

# To Implement Cloud Computing by using Agile Methodology in Indian E-Governance

P.V.S.S.Gangadhar<sup>1</sup>, Dr.A.K.Shrivastava<sup>2</sup>, Ragini Shukla<sup>3</sup>

<sup>1</sup> MPhil (CS) Research Scholar, Department of Computer Science, Dr. C. V. Raman University, Bilaspur, India.

<sup>2</sup> Professor & Head, Department of Physics, Dr. C. V. Raman University, Kota, Bilaspur, C.G., India

<sup>3</sup> Asst. Professor, Department of Computer Science, Dr. C. V. Raman University, Kota, Bilaspur, C.G., India

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**Abstract** - Many developed countries in the world, uses Information and communication technology to deliver public services in a more efficient & easy way. The benefits of the Electronic Governance are huge and day by day increasing from one to many public services. But implementation of the governance is constrained due to 1) high costs of investment 2) shortage of domain experts 3) diverse and irreconcilable systems and 4) Security and privacy issues. With the Invent & rise of Cloud computing, i am looking various aspects of use of cloud computing in e-governance is emerged. Cloud computing can solve many of the above mentioned hurdles and provide better way to e-gov expansion, but it has some risks also. Agile development treats optimize the chance provided by cloud computing by doing software relinquishes iteratively and getting end user feedback more frequently and quickly.

**KeyWords:** e-gov, Cloud Computing, Agile methodology, Security and Privacy.

## 1. INTRODUCTION:-

Cloud computing has key role to play to transform the way information technology is delivered and managed. The outcome will be improved cost efficiency, easy innovation, and the ability to launch new projects on demand basis. The shape of the cloud system is born and growing day by day, and it is developing rapidly both conceptually as well as in reality. However, the legal, contractual, economic and security aspects of cloud computing are evolving and are yet to attain maturity level.

The Government of India has implemented a number of ICT initiatives under the National e-Governance Plan (NeGP), including creation of ICT infrastructure both at the centre and state levels. The infrastructure thus created will provide the basis for adoption of cloud computing for the government with the objective of making optimum use of existing infrastructure, re-use of applications, efficient service delivery to the citizens and increasing the number

of e-transactions in the country, thus helping achieve the ultimate goal of NeGP. To harness the benefits of cloud, Department of Electronics and IT, of Government of India has ventured upon an ambitious project termed as 'Government of India - Cloud'(i.e GI - Cloud). The 'Gov. Cloud' is the Government of India's cloud computing environment that will be used by government departments and agencies at the centre and states government departments. In other words, it will enable the government to deliver cloud computing for effective and timely delivery of e-services to public.

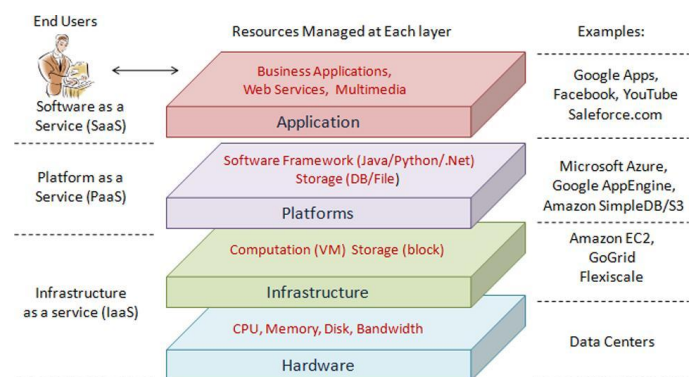


Fig-1: Cloud Computing Services

## 2.RESEARCH METHODOLOGY:-

**2.1 Agile Development:-** During project development lifecycle, Agile Development Methodology targets in assessing the route of the project towards progressing. This is attained by doing the work via ordinary temperament, known sprints and iterations. Teams must present at the increment of work which is in proper form. So that in an Agile Model, all the tasks are done in iterations and every part of requirements, design, and implementation is revisited again and again during the Agile Life Cycle with end User stratification Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here. Paragraph comes content here.

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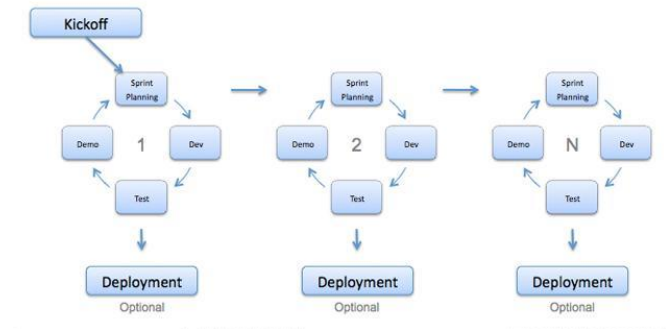


Fig-2: Diagram of Agile Mode

Why Agile is So popular:-

\*Individuals/small groups are more important than processes and tools.

\*Working software application is more important than comprehensive documentation.

\*Customer interaction is more important than contract negotiation.

\*Quick action to change is more important than next a plan.

These principles are referred to as the "Agile Manifesto"

2.2 Cloud Computing:-Cloud Computing is widely accepted for performing industry and academia work. It passes on as requirement for computational resources which are available on order through a computer network. It allows businesses to access shared data centre space for running their applications. CC is up-and-coming in the IT world due to the key advantages it provides:

- No need of hardware and software change.
- Quick & easy to use it.
- Very less probability of failures
- Highly customizable work environment
- Combination to other project solutions with effortlessness

Cloud computing provides to provisional of computational resources on demand via a computer network. It enables tasks to be assigned to arrangement of software and services over a network. This network of servers is the cloud.

Cloud computing is a new wave of IT infrastructure that permits businesses to run their applications on a shared data center space. Unlike traditional licensed software, cloud technology brings in efficiency by removing the cumbersome processes related to software development, testing, installation and failovers.

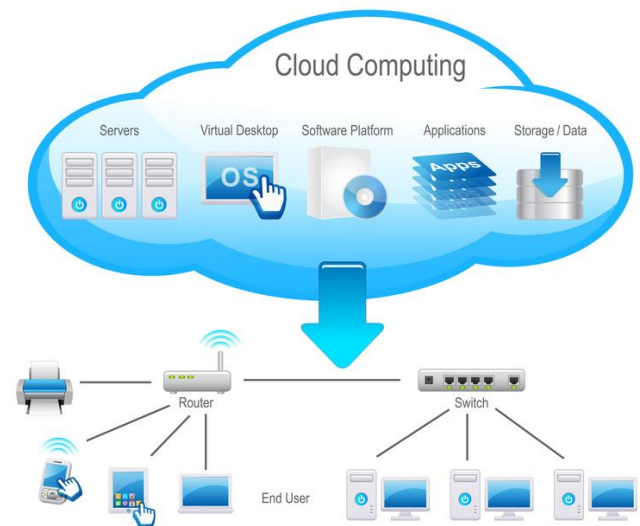


Fig-3: Architecture of Cloud computing

The key advantages of cloud computing includes:

- To deploy cloud technology, No hardware or software required
- Easy mixed up with other enterprise applications.
- Total customizable environment.
- Quick & Easy deployment, coupled with less probability of failures.
- Optimum utilization of in-built IT resources.

Many advantages and problems can be overcome by enhancing the agility of Software Development process and practices with the help of Cloud Computing. Many researchers have been experimenting on performing AD on Cloud Platform and some of them are focusing on integrating both for getting extraordinary outputs. Agile

are software methods which are very realistic and light weight. These methods actually understand the reality that requirements are very flexible; they keep on changing in the business model environment. They found that by combining Lean AD methodologies with CC results in going forward technology. AD processes make the effective and perfect use of favourable situation offered by CC by releasing applications in iterative manner and by receiving user response repeatedly. Shortened development time, high permanence and exploitation of workloads, early feedback from end user customers, team efficiency, and less cost are some of advantages of CC when combined with Agile Methods.

In AM fast feedback is considered as big asset, but new advancements in information technology can stretch the feedback cycle. So in order to lessen the feedback cycle automating production development is needed. CC provides for the opportunity for the business access tools and services and also suggests and establishes connections with other Clouds along with intelligence, integration and additional analytics. In Cloud-based AD, data from all the distributed automated tools is captured and shared. Broad detaining of data, intelligibly measuring performance of organization in real time helps a lot in suitably managing and monitoring the Agile Projects, along with serving organizations with agility.

### 3. CLOUD COMPUTING AND AGILE, A GREAT COMBINATION:-

Cloud computing is the very good, environment for agile development. It lets you get valuable functionality to your customers easily, collect immediate feedback, and make quick modifications based on that feedback. This rapid development cycle, an inherent advantage of cloud computing, are impossible to implement in the normal development model because of the huge cost of distribution.

Customer feedback is now wicker into the process at each level—an email sent or new idea posted on the idea **Exchange today may drive tomorrow's functionality**. As a result, the team supports only the present production release and next immediate release—not for the years of legacy releases. That means that each day, hundreds of people check into the same code fully. When someone makes a change that may break the existing code, **everyone immediately knows about the change, so there's no time wasted in the replacement and integration processes later in the development of the life cycle.**

Added Advantages of Cloud Computing with Agile Development:

- **Short development cycle-time of 73%.**
- **Higher stability of heavy work-loads.**
- **Higher utilization of heavy work-load, that is, Developing large-scale in small groups, software systems with a fixed number of developers.**
- **Higher quality check by early feedback from the customers.**
- **Higher flexibility to change of Management and development plans becomes easy.**
- **Reduce the cost of exchange of information between people.**
- **Place people physically closer to get optimum Output.**
- **Reduce the elapsed time between making a decision to immediate seeing the consequence of that decision.**
- **Replace documents with talking in person and at whiteboards, and**
- **Improve the team's amicability-its sense of community and morale- so that people are more inclined to relay valuable information quickly, easily and timely.**

### 4. EXPECTED OUTCOME:

#### 4.1. Stage-1 Ad-hoc eGov Cloud Solutions:

At this stage agencies or public organizations use cloud computing only for covering their needs in IT resources and enhancing collaboration with other agencies, and not for providing digital services to citizens or businesses. Since there is no Government Cloud, the cloud services (basically SaaS and IaaS) are entirely provided by individual vendors. In an absence of an official government policy, each agency or municipality decide how and to what extent it will use cloud services on its own.

#### 4.2. Stage-2 Cloud- based Public Services

At this stage, cloud computing is used by agencies and municipalities in order to provide digital public services to citizens and businesses. The public services are based on PaaS provided by individual vendors and the decisions related to cloud computing are still made at agency or municipal level. The degree of engagement is still low since the government holds also in this stage only the role of the customer of cloud services, but the fact that there are more stakeholders (citizens and businesses) in this case makes the return to the previous state more difficult.

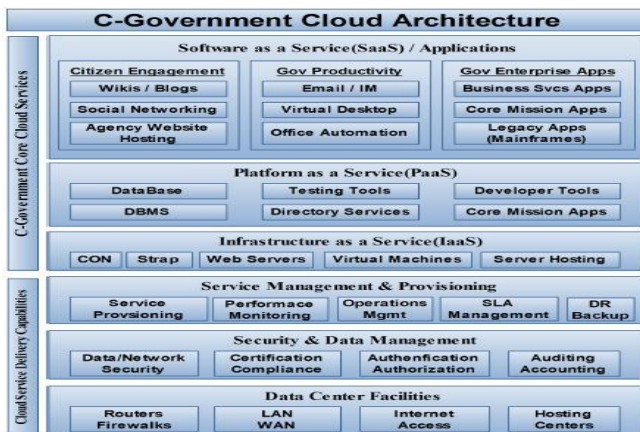


Fig-4: Diagram of e-gov Cloud Architecture.

4.3. Stage-3 : eGov Cloud(s): The main change in this stage is the development of one or more government clouds. These private clouds can belong either to the central government or more often, to agencies or government organizations. They are used in order to replace the former eGovernment information systems that the organization had and can support the provision of both internal and public services. The fact that a private cloud offers more security and control than the other deployment models may encourage the organization to use cloud computing more broadly. There are also some cases where the agency handles sensitive government data and the development of its own private cloud is the only way to adopt cloud computing.

4.4. Stage-4 : eGov Cloud Policy:-At this final stage cloud computing adoption is fully supported by the central government of a country. While in the other stages the use of cloud computing is usually a result of individual initiatives of agencies and municipalities, here the central government promotes cloud adoption in eGovernment through policies and roadmaps. The coordinated effort for integrating cloud computing in eGovernment that takes place at this stage has as a result a very high degree of engagement.

5. Limitation:- The proposed cloud with Agile model with the government as a whole and realizes the agencies and other government organizations as parts of it. Obviously, an agency could never reach the fourth stage of the model since it does not make centralized decisions and does not publish policies that affect other agencies.

6. Delimitation:-The same concept of may be incorporated into SARRC countries easy way with little modification of the system.

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Sri.P.V.S.S.GANGADHAR working as Scientist in National Informatics Centre, Govt. of India for past 16 years, His research interest are e-gov, Security, fuzzy logic, & Cloud computing  
Email: saiganga@gmail.com



Dr.A.K.SHRIVASTAVA, acquired Phd in 2002, working as PROFESSOR & Head of the Department of Physics at Dr. C.V.Raman University, Bilaspur, C.G., India.



RAGINI SHUKLA pursuing Phd from Dr.C.V.Raman University & working as Asst. Proff. at Dr.C.V.Raman University, Kota, Bilaspur.