



ITEC832

Enterprise Application Integration

S1 Evening 2017

Dept of Computing

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Disclaimer

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General Information

Unit convenor and teaching staff

Ian Krycer

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Credit points

4

Prerequisites

Admission to MInfoTech or MEng or MSc

Corequisites

Co-badged status

Unit description

This unit focuses on integration technologies from internal application integration to external business-to-business integration. Integration activities start with a process model and process redesign targets. We use the market leading IBM BlueWorks Live software to define our processes. Application integration techniques such as data orientated, application interfaces, message orientated middleware and application servers are covered. The role of Web APIs and RESTful architecture is considered, as well cloud based infrastructure, platforms and SaaS. We then consider B2B integration with EDI and Web Services, and the role of portals. We explore the objectives of business process management and supply chain planning and consider a recent innovative government integration initiative as a student presented case study.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.

Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the

situation.

Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.

Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

General Assessment Information

Submission methods for assessment tasks:

All assignment submissions are soft copy, and return of marks and comments, will be done through the ITEC832 page on iLearn.

Late submission:

Late submission of individual work will incur a 10% penalty for every 24 hours, or part thereof, it is late. So within 24 hours, the maximum mark that can be obtained is 90% of the full grade for that assessment task; between 24 and 48 hours, the maximum mark that can be obtained is 80% of the full grade; and so on. No extra documentation is required unless the student does wish to have an extension (see below) applied.

Late submissions of group based assignments are not permitted unless under exceptional circumstances with documentary evidence provided to the unit convenor which may include medical certificates as per the Department of Computing policy. One person being sick does not mean the group cannot submit work. Students are recommended to have a backup plan for group based submissions.

Extensions and Disruptions:

Extensions without a grade penalty may be provided to individuals who contact student services BEFORE the due date and can provide documentary evidence of illness or other misadventure and succeed in gaining a certified disruption. (Health issues will require a university issued Professional Authority Form.). If approved, a new submission timeline and submission method will be discussed on a case by case basis.

Students are strongly advised to contact the unit convenor as early as possible if there are any issues that will not make an on-time submission possible.

If you apply for Disruption to Study for your **final examination**, you must make yourself available for the week of July 24 – 28, 2017. If you are not available at that time, there is no guarantee an additional examination time will be offered. Specific examination dates and times will be determined at a later date.

Final Exam (Hurdle):

The final exam will focus on content covered in the classes throughout the semester including all lectures, references and workshops.

As the final examination is a hurdle assessment, you will need a minimum performance of 40% to pass the unit. Your aggregate score must be 50% or above. If you achieve 30 to 39% in the

final exam, you will be given a second chance to pass, with a new and different examination.

These second-chance hurdle examinations will also be offered in the week of July 24 - 28.

Results will be released on July 13. You will be notified shortly after that date of your eligibility for a hurdle retry and you must also make yourself available during that week to take advantage of this opportunity.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Hospital Procurement Process</u>	15%	No	Week 4
<u>EHR Case Study</u>	15%	No	Week 6
<u>Group Report</u>	10%	No	Week 12
<u>Individual Presentation</u>	10%	No	Various Weeks
<u>Examination</u>	50%	Yes	Week 14 or 15

Hospital Procurement Process

Due: **Week 4**

Weighting: **15%**

You are given an actual hospital procurement process. This is to be modeled as the 'As Is' Process using IBM Blue Works Live SaaS software. Metrics such as process cost and time are to be derived. Based on the objectives of business process reengineering, an automated, improved 'To Be' process is to be proposed. The new process is to be assessment according to the modeling metrics as well as a SWOT analysis and ROI justification.

On successful completion you will be able to:

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

EHR Case Study

Due: **Week 6**

Weighting: **15%**

You are given a well researched case study about the introduction of electronic medical records in the US. The case highlights the technological, management and organizational challenges of this immense application integration undertaking. Students are required to answer questions about the case study and provide As Is and To Be process models for one of the system's components.

On successful completion you will be able to:

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Group Report

Due: **Week 12**

Weighting: **10%**

Students form groups of 2 to 4, depending on the class size, and choose a contemporary SaaS implementation case study from a given list of published recent studies. The team is to identify the possible the opportunities for improvement to the existing As Is Process. Then, model the given new To Be Process as described in the case study and demonstrate how it delivers significant business benefits and the metrics to manage and quantify the benefits. The team is to submit a structured report comprised of each member's contribution and then each member is to give a class presentation on their findings.

On successful completion you will be able to:

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.

- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Individual Presentation

Due: **Various Weeks**

Weighting: **10%**

Firstly, each group will be allocated a minor project and be expected to present their findings regarding an ongoing class case study of a contemporary B2B integration initiative. Secondly, each student is to present on their component of the Assignment 3 Group Report. It is up to each team to structure their activities to meet the overall due requirements of the two presentations.

On successful completion you will be able to:

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Examination

Due: **Week 14 or 15**

Weighting: **50%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

A compulsory closed book exam covering all lecture, reference and workshop material.

On successful completion you will be able to:

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Delivery and Resources

Each week you should attend up to 4 hours of lectures and tutorials. For details of days, times and rooms consult the [timetables webpage](#).

Please note that you will be **required** to attend 80% of the lectures and hand in prepared work as required. Failure to do so may result in you failing the unit or being excluded from the exam.

Recommended Texts

The references for this unit are constantly being updated and textbooks do not keep up with the changes in technology. Hence, there is no mandatory textbook for this unit. The following texts are recommended reading:

Douglas K. Barry (2013) Web Services, Service-Orientated Architectures and Cloud Computing, 2e, Morgan Kaufmann, Sydney

David S. Linthicum (2009) Cloud Computing and SOA Convergence in Your Enterprise: A Step-by-Step Guide, Addison Wesley, Sydney

Jason Bloomberg (2013) The Agile Architecture Revolution: How Cloud Computing, REST-Based SOA, and Mobile Computing are Changing Enterprise IT, Wiley.

Lecture handouts will list appropriate Web based references and further reading for some of the rapidly evolving technologies discussed in this course. All the lecture handouts and soft copy references will be available for download from the class Web site from Week 1 at: <https://ilearn.mq.edu.au/>

We are using IBM Blue Works Live for process modeling. This is a SaaS app that initially has a free 30 day trial period. We then apply for an educational licence and can use the collaborative features for Assignment Two. We use the latest BPMN 2.0 modelling notation.

Other technology required is MS Word, MS Visio and MS PowerPoint. MS Visio is available free of charge from the University collaborative Microsoft DreamSpark website.

Website and access to unit material:

The web page and content for this unit can be found at iLearn: <https://ilearn.mq.edu.au/login/MQ/>. Note that the unit content is not publicly available and requires for you to log in to access.

Unit Schedule

Week	Topic	References
1	E-Commerce Lean Methodology Practical – IBM Blue Works Live Tutorial	Laudon and Traver, 2017 Mark Robinson, 2014 IBM Training
2	BPMN 2.0 BPM Using Blue Works Live E-Procurement Processes Release Assignment One (Individual Assignment)	BPMN.ORG IBM Training IBM, Gartner and JDA
3	Collaborative Commerce (ERP II) B2B Data Integration (EDI and EDI-INT) Release Assignment Three (Group Assignment) 'BPM with SaaS Solutions'	Gartner Coles Group Specifications Salient Retail Link, 2012
4	Introduction to Application Integration Web Services Services Orientated Architecture Assignment One Due Release Assignment Two (Individual Assignment)	Roshen, 2008 Barry, 2013
5	SOA Case Study Data Orientated Application Integration Tutorial: Minor Project 1	Barry, 2013 White, 2005 and 2009 Gartner, 2013
6	Application Integration - Application Interfaces and Application Servers Assignment Two Due Tutorial: Minor Project 2	Faber Novel, 2012 IBM, 2009 Gartner, 2012
7	Cloud Computing Hybrid Clouds ZapThink 2020 Enterprise Architecture Vision Tutorial: Minor Project 3	Linthicum, 2009 Gartner, 2015

8	Integration in the Healthcare Market (Guest Speaker) Application Infrastructure and Middleware Market Tutorial: Minor Project 4	CIO of Ramsey Healthcare Gartner, 2015 and 2016
9	BPM and SOA Together IBM Hybrid Clouds and BPM Tutorial: Minor Project 5	Skalle and Hahn, 2013 Guest Speaker
10	Business Process Management Systems Internet of Things Tutorial: Minor Project 6	Gartner, 2014 BI Intelligence, 2016
11	Tutorial – Group Assignment	
12	Group Presentations Assignment Three Due	
13	Group Presentations continued Tutorial and Revision	

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- Group Report
- Individual Presentation
- Examination

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-

solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- Group Report
- Individual Presentation
- Examination

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- Group Report
- Individual Presentation
- Examination

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- Group Report
- Individual Presentation
- Examination

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.

- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
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- Group Report
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- Examination

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcomes

- Apply an understanding of process modelling to analyse an existing 'As Is' process and be able to compare and contrast with proposed improved 'To Be' processes for process improvement and optimisation.
- Critically evaluate application integration technologies such as APIs, database integration, application servers, Web Services, REST and business process management systems and be able to recommend the most suitable technology for the situation.
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Standards

Four standards, namely HD, D, CR, P summarize as many different levels of achievement. Each standard is precisely defined to help students know what kind of performance is expected to deserve a certain mark. The standards corresponding to the learning outcomes of this unit are given below:

HD	Apply techniques and knowledge in new contexts, show breadth and depth of understanding of business process modeling and its role in justifying investment in application integration technologies.	A sound grounding in designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate leadership, creativity, critical thinking and analysis skills. Enthusiatic in acquring new knowledge in the application integration area. Demonstrate capability in applying new application integration knowledge to solve real-world problems. Conduct team work effectively and play a key role in moving the whole project team forward.
D	Apply techniques and knowledge in some new contexts, show breadth and depth of understanding of across most of the business process modeling topics and its role in justifying investment in application integration technologies.	Apply techniques and knowledge in some new contexts, show breadth and depth of understanding across most of the topics: designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate some leadership occasionally. Show creativity, critical thinking and analysis skills. Have the capability in applying application integration knowledge to solve real-world problems. Collaborate with team members well and finish assigned tasks on time and with good quality.
CR	Show breadth of understanding across most of the business process modeling topics and its role in justifying investment in application integration technologies.	Show breadth of understanding across most of designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate analysis skills in some occasions. Know how to apply application integration to solve some of the real-world problems. Able to finish assigned tasks on time and with good quality most of the time.
P	Can reproduce definitions and ideas, show some breadth of understanding othe business process modeling topics and its role in justifying investment in application integration technologies.	Can reproduce some defintions and ideas, show some breadth on issues in how breadth of understanding across most of designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate limited analysis skills. Can apply application integration knowledge to solve limited real-world problems. Able to finish all assigned tasks on time and with acceptable quality.

In this unit, your final grade depends on your performance in each part of the assessment. For each task, you receive a mark that combines your standard of performance regarding each

learning outcome assessed by this task. Then the different component marks are added up to determine your total mark out of 100. Your grade then depends on this total mark and your overall standards of performance.

In order to pass the unit, you must obtain a total mark of 50% or higher.

Changes since First Published

Date	Description
18/02/ 2017	Add Outline and a few paragraphs in the Standards Section about a 50% pass mark.