

## DigiDocs; A Proposed Architecture for e-Government

Mr. Akshay Kshar<sup>1</sup>  
akshaykshar8@gmail.com  
PRMITR, Badnera

Mr. Shubham Oza<sup>2</sup>  
shubhamoza@gmail.com  
PRMITR, Badnera

Mr. Shubham Kalpande<sup>3</sup>  
shubhamkalpande1995@gmail.com  
PRMITR, Badnera

Mr. Ashwin Varma<sup>4</sup>  
ashwinvarma50@gmail.com  
PRMITR, Badnera

Mr. Shwetang Rangari<sup>5</sup>  
shwetang007.sr@gmail.com  
PRMITR, Badnera

Prof. Ms. P.B. Lohiya<sup>6</sup>  
Assistant Professor  
pblohiya@mitra.ac.in  
PRMITR, Badnera

**Abstract** - This document offers a standardized mechanism to issue government documents to Aadhaar holders in electronic and printable formats, store them, and make it shareable with various agencies. This allows government issued documents to be moved to electronic form and make it available for real-time access in a set of “digital repositories”. This solution also offers multiple digital locker providers and access gateways to co-exist to enable healthy ecosystem play. Usage of Aadhaar ensures that document owner is strongly authenticable eliminating document frauds. In addition to supporting new documents to be made electronic and online accessible, this solution also offers a way to digitize older documents. Proposal also offers a mechanism by which “digital lockers” can be offered by service providers and suggestion to provide “a default digital locker” portal and mobile application to residents to view a consolidated list of documents using their Aadhaar number.

### 1. INTRODUCTION

Currently, in India, almost all of the government issued documents are in physical form across the country. This means every time a resident needs to share the document with an agency to avail any service, an attested photo copy either in physical form or on scanned form is shared. Use of physical copies of document creates huge overhead in terms of manual verification, paper storage, manual audits, etc. incurring high cost and inconvenience. This creates problem for various agencies to verify the authenticity of these documents, thus, creating loopholes for usage of fake documents/certificates. Due to the nature of these documents not having a strong identity attached to it, anyone with same name can indeed misuse someone else’s document.

### 2. OBJECTIVES

Objectives of such digital repository solution are:

1. Eliminate need for the residents to maintain hard copy of government issued documents.
2. Eliminate need for the residents to produce (in hard format) government issued documents, while applying for services.
3. Provide secure and consented access of government issued documents to user agencies.
4. Reduce administrative burden, service fulfillment time, and costs by enabling paperless transactions.

### 3. LITERATURE REVIEW

#### DIGITAL INDIA VISION

The Digital India programme cleared by the cabinet in August 2014 seeks to ‘prepare India for a knowledge future’. There are three key objectives; (a) to create a digital infrastructure for online digital identity, mobile phone and a bank account, (b) to service and govern a real-time online financial transaction platform, and (c) to digitize all documents and records of the residents and make them available on a real-time basis. This vision of electronic resident document system should address two key aspects:

1. Minimizing usage of physical documents (no scan/photocopies, no physical papers) via electronic formats and sharing across agencies; and
2. Eliminating usage of fake documents (no fake govt/degree certificates, no fake usage of someone else’s certificate) via a mechanism to verify “authenticity” of government issued documents online.

3. Provide a default “digital locker” for people to store and access Government issued documents in the Government cloud if they wish to subscribe.

#### E-GOVERNANCE

Electronic governance or e-governance is the application of information and communication technology (ICT) for delivering government services, exchange of information, communication transactions, integration of various stand-alone systems and services between government-to-customer (G2C), government-to-business (G2B), government-to-government (G2G) as well as back office processes and interactions within the entire government framework. Through e-governance, government services will be made available to citizens in a convenient, efficient and transparent manner. The three main target groups that can be distinguished in governance concepts are government, citizens and businesses/interest groups. In e-governance there are no distinct boundaries. Generally, four basic models are available – government-to-citizen (customer), government-to-employees, government-to-government and government-to-business.

#### DIGITAL DOCUMENT

Digital document is any electronic media content (other than computer programs or system files) that are intended to be used in either an electronic form or as printed output. Originally, any computer data were considered as something internal — the final data output was always on paper. However, the development of computer networks has made it so that in most cases it is much more convenient to distribute electronic documents than printed ones. And the improvements in electronic display technologies mean that in most cases it is possible to view documents on screen instead of printing them, thus saving paper and the space required to store the printed copies.

#### 4. PROPOSED ARCHITECTURE

This section covers solution architecture in detail including terminology used, high level architecture diagram, document identification scheme, document issuance lifecycle, document sharing scheme, and some examples,

##### i. Key Terminologies

1. Electronic Document or E-Document – A digitally signed electronic document in XML format issued to one or more individuals (Aadhaar holders) in

appropriate format compliant to DLTS specifications.

Examples:

- Degree certificate issued to a student by a university.
  - Cast certificate issued to an individual by a state government department.
  - Marriage certificate issued to two individuals by a state government department.
2. Digital Repository – A software application complying with DLTS specifications, hosting a collection (database) of e-documents and exposing a standard API for secure real-time access.
    - While architecture does not restrict the number of repository providers, it is recommended that few highly available and resilient repositories be setup and encourage everyone to use that instead of having lots of repositories.
  3. Digital Locker - A dedicated storage space assigned to each resident, to store authenticated documents. The digital locker would be accessible via web portal or mobile application.
  4. Issuer – An entity/organization/department issuing e-documents to individuals in DLTS compliant format and making them electronically available within a repository of their choice.
  5. Requester – An entity/ organization/ department requesting secure access to a particular e-document stored within a repository.

Examples:

- A university wanting to access 10th standard certificate for admissions
  - A government department wanting to access BPL certificate
  - Passport department wanting to access marriage certificate
6. Access Gateway – A software application complying with DLTS specifications providing an online mechanism for requesters to access an e-document in a uniform way from various repositories in real-time.
    - Gateway services can be offered by repository providers themselves.

- While architecture does not restrict the number of repository providers, it is suggested that few resilient and highly available central gateway systems be setup and requesters can sign up with

In the diagram below, top side represents the issuance part and bottom side represents the real-time access part.

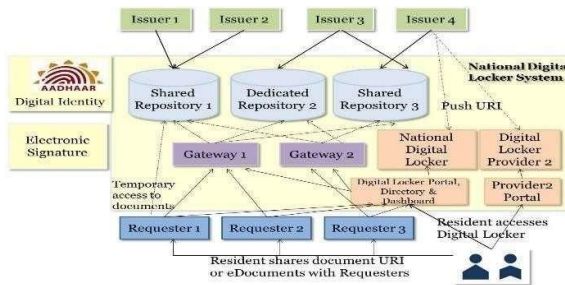


Fig 1. Architecture

Diagram depicts the federated model of document storage via designated dedicated digital repositories. It also depicts the co-existence of highly available document access gateway(s) (one or two) that can be used to access these documents stored in these repositories. Individuals (Aadhaar holders) may be provided a “default digital locker” mechanism to directly access

ii. Structure of the digital locker

- Digital Documents: This contains the URI's of the documents issued to the user by government departments or other agencies.
- Uploaded Documents: This subsection lists all the documents which are uploaded by the user. Each file to be uploaded should not be more than 10MB in size. Only pdf, jpg, jpeg, png, bmp and gif file types can be uploaded.
- My Profile: This section displays the complete profile of the user as available in the UIDAI database.
- My Issuer: This section displays the issuers' names and the number of documents issued to the user by the issuer.

- My Requester: This section displays the requesters' names and the number of documents requested from the user by therequesters.
- Directories: This section displays the complete list of registered issuers and requesters along with their URLs.

SECURITY MEASURES OF DIGILOCKER

Following is the security measures used in the system

- 256 Bit SSL Encryption
- Mobile Authentication based Sign Up
- ISO 27001 certified Data Centre
- Data Redundancy
- Timed Log Out
- Security Audit

5. PROPOSED SYSTEM WORK

To model system, the most important aspect is to capture the dynamic behavior. To clarify a bit in details, dynamic behavior means the behavior of the system when it is running/ operating.

So only static behavior is not sufficient to model a system rather dynamic behavior is more important than static behavior .in UML there is diagrams available to model dynamic nature and use case diagram is one of them. now as we have to discuss that the use case diagram is dynamic in nature there should be some internal or external factors for making the interaction.

These internal and external agents are known as actor .so use case diagram are consisting of actor, use cases and their relationship. The diagram is used to model the system/subsystem of an application. A single use case diagram capture a particular functionality of system.

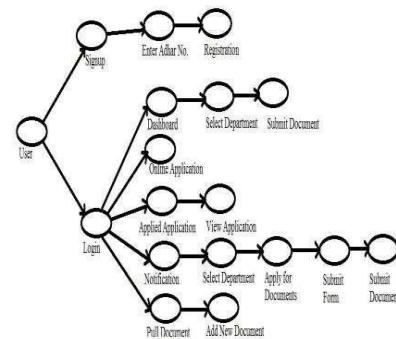


Fig 2. Use case diagram: User Module

In the flow of digidocs first of all user register with their aadhaar no then they can start their process for uploading online document. Suppose the user is already registered then directly use online portal. User can select department that is rto, tehsil, e-governance. Then they can apply on it the process is going on than the department login views the user's application they can check all the users detail they can mention an application from then all it is right then admin can decide the user from is approve or rejected. The information is right the form will be accepted otherwise rejected. Then the user can see the notification your form is approve or rejected on user dashboard.

## 6. PERFORMANCE ANALYSIS

This chapter contain analysis of our project from various point of view

### COMPUTATIONAL ANALYSIS

Computational analysis is based on the analysis of the mathematical model computational recourse to study the behaviour of a complex system by computer simulation. Computational analysis is used in the design and the analysis of problem and their solution, broadly interpreted. The most important and high-level thought process in Computational analysis is the Abstraction process. abstraction is used in defining, generalizing form instances, and parameterization. It is used to let one object send for many. It is used to capture essential property common to set of object while hiding irrelevant distinctions among them.

### ROBUSTNESS

Robustness Analysis is a way of supporting decision making when there is radical uncertainty about the future. It addresses the seeming paradox – how can we be rational in taking decisions today if the most important fact that we know about future conditions is that they are unknowable? It resolves the paradox by assessing initial decisions in terms of the attractive future options that they keep open.

### RELIABILITY

System reliability, by definition, includes all part of the system, including hardware, software, supporting infrastructure (including critical external interfaces), operator and producer. Traditionally, reliability engineering focuses on critical hardware part of system since the widespread use of digital integrated circuit technology, software has become an increasingly critical path of most electronic and, hence, nearly all present day system. There are significant

differences, however in how software and hardware behave.

### TESTING

In general, testing is finding out how well something works. In terms of human beings, testing tells what level of knowledge or skill has been acquired. In computer hardware and software development, testing is used at key checkpoints in the overall process to determine whether objectives are being met.

At the system level, the manufacturer or independent reviewer may subject a product or service to one or more performance tests, possibly using one or more benchmarks. Whether viewed as a product or a service or both, a Web site can also be tested in various ways - by observing user experiences, by asking questions of users, by timing the flow through specific usage scenarios, and by comparing it with other sites.

### USABILITY TESTING

Usability testing is a technique used in user-centered interaction design to evaluate a product by testing it on users. This can be seen as an irreplaceable usability practice, since it gives direct input on how real users use the system. This is in contrast with usability inspection methods where experts use different methods to evaluate a user interface without involving users.

## 7. CONCLUSION

This thesis introduces DigiDocs services and shows how could be use it. The goal of this service is to eliminate the use of physical documents enable sharing of verified electronic documents across the governments agencies.

DigiDocs is to ensure safe custody of the important documents such as PAN card; Aadhaar Card etc. which determines the nationality of the

Citizens of India electronically. This move would in turn result in much more transparency, authenticity and eradication of red tapism and corruption to the maximum extent possible. This is a refreshing move towards making India 'a digitized economy' and thereby ensuring broadband connectivity in the rural areas. Thus, for the program to be a success, it becomes imperative that there is absolute coordination between the departments and utmost commitment on the part of ministries.

## 8. FUTURESCOPE

DigiDocs can be implemented as initiative by Government of India as a part of vision Digital India. Many government sectors such as CBSE, State Transport, Universities, Private Services etc., may join in as a partner, this will reduce the amount of paperwork's goes into the working at these systems.

Future government initiatives may also be synchronized or collaborate with Digidocs, this may digitize a system completely. Many private departments willing to provide digital documentation services can also join as partners. It can be accessible on mobile, which provide accessibility to institutes and organization for every individual citizen of India, anywhere and anytime.

Thumb print authentication can be added to this project which will provide great security to each and every user by securing his account and documents.

DigiDocs will provide secure access to government-issued documents. It uses authenticity services provided by Aadhaar. It is aimed at eliminating the use of physical documents and enables sharing of verified electronic documents across government department.

Digital Locker provides a dedicated personal e-storage space to citizens, linked to their Aadhaar numbers. Digital Locker will reduce the administrative overheads of government departments and agencies created due to paper work. It will also make it easy for Indian citizens to receive services by saving time and effort as their documents will now be available anytime, anywhere and can be shared electronically.

To sign up for your Digital Locker, you need your Aadhaar number and a mobile number linked to that Aadhaar number.

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