

Web Development Engineering Processes

- Introduction to Web Development Outsourcing Processes

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Overview

- Web Development Engineering vs. software engineering
- Web Development Engineering services for Web Development Companies
- 4 Aspects of Web Development Engineering Services
 - Offshoring Process
 - Web Development Engineering Process
 - Software Engineering Process
 - Service Delivery Management Process
- Quality Assurance and Quality Control Processes
- Process Maturity (CMM Level 3 and beyond)
- Metrics and Process Control

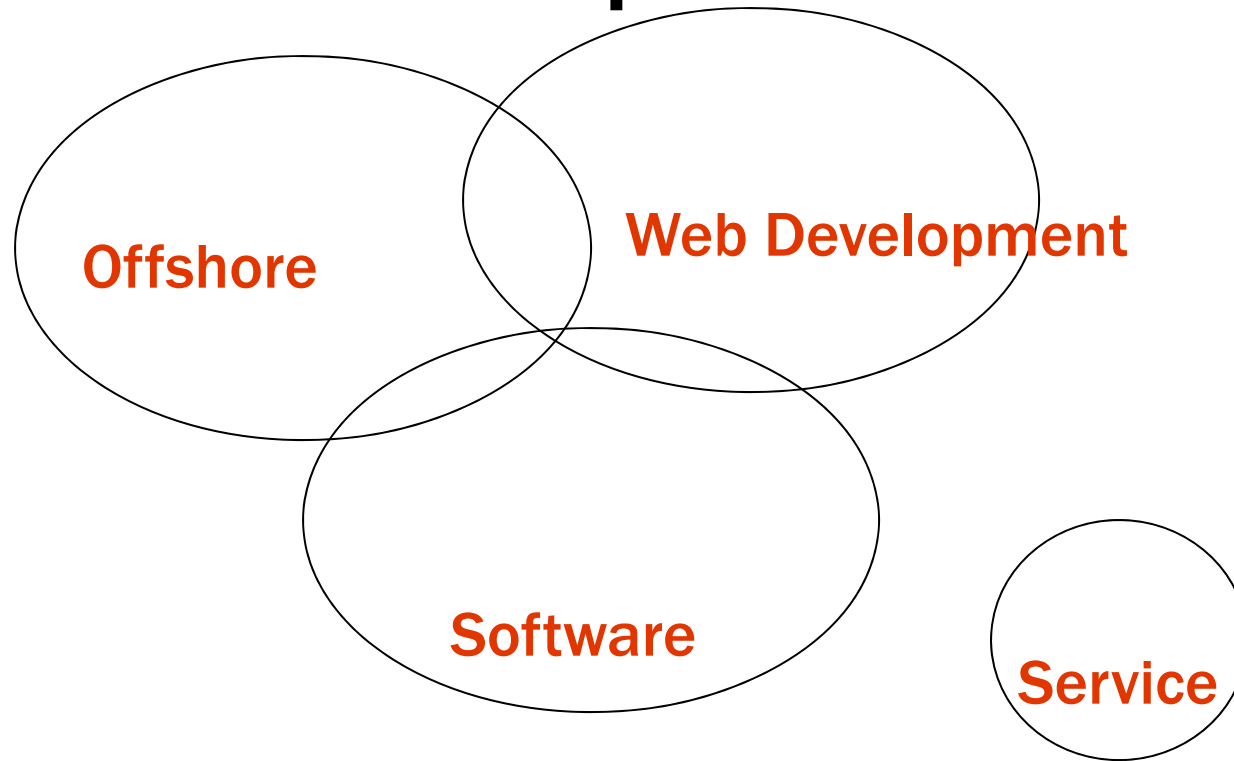
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Web Development Engineering Challenges

- Web Development is application development
 - Faster response time for go/no-go decision making of management based on cost, schedule, risk and quality.
 - More and diverse stakeholders involved in engineering
 - Small Integrated Teams
 - Highly integrated many-to-many communication
 - Light weight software processes/ Faster turn-around time
 - 100% control on change management and requirements management
 - Higher expertise level of architects, designers and developers
 - Balance cost, risk and schedule
 - Low schedule variance tolerance
 - Long term maintainability and stability of Web Development
 - Usability and scalability of Web Development architecture

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Software Web Development Outsourcing Specialists



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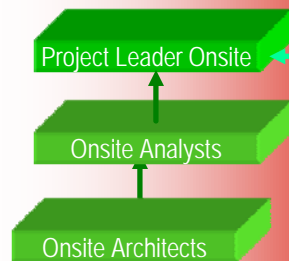
Off shoring Process

Onsite

- A. Statement of Work
- B. Micro Level Process
- C. Knowledge Transfer

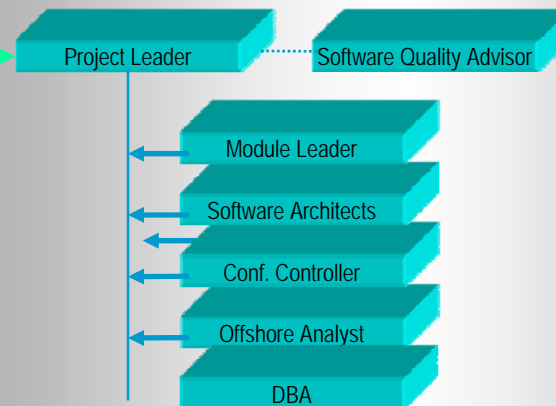
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Project Status & Control



Off Shore (India)

- D. Transition
- E. Parallel Run
- F. Change Control Board
- F. Release / Build / Patch Scope
- G. Emails / Phones / IM Tools Clarifications
- H. Weekly Status Report
- I. Build / Phase End Report



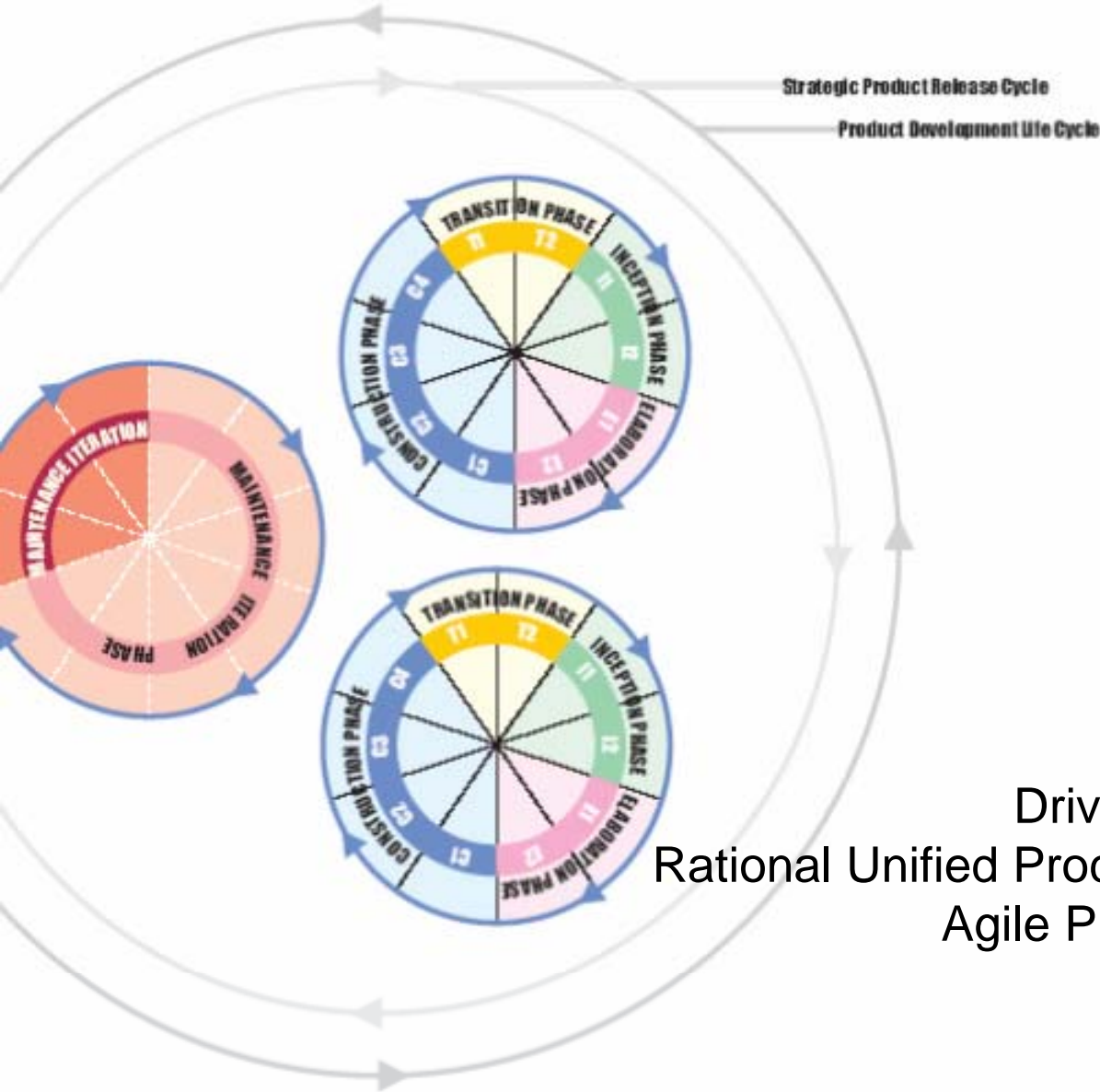
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Development Engineering

- Web Development
- Web Development Maintenance
- Web Development Support and Helpdesk
- Web Development Re-engineering
- Pilot Development

High Level Tasks	Driven By	Location
Strategic Web Development Release Planning	Customer	Customer site
Release Project Planning	Joint	Customer Site
Web Development Architecture Feasibility and Effort Estimation for a release	INFLUXIVE	INFLUXIVE Site
Release Project Plan and Schedule. Release Project Kick-off	INFLUXIVE	INFLUXIVE Site
Requirements Capturing	Joint	Customer Site
Design	INFLUXIVE	INFLUXIVE Site
Development	INFLUXIVE	INFLUXIVE Site
System Testing	INFLUXIVE	INFLUXIVE Site
Quality Assurance	INFLUXIVE	INFLUXIVE Site
Web Development User Documentation	INFLUXIVE	INFLUXIVE Site
Marketing Material Preparation	INFLUXIVE	
Sales Material (Brochures and Demonstration)	INFLUXIVE	
Release Project Evaluation and Final OA	Customer	Customer Site

Development Engineering

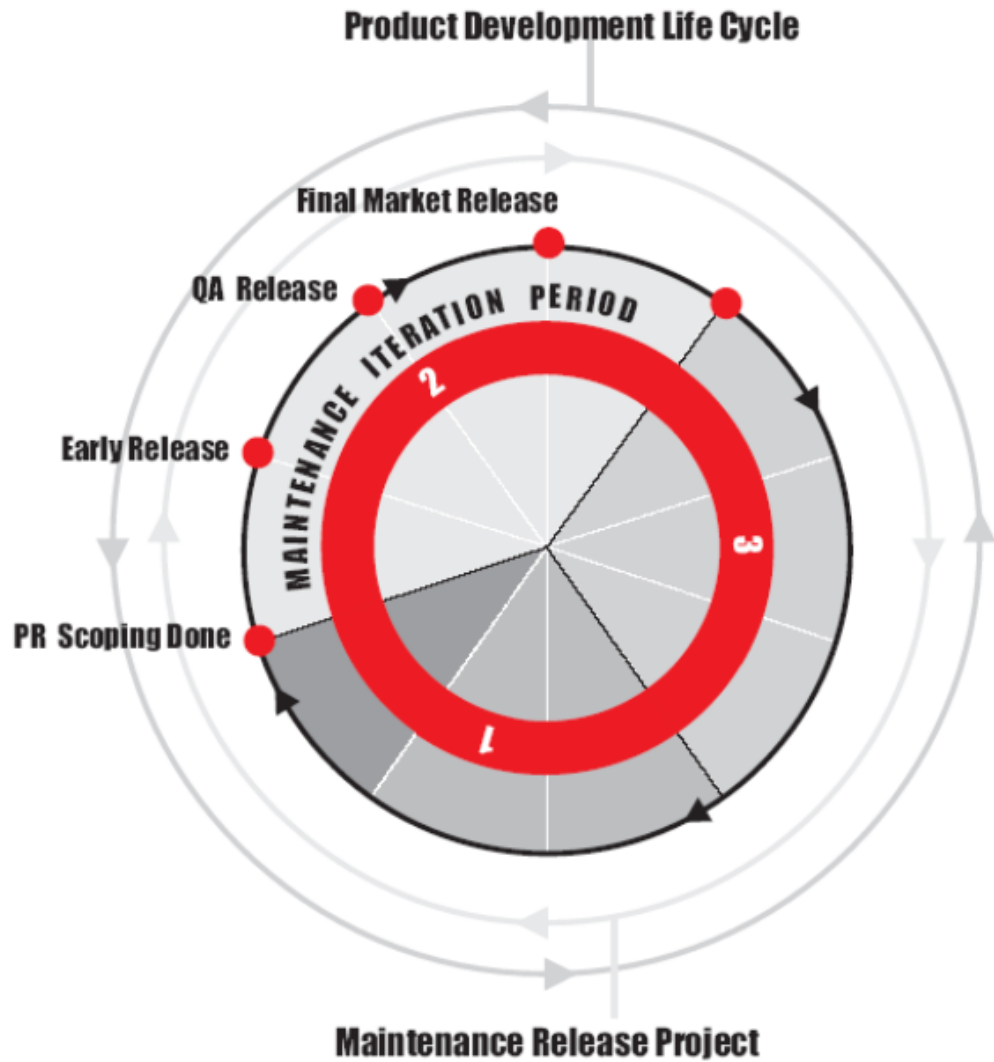


Driven by
Rational Unified Process-CMM L3 Process
Agile Processes

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Development Maintenance Process

Define Release Objectives
Define Scope in terms of Customer Issues, Internal Bugs, Re-engineering/Change Requests
Scope Sign-off



Development Maintenance

MAINTENANCE

- **Corrective Maintenance**
 - Identify & Remove Defects
 - Correct Actual Errors

FUNCTIONAL BUG BASED

- **Preventive Maintenance**
 - Identify & Detect Latent Falts
 - System With Safety Concerns

IDENTIFICATION

- **Perfective Maintenance**
 - Improve Performance, Dependability, Maintainability.
 - Add New Functionality

RE-ENGINEERING BASED

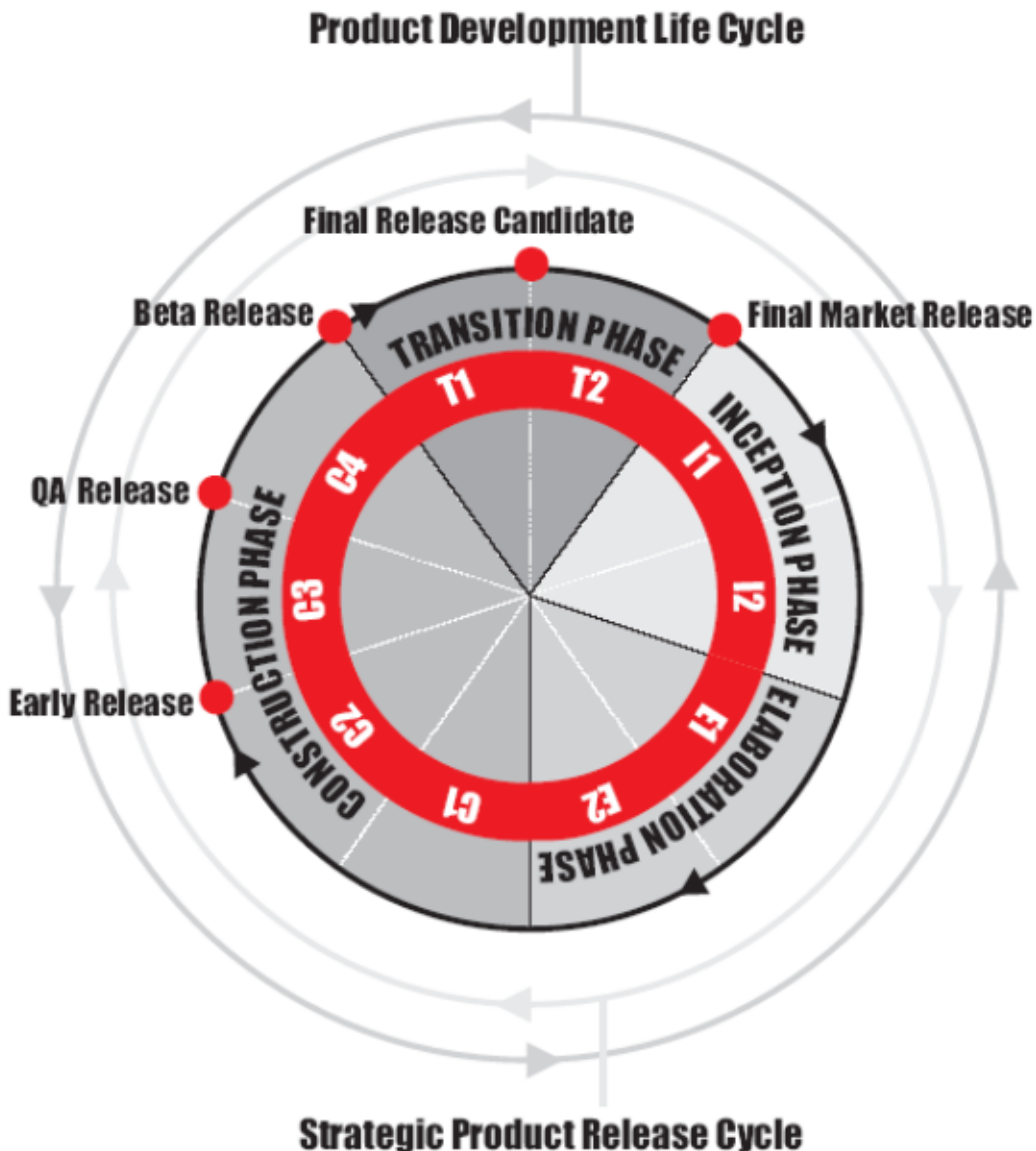
- **Adaptive Maintenance**
 - Adapt to a New/Upgraded Environment (eg.: Hardware Operating System, Middleware)

- **Emergency Maintenance**
 - Unscheduled Corrective Maintenance (Risks Due to reduced Testing)

END CUSTOMER ISSUE BASED

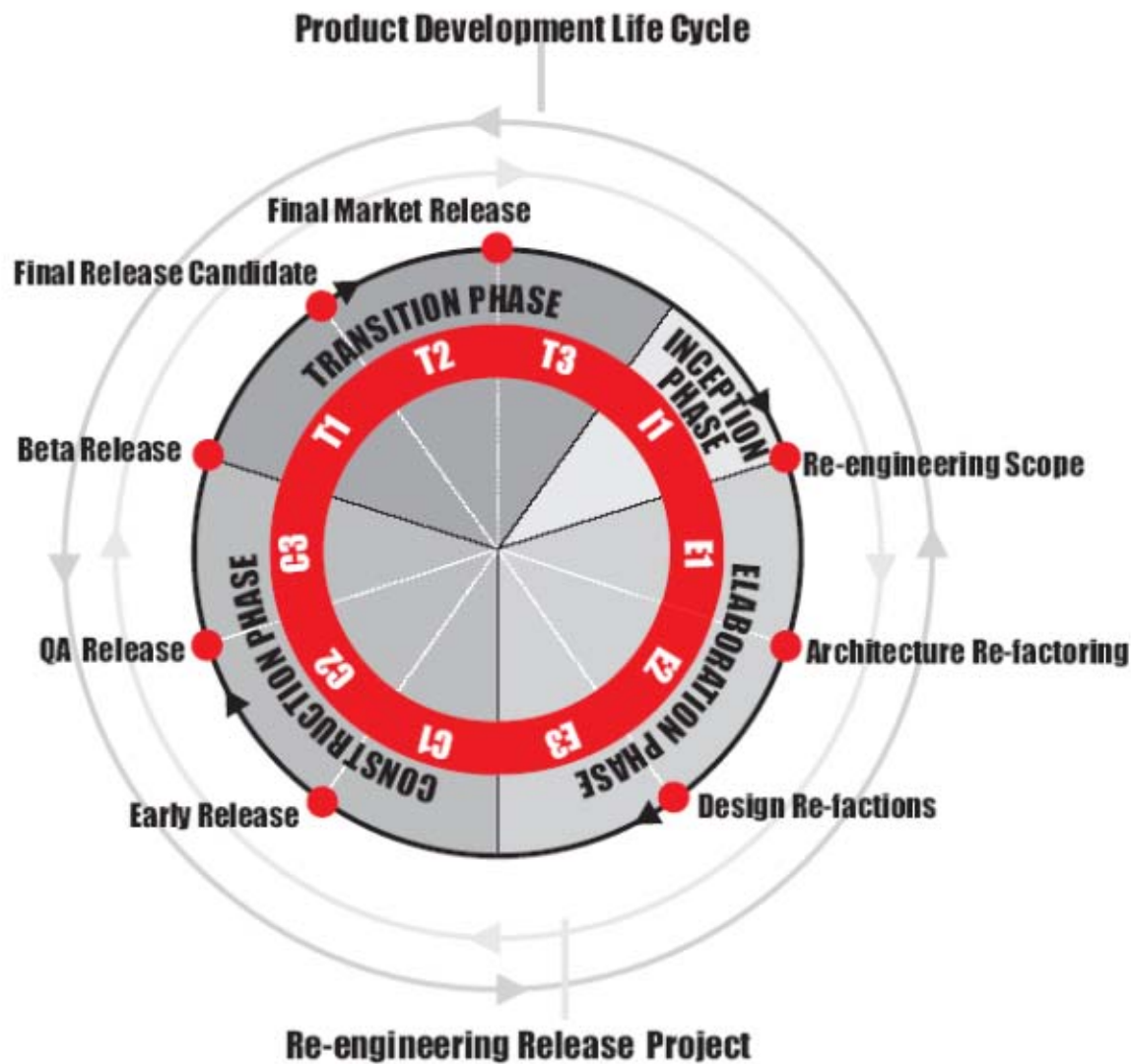
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Development



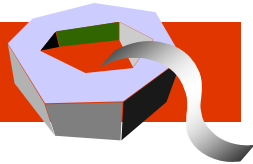
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Development Re-Engineering



Software Engineering Process

Checklists



Detailed checklists for various process stages

Review checklists for different reviews

References



Document templates for various work Web Developments

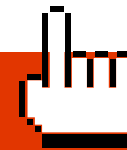
Standards and Guidelines available for various activities

Tools



- Requirements Management – Rational Requisite Pro
- Design – Rational XDE
- Knowledge Management - Wiki
- Change Management - Bugzilla

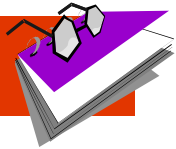
Online



- Process available on Intranet
- Project Management Tool
- Remote Version Management
- Requisite Pro

Software Engineering Process

Reviews (Inspections)



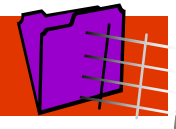
- Project plan and schedule
- Requirement specification
- Detailed design
- Functional specs
- Code, Test plan and test results

Audits



- Regular internal audits
- NCs given; to be closed within 60 days
- Half-yearly, External audits
- On-going “audit” by SQA

Management Review



- Contract review
- Weekly status review
- Milestone review
- Monthly Progress Review

Software Quality Advisor



- SQA associated with projects
- SQA reports to Quality Department
- SQAs help projects set up processes & monitor them
- SQAs help perform Metrics Analysis

Quality Assurance

Audit done for on-going projects.

Frequency is decided based on the duration of the project.

Internal Reviews

- Code Reviews
- Design Reviews
- Test Plan / Cases Review

External Reviews

- As and when needed

Level Review Methodology to be implemented for all reviews.

- Team Review
- Peer / Management Review
- Customer Review

Quality Control

Quality Control Planning

- Part of Project Management Plan

Multiple Level Testing Strategy

- Unit testing
- Integration testing
- System testing
- Stress and Performance testing
- Regression testing
- UAT

Define test objectives

Identify environmental needs

Identify test tools

Code reviews

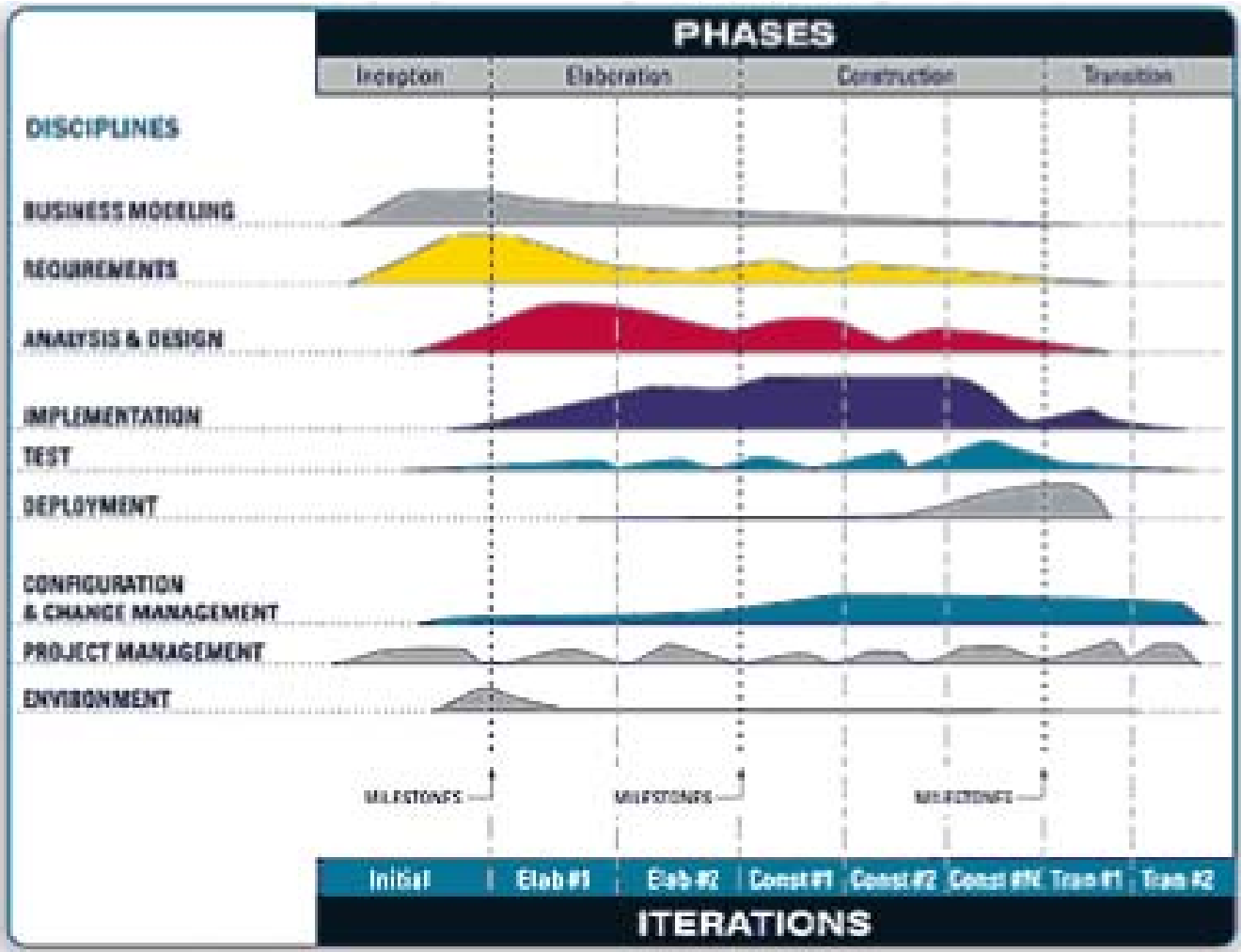
Unit test

Independent unit test

Identify defects associated with hardware, communications, system software etc.

Test plan review by independent person/group depending on complexity

Process Maturity CMM Level 3 & Beyond..



Unified Process - A CMM Level 3 Process

The Rational Unified Process – An enabler for higher Process Maturity;
 Hann, Q-Labs France, Philippe Krutchen, Rational Software

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satisfies CMM and more..e.g.

A baseline is implicitly defined to consider the business environment of the application to be developed, to set priorities for the project requirements, and make all necessary decisions related to the functional and non-functional contents of the project.

Project plans are established and a list of activities, roles and responsibilities, milestones, and artifacts need to be set up that are realistic and reliable. Project plans take risks into account.

Project plans are monitored and the project team reacts in case of major deviations of feature contents or project environment/organization.

Any changes in the project are identified and analyzed. Further decisions are made and reported in the baseline and project plans.

Methods and tools are selected and applied to ensure the project's best performance.

Rational Unified Process fulfills these requirements in the major tasks of the Inception phase as follows:

1. Gets the project vision and develops a business model by matching item 1 in preceding list.

2. Organizes and plans the project

3. Estimates potential risks. (This item relates to item 2 in the preceding list.)

4. Deploys the Unified Change Management policy, which is similar to items 3 and 4 in the preceding lists.

cs and Process Control

Web Development Metrics

- Defect Density
- Web Development User Problems/Issues
- Web Development User Satisfaction
- Backlog Management Index = Problems closed during month/Problems arrival during the month * 100 %
- Fix Quality (No of reopened problems based)
- Mean response time (Based on problem type and classification)

Process Metrics

- Delivered defects and delivered defects per size
- Total effectiveness throughout the process
- Adherence to schedule
- Accuracy of estimates
- Number of open customer problems
- Time that problems remain open
- Cost of nonconformance
- Software reliability
- Defect containment Efficiency, Total Released Defects

cs and Process Control

Software Metrics

- Effort Variance
- Schedule Variance
- Defect Density
- Defect Containment Efficiency
- Requirement Stability Index
- Rework Ratio
- Size Variation
- Web Development
- Test Effectiveness

Thank you

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