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Cloud Computing meets Project Management

By Raj Asava and Hussein Mzee

History demonstrates that market changing technologies are the ones that enable a broad class of people to employ what previously, only an elite class could afford. Cloud computing fits this bill. *Cloud computing* can be regarded as the fourth wave in the Information Technology (IT) industry, following the *mainframe* era, the rise of the *personal computer* (PC) and the *internet* revolution, which collectively span from the 1960's to the present day.

The rise of the PC changed the narrative from expensive mainframes used only by a few organizations, to computing devices the masses could afford. The affordability, combined with democratization of information resulted in higher operational efficiencies and dramatic gains in overall production and performance of both public and private companies. A significant number of companies including today's Fortune 100 businesses such as Microsoft, Intel and Apple saw their growth accelerate during this era.

The follow-on internet revolution combined billions of information islands to form a huge world-wide-web that made it convenient and feasible to collect, index, publish and share information en masse. In the process, we witnessed exponential gains in productivity as communication and collaboration joined forces with democratization of information and affordability – the world was beginning to get flat! Cisco, Dell, EBay and Yahoo are a few enterprises that rose to greatness during this revolution.

The Rise of Cloud Computing:

Cloud computing, the latest wave of disruption in information technology, holds the promise to dwarf the gains experienced by the previous two revolutions. So what exactly is cloud computing, and why does it hold such awesome power?

Cloud Computing can be best described as a highly automated, readily scalable, on-demand computing platform of virtually unlimited processing, storage and ubiquitous connectivity, always available to carry out a task of any size and charged based on usage[1].

While early in its evolution, Cloud computing is fast becoming as pervasive a platform as the internet. It is transforming the stand-alone IT infrastructures to closely resemble social public Infrastructures like electricity and water utility systems, and facilitating a shift to on-demand and pay-per-usage arrangements. For small to medium sized businesses, this is already simplifying IT functions, providing higher efficiencies while reducing overall IT infrastructure and

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[1] Raj Asava, 'Cloud Computing – Been There, Done That' – Perot Systems White Paper, April 2009

management costs. Cloud computing will eventually reduce the captive IT footprint of businesses, simplify corporate IT management, and transform IT related expenses from large upfront capital outlays (and ongoing maintenance) to pay-as-you-use go arrangements.

While businesses like Amazon, Google, IBM, Microsoft, HP and Dell are at the leading edge of providing components of the cloud computing platform (hardware, software, & services), a new crop of innovative businesses will emerge, as in the past, to capitalize on what the cloud has to offer. They will provide innovative tools and services that can take full advantage of the cloud, and a few will even challenge the IT giants and rise to the top by disrupting the computing models. It will take much of this decade before this chapter is fully fleshed out.

The Need and Power of Project Management

As the IT industry goes through its next avatar, it is important to recognize and acknowledge that at the core of it all, businesses remain focused on processes and projects. Processes are how things get done within an organization in a defined and predictive manner. Projects on the other hand, are endeavours undertaken to create or enhance a product, service or a process. While IT can enable an organization to do things cheaper, faster and in a predictable manner, it is, the discipline of Project Management that ensures the delivery of expected outcomes.

Project Management is the application of knowledge, skills, tools and techniques to activities that meet project requirements and is accomplished through the use of the time tested PMI's five phase approach: initiation, planning, execution, controlling, and close-out. Collectively, these phases are known as the project life cycle. Project managers use the life cycle to deliver projects while balancing the constraints of scope, schedule, quality and resources, along with customer expectations and risk management.

Formalized project management allows organizations to pursue systematic approach to managing projects, and a way to generate consistent results when undertaking new initiatives. This year, $12 Trillion (US), 1/5th of world's GDP, will be spent on projects[2]. It is, however, astonishing that the formalized use of project management frameworks is still not widespread, resulting in 90% of projects not meeting time, cost, or quality targets. Only 9% of large, 16% of medium and 28% of small company projects were completed on time, within budget and delivered measurable business and stakeholder benefits, as per Standish Group Chaos Report[3]. The lack of a project management framework, security, and information integrity risks add to the list and reasons for project failure.

Cloud Computing meets Project Management

With the advent of cloud computing, there is an added need and urgency for a formalized project management methodology across organizations. From lost time to inconsistency, the lack of

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[2] World Bank, World Development Indicators, 2010
[3] Standish Group Chaos Report 2009

process & tools for managing projects will mean poor performance and an inability to harvest the true benefits of the cloud. The key to successful project management in the cloud era is to maintain the standardized project management framework that embeds best practices into how one manages projects, inside and outside the cloud.

While cloud is shifting much of the computing from dedicated IT environments to a combination of both private and public clouds, the fundamental business functions (marketing, sales, design, delivery, implementation, support etc.) and associated processes (concept-to-offering, order-to-cash, prospect-to-customer etc.) remain intact. Today, more than ever, the rigor of project management is needed to ensure these functions and processes deliver the expected results while taking full advantage of the benefits offered by the cloud environments. So what does cloud computing mean to project management and what will the rise of the new dominant players in cloud portend for the project management discipline?

At a minimum, we envision that, Cloud computing will:

- Usher in large complex projects, which in the past were not feasible due to limited compute, storage or network capacities within an organization
- Enable the parsing of multiple transactions in a highly distributed environment made up of multiple providers, to be processed in tandem and subsequently aggregated
- Provide real-time collaboration between globally dispersed teams
- Allow rapid staging, set-up and take-down of a variety of compute environments as needed to test/validate an application
- Require real-time project management software with a rich set of web-based tools

Organizations have a lot to gain from the current shift in IT towards Cloud Computing. Industry experts expect cloud computing to:

- Lead to greater resource sharing, greater economies of scale, and greater levels of architectural standardization and process optimization[4].
- Realize project savings through agility and speed of implementation. It enables projects to cut back on capital spending and optimize operational expenses.[5]
- Enable users of IT-related services to focus on what the services provide to them rather than how the services are implemented or hosted.[6]
- Leverage the virtually instant agility, flexibility and reach, to dynamically access anything or anybody, and the virtually infinite diversity of available functionalities arising from composite applications and components allowed by cloud computing.[7]
- Provide higher value for creativity and innovation as it enables enterprises to focus on business objectives and, therefore, allocate more resources to solve business problems. It

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[4] "Economies of Scale Are the Key to Cloud Computing Benefits", Gartner, June 2008

[5] "Data In the Cloud: Adaptations of Data Management Technologies and Providers", Gartner, October 2009; "Cloud Computing Constituencies and Inconsistent Perspectives", Gartner, April 2009; "Economics of the Cloud: Business Value Assessments", Gartner, September 2009

[6] "Cloud Computing: Defining and Describing an Emerging Phenomenon", Gartner, June 2008

[7] "Cloud-Computing Service Trends: Business Value Opportunities and Management Challenges, Part 2", Gartner, February 2010

enables IT availability to broader masses of individuals, thus creating a pool of talent that has not existed before.8

Despite these expected gains, it will require, the rigor and discipline of the time tested Project Management approach, methodology and perseverance, to fully realize these benefits. Like an air traffic control system, the project management discipline in the cloud world will be tasked with the responsibility for overseeing, organizing, managing, and guiding a highly complex mixture of transactions that are processed concurrently in different parts of the cloud. Just as the safety of passengers and airplanes depends on the skills of controllers and pilots, the successful completion and delivery of cloud projects will depend on the Project Managers, empowered with project management frameworks and proven methodologies, and combined with experience and discipline. This would apply to all cloud projects in private industries as well as public sector.
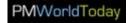
Summary

Even in a dedicated IT environment, the possibility of project failure is high. In the cloud, the risk grows exponentially. The parallel processing and on-demand scalability that the cloud offers requires a robust project management discipline to guide through the dark as well as friendly clouds.

Both, the cloud computing and project management will have discernible impacts on each other. The impact of cloud on project management will include a higher scrutiny on security, parallel processing, scalability, and the ability to tap into infinite resources.

On the other hand, the key influence of Project management on the cloud will be the disciplines of time-tested project management frameworks and methodologies to manage the impact while harnessing the benefits of what cloud computing has to offer.

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[8] "Economics of the Cloud: Business Value Assessments", Gartner, September 2009

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