CM & QM and Peer Reviews

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CS577a
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Outline

CS577a Quality Management (QM)

- The three legs

CS577a Configuration Management (CM)

- CM System Approaches
- Change Control

Peer Reviews (AKA wrongly as "Inspections")

- ROI by Type of Review
- Peer Reviews as practiced in 577a

Peer Review Workshop

Quality Management

The Quality tasks in QM

- Quality Assessment (and Reporting)
  - Peer (team) Reviews
  - Agile (IIV&V) Artifact Reviews
  - Testing
- Quality Tracking (Follow up on the "Reports")
- Quality Improvement

With pre-requisites

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

CS577a Quality Management

Pre-requisites

- Configuration Management: Described in LCP
- Early Defect Finding (Identification) mechanisms: **PR & AAR**
- Defect and Effort Data submittal: QR

The Quality tasks in QM

- Quality Assessment (and Reporting)
  - Agile (IIV&V) Artifact Reviews (AAR)
  - Peer (team) Reviews: Fagan's Inspection or Pair Development
  - Testing?
  - Problem Reports (QMIS)
- Quality Assessments Tracking (Follow up on the "Reports")
  - Available mechanisms: QMIS, Bugzilla, Mantis, ClearQuest, …

- Quality Improvement
  - Iterative reaction to feedback, IIV&V/Peer reviews, ARBs

Cost Schedule Quality Tradeoff

Q, $, Time:

- Normal projects: Pick two of the three: the other is the "independent" variable.
- MBASE projects: Pick all three: Shrink the "size" (features/capabilities, documentation/project-requirements, LOS, Interfaces, Evolution)

CS577a CM

CM System Approaches (possible)

- For Documents:
  - File naming conventions on Team Website
  - ClearCase Light
- For Prototype Code
  (especially if more than one prototyper)
  - CVS
  - ClearCase Light
  - …

Change Control …

CS577a CM (cont.)

Change Control

- Heavy-weight: change control boards
- Medium-weight: as described in full MBASE guidelines
- Light-weight:
  - Project Manager/Leader oversight
  - Clear (verbally) with client

CMM Level 3 KPA--Peer Reviews

Goals

"1. Peer review activities are planned.

"2. Defects in the software work products are identified and removed."

Purpose

- Remove defects from the software work products early and efficiently.
- Corollary effects:
  - develop a better understanding of the software work products
  - develop a better understanding of the defects that can be prevented.

"This Key Process Area (KPA) covers the practices for performing peer reviews."

NOTE: specific software work products that undergo peer review are identified in the key process areas that describe for each software work product

- development process (including iterative approaches)
- maintenance process (post development)

Peer Reviews – CMM Level 3 KPA(cont.)

Can be implemented via

- Fagan-style inspections [Fagan86],
- Structured walkthroughs
- Number of other collegial review methods [Freedman90]

Involve a methodical examination of software work products by the producers' peers

- to identify defects and
- to identify areas where changes are needed

The specific products that will undergo peer review

- Identified in the project's defined software process
- Scheduled as part of the software project planning activities

Peer Reviews in CS577a

The top-level activities performed for Peer Reviews are:

"1. Peer reviews are planned, and the plans are documented."
In LCP in I&E [and then in QM Plan in Construction]!

"2. Peer reviews are performed according to a documented procedure."
In presentations:

- ec18b[IIV&V-AgileArtifactReviewWrkshp]v0
- Inspection Training Material
- Pair Development Training Material

"3. Data on the conduct and results of the peer reviews are recorded."
In Quality Report (QR)

  - On Campus: Inspection Report or Pair Development Report
  - IV&V: AgileArtifactReview Report

CS577 MBASE Defect Reporting Concepts

Range of Defect identification & reporting mechanisms

- One at a time: a 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: Two 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
- Pair Development: Four different types of forms

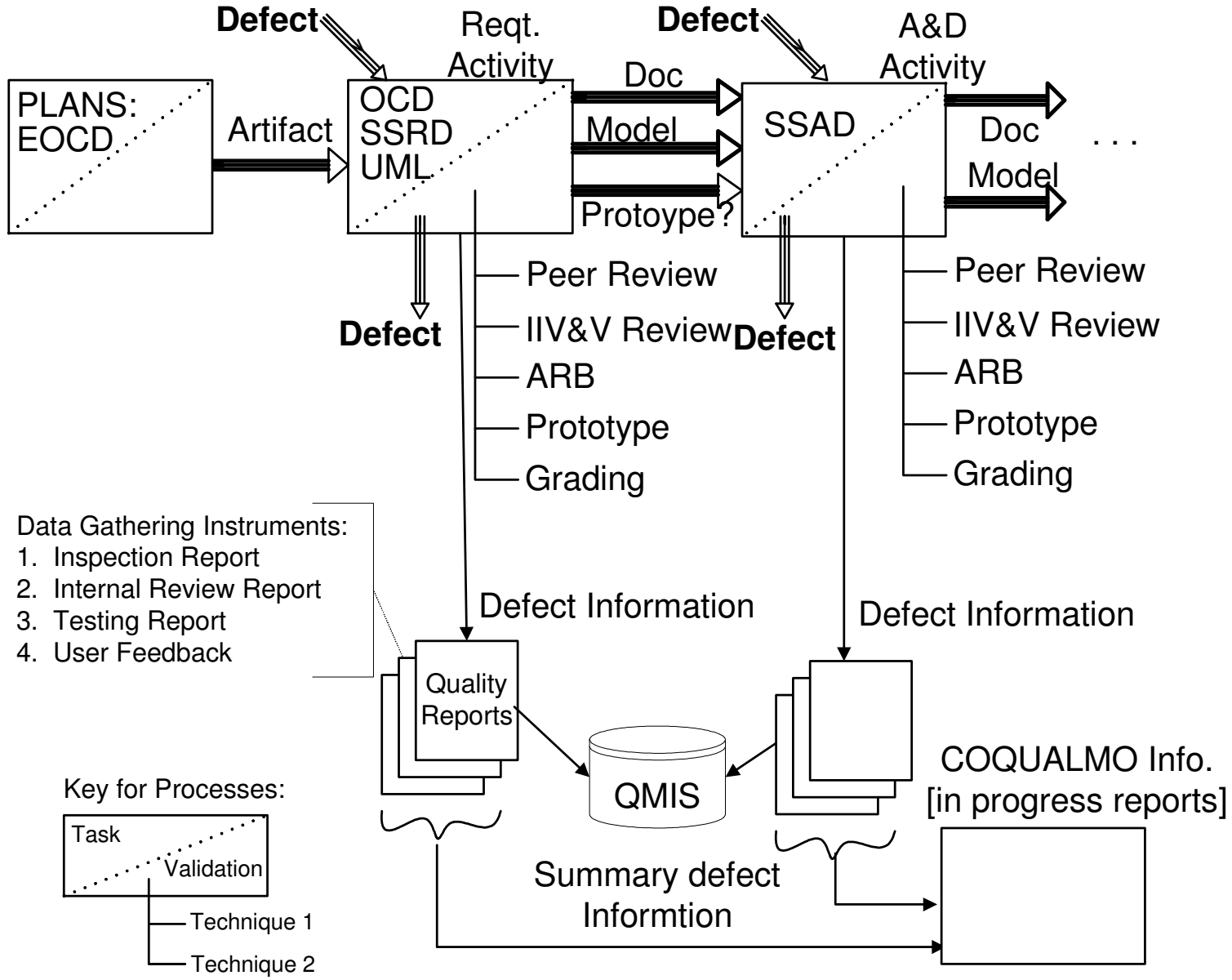
What & Where for Reviews

CS577 Model/Document Assessment

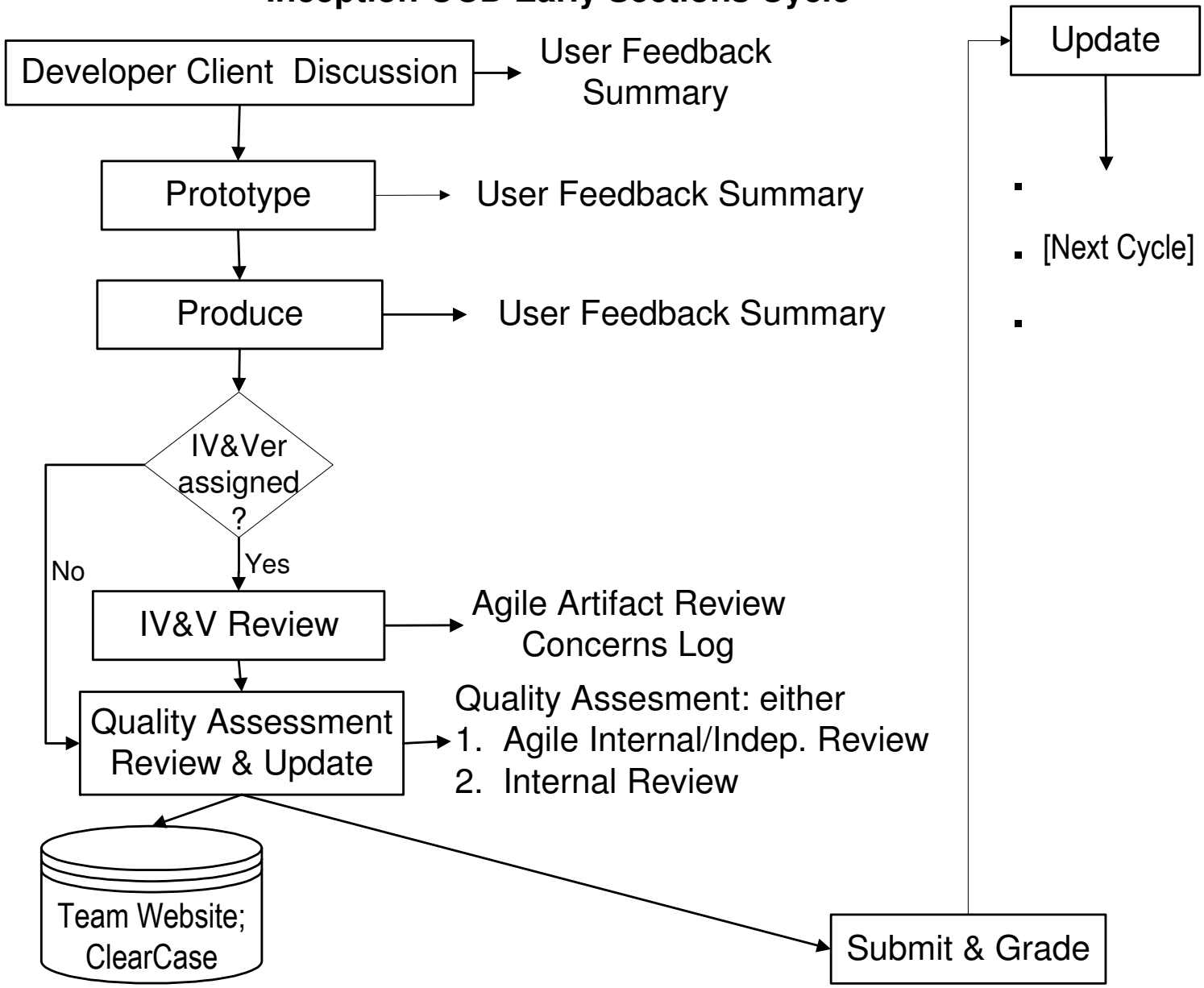
CS577 Inception OCD Early Sections Sub-cycle

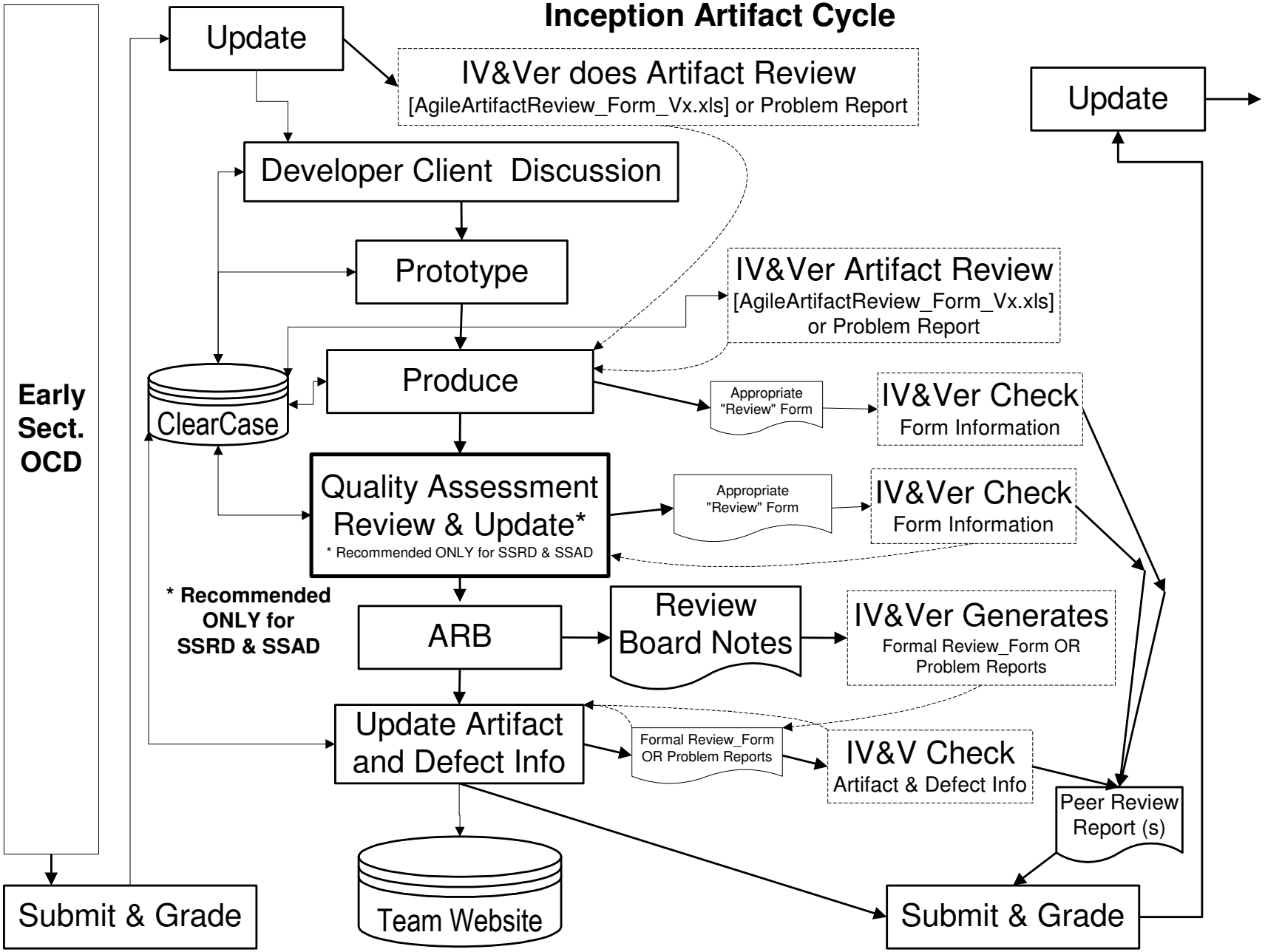
CS577 Inception Artifact Life Cycle

CS577 Model/Document Assessment



Inception OCD Early Sections Cycle




Inception Artifact Cycle
Early Sect. OCD
Update
IV&Ver does Artifact Review
[AgileArtifactReview_Form_Vx.xls] or Problem Report
Update
Developer Client Discussion
Prototype
IV&Ver Artifact Review
[AgileArtifactReview_Form_Vx.xls]
or Problem Report
ClearCase
Produce
Appropriate "Review" Form
IV&Ver Check
Form Information
Quality Assessment Review & Update*
* Recommended ONLY for SSRD & SSAD
Appropriate "Review" Form
IV&Ver Check
Form Information
* Recommended ONLY for SSRD & SSAD
ARB
Review Board Notes
IV&Ver Generates
Formal Review_Form OR Problem Reports
Update Artifact and Defect Info
Formal Review_Form OR Problem Reports
IV&V Check
Artifact & Defect Info
Peer Review Report (s)
Team Website
Submit & Grade
Submit & Grade

CS577 MBASE Defect Reporting Concepts

Agile Artifact Review

Project Name:		Review #	
Artifact:		Review Date:	
Module:		Review Time:	
MBASE Phase/lvevel:			
Activity:			
Exit Criteria:			
Reviewer:		Date Sent to Reviewer:	
Reviewer email:		Date Returned to Author:	
Reviewer phone:		Date Retuned to QAT:	
Auhor:		Total Preparation Time:	

Use this sheet to record the areas of concern that come up during your reading/review of the Artifact. Give the "location" information 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. Give your opinion for the classification of the area of concern in M/W/E field. Write in letter each for Missing(M)/Worng(W)/Extra(E). Also, rank the priority and criticality in both field as High, Medium or Low.

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 list, note the number of the Defect/Issue(s) in the Areas of Concern Log. 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 or at this time.

#	Location(s)	Area of concern	M/W/E	Priority	Criticality

New CS577 MBASE Defect Reporting Concepts (cont.)

Agile Artifact Review (cont.)

Project Name: _____ **Review #:** _____ - _____

Artifact: _____ **Date:** _____

Module: _____ **Activity:** _____

Type of review: [Indepent] Review _____ **MBASE Phase/level:** _____ **Review Date(s):** _____

No. of Priority: ☐ High ☐ Medium ☐ Low No. of Criticality: ☐ High ☐ Medium ☐ Low ☐ No. of open issues

Comments: _____

Defects/Issues

D/I	#	Location (s)	Description	Classification	Priority	Criticality	Activity of Defect Injection (Requirements,Design,Code,etc.)	Location of correction(s)	Date of fix	Comments
				☐ Missing ☐ Wrong ☐ Extra ☐ Open issue	☐ High ☐ Medium ☐ Low	☐ High ☐ Medium ☐ Low				
				☐ Missing ☐ Wrong ☐ Extra ☐ Open issue	☐ High ☐ Medium ☐ Low	☐ High ☐ Medium ☐ Low				

CS577 MBASE Defect Reporting Concepts (cont.)

Agile Internal Review

Project Name:			Review #		-
Artifact:			Review Date:		
Module:			Review Time:		
MBASE Phase/level:					
Activity:					
Exit Criteria:					
			Date Sent to Reviewer:		
Review Leader:			Date Returned to Author:		
Review Leader email:			Date Returned to QAT:		
Review Leader phone:			Total Preparation Time:		
Auhor:					
Reviewer 1:		Reviewer 2:		Reviewer 3:	
Reviewer 4:		Reviewer 5:		Reviewer 6:	

Use this sheet to record the areas of concern that come up during your reading/review of the Artifact. Give the "location" information 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. Give your opinion for the classification of the area of concern in M/W/E field. Write in letter each for Missing(M)/Worng(W)/Extra(E). Also, rank the priority and criticality in both field as High, Medium or Low.

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 or at this time.

#	Location(s)	Area of concern	M/W/E	Priority	Criticality

CS577 MBASE Defect Reporting Concepts (cont.)

Agile Artifact Review (cont.)

Artifact: _____ Date: _____

Module: _____

Type of review: _____ MBASE Phase/level: _____ Review Date(s): _____

Defects found: ☐ Major ☐ Minor ☐ No. of Open Issues ☐ Number of Unavoidable defects ☐ Number of Avoidable defects

Comments: _____

Defects/Issues

D / I	#	Location (s)	Description	Classification	Priority	Criticality	Activity of Defect Injection (Requirements,Design,Code,etc.)	Location of correction(s)	Date of fix	Comments
				☐ Missing ☐ Wrong ☐ Extra ☐ Open issue	☐ High ☐ Medium ☐ Low	☐ High ☐ Medium ☐ Low				

CS577 MBASE Defect Identification Processes On Campus: ODC and SSAD

Fagan's Inspection: Five different types of forms

- Announcement
- Individual Preparation Log (one per inspector)
- Defect List

} QMIS

- Detialed Report
- Inspection Summary Report

} Hard copy with package

Pair Development: Four different types of forms

- Plan Announcement
- Pair Development Log
- Area of Concern Log

} QMIS

- Pair Development Summary

} Hard copy with package

CS577 MBASE Defect Identification Processes A range of options (other artifacts)

Agile Artifact Review: IIV&Ver

- Multiple issues/problems found by a single reviewer: (only two types of forms: Issues/Concern and Defect List

Agile Internal Review: Three different types of forms

Agile Formal Review: Three different types of forms

Internal/Informal Review: 4 different types of bigger forms

Formal Review: Four different types of bigger forms

Fagan's Inspection: Five different types of forms

CS577a MBASE Defect Identification Processes Minimum (Required)

Agile Artifact Review (AAR): IIV&Ver
Multiple issues/problems found by a single reviewer:
(only two types of forms: Issues/Concern Log and Defect List)

- Recorded as "Concerns" on Concern Log
- Author (team) completes "Defect List

Inpsection / Pair Development: On Campus

- OCD
- SSAD

CS577 MBASE Defect Reporting Concepts

Agile Artifact Review: filled out by IIV&Ver per artifact

Project Name:		Review #	
Artifact:		Review Date:	
Module:		Review Time:	
MBASE Phase/lvevel:			
Activity:			
Exit Criteria:			
Reviewer:		Date Sent to Reviewer:	
Reviewer email:		Date Returned to Author:	
Reviewer phone:		Date Retuned to QAT:	
Auhor:		Total Preparation Time:	

Use this sheet to record the areas of concern that come up during your reading/review of the Artifact. Give the "location" information 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. Give your opinion for the classification of the area of concern in M/W/E field. Write in letter each for Missing(M)/Worng(W)/Extra(E). Also, rank the priority and criticality in both field as High, Medium or Low.

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#	Location(s)	Area of concern	M/W/E	Priority	Criticality

New CS577 MBASE Defect Reporting Concepts (cont.)

Agile Artifact Review (cont.): author/team response

Project Name: _____ **Review #:** _____ - _____

Artifact: _____ **Date:** _____

Module: _____ **Activity:** _____

Type of review: [Indepent] Review _____ **MBASE Phase/level:** _____ **Review Date(s):** _____

No. of Priority: ☐ High ☐ Medium ☐ Low No. of Criticality: ☐ High ☐ Medium ☐ Low ☐ No. of open issues

Comments: _____

Defects/Issues

D/I	#	Location (s)	Description	Classification	Priority	Criticality	Activity of Defect Injection (Requirements,Design,Code,etc.)	Location of correction(s)	Date of fix	Comments
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				☐ Missing ☐ Wrong ☐ Extra ☐ Open issue	☐ High ☐ Medium ☐ Low	☐ High ☐ Medium ☐ Low				

CS577 MBASE Defect Reporting Concepts (cont.)

Agile Internal Review: to assist in preparation

Project Name:			Review #		-
Artifact:			Review Date:		
Module:			Review Time:		
MBASE Phase/level:					
Activity:					
Exit Criteria:					
			Date Sent to Reviewer:		
Review Leader:			Date Returned to Author:		
Review Leader email:			Date Returned to QAT:		
Review Leader phone:			Total Preparation Time:		
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Reviewer 1:		Reviewer 2:		Reviewer 3:	
Reviewer 4:		Reviewer 5:		Reviewer 6:	

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#	Location(s)	Area of concern	M/W/E	Priority	Criticality

CS577 MBASE Defect Reporting Concepts (cont.)

Agile Internal Review (cont.): done during PR meeting

Artifact: _____ Date: _____

Module: _____

Type of review: _____ MBASE Phase/level: _____ Review Date(s): _____

Defects found: ☐ Major ☐ Minor ☐ No. of Open Issues ☐ Number of Unavoidable defects ☐ Number of Avoidable defects

Comments: _____

Defects/Issues

D / I	#	Location (s)	Description	Classification	Priority	Criticality	Activity of Defect Injection (Requirements,Design,Code,etc.)	Location of correction(s)	Date of fix	Comments
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Peer Reviews in CS577a ROI

Michael Fagan suggests "Goal Levels" [Since 1988]

Goal Level	Process	Process Execution
1 Baseline.	Undefined, Intuitive Process with Reviews/Walk-throughs	Discipline level: Many judgement calls.
2 60% defects found before testing. +10% Productivity.	I0, I1, I2 … Inspections	Informal Moderator training (0 - 1 day).
3 90% defects found before testing. +25% Productivity.	Formal Exit Criteria. I0, I1, I2 Fagan Inspections Design Change control	Formal Moderator training [for ALL] (3+ days [with FIs]) – ALL changes

The above are first 3 out of 5 of Fagan's Goal Levels

- CS577a teams do Inspections or Agile Inernal Peer Reveiws
- CS577a teams do not really do Design Change Control or Inpsections [Peer-Reviews] of all changes

CS577a defect detection rates and ROI are lower than Fagan's