



**MACQUARIE**  
University

**Department of Computing**

**Semester 2, 2023**

**COMP3760/6760: Enterprise Systems Integration**

**Assignment 3 (Group Assignment): *System Integration***

**(20% of the semester)**

**Adapted and modified by Yang Zhang from the work of Prof. Jian Yang.**

Due **11:55 pm Tuesday - 31 October 2023**

## Process and Service Support for Study Aboard

(Source: COMP3760/6760 Assignment 2 Specification).

### Background Information: Study Abroad - Assignment 2 by Dr. Peter

In recent years, the opportunity to incorporate international study into their degrees has become increasingly accessible for Australian students. Pursuing a study abroad experience is viewed as a pathway to enhanced employability after graduation by students and as a valuable point of distinction among job applicants by employers. Typically lasting one semester, these study abroad programs can also extend up to a year for those seeking a more extended international academic experience.

### The Application Process:

The high-level process architecture of a study abroad application covers the core, support, and management process. The core processes include activities of a student study abroad application and the student administration team revolving around an application (figure 1).

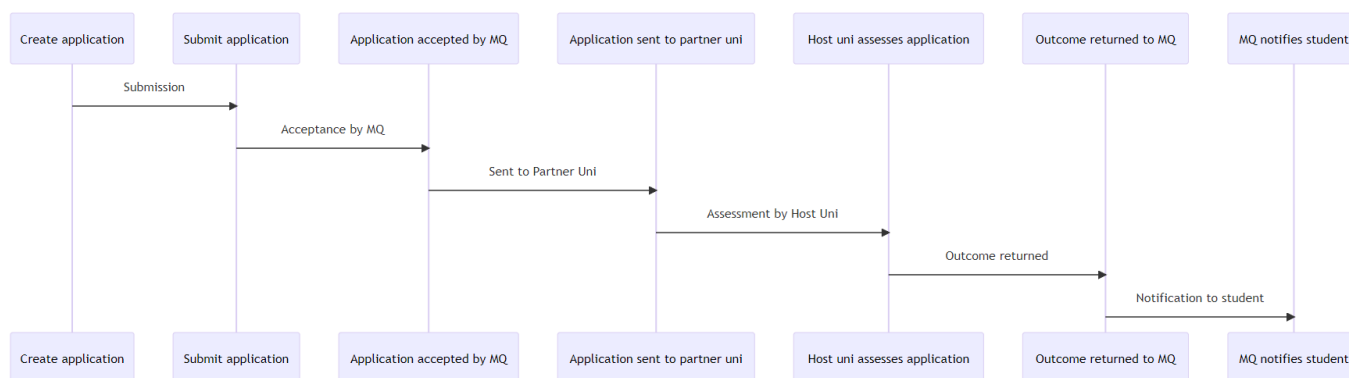


Figure 1: *Simplified* Flow of a Typical Study Abroad Application (SAA)

## Project Brief (4 marks)

Provide a description on: the group meeting schedule or plan, each member's role in the project, identifying risks and ways to manage risks, ways to communicate between members, and a log recording each meeting, discussion and dialogue between members in relation to the project. Note: all members need to contribute to the project. The description and log need to be submitted together with the four tasks.

## Task 1 Collaborative Business Process and EAI (4 marks)

When a student puts an application to study a course aboard, we need check her/his degree program structure, the relevant information about the course available in the partner's university, to judge if the selected course meets the required credit points and the contents, and to check if her/his degree program allows such selection. A degree program structure normally contains the total credit points required, the core units required at different level; while the unit information includes the prerequisite units and offering semester. Different universities may have different degree rules and course requirements.

The objective of this task is

- to use BPMN notation (Week 2 lecture) to draw a collaborative business process based on Figure 1, in which you need to show partners (users), **how they interact, and how information/messages are exchanged**.
- There are various ways to design and implement this collaborative business process. Suppose all the partner universities have systems similar to our *eStudent*, **design and draw an EAI system** that support student make an inquiry or lodge an application to MQ portal for study aboard.
- **Explain** how queries are processed in your **EAI system**. You may make the necessary assumptions.

## Task 2 Web Service Design (4 marks)

Suppose you are wrapping the SAA process (Figure 1) as a web service, which allows a student to create a application for studying aboard. You are required to:

- Identify the **two necessary functions** of this SAA service. You can make your assumptions based on your experience in study applications;
- For each of the above functions, **identify the input/output messages**;
- Use WSDL interface definition constructs to specify the above **identified functions** with input/output messages.

## Task 3 XML Schema Design (4 marks)

For the above input/output messages, write their XML Schemas. You need to include the following:

- **Two** different ways of specifying **complex types**, one is defined inside the element, the other defines a complex type first, then (re-)uses it as a complex type of an element;
- Use **constraints** on the values of a simple typed element, on the occurrence of elements;
- Pick up **one xml schema**, construct a sample xml document.

## Task 4 Discussion (4 marks, @ 800 words)

“Different partner universities have different degree programs with different rules and different credit systems. Their student support systems are implemented differently with different interfaces”, from this description we can image there are different systems implemented in different sites to support SAA. For example, at Macquarie University, Bachelor of IT program has 5 majors to choose. This program requires students to take core units at different levels and select elective units. **eStudent** is used for students to enroll in program, select units to study,

apply for special considerations, etc. A partner university in US may have different program structure and the program information can be found in their website without the capability for students to select units to study. Use what you have learned in the unit to discuss the following:

- *How does robotic process automation (RPA) assist in the entire process?*
- *The possible technologies potentially used to support system integration at various levels.*
- *The options and considerations of the technologies along with their advantages and disadvantages.*

**Submission:** *one submission per group*, together with the project description and log.

### **Zero Tolerance for Cheating:**

You are required to use your own words to provide the descriptions and explanations. **All submissions will be checked for plagiarism.** Any cases **will be reported to the faculty for disciplinary action**, and the marks of the assignment and the unit will be withheld until the case has been resolved. See Macquarie University's code of conduct for the details of the process: <https://students.mq.edu.au/study/getting-started/student-conduct>.

### **Submission**

Place your soft copy in your assignment 3 submission folder on iLearn.

**Due 11:55 pm Tuesday - 31 October 2023 (Hard deadline)**

### **Marking Rubric**

	<b>Developing</b> (Borderline Pass-Fail)	<b>Functional</b> (Pass)	<b>Proficient</b> (Credit)	<b>Advanced</b> (Distinction-High Distinction)
<b>System Integration</b>	Showing some understanding of system integration	Showing understanding of system integration, can apply technologies in the business case	Good understanding of system integration issues, can explain and use the technologies proficiently and appropriately without any significant mistakes	Excellent understanding of system integration and can explain and use the technologies at an expert level
<b>XML, web service</b>	Limited understanding of XML, web services, some obvious mistakes	Competent understanding of XML and web services, some trivial mistakes still in evidence, but generally an understanding of what is taking place and why	Some incorporation of the literature beyond just competent understanding of XML and web services	An excellent grasp of XML and web services, also drawing on the literature widely to exemplify in the case of further examples how XML and web services has aided system integration as well