



CS577b Quality Mgt. 1

Jan. 27, 2002

Agile QM

For Elaboration #2 and Construction

Goals of Presentation

You should get

- Information on Quality Management details for MBASE/CS577b
 - Why and How things have changed
 - Information you need to know to do your job during Elaboration Cycle #2
 - Process and Workflow changes
 - Artifact generation timing
 - Quality Focal Point's role
 - IV&Ver's role
 - Documentation changes
- A heads-up about ClearCase and Quality Reporting

Review: Quality Management Data

Why

- Large, well managed systems development norm
- For our CeBASE research
- For our COQUALMO tool research

What

- Defect history: readiness to deploy
- Defect types and descriptions
- Defect densities
 - injection and removal data
 - for trial calibrations of tool

Review: Immediate Remediations

You should be using ClearCase for EACH change

- Points for use/lack of use WILL impact your team grade!
- Useful for YOUR working configuration management
- A resource for researchers
 - Very few real projects provide information to allow tracing of defects and problems
 - In conjunction with
 - Defect Logs (Defect == ANY CHANGE or FI defect)
 - Problem Reports
 - Plans
 - Sizing
- Good experience for YOU as a software engineer [and an attractive career alternative]

Review: Immediate Remediations (cont.)

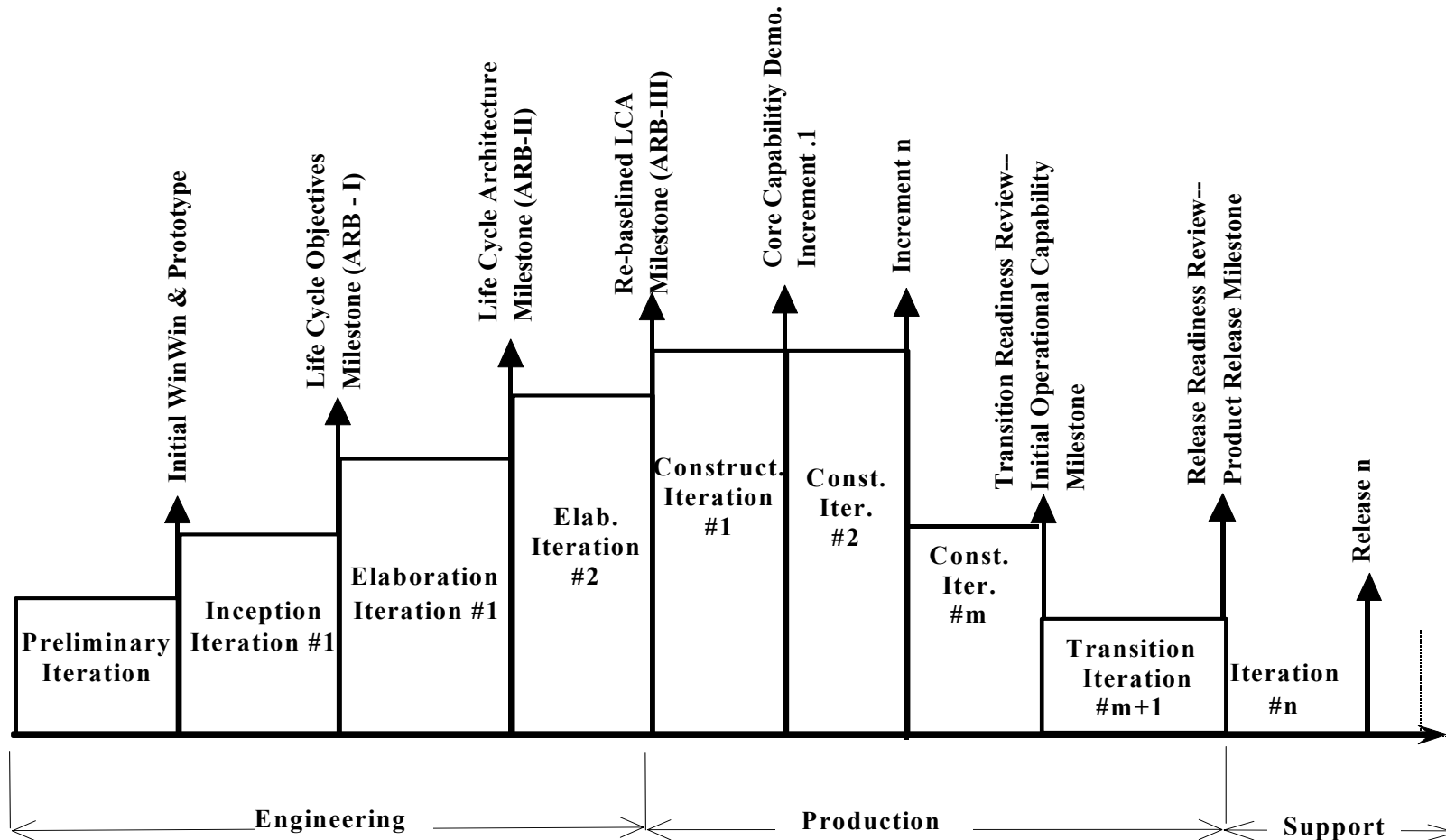
LCP descriptions of Quality Management

- Many of last years LCO and LCA versions of LCP's went on and on about inspections which should have been done by reference
- Very few LCP's had the information desired for
 - Post-facto analysis of Quality Data
 - Plans for "Construction"

Quality Plans: Only one team did a draft as might be expected at a true LCA ARB

Drafts of other Construction Plans were lacking

MBASE/RUP Phases in CS577ab



Review: 577b Quality Management

- Why and How things have changed
- Information you need to know to do your job during Elaboration Cycle #2
 - Process and Workflow changes
 - o Forms
 - o Problem Reporting
 - Artifact generation timing
 - IV&Ver's role
 - Quality Focal Point's role & tasks
- Documentation changes
 - Weekly Status Report:
Defect Counts and Peer Reviews Planned
 - LCP and Construction Set Documents

Progress Report – Defect Counts

Type	New ¹⁷ opened	New ¹⁷ closed	Old ¹⁸ closed	Current
Issues ¹⁹				
Defects ²⁰				
Problem Reports				

¹⁷ Problem reports and issues generated since last report.

¹⁸ Old are those in "Current" in the previous report.

¹⁹ See QMP for a definition. Usually potential defects identified in other artifacts during a review (i.e., artifacts not the primary focus of the review)

²⁰ See QMP for a definition. Usually changes made by the "author" of a reviewed artifact as a result of an "issue" or those identified in an inspection (where a "Defect" is objectively defined and the author concurs with the designation.)



577b QM Changes – What, Why & How

Radical shifts:


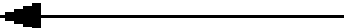
- Quality Focal Point role elevated and expanded
- IV&Ver to do real acceptance test development
- Traditional (large system) Quality Management to "Agile"
 - Change because
 - o Better fit with demands of CS577b
 - o An experiment for CeBASE
 - Lose ability to gather data necessary to operate at CMM Level 4 and Level 5

Simple Changes: Names and content of expected documents

Inception and Elaboration ¶

- ◆ +Operational Concept Description (OCD) ¶
- ◆ +System and Software Requirements Definition (SSRD) ¶
- ◆ +System and Software Architecture Description (SSAD) ¶
- ◆ +Life Cycle Plan (LCP) ¶
- ◆ +Feasibility Rationale Description (FRD) ¶

Construction ¶

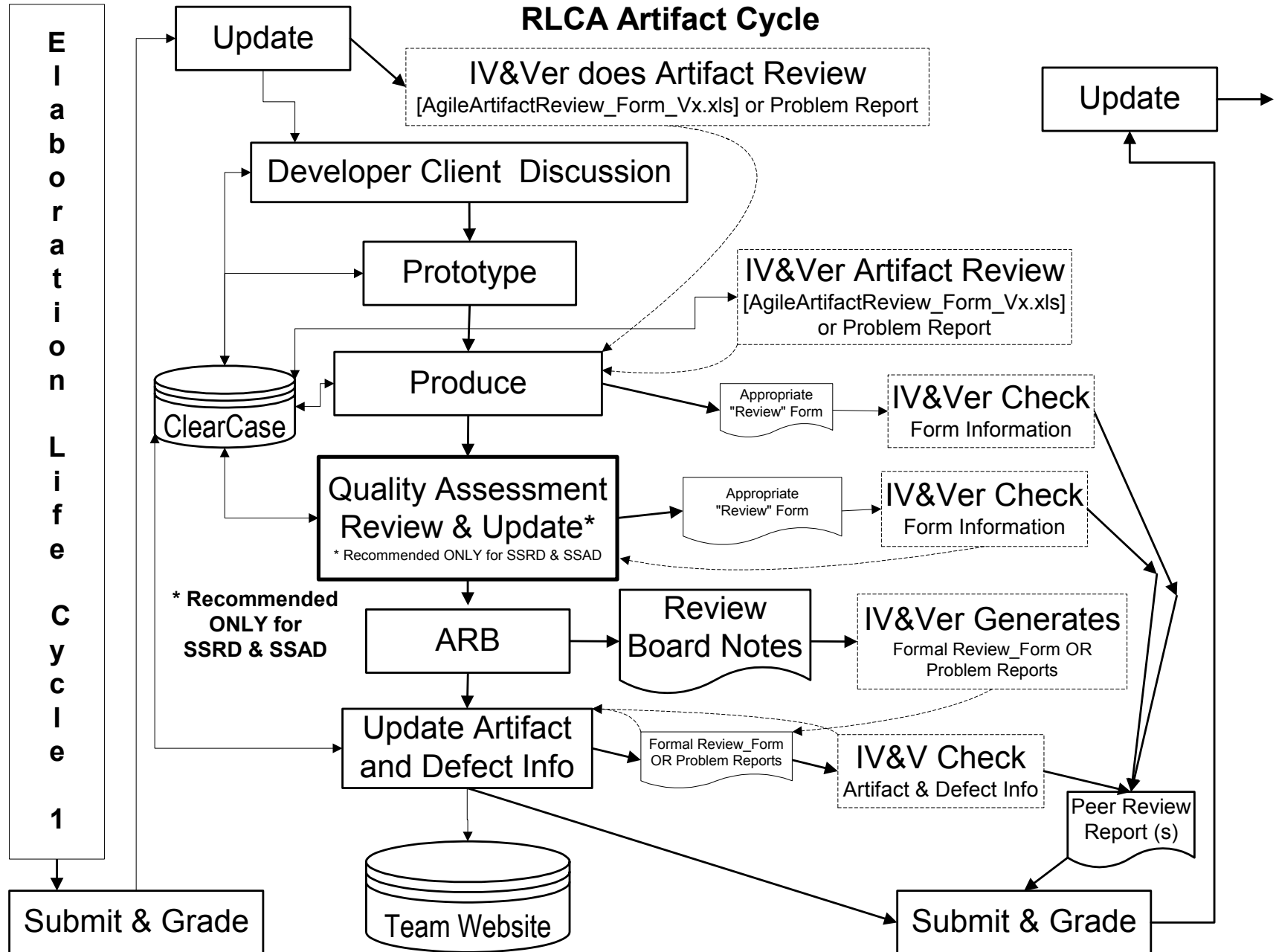
- ◆ +Iteration Plan ¶
- ◆ +Iteration Assessment Report ¶
- ◆ +Release Description ¶
- ◆ +Quality Management Plan ¶
- ◆ +Test Plan ¶
- ◆ +Test Description and Results ¶
- ◆ +*Peer Review Plan* ¶ 
- ◆ +*Peer Review Report* ¶ 

577b QM – Info for Elaboration-2

Process and Workflow changes:

- Improved forms for "Agile Artifact Review"; used only when desired in place of multiple "Problem Reports"
- Internal peer reviews recommended only to help on "technical" documents:
 - SSRD, SSAD
 - For code during Construction
- IV&Ver plays a significant role
- If no IV&Ver: "Quality Focal Point" role does even more
- Normal "Quality Focal Point" role tracks problem reports and provides statistical data on Weekly Progress Report (NEW!)

RLCA Artifact Cycle -- Streamlined consistent with IV&Ver doing checks of "defect" data



577b QM – IV&V Implications

DO NOT send documents to IV&Ver

DO NOT use team website for documents for IV&Ver

USE ClearCase

- Team submits (checks in) Artifact
- IV&Ver reads (NOT check-out) latest version of Artifact!

Only FINAL, Milestone documents should go onto the team website!

- The team website is for public access/viewing.
- IFF you have a technical person on the client team who wants access to ClearCase, give them the URL and a little help! No permissions need for READ access!

let the TAs know and they will set him/her up with read

577b QM – Info for Elaboration-2 (cont.)

Process & Workflow changes: Five person plus IV&Ver teams

- IV&Ver does
 - Reviews similar to those of last semester
 - Generates and runs independent "Acceptance" tests; should be developed with Client
- Quality Focal Point
 - Handles the QM-related RLCA/CTS tasks!
 - QM Plan
 - Test Plan
 - Test Description and Results
 - Peer Review Plan
 - Peer Review Report(s)
 - Develops and runs independent system tests; packages up and runs the regression tests

577b QM – Info for Elab.-2 (cont.)

"Agile" Artifact Review Form set - 1

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 arctifact 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 #



577b QM – Info for Elab.-2 (cont.)

"Agile" Review Forms set - 2

Project:						Review #:	-
Component:						Date:	
Artifact:							
Type of review:	[Independent] 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:	<input type="checkbox"/>						
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				

577b QM – Info for Elab.-2 (cont.)

"Agile" Artifact Review Form set - 2

CSE wants to know information about Unavoidable vs. Avoidable "defects":

- Unavoidable defects (AKA changes) arise because the methods, techniques or approaches being followed necessitate changes.
 - Examples include changes arising because of
 - o the dynamics of learning,
 - o exploration in IKIWISI situations,
 - o code or screen contents reorganizations taken on as an "afterthought",
 - o replacement of stubs or placeholders in code, etc.
 - Such situations are often "planned for" and expected to occur

577b QM – Info for Elab.-2 (cont.)

"Agile" Artifact Review Form set - 2

CSE wants information about Avoidable "defects":

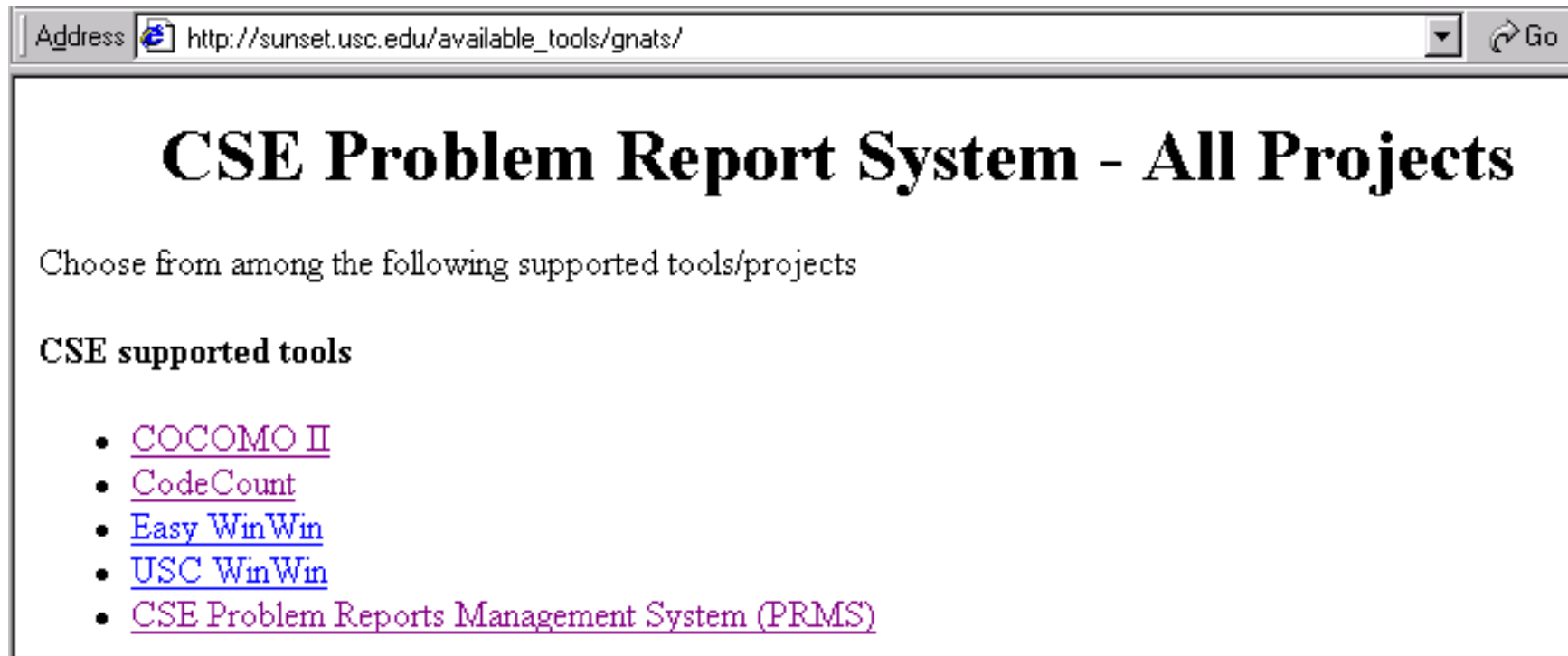
Avoidable defects are those changes in analysis, design, code or documentation arising from human error, and which could be avoided through better analysis, design, training, etc.



- **Examples include**
 - stub replacement that violates win conditions or requirements such as execution time or memory space
- **For instance**
 - the replacement of a "stub" which breaks a critical timing constraint

577b QM – Info for Elab.-2 (cont.)

Problem Report System

Process and Workflow changes: Problem Reporting using FSF's gnats. Links on class web-page

A screenshot of a web browser window. The address bar shows the URL 'http://sunset.usc.edu/available_tools/gnats/'. The main content area has a large heading 'CSE Problem Report System - All Projects'. Below the heading, it says 'Choose from among the following supported tools/projects'. Underneath, there is a section titled 'CSE supported tools' with a bulleted list of links: 'COCOMO II', 'CodeCount', 'Easy WinWin', 'USC WinWin', and 'CSE Problem Reports Management System (PRMS)'.

Address  http://sunset.usc.edu/available_tools/gnats/ 

CSE Problem Report System - All Projects

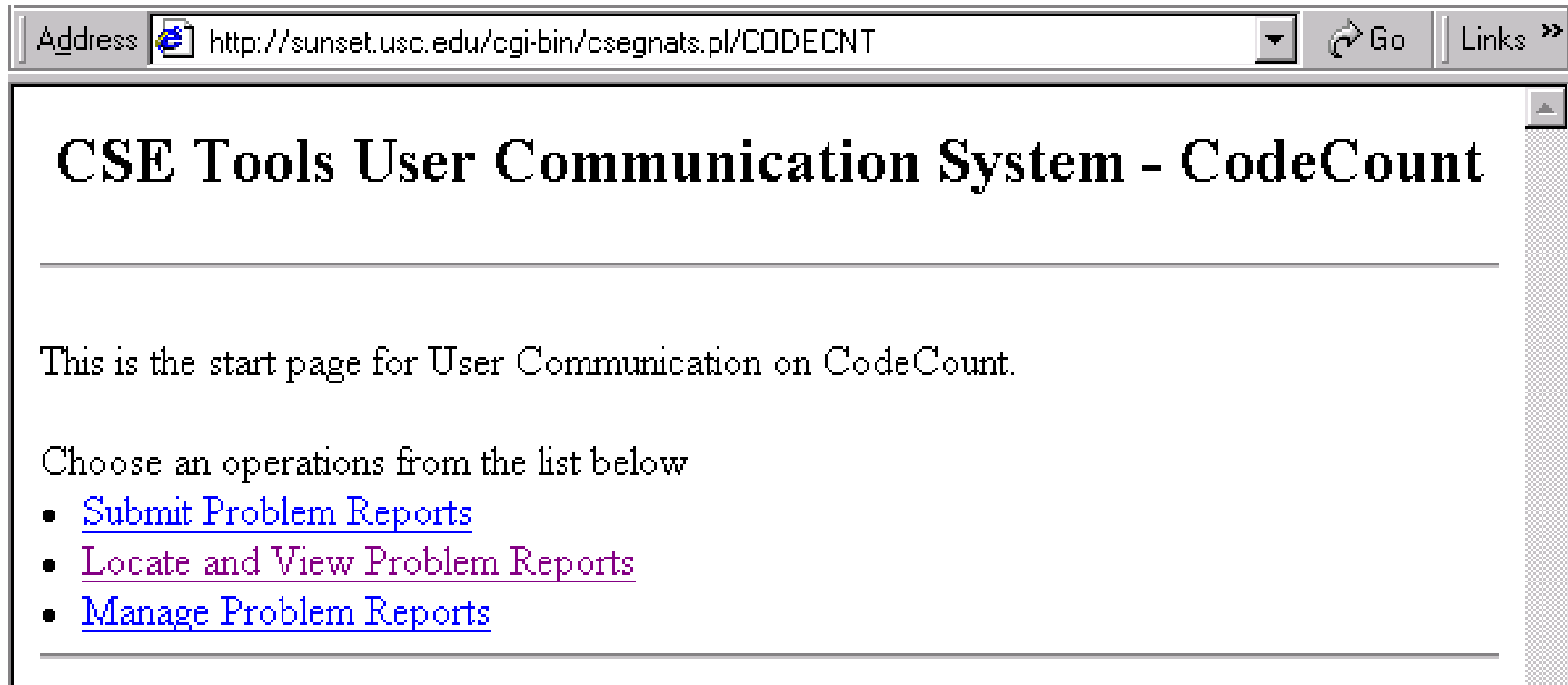
Choose from among the following supported tools/projects




CSE supported tools

- [COCOMO II](#)
- [CodeCount](#)
- [Easy WinWin](#)
- [USC WinWin](#)
- [CSE Problem Reports Management System \(PRMS\)](#)

577b QM – Info for Elab.-2 (cont.)

Problem Report System (cont.)

A screenshot of a web browser window. The address bar shows the URL 'http://sunset.usc.edu/cgi-bin/csegnats.pl/CODECNT'. The page title is 'CSE Tools User Communication System - CodeCount'. The main content area contains the text 'This is the start page for User Communication on CodeCount.' followed by a list of three links: 'Submit Problem Reports', 'Locate and View Problem Reports', and 'Manage Problem Reports'.

Address  http://sunset.usc.edu/cgi-bin/csegnats.pl/CODECNT  Go  Links »

CSE Tools User Communication System - CodeCount

This is the start page for User Communication on CodeCount.

Choose an operations from the list below

- [Submit Problem Reports](#)
- [Locate and View Problem Reports](#)
- [Manage Problem Reports](#)

577b QM – Info for Elab.-2 (cont.)

Problem Report System (cont.)

Address <http://sunset.usc.edu/cgi-bin/csegnats.pl/CODECNT/submitPR> Go Link

Report problems - CodeCount

Please provide [details](#) of the problem.

[Submitter's Name](#) * [Organization](#)

[Email](#) * [Other organization](#) (* if Organization is Other)

[Class](#)

[Release](#)

[Severity](#)

[Synopsis](#) *

[Description](#) *

[Additional Information](#) *

577b QM – Info for Elab.-2 (cont.)

Problem Report System (cont.)

Query problems - CodeCount

The Problem reports matching your query are:

PR Number	Category	State	Synopsis
18	CODECNT	open	Not COCOMO. It is Codecount - can't download it

577b QM – Info for Elab.-2 (cont.)

Problem Report System (cont.)

Full text of PR number 18:

```
From webfoot  Wed Mar 31 10:53:53 1999
Return-Path: <webfoot>
Received: (from webfoot@localhost)
    by sunset.usc.edu (8.8.8/8.8.8/usc)
    id KAA25702; Wed, 31 Mar 1999 10:53:52 -0800 (PST)
Message-Id: <199903311853.KAA25702@sunset.usc.edu>
Date: Wed Mar 31 10:53:52 PST 1999

From: "D. Fellows" <fellows@unb.ca>
Reply-To: fellows@unb.ca
To: cse-gnats
Subject: Not COCOMO. It is Codecount - can't download it
X-Send-Pr-Version: 3.107

>Number:          18
```

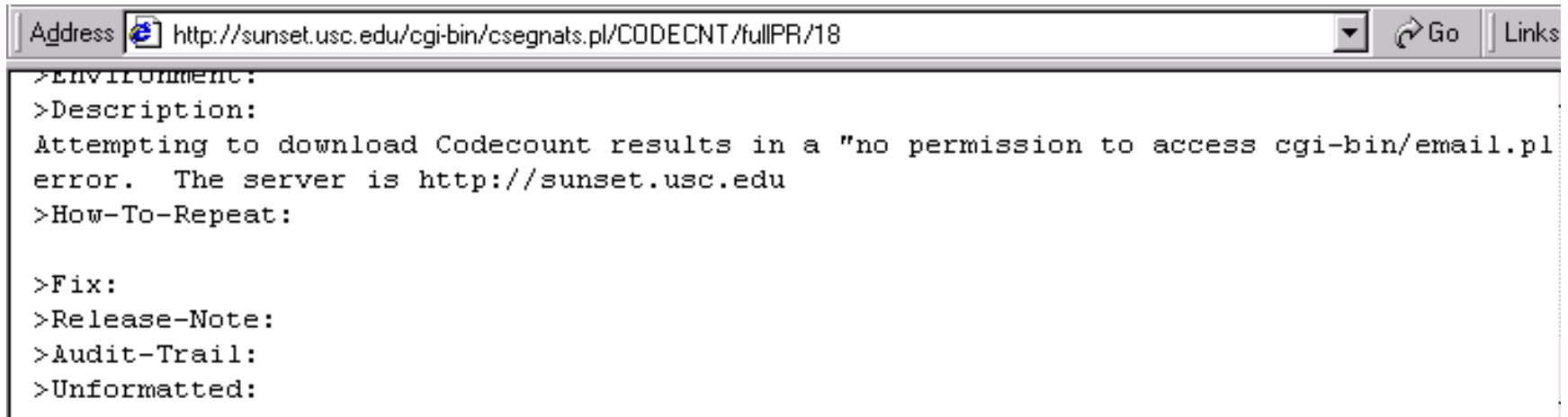


577b QM – Info for Elab.-2 (cont.)

Problem Report System (cont.)

```
>Number: 18
>Category: CODECNT
>Synopsis: Not COCOMO. It is Codecount - can't download it
>Confidential: no
>Severity: Serious
>Priority: medium
>Responsible: jongmoon
>State: open
>Class: support
>Submitter-Id: CSE
>Arrival-Date: Wed Mar 31 11:00:02 PST 1999
>Closed-Date:
>Last-Modified: Tue Apr 13 12:46:34 PDT 1999
>Originator: D. Fellows
>Release: USC COCOMO.II.1998
>Organization:
U. N. B.
>Environment:
>Description:
Attempting to download Codecount results in a "no permission to access cgi-bin/email.pl
error. The server is http://sunset.usc.edu
>How-To-Repeat:
```

577b QM – Info for Elab.-2 (cont.) Problem Report System (cont.)

A screenshot of a web browser window. The address bar shows the URL: http://sunset.usc.edu/cgi-bin/csegnats.pl/CODECNT/fullPR/18. The page content is a problem report with the following text:

```
>Environment:  
>Description:  
Attempting to download Codecount results in a "no permission to access cgi-bin/email.pl  
error. The server is http://sunset.usc.edu  
>How-To-Repeat:  
  
>Fix:  
>Release-Note:  
>Audit-Trail:  
>Unformatted:
```

577b QM – IV&Vers role

IV&Ver Activities per Boehm '81 (Figure 24-6)

- Throughout
 - Tool enhancement and maintenance (11%)
 - Management and reporting (24%)
- Tied to Waterfall Phase
 - Requirements Analysis (15%)
 - Equations Analysis (12%)
[today might also include "Architectural" Analysis]
 - Code Analysis (18%)
 - Testing (20%)

577b QM – Artifact Generation Timing

Concept: LCP gets "useful" (for future analysis) historical information and evolving level of detail leading up to CTS documents, which gradually gets pushed further into the CTS documents. For instance, for Quality Management:

- LCO: History (what, when, where) of Inception QM; Plans for Elaboration and sketch of plan for Construction
- LCA (actually a preliminary LCA): History (records) of Elaboration QM; draft plan for Construction
- RLCA (the real one): History (records) of Elaboration QM; Full-up plans for Construction
- Core Capability Demo: Plan update

Should have been going on all along

577b QM – Documentation Changes

Weekly Status Report: added materials (for/by Q-person)

- ClearCase Change History of major documents/code
- Quality/Issue/Problem Report Tracking:
 - Activity: list of Peer Review files or transmittals
 - Plan for Peer Reviews for next week
 - Status for each category: New open, Old closed, Current

NOTE: IV&Ver will do similar report on his activities and status – a simple list of emails and/or problem reports

LCP: documents approaches

- Contains (LCO) or refers to (LCA and CTS)
Quality Management plan
- Initially identifies COQUALMO driver level information
- Exit Condition variations (tailoring)

577b QM – Documentation Changes (cont.)

Construction Set Documents

- Quality Management Plan
 - Documents the CM Plan
 - Includes Problem Reporting approach
 - Identifies kinds of activities against COQUALMO driver level information: Rational required only on deviation from organizations "profile"
 - Refers/defers to
 - Test Plan & Test Description and Results [Reports]
 - Peer Review Plan & Peer Review Reports

577b Configuration Management

**Source code and document control through ClearCase!
version check out and check in with comments and meta-data**

Product Data Management: necessitated by IV&Vers

- Real-time painless updating
- Baselines done via "notes" (flag's in the history)

**ClearCase – a Rational Software large system
development support tool**

- Two interfaces: Web and GUI
- Six Functions

Introduced and demonstrated LAST YEAR

- ?http://den.usc.edu/colloquia/special_csci577b/special_csci577b.asp?

577b Configuration Management (cont.) Process (and Structure) Changes

Problem identified by a classmate:

**How to simply get all the latest documents,
needed when doing consistency checks,
without getting them one at a time!**

**Solution: All MBASE Guideline's documents
in ONE ClearCase Folder**

Implication: CM person

- Restructures the teams ClearCase structure before completing RLCA!
- Makes sure folders ONLY at outer level of ClearCase structure

577b Configuration Management (cont.) Process (and Structure) Changes

?Tools [on main page] has links for Structure and Access

Tools

- [ClearCase](#) - *new*
 - [ClearCase Configuration Management](#)
 - [Use Terminal Services Web Connection to access Terminal Server](#)
 - [Download and run Terminal Services Client program](#)
 - [Structure of ClearCase](#)

Two ways to run Terminal Services: Web (requires "Install") or Download & Run Client (works in SAL labs)

Instruction to create your view to make changes in your project ClearCase Configuration Management Archive:
http://sunset.usc.edu/classes/cs577b_2002/guidelines/Configure_ClearCase.htm

