

CS577a IV&V Role

Initial Discussion
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Goals of Presentation

You should get an overview of

- **CS577 and [Agile?] Quality Management**
- **The evolving IV&V Role for DEN remote students**
 - What it is & how it works
 - Principles behind it
 - How it's distinct from other project participation

CS577

Software Engineering of Large Systems

- Not enough time to do a "large" system, but
 - Real client
 - Real deliverables
- Teach and Use "best practices": techniques, tools and ...
 - MBASE: WinWin Spiral Model; Risk Driven; COCOMO II
 - OO Analysis and Design
 - Quality Management (QM)
 - Inspections and other QM early assessment techniques
 - Configuration Management
 - ...
- Projects run & documented like "Large Systems" projects
- Evolving: MBASE, QM, IV&V, ...



CS577 (cont.)

IV&V option – for DEN-remote students ONLY!

- There are NO non-DEN remote students!
- DEN-remote students DO NOT develop projects, unless:
 - ENTIRE TEAM is collocated and can be at one location for all eMeetings with client(s).
 - ENTIRE TEAM always comes to campus to participate

IV&V option – A project quality and learning enhancer

- Project results are improved as a result of YOUR efforts
- You learn by doing and interacting with a real project

Quality Management

The Quality tasks in QM

- Quality Assessment
- Quality Tracking
- Quality Improvement

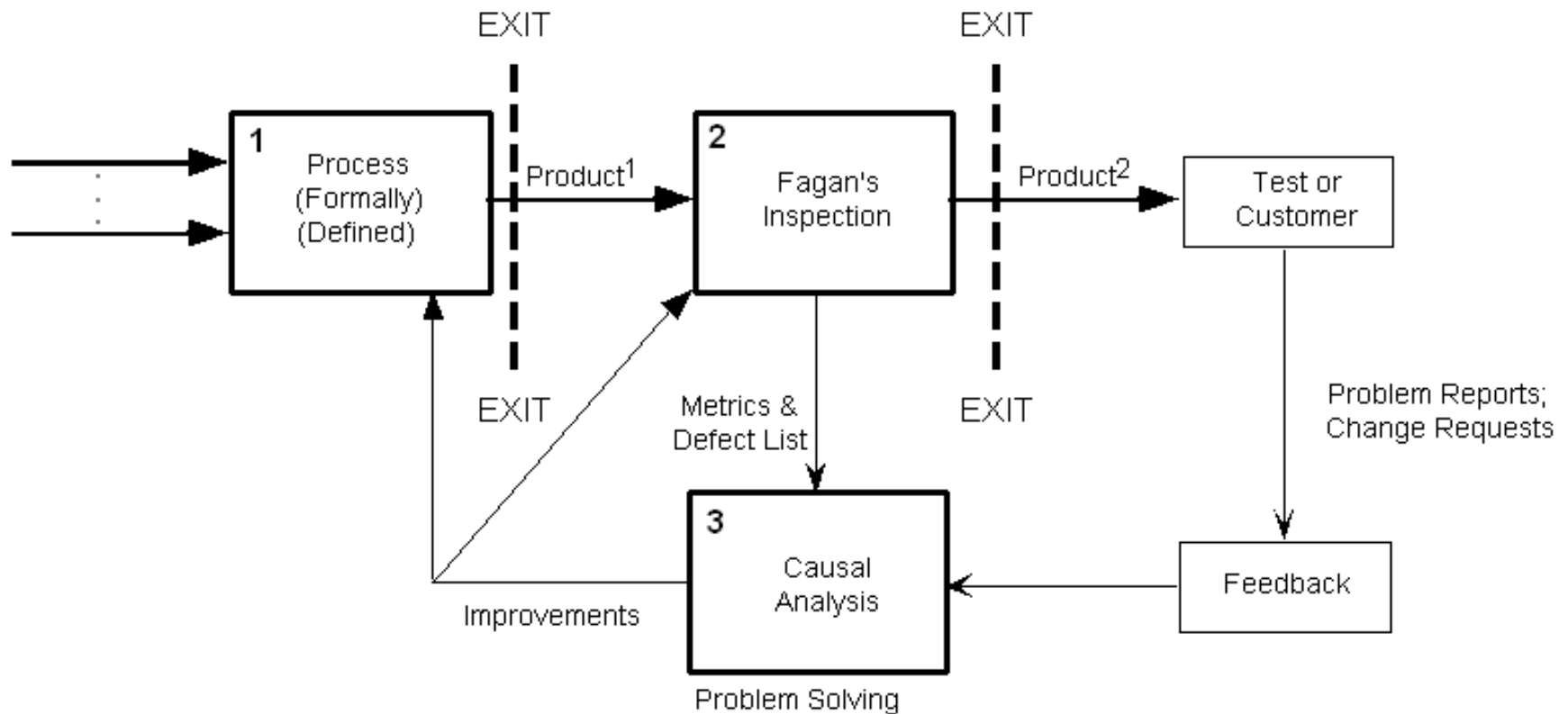
With pre-requisites

- Configuration Management
- Early Defect Finding (Identification) mechanisms
- Defect and Effort Data submittal

Data for Quality Management

Sufficiency of early measurement activities

- FI: Defect description, location & classification (MWE/Mm)
- Fagan's Process/Quality Improvement Cycle:
Defect Summary Report & Detailed Defect Categorization



CS577 MBASE Defect Reporting Concepts

CS577: Still More information

- Details to assess process adherence
- Result: Productivity ↓ because Overhead ↑

Agile Methods & MBASE Practices? Lessons Learned:

- Agile/Lean approach characteristics:
Productivity ↑ by use of tacit knowledge AND
Reduced overhead (people vs. process) and frustration

Given

- Why metrics
- What Fagan did
- CS577: Software Engineering I and II
Large Scale Software Engineering project course
- CS577: Schedule as an Independent Variable, but
 - Still want easily gathered raw data.
 - Enough data so post-facto generation of details possible

CS577 MBASE Defect Reporting Concepts

Range of Defect identification and reporting mechanisms

- One at a time: gnats problem reporting system
- Multiple issues/problems found by a single reviewer:
Agile Artifact review
(only two types of forms: Issues/Concern and Defect List)
- Agile Internal/Informal Review: Three types of forms
- Agile Formal Review: Three different types of forms
- Internal/Informal Review: Four different types of bigger forms
- Formal Review: Four different types of bigger forms
- Fagan's Inspection: Five different types of forms

Lessons Learned So Far

For Quality Management in CS577 (Software Engineering I & II) which teaches MBASE

- Different information relevant for different types of reviews
- Subjective definition of a "defect":
 - Who decides? Only the "author": every change made
 - Call all identifications from review activity an "concern"

From Quality Improvement World

- Push on Productivity, get Productivity impact;
Push on Quality, get a multiplicative impact on productivity
- Defect prevention and early defect detection:
 - Increases Quality AND decreases [total] Cost
 - Requires an investment
 - Seems to require/imply "process"

"Agile QM" [Boehm]

More efficiently achieving Quality by sharing tacit knowledge

- Risk-driven
 - Importance of scenarios
 - Criticality of defects
 - Risk of late defect detection
 - Risk of missing resources
(test data, drivers, tests, oracles, etc.)
- Efficient
 - Risk-driven PBRs
 - As early as possible
 - Automated aides
 - Essential plans



Outline

CS577 and QM

The CS577 IV&V Concept

The Selection/Assignment Processes

IV&V for DEN-remote Students

Independent Verification & Validation (IV&V) person on one of the campus based projects. Details for the IV&V role are evolving, but concept is fairly straight forward:

- You do all the same individual homework assignment, quizzes and learning, including the use of the class tools.
- Rather than producing a project team's artifacts or "homework" assignments, you will be "reviewing" them.
- You do a thorough technical review of the document packages and models
- You participate telephonically in the ARB for your team

IV&V for DEN remote Students (cont.)

"Reviewing" a project team's artifacts . As a result of the review,

- You may resolve simple questions directly with the Artifact's "author"
- Send all "concern logs" to the team electronically & a copy to the TAs
- You may generate "problem reports" for open issues.

Thorough technical review of the document packages and models

- made available just prior to the "Architecture Review Board"
- submit "concern logs" directly the CS577a instructional staff before the scheduled ARB

Participate in ARB for your team

- telephonically (we can/will call you)
- possibly supplemented by other remote meeting capabilities, like NetMeeting



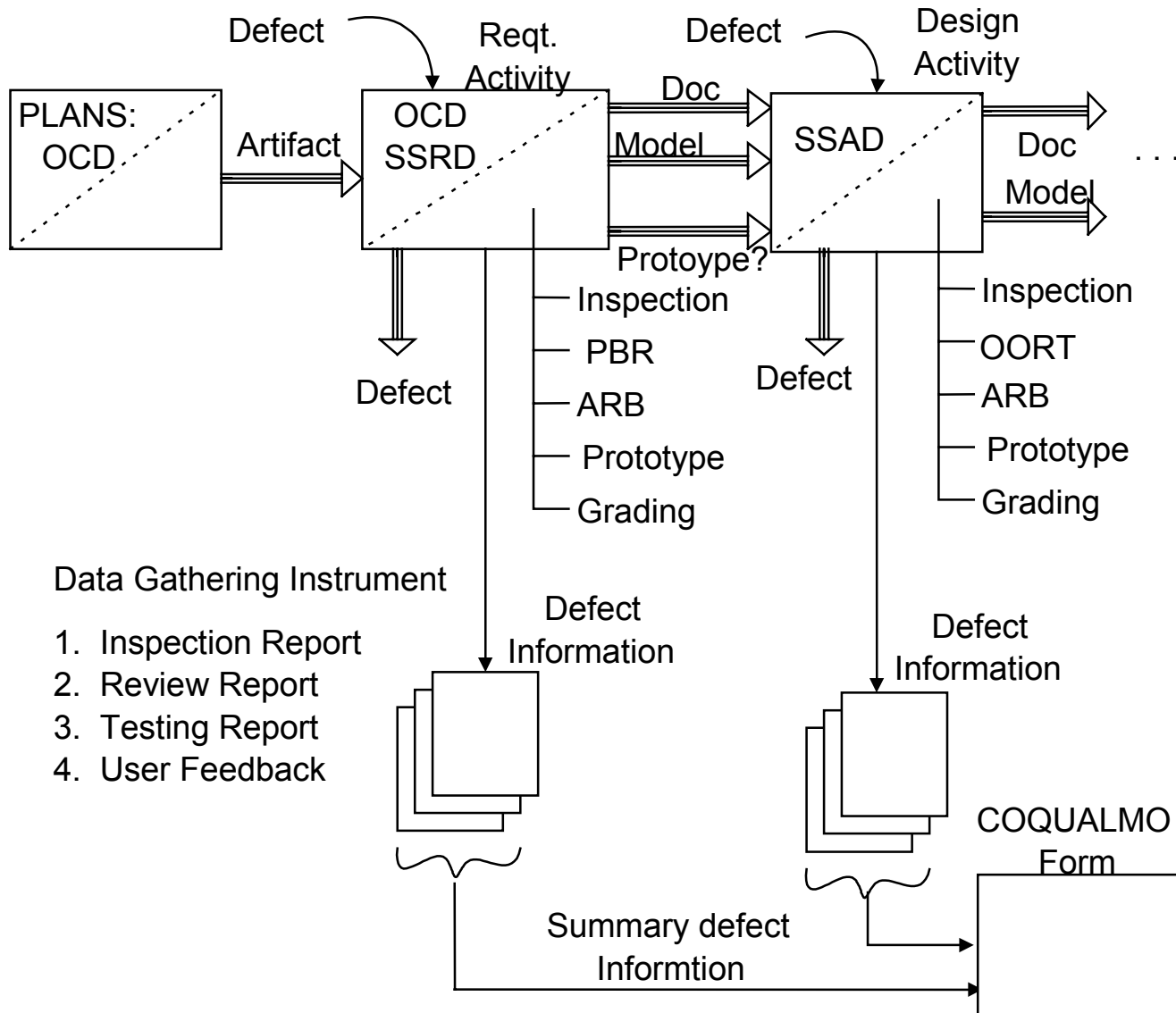
What & Where for "Reviews"

CS577 Model/Document Assessment

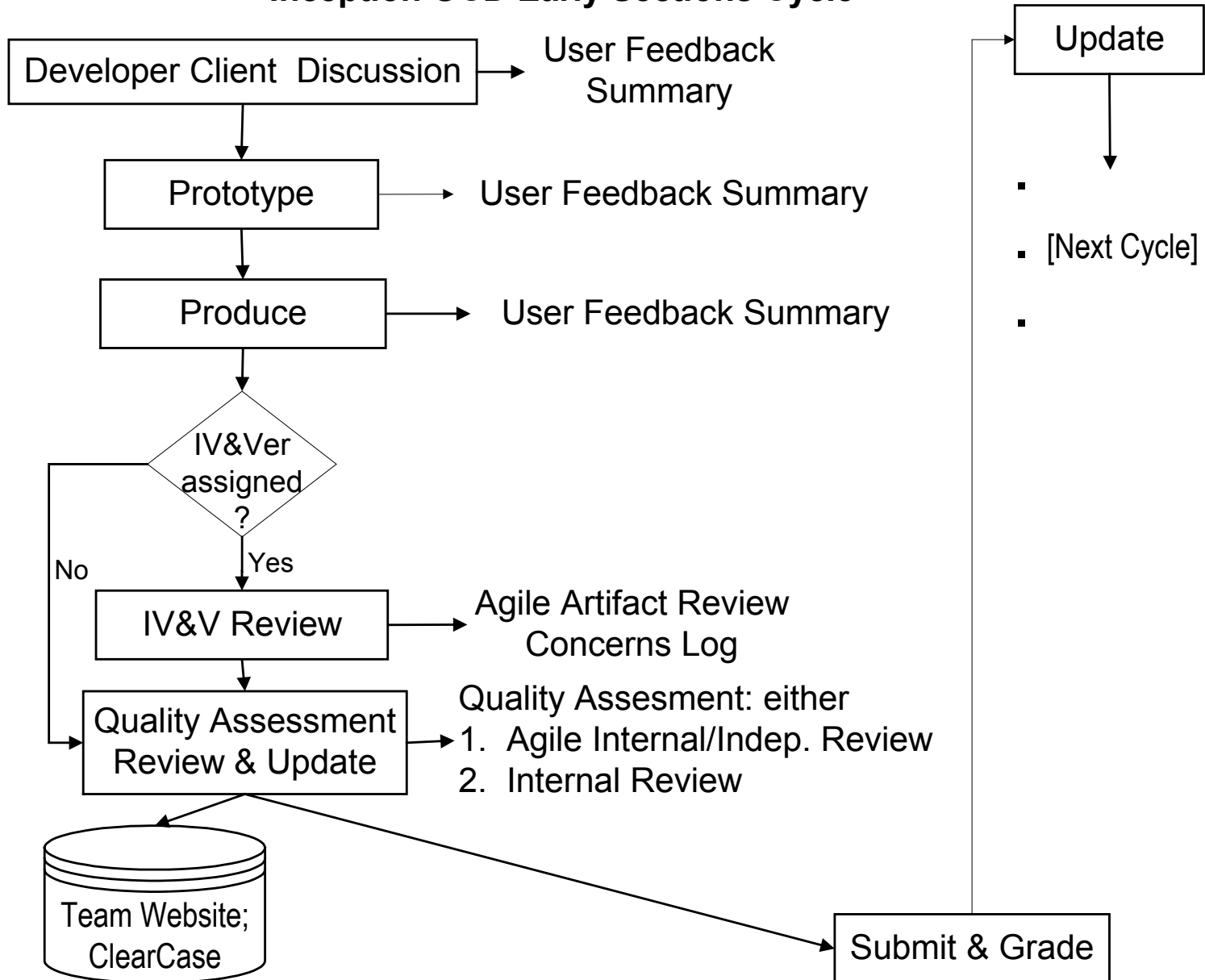
CS577 Inception OCD Early Sections Sub-cycle

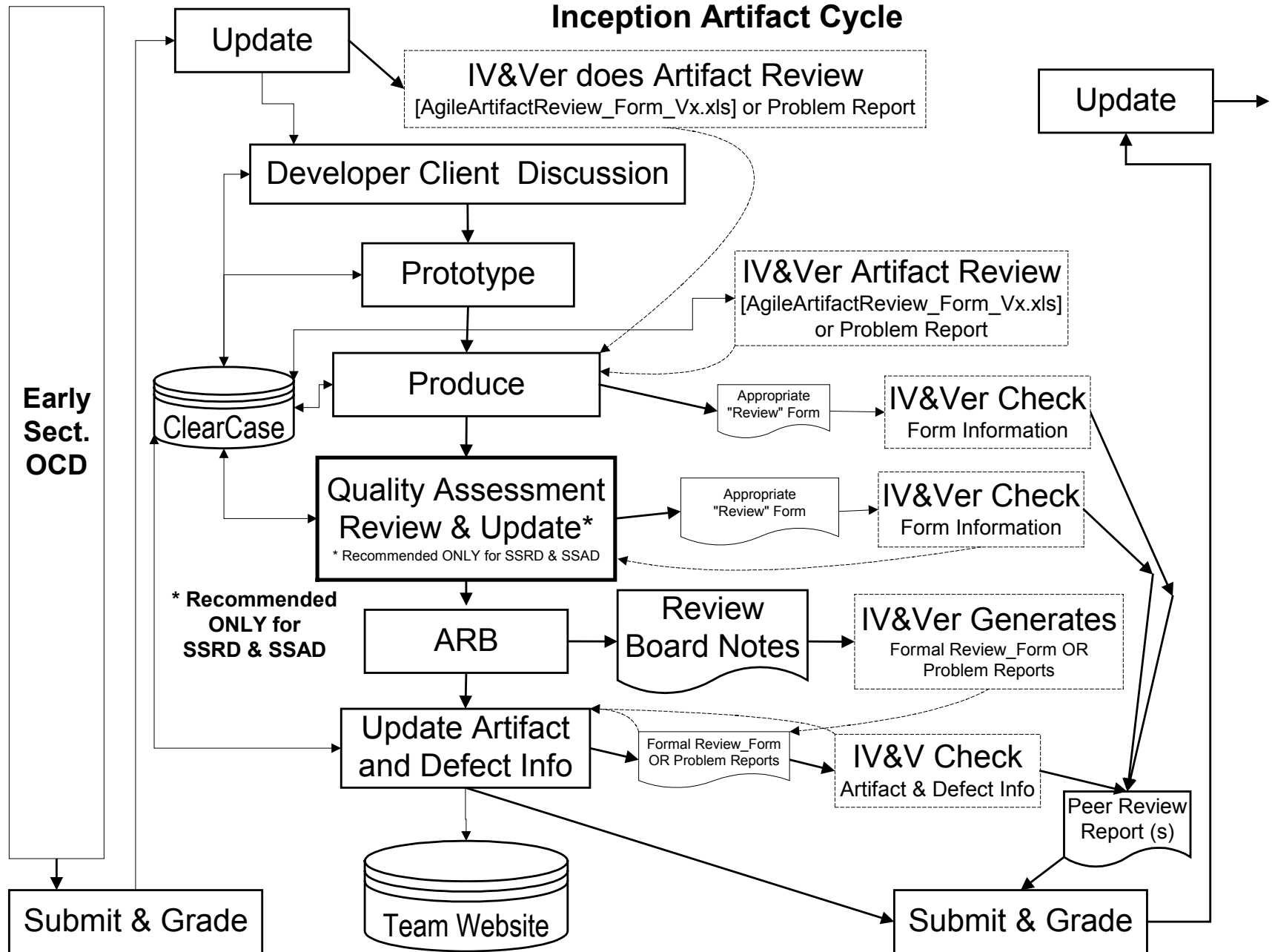
CS577 Inception Artifact Life Cycle

CS577 Model/Document Assessment



Inception OCD Early Sections Cycle





CS577 MBASE Defect Reporting Concepts (cont.)

Agile Artifact Review (cont.)

Project:				Review #	-		
Component:				Date:			
Artifact:				Time:			
MBASE Phase/level:							
Exit Criteria:							
Reviewer:				Dates:			
Reviewer email:				To reviewer			
Reviewer phone:				Returned to Author			
Auhor:				Retuned to QA			

Use this sheet to record the areas of concern that come up during your reading/review of the Artifact. Number the issues as you go (1, 2, 3, ...) and, if at all possible, record the number of the page in the artifact or other "location" information (e.g. screen name, etc.) and the associated technical description of the area of concern to indicate to the developer/author during his/her analysis of this information about the relevant part of the Artifact.

Keep this sheet with you during the analysis of the artifact. When an area of concern you recorded here requires corrective action and is placed on the artifact's Problem/Issue list, note the number of the Problem/Issue(s) in the rightmost column. Problems are things you believe the author of this artifact can/should fix; "open issues" are things which can not be corrected solely in this artifact.

#	Location(s)	Area of concern						Problem or Issue #



New CS577 MBASE Defect Reporting Concepts (cont.)

Agile Artifact Review (cont.)

Project:						Review #:	-
Component:						Date:	
Artifact:							
Type of review:	[Indepent] Review			MBASE Phase/level:	Review Date(s):		
Defects found:	<input type="checkbox"/> Major	<input type="checkbox"/> Minor	<input type="checkbox"/> No. of Open Issues	<input type="checkbox"/> Number of Unavoidable defects	<input type="checkbox"/> Number of Avoidable defects		
Comments:							
Problems/Issues							
#	Location (s)	Description	Classification	Activity of Defect Injection (Requirements, Design, Code, etc.)	Location of correction(s)	Date of fix	Comments
			<input type="checkbox"/> Major <input type="checkbox"/> Missing <input type="checkbox"/> Minor <input type="checkbox"/> Wrong <input type="checkbox"/> Open issue <input type="checkbox"/> Extra <input type="checkbox"/> Unavoidable <input type="checkbox"/> Avoidable				
			<input type="checkbox"/> Major <input type="checkbox"/> Missing <input type="checkbox"/> Minor <input type="checkbox"/> Wrong <input type="checkbox"/> Open issue <input type="checkbox"/> Extra <input type="checkbox"/> Unavoidable <input type="checkbox"/> Avoidable				



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Selection Form

http://sunset.usc.edu/classes/cs577a_2002/questionnaire/remotelV&V.html

Based on last years quesitonaire

Selection of Projects to participate in



Selection of Projects to participate in

- Prioritize the projects that you have selected for participating on along with those for IV&V according to high (1) – low (10) that are given in the project list. [Preference will be given to first 7 projects in the list since CSE is most interested in seeing these initiated rather than the latter ones.]

Priority*:	<input type="checkbox"/>	First Choice*:	<input type="text" value="Select One"/>
Priority*:	<input type="checkbox"/>	Second Choice*:	<input type="text" value="Select One"/>
Priority*:	<input type="checkbox"/>	Third Choice*:	<input type="text" value="Select One"/>
Priority*:	<input type="checkbox"/>	Fourth Choice*:	<input type="text" value="Select One"/>



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First Tasks -- More Info by Sep 23