be scheduled and triggered using robots. Overall, this help to accelerate speed of deriving insights from data.

**2) Option II**

**Use case scenario:**

Created a survey form to gather feedback on after sales quality such as servicing quality and repair time. The benefit of this use case is that once the app is created, for other future use cases, it can take reference from this template format to create a different one instead of having to start from scratch to create a new program. Different roles can also be assigned to access and run the app.

**Constructing the input activities in the workflow**

> Creating a new app and giving a name to the app.

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> Select ‘Form A’ template to create the survey form

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> Add control to add in controls such as “label”, “button”, “text area”

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**Modifying and adding contents to the survey form**

Edit the header text of the survey form and adding in the logo “ASUS”.

A blue rectangle with white text

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Font size, type and placement of the text can be modified under ‘Style’

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Linking the logo to a URL:

Click the targeted text to be linked. Select “Edit Rule” under “Events” tab on the right column.



Input the URL link to be linked to the logo.

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Bodies can be duplicated if similar text boxes are needed

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‘Text’ boxes can be added by dragging into the body area.

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Click “Preview” at the top right of the screen to view a sample of how the final output will look like to the end user before publishing it.

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**Format of the form before running:**

**A screenshot of a survey

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**A screenshot of a computer

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**A close-up of a person

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**A white background with text

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**A screenshot of a computer

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**Test outcome of the form:**

Form header with text and background.



Logo can be clicked and linked the <https://www.asus.com/> URL link. Link is attached to provide users with quick access to the ASUS website to access more information about the brand.

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Desired text and entry boxes are being output correctly. Text can be entered into the fields.

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Checkboxes with the required options to select are displayed and can be selected.

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Text can be entered into the text box areas.

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After publishing, the app can be seen under ‘Apps’ list with status shown as ‘Published’.

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**3a) Identifying the problem and applications used**

Identifying objectives

Target audience

-Stakeholders from various business units that have access to update the shipments spreadsheet

Problem statement

-Existing way that a user conveys the message that he/she has updated the spreadsheet is through verbal communication or through text messaging apps such as Microsoft teams.

-In the event of any issue (for e.g incorrect shipment details being processed), it is difficult to track back when that specific record was being input into the spreadsheet

Desired effect

-To convey new initiatives of enabling email trigger notifications to the relevant stakeholders whenever there are updates to the common spreadsheet. Secondly, to introduce the use of Tableau to be able to track user update history. Having both initiatives in place can allow for more efficient documentation as well as referencing of record updates to the spreadsheet.

Applications involved in the automation process

The applications involved in this process are Zapier, ServiceNow and Outlook. ServiceNow is used to load the excel database involved while Zapier can be used to connect ServiceNow to Outlook. Zapier can extract the dataset as well as the relevant fields from ServiceNow after setting up ServiceNow in the flow. Any updates in the ServiceNow table that is loaded into Zapier will trigger an email notification informing the required stakeholders of what the updates are.

**3b) Importing the data set**

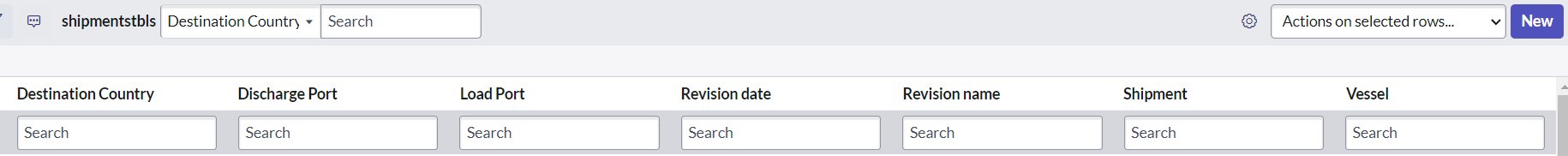
Created ServiceNow table ‘shipmentstbl’ that the loaded dataset would be imported into:

Adding required fields

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‘Show list’ view to verify all required fields are in the list.



Created staging table ‘shipments1stag’ to store the dataset before importing it into the target table.

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Transform mapping:

Created transform map “shipments1trf’ to do auto map matching to bring in the required fields from staging table into the target table.

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Transformation successful:

Data from excel spreadsheet is loaded into the target table “shipmentstbl”.

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**3c) Preparing and creating the dataset**

Dataset preparation/cleaning

Dealing with blank cells in the spreadsheet.

Before: After:

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Replacing blank cells as ‘NA’ to ensure more accurate filtering and sorting. Selected all blank cells and used ‘Go To’ feature, selected blanks and all blank cells will be highlighted. Key in ‘NA’ value followed by “Ctrl + Enter” to apply it to all the blank cells highlighted.

Before: After:

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Converting all values in the ‘Vessel’ column to uppercase using the UPPER() function. To ensure consistency in the values for easier referencing.

Before: After:

A list of different types of sports teams

Description automatically generated with medium confidence A screenshot of a computer

Description automatically generated

Removing unwanted strings from the values in the ‘Vessel’ column through use of SUBSTITUTE() function.

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Cleaning up the date stamp format to extract only the date value. Not necessary to have the timestamp included.

E.g 2019-6-29 00:00 -> 29/6/2019

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ERROR cells (i.e #VALUE1) are converted to ‘NA’ values using “Go-To” feature

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**3d) Creating project management schedule and automation solution**

Setting up connection between Zapier and ServiceNow:

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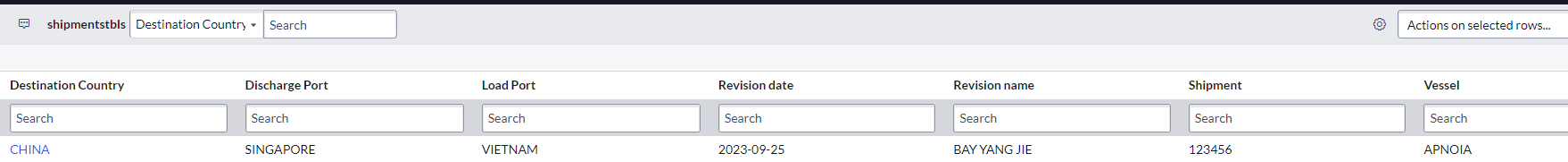
Loading the dataset into Zapier:

ServiceNow table “shipmentstbl” loaded into Zapier’s ‘Trigger’ step:

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New record was created in the ServiceNow table ‘shipmentstbl” through Service Catalog to test if new record would show in the list under the ‘test’ step.



New record created in ServiceNow table is reflected in the ‘test’ step:

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Setting up test ZAP:

Entering email addresses that will be receiving the ZAP & giving a subject header for the ZAP

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Setting the body format and create sample email format to test the ZAP email trigger:

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The new records in the ServiceNow table can be included in the body text by searching for them from “Insert Data” dropdown list.

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Sent the test step to the email address:

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Successfully received alert about the new record update:

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Published ZAP:

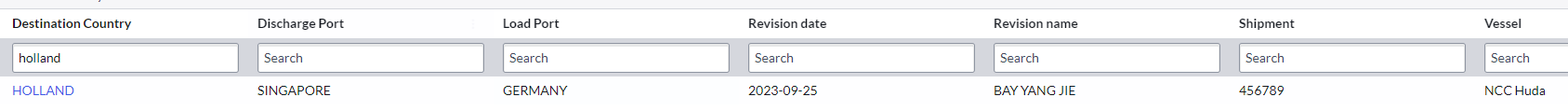
After 1st version is published, if there needs to be an update to the ZAP, a 2nd version is created. In this case, update was to modify body text.

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Testing to see if published ZAP works by creating another new record in ServiceNow table using Service Catalog and checking if email notification is automatically triggered.

New record created in ServiceNow table “shipmentstbl”



Email notification is triggered successfully to notify user about the change details:

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**Project management schedule**

Using ASANA to create a project management schedule

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Evaluate possible go-to solutions and present a proposal initiative to automate the existing workflow.

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Showcase through demonstrations how the different automation tools work and each tool plays a part in the automation process. Request stakeholders to get hands on experience with the tools while gathering any queries they might have and resolving it.

Two rounds of UATs would be conducted. First round is to get stakeholders to run the full process and gather feedback on how the process can be improved or problems encountered. Enhancements to the automation tool set up would then be done based on the feedback provided. Get users to do a 2nd UAT dryrun to verify no further issues or feedback.

**A group of blue squares

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Final stage would be the deployment of the automation set up to production. Following the deployment, it is critical to track error rates to ensure the performance of the automation tool setup is stable.

**3e) Formulating visualizations on dataset**

Loaded csv dataset into Tableau:

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Created tableau chart showing:

-detailed summary of when the different users updated the data spreadsheet (e.g which quarter it was updated, the exact date that the user updated on and the name of the user who did the updates).

-classify users by colour for easier identification when tracking back records

-interactive filter included to enable filtering if there is a need to check back user update history

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