TECHNO COMMERCIAL PROPOSAL

For

Selection of agency for design, development, Implementation and support

Of

Unified State Portal of Govt. of Assam using standardized website framework (SWF)

অসম চৰকাৰ



Prepared By:



1. INTRODUCTION

Luminous Infoways has been recognized and has received accolades for its penchant for quality deliverables. The recognitions include e-India International Award, India e-Gov2.0 Award, National Award from Govt. of India & World Bank and Web Ratna award. It has also received "IT Award 2009" and "IT Award 2010" as the Best IT service provider from CII (Confederation of Indian Industries) and Govt. of Odisha. Recently conferred eWorld award recognition to Standardization of District Portal of which it is a key stakeholder. Luminous Infoways is engaged in IT consulting & services including Software Development, Content Service, and Maintenance & Support services for complex medium and large scale projects. Since last inception it has been persistently trying to provide the perfect IT solution to its clients. It undoubtedly has strived exceptionally hard and delivered at par with client's needs as per their requirement.

1.1. EXECUTIVE SUMMARY

Current Web technology allows governments to share with the public a variety of information in unlimited quantities on demand. Technology is also available to allow citizens to bring issues of concern to the attention of local, regional and national governments. However, exploiting these capabilities within government systems is a challenge that encompasses environmental, policy, legal and cultural issues. Establishing effective e-Government requires openness, transparency, collaboration and skill in taking advantage of the capabilities of the World Wide Web. A Government organization needs effective website to get in touch with citizen.

Thus the proposed methodology for Design & Development of "Unified Web-portal, content management system, Responsive Layout Design along with Bilingual functionalities" for the "Assam state government" would help to serve information to the citizens and manage the administration. Development techniques will cater an optimal viewing experience, ease of reading and navigation with a minimum of resizing, panning, and scrolling across a wide range of devices; (from Desktop monitors to mobile devices).

The website will be designed in conformity with all features which are required to make the website more authenticate and more successful like:

- Fast Loading.
- Browser Compatibility.
- Updated Look and feel.
- Precise information about the site which helps the end user to understand and to find out what they
 required to know.
- Interactive in nature so that it will make end user to revisit the website.
- Content Management Frame work
- Complied with the Guidelines for Indian Government Websites (GIGW) and furnished work will be provided.

1.2. EXPERIENCE

Luminous has vast experience in Designing, Developing and Maintenance of Web Portal of various government & Private Organizations. In its long and enriching journey of major web portal development, please find below some of our milestones:

1	Directorate of Ports & Inland Water Transport, Govt. of Odisha	Development and Implementation of Web Portal & Web Applications, Hand Holding Support & Maintenance, & AMC for Directorate of Ports & Inland Water Transport, Govt. of Odisha URL: http://203.129.205.38:8080/ports	DISCONDING OF THE CONTROL BUILDING MATERIAL TRANSPORT The first and attack attack of the second building second building second control attack of the second building second building second control
2	NIELIT, DEITY ,Govt. of India	Design & Development of ESDM portal , Government of India for the department of IT URL: http://esdm-skill.deity.gov.in/	ESDM CONTROL OF THE PROPERTY
3	Central Council for research in Homoeopathy (CCRH), Govt. Of India	e-Book Development and its website implementation for Central Council for research in Homoeopathy . URL: http://ccrhindia.org/index.asp	CHINAL COUNCE FOR WHICH STATES AND STATES A
4	Apparel Export Promotion Council (AEPC)	Redesigning, Hosting and maintenance of AEPC website URL: http://www.aepcindia.com/	ADDITION OF THE CONTROL OF THE CONTR

5	AMHSSC (Apparel Made ups & Home Furnishing Sector Skill Council)	Designing and Maintenance of official website of AMHSSC URL: http://www.sscamh.com/indexHome.php	* A MILET STATE AND A THE PRINCIPLES AND STATE OF THE PRIN
6	Ludhiana Municipal Corporation	Designing, development and maintenance and Hosting of Ludhiana Municipal Corporation, State Level URL: http://main.mcludhiana.gov.in/	Ludhiana Municipal Corporation Ny City Ny Ishou 1010 metal. Anna 1-10 Anna
7	Jharkhand State Information Commission	Designing Development maintenance and hosting of website for Jharkhand State Information Commission URL: http://www.sicjharkhand.in/	Secret Bound Secret
8	State Human Rights Commission, Jharkhand	Designing, Development and maintenance of website for The State Human Rights Commission, Jharkhand. URL: http://www.jshrc.in/	Scale Human Rights Commission Parthaeol, Sanche Residence of the Commission Residence of the Commiss

9	All india Institute of medical science (AIIMS) Bhubaneswar	Design & Development of Interactive website for All india Institute of medical science (AIIMS) Bhubaneswar URL: http://www.aiimsbhubaneswar.edu.in	AIMS Bluberstear All of the territory in the territory
10	National Health Mission, Govt. of Odisha	Website Design, Development and deployment for National Rural Health Mission, Govt. of Odisha Blood Bank MIS E-Swasthya Nirman Malaria Information System Drug Testing and Data Management System Health Unit Database-Where is my Doctor Human Resources Management Information System (HRMIS), First Referral Unit URL: http://www.nrhmorissa.gov.in/	National Health Mission Cognition of Health & Fairly Middles, Covernment of Odds # ANOTICS - SY COMPRISATION FOR PP OGETIMES IN DISTRICTS - PP OGETIMES - PP OGET
11	Directorate of Export Promotion and Marketing	Development and implementation of website with Web CMS Directorate of Export Promotion and Marketing URL: http://depmodisha.nic.in/	DIRECTORATE OF EXPORT PROMOTION 8: MARKETING Covernment Of Oddsh The Real By Oppositions White Note And Notes Depart Teday Laterary 18 Course Leg by Oppositions White Notes Depart Teday Laterary 18 Course Leg by Oppositions White Notes Depart Teday Laterary 18 Course Leg by Oppositions Department of Course Leg by Oppositions Leg by Department of Course Le

12	Information & Public Relations Department, Govt. of Odisha	Development implementation and hosting of RTI CMM Portal. National governance Award Winner 2012 for Best Government Portal, Information & Public Relations Department, Govt. of Odisha URL: http://rtiodisha.in/	Population of the Community Control of the Community Control of Co
13	NALCO (National Aluminium Company Limited)	Annual Maintenance Contract (AMC) for the maintenance, development and deployment of our bi-lingual website and Web Applications National Aluminium Company Limited URL: http://www.nalcoindia.com/	INCOME A SALEMENT COMPANY CARROL CARROLL CONTROL CARROLL CARRO
14	TRIFED	Designing, development, hosting maintenance of the NTFP Website for Tribal Co-operative marketing Development federation of India Limited URL: http://www.trifed.in/	Tribal Co-operative Marketing Development Federation of India Limited Henry PT and anony. One of robe About TRIFED About TRIFED Tensormens and one has appeared to the control of the
15	Bihar State AIDs control Society	Development and maintenance of official website of Bihar State AIDS control society Bihar State AIDs control Society URL: http://www.bsacs.in/	The blood you donate gives someone another chance at life. GIVE THE GIFT OF LIFE DONATE BLOOD BRANCE BLOOD B
16	Orissa Model Tribal Education Society	Designing, Development and maintenance of Website for Orissa Model Tribal Education Society URL: http://www.omtes.org	The Colishe Model Tribal Education Society (CATES) Chapterise by 3T & 5C Oranispassic Department, Gent, of Orbinal India About OUTE - McTHITTON - ACTIVITIES TRANSPORT STATEMENT & STATEMENT ABOUT STATEMENT ACTIVITIES TRANSPORT STATEMENT & STATEMENT ABOUT STATEMENT ACTIVITIES TRANSPORT STATEMENT & STATEMENT ABOUT STATEMENT ACTIVITIES TO STATEMENT ABOUT STATEMENT ABOUT STATEMENT ACTIVITIES TO STATEMENT ABOUT STATEMENT ACTIVITIES TO STATEMENT ACTIVITIES TO STATEMENT ABOUT STAT

18	Sport &youth services Deptt, Govt of Odisha	Work order for Designing, Development and maintenance of website for department of Sport &youth services ,Orissa, Bhubaneswar URL: http://dsysodisha.gov.in/	To the second s
20	Orissa Sangeet Natak Akademi	Work Order for Designing & Development of website of Orissa Sangeet Natak Akademi OSNA, Bhubaneswar URL: http://www.orissasangeetnatak.org/	Official Surgered Officials Surgered Ratata Alaxidemi Marian Annual Surgered Per Rotter for the Paper Loan Annual Surgered S
21	Vyapam	Revamp of Vyapam Website and Development of Content Management system. Madhya Pradesh Professional Examination Board URL: http://www.vyapam.nic.in/	WADDUTED STATES AND ST
22	Project & Development India ltd	Website Designing and Development for www.pdilin.com in Hindi for Project & Development India ltd URL: http://www.pdilin.com/	Projects & Development India Limited PDIL ANALY - Projects & Development India Limited PDIL ANALY - Projects & Development India Limited Unit Service - Se



2. BACKGROUND

Here, in the State of Assam, there already exists a State Portal which connects with SSDG to deliver citizen services. Also there is a content management system available in the State Portal for information dissemination. However, with the emergence Standardization of Government Websites, it is envisaged to re-design the State Portal following the same guidelines. The Unified State portal that will be designed and built along the Standardization Framework is aimed to address the existing challenges in the current state portal and introduce some features.

The state portal of the government of Assam is an initiative taken for bringing together the information of all state Departments under a single umbrella. The state portal was implemented under the national e-governance plan (NeGP). The portal was integrated with Service Delivery Gateway (SSDG) to provide linkage to the e-District services and to some of the major applications.

In Existing Scenario the current state portal provides the various departments of government a standard interface to upload their respective content. The linkage to the Service is SSDG. There is no mechanism for integrating services and applications of individual departments.

The current State Portal provides the various departments of the government a standard interface to upload their respective content. The linkage to the services is through the SSDG.

The State Portal does not facilitate auto content updates from individual websites of department to the State Portal. Hence the latest content from each department is seldom populated on the State Portal.

Mechanism for citizen to provide feedback to government is also not available.

Important features viz localization, mobile device compatibility, assistive technology for audio/visual impaired citizens have not been considered in the existing state portal.

The new system will meet the following challenges

• The Services of individual departments will be linked to the Portal.

- There will be linkage to the constituent organizations of the line departments.
- The information from all departments is to uniformly update.
- Maximizing User interface and usability
- To make more citizen centric
- To link all departments
- To integrate content Management system
- To make the site user friendly for core audience to achieve desired objectives.
- Improve visual design, content structuring, and reduce clutter.
- Easy navigation.
- To make core information available with reduced number of clicks.
- Easy maintenance.

3. SCOPE OF PROJECT

The broad scope for the unified web application of the state portal is as following:

- Unified State Portal will be based on the SWF. The Unified State portal along with department portals which
 are built on SWF would act as an interface for dissemination of information and provide access linkage to
 the transactional government services.
- Ul Design of the State Portal will be done as per Standardized Website Framework.
- The Content Management System of the State Portal will integrate and update the content from Departments Websites.
- Citizen Login/Registration System for availing services and Seamless migration of existing user to the new login/registration system of Unified Portal.
- Integration of existing 46 service e-Forms to the new Unified Portal with a provision to implement a new e-Form(s) on demand and integrate the same to SSDG so as to facilitate seamless communication with applications of e service providers.
- Provision for user profile updation based on OTP authentication.
- There will be an efficient mechanism to store the department's content in a logical directory structure.
- Development of Search interface for the State portal content. There will be provision for custom tagging web pages so that it can show up in search efficiently.
- Facility for integration of Content Management.
- Role based work flow for Content Management (contribution approval and publishing)
- Creation of content types & design and development of Web forms for capturing the metadata.
- Localization of the web portal in local languages like Assamese.
- Implementation of Single Sign On via e Pramaan framework and Digital Locker.
- Integration with open data framework of Govt. of India.
- Provision for citizen engagement/feedback via RAS Framework of MeiTY and MyGov that is expected to be soon launched by the Govt. of Assam.
- Testing & Tuning the CMS pages for functionality, performance & security.
- Developing Metadata Replication Service for periodic transfer of metadata to National Portal Metadata Repository.
- Implement a dashboard on the Unified State Portal using a Portal Analytics solution. Dashboard will include the presentation of Services and Information and will be role based.
- Extraction of metadata for the existing content items and uploading the same.
- Development of role based editable Government Directory in the State Portal
- Design and Development of role based Calendar and Event Management interfaces for Government Users.
- Integration of State portal with National Portal of India for data exchange via metadata and seamless exchange of services.
- Integration with S MS & e-Mail services.
- Provision for payment gateway which will work seamlessly in the Unified Portal

- Integration with current user base of Human Resources Management System of the Government would be done for employee login.
- Facilitate training programs users on usability of Unified State Portal.
- Security implementation and third party security audit.
- STQC Audit

4. PROPOSED SOLUTION

4.1. PROPOSED WEBSITE

4.1.1. Standardized website framework (SWF)

To address the need for bringing in Standardization of Government Websites, the Information Technology department, Government of Assam has already established a framework for Standardization of Government Websites. Unified State Portal will be based on the Standardized Website Framework (SWF). The Unified State portal along with department portals which are built on SWF would act as an interface for dissemination of information and provide access linkage to the transactional government services.

- i) The Standardized Website Framework (SWF) based on Open Standards and Architecture will provide the necessary components to bring in Standardization of the following:
 - Information
 - Technology and
 - Process
- ii) The SWF will provide the base templates, components and services for departments to configure their individual websites. Other key principles of development are minimizing redundancy, information sharing and interoperability. Websites of departments are developed taking its constituent organizations into account. Information and Data of a website can be shared with multiple sites, thereby minimizing the need to have the same information published in multiple sites. It will 'Publish once, after view from many principles.
- iii) SWF lays down Standard Layouts and Standard Content to be adopted by all Government Websites.
- iv) Content in the website is based on the role of the Website user. This helps removal of information overload on the home page and also helps the end user to locate the right information.
- v) Standard Services templates for providing the Citizen Centric Information and Services.

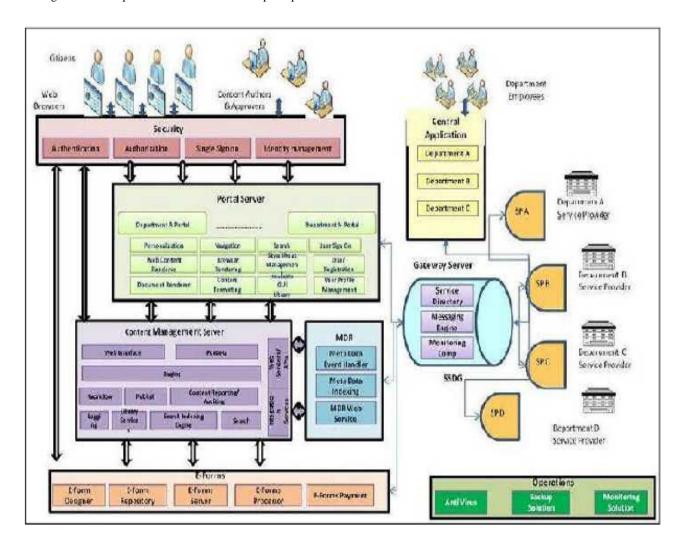
4.1.2. Business Principle

Assam state Unified portal will provide consistent & measurable level of quality information & services to citizens. For this the business principle will be supreme and universally applicable. It will maximize the benefits of states. All the organizations and departments are responsible information management. The basic principles of business principle followed are listed below:

- A. Application Principle
 - Portal will be Scalable
 - Portal will be highly available
 - Portal will be Extensible
 - Portal will be Secure
 - Maximize Portability
 - Minimize Technology Dependence
 - Portal will be Easy to Use
- B. Data Principles
 - Data will be treated as an Asset

- Data will be shared
- Data will be Accessible
- Data will be secured
- C. Technology principles
 - Technology Changes will be driven by Business Requirements
 - Control Technical Diversity
 - Promote Interoperability

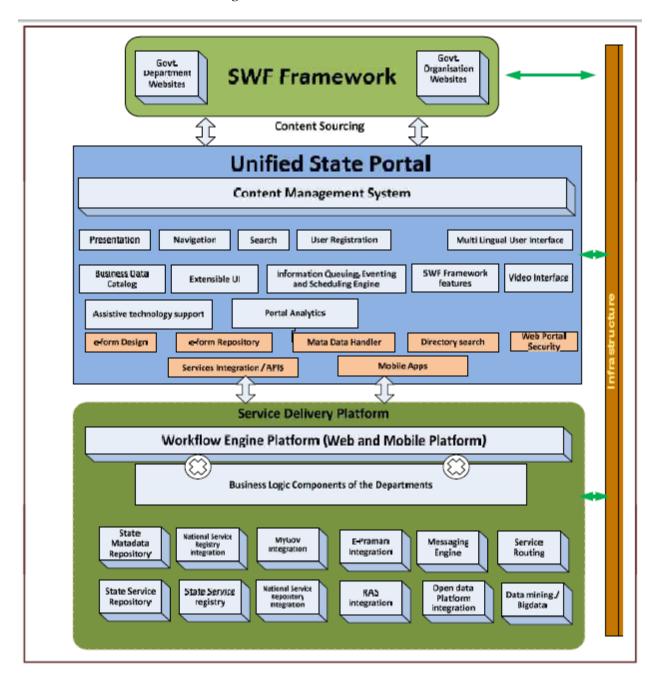
The diagram below explains the details of business principle:



4.1.3. Multilingual (English, Assamese, Bengali, Bodo and Hindi)

Content of the different modules will be in multilingual means we can provide multilingual website that provides content in more than one language. The Proposed website includes all the language contents as English, Assamese, Bengali, Bodo and Hindi; however the default language will be English. The portal would have Unicode facility to enter above defined language in all pages. Data Server & content management will support Unicode. Position language option at "Sweet Spot" will be provided. All user interface elements will be externalized & application will use language dependent mapping in a platform defined standard.

4.1.4. Block diagram



4.1.5. Screen Access Reader

Screen Access Reader will enable people with visual impairments access the website using assistive technologies, such as screen readers. The information of the website is accessible with different screen readers, such as J.A.W.S. that stands for Job Access with Speech, N.V.D.A. that stands for Non Visual Desktop Access, S.A.F.A. that stands for Screen Access for All, Supernova and Window-Eyes.

4.2. METHODOLOGIES TO FOLLOW TO DESIGN WEBSITE

The following methodologies will create awareness and ultimately lead to good global presence.

Navigation:

The navigation will indicate the user to where the users currently are in the **ASSAM STATE GOVERNMENT** website. For example, clicking on the "Home" tab will take to the main screen content of the website.

Advance Search Facility:

This feature will allows user to search through the ASSAM STATE GOVERNMENT website rather than navigate around using menus and links. We will develop Search interface for the State portal content & will provide system for custom tagging of web pages so that it can show up in search efficiently.

Cross Platform/ Browser Compatibility:

Different browsers often have different rules for displaying contains. The Cross platform feature helps in functioning in any environment i.e., the website will be Compatible with all leading internet browsers like Internet Explorer, Mozilla Firefox etc.

4 Appearance:

An attractive site is far more likely to generate a positive impression and will keep visitors on to the ASSAM STATE GOVERNMENT website once they arrive. This can be achieved by having following some points below:

- Good use of Color
- Text that is easily readable
- Meaningful Graphics
- Quality Photography

Precise Information/content rich:

The content of the ASSAM STATE GOVERNMENT website will be in such a manner that it will help the reader/researcher to fulfill their requirement, what they want to see which will match their needs.

4 Content integration:

- Decentralized maintenance: The concerned officers of Organization/Circles/divisions will be able to update their sections and will maintain the website from anywhere anytime.
- Configurable access restrictions: Roles and permissions will be assigned that prevent editing of content from unauthorized users.

♣ Flashy images/Banner:

Flashy images shall be uploaded under the banner section which would provide more attractive Look and feel to the website.

Location identification (Google Map):

Using Location Identification (Google Map) in "Commercial Tax Organization" website will enable people to access the business location with more ease. Using these maps, it can augment the interactive quotient of the website. Thus more and more people will be interested to visit the site. Google maps have the ability to get the direction based on the user's mode of travel.

♣ Search Icon:

This feature will allow users to search through the website rather than navigating around using menus and links.

Website Logo:

The website logo on a single click shall be able to redirect to the home page of the ASSAM STATE GOVERNMENT website.

Current date display:

The current date shall be displayed in the ASSAM STATE GOVERNMENT website

Important links:

In the important link section, all links will be available in the home page in more user friendly manner so that the visitors can directly navigate to the particular link.

♣ Site map:

This section will contain the list of pages that will be accessible by the users.

Interactivity:

The site is so interactive that it contains the user details who are online and all the activities of the users inside the system in addition to that it help more users to visit again and again and are able to interact with the site as many times they want.

Copyright & developed by:

The website shall state its copyright and by whom the website is developed.

4.3. ARCHITECTURE DESIGN 4.3.1. Technology

The proposed system of ours will be highly secured. It will use PHP as server side Scripting language, version 5.2, Client -side scripting Language Java Script, Database MY SQL, jQuery, HTML, CSS, Adobe Photoshop will also be used. Database security will be our prime importance. Hence we would like to propose a significantly advanced architecture i:e Model-View-Controller (MVC) architecture with YII framework

Proposed MVC Architecture is reusable and expressive

When the problem occurs, there is no need to invent a new solution due to reusability feature; we just have to follow the pattern and adapt it as necessary.

By using the MVC design pattern our web portal becomes more expressive.

General 3-Tier Architecture

Presentation tier<=>Logic tier<=>Data tier.

The Presentation (client) tier never communicates directly with the Data tier & all the communication must pass through the Logic (middle ware) tier. Hence the points of communication are doubled. All the problems that are faced by the above architectures could be overcome by MVC, hence MVC is needed.

MVC Architecture

It is a classic design pattern often used by applications that need the ability to maintain multiple views of the same data. The MVC pattern depends on a clean separation of objects into one of three categories — models for maintaining data, views for displaying all or a portion of the data, and controllers for handling events that affect the model or view(s).

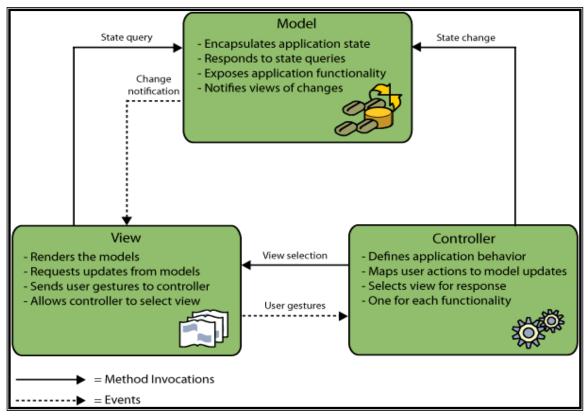
MVC architecture can be represented simply as shown below:

|Model| <=> |Controller| <=> |View| <=> |Model|

Hence MVC is a triangular architecture where the View sends updates to the Controller, the Controller updates the Model, and the View gets updated directly from the Model.

MVC Architecture:

The MVC (Model-View-Controller) architecture is a way of decomposing an application into three parts: the model, the view and the controller.



Model:

It handles data processing and database works part. Model processes events sent by controller. After processing these events then it sends processed data to controller (thus, controller may reprocess it) or directly to view side.

View:

View prepares an interface to show to the user. Controller or model tells view what to show to the user. Also view handles requests from user and informs controller.

Controller:

Controller is like brain of the system. Because it processes every request, prepares other parts of the system like model and view. Then the system determines what to do by controller's commands.

The YII Framework

YII has the features like MVC, DAO/Active Record, caching, authentication and role-based access control, scaffolding, testing. It is light weight and has powerful caching support. Security is a part of this frame work. It includes input validation, output filtering, SQL injection and Cross-site scripting prevention.

YII is much faster because it uses lazy loading technique. It does not enable functionality until or unless that has been invoked for the first time. For example it does not create an object unless the object is called for the first time. Other frameworks suffer from the performance hit because they would enable functionality no matter it is used or not during a request.

The proposed solution will support the web services standards including XML, SOAP, UDDI and WSDL.

Web services require several related XML-based technologies to transport and to transform data into and out of programs and databases.

Web services require the use of several related XML-based technologies:-

XML (Extensible Markup Language), the basic foundation on which Web services are built provides a language for defining data and how to process it. XML represents a family of related specifications published and maintained by the World Wide Web Consortium (W3C) and others.

WSDL (Web Services Description Language), an XML-based technology, defines Web services interfaces, data and message types, interaction patterns, and protocol mappings.

SOAP (Simple Object Access Protocol), a collection of XML-based technologies, defines an envelope for Web services communication—mappable to HTTP and other transports—and provides a serialization format for transmitting XML documents over a network and a convention for representing RPC interactions.

UDDI (Universal Description, Discovery, and Integration), a Web services registry and discovery mechanism, is used for storing and categorizing business information and for retrieving pointers to Web services interfaces.

4.3.2. Coding Standard

During development of the Web portal **Luminous** will follow optimum coding standards. Robust, Reliable and most advanced coding will be done during the development of the project. It will remain unique, easily modifiable and most helpful for development team

Model

- We separate the model its own project with a distinct assembly.
- Put all business logic in the model.
- Put all validation logic in the model.
- Define interfaces for data access
- We put all session logic in the model.

View

- We put HTML in Views and Partial Views (not in a controller).
- DO access data in views using ViewData.
- Enable (auto-generated) client side validation.
- Insert server-side comments in templates.
- We do use HTML Helper extension methods.

Controller

- Use model binding instead of manually parsing the request.
- Explicitly name views in action methods.
- Use Post/Redirect/Get (PRG) when submitting forms.
- Implement Handle Unknow Action and Handle Error.
- Order routes from specific to general when using standard routing.
- Use named route mechanism to avoid route ambiguity.

Extensibility Recommendations

• Use filters for adding behaviors

Testability Recommendations

• We do units tests. Follow Requirement Traceability Matrix(RTM)

Security Recommendations

• Guard against common attack vectors.

These attack vectors include (but are not limited to):

- Cross-site scripting (XSS) attacks
- > SQL injection
- Cross-site Request Forgery (XSRF)
- > Improperly implementing model binding
- DO authenticate and authorize users to protect content.
- Protect against XSS attacks.
- Localization and Globalization Recommendations.
- DO use PHP special resource folders and resource files.

Performance Recommendations

- We consider partial page updates using AJAX for reducing bandwidth.
- Manage short lived (intra-request) storage.
- Use an Output Cache filter for static pages.
- Consider using asynchronous controllers for long running requests.

Performance is a multi-faceted problem for web-sites, as a myriad of bottlenecks can affect performance including:

- Database
 - Inefficient queries
 - o Incorrectly placed indexes
 - O Non-normalized design
- Bandwidth problems
 - O Large request size (affected by individual large images, .css, .js, .html, etc.)
 - O Content that references many other items, such as multiple script, CSS, or image files
 - Slow connection speed
- Processing power
 - o Server: expensive operations
 - Client: poorly written javascript

This section will focus solely on server processing and request size.

4.3.3. Content Integration View

Content Integration helps organizations fuse traditional data management and enterprise content management approaches into a single comprehensive information management strategy, which allows organizations to realize the true value of their people, processes, and information. Through supporting a complete view of the relevant information across the enterprise, the Integration Center helps organizations ensure that all critical business decisions are based on current and complete information, regardless of its location or format, for the purposes of business intelligence, governance, and process optimization.

Serving as the hub of the information system, the OpenText Integration Center is a data and content integration platform that gives organizations the ability to quickly adapt to new and changing business processes with powerful and flexible capabilities that transforms information from where it is to where it needs to be.

Benefits

- Accelerate time to market
- Streamline business operations and productivity
- Improve information consistency
- Enable a "single version of truth" presented in business context
- Facilitate information transparency for all participants in business processes
- Manage information flows across global operations
- Initiates processes based on pre-determined schedules or events.
- Provides process monitoring as well as full history and audit-trail reporting.

4.3.4. Performance

Luminous will design the Architecture in emphasizing to enhance the Performance of the project. Performance is a multi-faceted problem for web-sites, as a myriad of bottlenecks can affect performance including:

- Database
 - Inefficient queries
 - o Incorrectly placed indexes
 - Non-normalized design
- Bandwidth problems
 - O Large request size (affected by individual large images, .css, .js, .html, etc.)
 - O Content that references many other items, such as multiple script, CSS, or image files
 - Slow connection speed
- Processing power
 - o Server: expensive operations
 - Client: poorly written JavaScript

This section will focus solely on server processing and request size.

4.3.5. Search Engine Optimization (SEO)

Besides design & Development of the web portal **Luminous** will manage to improve the visibility of the website and optimize the website load time, response time, navigation and search by using the technology Search Engine Optimization (SEO).

Search Engine (SEO) is the process of visibility of a website or search engines .It is a which helps search and rank your site millions of other sites in search query. SEO thus traffic from search



Optimization improving the a web page in technique engines find higher than the response to a helps you get engines.

Search Engine Optimization (SEO) is often considered the more technical part of Website. This is true because SEO does help in the promotion of sites and at the same time it requires some technical knowledge - at least familiarity with basic HTML. SEO is sometimes also called SEO copyrighting because most of the techniques that are used to promote sites in search engines deal with text. Generally, SEO can be defined as the activity of optimizing Web pages or whole sites in order to make them more search engine-friendly, thus getting higher positions in search results.

The Search Engine Optimization Process will be followed the below process:-

OFF PAGE SEO:

- ➤ Community Creation in Social Networking Sites
- Blog Post
- Forum Posting
- ➤ Search Engine Submission
- Directory Submission
- Social Bookmarking
- Link Exchange
- ➤ Photo Sharing
- > Article Submission
- Press Release Promotion
- Document Sharing

ON PAGE SEO:

- Keyword Analysis
- Meta tag creation
- ➤ Image Alt-Tag
- ➤ Page Title
- Meta Descriptions
- ➤ Anchor Text Linking
- Broken Link

4.3.6. Integration Layer Entity

Integration Layer Entity will be used by Unified State Portal to access services provided by various government departments. Here Luminous will use the SSDG as the middleware during integration.

To access departmental services, State Portal would use service communication infrastructure component, which encapsulates

- Provide container environment for services
- Service interface
- Protocol translation
- Message routing
- Data transformation.

The Service communication infrastructure component will manage the message routing as the portal incorporate with e forms. Each time the notification which is sent will be managed in this system. Data transformation will be managed in this integrate layer.

4.3.7. Data Layer entity

Following Data layer entity will be managed by Luminous:

Database Server: Luminous will use Relational Database Management System (RDBMS) for persistent store of structured data in designing the database of Unified State Portal, Assam State government.

Document Repository: Static content of Unified State Portal such as documents, PDF files, images, audio/video files etc. would be stored in document repository.

Content Repository: Luminous uses Content repository as an integral part of content management system. It is a database in which electronic documents and other web content are stored. It can facilitate scheduled publication of content to a web-site in a controlled manner using a defined process of Content Management Framework.

Directory Server: Luminous uses Directory server as a specialized database that is optimized for lookups. Luminous will design the Directory Server to efficiently process simple "selects" from anyone, anywhere such as from department's web portal over the Intranet / Internet. It will be used for storing in frequently modified but frequently queried data such as application settings, user profiles, group data, policies, access control information etc. It will conform to Open LDAP standard.

4.3.8. Scalability

Luminous will make the web portal most scalable to make capable to handle a growing amount of work, or its potential to be enlarged to accommodate that growth. The system will be capable of increasing its total output under an increased load when resources are added. In future as per requirement of the Assam state government, whenever any new department, new service or new forms or any type of additional load or resource they want to incorporate the system will make possible as it is designed so scalable.

4.3.9. High Availability

The portal will be designed with high availability configuration. We support technique of clustering, load balancing for achieving desired performance level.

4.3.10. Portability & Extensibility

Unified State Portal would be ensured with portability of Data & Content on any Platform as per the discretion of the state. Portal will be built using Open standards & provide interoperability with other platforms as per requirement. It enables the system most portable & extensible to make platform independent & easy accessible.

4.3.11. Interoperability & Universal Accessibility

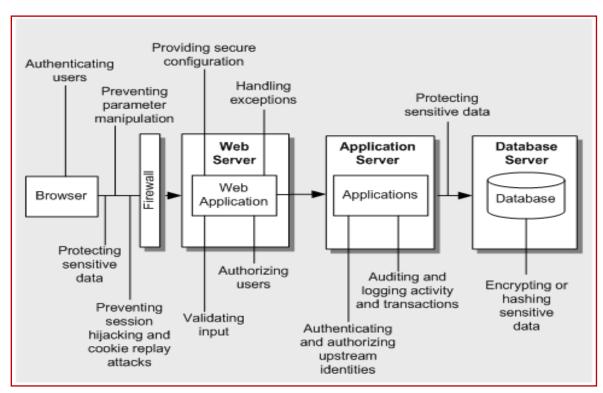
The portal will be designed with most interoperable features to make capable of different programs to exchange data via a common set of exchange formats, to read and write the same file formats, and to use the same protocols. It will make standardization during the design of a program.

It refers to the collaboration ability of cross-border services for citizens, businesses and public administrations. Exchanging data will be easier with different specifications of formats and varieties of categorizations due to this feature.

Unified web portal can exchange data in a semantically interoperable manner. This saves time and money and reduces sources of errors.

Also the system design would be such that it would be universally accessible even by people with disabilities who can access the system because of Screen Access Reader. It refers to the characteristic that products, services, and facilities can be independently used by people with a variety of disabilities.

4.3.12. Security Model (OWASP)



The security architecture will work as a guideline for developing security in applications. Overall, the webportal (application) security architecture will help to:

- apply the security solutions to any application, no matter what technology it uses
- have proper security controls in place for an application
- protect the application from threats
- ease the burden of performing security administration
- help security assurance by providing proper data for incident handling (Accountability)
- Easily adopt to changing security infrastructures

We can define 'application security architecture' as the manner in which the security components of an application software system need to be constructed, so that they are: Easy to use, Flexible to change, Reusable, Extendable, Interoperable etc.

Application Security Architecture:

The security policy needs to be thoroughly applied to applications. Two key components required to design, develop and deploy secure applications are:

- ☐ Application security development life cycle and guidelines
- ☐ Security infrastructure with interoperable components

Application security development life cycle and guidelines

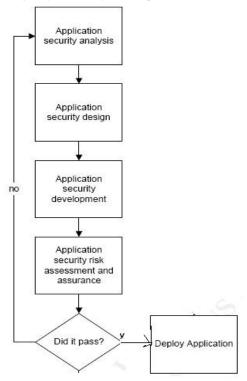
Application will be designed and developed using various methodologies such as structured design methodology, object-oriented and extreme programming. Since it is difficult to develop a generic life cycle that fits all the needs, we need to develop a lifecycle with guidelines that might enable different methodologies to incorporate it in their flow.

Application security analysis:

An application, for security analysis purposes, can be defined as a "resource (data and business logic) repository" available to a "user" over a "communication channel". The key security concepts that revolve around a user are identification, authentication and authorization. Often identification and authentication are used interchangeably, but they are separate and distinct

components. Identification is 'an act or process that presents an identifier to a system so that the system can recognize a system entity and distinguish it from other entities'. Authentication is 'the process of verifying an identity claimed by or for a system entity'. Applications typically implement these two aspects of security through a USERID and a password. Employees would access the application by using their employee id and a password. There needs to be a registration process to assign a unique identity to every user. This process needs to be defined very carefully, so that the application does not assign duplicate identifiers to the same user nor allow any unknown or unidentifiable user to register with the system.

Authentication is used determine the legitimacy of a user who wants to access the application. Different levels of authentication can be used to protect the application based on the risk associated with the application. Sensitivity of the data, application functionality, application architecture (the more distributed it is, the more the risk), user base could be factors determining the risk. Once a user is authenticated and is authorized to perform a business function (transaction), there may be data/control transfer between different processes on different systems. A typical application is split up into multiple module/objects which perform different logical operations to accomplish a complete task. For example, a mainframe application is monolithic in structure and is split into various modules which could run in the same process space to complete a task. An n-tier application could have multiple processes running on several machines to perform a task using inter-process communication mechanisms and/or communication protocols. In these scenarios, where several



communication channels might be used, various network and system threats, including eavesdropping, could jeopardize this communication. If the data is corrupted or compromised, there will be integrity and confidentiality issues. In addition to protecting data in transit, protection of static data is required to provide integrity and confidentiality. For example, if the configuration files containing the connection and initialization attributes of an application were compromised, integrity and confidentiality of the application resources could be severely compromised.

Integrity is 'the property that data has not been changed, destroyed, or lost in an unauthorized or accidental manner'. Incorporating integrity into an application will inform the recipient of data modification by unauthorized users during storage or transmittal. Various hash methods such as SHA-1 or MD5 can provide the integrity component.

Confidentiality is 'the property that information is not made available or disclosed to unauthorized individuals, entities, or processes [i.e., to any unauthorized system entity]'. Confidentiality keeps the data secret from all but those who are authorized to see it. Various cryptographic methods can be used to provide confidentiality component. 'Cryptography is the art or science encompassing the principles and methods of transforming an intelligible message into one that is unintelligible and then retransforming that message back to its original form'. Encrypt (secret key) Decrypt (secret key).

Auditing is another security feature that needs to be implemented in the application. Since no application can ever be completely invulnerable to threats, auditing must be in-place to provide data needed for incident response. The auditing feature will provide a trail of which user did what and when at any given point of the application lifetime.

The final component, **Non-repudiation** provides proof of existence of message. 'Non-repudiation with proof of origin provides the recipient of data with evidence that proves the origin of the data, and thus protects the recipient against an attempt by the originator to falsely deny sending the data'. 9 'Non-repudiation with proof of receipt, provides the originator of data with evidence that proves the data was received as addressed, and thus protects the originator against an attempt by the recipient to falsely deny receiving the data'. The goal of a non repudiation component is to collect, maintain, make available irrefutable evidence. For this component to work, all the previous five components must be established:

Application Security Design:

During the design phase of an application (for off the shelf purchase, it would be evaluation phase), security needs to be involved with the application team to assist them in implementing proper security technology and/or processes. The key structural needs within an application to incorporate proper security controls are:

☐ Single Access Point: User entry into an application will be through a single point. Backdoors are often created to perform administrative functions. Backdoors will be avoided and application entry will be restricted to a single point for all types of users, including administrators. Identification and authentication components need to be performed at this point. Access points to multiple applications can be consolidated to a single point, often called a portal. Also, technologies such as single sign on are gaining popularity. This feature also saves the user from having to remember multiple passwords which can provide enhanced security by eliminating a need to write down passwords in unsecured places (for example, sticky notes under a keyboard or on a Monitor). ☐ Session: Users will not have to authenticate multiple times while they are traversing an application. Their current interaction with the application needs to be maintained by the application. This session must be unique and separately maintained for every user. For example, if a user is away from the application for some time, the session will help the application from determining the user and their current state with the application. Also, authentication details like last active time can help the application determine whether it needs to authenticate the user again per the authentication policy. Roles: Users have different needs in an application. Users will be given different privileges (read, change, add, delete) to various application resources within an application. If implemented to only allow individual, user-by-user authorization, maintaining privileges would be an administrative nightmare. Typically, users are grouped into a certain role and privileges to required application resources will be given to that role. Once that is done, all the users who perform that role are assigned that role instead of each privilege individually. Instead of changing a privilege for every user, the administrator will just have to change it for that role. Check points have to be established at every resource level where a privilege to a user needs to be defined. These check points will query the access control data to make a decision for the user to access the resource. ☐ Secure Access Layer: Applications use various mechanisms to communicate with the user or other applications. Depending on the classification of the data that is exchanged or control that is transferred during the communication, the access mechanisms and access layer need to be secured. Confidentiality and integrity components need to be used to secure the communication, as well as static data. For example, SSL can be enabled on a web server using certificates to provide authentication of the application to the user, confidentiality between the application and the end user and integrity of the information transferred. ☐ Audit: components need to be placed in an application for tracking the actions being performed on the application resources. The placement of these components will help tracing any application event. Proper backup and recovery

procedures need to be implemented for the audit output using retention guidelines. Also, the audit output will be properly formatted to help searches or statistic generation. The output will definitely contain the successful and unsuccessful

attempts by a user accessing a resource at the single access point and all the checkpoints. Adding a timestamp, message code and message description will add value to the output.

Administration layer: Easy to use administration functionality needs to be provided to the application administrators to maintain user identification attributes authentication and authorization information. The administration functionality needs to be accessible to the administrators though the single entry point and proper authorization.

Application Security Development:

Application security development will be given a lot of thought and care. An application security development guideline needs to be created, specifying various technologies and a coding style to eliminate vulnerabilities and help mitigate risk. Some of the application components that must be considered in developing the guideline are:

- A common vulnerability of application is buffer overflow. This threat can be mitigated by proper data type/bounds checks at the interface of any reusable component like a function/method or at any data input process.
- Authorization needs to be handled carefully. Just defining roles and assigning those to users will not completely secure authorization. Situations where multiple roles are assigned to the same user with different types of privilege on the same resource need to be considered.
- Application will always fail safely. It will never fail to an 'open' state. Error/exception handling mechanisms used will not display too many development details. Some coding scheme needs to be used which could be cross-referenced to an error description database.
- □ System configuration needs to be analyzed. Most of the systems come with all privileges open for the default. Never use the default configuration. Always use the least privilege model.

Application security risk assessment and assurance:

Applications need to be assessed at the business level to ascertain the risk based on information compromise, unauthorized access and availability for determining the security level that needs to be assigned to them. After an application has been developed and functionally tested and before deploying it to production environment, we need to meticulously perform a security risk assessment and assurance test. This test will help ensure the total system is in compliance based on the security level assigned to it. These tests need to be mandated on all applications, newly developed or changing an existing application or a purchased product. Application risk checklists need to be developed to assure that proper security controls have been placed at the appropriate locations within the application. The checklist must be updated at a regular interval to accommodate newer technologies and threats. The checklist will contain all aspects of logical access for various security levels including:

user identification (registration process)
authentication (level, password strength, sign-on attempts, account
lockout policies, helpdesk processes on unlocking, session tracking)
authorization
sensitive data handling (encryption, hashing)
auditing features
security administration

Apart from the application tests, any system software such as operating system, server software (web, application), and DBMS need to be assessed and patched to the latest security compliant level. Tools, products or processes need to be employed to standardize the methodology of security assessments. Application contingency plans will be reviewed to make sure all the backup and recovery plans are up to date so that there is no disruption of service (availability).

Security infrastructure with interoperable components

Security needs to become an infrastructure service. The infrastructure needs to be interoperable with any application and be maintained by a team that can keep pace with the latest standards. Accomplishing the above and offering security as a centralized component can be a tedious and painful task. Eventually, the Enterprise will realize the fruits - cost savings and controlled environment. This centralized infrastructure will:

- provide Identity, authentication, authorization, confidentiality, integrity non-repudiation and audit components
- · adhere to industry standards
- be easily manageable
- be scalable
- Provide the framework which needs to adapt to newer technologies with less effort (security is a race where the good guys
 always need to be in front of the bad guys).

To provide the above infrastructure, the security team needs to analyze the existing applications and define the requirements.

Security analysis

Security team needs to collect statistics on the various applications that are being used in the organization with an emphasis on identification, authentication and authorization. A sample template listing the data that will be collected could look like:

Defining these characteristics will help the security architecture team to:

- understand the functional, performance, cost and process requirements from a security perspective
- Develop solution(s) to support different types of applications with their security needs. Gaps will be filled by working with
 the application teams to provide custom solutions that can be reused for similar applications. For example the infrastructure
 may provide the security components in a certain language and the application might be using a different language. We
 might need to develop some integration software that would fill the gap.
- Applications need to be analyzed for vulnerabilities and a common, centralized security infrastructure needs to be established to accommodate their security needs.
- New applications need to use the security infrastructure from the start and older applications need to start migrating toward it.
- Update/upgrade the policy, guidelines, processes, checklists, infrastructure at regular intervals to accommodate needs and technology changes.

4.4. INTEGRATED WITH THE SSDG ASSAM PORTAL

Unified State Portal will integrate with existing SSDG stack to provide seamless citizen services. Following points will be considered by IA.

- Existing user base of state portal will be seamlessly integrated with new state portal
- There will be a provision for user registration in the new state portal for citizen registration.
- Unified State Portal will integrate seamlessly with existing SSDG stack post successful citizen login and will
 populate relevant e-Forms.
- Unified State Portal will seamlessly route registered citizens to existing services via e-District, CCTNS etc.

4.5. INTEGRATE ALL THE DEPARTMENTAL AND ITS SUB ORGANIZATIONS WEBSITE

This unified web portal will be integrated with all department and sub organizations. The links will be added. Any updation in department level will be reflected in unified web portal.

4.6. PROJECT DEVELOPMENT & IMPLEMENTATION PLAN 4.6.1. Introduction

Luminous follows the Project development plan based on the Project Plan IEEE software processes standard: 12207 or Unified Process standard. Our software project development plan includes three fundamental phases i.e. Software requirement Analysis, Design & Development and finally software implementation and each phase followed by multiple process.

Our Requirement analysis phase includes Project Planning, Requirement gathering and GAP Analysis with the existing system, Preparation of Techno functional proposal and Software Requirement Specification (SRS). The phase is meant to freeze the requirement.

The Design and Development phase starts with Decision management, Risk management followed by Architecture design, coding & unit testing at developer end. After completion of Development process we go for a brief testing to make the application bug free and most robust.

Then our software implementation process starts with User Acceptance Testing (UAT). After duly finalized and acceptance by client our team proceeds for Installation at Client Side. Then we provide user manuals and scheduled project training to the users in a dummy database as per client requirement. Then the final implementation process tends us to make go live the project with the client database. We continue the process of support for successful implementation of the project.

The details of aforesaid phases with detailed processes are defined below:

4.6.2. Software Requirements Analysis Phase:

Our software requirement analysis phase includes the following Processes:

i. Project- Planning/Study

This is the first phase of the project, in which the detailed project planning for implementation to be done in an effective manner. This phase will involve the following activities:-

- Creation of Project Plan & Schedule
- Project Scope preparation with consulting to client
- Defining phase wise activities
- Defining Roles and Responsibilities for various activities to be carried during the project period
- Strategies to be made for Monitoring and Control Mechanism
- Activity wise start dates, duration, end dates
- Activity wise resources required planning
- Risk management and mitigation planning

ii. Requirement Gathering & GAP Analysis.

In this phase, our analysis team studies the existing activities to gather the exact requirement & GAP in their existing system if any and analyze the system requirements to develop the proposed solution which will best fit to the client environment. This phase will cover the following activities:-

- Understanding the existing business processes/procedures, gap analysis and recommendations.
- Understanding existing IT infrastructure
- System functional requirements and interface requirements
- High-level entity relationships and data flow to the appropriate level of detail
- High-level input, processing and output specifications
- Understanding the user access requirements
- Preparation & send for approval of Techno Commercial Proposal document to client
- Review and approval of proposal by client.
- Preparation of Software Requirement Specification Document (SRS)
- Review and approval of SRS by client

4.6.3. Design, Development and Testing phase:

Our software Design and Development and Testing Phase includes the following process:

i. Decision Management Process:

The purpose of the Decision Management Process is to select the most beneficial course of project action where alternatives exist. A decision-making strategy, alternative and preferred course of action is defined during this process.

ii. Risk Management Process:

The purpose of the Risk Management Process is to identify, analyze, treat and monitor the risks continuously

iii. Software Architectural Design Process:

The purpose of the Software Architectural Design Process is to provide a design for the software that implement and can be verified against the requirements.

This phase will include the following activities:-

• Detail Technical Design Specification

- ✓ Solution Architecture
- ✓ Database Design
- ✓ System Interfaces
- ✓ Development Platforms and Tools
- ✓ System Performance

• Prototyping

- ✓ Creation of the prototype
- ✓ Review and Corrections in the prototype
- ✓ Signoff on the prototype

iv. Software Detailed Design Process:

The purpose of the Software Detailed Design Process is to provide a design for the software that implements and can be verified against the requirements and the software architecture and is sufficiently detailed to permit coding and testing.

v. Software Construction Process:

The purpose of the Software Construction Process is to produce executable software units that properly reflect the software design.

vi. Software Integration Process:

The purpose of the Software Integration Process is to combine the software units and software components, producing integrated software items, consistent with the software design, that demonstrate that the functional and non-functional software requirements are satisfied on an equivalent or complete operational platform.

vii. Configuration Management Process:

The purpose of the Configuration Management Process is to establish and maintain the integrity of all identified outputs of a project or process and make them available to concerned parties.

viii. System Integration Process:

The purpose of the System Integration Process is to integrate the system elements (including software items, hardware items, manual operations, and other systems, as necessary) to produce a complete system that will satisfy the system design and the customers' expectations expressed in the system requirements.

ix. System Qualification Testing Process:

The purpose of the Systems Qualification Testing Process is to ensure that the implementation of each system requirement is tested for compliance and that the system is ready for delivery. In this phase the testing team will do the Integration testing, Functional Testing, Retesting & Regression testing and the Development team will fix all the bugs reported by testing team to ensure the proper working on the website. In this phase following activities will be performed by testing team.

- Requirement Analysis from testing point of view and prepare a Requirement Traceability matrix
- Test planning would be done to identify what are the major functional & Non functional components would be tested
- Preparation of test plan/strategy document for various types of testing

• Test effort estimation and Resource planning and determining roles and responsibilities.

4.6.4. Risk analysis & Risk Mitigation plan

Luminous do Risk analysis & mitigation plan to avoid expectation of loss, potential problems that may or may not occur in the future. It is generally caused due to lack of information, control or time. A possibility of suffering from loss in software development process is called a software risk. Loss can be anything, increase in production cost, development of poor quality software, not being able to complete the project on time. Software risk exists because the future is uncertain and there are many known and unknown things that cannot be incorporated in the project plan. A software risk can be of two types (a) internal risks that are within the control of the project manager and (2) external risks that are beyond the control of project manager.

We do Risk management to be carried out to:

- 1. Identify the risk
- 2. Reduce the impact of risk
- 3. Reduce the probability or likelihood of risk
- 4. Risk monitoring

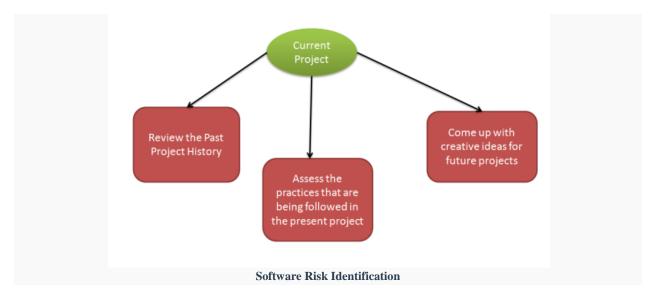
Software Risk analysis is a very important aspect of risk management. In this phase the risk is identified and then categorized. After the categorization of risk, the level, likelihood (percentage) and impact of the risk is analyzed. Likelihood is defined in percentage after examining what are the chances of risk to occur due to various technical conditions. These technical conditions can be:

- 5. Complexity of the technology
- 6. Technical knowledge possessed by the testing team
- 7. Conflicts within the team
- 8. Teams being distributed over a large geographical area
- 9. Usage of poor quality testing tools

With impact we mean the consequence of a risk in case it happens. It is important to know about the impact because it is necessary to know how a business can get affected:

Software Risk Identification

In order to identify the risks that your project may be subjected to, it is important to first study the problems faced by previous projects. Study the project plan properly and check for all the possible areas that are vulnerable to some or the other type of risks. The best ways of analyzing a project plan is by converting it to a flowchart and examine all essential areas. It is important to conduct few brainstorming sessions to identify the known unknowns that can affect the project. Any decision taken related to technical, operational, political, legal, social, internal or external factors will be evaluated properly.



In this phase of Risk management you have to define processes that are important for risk identification. All the details of the risk such as unique Id, date on which it was identified, description and so on will be clearly mentioned.

Software Risk Analysis

Software Risk analysis is a very important aspect of risk management. In this phase the risk is identified and then categorized. After the categorization of risk, the level, likelihood (percentage) and impact of the risk is analyzed. Likelihood is defined in percentage after examining what are the chances of risk to occur due to various technical conditions. These technical conditions can be:

- 1. Complexity of the technology
- Technical knowledge possessed by the testing team
- Conflicts within the team
- Teams being distributed over a large geographical area
- Usage of poor quality testing tools

With impact we mean the consequence of a risk in case it happens. It is important to know about the impact because it is necessary to know how a business can get affected:

- 1. What will be the loss to the customer
- How would the business suffer
- Loss of reputation
 Monetary losses
 Legal actions again Loss of reputation or harm to society
- Legal actions against the company
- 6. Cancellation of business license

Level of risk is identified with the help of:

Qualitative Risk Analysis: Here you define risk as:

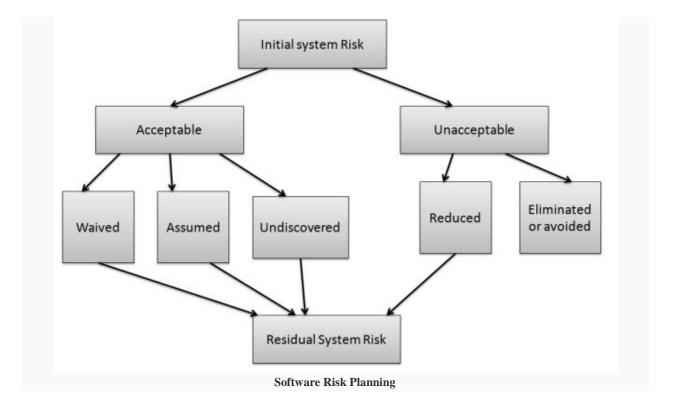
- High
- Low
- Medium

Quantitative Risk Analysis: can be used for software risk analysis but is considered inappropriate because risk level is defined in % which does not give a very clear picture.

Software Risk Planning

Software risk planning is all about:

- 1. Defining preventive measure that would lower down the likelihood or probability of various risks.
- 2. Define measures that would reduce the impact in case a risk happens.
- 3. Constant monitoring of processes to identify risks as early as possible.



Software Risk Monitoring

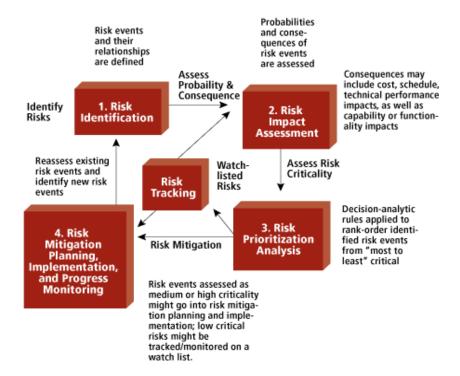
Software risk monitoring is integrated into project activities and regular checks are conducted on top risks. Software risk monitoring comprises of:

- Tracking of risk plans for any major changes in actual plan, attribute, etc.
- Preparation of status reports for project management.
- Review risks and risks whose impact or likelihood has reached the lowest possible level will be closed.
- Regularly search for new risks

Major risks we have determined for this software are as follows:

- Equipment failure
- Late delivery of software
- Technology will not meet expectations
- End users resist system
- Changes in requirements
- Deviation from software engineering standards
- Less reuse than planned
- Poor commenting of source code

Risk mitigation planning is the process of developing options and actions to enhance opportunities and reduce threats to project objectives [1]. Risk mitigation implementation is the process of executing risk mitigation actions. Risk mitigation progress monitoring includes tracking identified risks, identifying new risks, and evaluating risk process effectiveness throughout the project.



Risk mitigation handling options include:

- Assume/Accept: Acknowledge the existence of a particular risk, and make a deliberate decision to accept it without
 engaging in special efforts to control it. Approval of project or program leaders is required.
- Avoid: Adjust program requirements or constraints to eliminate or reduce the risk. This adjustment could be accommodated by a change in funding, schedule, or technical requirements.
- Control: Implement actions to minimize the impact or likelihood of the risk.
- Transfer: Reassign organizational accountability, responsibility, and authority to another stakeholder willing to accept
 the risk.
- Watch/Monitor: Monitor the environment for changes that affect the nature and/or the impact of the risk.

• Monitoring Risk

Include risk monitoring as part of the program review and manage continuously. Monitoring risks will be a standard part of program reviews. At the same time, risks will be managed continuously rather than just before a program review. Routinely review plans in management meetings.

- Review and track risk mitigation actions for progress. Determine when each action is expected to be completed successfully.
- Refine and redefine strategies and action steps as needed.
- > Revisit risk analysis as plans and actions are successfully completed. Are the risks burning down? Evaluate impact to program critical path.
- Routinely reassess the program's risk exposure. Evaluate the current environment for new risks or modification to existing risks.

4.6.5. Software Implementation phase:

The Software Implementation Phase includes major processes i.e. Installation, UAT, operation, measurement, Training and Go live processes etc. The details are defined below:

i. Software Installation Process:

The purpose of the Software Installation Process is to install the software product that meets the agreed requirements in the target environment.

ii. Software Acceptance Support Process:

The purpose of the Software Acceptance Support Process is to assist the acquirer to achieve confidence that the product meets requirements.

iii. Software Operation Process:

The purpose of the Software Operation Process is to operate the software product in its intended environment and to provide support to the customers of the software product.

iv. Measurement Process:

The purpose of the Measurement Process is to collect, analyze, and report data relating to the products developed and processes implemented within the organizational unit, to support effective management of the processes, and to objectively demonstrate the quality of the products.

V. User manual & Training Process:

The purpose of this process is providing a user manual to the client to guide the project details and providing training to the user with a dummy database.

Vi. Go Live in Client Database

• The purpose of the process is making go live with deploying the project in client's real database. So, after training and receipt of UAT, the website would be deployed at the NIC server for final go live. The Actual implementation of project starts here.

vii. Software Support & Maintenance Processes:

The Software Support Processes provide a specific focused set of activities for performing a specialized software process. A supporting process assists the Software Implementation & maintenance Process as an integral part with a distinct purpose, contributing to the success and quality of the software project.

VIII. Software Review Process:

The purpose of the Software Review Process is to maintain a common understanding with the stakeholders of the progress against the objectives of the agreement and what will be done to help ensure development of a product that satisfies the stakeholders. Software reviews are at both project management and technical levels and are held throughout the life of the project.

IX. Software Problem Resolution Process:

The purpose of the Software Problem Resolution Process is to ensure that all discovered problems during software review are identified, analyzed, managed and controlled to resolution.

X. Security audit and Compliance:

The purpose of the Software Audit Process is to independently determine compliance of selected products and processes with the requirements, plans and agreement, as appropriate.

As per requirement of ASSAM STATE GOVERNMENT, the website would be hosted in NIC server, which would have to undergo cyber security auditing. The website after development would be hosted in staging server. Then it would go for 3rd party cyber security auditing by CERT in empanelled Vendor. After compliance, and acceptance by ASSAM STATE GOVERNMENT, the same would be hosted in NIC server.

The First level Application Audit would highlight the vulnerabilities in the Application like Cross Site Scripting, vulnerability to SQL Injections, Buffer Overflows, Invalidated Inputs, and insecure storage etc. These would need to be addressed by the Developers, post which the second or third level audits would be undertaken. Removal of flaws and vulnerabilities from the Application depends on the capabilities of the Application Developers, and the subsequent level audits are driven by this necessity. The following security standards will be followed for the cyber security audit & compliance.

XI. AMC ((Paid) Annual Maintenance Charges):

Luminous always wants and maintain an unbreakable client relations and provides supports as per requirement. Here, Luminous will engage resources who would look after for Break fix, Bug clearance during the AMC period for 3 consecutive years. Also any minor changes in the portal, compilation & content updating would be done in this period. ASSAM STATE GOVERNMENT can extend the service period as per their requirement and followed by the tenure agreement from both the side.

The following scope will be maintained through AMC.

- * Database cleansing & data rearrangement.
- * Data Synchronization.
- * Fixing of broken links.
- * Defect analysis & troubleshot.
- * Application upgrades & Service Patches.

XII. Change Management

Only major changes requiring substantial development effort and allocation of resources will constitute a Change request on fulfillment of any of the following conditions:

- 1. Inclusion of a new module that will impact the business.
- 2. Technological changes encompassing the following paradigms:
 - i) Change of Programming language,
 - ii) Change of Database,
 - iii) Change of CMS,
 - iv) Change/ Inclusion of Search Engine,
 - v) Change/ Inclusion of Analytics Software,
 - vi) Change/ Inclusion of Directory Services

The process to address the change request will be as follows:

- 1. Identification and documentation of change request requirement:
 - The details of scope of change will be analyzed and documented.
- 2. Effort Estimate:
 - IT Department will ask Luminous to submit the effort estimate in terms of man month rate using standard effort estimation technique.
- 3. Approval or disapproval of the Change request :

Technical Committee constituted by IT Department will approve or disapprove the change requested including the additional payments, after analysis and discussion with Selected Bidder on the impact of the change on schedule.

3. Implementation of the change request:

The change will be implemented in accordance to the agreed cost, effort, and schedule.

4.7. SINGLE SIGN ON VIA E-PRAMAAN FRAMEWORK AND DIGITAL LOCKER

Luminous provide a platform to implement a single sign on via e- Pramaan framework and digital locker.

e-Pramaan is "a simple, convenient and secure way for the users to access government services via internet/mobile, as well as for the government to assess the authenticity of the users." Thus, it is a framework that enables e-authentication of users when they access online services via the Internet or mobile phones. The positive thing about e-Pramaan is that it builds the trust and confidence of users in online transactions, and thus encourages the usage of e-services for delivering the services provided by the government.

DigiLocker is a platform for issuance and verification of documents & certificates in a digital way, thus eliminating the use of physical documents. Indian citizens who sign up for a DigiLocker account get a dedicated cloud storage space that is linked to their Adhar (UIDAI) number. Organizations that are registered with Digital Locker can push electronic copies of documents and certificates (e.g. driving license, Voter ID, School certificates) directly into citizen's lockers. Citizens can also upload scanned copies of their legacy documents in their accounts.

Here, we support users to do a single sign in and work for both e- Pramaan framework and digital locker.

4.8. INFORMATION ARCHITECTURE

Top menu

- 1. Home
- 2. Public Representative

Rajya Sabha

State Assembly

Zilla Parisada

Panchayat Samiti

Gram Panchayat

- 3. Assembly
- 4. Department
- 5. Council of Ministers
- 6. Chief Minister
- 7. Raj Bhaban
- 8. District

Body

- 9. News & Media
- 10. State Profile

About Assam

History

Topography |

Wild Life

Scenic Assam

Photo Gallery

Land and People

Eminent Personalities

E-Magazines

Literature

Event Archive

Patriotic song

11. Citizen Services

e-Abhijoga

Common Service Center (CSC)

e-District

e-Municipality

Student Admission Management System

Bhulekh

Railway Reservation

Download Forms

12. Departments

Admin Reforms & Training

Agriculture

Animal Husbandry & Veterinary

Assam Accord

Border Areas

Chief Electoral Officer

Cm's Secretariat

Chief Secretary's Office

Co-Operation Department

Cultural Affairs

Education

Environment & Forest

Excise Department

Finance

Fishery

Food,Cs & Consumer Affairs

General Administration Department

Guwahati Development Department

Health & Family Welfare

Hills & Barak Valley Division

Home & Political

Horticulture Department

Information Technology

Information & Public Relations

Industries & Commerce

Irrigation

Judicial Department

Labour & Employment

Legislative

Mines And Minerals Department

Minority Welfare Department

Panchayat & Rural Devt

Parliamentary Affairs

Pension & Public Grievances Department

Personnel

Planning & Devt

Pollution Control Department

Power

Public Enterprises

Public Health Engineering

Public Works Building & NH

Public Works Roads

Printing And Stationary Department

Revenue & Disaster Mgmt

Science And Technology

Secretariat Administration

Social Welfare

Soil Conservation

Sports & Youth Welfare

Transport

Tea Tribes

Tourism Department

Urban Development Department Water Resource Welfare of Plain Tribes & Backward Classes Department

- 13. Assam Tourism
- 14. Civil List
- 15. Education
- 16. Business

Policies

Invest in Assam

Holiday List

E Procurement

- 17. Offices, commissions & Tribunal
- 18. Act, Rules & Policies

Bottom Links

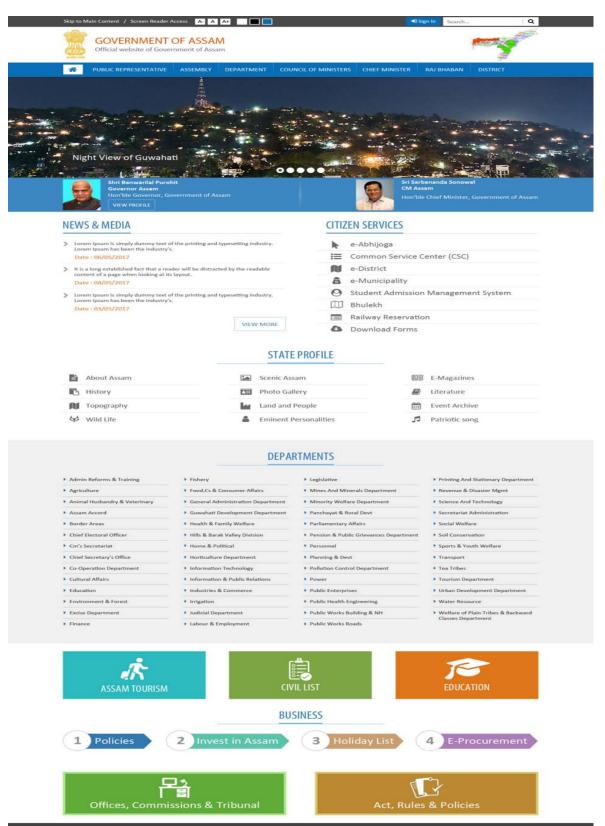
- 19. Contact us
- 20. STD Code
- 21. Feedback
- 22. RTI

What we do

Assam Information Commission

Right to Information

Home Page Template:



5. CONTENT INTEGRATION

Content Management System for Website:

The Content Management System of the State Portal will integrate and update the content from Departments Websites. We manage Staging, Versioning and Archiving of content in this module. The proposed website will be comprised of both static and dynamic components and will be developed with various features and dynamic modules. The website will be designed in conformity with the "Content Management Frame work". It will support resizing the text and images to be distinguishable on a high resolution monitor without use of assistive technology, since the display size of the components decreases with the increase in the screen resolution set by the user.

Creation of content types, design and development of web form will be done for capturing metadata in this module. Metadata replication service will be provided for periodic transfer of metadata to national portal metadata repository.

Miniature facts will be segregated and designing will be done articulately to satisfy the needs of web analysis. The Content Management Infrastructure shall give the flexibility to modify the design when major event has to be publicized.

Basic Information flow through CMS:

- Template designing
- Content is entered as plain-text or HTML into database
- Content is placed in a template for display to the end user.

CMS Functionality:

A web content management system is a application to create, manage, store and deploy content on Web pages. Web content includes text and embedded graphics, photos and code (e.g. for applications) that displays content or interacts with the user. Web CMSs usually allow client control over HTML-based content, files, documents, and web hosting plans based on the system depth and the niche it serves. The Content management system will include the following functionality:

• Capture and Edit(Content Submission):

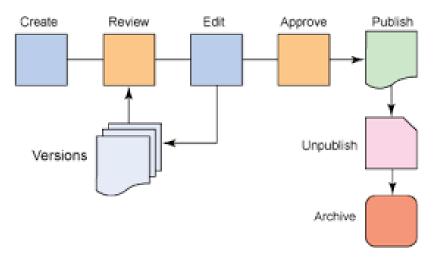
The elements of the data model that will be used must be defined and the database components that follow will be specified.

• Authentication:

User needs to be authenticated by putting valid user name and password. In necessary case OTP integration will be considered for authentication. There will be various privileges associated with the users; the levels and details of these are defined below.

• Workflow:

The rules for work flow will be different for each user, and each piece of content. These shall be governed through a policy distinct and separate from the system. As such the system must allow for different work flows for each user for each package of data.



• User Administration:

Set up users, assign fictions etc

Tools – (available to specific levels of users)

For example:

- ✓ Edit, delete and expire content
- ✓ Help (access to Content Policy, writing style guidelines, system help)
- ✓ Text formatting tool (bold, hyperlink, etc)
- ✓ Search for content (probably necessary for hyper linking)
- ✓ Create new content category/attribute/etc.
- ✓ Assign a piece of content a value (e.g. today's highlighted news)
- ✓ Attach comments to content for review
- \checkmark View the audit trail of a particular piece of content
- ✓ Messaging & Notification
- Reporting It is essential that blockages in the work flows are identified and reported. Various other aspects of reporting will be explained in user specification Sheet.
- ✓ Statistics about:
 - Content in repository
 - Usage of CMS (must be logged to ensure an audit trail and accurate reporting)

• File Upload:

There will be functionality that will allow files (e.g. PDF, DOC, DOCX, TXT, JPEG, JPG, PPT, XML, etc) to be loaded onto the CMS (and hence be internet accessible). All upload files will be defined in the CMS as publications, therefore the upload function will then bring up the add publication screen and default the upload option into the content component section of publication.

• Content Moderation:

Level of Users will access the CMS:-

- 1. Super Admin
- 2. Admin

SUPER ADMIN

Super admin has the sole power. He/she can create levels of users, assign them with tasks and responsibilities, he/she can moderate content if he/she feels do to so. He/she has the ultimate power to approve a particular content after moderation. Super admin may reject the content too. In such a case the content remains in hold state unless properly modified by the Admin. Super admin may declare a content not fit for publications. In that case the content gets removed from the database.

ADMIN

 $Admin\ will\ be\ responsible\ for\ entering\ data\ into\ the\ CMS.\ Admin\ will\ have\ the\ power\ to\ edit\ /\ Update\ /\ Delete\ contents.$

The proposed website layout is mentioned here for reference. This can be changed or modified according to requirement of "Assam State government"

5.1. Content Delivery

A content delivery network or content distribution network (CDN) is a globally distributed network of proxy servers deployed in multiple data centers. The goal of a CDN is to serve content to end-users with high availability and high performance. CDNs serve a large fraction of the Internet content today, including web objects (text, graphics and scripts), downloadable objects (media files, software, and documents), applications (e-commerce, portals), live streaming media, on-demand streaming media, and social networks.

The term CDN means many things to different people and is an umbrella term that covers a lot of different types of content delivery services. Video streaming, software downloads, web and mobile content acceleration, licensed/managed CDN, transparent caching, and services to measure CDN performance, load balancing, multi-CDN switching and analytics and cloud intelligence.

5.2. Content Authoring

Content authoring system allows a non-programmer, usually an instructional designer or technologist, to easily create software with programming features. The programming features are built in but hidden behind buttons and other tools, so the author does not need to know how to program. Generally authoring systems provide lots of graphics, interaction, and other tools educational software needs. The three main components of an authoring system are: content organization, control of content delivery, and type(s) of assessment. Content Organization allows the user to structure and sequence the instructional content and media. Control of content delivery refers to the ability for the user to set the pace in which the content is delivered, and how learners engage with the content. Assessment refers to the ability to test learning outcomes within the system, usually in the form of tests, discussions, assignments, and other activities which can be evaluated.

6. SERVICE DELIVERY FEATURE

Luminous will provide operation & maintenance for a period of 3 years from the date of Go- Live. During this period the Luminous will provide all the necessary support and resolution for any technical or functional issue in the application including any enhancement or bug fixing.

It includes version upgrade (e.g., Application Portal, Database, CMS) on account of industry dynamics as a part of the Operation & Maintenance Support Services. Resources will provide customer support availability 24/7/365 via phone, email, or online support portal.

During O&M phase, Luminous will engage resources with following skill sets as per the agreement sign by both the party. Luminous will engage manpower against the following positions during O&M phase:

- Database Administrator
- Web Integration Engineer
- Web Content Specialist

7. PROJECT TIMELINE

	Assam State Govt. Unified Webportal development & Implementation Plan																																									
			VI1		Т	M2				M				M					15				16		M7					M		M9					M10				M11-M46	
		wl	w2	w3	w4	w	l w2	w3	w4	wl	w2	w3	w4	w1	w2	w3	w	w1	w2	w3	w4																					
Sl. No.	Particulars																																									ı
1	(After getting Workorder) Requirement capturing, SRS generation and approval																																									
2	Development,Unit Testing, System Integration Testing,Load testing, content integration																																									
3	Training to Identified Stake holders																																									
4	UAT sign up																																									
5	Security audit and certification by the company																																									
6	Go -live																																									
7	STQC Cirtification																																									
8	Operation, maintenance and support																																									

8. UTILITY COMPONENTS

8.1. APPLICATION LEVEL LOGGING

An application log is a file of events that are logged by a software application. It contains errors, informational events and warnings. The format and content of an application log are determined by the developer of the software program, rather than the OS.

An application log may also be referred to as an application log file. Logged events typically include the following:

- Warnings about low disk space
- An operation that has been carried out
- Any significant problems known as an error events that prevent the application from starting
- A success audit to indicate a security event such as a successful logon
- A failure audit to indicate an event such as a logon failure

Luminous will manage application level logging during the development of this web portal.

8.2. VALIDATIONS

Validation is the process evaluating software during the development process or at the end of the development process to determine whether it satisfies specified business requirements.

Validation Testing ensures that the product actually meets the client's needs. It can also be defined as to demonstrate that the product fulfills its intended use when deployed on appropriate environment. Luminous do validation testing during its implementation.

8.3. EXCEPTION HANDLING

The point of exception handling routines is to ensure that the code can handle error conditions. Luminous ensure in making the web portal so robust which handle all exceptions establishing error free and uninterrupted service to the client.

8.4. APPLICATION LEVEL CACHING

In the fast-paced applications developed today, response time is a very critical factor. To improve the turn-around time for data that seldom changes, Luminous supports the concept of application caching. It will reduce the system response time and make the portal more accessible.

8.5. LOCALIZATION

Website localization is the process of adapting an existing website to local language and culture in the target market. Luminous supports this process for the visitors of the site for better process information, making navigation easier and attitudes toward the web site more favorable.

8.6. APPLICATION CONFIGURATION

Luminous gives an easy way to store configuration information in an Application Configuration File. In the simple implementation, user can store information as Key-Values.

It configures the parameters and initial settings for the system and maintains the smooth running of project accordingly.

8.7. MASTER DATA MANAGEMENT

Master data management (MDM) is a comprehensive method of enabling an enterprise to link all of its critical data to one file, called a master file that provides a common point of reference. When properly done, MDM streamlines data sharing among personnel and departments.

Luminous will make easier to add and maintain master data throughout the portal.

8.8. SESSION MANAGEMENT

Session Management will be taken care by Luminous to maintain the sequence of network HTTP request and response transactions associated to the same user. Modern and complex web applications require the retaining of information or status about each user for the duration of multiple requests. Web applications can create sessions to keep track of anonymous users after the very first user request.

Luminous manage current web applications which can provide session capabilities both pre and post authentication.

Once an authenticated session has been established, the session ID (or token) is temporarily equivalent to the strongest authentication method used by the application, such as username and password, passphrases, one-time passwords (OTP), client-based digital certificates, smartcards, or biometrics (such as fingerprint or eye retina). It will focus on OWASP Authentication process.

9. USERS & ADMINISTRATION

The user administration and security module will be design robust. The User creation, maintenance & user hierarchy will be maintained by Admin.

Admin will create new user and add privileges to user. As per privileges given, user can access the software & during login, the dashboard will be shown accordingly as per privileges given. User will be provided with the facility to add / modify / Update

his/her profile information and Reset password option. OTP (One time password) will be integrated during profile updation. OTP will be sent to register mobile no and user need to enter during updation.

The password maintenance will have the features like, password encryption, complexity analysis. Force change of password after predefined periodic interval & password recovery using SMS / E-mail will be maintained in the system. User activation / Deactivation system will be controlled by the Admin of the whole system. The power distribution will be maintained as per the defined user level depending upon their work profile. Admin will control & distribute required power to concerned users respectively to restrict unauthorized user access & ensure proper power distribution.

Luminous will manage Citizen Login/Registration System for availing services and also manage Seamless migration of existing user to the new login/registration system of Unified Portal.

10. FUTURE SCOPE

10.1. MOBILE APP

Besides designing and developing the unified web portal, **Luminous** will incorporate Mobile App as a future scope of the project. Having a Mobile App is like opening a door and inviting citizen / user to know more about any Govt and private organization, so that the citizen is able to know all about the services through the mobile app at their convenience.

There will be no inclusion of any new Service Delivery Platform for web application of Unified State Portal. However, a mechanism will be established to integrate the SSDG and further integration with service delivery platform to deliver the G2C services of the departments such as eDistrict, CCTNS, EODB etc.

The proposed mobile App can be installed on any OS devices like; android / iphone / windows devices to get the same features as on the proposed website. Proposed mobile app will take minimum amount of internal memory & it will store data in External memory once data has been fetched from Unified state portal website (Multimedia Gallery & What's New) section. During development, as per your requirement we will develop the entire web-service/JSON page. We will provide you the clear-cut explanation about how to hit the web-service URL & what shorts of data it will return, including meaning of each JSON response data.

The proposed Solution will be a Hybrid Mobile app will support compatible with and accessible on various OS mobile devices.

The solution requirement for the mobile Application:

The application will be developed as mobile app for various Mobile OS supported platform (Android, I OS, Windows, Blackberry, etc.).

Here the Hybrid App will be downloaded and installed on various Mobile OS platform devices.

Users will be able to download the app by visiting the device-specific portals such as App Store, Android Market or Google Play store, Apple store etc.

The mobile app will provide an update features in case of newly published version.

The mobile App will take minimum amount of internal memory & it will store data in External memory once data has been fetched from website.

The proposed application will develop in web-service/JSON page.

The Developed application shall be compatible for websites developed in PHP and JSP technologies both.

Sample Screen Shots of the Android Mobile Application.



Fig 0.1: Main Screen page



Fig 0.2.: Tender/Notice Page



Fig 0.3.: Dashboard screen Page

Mobile Application Architecture: The proposed mobile application which will be integrated with the proposed UNIFIED WEB PORTAL, ASSAM website to fetch information related to the What's New section and Multimedia Gallery Section.



The above architecture layers characterize that how the mobile app will generate notifications of any updation being done by the UNIFIED WEB PORTAL, ASSAM.

10.2. INTEGRATION OF NEW E-FORMS

Luminous will provide facility to integrate new e forms as a future scope of the project. It would incorporate all new e-forms of Assam govt. into the web portal along with Integration of existing 46 service e-Forms to the new Unified Portal, Luminous will create provision to implement new e-Form(s) on demand and integrate the same to SSDG so as to facilitate seamless communication with applications of e service providers. As the system would be designed in the most scalable and portable manner, adding any new feature won't be any hurdle.

10.3. INTEGRATION WITH THE SERVICES LIKE G2G, G2C, G2B

Luminous will provide facility to integrate with G2G, G2C & G2B as a future scope of the project. Government to government (G2G) is the electronic sharing of data and/or information systems between government agencies, departments or organizations. The goal of G2G is to support e-government initiatives by improving communication, data access and data sharing. G2G initiatives are also being driven by budgets and funding. By sharing information and systems, governments are able to reduce IT costs government offices can be more efficient and streamline procedures, allowing citizens to access information over the Internet.

The system connects all the state police departments of the participating states, and the police departments transmit the collected information to their states' other law enforcement and public service agencies.

G2B platform will provide a one-stop shop for convenient and efficient online G2B services for the investor and business communities in India, reducing delays and complexity in obtaining information and services. It will serve as a gateway to obtain services relating to planning, starting and operating businesses in India including licenses, approvals, clearances, obtaining no objection certificates, permits and filing returns. This will provide investors an interactive tool to assess license and permit requirements to setup and operate a business in India.

The following G2C (Government to Citizen) is the electronic sharing of data or information system between government body & Citizen of Assam. Below are some examples of this Service which are to be offered:

- Women & child welfare
- Training & Placements (Labour)
- Urban Development
- Revenue
- Panchayati Raj
- Handicap Welfare
- Ration & Supplies

Luminous will incorporate these above services in the web portal as a future scope of the project.

10.4. INTEGRATION WITH MeiTY and MyGov

Luminous will make Provision to integrate with RAS Framework of MeiTY and MyGov . This system will be helpful for suggestion & feedback sharing of citizen besides other facilities.

11. PROJECT DELIVERABLES

Luminous will provide following deliverable during the complete project life cycle

- I. Detailed Project/Activity plan
- II. Base line communication, templates for Project documentation
- III. One deliverable template
- IV. Project Management structure
- V. URS and SRS document with process flows
- VI. High-level architecture design document
- VII. Project and test plan for remaining stages
- VIII. Data Model, Architecture
- IX. Solution and Technical Architecture
- X. Testing and performance requirements
- XI. Full report on the data migration scope assessment; including various reconciliations to establish the validity of the migrated data
- XII. Initial data migration design;
- XIII. Data migration proposal with detailed delivery plans.
- XIV. Data Cleansing Requirements Specification; Data Cleansing Log
- XV. Unit Tested Code
- XVI. Unit Test results log
- XVII. Updated design document (if any)
- XVIII. System tested website
- XIX. Test Results Log and Impact Assessment Sheet
- XX. Revised Architecture Document
- XXI. System Tested Code
- XXII. Test results log
- XXIII. Training and User Manuals
- XXIV. Installation Manual, Operation Manual & Maintenance Manual
- XXV. Deployed code
- XXVI. Final Documentation
- XXVII. Knowledge Transition
- XXVIII. Deployment plan and test plan