

Eexam

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Information and Knowledge Management

Exam: IN2105 / Retake

Date: Friday 26th June, 2020

Examiner: Prof. Dr. Helmut Krcmar

Time: 10:45 – 12:15

| | P 1 | P 2 | P 3 | P 4 | P 5 | P 6 | P 7 | P 8 | P 9 |
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| I | | | | | | | | | |
| II | | | | | | | | | |

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Retake

Information and Knowledge Management

Prof. Dr. Helmut Krcmar
Chair of Information Systems
Department of Informatics
Technical University of Munich


Friday 26th June, 2020
10:45 – 12:15

Working instructions


- This exam consists of **16 pages** with a total of **9 problems**.
Please make sure now that you received a complete copy of the exam.
- The total amount of achievable credits in this exam is 90 credits.
- Detaching pages from the exam is prohibited.
- Allowed resources:
 - one **non-programmable pocket calculator**
 - one **analog dictionary** English ↔ native language
 - the **lecture slides**
- Do not write with red or green colors nor use pencils.
- There will be no points awarded for solely naming or listing terms or definitions. Always provide reasons and complete argumentations.

PART A (31 points) Understand and Explain

Problem 1 Information and Knowledge Management (6 credits)

- 0  a) Explain the difference between information management and knowledge management and why this differentiation is needed. (2 points)

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- 0  b) Explain the influence of information management and knowledge management on business strategy. (4 points)


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Problem 2 Business Value of IT (9 credits)

a) Explain why it is hard to measure the value of IT investments by drawing from IT-Benefit Mechanics. Provide 2 reasons. (2 points)

Diagram illustrating a 3x2 grid of squares. The grid is labeled with 0, 1, and 2 on the right side, corresponding to the rows.

b) Explain three problems when measuring IS and IT value? Use examples. (3 points)



A 4x2 grid of squares. The right side of the grid is labeled with the numbers 0, 1, 2, and 3, corresponding to the rows.

c) Name 4 potentials of IT and IS and explain if and how their value can be measured. (4 points)

[illegible]

A diagram showing a vertical stack of five square cells, each divided into two equal horizontal compartments. The cells are labeled on the right side with the numbers 0, 1, 2, 3, and 4, corresponding to rows 0 through 4 respectively.

Problem 3 Case: How Commonwealth Bank of Australia (CBA) Gained Benefits Using a Standards-Based, Multi-Provider Cloud Model (8 credits)

In 2011, CBA began implementing its multiprovider cloud model that now allows it to deploy “stateless” 18 applications wherever it chooses. Examples of such applications at the time of writing are the range of new “apps” for the web and mobile space. The first benefit of the model is that it moved CBA’s IT costs close to true pay-as-you-go. That is, pay-as-you-go IT costs replaced previously fixed or stepped IT costs. Also, applications running in the cloud now use IT resources that automatically scale with CBA’s variable workloads. Finally, the model allows development, test and production environments to be commissioned in minutes instead of weeks, reducing time to market for new banking applications and services.

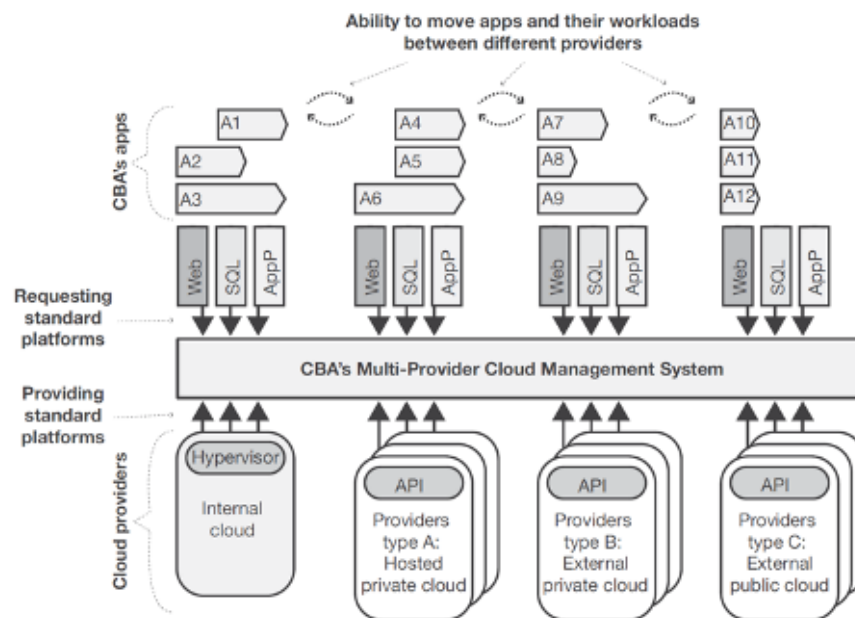


Figure 3.1: CBA's Multi-Provider Model of Cloud Computing

CBA's IT department set up a team dedicated to working on the implementation of the model. The team drew on support from other departments (e.g., for legal expertise). Externally, CBA collaborated with several cloud providers and other industry partners to develop and mandate cloud standards, such as application programming interfaces (APIs), across applications and providers. This meant that, instead of accepting the cloud providers' standards, CBA required cloud providers to accept its own standards. Thus, CBA reversed the typical cloud model where the cloud provider defines interfaces and standards.

CBA also negotiated short-term, flexible, on-demand contracts with a range of cloud providers. Those unable to accept the standards or contractual flexibility were unable to bid in the CBA-created market for IT supply. CBA said that new application developments were “governed towards the cloud,” which meant that

new apps had to use the cloud standards.

Figure 3.1 depicts the design of CBA's multiprovider model of cloud computing. CBA's cloud model has three main layers. The top layer (CBA's apps) consists of a set of applications that adopt the cloud standards. One interviewee called this an "AppStore-like" offering for CBA's business units. CBA's business units or customers are the end users of the cloud-hosted applications (although they will typically not know or care that the applications now run in the cloud). These applications use different standards, depending on their respective requirements. For example, if an application needs an SQL server, then it needs to comply with CBA's SQL server standard, and an application needing a web server has to comply with CBA's web server standards. In the figure, application A1 would require a web server and an application platform, while application A2 would require a web server and an SQL server. However, the cloud management system—the central layer of the model—dynamically and automatically chooses the physical location of the web server, SQL server and application platform.

The arrows in Figure 3.1 indicate how applications request and how clouds provide computing capacity based on technical, legal, cost and performance considerations. Instead of dedicated computing resources, the applications rely on the central multi-provider cloud management system to dynamically allocate the computing capacities they need. The model thus allows CBA to shift applications and their workloads on the go, depending on prices, performance and service level agreements for security, compliance or availability.

The multi-provider cloud management system matches the applications on the upper layer to the cloud computing infrastructure on the lower layer. The primary purpose of the management system, which was launched in 2012, is to dynamically determine which provider should execute an application and to assign the application to that provider. The cloud management system remains inside CBA's firewall, and CBA manages and controls the system. The actual computing could take place on either side of the firewall according to the cloud management system's dynamic allocations. In this way, the management system provides the applications with on-demand infrastructure, which it sources from any cloud provider supporting the infrastructure standards.

CBA's IT department actively manages this central management system, which is built around ServiceMesh's software technology. The management system codifies CBA's policies and contracts, and dynamically allocates applications and their workloads to cloud providers. The allocations take account of real-time costs and performance as well as general security, compliance and avail-

ability needs. The system optimizes the allocation across providers on an on-going basis within these constraints. This automatic optimization across providers reduces costs and maximizes the availability and performance of applications.

The bottom layer in Figure 3.1 (“Cloud providers”) includes internal, private external and public clouds that comply with CBA’s standards. This layer includes Amazon, Fujitsu, Hewlett- Packard and several other cloud providers. CBA’s own IT function is also one of the cloud providers that the multi-provider model manages. Providers host cloud environments internally in the bank, domestically in Australia and abroad in countries such as the U.S. or Singapore. Providers do not need to provide all the types of services CBA needs. However, the services they do provide must comply with CBA’s standards.

Source: Schlagwein, D., Thorogood, A., Willcocks, L. P. (2014). How commonwealth bank of Australia gained benefits using a standards-based, multi-provider cloud model. *MIS Quarterly Executive*, 13(4), 209-222.

a) Explain the two-sided relationship between a corporate strategy and information systems according to Krcmar (2015) and illustrate it with examples of the case (3 points)

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b) Explain the importance of IT governance for IT outsourcing based on the four IT governance components according to Ratzer (2007) and illustrate the six governance goals with examples of the case (5 points)

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Problem 4 IT Strategy (8 credits)

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a) What are the strengths and weaknesses of the resource-based view and the market-based view? Use examples to illustrate your arguments. Provide one strength and one weakness for both views each. (4 points)

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b) Why do we refer to ecosystems when analyzing digital platforms? (4 points)

PART B (30 points) Application and Analysis

Problem 5 Information and Knowledge Management (8 credits)

a) Argue why information and knowledge management are so relevant in today's digital economy. (4 points)

Hint: The two graphics provided may be used as an aid or in your argumentation, but do not have to.

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Figure 5.1: Gartner Hype Cycle for Emerging Technologies 2019

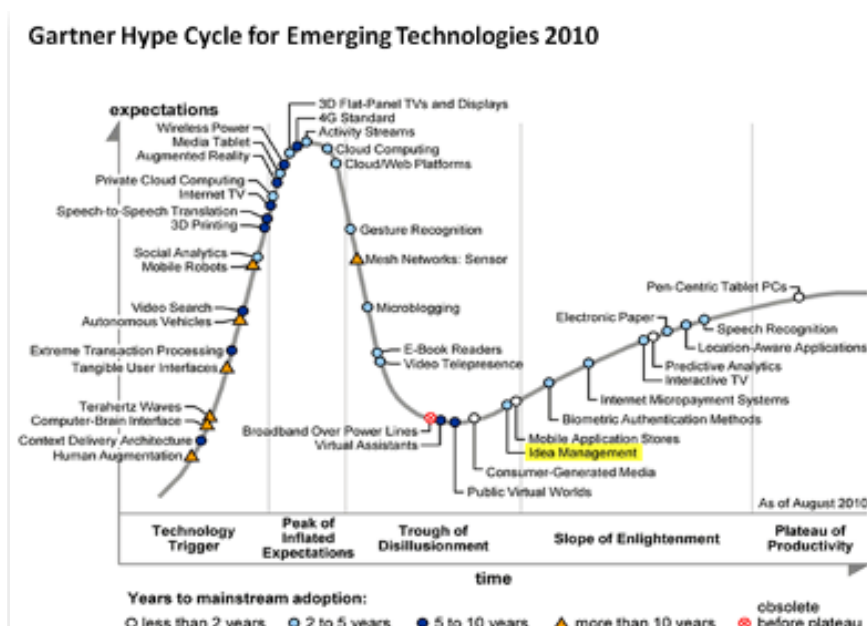


Figure 5.2: Gartner Hype Cycle for Emerging Technologies 2010

Problem 6 IT Strategy (22 credits)

a) Discuss if cloud computing, like in the case study of Part A (Problem 3), can be seen as a disruptive innovation based on Christensen's Criteria. Draw your conclusion based on the assumption that all of Christensens Criteria must be met to classify a disruptive innovation. (10 points)

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b) Discuss why and how risks and benefits of outsourcing affect the cloud service providers. Name 3 examples from the case. (6 points)

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c) Discuss the benefits and challenges IT management faces due to the General Data Protection Regulation. Provide 6 arguments. (6 points)

PART C (29 points) Knowledge Transfer

Problem 7 Knowledge Management (14 credits)

a) Why is knowledge sharing in organizations difficult? Explain six barriers of knowledge sharing and give suggestions how to overcome them. (6 points)

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b) Discuss benefits and drawbacks for each of the two fundamental strategies (communication and codification) of knowledge management. (4 points)

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c) Why is knowledge management important for distributed work situations? How is it helpful? Provide 2 arguments explaining the “why” and “how”. (4 points)

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Problem 8 The Digital Economy (12 credits)

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a) We live in an uncertain world. Business practices need to be dialed in to this uncertainty. If uncertainty is defined as a situation or event we cannot foresee, how does it compare to risk? (2 points)

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b) How are knowledge management and the resource-based view related? (5 points)

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c) How do platform ecosystems and Porters 5 forces link? How do digital platforms change the application of the five forces model? (5 points)

Problem 9 IT Alignment (3 credits)

Explain the importance of IT service management in regard to IT-strategy alignment. Refer to the model of Reynolds and Yetton (2015). (3 points)

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Additional space for solutions—clearly mark the (sub)problem your answers are related to and strike out invalid solutions.

