# NREGA and Possible Technological Interaction: Powered by Emerging Computing and Information Technology

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## Abstract :

National Rural Employment Guarantee Act (NREGA), 2005 is one of the important initiatives taken by the Government of India which was effect from $2^{nd}$ February 2006. The main aim of passing the act was assurance and guarantee towards right to work to the Indian men and women for at least hundred days. It is one of the important initiative of Rural Development. It has from the beginning operated by the Gram Panchayats and similar administrative and local bodies. The program was initially started in two hundred districts and spread gradually in other districts. Information and Computing Technologies have played as important and valuable role in almost all types of affairs and implementation of NREGA and more applications in the project will result more rapid success with the latest computing and IT gradients. This paper is presented an awareness and overview on several aspects of NREGA Scheme and specially highlighted few technologies and system which can positively grow-up the NREGA project.

## Keywords :

Rural Development, NREGA, MGNREGA, Indian labor law, Social Security, IT, Computing, ICTD, IT for Society, Social Computing, Information Science.

## Introduction :

The NREGA act was passed in the year 2005 and approved by the President of India on September, 2005. The main aim was ensuring the rural development and conferring work right to the rural people or wage employment by the wide areas. In a particular financial year this act guaranteed hundred days work [22]. The NREGA was changed as MGNREGA by adding the

nomenclature 'Mahatma Gandhi' before the NREGA, though in this paper the common NREGA is mentioned. However unemployment condition is very much needed in this case [1], [12]. The Panchayat is the core authority for implementing NREGA. From its initial 200 districts it has been now enhanced in almost all the districts in the Country spread over states and union territories. The better deployment and offering is many ways possible with the IT implementation [2], [13].

**Objective :**

The main aim as well as objective of the paper is includes but not limited to as follows—

- To know about basics on NREGA and its main features.
- To learn about the aim and objective of NREGA and future possibilities.
- To find out the core and main role of Information Technology and Computing in NREGA project.
- To learn about the future possibilities of NREGA with Cloud Computing and Virtualization tool.
- To know the possibilities of Human Computer Interaction and Human Centered Computing in the activities of NREGA project.
- To know about the main challenges, opportunities and SWOT in the regard of NREGA and possible IT integration as much as much as possible.

**Technologies and MGNREGA :**

Some of the possible and healthy reasons of inclusion of Information Technology and Computing have been provided in the later sections. Before go to these, it is best to learn about the NREGA; which ultimately help to know about possible technology in many regard [3], [14] (See Fig: 1 in this regard). These are unskilled manual work and normally employment is provided within 5 K.M. radius and among the areas of works most important are construction, maintenance, and development of roads, canal, pond, well, gardening and so on.
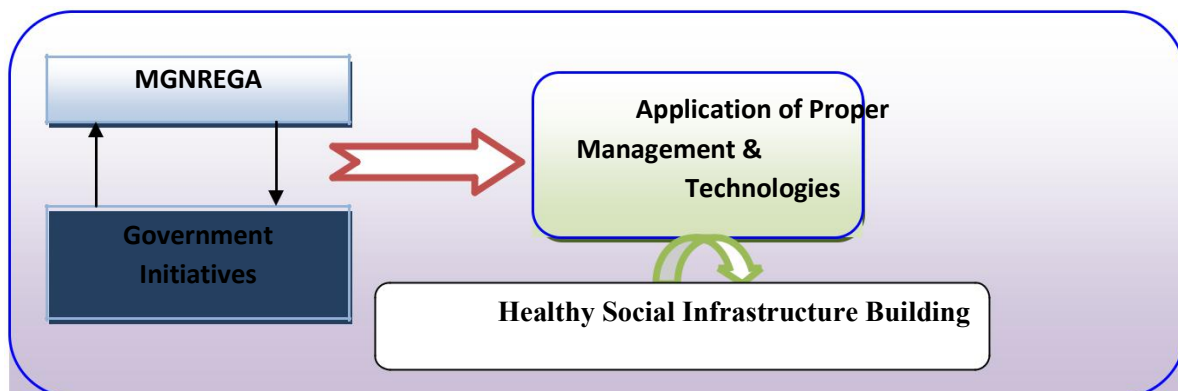


*Fig: 1-The MGNREGA and Proper Management Requirement*

The indirect benefit of NREGA is helping environment, empowering the women in rural sectors, rural-urban-migration and improving social equity [18], [19], [20].

Information Technology is the applied tools and technologies which help in promising of information, content and thereafter dissemination. However collection, selection, organization and management also played a lead role in Information Technology process. Information Technology is helpful for the better and effective management, implementation of project affairs, progress of allowed works, financing pattern, better monitoring, and healthy evaluation. Fostering social equity is also positively possible with the IT and Computing implementation in the NGREGA project [4], [5], [15].

A better and healthy social audit is also positively may be bring by the social audit. The process of Right to Information Act, Public hearing system may get the benefit of NREGA, many ways. The NREGA project may get benefits from several components of IT and these are Database Technology, Multimedia Technology, Network Technology, Computer Technology and among these some latest technologies are provided in the next sections [6], [7], [21].

**Cloud Computing and MGNREGA:**

Cloud Computing is a kind of computing which can scale out and also help in the improvement of information processing and management. It ensure computing and IT applications to use computing capability without any location bar and strong conventional network communication requirement. Cloud Computing normally provide healthy and efficient bandwidth, centralize storage, memory and processing power [15]. Information Technology is deals with the „*software, hardware, network, database and multimedia"*— so that with cloud adaptation, it is positively possible to include flexibility, mobility, remote access and management (Refer Fig: 2). The NREGA project has deals with several data on administration, labor, Panchayat, working agenda, work-load, utilization and so on—in all cases it is positively possible to bring cloud benefits which ultimately helps in the processing of following—

- Capturing and managing data, information and content in centralized database with possibilities of accessing with local manner.
- The data entry on NREGA related projects have been carrying in around 25000+ places and here cloud, specially mobile cloud may positively utilize.
- In many cases poor connectivity, less bandwidth may create problems and here cloud has several alternative solution for better and healthy virtual information management.
- The stakeholders of content, technologies, manpower, administrators may bring in one harmony and helps in smooth and efficient management.
- It is a fact that the centralize database, software, hardware, multimedia applications played a lead role in cloud and proper backup are always prepared and thus in this model it is effectively possible to bring better and cost effective record and Information Technology Management.

- The NREGA has several areas at the administrative levels and these are possible to bring with cloud integration and ultimately may help in healthy financial management, information management, government management, cost estimation management, work management and so on [16].
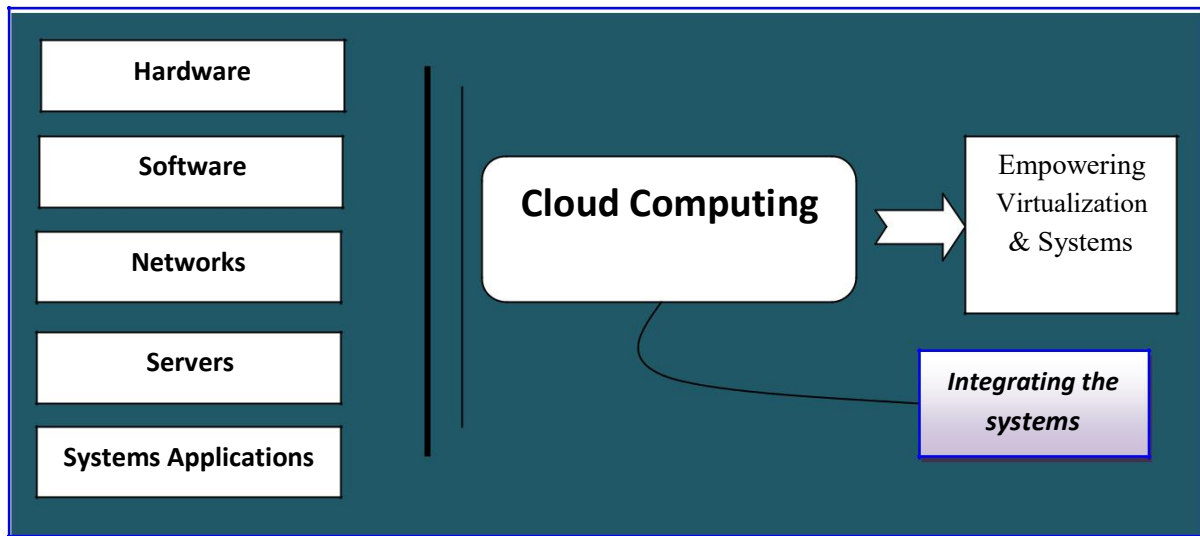


*Fig: 2-Cloud Computing and its Basic Features*

**Human Computer Interaction (HCI) and MGNREGA :**

Human Computer Interaction (HCI) is the designing, development, evaluation and also implementation of interfaces which are much more interactive and usable. The details is depicted in the Fig: 3. Actually HCI principle governed by some psychological basis and management facets and thus it told about the better interface designing and management with possible Graphical User Interface (GUI), Web Interface (WI) and thus helps in common process of MGNREGA in many ways. It is a fact that the MGNREGA has touched around 640,300+ villages and these are governed by the 241,000+ Gram Panchayat and thus Record and Information System Management done with 25000+ locations and all these affairs have to done by the web system and offline information/web tools and thus it is better to introduce the HCI principles for easy information processing, management and dissemination [17]. Ultimately HCI in MGNREGA also promotes the functional scope in all the cases which include—

- Administrative Module.
- Record Management Module.
- Work Management Module.
- Worker Management Module.
- Budget and Financial Module.
- Inventory Management Module.
- Common People Information Accessing and so on.

The user interface of computers, website, online and offline system need to build with HCI and Usability Engineering principles many ways. Here local level, information literacy related affairs need to take care. Moreover in this HCI system a better Digital Library Survey and its inclusion is very important and urgent. Here Human Interactive Design has put on priorities with easiness in use of other devices such as keyboard, microphone, joysticks and other devices which has better and healthy communication among the users. Here Usability Engineering principles and methods also need to adopt as much as possible for better, usable and clear, multi lingual interface designing [6], [7], [14]. Hence aspects of information design, interaction design and similar tools and applications need to adopt for better input and healthy output as much as possible. The IT Manager and Interface Designer need to take care about the Information Architecture as much provided.
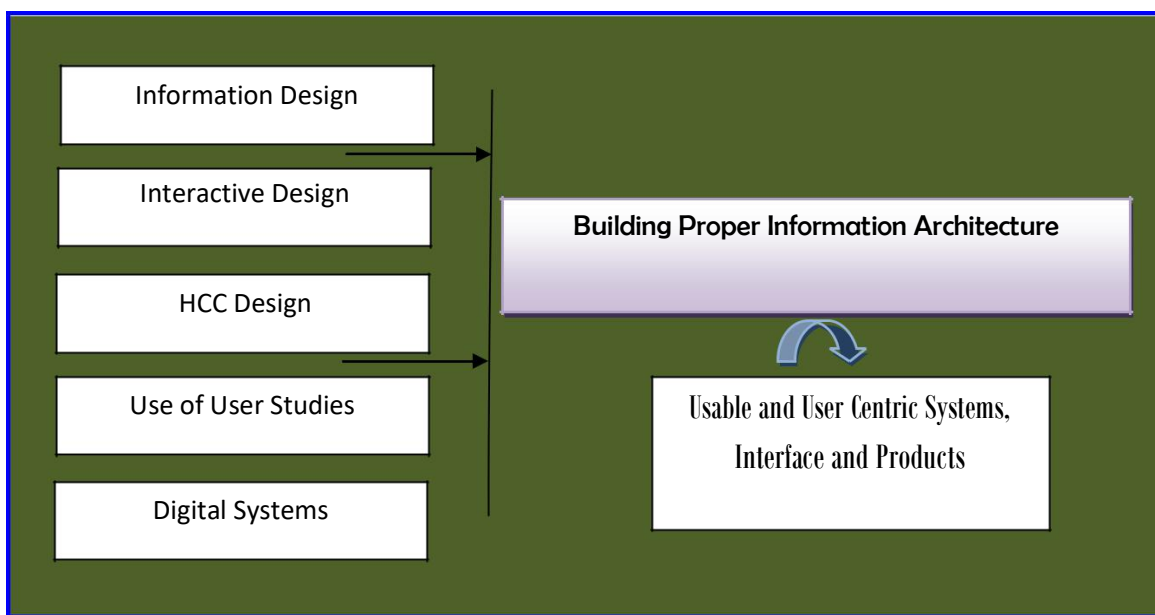


*Fig: 3-Human Computer Interaction and proper methods and requirement*

**Future Possibilities :**

For better and improved Human Computer Interaction and Usability Engineering results adoption of following principles are required in the MGNREGA –

- Digital content generation and management as much as possible with full digital resource management and here healthy designing and development principles need to follow.
- There should be potentiality of users to use the interface and web systems by the individual systems and users and here it is preferable that there should be self manageable and handling display and dissemination system [8], [9].
- Multimedia and similar tools and technologies may be adopted based on requirement for building interface much catchy among the MGNREGA stakeholders.

- MGNREGA is spread over 31 states and Union Territories and thus many people are using at a time thus healthy and superb cloud system need to implement.
- Single window system help and keep better information management thus the system need to build accordingly [10].
- Muster roll has to manage for huge stakeholders and thus it is better to use the cloud based server and public cloud which are easy to use and effective.
- Annual report preparation, building the healthy information management for good governance is possible with additional support of cloud based apps etc [11],[16].

**Suggestion and Recommendation :**

- In future it is better that apart from centralize system there should be a platform of local computer and informatics practice.
- Proper planning for content management, IT Management, Information Systems are very much important and urgent to build a solid system.
- Public-Private and even depending need Hybrid cloud models may be adopted as it holds several interface and confidential data. The NREGASoft App and tool need associated with much more HCI and Human Centered Computing principles here user study and SWOT analysis are important and required time to time [10], [11], [15].

**Conclusion :**

Today NREGA project has the stakeholders of several products such as handheld devices, touch screen, mobile devices and it provide a healthy and sophisticated rural development system many ways. Till more than 6000 block of Indian districts have been entered into the NREGA scheme as far as ICT is concerned and here much more cloud based products need to use for more better and healthy productivity. Today with inclusion of ICT in the MGNREGA several activities have been improved and thus these are ultimately helps in better Information Technology Management. And indirectly all the activities promotes and will results good and healthy governance.

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