

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

e.g. ebank

\* webpage may/may not be interactive.

(iii) eg. client/stock excess  
(iv) user should not wait for too long  
to get functionality.

### → WEB-BASED SYSTEM:

web app combined client-server

hardware reuse some resources. Software: (vi) primarily form. of web apps is to use audio/video/text data.

(vii) browser (viii) OS

\* not restricted to single system, they (vii) content must be qualitative. It should use computing power to integrate net like ways. Present content desired use audience

(viii) content should changed and updated with the world. Along with its types

1. Are webapps really a comp. soft?  
Ans. Yes, they are set of executable software and features and continuously evolve.  
they reusable functionality to end user.

(ix) info must be provided quickly. Time duration is fixed for website.

Compelling need to market software quickly.

### → ATTRIBUTES OF WEB APPS

(i) Network interactivity: adding app to network (ii) Platform = Resists. It should live in form

(iii) Concurrency: many users using app at same time that is acceptable by user. It is unpredictable load: no. of users on webpage inc. or dec. based on type.

(iv) Performance: situation and

we can access data PAGE NO. \_\_\_\_\_  
and perform operation  
whenver it is imagined  
PAGE NO. \_\_\_\_\_

## → CATEGORIES OF WEB APPLICATION BASED ON FUNCTIONALITY

### i) INFORMATIONAL:

Online news paper, product catalogue, newsletters, message, reports, online classifications, online books. Giving any kind information.

### ii) Interactive:

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, paying, people pay

### iv) Work-flow oriented:

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

### v) Collaborative work environment:

Distributed authoring systems, collaborative design tools, distributive systems

## → CHARACTERISTICS OF WEB APP

### i) Product Related:

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

### ii) 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 uniqueness of web-app). It consists of node, link and anchor.

Links make website more interesting and info is more easy to understand.

### iii) Content:

Content generation, integration, availability and undatedation.

## MARKET PLACES

### i) Online communities

Discussion groups, recommends etc.

### ii) Social media

systems, social online auction etc.

### iii) e-mail

systems, networking, e-mail

— Consists of documents, table, text, graphic, multimedia in high-quality reliable, consistent and up-to-date related:

### (iii) USE RELATED:

→ depends on user of the app.

→ It gives 3 types of content:

- (i) Natural Content
- (ii) Social content
- (iii) Technical content

→ (iv) 24x7x365 availability of website makes it better. This increase usage of website. People work from home that comes naturally. (Benefits to customer)

→ (v) Scalability and multi-region related to website. Services like web application is used. Bandwidth stability, reliability is essential feature.

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

— (vii) DEVELOPMENT RELATED:

→ Development team:

- (i) Dev process: (i)
- Tech infrastructure: (ii)
- Interpretation: (iii)

(v) Team must be highly specialised and knowledgeable. Select those engineers who can work at enterprise level.

— They must be good designer, database developer, IT-experts, system analysts, innovative, creative, think out of box, interested in new tech.

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

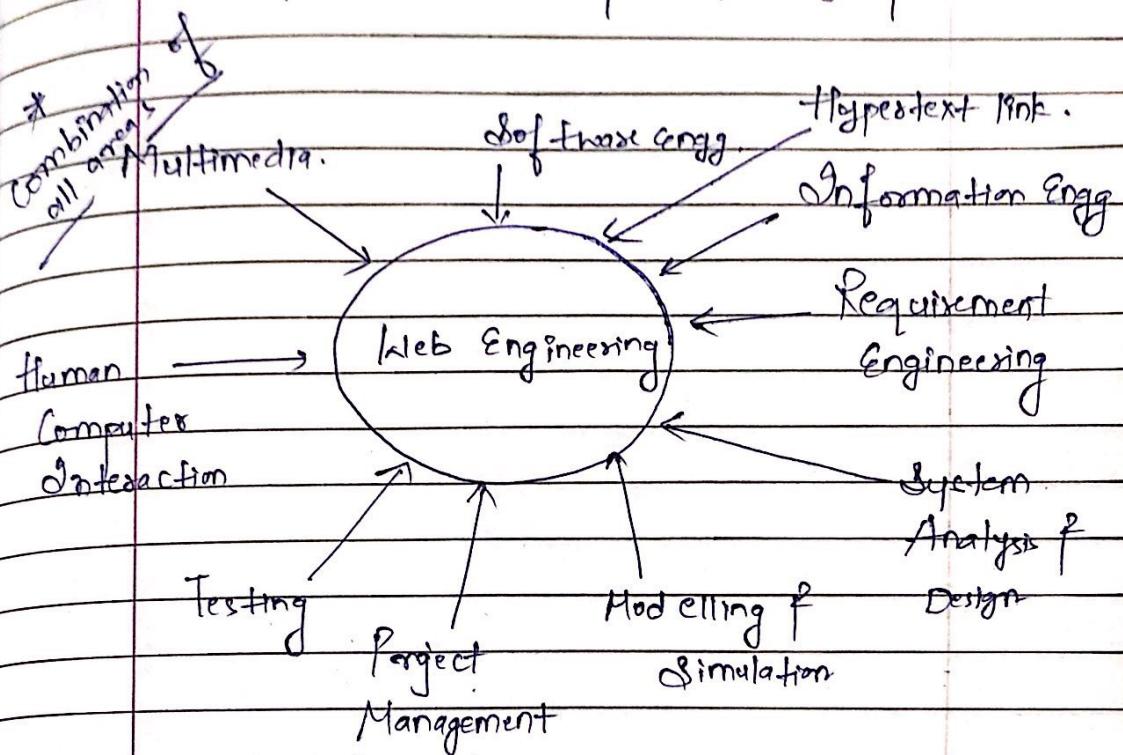
— (ii) App must be plug-free browser must be compatible

— (iii) Security must be able to handle business of pages.

→ must be accessible within time limit

# 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

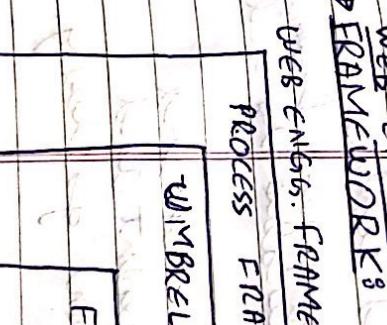
## NEED OF WEB ENGINEERING

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

\* Web dev till date is temporally due to which we get more variability projects. This is because of lesser project input.

- \* Applications must be:

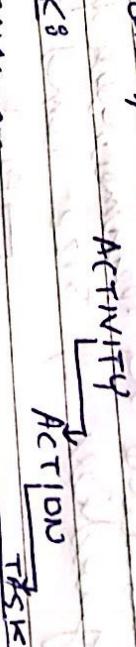
- (i) delivered on time
- (ii) high quality
- (iii) systematic
- (iv) meets customer needs.



### UMBRELLA ACTIVITIES

#### FRAMEWORK ACTIVITY 1

##### Web Engineering activity 1.1



- well engg processes on agile yet disciplined framework for industry
- Quality Web Apps.
- Engineers must understand business demand adaptation, mgmt demand

instantaneous responsiveness, responsive delivery, stakeholder demand, rapid delivery, stakeholder demand, customer demand, of software, and now it is delivered of software and now it is delivered to client and can quickly respond to client and can quickly respond to changes.

- (i) in team members
- (ii) in new technology, that may have changes of all kind that may have in next or present.



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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 all planned and before time the work expand with time time. Hidden activities come if we have lots of time.

(ii) Continuous enhances agility. (iii) Design process enhances agility. best architecture, requirement, and design emerges from self organising team

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

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

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

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

(viii) Working software is primary measure of progress.

(ix) Agile process promotes sustainable development.

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

Q. What are methods are

#### CLASSIFICATION

i) Communication methods

(ii) Req. analysis methods

(iii) Design Methods

(iv) Construction Methods

(v) Testing Methods

$$3x - 2x = 4$$

$$\frac{9x - 7x}{4} = 0$$

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

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### (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 architecture, interface design, navigation structure.

### (iv) Construction Methods:

- apply set of language tools and related technology to creation of web page with dyn. content and functionality.
- coding phase

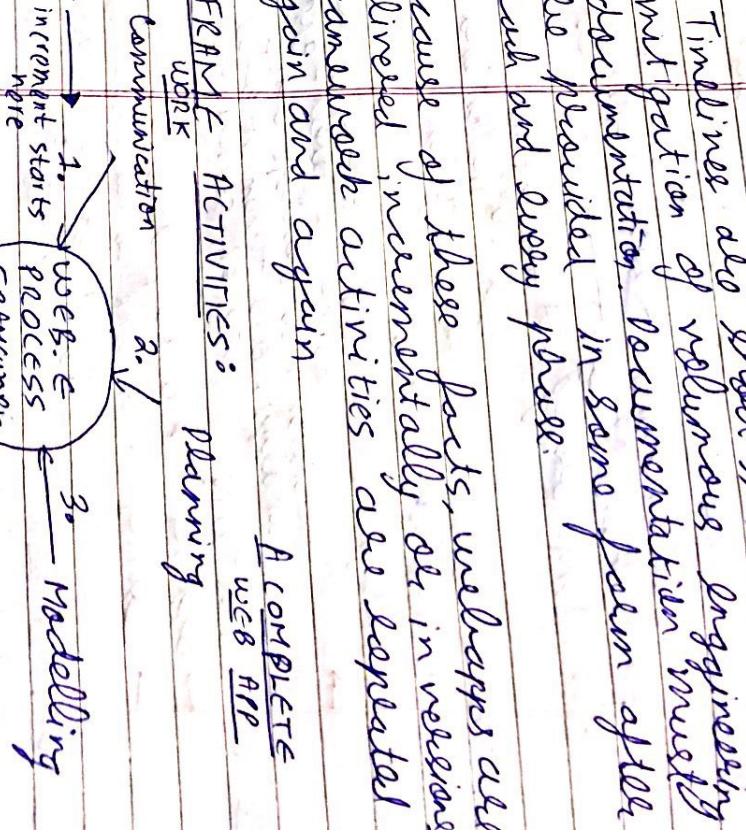
### (v) Testing Methods:

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

\*Because of these facts, web apps are delivered incrementally so in revision framework activities are repeated again and again.

A COMPLETE WEB APP

→ FRAMEWORK ACTIVITIES: planning work communication



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 for the web app.
    - (iv) Define key business goals and objectives.
    - (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, are 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

(v) required and missing functions to be implemented

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.

(vi) → If requirement of actions in scenario is complex, what is solution

(vii) → If requirements of actions in scenario is complex, what is solution

(viii) → What internally observable states

its origin, who is responsible for developing this content? Is it advisable to change content in diff classes?

classes? Are relation b/w classes complex? Which classes are static?

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

(x) What user tasks are performed as part of the interface? What info is needed to perform task? What steps user to perform and when uses interface required and what if user-app?

With user-app? What if there inconsistencies or omission

(xi) Are there inconsistencies or omission?

(xii) → Are scenarios detailed enough?

(xiii) → Is each scenario detailed enough?

(xiv) → Does scenario confirmation to content

(xv) → Does scenarios confirm to be implemented

(xvi) → If requirement of actions in scenario is complex, what is solution

(xvii) → If requirements of actions in scenario is complex, what is solution

(xviii) → What internally observable states are required for each task?

(xix) → What internally observable states are identified?

(xx) → What user tasks cause truncation

(xxi) → What user tasks cause truncation

(xxii) → Does form and field 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 function well understood?
- (ix) → Have constraints and performance requirements been implemented?
  - what primary policies are required to be implemented?
  - 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<br>(ii) Aesthetic Design<br>(iii) Content Design<br>(iv) Navigation Design<br>(v) Architecture Design<br>(vi) Component Design | ↓<br>DESIGNING |
|---|----------------|

- (i) Core engg content objects and for all web-app functions. Linage of all web-pages.
- (ii) Represent navigation flows among pages.
- (iii) Define layout, structure, outline for all content that is to be presented as part of web-app.
- (iv) 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.  
 (vii) → What architectural design pattern is used by MVC, MVCA

- (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) TESTING.
- (II) CODE GENERATION

### 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

(i) → what components are treated with preference to user task?

→ Have test been designed to fully exercise functionality

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

⋮

convention is followed

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

as are

→ all security elements at place and functional

;

(ii) → how we ensure security issues along with web app implement

→ check overall performance

→ query is assessable in time frame or not.

→ it is free from all subjective as

MCQ

(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](http://www.tutorialspoint.com/html/html_quick_guide.htm)

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<table>
<tr><td> <li> <td>
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### WEB SOFTWARE MGMT AND