

Content Based E-Authentication Framework for E-Governance: An Effective Service Delivery Model in Digital Environment

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Abstract: Several developing countries including India are take the effective step to role ICT (Information and Communication Technology) which can play an important role in the government sector. The effective step to make the reliable and flexible communication between government and citizen for the effective use of Information and Communication Technology under e-Governance. we are putting into practice and innovative e-Governance model with e-Authentication mechanism which may be drastically changing in the field of various e-Governance services which are running under the national e-Governance plan in state and center level. This paper depicts and implements a framework for content based e-Authentication framework for e-Governance under the various e-Authentication mechanisms which is effective service delivery model in term of e-Authentication as well as e-Governance. This project deeply considered various level of authentication and put model maximum effort to implement the model in an effective and flexible manner. A clear, comprehensive layout and framework for the citizens and content is categorized according to the authentication level which is web related task. The main objective of the project is to implement e-Governance in and easy and effective way include the e-Authentication to provide better information and service delivery to the citizens. This project will helps and provide awareness in the field of e-Authentication and access the government information access with secure channel and effective manner.

Index Terms— e-Governance; e-Authentication; Content based e-Authentication Framework for e-Governance

I. INTRODUCTION

Content based e-Authentication framework for e-Governance provides a process for online identity verification system which enable the secure government services with their credential and trusted environment between citizen and government. Government of India has conceptualizes the tional e-Authentication Framework (NeAF) to provide a uniform approach to managing identity authentications of all citizens for the delivery of various services over internet and mobile platform[1]. The project is the initiative of formulating a comprehensive framework of the electronic authentication to deliver the Government information. Electronic authentication provides a simple, convenient and secure way to access government services via internet. As part of this larger initiative, several public services are being provided to the users through electronic means[2]. Framework utilize by the all interested stack holders and authorized agencies to access the specific information from

the government website. The aim of this paper is to create core infrastructure of the framework which ensure the easier way of accessing the services under the electronic authentication. Electronic authentication helps the online transactions and stimulates the electronic environment through the better service delivery. the main concentration of this project on the e-Authentication because government release personal or business information only for reliable and verified identities. Only verified identity of user use the application and government information. Content based e-Authentication framework for e-Governance provides the security on the web based application.

According to the system credential of user are registered in authorizes database and after successful registered user can access the information via the some e-Authentication mechanism from the authentication layer. Information which user want to access is secured under by the proper way. An assurance level is determined through a comprehensive risk assessment process that determines the severity of the impact of getting e-Authentication wrong[3]. There are 6 electronic authentication mechanism ranging from level 0 to level 5 based on the assurance level. Level 0 electronic authentication mechanism is open access to all citizens. level 1 electronic authentication define low confidentiality, level 2 electronic authentication define minimal confidentiality, level 3 and level 4 electronic authentication define moderate confidential and level 5 electronic authentication define the highly confidentiality required identity assertion. Authentication Framework is one of a series developed as part of the Government's commitment, In the Modernising Government White Paper, to developing a corporate IT strategy for government[4]. To access the specific application a specific user service is categorized through the authentication layer. Content based e-Authentication framework for e-Governance works on the web based application. The main purpose of this project is to take some initiative in the field of e-Governance and provide the better service delivery to the citizen with electronic environment.

II. E-GOVERNANCE

e-Governance is the application of the ICT (Information & Communication Technology). There are number of projects in the field of e-Governance are running under the National e-Governance Plan (NeGP). e-Governance provide the effective way of communication between citizen and

government. ICT has tremendous application in G2C form of e-Governance[5].

Using the Information and Communication Technology we can improve the efficiency, accountability and transparency of the government department. With the advent of ICT, many governments have taken steps to use this as a tool to modernize their workings and as a result, it has impacted both the service provider i.e. government and the recipient (the citizen)[6]. e-Governance create the digital environment and improve government services and interactions with citizens businesses and other authorized agencies. e-Government helps simplify process and makes access to government information more easily accessible for public sector agencies and citizens. [7]. e-Governance is the effective tool for the reducing cost and improve the service delivery of public service. e-Government deals with as portal mainly accessing the government information which helps to better communication between Government to Citizens (G2C), Government to Business (G2B), Government to Government (G2G) and all interested stockholder. There exists relationship between the Governance and Information & Communication Technology (ICT) [8]. e-Governance is used to identifier for IT-based citizen-centric service which require a more precise definition. E-Government is a vibrant and expanding phenomenon which offers much to traditional administration in the public sector[9]. In the field to e-Governance we have to use the digital environment under which is useful for businesses like e-Commerce and e-Business in private sector. Deeper understanding of the complex mesh of technological, organizational and social factors and processes in both e-Commerce and e-Government might lead to practice-relevant cross-fertilization and reduction of unnecessary reduplication[10].

III. FRAMEWORK DESIGN

This paper describes the design issues of a practical content based e-Authentication framework for e-Governance system for the citizen of India. Emphasis was on giving a cost effective solution with effective electronic authentication environment and user friendly interface to the system using English language. Framework help accessing the reliable information and kept the information in secure form. System must ensure that the person to whom they provide a requested service is legitimately authorized to receive that service[11]. Content is categorized according to the stages of authentication which is define in the authentication layer. Authentication layer consist of level 0 to level 5 authentications. Content is categorized according to the authentication layer. Content categories in six methods based on the security level.

Purpose of Level 0 Authentication is to access the Level 0 application. user can access the level 0 application without any credential, level 0 authentication is open for all citizens.

Purpose of Level 1 Authentication is to access the Level 1 application. user can access the level 1 application by the follow instruction- user must give credential as user name and password by clicking the Level 1 Authentication on the web.

Purpose of Level 2 Authentication is to access the Level 2 application. user can access the level 2 application by the follow instruction- user must give credential as user name and password along with security questions by clicking the Level 2 Authentication on the web.

Purpose of Level 3 Authentication is to access the Level 3 application. user can access the level 3 application by the follow instruction- user must give credential as user name and password along with One Time Password (OTP) by clicking the Level 3 Authentication on the web.

Purpose of Level 4 Authentication is to access the Level 4 application. user can access the level 4 application by the follow instruction- user must give credential as user name and password along with security questions and One Time Password (OTP) by clicking the Level 4 Authentication on the web.

Purpose of Level 5 Authentication is to access the Level 5 application. user can access the level 5 application by the follow instruction- user must give credential as user name and password along with One Time Password (OTP) and Biometric verification by clicking the Level 5 Authentication on the web. Level 5 is proposed in model but not implemented.

Figure 1 shows the how the content can be categorized, the content categorized in six level according to six authentication levels. Each of level have specific access requirement, user must follow these requirement then user able to access these applications.

IV. CONTENT UNDER CMS (CONTENT MANAGEMENT SYSTEM)

All web application ranging from level 0 to level 5 maintain by the Admin panel of Content based e-Authentication framework for e-Governance through the Content Management System which use to manage the content of a website. Using content management system of admin panel we can enable to create, edit, review and publish electronic text. Content management system provide the web based Graphical User Interface (GUI) enable the publishers to access the content management system.

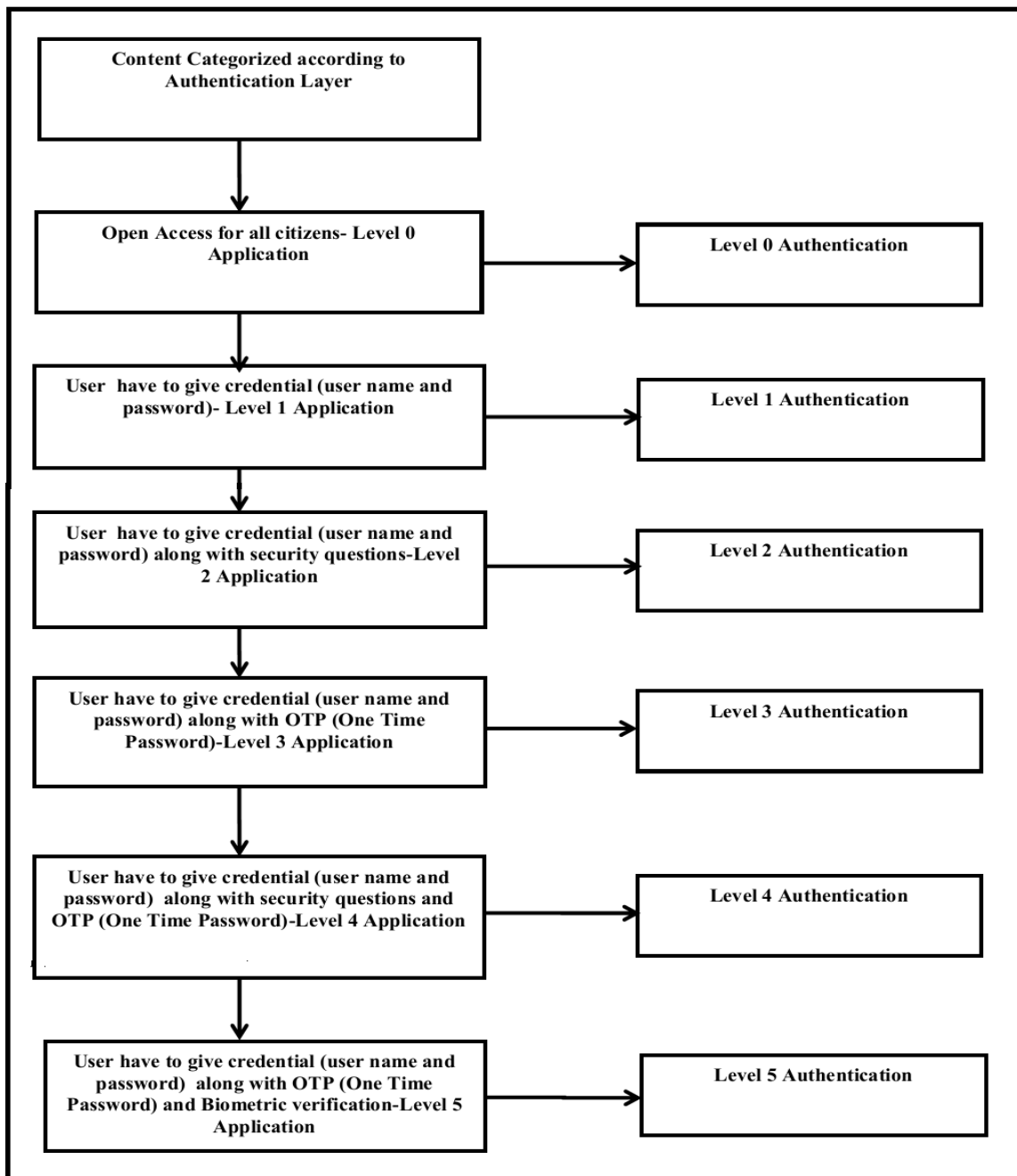


Figure 1: Layout for Content categorization

V. ALGORITHM TO IMPLEMENT THE SYSTEM

Framework contain the sign up and sign in form to access the level 1 to level 5 authentication. Login form have three field user name, email address and phone number. Each level has unique specification to accessing methods. Each level define its separate algorithm to implement the system which are given below:

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A. ALGORITHM TO IMPLEMENT LEVEL 1 AUTHENTICATIONS

- Step 1: open the web page.
- Step 2: add web page to the database.
- Step 3: new user click the Level 1 Authentication for sign up.
- Step 4: registered user click the Level 1 Authentication.
- Step 5: in login, user give credential as user name and password
- Step 6: if credential is true then go the step 7 otherwise go to step 4.
- Step 7: Access the Level 1 application.

B. ALGORITHM TO IMPLEMENT LEVEL 2 AUTHENTICATIONS

- Step 1: open the web page.
- Step 2: add web page to the database.
- Step 3: new user click the Level 2 Authentication for sign up.
- Step 4: registered user click the Level 2 Authentication for sing in.
- Step 5: check step 1 verification- user give credential as user name and password.
- Step 6: if credential is true then go to step 7 otherwise go the step 4.
- Step 7: check step 2 verification- user must give two correct security answer and only three attempt to give right answer.
- Step 8: if security answer is correct then go to step 9 otherwise go to step 4.
- Step 9: Access the Level 2 application.

C. ALGORITHM TO IMPLEMENT LEVEL 3 AUTHENTICATIONS

- Step 1: open the web page.
- Step 2: add web page to the database.
- Step 3: new user click the Level 3 Authentication for sign up.
- Step 4: registered user click the Level 3 Authentication for sign in.
- Step 5: check step 1 verification- user give credential as user name and password.
- Step 6: if credential is true then go to step 7 otherwise go to step 4.
- Step 7: check step 2 verification- user give correct One Time password which is system generated.
- Step 8: if One Time Password is correct then go to step 9 otherwise go to step 4.
- Step 9: Access the Level 3 application.

D. ALGORITHM TO IMPLEMENT LEVEL 4 AUTHENTICATIONS

- Step 1: open the web page.
- Step 2: add web page to the database.
- Step 3: new user click the Level 4 Authentication for sign up.
- Step 4: registered user click the Level 4 Authentication for sign in.
- Step 5: check step 1 verification- user give credential as user name and password.
- Step 6: if credential is true then go to step 7 otherwise go to step 4.
- Step 7: check step 2 verification-user must give two correct security answer and only three attempt to give the right answer.
- Step 8: if security answers correct then go to step 9 otherwise go to step 4.
- Step 9 check step 3 verification- user give Correct One Time Password which is system generated.
- Step 10: if One Time Password is correct then go to step 11 otherwise go to step 4.
- Step 11: Access the Level 4 application.

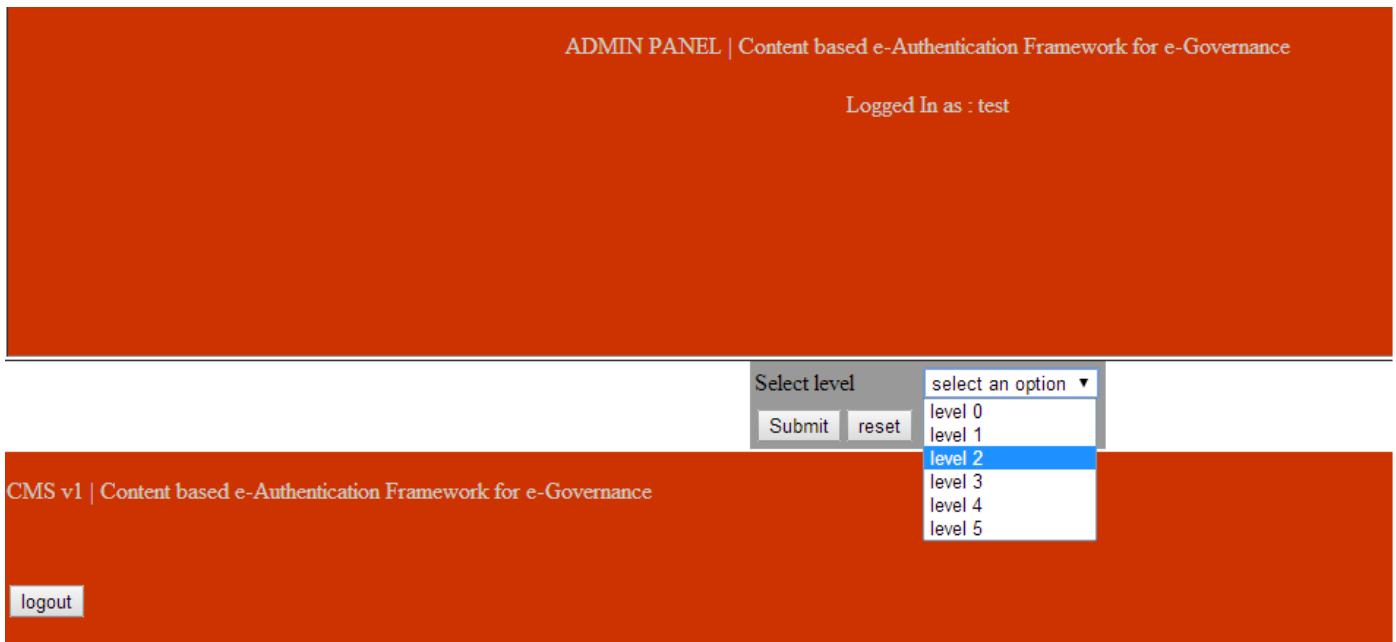


Figure 2 : admin panel of content based e-Authentication framework for e-Governance

VI.DATABASE AND SOFTWARE

To implement Content based e-Authentication framework for e-Governance many class of software is required in various developing stages. A large class of database is a significant criterion for developing this project. There many thing should kept in during software development is that the software should be flexible and simple to use for citizen, user and employee and other interested stakeholder.

We have created content management system for level 0 to level 5 application, database, web pages and forms for content based e-Authentication framework for e-Governance. The real implementation would need rigorous analysis for the e-Authentication mechanism and studied the various e-Authentication frameworks of various countries. We develop database, website and some forms for web based electronic authentication application. Figure 3 shows the view of the web site.



Figure 3: Web site of content based e-Authentication framework for e-governance

There are several links of the home page of content based e-Authentication framework for e-Governance website. The link methods define the authentication layer which level 0 to level 5. Clicking the level wise authentication login form will appear. Users who are interested to access the information from website they fill the login form and submit, after

successfully sign up user can login the specific level application using the electronic authentication. We created a database named “kec” with php and mysql software.

A. Accessing level 1 Application

Figure 4 shows login form. Then portion required user name, e-mail address and phone number.

After submitting signup form then user can login with the credential. Figure 5 shows required credential about the user and password is filling the fields of login form, user has to submit it. If its credential will be correct the user can access the required level application.

Figure 4: login form of framework

Figure 5: login with credential user name and password

B. Accessing level 2 Application

Accessing the level 2 application user have to follow two step verification. step 1 verification user give the credential user name and password like level 1 authentication and step 2 verification user must give two security answers, Figure 6 shows the required field about step 2 verification, after successfully enter right answer user can access the level 2 application.

Figure 6: required credential of step 2 verification

C. Accessing level 3 Application

Accessing the level 3 application user have to follow two step verification. Step 1 verification user give the credential user name and password like level 1 authentication and step 2 verification user must enter One Time Password, which is generated by authorized party. After the enter correct One Time Password user can access the level 2 application. Figure 7 shows the required field of One Time Password.

Figure 7: required field of step 2 verification

D. Accessing level 4 Application

Accessing the level 4 application user have to follow three step verification. Step 1 verification user give the credential user name and password like level 1 authentication and step 2 verification user must give two security answers, Figure 6 shows the required field about step 2 verification, after successfully enter right answer user can redirect to the step 3 verification. In step 3 verification user must enter One Time Password, which is generated by authorized party. After the enter correct One Time Password user can access the level 3 application.

VII. CONCLUSION

Content based e-Authentication Framework for e-Governance is the practice framework which will give the effective and efficient service delivery to the citizen. Content based e-Authentication Framework for e-Governance. It manage properly with various e-Authentication methods which works with efficient and convenient manner. Content based e-Authentication Framework for e-Governance works with 6 authentication level ranging from level 0 to 5 level from the e-Authentication layer. 0 to level 5 is implemented and level 6 is proposed for future work. Content based e-

Authentication Framework for e-Governance is open and transparent where the user can access the particular application through the specific e-Authentication mechanism. Content based e-Authentication Framework for e-Governance provide the consistent approach for e-Governance service and give the greater privacy.

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