THE UNIVERSITY OF SYDNEY

School of Information Technologies
Faculty of Engineering & IT

ASSIGNMENT/PROJECT COVERSHEET - INDIVIDUAL ASSESSMENT

Unit of Study: INFO5991 Services Science Management and Engineering

Assignment name: Construct a synthesis grid

Tutorial time: _____

Tutor name: _____

DECLARATION

I declare that I have read and understood the *University of Sydney Academic Dishonesty and Plagiarism in Coursework Policy*, and except where specifically acknowledged, the work contained in this assignment/project is my own work, and has not been copied from other sources or been previously submitted for award or assessment.

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I realise that I may be asked to identify those portions of the work contributed by me and required to demonstrate my knowledge of the relevant material by answering oral questions or by undertaking supplementary work, either written or in the laboratory, in order to arrive at the final assessment mark.

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NEWTOWN BANK Ltd.

Increasing Profitability with better IT Infrastructure Investments

Construct a synthesis grid

Specializing: service-oriented architecture
Name: Lu Zheng
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Date: 4/April/2017

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1. Source REVIEW

Source	Author	Relevance	Expertise of author	Viewpoint of author	Intended audience	Evidence	When published	Scholarly or not
"Understanding the Economic Potential of Service-Oriented Architecture"	BENJAMIN, GOETZ, CHRISTINE, AND GEROLD (2010)	This article mainly focuses on economic effects of SOA, and also gives basic design principle of SOA. It is helpful for the claim of Newtown bank`s problem.	BENJAMIN MUELLER and GOETZ VIERING are Ph.D. candidates and research assistants at IRIS, EBS; CHRISTINE LEGNER is a Deputy Professor and GEROLD RIEMPP is a Full Professor, who are specialized in this area.	The purpose of the resource is to provide support for further studies, due to few studies have a comprehensive result of economic potential of SOA.	For further investigators and enterprises who intend to introduce SOA.	96 reference articles are cited by this article.	Published in 2010, which is still influential.	Yes.
"A Literature Review of Research on Service-Oriented Architectures (SOA): Characteristics, Adoption Determinants, Governance Mechanisms, and Business Impact"	Nils Joachim (2011)	This article is a literature review, aim to synthesize and summarize the outcomes of previous research in SOA.	Nils Joachim is from Department of Information Systems and Services University of Bamberg.	The purpose of the resource is to offer researchers an overview about the existing body of knowledge in SOA as well as research agenda.	For further investigators.	69 reference articles are cited by this article.	Published in 2011, which is still influential.	Yes.

"Realizing service migration in industry—lessons learned"	Khalid Adam Nasr, Hans-Gerhard, Arie (2011)	This article presents two descriptive case studies covering the re-engineering and further evolution of adopting service-oriented architecture (SOA) in the industry. It is useful for analyzing the benefits and drawbacks of applying SOA for Newtown Bank.	Khalid Adam Nasr has nine years of professional experience in the IT sector. Hans-Gerhard is a PhD in Software Engineering (2000) from the University of Glam organ; Arie van Deursen is full professor at Delft University of Technology	The goal of both case studies is to identify the possible benefits and drawbacks of realizing SOA in large organizations in order to obtain a better perspective on the real, rather than the assumed, benefits of SOA in practice.	For further investigators.	38 reference articles are cited by this article.	Published in 2011, which is still influential.	Yes.
"Extensible Architectures: The Strategic Value of Service Oriented Architecture in Banking"	Richard B., Marco Cavallari, K. Hjort-Madsen, Jan Pries-Heje, Maddalena Sorrentino, and Francesco Virili (2005)	This article is about applying SOA in banking industry, which is useful for analyzing Newtown Bank case.	Richard Baskerville is from Georgia State University; Marco is from Teamlab; Kristian Hjort-Madsen, Jan Pries-Heje are from the IT University of Copenhagen; Maddalena Sorrentino is from Universita degli Studi di Milano.	The article reports a comparative, cross-cultural case study of the implementation of Service Oriented Architectures (SOA) at a Scandinavian bank and a Swiss bank. Published at Association for Information Systems.	For further investigators in SOA and working staff in bank industry.	27 reference articles are cited by this article.	Published in 2005, which is still influential.	Yes.

2. Synthesis grid on service-oriented architecture

In-text citation of source in APA 6th format	Definition and explanation of characteristics of the IT strategy in which you are specialising	General benefits	General challenges and risks	Risk mitigation	Information in the source specifically relevant to Newtown Bank's problem, goals, and requirements:	Page no. and quotes
BENJAMIN, GOETZ, CHRISTINE, AND GEROLD (2010)	Modularity: An SOA decomposes the existing application architecture and structures it into a manageable number of partially autonomous subsystems—that is, domains and services.	allows a quick and easy composing of services that will optimally meet current requirements, lead to agility, complexity reduction, increased reusability, and better interoperability.	Complexity	By developing a clear framework	**Related problems:** This principle is for solving the problem of "legacy code" by modularizing business units. **Related goals:** Improve the flexibility for future developments. **Related requirements:** related with requirement3,4,5,7, helping in explaining What is SOA, the benefit of modularity, and the challenge is improved complexity of designing, as well as the transition of system update.	p.147 "SOA as an Architectural Style"
BENJAMIN, GOETZ, CHRISTINE, AND GEROLD (2010)	Loose coupling: the logical and run-time dependencies between services are as low as possible.	essential for the dynamic binding of components.	Complexity	By developing a clear framework	**Related problems:** This principle can solve the problem of "legacy code" by loose couple design. **Related goals:** Improve the flexibility for future developments. **Related requirements:** related with requirement3,4,5,7, helping in explaining What is SOA, the benefit of loose	p.147 "SOA as an Architectural Style"

					coupling, and the challenge is improved complexity of designing, as well as the transition of system update.	
BENJAMIN, GOETZ, CHRISTINE, AND GEROLD (2010)	Standards: relies on compatible interfaces and the use of open and widely standards:	important to ensure interoperability and to guarantee seamless integration	Compatibility	Introduce state-of-art design in the industry.	**Related problems:** This principle can support the development of core function and the integration with external services. **Related goals:** provide potential ability for greater organizational agility and competitiveness with other banks. **Related requirements:** related with requirement3,4,5,7, helping in explaining What is SOA, the benefit of standard interface, and the challenge is problem of compatibility of different components, as well as the transition of system update.	p.148 "SOA as an Architectural Style"
BENJAMIN, GOETZ, CHRISTINE, AND GEROLD (2010)	Using web services: easier for components to communicate and cooperate over a network	applied to overcome platform and vendor dependency, reduce cost.	Security problem	Increase specialist in security.	**Related problems:** This principle can support the communication between core functions and the access of customers at anytime anywhere. **Related goals:** Reduce cost, thus increase the return on IT infrastructure investments. **Related requirements:** related with requirement3,4,5,7, helping in explaining What is SOA, the benefit of web service, and the challenge is security	p.148 "SOA as an Architectural Style"

					problem among online transaction, as well as the transition of system update.	
Nils Joachim (2011)	Better Business agility	shorter time-to-market and Cost reduction	lack of industry standards and mature tool.	Improve standard.	**Related goals:** Reduce cost, thus increase the return on IT infrastructure investments. **Related requirements:** related with requirement4,6, helping in explaining the economic benefit of SOA to bank industry.	p.7 "SOA's Business Impact"
Nils Joachim (2011)	Better data quality	Reduce data complexity			**Related goals:** Increase data quality, better ability of competitive. **Related requirements:** related with requirement4,6, helping in explaining the economic benefit of SOA to bank industry, for banks, quality of data affects the mature of business process, more qualified more better understanding the customers.	p.7 "SOA's Business Impact"
Nils Joachim (2011)	Business/IT alignment	improved relationship with the business units			**Related goals:** Better business alignment, better ability of competitive. **Related requirements:** related with requirement4,6, helping in explaining the economic benefit of SOA to bank industry, for banks, Better collaboration with different business units, easier to develop business lines.	p.7 "SOA's Business Impact"

Khalid Adam Nasr, Hans-Gerhard, Arie (2011)	usage and maintenance challenges		resistance from staff	Train people	**Related requirements:** related with requirement5,6, helping in explaining the challenges in usage and maintenance of SOA.	p.641 “usage and maintenance challenges”
Khalid Adam Nasr, Hans-Gerhard, Arie (2011)	Complexity of designing			developing a clear framework, based on rigorous analysis, analyze their business process carefully	**Related requirements:** related with requirement5,6, helping in explaining the challenges in complexity of designing of SOA.	p.641 “usage and maintenance challenges”
Richard Baskerville, Marco Cavallari, Kristian Hjort-Madsen, Jan Pries-Heje, Maddalena Sorrentino, and Francesco Virili (2005)	For instance, in the CMS system, whenever a cash amount is involved, the number of bills exchanged should be defined. The legacy system, on the other hand, is able to deal only with a total amount for each currency. The new service, based on a reference model that is closer to the teller view, translates, whenever necessary, the number of banknotes into a total amount, masking the underlying legacy	allows a quick and easy composing of services that will optimally meet current requirements, lead to agility, complexity reduction, increased reusability, and better interoperability.	Complexity of designing	developing a clear framework, based on rigorous analysis, analyze their business process carefully	**Related problems:** Explaining the bad effects of “legacy code”. **Related goals:** The bank case helps in offering comparison. **Related requirements:** Related with requirement1,2: helping in explaining the problems of “legacy code” and their root cases; and also: Related with requirement4,6: helping in arguing the benefit of SOA and the specific effects in banking industry through the comparison case.	p.9 “CASE: CENTRAL EUROPE BANK”

	transaction and hiding the complexity of functionality extension.					
Richard Baskerville, Marco Cavallari, Kristian Hjort-Madsen, Jan Pries-Heje, Maddalena Sorrentino, and Francesco Virili (2005)	Reusability of business components (i.e. of Web services) has already been demonstrated by subsequent projects in the Central European Bank, where new functionality was added to the original business components, e.g. by adding new methods or by adapting the existing ones.	Increase the reusability means reduce cost of developing new version, improve flexibility to meeting changes.	Complexity of designing	developing a clear framework, based on rigorous analysis, analyze their business process carefully	**Related problems:** Explaining the case about easily changing and enhancing of applying SOA **Related goals:** The bank case helps in offering comparison. **Related requirements:** Related with requirement4,6: helping in arguing the benefit of SOA about developing new version and changes, the specific effects in banking industry through the comparison case.	p.9 “CASE: CENTRAL EUROPE BANK”
(Ho, 2003)	Definition: generally, SOA is an architectural style for building loosely coupled distributed systems that deliver application functionality as services to be used for end-user applications.				**Related requirements:** related with requirement3, helping in explaining What is SOA.	p.6 “SERVICE ORIENTED ARCHITECTURE”

3. Glossary

term	Definitions/explanations
Service-oriented architecture (SOA)	generally, SOA is an architectural style for building loosely coupled distributed systems that deliver application functionality as services to be used for end-user applications. (Ho, 2003)
Modularity	An SOA decomposes the existing application architecture and structures it into a manageable number of partially autonomous subsystems—that is, domains and services. (BENJAMIN, GOETZ, CHRISTINE, AND GEROLD, 2010)
Loose coupling	the logical and run-time dependencies between services are as low as possible. (BENJAMIN, GOETZ, CHRISTINE, AND GEROLD, 2010)
web services	a service offered by an electronic device to another electronic device, communicating with each other via the World Wide Web. (BENJAMIN, GOETZ, CHRISTINE, AND GEROLD, 2010)
Business agility	the "ability of a business system to rapidly respond to change by adapting its initial stable configuration" (Nils Joachim, 2011)
CMS system	A content management system (CMS) is a computer application that supports the creation and modification of digital content. It is often used to support multiple users working in a collaborative environment. (Richard Baskerville, Marco Cavallari, Kristian Hjort-Madsen, Jan Pries-Heje, Maddalena Sorrentino, and Francesco Virili, 2005)
Legacy code	source code that relates to a no-longer supported or manufactured operating system or other computer technology

4. Bibliography

[1] Mueller, B., Viering, G., Legner, C., & Riempp, G. (2010). Understanding the Economic Potential of Service-Oriented Architecture. Journal Of Management Information Systems, 26(4), 145-180.
[2] Nasr, K., Gross, H., & van Deursen, A. (2011). Realizing service migration in industry-lessons learned. Journal Of Software: Evolution And Process, 25(6), 639-661.
[3] Nils Joachim (2011). A Literature Review of Research on Service- Oriented Architectures (SOA): Characteristics, Adoption Determinants, Governance Mechanisms, and Business Impact.
[4] Richard Baskerville, Marco Cavallari, Kristian Hjort-Madsen, Jan Pries-Heje, Maddalena Sorrentino, and Francesco Virili (2005). Extensible Architectures: The Strategic Value of Service Oriented Architecture in Banking.

5. Reflection

Joys: It is enjoyable to read so many interesting and persuasive papers of banking industry in IT perspective, in particularly SOA.
Frustrations: not satisfied with the format of my assignment, due to limited table space with too much information.
Learnings: the papers I read enable me to better understand the concept of SOA and the core problems of my client, Newtown Bank, as well as the importance of introducing SOA to their business, which point out the direction of my later research and recommendation.
Questions/Comments: still have no ideas about other two specializing topics and the additional benefits gained from synergy of implementing three strategies.