

# Analysis of Cloud Computing & Emergence in Software Agile Process Model

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*Abstract – At present research in Cloud computing is innovation monitors business organizations requirements. For a good productivity analysis in cloud computing gather the some information in previous articles, finally our work proposes to provide best end user product. Implementing agile process model in cloud product is novel trusted to assess and expose risk most of different clouds such as Amazon, Google, Windows uses the process models compare to all other process model agile is the efficient for cloud computing. Comparative study represents the agile method is more reliable secure for different clouds like Windows Azure & Google Engine, etc.*

**Keywords – Cloud Computing, Software Engineering, Agile method, metrics, lifecycle.**

## I. INTRODUCTION

A general purpose technology can provide a fundamental contribution to promote growth and competition [1] and it can help the economy to recover from a severe downturn as the current one. In this article we employ the endogenous market structures approach (Etro, 2007a, 2009) to study the economic impact of an innovation in the hardware-software field which is going to have a profound effect on the market structure of many sectors and on the global macroeconomic performance in the next years. This innovation is associated with cloud computing, the new frontier of the Internet era, a technology through which information will be stored in servers and provided on line as a service to clients in a pay as we go in a manner. Firms will be able to adopt this service on demand, so as to avoid large up-front costs (that are currently necessary for hardware and software equipment) and spend in ICT according to their production necessities - see Dubey and Wagle (2007) and Armbrust et al. (2009) for early reviews of the topic. This will have a large impact on the cost structure and through it on the production possibilities of all firms, especially small and medium size enterprises (SMEs). Our focus will be mainly on the theoretical impact of this innovation on the creation of new firms and products, on the empirical evidence about the impact of its introduction for the European economy and on the implications for policies supporting cloud computing adoption. This allows us to apply the theory of endogenous market structures to examine a macroeconomic experiment that can be hardly approached within the neoclassical or New-Keynesian frameworks. The term “cloud computing” refers to an Internet-based technology through which information is stored in servers and provided as a service (Software as a Service, or SaaS) and on-demand to clients (from the “clouds” indeed). Its impact will be spectacular

on both consumers and firms. On one side, consumers will be able to access all of their documents and data from any device (the personal laptop, the mobile phone, an Internet Point..), as they already do for email services, and to exploit impressive computational capabilities.[4] On the other side, firms will be able to rent computing power (both hardware and software) and storage from a service provider and to pay on demand, as they already do for other inputs as energy and electricity: that is why we talk of utility computing. The former application will affect our lifestyles, but the latter will have a profound impact in terms of cost reductions on the software industry. According to Armbrust et al. (2009) this impact will be similar to the one that semiconductor foundries had on the hardware industry [5].

The speed of change in internet technology to be impressive couple of years the availability of devices and tools to access software based services has increased dramatically. Software is becoming more pervasive runs on many of the devices that we use every day such as computers even if they may have a shape and user interface that hides them. The amount and variety of current network connected devices opens a new world of possible applications at the crossroads of internet of services. Cloud computing is changing the landscape with the promise of cheaper and more flexible software based services but the future evolution of the cloud is not yet clear today.

Cloud metrics like Amazon, Microsoft Azure cloud, Google application engine, sun Microsystems cloud and Hadoop are selected and every cloud is scrutinized with different cloud availability metrics. Cloud providers have to maintain the performance assessment testimony of cloud to verify its quality and keep on the quality to check clouds supplied by the different providers to compare the performance of their own cloud with the others. The cloud is estimated on purposed metrics for distinct scenarios and for each metric the impact of diverse facets are scrutinized and deliberated. The success for clouds can be attributed to the ability to provide seemingly unlimited computing resources almost instantaneously are taken and each metric has applied on each of them in their execution time for finding out their performance.

Google cloud provides hosted and software plus services technologies multi-tenant internet scale infrastructure offers faster access to innovation superior reliability and security and maximum economics of scale.



**Fig 1 Software metrics for Cloud Providers**

**Problem Definition:** Cloud computing is service oriented architecture. In previous work we identify the problem in cloud computing that reliability of code, complexity of structure, more effort and cost we analyze the solution software engineering is efficient to solve. Compare to all the process models “Agile Process Method “best in software engineering. Our work presents the Cloud Agile Process model, which is flexible reliable in all domains.

## II. RELATED WORK

The invention true behind the advent of cloud computing existed from past several years and it does exist today as well. Traditional business applications have been expensive, complicated and difficult to monitor these business applications not only require in house networks, servers, bandwidth, storage and space for datacenters but they also require adequate man power to install, configure and keep them running. Suppose an organization has hundreds of applications apparent with the amount of resources required for traditional business applications, they do not seem to be the best solution. At this point the implement latest buzz in the field of Information Technology Cloud Computing.

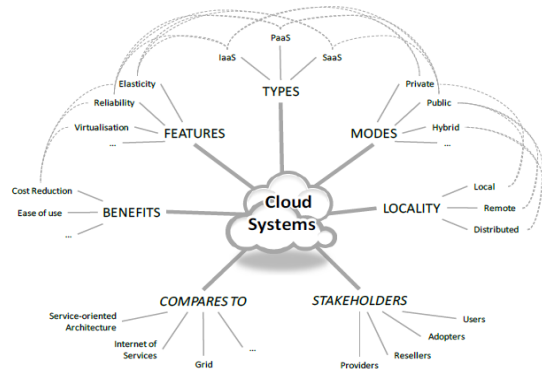
The idea behind the Cloud Computing is very simple difficult to implement instead of organizations running their business applications by themselves. This is advantage to organizations in the sense that they don't need to have all the facilities, resources and people to run the applications and therefore, less cost. Moreover, with Cloud Computing vendors taking care of business applications, organizations can use their existing resources to focus on other important things like new projects, research and innovation. It can be best to keep in words of sales which is same as mining ideas – “Cloud computing is a simple idea, but it can have a huge impact on your business”. Unlike traditional business applications that require lot of resources and time to get an application up and running, cloud based applications can be up and running in few days.

With applications operating on Cloud, organizations don't need to have all the facilities, resources and people

to run their business applications in-house and therefore, less cost. One of the biggest advantages of Cloud Computing is that it offers unlimited data storage. Storage space is available on demand and it ranges from few megabytes to hundreds of terabytes. With Cloud Computing, organizations no longer need to worry about software updates, security and performance enhancements. It is the responsibility of the Cloud Computing vendors to install all the required updates and to perform system enhancements.

## III. CLOUD SOFTWARE COMPONENTS

Cloud architecture of a cloud solution is the structure of the system which comprise on-premise and cloud services middleware and software components geo-location the externally visible properties of those and the relationships between them.



**Fig 2 High level cloud architecture**

With particular respect to the various usage scopes a cloud is an elastic environment which involves resources in multiple stakeholders and providing a metered service at granularities for a specified level of quality of service. Other words cloud platforms that allow execution in various forms across multiple resources to be specific a cloud infrastructure that enables execution of code in a managed and elastic fashion whereas managed means that reliability according to pre-defined quality parameters is automatically ensured and elastic implies that the resources are put to use according to actual current requirements observing overarching requirements.

**A. Characteristics of Cloud:** Clouds do not refer to a specific technology general provisioning with enhanced capabilities it is mandatory to elaborate on these aspects. Elasticity is an essential core feature of cloud systems and circumscribes the capability of the underlying infrastructure non-functional requirement adapt, changing amount of requests and vertical scalability refers to the size of the instances themselves and amount of resources required to maintain the size. Elasticity goes up dynamic integration and extraction of physical resources to the infrastructure whilst from the application perspective this is identical to scaling from the middleware management perspective.

Reliability is essential for cloud to support today's data centre type applications in a cloud, reliability denotes the capability to ensure constant operation of the system without disturbance no loss of data no code reset during execution etc. reliability is achieved through redundant resource utilization.

Quality of service is relevant to support capability that is essential in many use cases where specific requirements have to be met by outsourced services in business cases basic quality metrics like response time throughput must be guaranteed at least to ensure that the quality guarantees of the cloud user are met.

Adaptability are essential features of cloud systems that relate to the elastic capabilities which includes on-time reaction to change in the requests and size of resources but also adaptation to changes in the environmental conditions that require different types of resources different quality routes implicitly agility require resources to be autonomic capabilities.

Availability of service data is an essential capability cloud systems and core aspects to give rise to clouds in the first instance. With increasing concurrent access availability is particularly achieved through replication of data services and distributing them across different resources to achieve load-balancing.

**B. Business Benefits of Cloud Computing:** Cloud computing offers business benefits allows to set up what is essentially a virtual office to give you the flexibility of connecting to business anywhere with growing number of web enabled devices used in today's business environment. Reduced IT costs is moving cloud computing may reduce the cost of managing and maintaining IT systems rather purchasing expensive systems and equipment for your business can reduce the costs by using the resources of cloud computing service provider. The cost of system upgrades new hardware and software may be included in contract No longer need to pay wages for expert staff & Energy consumption costs may be reduced.

Business continuity protecting data and systems is an important part of business planning whether experience a natural disaster power failure or other crisis having data stored in the cloud ensures it is backed up and protected in a secure and safe location. Collaboration efficiency in a cloud environment gives the business ability to communicate and share more easily outside of the traditional methods, working on a project across different locations we choose could use cloud computing to give employees contractors and third parties access to the same files. Flexibility of work in cloud computing allows employees to be more flexible in their work practices for example ability to access data from home and communicate with others on business, education, entertainment.

Access to automatic updates for IT requirements may be included in service fee depending on cloud computing

service provider system will regularly be updated with the latest technology.

#### IV. CLOUD SOFTWARE LIFE CYCLE MODEL

The cloud life cycle is into four phases that classified into different stages as illustrated in figure. This approach allows a company to break down its planning and workload to suit its requirements, basic premise is that a company only commits resources one step at a time so that each step is completed there is an option to stop without losing the initial investment.

The investigation is an organization will only commit a small number of high-level resources in order to decide that should be full scale project. Next is engage can select a service provider that can deliver the required cloud service. Many organizations decide to stop at this stage because the appropriate cloud services are not available. Other one is implementation day to day management service and refresh is ongoing review process.



Fig 3 Develop process method

Key challenges phase to investigate Architect is

- To satisfy the new requirements within an existing or reduced budget
- To provide a clear cost benefit analysis of cloud services using limited or historical cost data.
- To clearly articulate the benefits of a move from CapEx to OpEx this may need to consider the current CapEx investment of decommissioning existing services.

Activities to determine the organizations IT objectives and its alignment with the business and what role cloud computing will play within the IT strategy will result the output documented understanding of what will be achieved by comparing the strategic requirements with the available services and providers.

Identify key challenges is to define the Enterprise Architecture can be particularly time-consuming if none is already in place and engage with both users and IT personnel who will be impacted particularly if the job is being altered. Activities is to determine what services will be outsourced to the cloud and consider impacts on the service, people, cost, infrastructure and stakeholders will result the output cloud outsourcing model with

documentation current and future states of the IT structure.

**A. Cloud Agile Process Method:** Agile development through analytics and direction from stakeholders product owners first through continuous introspection on daily basis technical team members can see if their code merges properly with other developers code or find duplications or efficiencies in code. The key of agile is to reduce overall feedback to shorten, best way to do reduce the cycle is to automate each functionality. Automation of code scanning and integration testing deployment and all other continuous introspection activities will not only shorten cycles and speed up development of agile process scalable.

The cloud can automate develop continuous integration of code must begin with proper source control management to establish version, organizations can rely on the cloud to provide distributed access for successful agile development.

Automated development continuous integration of code must begin with proper source control management successful agile development organizations can rely on the cloud to provide distributed source code management to any number of developers.

Automated Build in the cloud organization building with agile can expedite the work and reduce the build costs. Developers can take existing build images residing on multiple platforms and use virtualization to have images pre-built and then accessed through the cloud.

Automated testing in the cloud provides significant advances in speed and agility organizations can quickly run multi-platform testing using virtual images.

Automated production deployment in the cloud provides access to production environment in minutes and some cases push button control to automate deployment.

In agile to reduce the feedback cycle automating production deployment as much as possible is a highest priority deployment is a test machine or a normal machine staging production fast and frequent deployment.

#### ***Advantages of Agile Cloud Computing Method***

Agile grew out of experience with the real-life projects of leading software professionals compare to early because of the challenges and limitations of traditional development have been discarded.

The method offers a framework for assisting teams helps the function and maintains focus on rapid delivery.

Agile method ensures that value is optimized throughout the development process uses the iterative planning and results in team that can continuously align a delivered product reflects the desired needs of a client. Easily adapts to changing requirements throughout the process by measuring and evaluating the status of a project.

It could be stated that the agile method helps companies build the right product instead of trying to

market software before it is written; the agile method empowers teams to optimize the release during its development.

**B. Cloud Metrics:** According to the Symantec 2013 Hidden Costs of cloud survey rogue cloud deployments is one of the pitfalls of the cloud, surprisingly common problem found in many businesses within the last years. The organizations need to know all the layers of security and assets in the cloud.

Cloud metrics provide visibility for the company both in the cloud provider. Cloud metrics educate and provide a common language for understanding the information security program as applicable to the cloud vendor to the company. From the security point of view cloud computing may share responsibilities as the new security model. Both an organization and its vendor will measure security. Organizations need to define who is doing what. Both an organization and its vendor will manage functional components of an information security program. Security work is never finished. Cloud computing should motivate both an organization and its cloud vendor to assess the threat landscape and what new or different security threats exist in the cloud. In order to correctly assess responsibility, three service models for cloud computing (SaaS, PaaS, and IaaS) can be viewed as a stack, with platform building on infrastructure and software building on both infrastructure and platform.

The need for security metrics in the cloud is not much different from the need for security metrics in general. Everyone in the cloud, vendor and purchaser alike, will need to measure the effectiveness of security controls and show their accountability to each other and to regulatory bodies. In the past, there was little benefit for companies to share security metrics as there were risks in doing so. With cloud computing and a world of shared accountabilities across virtual, physical and geographic boundaries, we need to find ways to share information between vendor and tenant across the industry in responsible ways. This implies we need to remove some of the roadblocks to success and work on areas such as common definitions for terms, common metrics deployed in a consistent manner, and a consistent reporting framework. Industry bodies such as the Cloud Security Alliance of which Symantec is a member, are helping to achieve these goals, and many security practitioners are volunteering their time and talent.

## **V. COMPARATIVE STUDY AGILE ON DIFFERENT CLOUDS**

Google apps engine supports java runtime, servlet standard used to interact with the developers can use common web application technologies such as java server pages to implement the present logic of the application. Developers can get started with app engine allows developers to register upto 10 applications per developer account. Additionally app engine provide various service that applications can use for tasks such as storing



persistent data for sending emails and integration with Google user accounts. For example consider school supply system on Google app engine implemented using java programming language and used java servlet standard for developing front end application. Windows azure school supply system is developed using windows and SQL azure service provides the development, cloud hosting and the application management environment on the windows azure platform. The back end application is developed on a cloud based relation database platform SQL Azure. Comparison between Google and Microsoft cloud computing platforms has their own set of characteristics, purpose of developing the school supply system application on the clouds was to bridge the gap between the theoretical and practical cloud computing. The choice of the platform depends on several factors such as type of application desired data store cost etc. example in applications where relational data store is must windows azure is the better choice because of the scalable and robust SQL Azure service. The Google App engine platform is better for a novel application as it is low cost agile process model is best suited for Google Apps compare to Windows Azure.

## VI. CONCLUSION

In this paper we present a novel analysis how good if we use agile process model to implement cloud computing end products. Quality attributes can be employed with technique of erasure correcting code, reduces the complexity and secure data storage. Our future direction is to model agile quality metrics for cloud computing can improve the system efficiency.

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