

INTERNET AND WEB ENGINEERING

- HTML → web Engineering → Roger Pressman
- DHTML
- CGI PERL → INFO SEC
 - (i) DES, Multiple PES, Weakness
 - (ii) Digital Sign: RSA, Ellagamal
- JAVASCRIPT
- JSP APPLET
- XML
- PMP
- ASP COOKIES

→ WEB :

It is an indispensable tech for business, e-commerce, education, govt, industry, finance, politics, science, tech, engg. etc.

- i) acquire news through online media
- ii) put opinion on web blogs
- iii) go to school by online learning
- iv) meet people through web.

→ Adhesive vehicle that takes raw info of an area and structures it in a meaningful way, builds it, and delivers to us on web browser.

→ WEB-BROWSER :

Software tool that enables us to use web technologies.

★ TYPES OF COMMUNICATION :

(i) Passive : we have info on web page, but don't have control on volume or structure. We can select info but do not have direct control on it.
eg: e-books, reading blogs.

(ii) Active : part of info that can be customized by user. You give the info that can be customized

to meet your needs/goals.

→ WEB APPLICATION: (WEB-APP)

It is vehicle that:

- (i) acquire raw info (in any form, audio, video etc)
- (ii) structure it
- (iii) build a package / presentable form
- (iv) delivers it.

e.g. ebook.

* web app may/may not be interactive

→ WEB-BASED SYSTEM:

a web app combined to client-server hardware where some network software

- (iii) Browser (iv) OS

* not restricted to single system. They use computing power to integrate diff databases.

1. Are webapps really a comp. soft?

Ans. Yes, they are set of executable statements that provide functionality to end user.

→ ATTRIBUTES OF WEB APPS

- (i) Network Interoperability: adding app to network to serve needs of diverse people
- (ii) Concurrency: many users using app at same time
- (iii) Unpredicted Load: no. of users on webapp inc. of doc based on situation and type.
- (iv) Performance

(i) Availability

(ii) Data Driven

(iii) Content Sensitive

(iv) Continuous Evolution

(v) Immediacy

(vi) Security

(vii) Aesthetic

(viii) eg. cricket/stock sites

(ix) user should not wait for too long to get functionality.

(x) expectation of 100% availability is

It is available 24x7x365

(xi) primary func. of web apps is to use audio/video/txt data.

(xii) content must be qualitative. It should not be vague. Present content desired by audience.

(xiii) content should change and updated with the world. Along with its types and features and continuously evolve.

(xiv) info must be provided quickly. Time duration is fixed for website. Compelling need to market software quickly.

(xv) Aesthetic = looks. It should be in form that is acceptable by user. It is imp for appeal of web-app.

→ CATEGORIES OF WEB APPLICATION BASED ON FUNCTIONALITY

(i) INFORMATIONAL:

Online news paper, product catalogue, newsletters, manuals, reports, online classifieds, online books. Giving any kind of information.

(ii) Interactive:

Query based, registration form, customized information presentation, online games. Allows us to interact.

(iii) Transactional:

Online shopping (ordering goods and services), online banking, online reservation system, online payment of bills, paytm, google pay.

(iv) work-flow oriented:

Online planning & scheduling, inventory mgmt, status monitoring, supply chain mgmt. Companies managing & future plans.

(v) Collaborative work environments:

Distributed authoring systems, collaborative design tools.

(vi) ONLINE COMMUNITIES MARKET PLACES
Discussion groups, Recommender systems, email, online auctions etc.
Social networking, e-mails

→ CHARACTERISTICS OF WEB APP

(i) PRODUCT RELATED: → relate to product. integral part of web app.

→ Present: presentation of web app. It plays major role in success of web app. presenting data in terms of graphics. It decides looks & feel of web-app. App must be attractive, interactive and up-to present market.

→ Hyper text: Text that allows us to move from one doc to other. It allows non-linearity, cognitive load (dividing info in subparts, and connect smaller parts by link, and bulkiness of web-app). It consists of node, link and anchor.

Links make website more interesting and info is more clear to understand. and improve performance.

→ CONTENT: Content generation, integration, availability and updation.

- consists of documents, table, text, graphic, multimedia, in high-quality
- reliable, consistent and up-to-date

(iii) USE RELATED:

- depends on user of the app.
- It gives 3 types of content:
 - (i) Natural Content
 - (ii) Social content
 - (iii) Technical content
- $2 \times 7 \times 365$ availability of website makes it better. This increases performance of website. Deals with content that comes naturally. (related to user)
- (ii) Scalability and ~~design~~ multiple regime
- (iii) Related to network. Devices where web application is used. bandwidth stability, reliability is essential feature.

(iii) DEVELOPMENT RELATED:

- Development team: (i)
- Dev Process: (ii)
- Tech infrastructure: (ii)
- Integration: (iv)

- (i) Team must be highly experienced and knowledgeable. Select those engineers who can work on enterprise level

- (i) They must be good designers, database developer, IT-experts, hypertext experts
- (ii) innovative, creative, think out of box, interested in new tech.

(iii) Process must be flexible. There must be ~~flexible~~ parallel software development for optimal use of time

- (iv) App must be bug-free
- Browser must be compatible
- Server must be able to handle bulkiness of pages.
- must be accessible within time limit

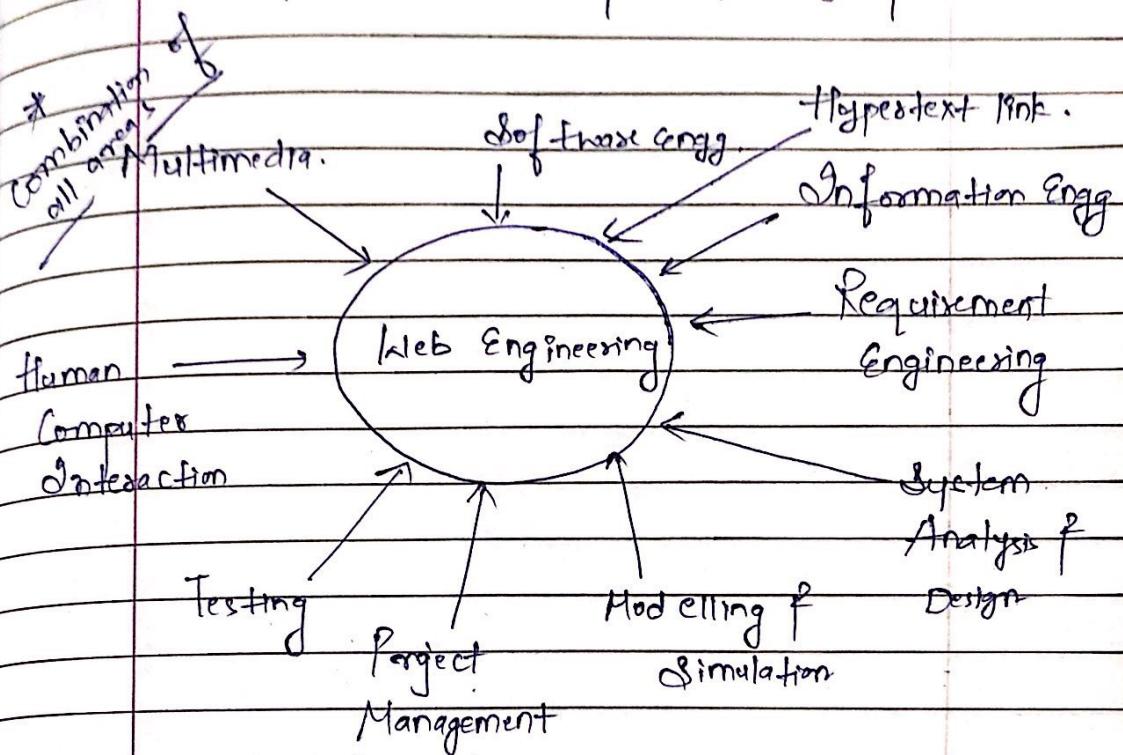
(iv) Integration: system must be able to integrate other system.

(iv) EVOLUTION RELATED:

Short time dev may cause change in product, use and dev. We must evolve our app continuously

Introduction to Web Engg.

- It is a process of systematic approach for a high quality web based systems establishment.
- It promotes use of scientific engg & management principles.
- Focus on methodology, technology & tools which lay foundation of web engg.
- which focus on development, design & evolution.

# Evolution of Web Engineering.

- Continuous Change : are subject to evolution due to constantly changing requirements & needs.
 appn created are temporary.
 permanent
- Competitive Pressure : Because needs are very high.
 Products have short life time. ∵
 time invested on them is less (ASAP)
- Fast Pace : Extreme time pressure is due to rapid time change

NEED OF WEB ENGINEERING

- 54% of surveyed delivered projects did not meet business needs
 - 53% of surveyed delivered projects did not provide the required functionality
 - 79% of projects presented scheduled delays
 - 63% of surveyed projects exceeded their budget.

* Web dev till date is temporarily due to which we get poor quality projects

This is because of poor project management
* Application must be:

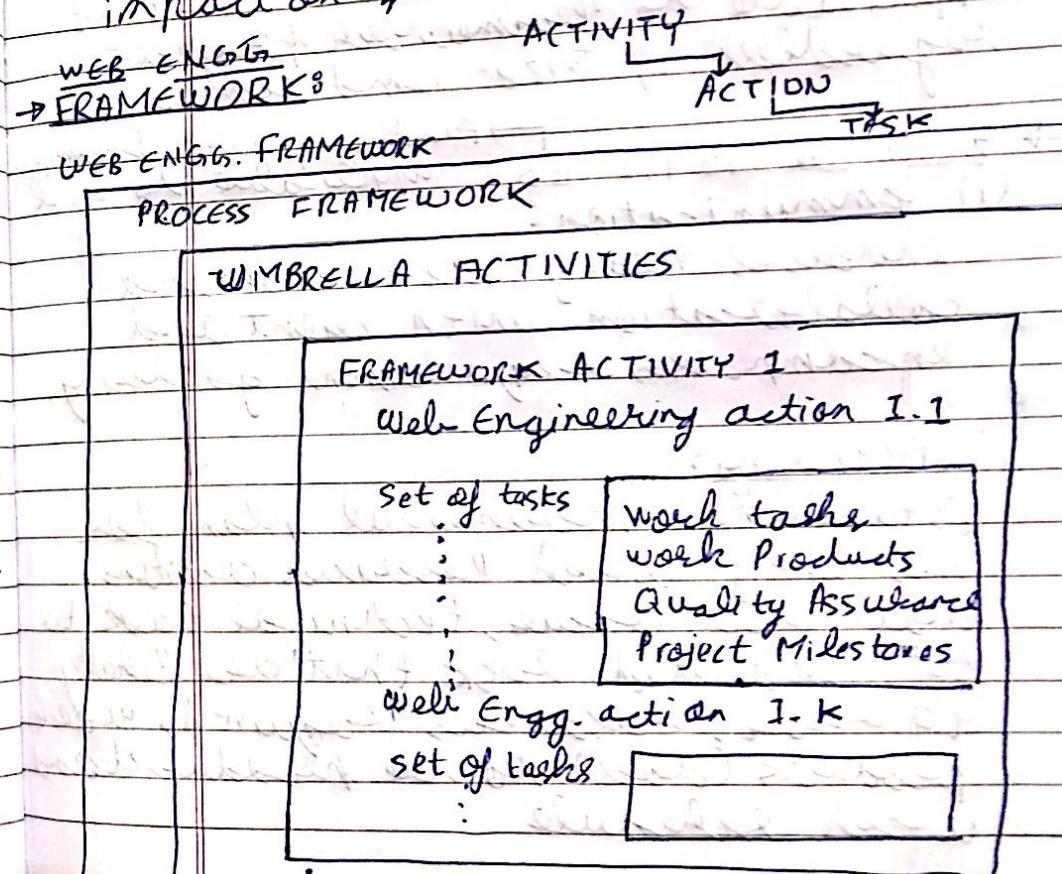
- (i) delivered on time
 - (ii) high quality
 - (iii) systematic
 - (iv) meets customer needs.

a Sound methodology which follows systematic process, with quality assurance, rigorous discipline and repeatable process, better tools and technique.

→ well engg proposes an agile yet disciplined framework for industry quality Web Apps.

→ Engineers must understand business demand adaptation, mgmt demand

real instantaneous responsiveness.
Stakeholders demand rapid delivery
of software, and customers demand
product and user it is delivered
→ Agile team can quickly respond to
changes:
(i) in software build
(ii) in team members
(iii) in new technology.
(iv) changes of all kind that may have
impact on product.



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Framework Activity n

well Engg. action n. I

set of tasks

- (iii) Modeler
 - Encourages creation of models that assist developer and customer to better understand requirement and design to achieve their requirements

→ Builds all foundation by forecasting web engg. process by identifying small no. of framework activities applicable to framework projects regardless of size and complexities

→ Part of generic planning deployment

- (iv) Construction
 - Combines generation of XML, HTML, Java, and database code and similar code with testing that also required to cover errors in code.

- (v) Model Activities is applicable to all deliveries a well-app increment (talking of version) to customer who evaluate it and provide feedback based on collaboration with client and evaluation.

encourages requirement gathering.

(ii) Planning:

- Establishes incremental plan for web engg. work describes outcome.
- first will decide, technical task to be conducted, risk that also likely to occur, resources required, user products (dbs) to be produced and work schedule

→ PRINCIPLES TO FOLLOW AS YOU ADOPT
WEB ENGG. FRAMEWORK

- (I) Emphasize on project agility and
a set of agility principles.
Satisfy customer with early delivery
of product / continuous delivery of
product
- (II) Deliver working software quickly
from couple of weeks to couple of

months with refinement to short extension to technical You should plan in such a way that also planned and before time that "work expand with time available". Hidden activities come if we have lots of time.

(ii) Business people and developers should work daily for long hours should

(iii) Build project amongst motivated individuals → Team leader's responsibility

(iv) Give them environment to work and trust them on the job.
→ Team leader's responsibility

(v) Most effective way to share info by face to face conversation.

(vi) Working software is primary measure of progress.

(vii) Agile process promotes sustainable development.

(viii) Sparseness, developer, and user can maintain a constant pace indefinitely everyone involved should achieve task rapidly

- a. UML WEB ENGG. METHODS ARE CLASSIFICATION
 - i) Communication methods
 - ii) Req. analysis methods
 - iii) Design Methods
 - iv) Construction Methods
 - v) Testing Methods

$$3x - 2x = \frac{x}{4}$$

$$4x - 3x = 0$$

$$x = \frac{3}{4}x$$

(ii) Requirement Analysis Method:

- Provides basics for understanding content to be delivered by involving structuring and creating flowchart for requirement of user.
- functions to be provided for user and modes of interaction that user class of web will be required for navigation module.

(iii) Design Methods:

- holds series of design technology to address web content, app, info arch, texture, interface design, navigation structure.

*Because of these facts, web apps are delivered incrementally or in revisions

delivered, integration of voluminous documentation must be done after again and again.

A COMPLETE WEB APP

→ FRAMEWORK ACTIVITIES: planning work communication

(iv) Testing Methods:

- Incorporate technical review of both content and design model and a wide array of testing techniques that addresses component level, application level, architecture issues, navigation

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web engg. team and next increment
clients.

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COMMUNICATION

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* From start to end, we get increment

1. For any changes suggested by user, we perform next increment.

(I) COMMUNICATION

EXECUTION

RISK

- Formulation: It defines business and organisational context for web app functionality and also of change negotiation have diff.
- Elicitation & stakeholders are identified

- business and potential changes in business environment and requirement are predicted
- Interpretation with other application, database, and business apps are defined.

- Planning
- Estimation
- Risk Analysis
- Scheduling
- Monitoring

ESTIMATION

PLANNING

RISK

MONITORING

IMPLEMENTATION

DELIVERY

EVALUATION

FEEDBACK

ACTIVITY

FEEDBACK

→ MONITORING

- HOW SHOULD THE COMMUNICATION ACTIVITY BE REFINED
 - (i) Identify business stakeholders
 - (ii) Identify user categories
 - (iii) Formulate the business context
 - (iv) Define key business goals and objectives for the web app.
 - (v) Identify the problem
 - (vi) Define informational and application goals.
 - (vii) Gather requirements
 - (viii) Develop usage scenarios
 - (ix) Find who is the customer for web app.
 - (x) Types of users that will interact with web-app, what is the background for each user category, what is need of each and every user etc for app.
 - (xi) how does web-app fit in broader business category, is the strategy well established and business rules well understood
 - (xii) how success is measured in qualitative and quantitative terms. If web-app has multiple objectives, what are their priorities are all goals consistent with each other
- WHAT TASK ARE REQUIRED TO DEVELOP INC PERT PLAN
- (i) Refine your description of web-app
 - (ii) Identify what classes of content is provided to end-users, what is status of content, how dynamic content is, how frequently it changes, how stable are functions.
 - (iii) What user task is supported by webapp increment, what content is developed, how web-app is configured for network, navigation control, user constraint list for each increment, what special performance requirement
 - (iv) have all categories of users that interest with web web-app. Are task usage scenarios complete and consistent with requirements.

- (vii) Estimate effort and time required to deploy the increment.
 - (viii) Access risks associated with delivery of the increment.
 - (ix) Define the development schedule forth what intermediate milestones are planned increment.
 - (x) Establish user products to be produced as a consequence of each increment activity.
 - (xi) Define your approach to change control to establish your quality assurance approach.
 - (xii) If modification also required, what changes are required, how much effort is likely to be required for each increment, (i) Predict whether a requirement model is estimated deployment date of each increment. How much time is required to begin, (ii) Identify content relationships to begin, (iii) Refine and extend user scenarios of changes and performance issues clearly understood.
 - (xiii) How much effort and time is required to model, construct and deploy increment, (iv) Refine interface requirement what resources (man-power, software, hardware), required.
 - (v) What risk should be addressed with its this increment. How high probability (vi) Identify database requirements.
- WHAT ANALYSIS MODELING TASK CAN BE APPLIED?**
- (i) Decide whether a requirement model is needed
 - (ii) Represent welfare content
 - (iii) Identify content relationships
 - (iv) Refine and extend user scenarios
 - (v) Review usage scenarios
 - (vi) Create an interaction model for complex scenarios
 - (vii) Refine interface requirement
 - (viii) Identify functional
 - (ix) Refine constraints and performance requirements

→ More likely is conceptual representation of a web-app to be build.

Analysis examines info gathered during communication activity during strategy like stakeholders info.

When requirements gathered for complex it is advised to refine them by analysis modelling

(i) Does existing info provide sufficient detail about web-app content

(ii) required modes of interaction

(iii) required functionality

(iv) technical configuration issues

If yes, then no need of analysis model. Have usage scenarios developed in sufficient detail? Is this info exist

Are complete, then is no need of analysis model.

(v) what content is to be presented what's its origin, who is responsible for developing this content? Is it advised to develop a ~~content~~ content is in diff classes? also relation b/w classes complex? which classes are static?

(vi) → Does user info and feel accommodate

(vii) How is one class of content related to other? What is form and style of each class.

(viii) What user tasks are performed as part of the interface? What steps user perform task? What steps user to perform and when uses interface required and what if inconsistent with user-app? What if there inconsistencies or omission

(ix) Are there inconsistencies in scenarios? in scenario detailed enough? → Is each scenario detailed enough to support scenarios to be implemented

(x) If requirements of actions in their - 3rd to 5th → If requirements of actions in scenarios is complex, what is solution for user task and content that b/w user task and content that is required for each task? → What internally observable states are identified? → What user task cause truncation from one stage to another?

(xi) → Does form and feel accommodate user scenarios.

- Are modifications required in layout and navigation for mobile users? Identify functions. what functions will app perform. what functions in user will user provide to Is also implied by each func well understood?
- (ix) → Have constraints and performance been defined? Primary policies are required to be implemented?
- (x) → What databases will be accessed? Is info interface well defined? → what content classes are involved?
- WHAT ARE THE ELEMENTS OF A DESIGN MODEL?

- (i) Interface Design
- (ii) Aesthetic Design
- (iii) Content Design
- (iv) Navigation Design
- (v) Architecture Design
- (vi) Component Design

DESIGNING

- ↓
 - (i) Interface Design Core engg
 APPLICATION
 - (ii) Aesthetic Design
 - (iii) Content Design
 - (iv) Navigation Design
 - (v) Architecture Design
 - (vi) Component Design
- TYPES OF DESIGN
 - (i) Define layout, structure, outline for all content that is to be presented as part of web-app.
 - (ii) Define graphical design. Decide look and feel. includes geometric layout, colour, font, placement, text size etc.
 - (iii) Define layout, structure, outline for all content that is to be presented as part of web-app.
 - (iv) Represent navigation flows among content objects and for all web-app functions. Linkage of all web-pages.
 - (v) Identify overall hyper-media structure for web application.

(iii) Perform detailed processing logic required to implement functional requirements that implement user-specific functions.

Q WHAT DESIGN MODELLING TASK CAN BE APPLIED?

- (i) Design the interface
- (ii) Design the aesthetic for the website.
- (iii) Design the navigation scheme
- (iv) Design the webpage architecture.
- (v) Design the content and the structures that support it
- (vi) Design functional components → Architectural Patterns
- (vii) Select appropriate design patterns
- (viii) Design appropriate privacy and security mechanism
- (ix) Review the design

(iii) → what links and nodes are required in navigation.
 → How navigation convention and aids are to be used.
 → Is overall navigation flow is defined.
 → Do navigation mechanism correspond to interface
 → Has navigation is optimised
 → Is navigation element is agree with different user scenarios.
 (iv) → what architectural style styles will be used.

(v) → what content must be designed as part of web app implementation
 → what usage data-structures and data are represented (links, buttons, menus)?
 → How central mechanisms are positioned → See interface to existing database
 → Does design accommodate user usage scenario
 (vi) → Have all algos being defined.
 → If cross-platform content desirable when processing is designed.

- (i) → How layout will be implemented
 → Will font and colour change with content.
- Navigation control

- Can navigation design can use existing pattern processing communication → Can user-flow, behaviours be achieved via functional patterns.

- (vii) → What level of security is required for user access to system.
- What security is required to prevent client side and server side and content from unauthorised access.

- (ix) → design confirm to customer requirement
- Can design be implemented as to increment deployment schedule.

CONSTRUCTION

- ~~select~~ HTML is compiled at browser. So web-page rendering time is less so execution is fast.
- we can use AJAX Tool Kit.
- can tool set can be used exclusively

WHAT CONSTRUCTION TASK CAN BE APPLIED

- (i) → Is all content available for interpretation into each webpage for implementation
- Links to all functions implemented
- What implementation is used for links

TESTING.

TASKS IN CODE GENERATION

- (i) Build and acquire all content and integrate the content into the webpage architecture.
- (ii) Select appropriate tool set for the generation of HTML code
- recipients, databases interface must be implemented.
- Have computational also adequately designed.

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- functionality is deployed on client side per server side.
- (v) → what buzzwords, plugins, operating system will be supported - e.g. Adobe Flash Player, ~~restricts~~ is required in some

PLAN THE TESTING ACTION

- (i) Test all web app components (content and function)

- (ii) Test Navigation
- (iii) Test usability
- (iv) Test security and performance
- (v) Test the webapp increment for different configurations.

DEPLOYMENT

HOW A WEB APP INCREMENT IS DEPLOYED?

- (i) Deploy the webapp increment to a server at a pre-defined domain.
- (ii) Establish the online feedback mechanism for end users.
- (iii) Evaluate end user interaction.
- (iv) Assess lessons learned and consider all end user feedback.
- (v) Make modifications to the webapp increment as required.

* Is test ensuring security at client and server side both.

Ques

PLAN THE TESTING ACTION

→ what components are treated with preference to user task?

→ Have test been designed to fully exercise functionality

(i) → what links are to be tested in context of user task

→ what user scenarios are applicable

→ Have test been designed to fully exercise navigation structure

Ques WEB APP DEPLOYMENT

(i) → domain based / region is fixed where we can actually deploy.

→ have all file and directory naming and link convention is followed

→ image - wwwpr - name
— video - wwwpr - name
— video - wwwpr name

convention is followed

→ have user been provided with access info (create reference document)

→ all security elements are placed and functional

each user scenario

(iv) → how we ensure security issues along with web app implementation

→ check overall performance

→ query is assessable in time frame or not.

→ here online feedback form implemented with web app implementation
→ it is free from all subjective or

(iii) → how user interact with system
→ what problems are encountered

→ what part of interaction are unclear, ambiguous and missing.

→ what content / functionality is missing.

(iv) → what changes are required based on user feedback

→ should changes be made immediately or part of next increment

(v) → what modifications are required in this increment.

→ what changes are required in subsequent increment.

UMBRELLA ACTIVITIES

- i) Change mgmt
- ii) Risk mgmt
- iii) Project mgmt
- iv) Quality mgmt assurance

CHANGE MGMT:

→ Manages affects of changes as each increment is engineered into generating tool that assist in mgmt

of all app content.

QUALITY ASSURANCE:

→ Design and conduct tasks that help ensure that each user product and deployed increment exhibit quality

RISK MGMT:

→ Consider project and technical risk as increment is engineered

PROJECT MGMT:

→ Tracks and monitors progress as an increment is engineered

→ www.tutorialspoint.com/html/html_quick_guide.htm

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→ HTML WEB SOFTWARE MGMT AND WEB-ENGNS