



ITEC832

Enterprise Application Integration

S1 Evening 2019

Dept of Computing

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General Information

Unit convenor and teaching staff

Ian Krycer

ian.krycer@mq.edu.au

Credit points

4

Prerequisites

Admission to MInfoTech or MEng or MSc or MCyberSec or MDataSc or MScInnovation

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.

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

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.

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 soft copy assignment submissions 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.

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 Supplementary Exams. 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:

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

There is no minimum performance requirement for the final exam, however, an aggregate score of 50% and above is required to pass the unit.

If you receive special consideration for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with

the [policy](#) prior to submitting an application. You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

Assessment Tasks

Name	Weighting	Hurdle	Due
Hospital Procurement Process	15%	No	Week 4
EHR Case Study	15%	No	Week 6
SaaS Implementations	10%	No	Week 12
Individual Presentation	10%	No	Week 12
Final Examination	50%	No	Exam Week

Hospital Procurement Process

Due: **Week 4**

Weighting: **15%**

You are given an actual hospital procurement process. This is to be modelled 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 modelling metrics as well as an 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.
- 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 organisational 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.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

SaaS Implementations

Due: **Week 12**

Weighting: **10%**

Students form groups of 4, and choose a contemporary SaaS implementation case study from a given list of published recent studies. The team is to identify the possible 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 identify 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.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.

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

Individual Presentation

Due: **Week 12**

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.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Final Examination

Due: **Exam Week**

Weighting: **50%**

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.

- 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](#).

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-Oriented 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 Three. 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 Imagine](#) 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	<p>BPMN 2.0</p> <p>BPM Using Blue Works Live</p> <p>E-Procurement Processes</p> <p>Release Assignment One (Individual Assignment)</p>	<p>BPMN.ORG</p> <p>IBM Training</p> <p>IBM, Gartner and JDA</p>
3	<p>Collaborative Commerce (ERP II)</p> <p>B2B Data Integration (EDI and EDI-INT)</p> <p>Release Assignment Three (Group Assignment) 'BPM with SaaS Solutions'</p>	<p>Gartner</p> <p>Coles Group Specifications Salient Retail Link, 2012</p>
4	<p>Introduction to Application Integration</p> <p>Web Services</p> <p>Services Orientated Architecture</p> <p>Assignment One Due Release Assignment Two (Individual Assignment)</p>	<p>Roshen, 2008</p> <p>Barry, 2013</p>
5	<p>SOA Case Study</p> <p>Data Orientated Application Integration</p> <p>Tutorial: Minor Project 1</p>	<p>Barry, 2013</p> <p>White, 2005 and 2009 Gartner, 2013</p>
6	<p>Application Integration</p> <p>- Application Interfaces and Application Servers</p> <p>Assignment Two Due</p> <p>Tutorial: Minor Project 2</p>	<p>Faber Novel, 2012</p> <p>IBM, 2009</p> <p>Gartner, 2012</p>
7	<p>Cloud Computing</p> <p>Hybrid Clouds</p> <p>ZapThink 2020 Enterprise Architecture Vision</p> <p>Tutorial: Minor Project 3</p>	<p>Linthicum, 2009</p> <p>Gartner, 2015</p>
8	<p>Integration in the Healthcare Market (Guest Speaker)</p> <p>Application Infrastructure and Middleware Market</p> <p>Tutorial: Minor Project 4</p>	<p>CIO of Ramsey Healthcare</p> <p>Gartner, 2018</p>
9	<p>BPM and SOA Together</p> <p>IBM Hybrid Clouds and BPM</p> <p>Tutorial: Minor Project 5</p>	<p>Skalle and Hahn, 2013</p> <p>Guest Speaker</p>
10	<p>CRM SaaS Integration</p> <p>Internet of Things</p> <p>Tutorial: Minor Project 6</p>	<p>Guest Speaker</p> <p>Gartner, 2018</p>

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](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@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

If you are a Global MBA student contact globalmba.support@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.

- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- SaaS Implementations
- Individual Presentation
- Final 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.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study

- SaaS Implementations
- Individual Presentation
- Final 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.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- SaaS Implementations
- Individual Presentation
- Final 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.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- SaaS Implementations
- Individual Presentation
- Final 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.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.

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

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
- SaaS Implementations
- Individual Presentation
- Final 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.
- Apply an understanding of integration technologies to critically analyse contemporary B2Bi case studies.
- 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.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Hospital Procurement Process
- EHR Case Study
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- Individual Presentation
- Final Examination

Standards

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. Enthusiastic in acquiring 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 of the business process modeling topics and its role in justifying investment in application integration technologies.	Can reproduce some definitions 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.