Cloud Based Object Oriented Requirements Engineering

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Abstract: Cloud Computing is now a topic of significant impact, while it may represent an evolution in technology terms, it is revolutionising the ways in which both academia and industry are thinking therefore, first phase of software engineering, i.e. "Object oriented requirements engineering" also not untouched by this because the benefits of cloud computing paradigms. Unsurprisingly, the benefits and opportunities of clouds attract not only legitimate users, but also attract software developers. Many software developers now use the Cloud as an affordable platform on which to deploy business solutions. Cloud computing is the next stage in the evolution of the internet, it provides the means through which everything — from computing power to computing infrastructure, applications and business processes — can be delivered to you as a service wherever and whenever you need them.

Keywords: Cloud computing; paradigms; impact; revolutionising; legitimate users

I. INTRODUCTION

Cloud Computing is becoming more and more appealing to organisations and individuals as a platform, for ubiquitous, on-demand, high power and low cost computation. Cloud-based applications are increasing rapidly as hosting cost has been reduced and computing resources become more available and efficient. In order to fulfill the user's requirement, it is very important to manage requirement effectively. It involves different disciplines such as psychology, languages and communications, organizational behavior and management [1]. Requirement engineering is a crucial activity, which can affect the entire life cycle of software development project. The main objective of requirement engineering is to collect requirements from different viewpoints such as business requirements, customer requirements, user Requirement, constrain, security requirement, etc…,Information is also one of the important requirements of requirement engineering process to develop quality and updated software [2]. The researchers gradually realize that the requirements engineering processes are very complex and the related technologies are in a great variety. Thus, in order to analyze and compare different types of requirements engineering processes more deeply, a simple, clear, unified description method of requirements engineering process is needed [3].
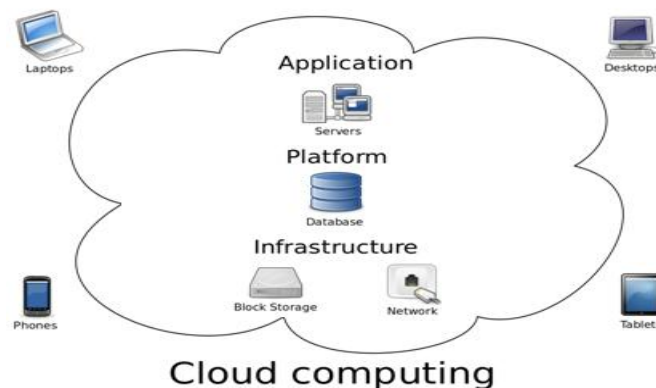
Cloud computing refers to computing with a pool of virtualised computer resources.Requirement engineering is the most effective phase of software development process. It aims to collect good requirements from stakeholders in the right way. It is important for every organization to develop quality software products that can satisfy user's needs. Therefore, it becomes necessary to apply requirement engineering practices in every phase of software development process. In requirements engineering process model to produce quality requirements for software development.

Requirement management and planning phase is executed independently for an effective management of requirements. It is iterative in nature for better requirement engineering and later maintenance. The successful implementation of proposed requirement engineering process can have a good impact on the production of quality software product. [4].
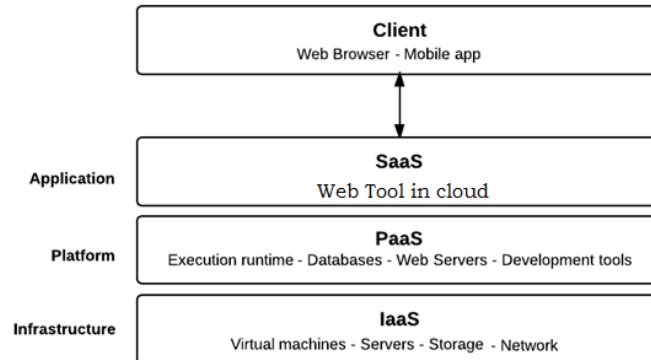

Fig.1 Cloud Based Web tools

Current trends are making effective requirements practices even more important. First, the demand for high quality and reliable software is growing rapidly. Second, we see an increasing number of projects being developed with different suppliers having a multitude of stakeholders with different needs and ambitions that have to cooperate to achieve a shared objective [5].Most requirement documents are written in natural languages and represented in less structured and imprecise formats, including requirement phase. Artifacts created in phases of software life cycle are required to be modeled and integrated, so the traceability, consistency, and completeness can be ensured[6].

The role of customers and other stakeholders is becoming increasingly significant during requirement engineering activities. Methods of eliciting requirements are now more co-operative. There are many techniques to obtain requirements from customers. Selecting the right techniques according to the characteristics of the project is very important. In some complex problems, combination of requirement engineering techniques should be applied for efficient and successful requirement engineering process [7].Requirement engineering is the most effective phase of software development process. It aims to collect good requirements from stakeholders in the right way. It is important for every organization to develop quality software products that can satisfy user's needs. Requirements engineering for software development process is a complex exercise that considers product demands from a vast number of viewpoints, roles, responsibilities, and objectives [8].

The role of customers and other stakeholders is becoming increasingly significant during cloud based requirement engineering activities. Methods of eliciting requirements are now more co-operative. There are many techniques to obtain requirements from customers. Selecting the right techniques according to the characteristics of the project is very important. In some complex problems, combination of requirement engineering techniques should be applied for efficient and successful requirement engineering process [7].Requirement engineering is the most effective phase of software development process. It aims to collect good requirements from stakeholders in the right way. It is important for every organization to develop quality software products that can satisfy user's needs. Requirements engineering for software development process is a complex exercise that considers product demands from a vast number of viewpoints, roles, responsibilities, and objectives [8].

Best practices for requirements management:
Industry research shows almost 50% of s/w are projects fail due to poor requirements engineering and management. Identifying user needs, collaborating and establishing a shared understanding of constraints throughout the lifecycle helps reduce redundancy and ambiguity.
Cloud computing is now commonly used to describe the delivery of software, infrastructure and storage services over the internet Users of the cloud can benefit from other organizations delivering services associated with their data, software and other computing needs on their behalf without the need to own or run the usual physical hardware (such as servers) and software (such as email) themselves..

Cloud computing is not just a technology solution or a server stored in another location; it is a business enhancing form of computing that affects the business on a positive level. Cloud computing solutions can simplify the way in which

your business operates, particularly in terms of hardware needs. Through a cloud solution you are able to connect and access the same information – but now you can connect from anywhere and enjoy a more streamlined technology installation, as shown in the graphic below.

The most common benefits are discussed in more detail below

Flexibility

When a company needs more bandwidth than usual, a cloud-based service can instantly meet the demand because of the vast capacity of the service's remote servers.

Disaster Recovery

When companies start relying on cloud-based services, they no longer need complex disaster recovery plans. Cloud computing providers take care of most issues, and they do it faster

Automatic software updates

On a global average, online companies spent 18 working days per month managing on-site security alone. But cloud computing suppliers do the server maintenance themselves, including security updates. This frees up their customers' time and resources for other tasks

Capex free

Cloud computing services are typically pay-as-you-go, so there's no need for capital expenditure up front. Because cloud computing is much faster to deploy, businesses have minimal project start-up costs and benefit from predictable on-going operating expenses.

Increased collaboration

Cloud computing increases collaboration by allowing all employees, wherever they are, to connect and work on documents and shared applications simultaneously. The can also allow colleagues and records to receive critical updates in real time.

Work from anywhere

As long as employees have internet access, they can work from anywhere. One study found that 42% of working adults would give up some of their salary if they could "telecommute" (work remotely from home), and on average they would take a 6% pay cut.

Document control

In companies not using the cloud, employees will typically send files back and forth over email, meaning only one person can work on a file at a time and the same document may have a multitude of names, formats and versions.

Cloud computing allows all the files to be kept in one central location, and everyone to work from one central copy. Employees can even chat to each other whilst making changes together. This whole process makes collaboration stronger, which increases efficiency and improves a company's bottom line.

Security

Some 800,000 laptops are lost each year in airports around the world. This can create some serious monetary implications and data security issues; but when everything is stored in the cloud, data can still be accessed no matter what happens to a machine, as the data is not physically stored on the machine.

Competitiveness

The cloud grants SMEs access to enterprise-class technology. It also allows smaller businesses to act faster than big, established competitors.

Environmentally friendly

Businesses using cloud computing only use the server space they need, which decreases their carbon footprint. Relative to using on-site servers, using the cloud results in at least 30% reduction in energy consumption and carbon emissions.

Cloud Provide following "as a service"

Software as a service (SaaS) is where the service provider hosts the software so you don't need to install it, manage it, or buy hardware for it. All you have to do is connect and use it.

Platform as a Service (PaaS) is where your operating system (such as Windows) is hosted "in the cloud", rather than being physically installed on your own hardware.

Infrastructure as a Service (IaaS) is where physical server space is rented and kept at a vendor's data warehouse. As the customer, you can install any legal software to the server and allow access to your staff and clients as you see fit.

Delivery of cloud services

Cloud computing services may be delivered over the following models:

Private cloud: Services are owned on-site by you and your company, with your data behind your organization's own firewall.

Public cloud: Services may be shared with other organizations, with data security provided by the cloud vendor.

Hybrid cloud: Services for a single organization delivered over a combination of private and public cloud.

Community cloud: Public or private cloud shared by more than one organization, with the data secured and portioned by the cloud services provider.

Cloud computing are business paradigms, where cloud provider offer resources like storage, computing, networking. Cloud requirements are rapidly change over time, so organization need to count with rapid method to Elicit, analyze, specify, verify, and manager dynamic requirements in systematic and rapidly ways. Even through the success of any software solution depends mostly in the identification of requirements in early stage of software development

II. METHODOLOGY

Cloud computing is a technology that allows relying on a shared pool of computing resources. So instead of relying in a single server resources, your website have got a bigger pool of shared resources among different other servers. Cloud Computing (CC) has been in recent years an excellent platform for the development of computational solutions for multiple fields of knowledge. This new computational approach has introduced a large number of advantages.

Most of s/w is fails due to poor R. E. and new technique for R. E. is required. Another problem in O. O. R. E. to manage the many requirements/needs (May be thousands).The huge gap between project success and failure ration, our research also fill gap between the success and failure ratio. New tool and technique for O. O. R. E. are very useful at the every step the projects.

Methodology adopted in Cloud based Object oriented requirements to manage requirements effectively by Preparing a matrix between requirements statement and various stages of requirement:

Requirements IDs / Requirements Steps	REQ001	REQ002	REQ003	REQ004
Identifying requirements				
Clarifying and restating the requirements				
Analyzing the requirements				
Defining the requirements in a way that means the				
Specifying the requirements				
Prioritizing the requirements				
Managing requirements				
Testing and verifying requirements				
Validating requirements				

Each requirement identified by unique requirement number like REQ001, REQ002, etc.. , if it is fulfill requirement step write "YES", If not fulfill till date write "NO".

This two dimensions matrix store on the cloud, so developer or team leader can see any time, which requirements are identified, Clarifying and restating the requirements, Analyzing the requirements, Defining the requirements in a way that means the same thing to all stakeholders, Specifying the requirements, Prioritizing the requirements, Managing requirements, Testing and verifying requirements, Validating requirements,

III.   COMPARISONS

Comparisons between cloud based object oriented requirement engineering and tradition object oriented requirement engineering:

PROPERTIES	Cloud based object oriented	Traditional object oriented requirement
PLANNING	Predictive	gradually
DOCUMENTATION	Comprehensive and constant	Minimal and evolving
User Interaction	Less	High
Maintenance	Less	High
Project Success rate	Comparative High	Comparative less
Nature	Dynamic	Static

IV.   CONCLUSION

The purpose of our research is to find a suitable Cloud based O. O. R. E. Process to be applied in Software organization for the development of software projects. Technologies are change frequently, so technology will change for O. O. R. E., it is necessary for change the all phases of software engineering, particularly in R. E., because R. E. is main pillar of the s/w development, and play the vital role in build the software. This cloud based web tool for object oriented requirement engineering, helpful for not only academics but also for the industries.

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