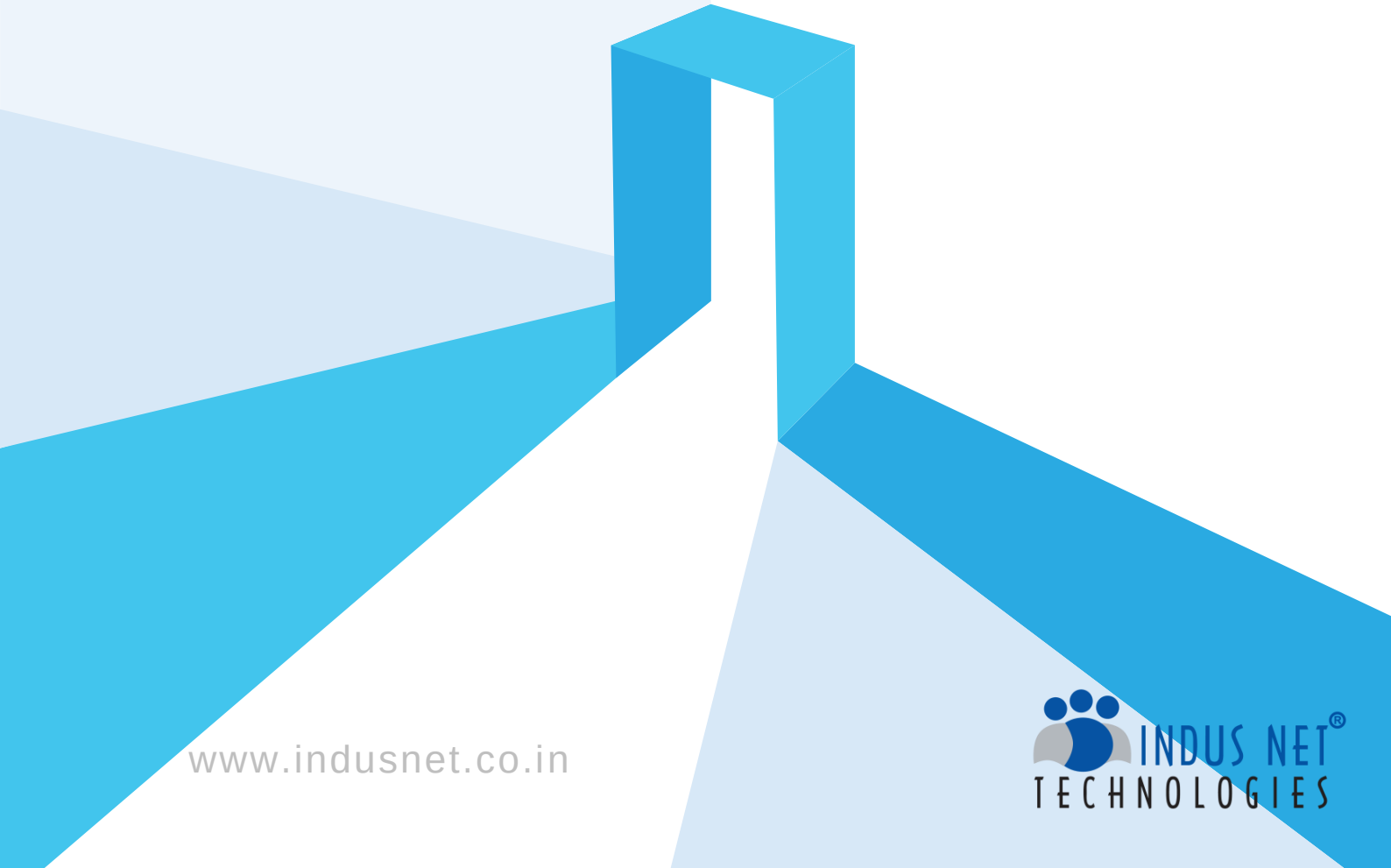
Central Mechanical Engineering Research Institute

System Requirement Specification

Document (Version3.0)



www.indusnet.co.in

INDUS NET® TECHNOLOGIES

Revision History

No.	Date	Authored By	Reviewed By	Authorized By	Comments
1.0		BA Team	Dipak Singh, Uttam Biswas		1st Draft version
2.0		BA Team	Dipak Singh, Uttam Biswas		2nd Version

Distribution

Business Area	Names
Indus Net Technologies	Dipak Singh, Uttam Biswas

Definitions

Term	Definition

References

Name	Owner	Document

Statement of Confidentiality

The information contained in this document is confidential and proprietary to Indus Net Technologies Pvt. Ltd. Indus Net submits this information with the understanding that **Central Mechanical Engineering Research Institute** will hold it in strict confidence. The contents are not to be disclosed, duplicated or used, in whole or in part, for any purpose other than the evaluation of Indus Net Technologies qualifications or participation in the scope of work identified within this document.

Acknowledgement

We would like to thank **Central Mechanical Engineering Research Institute** for giving Indus Net the opportunity to submit this system requirement specification document.

Disclaimer

The obligation of the parties to perform the effort identified in this document is subjected to the execution of a written agreement between the parties in accordance with the terms and conditions contained herein.

The information included in this SRS has been prepared and included for the purpose of this document only and shall not be constructed as a precedent in any other situation outside this proposal and context.

Contents

1) About Us

Indus Net Technologies is one of the fastest growing Internet strategy company in the world, providing reliable and cost effective consultancy and services to 15000+ clients from over 40 countries since 1997. Our team of 550+ web designers, programmers, app engineers and Internet marketing specialists work tirelessly to deliver results to our valued customers. We have footprints in London, USA, Singapore and India.

Fast facts about Indus Net Technologies:

- Rates #1 IT SME in India by Dun & Bradstreet in 2008.
- Deloitte Technology Fast 500 Asia Pacific in 2010, 2011.
- Deloitte Technology Fast 50 India in 2011. NASSCOM EMERGE50 in 2010.
- More than 550+ trained Software Experts and Consultant.
- Distributed work force.
- ISO 27001 certified (International Data Protection compliance)
- Dedicated account manager to take care of your project on a personal note, Global operations at London, USA, Singapore and India
- FY 2011-2012 turnover of $6 Million+

Our success lies in the success of our client's. Since 1997, we have helped thousands of small and medium sized organizations as well as some Fortune 500 companies make major leap in form of increased sales, improved productivity or reduced costs. Thus, we have enabled them to SAVE SMARTER, SERVE BETTER and GROW FASTER towards their goal.

Core Skills

- Application Development in Open Source and Propriety technologies like Java, PHP MVC, Cake PHP, Code Igniter, Yii, Zend, ASP/.NET, C#/C++/Qt, Ruby on Rails, Magento, Drupal, Word Press, etc.
- Graphics Design services and Mobile Development services
- Quality Control and Quality Assurance services. Digital Marketing services (SEO, PPC, SMM, etc.), Consulting and Project Analysis
- INT Execution Model (INTEM), a combination of Waterfall method and Agile/Scrum Methodology.

2) Preface

2.1 Background/ Introduction

Indus Net Technologies Pvt. Ltd. has been persistently trying to provide the perfect IT solution to its clients since its inception. It undoubtedly has strived exceptionally hard and delivered at par with client's needs. Now, Indus Net Technologies is privileged to offer the proposed solution **for "Redesign and Redevelopment of website for Central Mechanical Engineering Research Institute"**.

The Central Mechanical Engineering Research Institute (CMERI) is the apex R&D institute for mechanical engineering under the aegis of the Council of Scientific and Industrial Research (CSIR). Being the only national level research institute in this field, CMERI's mandate is to serve industry and develop mechanical engineering technology so that India's dependence on foreign collaboration is substantially reduced in strategic and economy sectors. Besides, the institute is facilitating innovations and inventions for establishing the claims of Indian talent in international fields where Indian products shall ultimately compete. Now Central Mechanical Engineering Research Institute wants to redesign its existing website using the latest technologies with all the security features.

2.2 Project Overview

Table: Project Overview

Project Name	CMERI SRS
Project Manager	Dipak Singh
Company	Indus Net Technologies
Contact	dipak.singh@indusnet.co.in
Application Area Description (e.g., Industry and functional areas)	
Start Date	
Projected End Date	

2.3 Document Purpose

The purpose of this Requirement Specification document is to define the functional properties of the intended system in terms that both the business users and the developers, of the system, can understand.

This Functional Specification forms the translation between the business requirements stated in the Business Requirements Document (BRD), and the actual system code developed by the system programmer so that the system can be build fulfilling the expectations of the desired business rules governing the system functionalities. It effectively forms a contract between the stakeholders and the developers of the system, and as such must be mutually accepted upon.

2.4 In Scope

The scope of this document broadly covers the following areas:

Website for the Central Mechanical Engineering Research Institute

- Preparation of website both in Unicode based Hindi & English (Bilingual) look alike pages & templates
- Preparation of Home Page of the website with link to English & Hindi portion
- Configurable three color scheme for the website, configurable by Admin to give a fresh look of the website on periodic manner
- 'Feedback or contact us' page will send email to authority about the user feedback.
- When creating a department page admin can enter member's names with their user profile link. Members can click on their user profile links and entry HR information after successful login.
- For Image Uploading for admin section, validation to be added for Image minimum, maximum size.
- Technology should be driven by Open Source Software like PHP and MySQL
- Creation of content through open source CMS like Drupal
- Hosting Platform should be Red Hat Enterprise Linux & Apache Web Server (Hardware & OS will be provided by CMERI)
- Templates should be exclusively designed for CMERI and all copyrights should be transferred
- Template based menu-wise content creation & addition as per the requirement of the Institute under given heads as detailed in Annexure-II.
- Developed website needs to be certified from NIC and follow GoI website Guideline on later date and thus all the design guidelines must be followed. The website will be designed to satisfy GoI Guidelines for Government Website (GIGW) and ready in all respects for certification.
- Auditing of the designed website for cyber security compliance by CERT-in empanelled Auditor & clearance from NIC
- Copyright for website materials including CMS, graphics and logo will be exclusively with CMERI

- Photography of the available equipments, buildings and amenities by developer.
- All source code of CMS, WebPages, CSS, graphics and components will be handed over with licenses (if any) to the CMERI.
- Comprehensive search facility of the website both in English and Hindi.
- Training of CMERI officials for content placement and code maintenance from CMERI office
- Linking with social networking sites and other government mission sites
- Auto-archival of existing website
- Feedback page for collecting visitor's feedback
- Search Engine submission & Optimization
- Provision for Visitors' Analytics
- Last updated info, copyright info, disclaimer, Institute's Address on every pages and visitors count with sitemap on home page should be reflected.
- One year warranty with free maintenance, error debugging and technical support.
- Layout development for Home Page and Inner pages
- Redesigning of the site to make it responsive
- Over all Look and Feel of the Website
- Open Source Content Management System Framework to manage website content
- Roll Based Access Control
- Media Centre
- Accessibility Independency
- Platform and Browser Independency including auto adaptability feature for browsing through mobile browsers
- Text Based Navigation

- Integrated Keyword Search Functionality
- Bi-Lingual Website (English/Hindi)
- Responsive Website Design
- Feedback management section along with an form based interface for communicating for business need (The query should be forwarded as an e-mail)
- FAQ Management
- Social Media Integration
- Important Links
- Additional sections like What's New, Latest News & Updates, Tender, Sitemap, Circular & Notices and Contact Us etc.
- Auto Archival Management
- Web Analytics
- Visitor Counter
- Registration Module for Visitors of the Website
- RTI Section
- Support during warranty period for bug fixing

Security Section

- Comply with GIGW guideline
- Comply with all international and GoI guidelines for IT segment
- Comply with W3C, WCAG Priority 2.0 standard

CMS Details:

- Structure of Content Management System (CMS)/Work flow of the CMS:
  - Super Administrator
  - Local Administrator per section
  - Content Creator for a section
  - Content Approver for a section
  - Query Response for a section
- User Management
  - CMS Users (site managers)
  - General Users (site visitors)
- Content Restriction for restricted users (some specific reports should be accessible to the restricted site users only)
- Performance Monitoring: Graphical as well as tabular through Admin modules accessible to super Administrator as the case may be
- Home Page layout configurable
  - Home Page Header Image – settable through Super Administrator
  - Thumbnail Image of each section – settable through Super Administrator
  - Home page menu should be of n-level with text color, background color, font etc. configurable
  - Archive policy with expiry date (non mandatory) for each item in each language to be implemented
  - Back-up of items (published and archived) in a Industry DMS Standard Formats (such as Dublin Core structure with XML files) directly searched CMS Database for restoration at later stage (Text as well as associated Files PDF,JPG, etc.) in case of disaster or hacking or archival purpose through Super Administrator
  - Hindi Font
  - Static Content on the Home Page – Editable through Super Administrator for each language

2.5 Out of Scope

- The Annual Maintenance Support for 3 years and translation of Hindi text is not in the project scope.
- Network security & global availability of the web server.
- Bug fix and break fix after warranty.
- Search Engine Submission and Optimization is not included in the scope.

2.6 Assumptions

The following assumptions have been taken into account which will be adhered to, while developing and implementing the application, by the development team.

The areas mentioned below:

- Indus Net Technologies (INT) will design and develop a powerful website application for CMERI
- It will be developed in English language only.
- Indus Net Technologies (INT) will develop Back end server support (web Service).
- The access details and the other key information will be provided to INT.
- All the data points regarding the graphical data representation will be provided to INT.
- Indus Net Technologies assumes that a dedicated resource from Central Mechanical Engineering Research Institute will be available for resolving/clarifying concepts or issues till the project is accomplished.
- The hosting part will be taken care by Central Mechanical Engineering Research Institute. However, Indus Net Technologies will coordinate with Central Mechanical Engineering Research Institute and NIC for hosting of the website.
- In case of any change in scope, over and above the requirements mentioned in this document, the proper change request process would be followed. This may result in project slippage, extra cost or reduced cost.

- The third party integration (Hardware/Software) cost will borne by Central Mechanical Engineering Research Institute. However, Indus Net Technologies may specify or recommend devices or software as per requirement. For Ex- Central Mechanical Engineering Research Institute will provide the API for the Google Web Analytics. Indus Net Technologies will only integrate the same with the application.

- One time Onsite training will be given to client in client's premises. The necessary arrangement for the training session has to be prepared by the client.

- Home page, department, HR, Tender, Recruitment page will be designed at first.

- Indus Net Technologies will provide 5 different layouts. CMERI officials will choose one of them or combination of few.

- Indus Net Technologies will provide 2-3 theme options to CMERI, Admin will select any of the theme.

2.7 Sections and Sub-sections of the Website

Sections	Sub-sections
About Us	▪ Institute Profile (Link Creation with Static Page) ▪ Extension Center-CoEFM ▪ Mission, Vision and Mandate (Link Creation with Static Page) ▪ Quality Policy (Link Creation with Static Page) ▪ Research Council (CMS Page for Content Addition/ Modification) ▪ Management Council (CMS Page for Content Addition/ Modification) ▪ Budget Outlay (CMS Page for Content Addition/ Modification) ▪ Organograms (Link Creation with Static Page) ▪ Director's Desk (Link Creation with Static Page)
Sections/ Divisions	▪ R&D Divisions(Template for Page Creation with following Links) ○ Major Research Areas ○ Sub-Research Area ○ Publications ○ Infrastructure ○ Team Members ▪ R&D Support Divisions (Template for Page Creation with following Links) ○ Performance ○ Team Members (Selectable from Human Resources Data) ○ Technical Services ▪ Administrative Divisions (Template for Page Creation with following Links) ○ Functionality ○ Members (Selectable from Human Resources Data)
Research & Services	▪ Thrust R&D Areas (Template for Page Creation) ▪ Other Allied R&D Areas (Template for Page Creation) ▪ Technological Services (Template for Page Creation) ▪ Testing Services (Template for Page Creation)
Infrastructural Facilities	▪ Equipments & Facilities (Template for Page Creation) ▪ Amenities (Template for Page Creation) ○ Guest House (Template for Page Creation) ▪ Estate (Template for Page Creation)
What's New	▪ Headlines (CMS Page for Content Addition/ Modification) ▪ Announcements (CMS Page for Content Addition/ Modification) ▪ Forthcoming Events (CMS Page for Content Addition/ Modification) ▪ Photo Gallery (CMS Page for Content Addition/ Modification)
Academics, Training & Courses	▪ AcSIR (CMS Page for Content Addition) ▪ Vocational Training (CMS Page for Content Addition/ Modification) ▪ Projects/ Thesis Supervision (CMS Page for Content Addition/ Modification) ▪ Training Courses (CMS Page for Content Addition/ Modification)
Career@CMERI	▪ Vacancies (CMS Page for Content Addition/ Modification) ▪ Results (CMS Page for Content Addition/ Modification) ▪ Other Notices (CMS Page for Content Addition/ Modification)
Projects	▪ Completed Projects ▪ Ongoing Projects
Performance	▪ Research Outputs (CMS Page for Content Addition/ Modification)

	▪ Publications (CMS Page for Content Addition/ Modification) ▪ Patents (CMS Page for Content Addition/ Modification) ▪ Technologies (CMS Page for Content Addition/ Modification) ▪ Copyrights (CMS Page for Content Addition/ Modification) ▪ Accolades (CMS Page for Content Addition/ Modification) ▪ Institutional Repositories (CMS Page for Content Addition/ Modification) ▪ Clients (CMS Page for Content Addition/ Modification) ▪ Annual Reports (CMS Page for Content Addition/ Modification)
Transparency Information	▪ Right to Information (Link Creation with following Static Pages) ○ CSIR Rules & Guidelines (Link Creation with Static Page) ○ General Info (Link Creation with Static Page) ○ Employee Details (CMS Page for Content Addition/ Modification) ○ Employee Strength (CMS Page for Content Addition/ Modification) ○ RTI Requests (CMS Page for Content Addition/ Modification) ○ Budgets (CMS Page for Content Addition/ Modification) ▪ Officials' Property Returns (CMS Page for Content Addition/ Modification)
Social Media & Press Coverage (Link Creation with following Pages)	▪ Facebook (Link with Logo Only) ▪ Twitter (Link with Logo Only) ▪ YouTube (Link with Logo Only) ▪ Print Media (CMS Page for Content Addition/ Modification) ▪ Electronic Media (CMS Page for Content Addition/ Modification) ▪ Press Release (CMS Page for Content Addition/ Modification)
Contact us	▪ CMERI Directory (CMS Page for Content Addition/ Modification) ▪ Human Resources (CMS Page for Content Addition/ Modification under following Category) ○ Scientific ○ Technical ○ Support Staffs ○ Administrative Staff ▪ Business Contact (CMS Page for Content Addition/ Modification)
Tenders	▪ High Value Tender Awarded (CMS Page for Content Addition/ Modification) ▪ Current Tenders
Site Map	

2.8 Platform and Resolution Specification

Table: Platform & Resolution Specification

Particulars	Web
Device	Desktops/Laptops/Mobile Phones/Tablets
Resolution & Cross-Browser Compatibility	Google chrome (version: 45.0.2454.78), Mozilla (version: 40.02), Safari (version: 5.1.7), Opera (version: 31.0.1889.174), Firefox (version: 40.02) and Internet explorer (version: 11) Latest browsers
OS Version	NA

2.9 User Definition

Following type of user will have access to the application:

Table: User Definition

User Type	Accessibility
User	Website
Content Creator	Backend
Sectional Admin	Backend
Sectional Content Approver	Backend
Admin/ Approver	Backend
Super Admin	Backend

2.10 Technology, Software and Framework Definition

Indus Net Technologies proposes the following technology and architecture:-

- **Server Side Scripting Language-PHP (Version 5.3)**
- **Framework-Drupal 7.0**
- **Client Side Scripting Language-Java Script**
- **Database-MySQL**
- **Architecture- MVC Architecture**
- **Other Technology-CSS, HTML, JQuery**

The system is divided into three phases: Layout, database, and web services. Each phase describes specific actions taken in several locations.

We have described each phase in details as follows:

Layout Phase

In this phase we will introduce the main concepts of the web application design facilities in the system.

We have to use the following tools in web design:

- HTML.
- Java Script.
- Cascading Style Sheet

HTML, an initialize of Hypertext Markup Language, is the predominant markup language for Web pages. It provides a means to describe the structure of text-based information in a document — by denoting certain text as links, headings, paragraphs, lists, and so on — and to supplement that text with interactive forms, embedded images, and other objects. The images in each web page will be created using Adobe Photoshop. We have already desired to give variety to the layout of each web page of the system. The system will be a robust, cross browser system. There are no menus or editors driven by DHTML, or the like, that can fail to work in some environments.

Cascading Style Sheets (CSS)

It is a simple mechanism for adding style (e.g. fonts, colors, and spacing) to Web documents. Using CSS, the HTML documents can be displayed using different output styles. In this system a standard CSS files has to be used to view the web pages.

Database Phase

This phase is connected with all other modules. In this phase, MySQL has to be used as web storage. It includes native support for managing XML data, in addition to relational data.

Web Services Phase

In this phase we have to use web services as references in most database actions. For example, the data manipulation is done through web services. All web services are web methods of functions that perform specific actions. Web Services allow the system greater flexibility over the Internet by allowing it to work with other systems through the Internet as if it was a standard LAN network. It uses XML to transmit the data to and from different sources. Web Services can also be considered as a connectivity tool—objects, data sets, and even cached objects can be passed to and from other servers. In other words we can say that web service is a technology to communicate one programming language with another. For example, java programming language can interact with PHP and .Net by using web services. In other words, web service provides a way to achieve interoperability.

3) Requirement Catalogue

All public and customers will be able to navigate through the entire website and its features. They will navigate through the various sections and check the functionalities of the website.

3.1 Home Page

A home page that is generally the first page a visitor navigating to a website from a search engine will see, and may also serve as a landing page to attract the attention of visitors. An ordered home page content will be given it will facilitate navigation to other pages on the site, by providing links to important and recent articles and pages, and possibly a search box. The home page will touch every aspect and it will reflect the Central Mechanical Engineering Research Institute's image and reputation. The home page will have a segmented view and a soothing color combination.

Once the user opens the URL at his/her browser address bar the home page is the first page that user will see. The home page will capture the attention of users, including all highlights and news related to the website. The rest of sections in Home Page will include Menu options, Header and Footer, and Side navigation.

- 'Achievements' section in Home page will include posts from departments.
- 'Banner' section in Home page will include images from departments.
- 'Announcements' section in home page includes posts from: tender, Recruitments, Results, Events, Notices.
- Posts which are added from backend will be approved by moderator before publishing.
- Auto archival functionality will be available in application with 15 days validity period.
- 'Thrust/Left panel quick link' section in Home page shows list of departmental categories. These links redirect users to a departments listing page. This page should show all the departments (with name, short description, thumbnail image) which fall under that particular category. 'Thrudy' section links will be present in the website for quick navigation and also the transaction should be quick. Home page will include 'Photo Gallery'.
- 'Last updated' date will be shown throughout the web pages and application forms.
- 'User profile' page will be implemented for each user.

Screenshot for the Home page is shown below. This needs to be finalized and approved by Client.

Figure: Home Screen

Unique Typography-

Most organization have a particular family, style, and size of a font, or typography, that they use that helps their customers immediately identify them versus their competitors. Typography technique will be used in this website that will help to lead readers to different parts of the website. This allows readers to immediately identify the brand name. It will also segregate the Central Mechanical Engineering Research Institute portal from the other websites in the same segment.

Hover Effects-

Hover effects help you identify where you are on a page. When you place your cursor over a part of a website that has a hover effect, it usually changes colors or highlights letting you know where you are looking. This feature also enriches the look and feel of the website.

Scroll to Page Sections-

It has a very particular advantage i.e. first, instead of clicking from one page to another to get all of the information; it'll give everything on one page. That means there is no need for multiple pages to load to get the content you are looking for, and usually the content is in the order that makes the most sense for the website visitor. So only a scroll from section to section will give the desired information.

Large, Responsive Images-

Larger images of the Central Mechanical Engineering Research Institute will help to attract the readers from all over the places. The images of the meetings, colleges, etc will also enhance the elegance look of the website. The home page will also contain image sliding facility and they will keep on changing their views and sliding after a certain amount of time.

Other Common Elements-

The home page will have different sections like Latest Updates and News & Events etc. These sections will contain information and news from the office. The institute's logo will give the website even a rich look. The website will have a very smooth navigation. The footer will contain certain message with additional information like "Privacy Policy", "About Us", "Terms & Conditions" and "Contact Us" , "Copyright Policy", "Feedback" ,"Sitemap" and "Disclaimer" etc.

The footer will also contain a time stamp and counter indicating the time and no. of visitors respectively.

3.2 Text Based Navigation

Text-based navigation is where all of the navigation info (links, information about those links, any cool little widgets you have, and so on) is listed in the text. The reason why you should rely on this when designing your page: Search engines can read the content of your text and can use the anchor text in the links to assign weight and relevance to those pages. Further, site navigation will have consistency. As you will browse around the Central Mechanical Engineering Research Institute website the navigation bar will remain. The navigation will change to indicate where you currently are in the site and provide further links to deeper within the area. For example, clicking on the "Articles" tab will take you to the main articles area, which then contains links to some of the most recent articles and a collection of links to sub-areas on topics like "Accessibility".

3.3 Context & Color

The website will have a soothing color combination which will provide a calm platform to its reader. The Govt. of India guideline emphasizes upon certain things while developing & designing a website which will be featured later.

There are some guidelines related to the context and colors are mentioned below:

Skip to Main Content-

An option will be given in the header part which will help the users to skip to the main theme or content of the website.

Resizable Fonts-

In the header part an option will be given for reducing and increasing the sizes of the text of the contents in the website which will help the users to read the context in their comfort zone.

Theme and Contrast Management-

This will have a functionality where the user can change the theme and color (with a flexibility of changing up to maximum 3 or 4 colors) of the website according to its requirement.

Screen Reader Access-

This will enable peoples 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 JAWS, NVDA, SAFA, Supernova and Window-Eyes etc.

3.4 Accessibility & Resolution Independent

The overall content shall be properly designed and put in separate pages as per its content. The overall content shall be proper tagged to make them screen reader friendly. It shall be compatible with the updated version of all leading internet browsers like Internet Explorer, Mozilla Firefox, Google Chrome and Smart mobile phones. The design structure shall be resolution independent. The site will also be accessible on all platforms like windows, Mobile phones, Linux, Mac OS etc.

It is ensured that the website adjusts itself automatically as per the screen resolution of the website visitors PC i.e. 1024*768, 1200*800 etc. Resolution independent website will automatically expand/compress itself as per the screen resolution and hence there should not be any vertical scroll in the website structure.

3.5 Responsive Website Design

In order to achieve Responsive Website Design INT will be using HTML5 and CSS3.

A Brief on RWD:

Responsive web design uses CSS media queries to serve different style properties depending on the screen size, orientation, resolution, color capability and other characteristics of the user's device. Using the responsive web design approach, a web page can adjust itself on the device it's being displayed on. It is the approach that allows the website to respond to the device that it is being viewed on.

3.6 Bi-Lingual Language Support

- The institute wants the website to be bilingual in both English and Hindi languages. This will be implemented during the development. The website will be bilingual and will be universally accessible by using Unicode Compliant Font.
- Administrator may be able to Add/Edit/Delete content for both the language from the same page.

3.7 Media Centre

- This section will contain the following things like Speeches (Audio/Video), Photo and Video Gallery and Press Releases etc.
- The speeches during any meeting and conferences will be placed in this section. User in the website can access this particular section and will be able to view and listen the same.
- In Photo Gallery after clicking the Photo section on the main Website the Visitor would get the thumbnail of all the photographs available. Once the user clicks on any particular thumbnail its large image will be shown. This section can also be divided in categories if the user wants. The same goes for the Video Gallery Management. All the videos relating to the institute will be placed here. By clicking on the thumbnails of the videos the larger part will be shown and from there the user can play the videos.
- The press releases will also be placed in this section which can be accessed by the users.

3.8 Integrated Search Functionalities

Full text search (both Hindi and English) would be provided in the website for all the content entered through the CMS. On entering any keyword, the system would search in all the pages and would provide links where that word is present. On clicking the link the content would be displayed. Search will be specific to the website. Any documents can also be searched in this section by entering the keyword of the document.

Along with this feature a Google Custom Search section will also be provided in the website where the user can search anything globally.

3.9 Auto Archive Management

It will be ensured that the expired contents are automatically removed from the main website. There will be an Auto Archival System available on the Website, which shall transfer the expired content in archives section as soon as it shall reach expiry date. Archived Data will be available in each page along with search option to search data between given dates.

3.10 Feedback Management System

This facility will lie with the Admin. Admin will have the authority to access the feedbacks from the people. The feedback can be viewed in the feedback panel and from that section admin will be able to reply to the feedbacks. Admin will be responsible to resolve the queries asked by the visitors through Email. Users can also share various ideas/thoughts through this section and admin will be able to revert back to them.

3.11 Frequently Asked Question-FAQ Management

Through this section users will be able to view a list of the frequently asked questions along with their answers related to Central Mechanical Engineering Research Institute. Administrator will have the provision to Add, Modify or Delete the questions and answers as and when required. This can be treated as quick access tool for certain queries arises during surfing the website.

3.12 Social Media Integration

The website will have the links to the social platforms like Facebook, Linked In, Twitter etc. User can share the photos and videos of the Central Mechanical Engineering Research Institute by clicking on the share button in the website. It will create awareness among the people and increase the audience for Central Mechanical Engineering Research Institute as well. The Press Coverage can also be inserted in this section. The press release/electronic media/print media can also be added to this section on approval from client.

3.13 Important Links

This section will have all links of bodies/organizations associated with the institute. This will allow the web visitor to go to external links without leaving the main site. It will also minimize the time and effort of the web visitors in searching for those sites independently.

For Ex- The website will contain the links like www.mygov.in, www.india.gov.in, www.tourism.gov.in etc.

3.14 Features of the Website for Disable Persons: Disable Friendly

Some Common accessibility features are also available for disabled persons which are mentioned below:

User Group	Accessibility Features
■ **Persons with Visual Impairments/Blind Persons** ■ **Additional Features for Persons with Low Vision**	▪ Image descriptions ▪ Heading structure ▪ Titles for web pages ▪ Headers, captions and summary provided for tables ▪ Options to skip to main content ▪ down menus and collapsible list with keyboard support ▪ Descriptive link text ▪ Transcripts for audio-video content ▪ Increase/Decrease Text Size ▪ Color Contrast Options ▪ Print and Large Print
■ **Persons with Hearing Impairment**	▪ Synchronized Captions ▪ Transcripts for audio-video content
■ **Persons with Functional Impairment in the Upper Limb**	▪ Options to skip to main content ▪ Drop-down menus and collapsible list with keyboard support ▪ Increase/Decrease Text Size ▪ Increase/Decrease Text spacing
■ **Persons with Mental Retardation, Autism, and Learning Disabilities**	▪ Color Contrast Options ▪ Increase/Decrease Text spacing ▪ Iconic Learning ▪ Descriptive link text ▪ Print and Large Print

Iconic Learning-

Text has been supplemented with icons to enable users with learning disabilities understand the information easily. Icons will be provided, along with text labels, for key navigation options as well as important features, such as print, email etc.

Images and Audio-

Video Content

Alternate Text-

Brief description of an image will be provided for users with visual impairment.

Synchronized Captions-

Captions will be added to enable users with hearing impairment access the audio/video content effectively.

Text Transcripts-

Transcripts will be provided for people with hearing impairment, deaf-blind users, and people having low bandwidth.

Skip to Main Content link-

Provided for quick access to the core content on the page.

3.15 Web Content Management System

A Content Management System (CMS) allows publishing, editing, and modifying content as well as its maintenance by combining rules, processes and/or workflows, from a central interface, in a collaborative environment & a WEB content management system is a tool used to control a dynamic collection of web material, including HTML documents, images, and other forms of media. A CMS facilitates document control, auditing, editing, and timeline management. A Web CMS allows non-technical users to make changes to a website with little training. Generally CMS is used to separate content from presentation. The website of Central Mechanical Engineering Research Institute will be a Web CMS.

At the company level, Content Management Systems (CMS) store and manage an organization's electronic document and Web content so that the employee of the company can reuse the information across different applications. The core application of the CMS is to manage content during its entire lifecycle i.e. from creation through publishing. A Web Publishing CMS allows non-technical authors and editors to easily and quickly publish their content which is otherwise done by technical programmers.

There are three basic participants in the web publishing CMS system:

- Content Authors (Create the content for the web)
- Content Editors (Decide what content to publish and where)
- Content Manager/Publishers (Publish the content on the web)

The above mentioned roles are the synonyms of Content Author, Content Creator and Content Approver. Above these roles there will be also Local Admin for each individual section and Super Admin for managing the overall website.

The different kinds of functions performed in a Web CMS may be defined as follows:

- Creating Content
- Storing Content
- Indexing Content
- Searching Content

- Retrieving Content
- Publishing Content
- Archiving Content
- Revising Content
- Managing Content end-to-end

Functionality of CMS

The Content Management System (CMS) is to be developed in order to facilitate the capturing of information into the **Central Mechanical Engineering Research Institute's** web site.

- Every user will be authenticated via simple user name and password. There will be various privileges associated with different users.
- There will be a functionality that will allow files (e.g. DOC, DOCX, PDF, TXT, JPG, PPT, JPEG, XML) to be uploaded onto the CMS.
- Admin will have the option to also upload the .csv files. Both importing/exporting facility will be available with the Super Admin.
- There will also be additional functionalities like Reporting, edit/delete content, Text formatting tool, Search option, creation of new content etc.
- The CMS will provide a means for system users to see what it is currently published and what is waiting to be published.
- The CMS will allow existing HTML templates to be edited and new ones to be created by authorized users.

3.16 Admin Panel

Admin Panel serves as the gateway to manage the website. The admin panel is a special password protected page in the website so only the authorized user can access the panel. The admin panel will give the user a complete control over the website. The dashboard will have some important information in the admin panel. The following things will be managed by the admin and the same will be reflected in the website:

Admin will have the authority

- To add, remove and edit the menus and submenus.
- To edit and remove the content in different sections of the website.
- To upload and remove the photos/videos from the image gallery.
- To add and remove users of the system
- Managing the Feedback section
- Managing the FAQ section
- Managing the e-Newsletter, etc
- Assigning roles to the various Users
- Complete control over the Content

3.17 HR Module

- This section will allow HRs of CMERI Organization to add employee details of any department.
- HR Users can login into the system using their Email-id and Password.
- HR Users can manage employee details and modify their details such as add/edit/delete.
- Approval privilege will be given to Admin only. Admin will view the details of the employee and approve it.

3.18 Role Based Access Control

RBAC is a model in which roles are created for various job functions, and permissions to perform certain operations are then tied to roles. A user can be assigned one or multiple roles which restrict their system access to the permissions for which they have been authorized. Three primary rules are defined for RBAC:

- **Role assignment:** A subject can exercise permission only if the subject has selected or been assigned a role.
- **Role authorization:** A subject's active role must be authorized for the subject. With rule 1 above, this rule ensures that users can take on only roles for which they are authorized.
- **Permission authorization:** A subject can exercise permission only if the permission is authorized for the subject's active role. With rules 1 and 2, this rule ensures that users can exercise only permissions for which they are authorized.

3.19 Additional Sections

News & Events:

The News & Events section will give the details of the latest events, the latest happening and the weekly/monthly news letter, news clips etc. e-Newsletter may be printed weekly/bi-weekly/monthly etc.

This section will have submenus like:

- What's New
- E-Newsletter
- Latest Updates

Tender Panel:

This is the one of the important section of the website. Through this section people will get to know about the upcoming tenders of the Central Mechanical Engineering Research Institute. The corrigendum, Addendum and Notices related to certain tenders will also be published in this section. The NIT, tender document etc can also be downloaded from this section.

Circulars/Notices:

The different kind of notifications, circulars (officials), Minutes of Meeting, documents, papers, etc will be posted in this section. Only .pdf/.doc/.docs/.xls/.pptx files are allowed to be uploaded in this section. Admin will have the functionality to upload the circulars and notices in this section.

Sitemap:

The website will have a proper sitemap placed in the footer part of the website. This is not mandatory that the Sitemap section will be in the footer part, it may be placed anywhere in the website but generally this section lies in the footer part or very rarely in the header part of the website. This section will show the complete list of pages in the website and the relation between them. It can also be shown to the user in a graphical/infographics format. User will be able to know the different sections and the subsections coming under them.

RTI Section

This section will provide the user with all the information pertaining to the RTI Act. This content of this section can be maintained and viewed in both the language. Administrator will have full control on all the content of this section and he can update the details as and when there is any new content.

3.20 Registration Module for the Users

There are some reports which will be made available in the website by the Admin. Due to some confidentiality issues those reports are only accessible by some restricted users. Those users need to be registered in the website by following a simple registration procedure. The step by step registration procedure is given below:

Step by Step Process for Registration

- The user needs to click the registration link present in the website. It will take the user to the registration page where the user needs to provide the details.
- User has to provide details like Name, Mobile No, Email ID etc.
- After clicking the submit button a User ID and Password (Temporary) will be provided to the user for logging into the account. User needs to change the password after logging into the account for the first time.
- In his log in panel the user can access the restricted files.
- The files will be uploaded by the admin then only the user will be able to view or download the same.

3.21 Web Analytics

For the web analytics section we will integrate the Google Web Analytics API in the website which will give the desired result to the user. Site Analysis, Event Tracking, in page Analysis, Visitor traffic, Analysis of Visitor Traffic, Traffic Source etc are the features will be available in this section.

3.22 Security Section

Below mentioned the security feature that will be kept in mind while development:

- Each user will be authenticated via unique user ID and password while before logging into the account.
- Password policy will be implemented for all the users.
- There will be CAPTCHA management functionality in the website. Different kinds of mechanisms will be used in captcha section such as text Description of images, visual/audio etc. In order to prevent machine/robotic interference in a system Captcha section is used.
- The data communication between different layers will be done through SSL. SSL uses a certain cryptographic system that uses two keys to encrypt data. A public key known to everyone and a private/secret key known only to the recipient of the message. Moreover, the website along with the application will be hosted on a secured server where the URL starts with https instead of http.

4) Project Management Approach

Our project delivery framework is based on best practices of **ISO** and **SEI CMM** guidelines. Defined procedures are implemented in a controlled environment for many project delivery aspects including:

1. Project Initiation
2. Project Planning
3. Define Communication Strategies
4. Risk Management
5. Quality Assurance Management
6. Development Lifecycle Management
7. Configuration Management
8. Project Metrics
9. Release Management
10. Change Control
11. Support Management
12. Documentation
13. Customer Satisfaction Surveys

At Indus Net, we continuously track, evaluate and assimilate latest developments in software engineering & creative research paradigms. Consequently, we develop software of the highest quality for clients by selecting the most appropriate software paradigm.

Our Quality Management System mandates collection of project matrix information at all stages of a project including Effort Variance (%), Schedule Variance (%), Defect Density, Productivity, Efforts till-date (PD), % Completion, project schedule, issues and risks, tasks completed during the reporting period, etc.

These metrics help in tracking of the project performance and compliance to the client requirements. The analysis of these figures helps in identification of process improvements and continuous performance improvements in subsequent engagements.

We adopt a tool-based approach, where appropriate. Our QMS lays a strong emphasis on Defect Prevention throughout the project life cycle. Emphasis is on catching defects as early as possible in the software development life cycle.

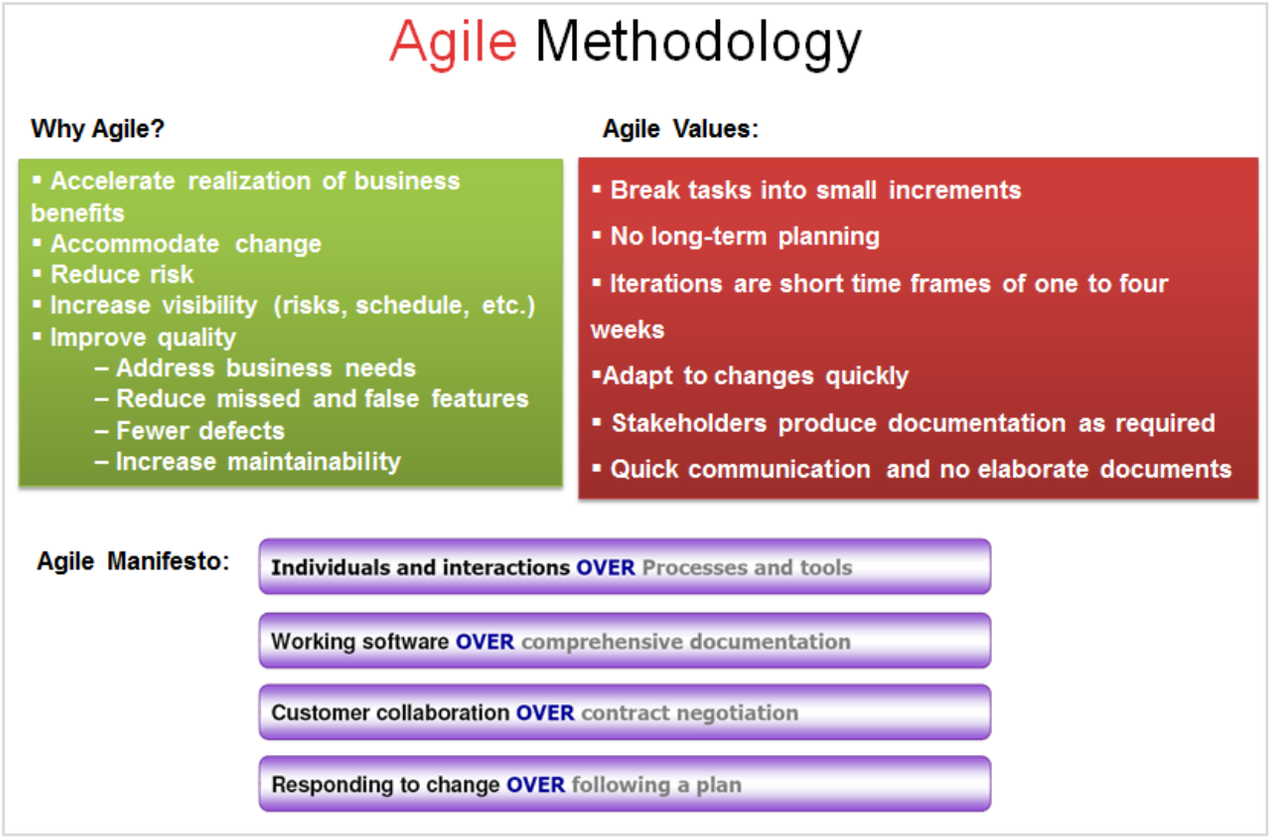
Consequently, QA activities such as – independent reviews/inspections, root-cause analysis, internal quality audits

and software quality assurance - are conducted at predetermined intervals throughout the project life cycle.

Strong management focus of each project is ensured through monthly Project Board Meetings. Metrics have been defined for measuring, tracking and reporting on all aspects of software quality.

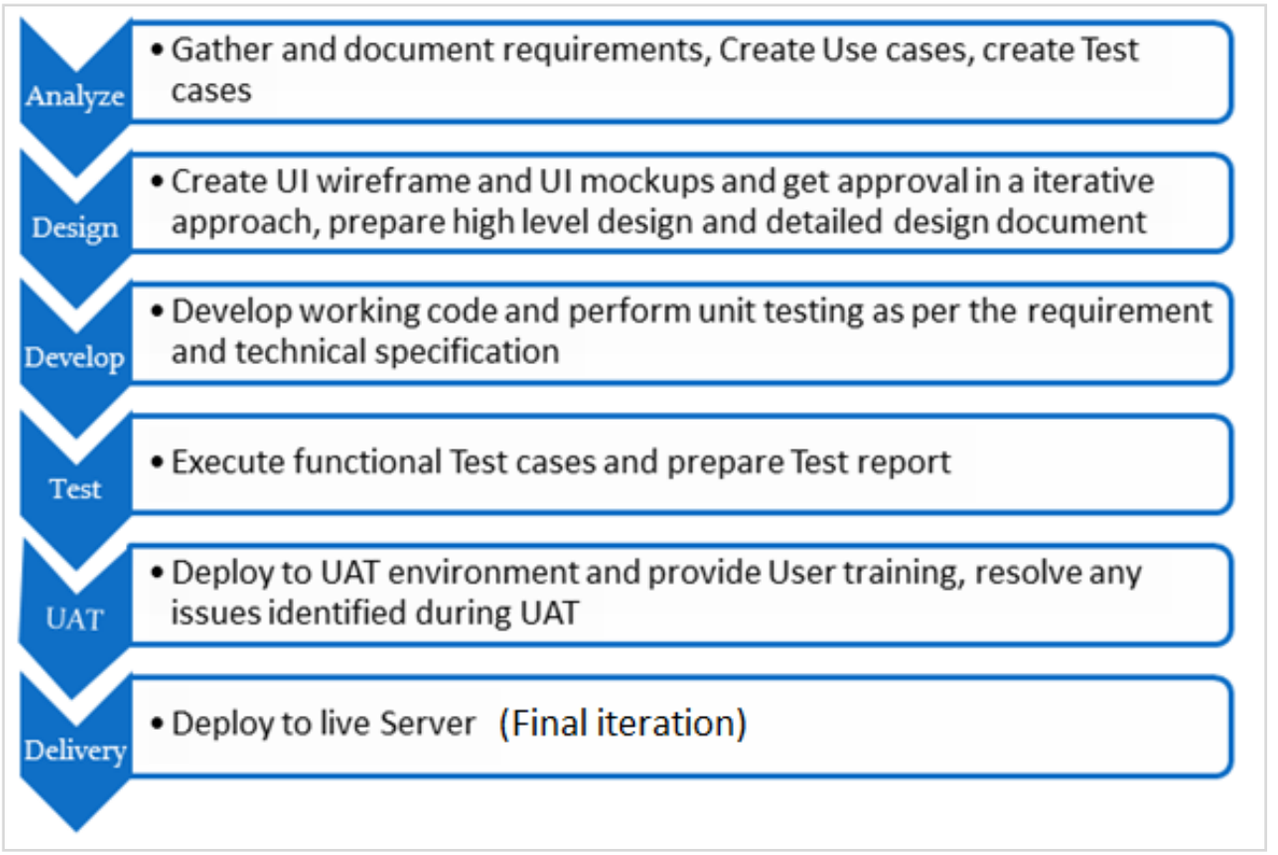
Agile Iterative Model Would Be Followed for the Project

Figure – Agile Methodology



Iteration Life Cycle

Figure – Iteration Life Cycle

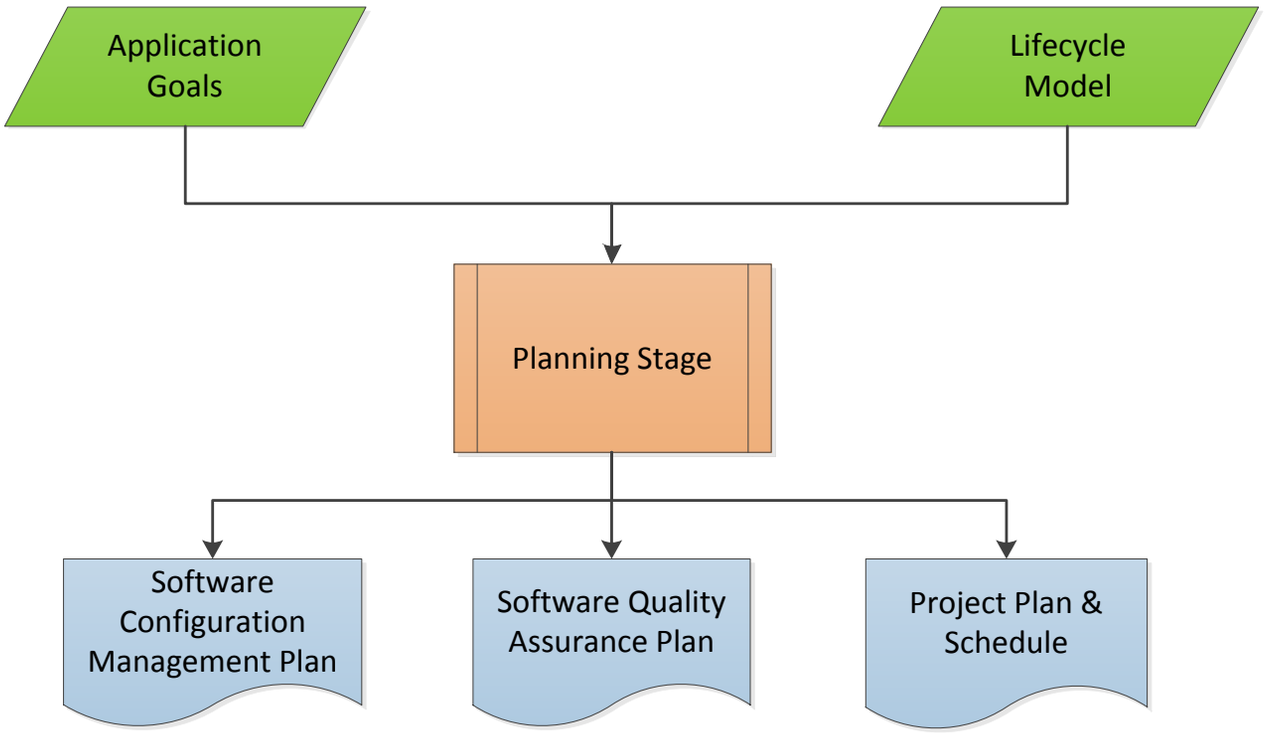


Initiation & Planning Stage

The planning stage establishes a bird's eye view of the intended software product, and uses this to establish the basic project structure, evaluate feasibility and risks associated with the project, and describe appropriate management and technical approaches.

The Project Plan is prepared and it becomes the master document to plan the entire project lifecycle.

Figure – Initiation and Planning Stage



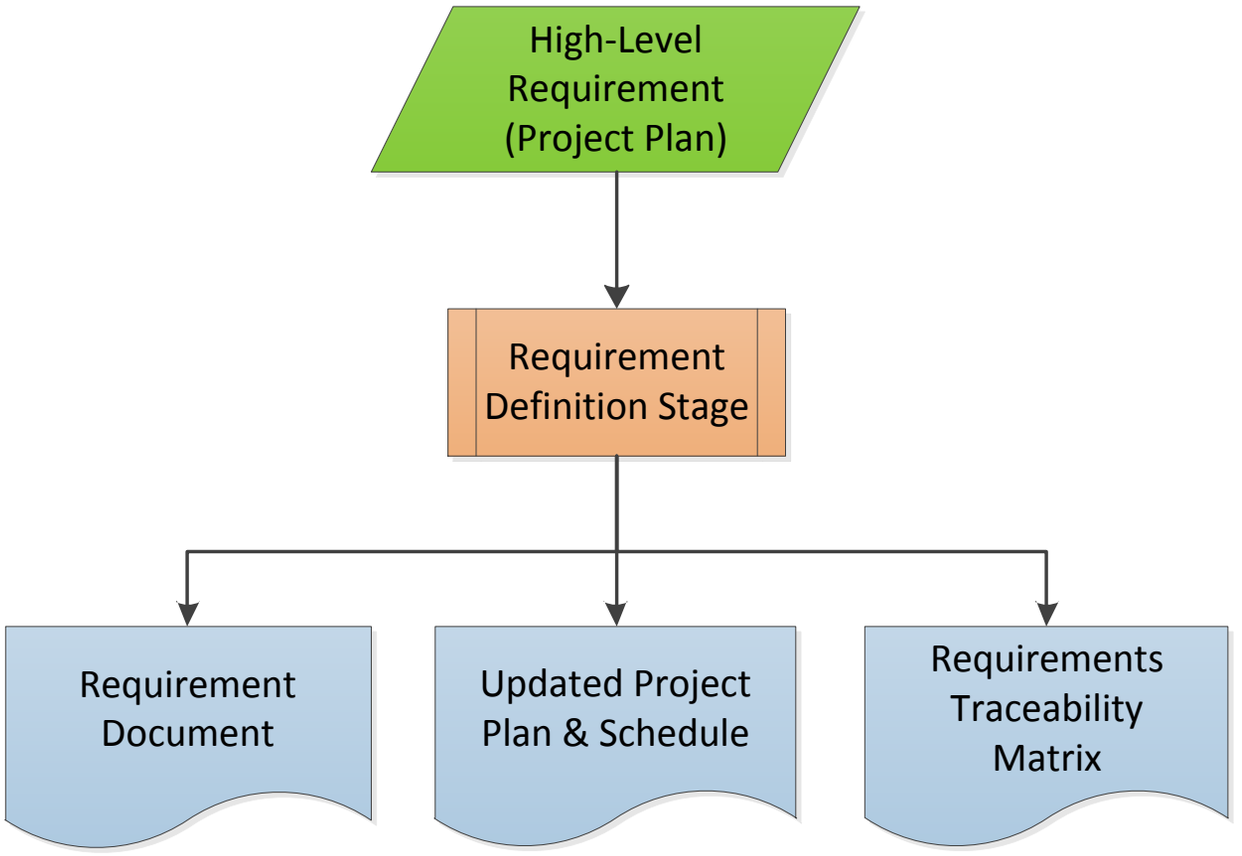
Requirement Definition Stage

These requirements define the major functions of the intended application, define operational data areas and reference data areas, and define the initial data entities. Major functions include critical processes to be managed, as well as mission critical inputs, outputs and reports.

The requirements are defined in a document called 'Software Requirement Specification' and/or we also create similar documents like 'Requirements Catalogue' etc as basically they contain complete descriptions of each requirement, including diagrams and references to external documents as necessary.

A Requirements Traceability Matrix is also prepared to act as a marker and checklist to manage the Requirements and Tracing them in the project output scenario. In this format, each requirement can be traced to a specific product goal, hence the term *requirements traceability*.

Figure – Requirement Definition Stage

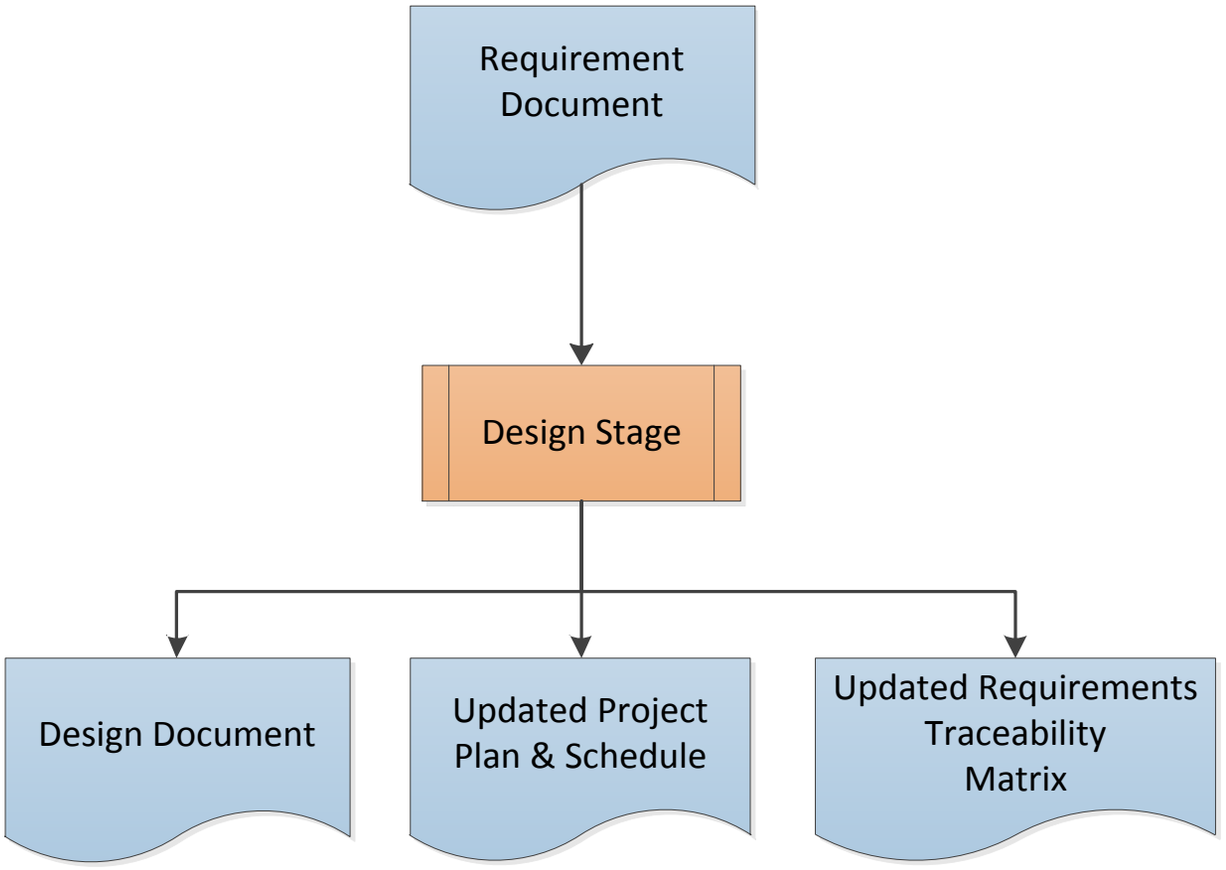


Design Stage

This being a very important stage in the project lifecycle and generallyinclude functional hierarchy diagrams, System Design Documents, screen layout diagrams, tables of business rules, business process diagrams, and a complete entity-relationship diagram is prepared.

This forms the basic architecture of the entire project, and proper importance in given to maintain the robustness and scalability of the current development with a foresight view of the future possible scenarios.

Figure – Design Stage



Development Stage

The development stage takes as its primary input the design elements described in the approved design document. For each design element, a set of one or more software artifacts are produced. Software artifacts include but are not limited to menus, dialogs, data management forms, data reporting formats, and specialized procedures and functions.

Appropriate test cases are developed for each set of functionally related software artifacts, and unit level testing becomes an integral part of this development process besides parallel coding and GUI design part.

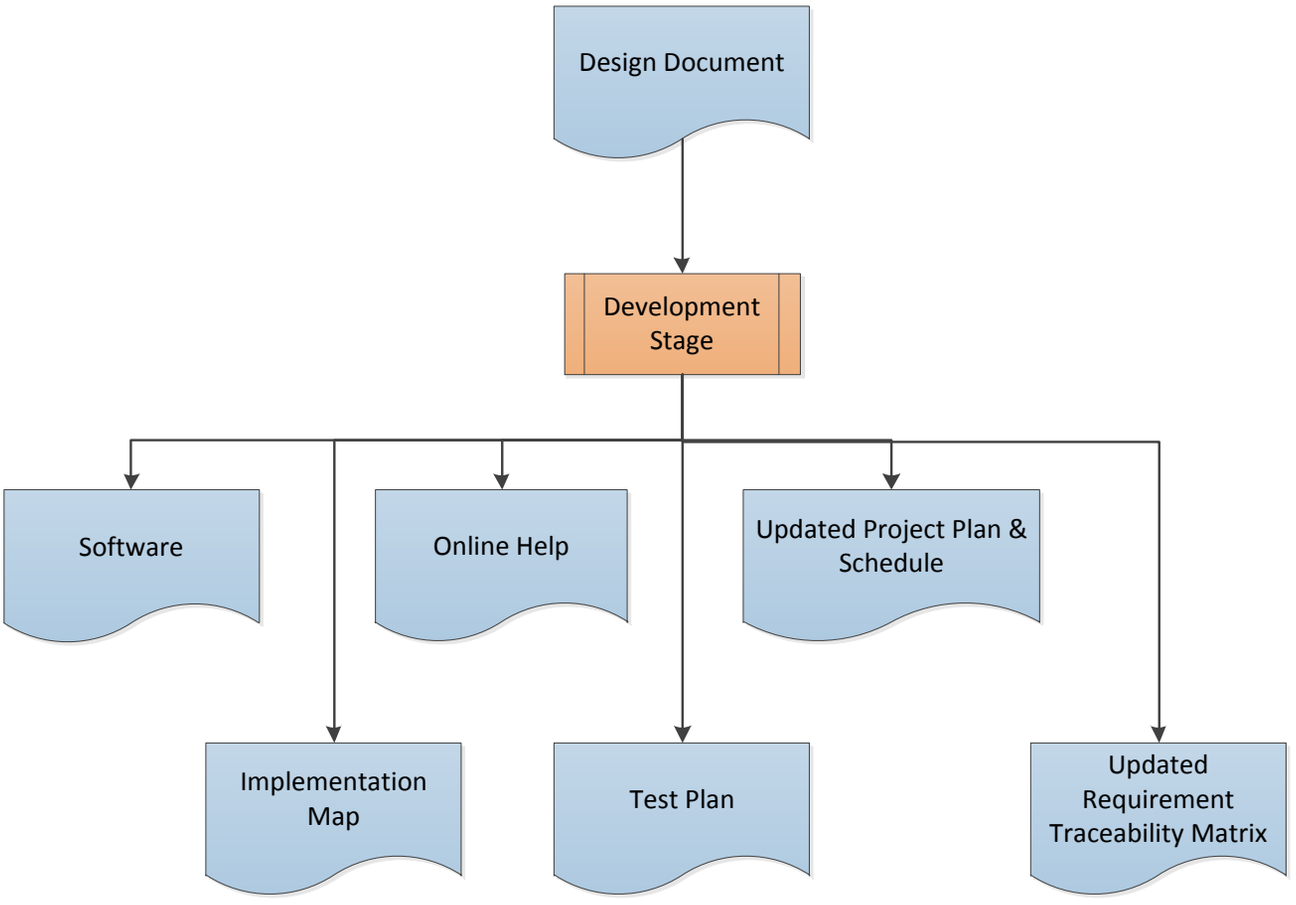
In this stage, from the project management perspective the Project Monitoring and Control takes a pivotal role to manage and track the progress of the project.

The Quality aspect also plays a crucial role in this stage and all best practices are followed to ensure the Quality

part of the delivery. Activities like updating the test plan that describes the test cases, used to validate the correctness and completeness of the software, an updated RTM, and an updated project plan are the control points at this stage.

The online Help is also prepared as the guided manual to record the functionalities of the system in a lucid way to the end user of the system, though often the Help is finally updated with screenshots etc after the completion of this stage.

Figure – Development Stage



Integration & Test Stage

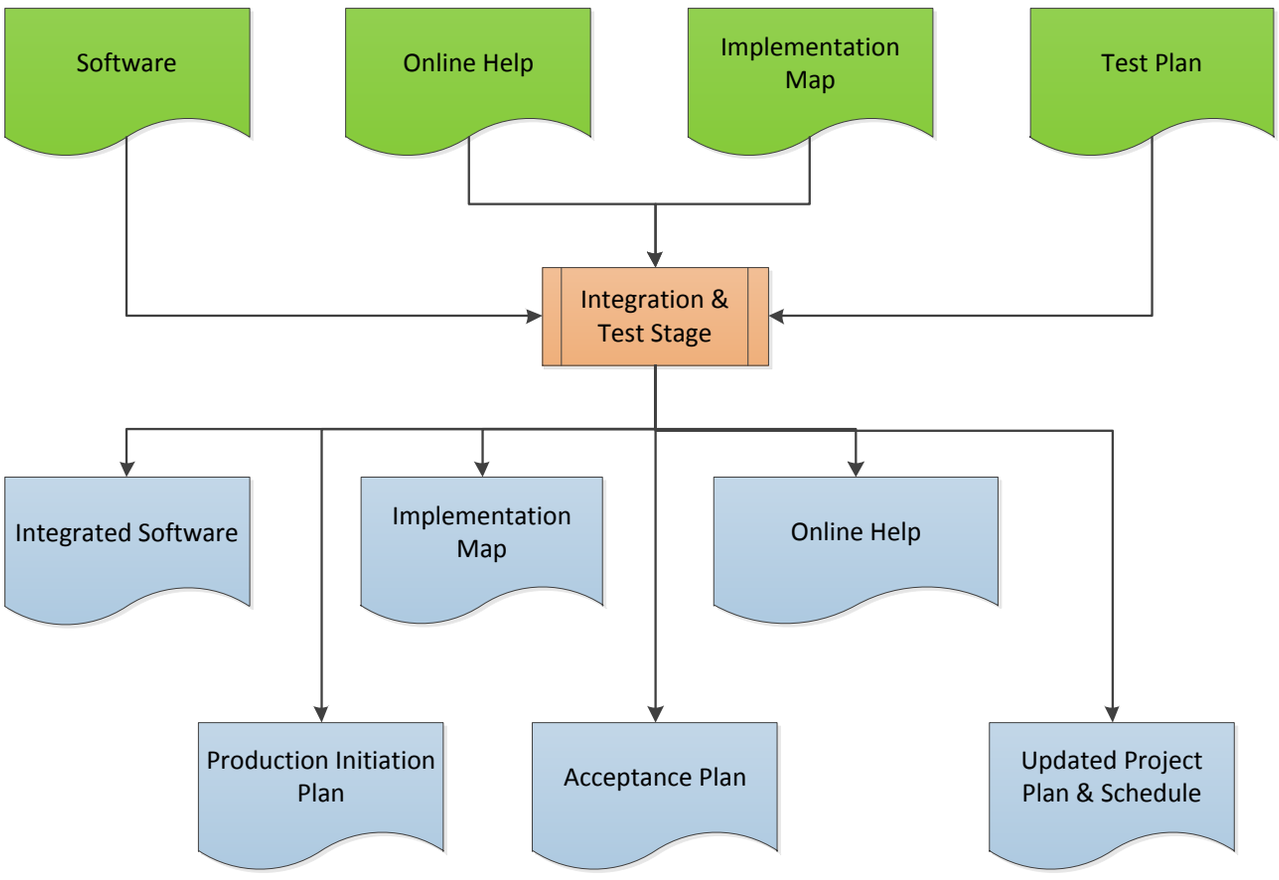
During the integration and test stage (including the UAT), the software artifacts, online help, and test data are migrated from the development environment to a separate test environment.

At this point, all test cases are run to verify the correctness and completeness of the software. Successful execution

of the test suite confirms a robust and complete migration capability. Proper Integration tests, Performance tests, automated tests are carried out at this stage to ensure the Quality part of the delivery.

For phase wise implementation (for large projects, if required), an Implementation Map is also prepared for a smooth and gradual Implementation.

Figure – Initiation and Test Stage



Delivery & Acceptance Stage

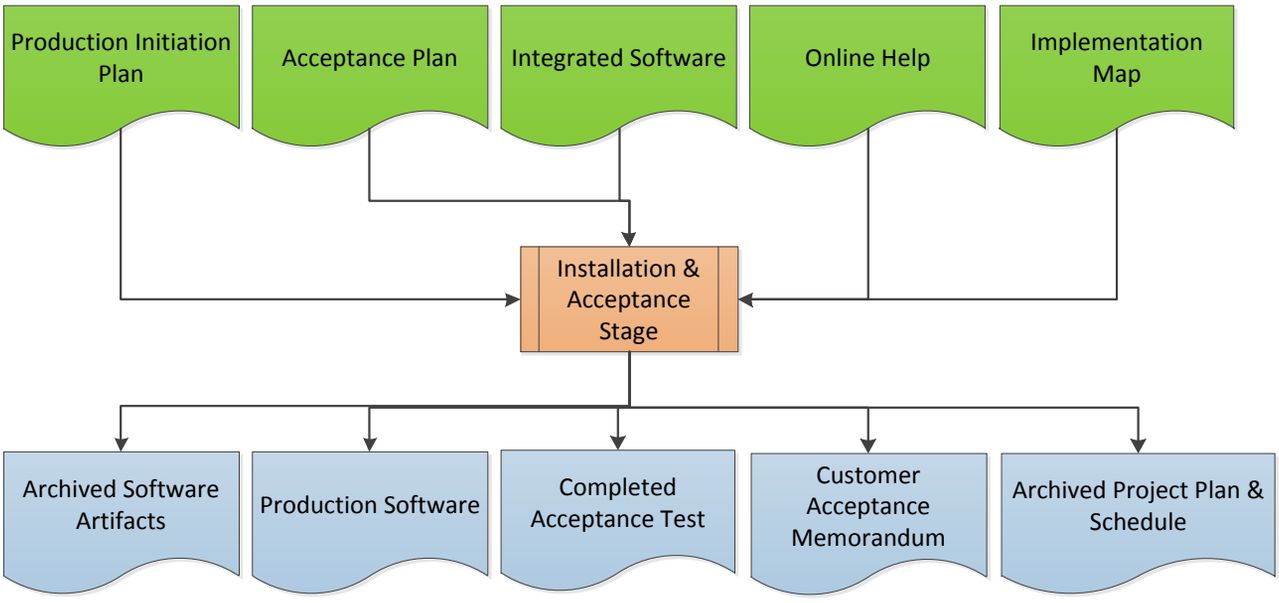
During the installation and acceptance stage, the software artifacts, online help, and initial production data are loaded onto the client production server. All delivery details are mentioned in the 'Release Note' document. After satisfactory acceptance of the final delivery, formal Sign-Off for Acceptance is obtained from customer. The project enters into the Support part after the 'Go-Live' stage.

All project deliverables are handed over to customers which normally includes full source codes, manuals, lessons

learnt document, other agreed documents, if any.

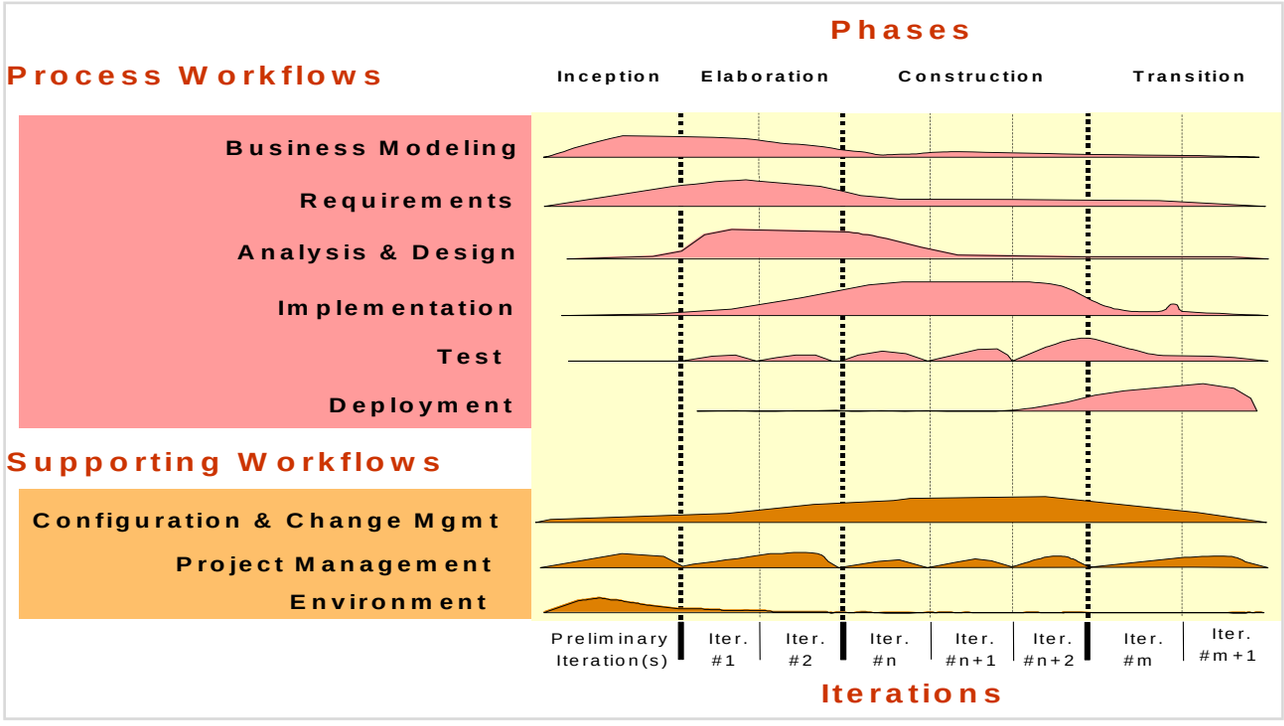
The project artifacts are internally moved to the Project Data bank.

Figure – Delivery and Acceptance Stage



Implementation Process Workflow

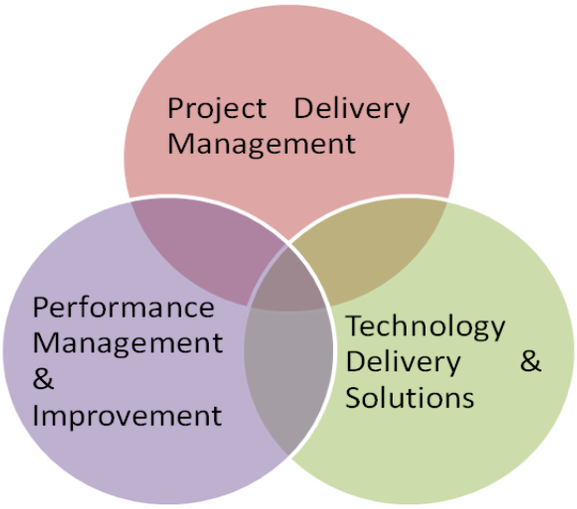
Figure – Implementation Process Workflow



5) Delivery & Project Implementation Schedule

Solution Delivery is at the core of every successful consulting project. To ensure success, Indus Net has a proven best practice methodology that can be customized to support projects of various size and scope.

Figure – Project Implementation



Project Delivery Management	**Performance Management & Improvement**	**Technology Delivery &Solutions**
> Program Management > Project Management > Business Analysis & Requirements > Change Management > Project Management Office (PMO) > Quality Assurance & Testing > Software Release Management	> Enterprise Performance Management (EPM) > Business Intelligence > Process Improvement > Compliance > Risk Management > Data Management & Governance	> Enterprise Data Management > Business Intelligence > Enterprise Performance Management (EPM) > Application Architecture & Development

Project Cycle

A project cycle describes the various phases - and their sequencing - that a project must go through from beginning to end in order to realize its objectives.

Figure – Project Cycle

Here are 5 phases in every Software development life cycle model:

- Requirement gathering and analysis
- Design
- Implementation or coding
- Testing
- Deployment & Maintenance

1) Requirement gathering and analysis: Business requirements are gathered in this phase. This phase is the main focus of the project managers and stake holders. Meetings with managers, stake holders and users are held in order to determine the requirements like; who is going to use the system? How will user use the system? What data should be input into the system? What data should be output by the system? These are general questions that get answered during a requirements gathering phase. After requirement gathering these requirements are analyzed for their validity and the possibility of incorporating the requirements in the system to be development is also studied.

Finally, a Requirement Specification document is created which serves the purpose of guideline for the next phase of the model.

2) Implementation / Coding: On receiving system design documents, the work is divided in modules/units and actual coding is started. Since, in this phase the code is produced so it is the main focus for the developer. This is the longest phase of the software development life cycle.

3) Design: In this phase the system and software design is prepared from the requirement specifications which were studied in the first phase. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture. The system design specifications serve as input for the next phase of the model.

4) Testing: After the code is developed it is tested against the requirements to make sure that the product is actually solving the needs addressed and gathered during the requirements phase. During this phase unit testing, integration testing, system testing, acceptance testing are done.

5) Certification & Deployment: After successful testing the product is delivered / deployed to the customer for their use by getting certificates & approval from the respective app stores.

6) Maintenance: Once when the customers starts using the developed system then the actual problems comes up and needs to be solved from time to time. This process where the care is taken for the developed product is known as maintenance.

Project Implementation Methodology

Specific processes will be followed throughout all phases of this initiative. The following points illustrate the phases through which the project will be implemented. Brief descriptions of activities in each phase are listed below.

Inception

Entry Criteria: Signed Contract

Project Kick-off Meeting

On signing the contract INT will assign a Project Manager for the project who will start with the kick off meeting with the client senior management and core users. The objective of the kick off meet will be to:

- Finalize the implementation team from client and INT including structure, escalations, reviews and responsibilities
- Implementation methodology tailoring for this project and aligning on the scope, deliverables and timelines.
- The Client will designate a project coordinator who will liaise with INT on all aspects of implementation and will take all relevant decisions with regard to the implementation of the system on behalf of the Client.
- After the Kick off meeting INT analysts will work with Client's designated project coordinator to complete the following tasks:
  - Understanding system requirements
  - Clarity and a common understanding on the Project Scope] and boundaries, interface matrix, functional and non-functional requirements, project schedule and delivery plans are also arrived at during this phase
  - Understand the system architecture
  - Get familiar with the various interfaces
  - Project Initiation and establishing development and test environment
  - Establish and develop a common understanding on the standards, guidelines and conventions to be followed.

Elaboration

The purpose of the elaboration phase is to analyze the problem domain, establish a sound architectural foundation, and to eliminate the highest risk elements of the project.

Construction

This phase involves customization programming and testing. The developers will implement the common application framework, and all the interfaces. The developers will also perform unit testing. Programming and unit testing will be followed by system testing. The development team will do the testing. This Phase includes:

- Development and testing of Customized Application and other deliverables for acceptance
- Prepare Unit Test Specifications
- Prepare System and Integration Test Specifications
- Developing unit test stubs for unit testing
- Programming and unit testing

Transition

Transition phase will primarily be an activity carried out with users and client technical staff. Following activities are performed during this phase:

- Support during User Acceptance Testing
- Implementation Support during System roll-out
- Post Implementation Support
- Training of end users and System maintainers
- Migrating operational data into the new system
- Parallel run with an existing system (if required)
- System rollout (cut-over)

Closure

Exit Criteria: Project Sign off from client and all issues are tracked to closure.

System Acceptance / Project Sign-off

A final review of the implementation deliverables and completions will be carried out by the implementation team and the Client will sign off the project.

Client Feedback and Reference Letter

INT will request the client for feedback on the whole project and also for a reference letter based on their experience of implementation of the project and how the product meets their requirements and objectives set out prior to signing the agreement.

Approach

We follow Proto-cycling approach for rapid deployment within client sites. This approach has been recognized as far more superior to the conventional water-fall methodology. Following is a brief description of our engagement model.

Contract and Commitments:

Project Signoff Day

Kickoff and Team:

Dedicated team immediately takes over the task of implementation and roll out. INT will introduce the Project Steering Committee and the Project Management Team. The Project Manager will submit a project plan along with the dependency matrix etc.

Prototype 1:

App version 1 is released for full scale trial to limited users in order to gather critical feedback

Prototype 2:

App version 2 then implements the feedback from version 1 followed by the final feedback

Go Live Version:

The version 3 is then released for full functional release

Data Management:

While the proto-cycles are being developed, data schema is frozen and also data entry and import logistics is executed so that at the time of trials, the actual data is available.

Learning Management:

Intensive learning modules are conducted to mitigate the risk of non-usage at the user level over first month to ensure smooth and successful transition from manual to automated change management.

Support:

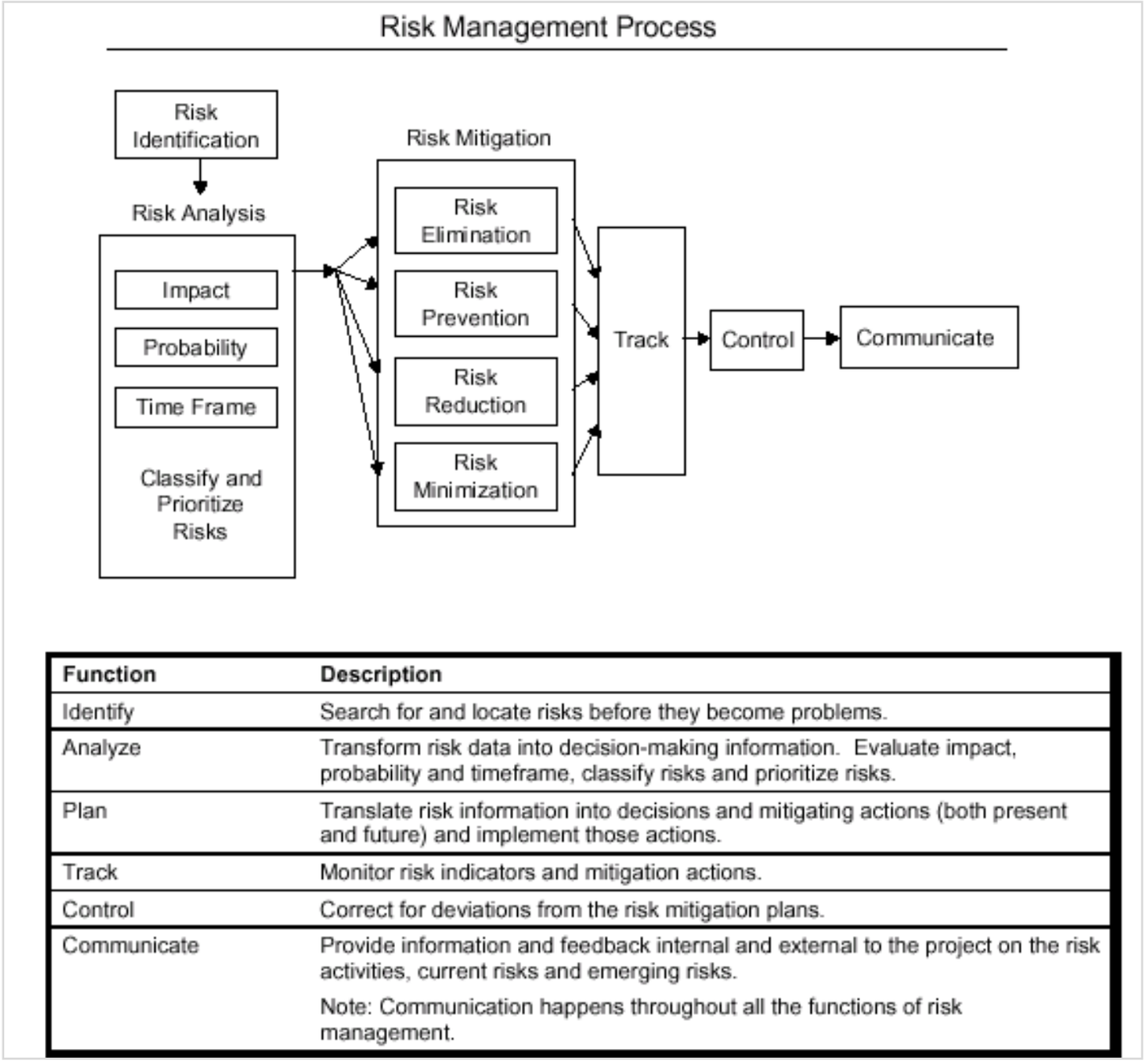
Hand holding and other support functions take over from the implementation team soon after the handover phase is completed.

Benefits

- Quickest Possible roll out
- Low cost of implementation
- Quick ROI
- Serviced and Managed Software

6) Risk Management

Figure – Risk Management



Function	Description
Identify	Search for and locate risks before they become problems.
Analyze	Transform risk data into decision-making information. Evaluate impact, probability and timeframe, classify risks and prioritize risks.
Plan	Translate risk information into decisions and mitigating actions (both present and future) and implement those actions.
Track	Monitor risk indicators and mitigation actions.
Control	Correct for deviations from the risk mitigation plans.
Communicate	Provide information and feedback internal and external to the project on the risk activities, current risks and emerging risks. Note: Communication happens throughout all the functions of risk management.

7) Quality Assurance

Quality Assurance Methodology

INT is committed to adhering to strict quality standards in accordance with our strategic vision and to supporting our clients in achieving their quality objectives. INT has attained ISO 9001:2008 certification. **The significance of our quality management systems are as under**

- Allocate the team as soon as project is initiated
- Our Review process includes
- Peer Review
- Independent person review

Figure – Quality Management

Organization for Quality Assurance

The Quality Assurance team within the development organization will consist of a Quality Assurance Lead and a team of reviewers. The number of reviewers will be proportional to the size of the development team and will also depend on the nature of the project.

Quality Assurance Activities

The activities that would be performed by the Quality Assurance Team are:

- Assist in preparing the QA Plan
- Assist in setting the project goals
- Review of all project deliverables
- Ensure peer reviews of all work products
- Review of Source Code and Technical Documentation
- Data Collation and Metrics collection
- Defect data collection and causal analysis

All work products are subject to QA. This is primarily done through peer reviews. All project deliverables will also go through an external review process.

INT's approach to QA begins at project initiation and continues throughout the project as an integral part of the scheduled activities. **There are three basic phases to our QA approach:**

- **Quality Planning –** determine specific, measurable criteria and QA process
- **Quality Control –** during the execution phases, monitor performance according to pre-established criteria, using the QA process
- **Quality Improvement –** employ feedback techniques to continuously refine and improve the QA criteria and process.

INT QA Process

Below is a summary of QA methodologies and mechanisms used by INT. These techniques are not mutually exclusive, but in fact complement and overlap each other. The key point is that INT will use its QA experience and expertise to develop and implement the right QA approach for client.

Quality Plan

The QA process begins with the development of a Quality Plan for the project. The Quality Plan is the basis for evaluating achievement of project quality objectives, and ensures that the work meets client and INT's expectations.

The Quality Plan will be used to:

- Identify the various quality assurance activities that will be carried out in the project
- Verify that client expectations are being met
- Identify and address potential quality issues
- Communicate priorities and evaluation criteria to management and team members
- Specify measurement criteria and goals
- Identify any gaps in processes and measures that need to be closed to improve quality

Quality Audits

Beyond the above services, INT employs senior personnel to conduct project audits and quality assurance reviews. These are additional mechanisms that assist in identifying potential problems, as well as help resolve existing ones.

Project audits can be completed on either a scheduled or ad hoc basis, as the situation warrants. When necessary, INT will provide resources to conduct such audits to ensure project success.

8) Change Management

Indus Net has a formal change control process in fixed cost projects to ensure impact of final delivery is not impaired. Well-documented scope changes help prevent misunderstanding, and ensure that all parties have a clear understanding of impact on timeframe, cost and deliverables that a scope change may have.

The Change Management process has two components to manage changes within the project environment:

- The Change Request Process
- The Change Approval Process

The **Change Request Process** is designed to manage changes to the project goals, deliverables, timeline, or design specifications. A Change Request does not necessarily mean a monetary impact to Customers – that depends on the degree to which the scope is changed – however all changes, large and small, are made via the Change Request process. To prevent misunderstandings, other forms of communication by any party, including, but not limited to, verbal discussions, meeting minutes, written or electronic memorandums, and presentations do not constitute a proper Change Request.

The **Change Request Process** could be used to implement any permanent change in the scope of the overall program, or for any one-time or out-of-scope work associated with a specific project. Depending on the change or work to be performed, a Change Request may or may not result in a pricing adjustment or a single service charge.

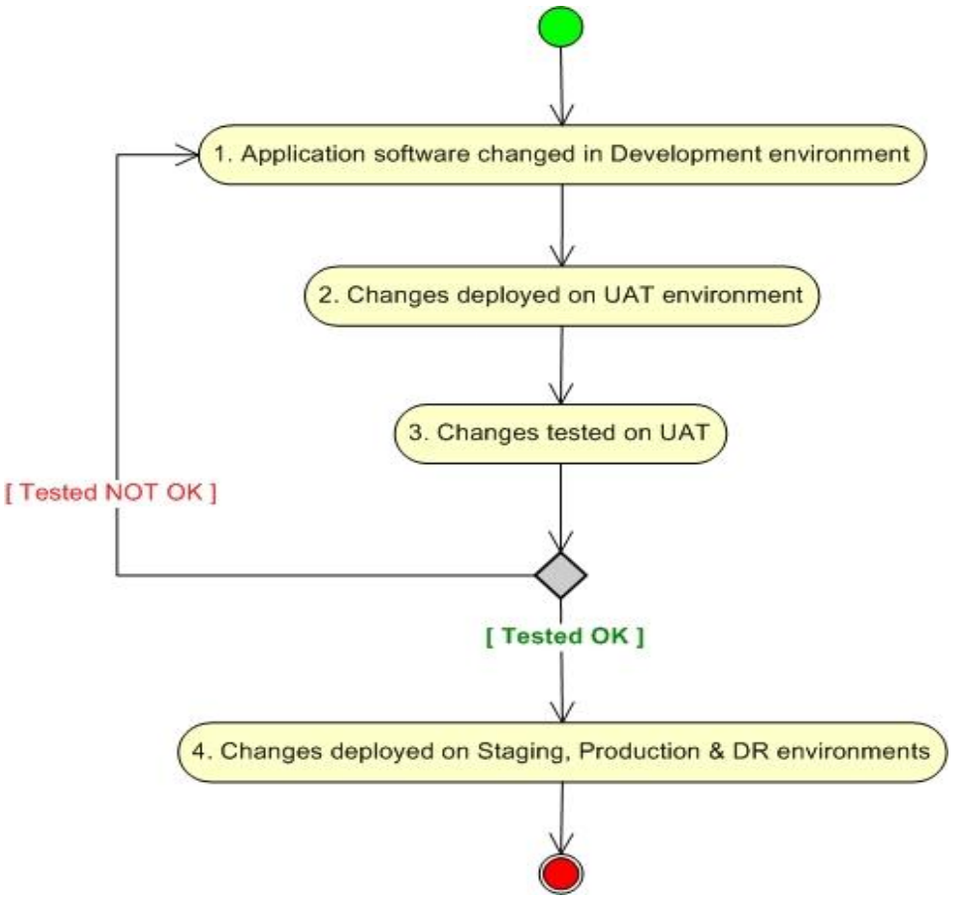
The **Change Approval Process** provides the mechanism to accept and formalize the change requests. Specific procedures associated with the Change Approval Process are triggered upon submission of a Change Request Form to the Indus Net Project Manager. These could be fresh approvals for additional resources or funds, revisions to plans, schedules etc.

The following table provides an overview of Indus Net Change Management process:

Phase	Activity	Responsibility
Change Initiation	Raise Change Request (CR)	Client
	Assign CR Number	Indus Net
Change Evaluation	Perform Impact Analysis and estimate efforts	Indus Net
	Accept/Reject CR	Client
	Assign CR responsibility	Indus Net
Change Analysis/Design	Identify program, design, database, and architecture changes	Indus Net
	Update any relevant design documentation	Indus Net
	Define data/testing requirements	Client/Indus Net
Change Implementation	Make code, database and architecture changes	Indus Net
	Unit Testing	Indus Net
	Quality Check and Check-in	Indus Net
Change Request Pack usage tracking	Update CR pack balance	Indus Net

The following diagram shows the way in which the application software changes (required for bug-fixing and/or CR implementation) flows from development environment to UAT and DEV/Staging/Production servers:

Figure – Change Management



[Step-1]: The development team makes some changes in the current application software. Those changes are required for CR implementation and/or bug fixing.

[Step-2]: After unit & integration testing of those changes has successfully been executed on the development environment, those changes are deployed (manually) on the UAT environment for user acceptance testing.

[Step-3]: Concerned people test the changes on UAT environment for user acceptance.

[Step-4]: If the changes pass UAT testing, then they are deployed (manually) on Staging, Production and DR environments simultaneously.

If they fail to pass UAT testing, then those changes are not deployed on the other environments. Instead, the development team starts re-working on them to fix the issues reported during UAT testing.

9) Annexure-II

Annexure – II

Indicated Broad Scope of Work

CMS Details:

(A) Structure of Content Management System (CMS)/Work flow of the CMS:

(i) Super Administrator
(ii) Local Administrator per section
(iii) Content Creator for a section
(iv) Content Approver for a section
(v) Query Response for a section

(B) User Management

(i) CMS Users (site managers)
(ii) General Users (site visitors)

(C) Content Restriction for restricted users (some specific reports should be accessible to the restricted site users only)

(D) Performance Monitoring: Graphical as well as tabular through Admin modules accessible to super Administrator as the case may be

(E) Home Page lay out configurable

(i) Home Page Header Image – settable through Super Administrator
(ii) Thumbnail Image of each section – settable through Super Administrator
(iii) Column swap
(iv) Home page menu should be of n-level with text colour, background colour, font etc. configurable
(v) Archive policy with expiry date (non mandatory) for each item in each language to be implemented
(vi) Back-up of items (published and archived) in a Industry DMS Standard Formats (such as Dublin Core structure with XML files) directly searched CMS Database for restoration at later stage (Text as well as associated Files PDF,JPG, etc.) in case of disaster or hacking or archival purpose through Super Administrator
(vii) Hindi Font
(viii) Static Content on the Home Page – Editable through Super Administrator for each language.

(F) Major Content Heads and their Requirements

- About Us
  - Institute Profile (Link Creation with Static Page)
  - Mission, Vision and Mandate (Link Creation with Static Page)
  - Quality Policy (Link Creation with Static Page)
  - Research Council (CMS Page for Content Addition/ Modification)
  - Management Council (CMS Page for Content Addition/ Modification)
  - Budget Outlay (CMS Page for Content Addition/ Modification)
  - Organograms (Link Creation with Static Page)
  - Director's Desk (Link Creation with Static Page)
  - Extension Center-CoEFM

- Sections/ Divisions
  - Scientific Divisions(Template for Page Creation with following Links)
    - Major Research Areas/ ActivitiesProjects
    - Team Members (Selectable from Human Resources Data
    - R&D Support Divisions (Template for Page Creation with following Links)
    - Performance
    - Team Members (Selectable from Human Resources Data)
  - Administrative Divisions (Template for Page Creation with following Links)
    - Functionality
    - Members (Selectable from Human Resources Data)
  - Keywords/ Sub-Research Area
  - Infrastructure
  - Technical Services Infrastructure

- Research & Services
  - Thrust R&D Areas (Template for Page Creation)
  - Other Allied R&D Areas (Template for Page Creation)
  - Technological Services (Template for Page Creation)
  - Testing Services (Template for Page Creation)

- Infrastructural Facilities
  - Equipments & Facilities (Template for Page Creation)
  - Amenities (Template for Page Creation)
    - Guest House (Template for Page Creation)
  - Estate (Template for Page Creation)

- What's New
  - Headlines (CMS Page for Content Addition/ Modification)
  - Announcements (CMS Page for Content Addition/ Modification)
  - Forthcoming Events (CMS Page for Content Addition/ Modification)
  - Photo Gallery (CMS Page for Content Addition/ Modification)

- Academics, Training & Courses
  - AcSIR (CMS Page for Content Addition)
  - Vocational Training (CMS Page for Content Addition/ Modification)
  - Projects/ Thesis Supervision (CMS Page for Content Addition/ Modification)
  - Training Courses (CMS Page for Content Addition/ Modification)

- Career@CMERI
  - Vacancies (CMS Page for Content Addition/ Modification)
  - Results (CMS Page for Content Addition/ Modification)
  - Other Notices (CMS Page for Content Addition/ Modification)

- Projects
  - Completed Projects
  - Ongoing Projects

- Performance
  - Research Outputs (CMS Page for Content Addition/ Modification)
  - Publications (CMS Page for Content Addition/ Modification)
  - Patents (CMS Page for Content Addition/ Modification)
  - Technologies (CMS Page for Content Addition/ Modification)
  - Copyrights (CMS Page for Content Addition/ Modification)
  - Accolades (CMS Page for Content Addition/ Modification)
  - Annual Reports (CMS Page for Content Addition/ Modification)
  - Institutional Repositories (CMS Page for Content Addition/ Modification)
  - Clients (CMS Page for Content Addition/ Modification)

- Transparency Information
  - Right to Information (Link Creation with following Static Pages)
    - CSIR Rules & Guidelines (Link Creation with Static Page)
    - General Info (Link Creation with Static Page)
    - Employee Details (CMS Page for Content Addition/ Modification)
    - Employee Strength (CMS Page for Content Addition/ Modification)
    - RTI Requests (CMS Page for Content Addition/ Modification)
    - Budgets (CMS Page for Content Addition/ Modification)
  - Officials' Property Returns (CMS Page for Content Addition/ Modification)
  - Annual Reports (CMS Page for Content Addition/ Modification)
  - Institutional Repositories (CMS Page for Content Addition/ Modification)
  - Clients (CMS Page for Content Addition/ Modification)

- Social Media & Press Coverage (Link Creation with following Pages)
  - Facebook (Link with Logo Only)
  - Twitter (Link with Logo Only)
  - Youtube (Link with Logo Only)
  - Print Media (CMS Page for Content Addition/ Modification)
  - Electronic Media (CMS Page for Content Addition/ Modification)
  - Press Release (CMS Page for Content Addition/ Modification)

- Contact us
  - CMERI Directory (CMS Page for Content Addition/ Modification)
  - Human Resources (CMS Page for Content Addition/ Modification under following Category)
    - Scientific
    - Technical
    - Support Staffs
    - Administrative Staff
  - Business Contact (CMS Page for Content Addition/ Modification)

- Tenders
  - High Value Tender Awarded (CMS Page for Content Addition/ Modification)
  - Current Tenders

- Site map

The above layout is just indicative to give an idea and is subject to change during implementation.

Terms & Conditions

- The prices are inclusive of all taxes if applicable however service tax would be charged as applicable.
- 100% payment needs to be made in advance against the PI.
- The prices are valid for a period of one month.
- The above costing has been done taking into account the initial requirements specified by user/client.
- The charges for additional pages or utilities will be intimated separately as and when the requirements arise and informed by user/client.
- The approval of site design layout and content providing and proofing will be the sole responsibility of the user/client.
- The contents of the website will be provided by the user within a period of 2 weeks after issuing the work order.
- The design (i.e. look and feel) of home page and other specified modules will be finalized by the user within a period of two weeks.
- Website will be developed within 12 weeks of receiving advance payment.
- The aforementioned web-site shall be maintained for a period of one year from the date of completion.
- The number of HTML Pages will be as per actual. A certificate from User Dept/NIC/NICSI offices is to be enclosed along with invoice on completion of web site.
- Neither Client nor NICSI shall be held responsible for circumstances beyond their reasonable control.
- Exact time duration w.r.t. Vender/NICSI approved agency will start from issuance of W.O. up to the completion of security audit. After this, penalty clause will be applicable.

****End of Document****