

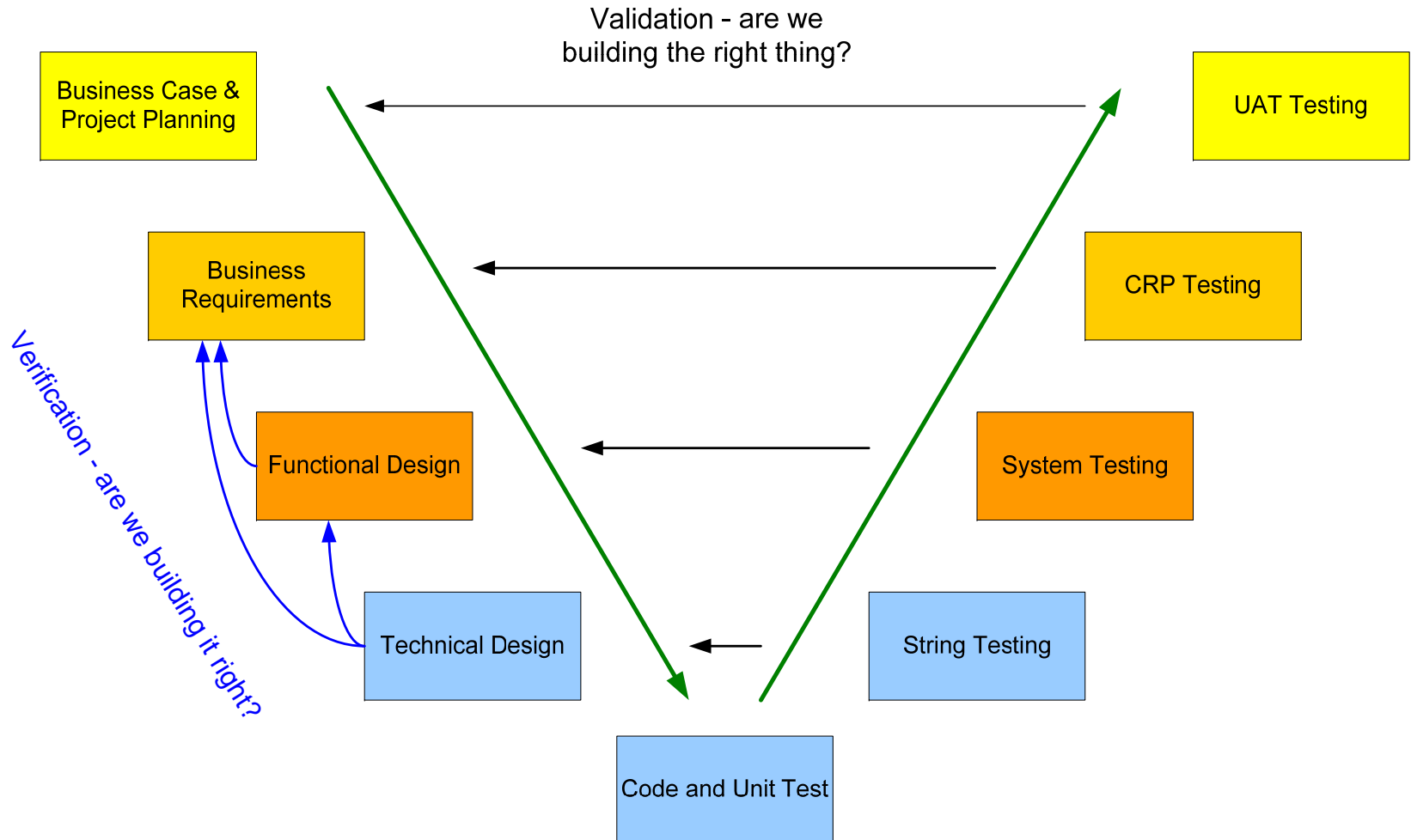


What is Quality Assurance?

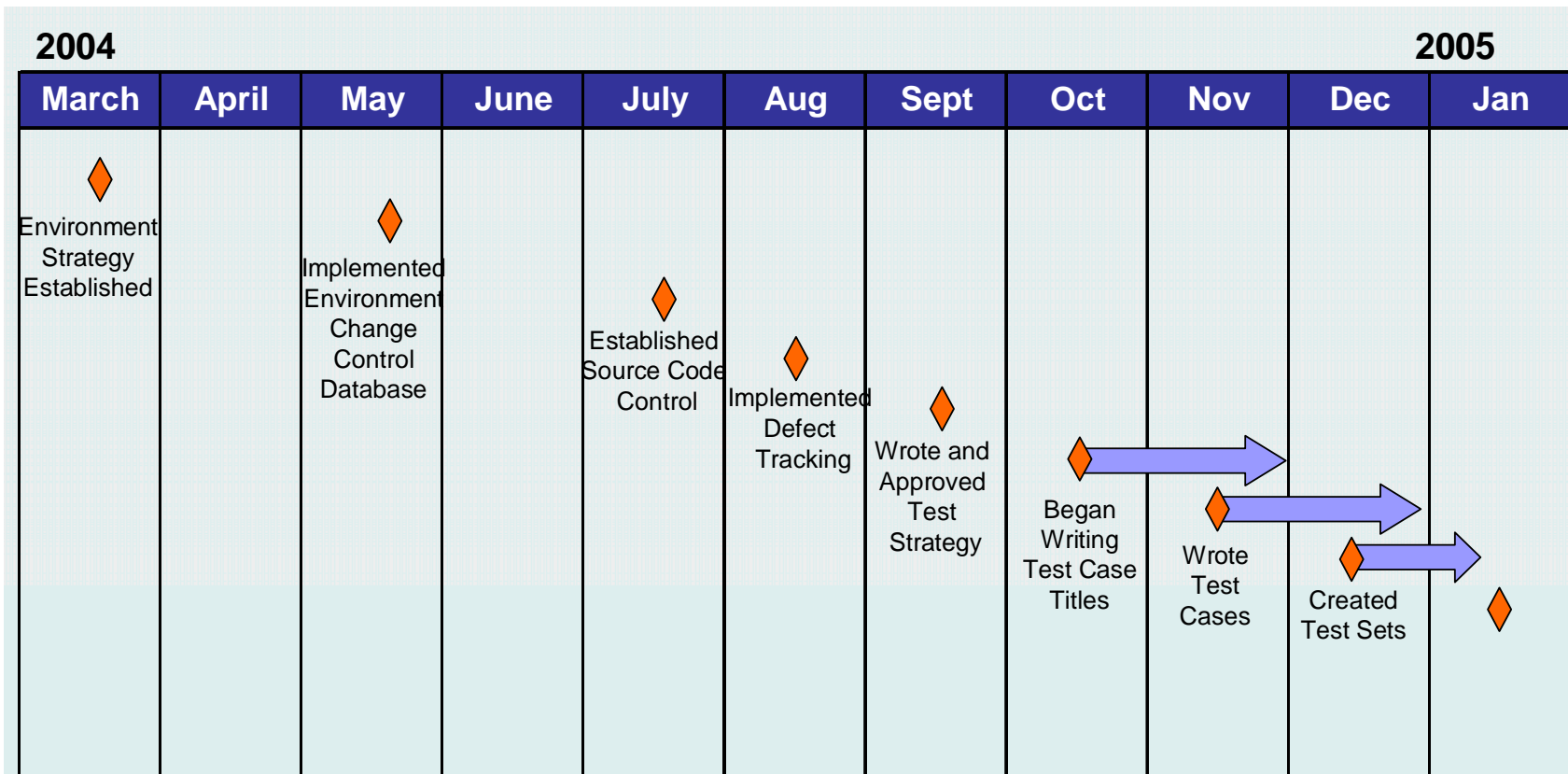
Quality Assurance (QA): Set of support activities needed to provide adequate confidence that processes are established and continuously improved in order to produce products that meet specifications (verification) and are fit for use (validation).

Quality Control (QC): Process by which product quality is compared with applicable standards and the action taken when nonconformance is detected.

The V Diagram



QA Implementation Timeline





Prerequisites for Testing

Environment Strategy

- ◆ Separate controlled environment for testing

Environment Change Control

- ◆ Ensures that our testing in these environments reflects what will be in production
- ◆ Ensures we have tested the procedures for deploying the code to production

Prerequisites for Testing

Documented Source of Changes

- ◆ Source code control, migration management
- ◆ Manual change procedures and documents

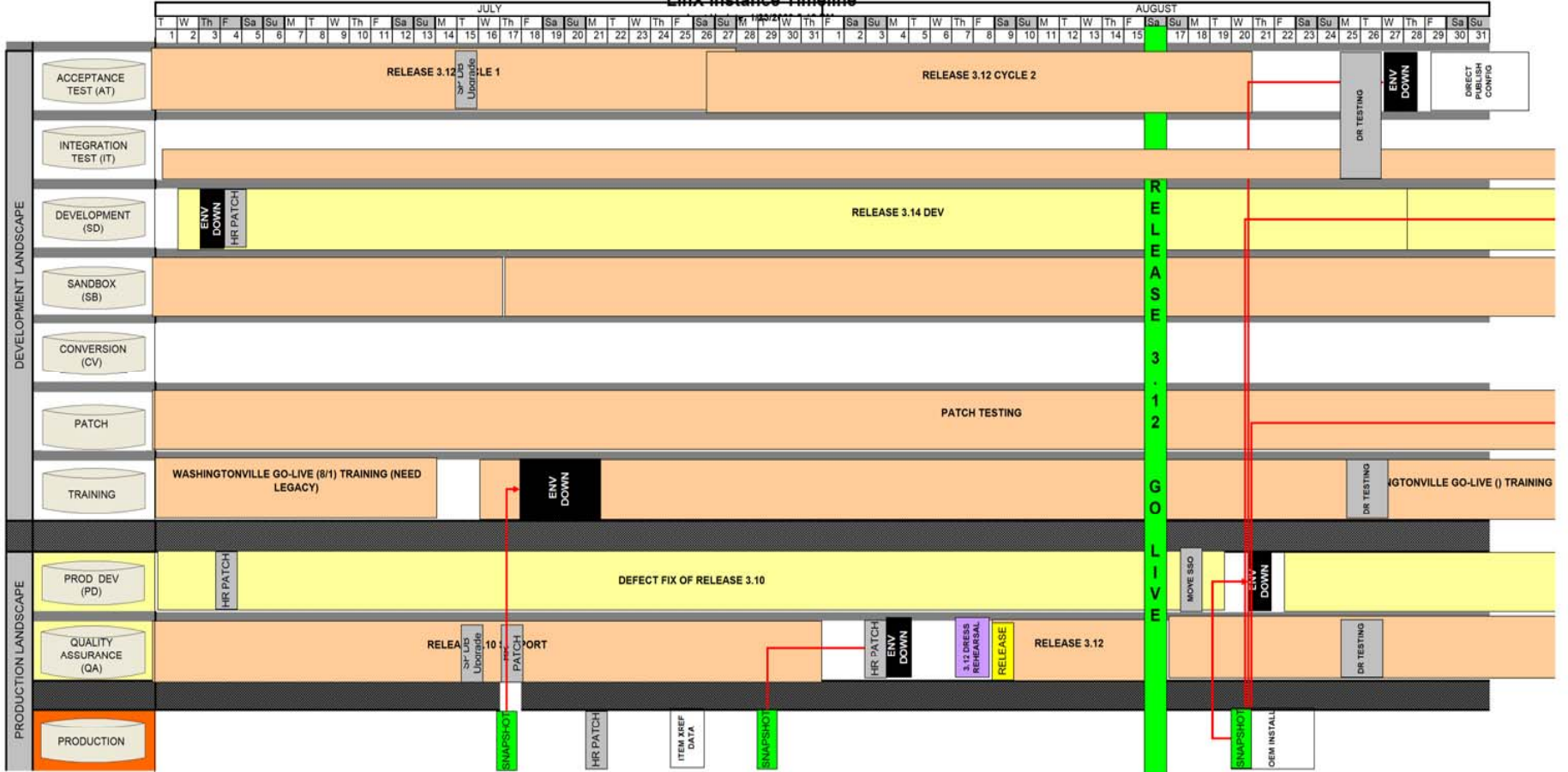
Quality Control

- ◆ Test Case Standards
- ◆ Defect Tracking

Environment Change Control

- ◆ Established early
- ◆ Owned by QA
- ◆ Worked closely with the DBA's
- ◆ Developed pattern over time

LinX Instance Timeline



Environment Change Control Meeting

- ◆ Weekly
- ◆ Cross Functional
 - Development
 - Operations – DBA, Platform, Common Tools
 - QA
- ◆ Used for approvals when necessary
- ◆ Minutes published each week and distributed to all users of the non-production environments

Defect Tracking

- ◆ Modified standard defect tracking in order to keep track and assign all the technical components
- ◆ Created a Parent/Child relationship
 - Parent = Business issue (Change Request)
 - Child = Technical components that were needed to solve the business problems (Work Ticket)

What is a Change Request?

- ◆ A Change Request is simply a request to make a change to any system environment.
 - A defect found during functional or system testing
 - A code change required because of a production support issue
 - A data change required to correct item attributes
 - A software upgrade required because our current version of software is no longer being supported
 - Configurations required for a business change
 - A hardware change required for disaster recovery planning, phasing out equipment, etc.

What are Work Packages?

- ◆ A work package is a unit of work, performed by a specific resource, that is the complete or partial solution of a business issue. (The business issue was entered as a change request.)
- ◆ Sample work packages include:
 - Mainframe code change required to resolve change request stating that orders entered in Order Fulfillment are not received in Oracle.
 - EAI code change required to resolve change request stating that orders entered in Order Fulfillment are not received in Oracle.
 - Job schedule change to automate concurrent request kickoff nightly.

How are Change Requests and Work Packages Related?

A change request can have **one** or many work packages associated with it.

Change Request *(not all fields listed)*

ID#:	CR001	Type:	Change Request
Title:	Multiple Orders Updated to Same Stop in OFS Do Not Update Correctly in Oracle	State:	Open - Scheduled
Submitter:	Sue Mallett	Owner:	Mike Parker
Business Process:			
Description:	Multiple orders in a shipment going to the same stop update properly in OFS. However, when orders are added to the stop, or they are all updated to another stop, then the trip is not updated properly in Oracle.		

Work Package *(not all fields listed)*

ID#:	WP001A	Type:	WP Code Oracle
RICE ID:	175.01	State:	Assigned
Group Responsible:	IT – Developer, Oracle	Owner:	Werner Gonnissen
WP Description:	Modify Oracle code to include logic for updating trips when orders are added to the stop.		
Package/Line #:			

How are Change Requests and Work Packages Related?

A change request can have one or **many** work packages associated with it.

Change Request *(not all fields listed)*

ID#:	CR002	Type:	Change Request
Title:	Stock Status Double Dipping Production Quantities	State:	Open - Scheduled
Submitter:	Laura Potts	Owner:	Tom Schertler
Business Process:			
Description: Stock status double dips on ship confirms between 8 pm and 10 pm			

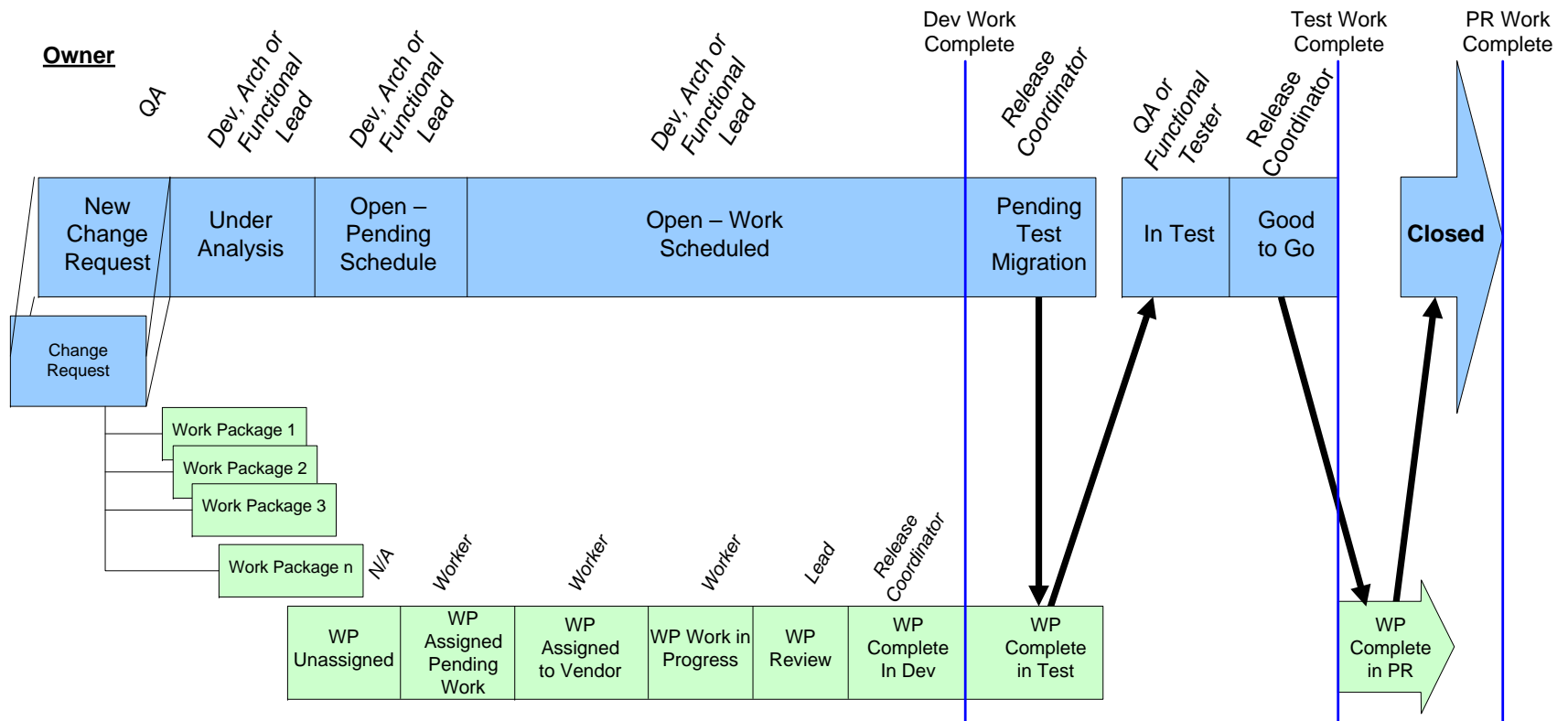
Work Package *(not all fields listed)*

ID#:	WP002A	Type:	WP Code Oracle
RICE ID:	83.21	State:	Assigned
Group Responsible:	Team Lead – IT Apps	Owner:	Steve Verplaetse
WP Description: Modify Oracle code to unqueue transactions before sending to IMS after the snapshot			
Package/Line #:			

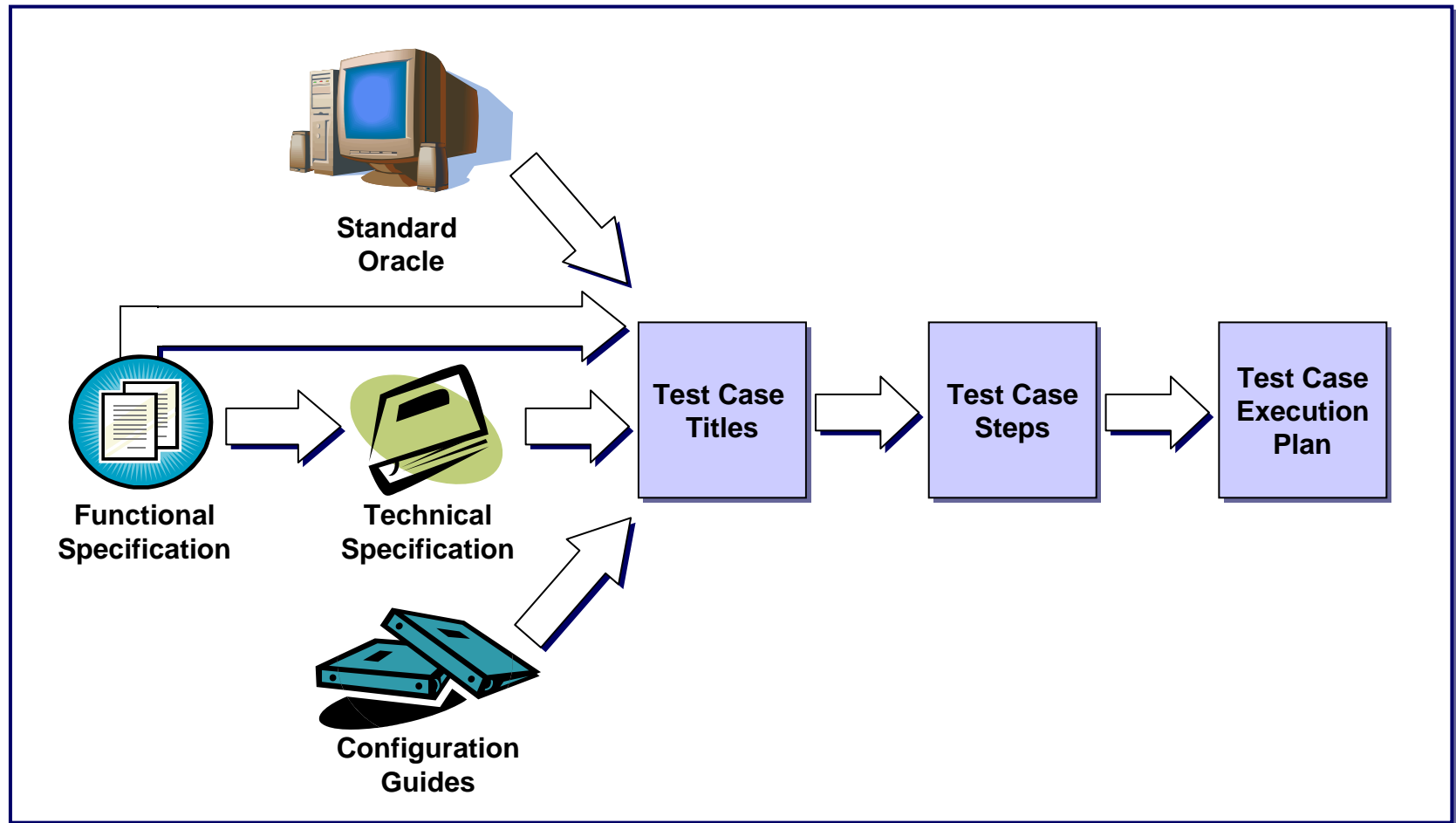
ID#:	WP002B	Type:	WP Code Mainfrm
RICE ID:	83.21	State:	Assigned
Group Responsible:	Team Lead – IT Apps	Owner:	Jeff Bultman
WP Description: Modify mainframe code to skip writing the BJ15 actual shipment queue when OFS order occurred before Oracle snapshot was taken			
Package/Line #:			

ID#:	WP002C	Type:	WP Code EAI
RICE ID:	83.21	State:	Assigned
Group Responsible:	Team Lead – IT Apps	Owner:	D. Mitra
WP Description: Modify WM code to increase time stamp sent from minus 1 second.....			
Package/Line #:			

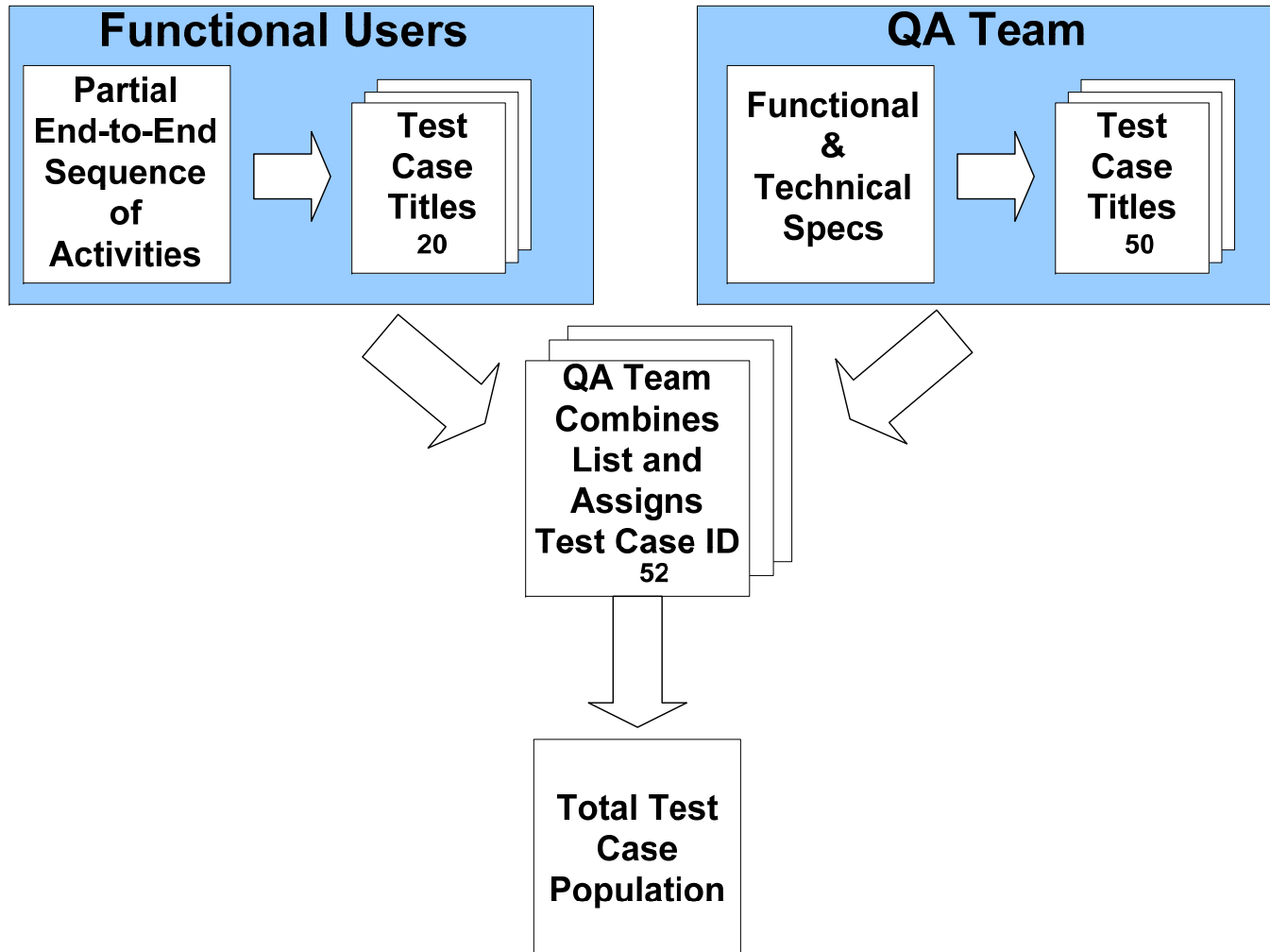
The Lifecycle of a Change Request/Work Package



Test Definition Process



Define Test Case Population



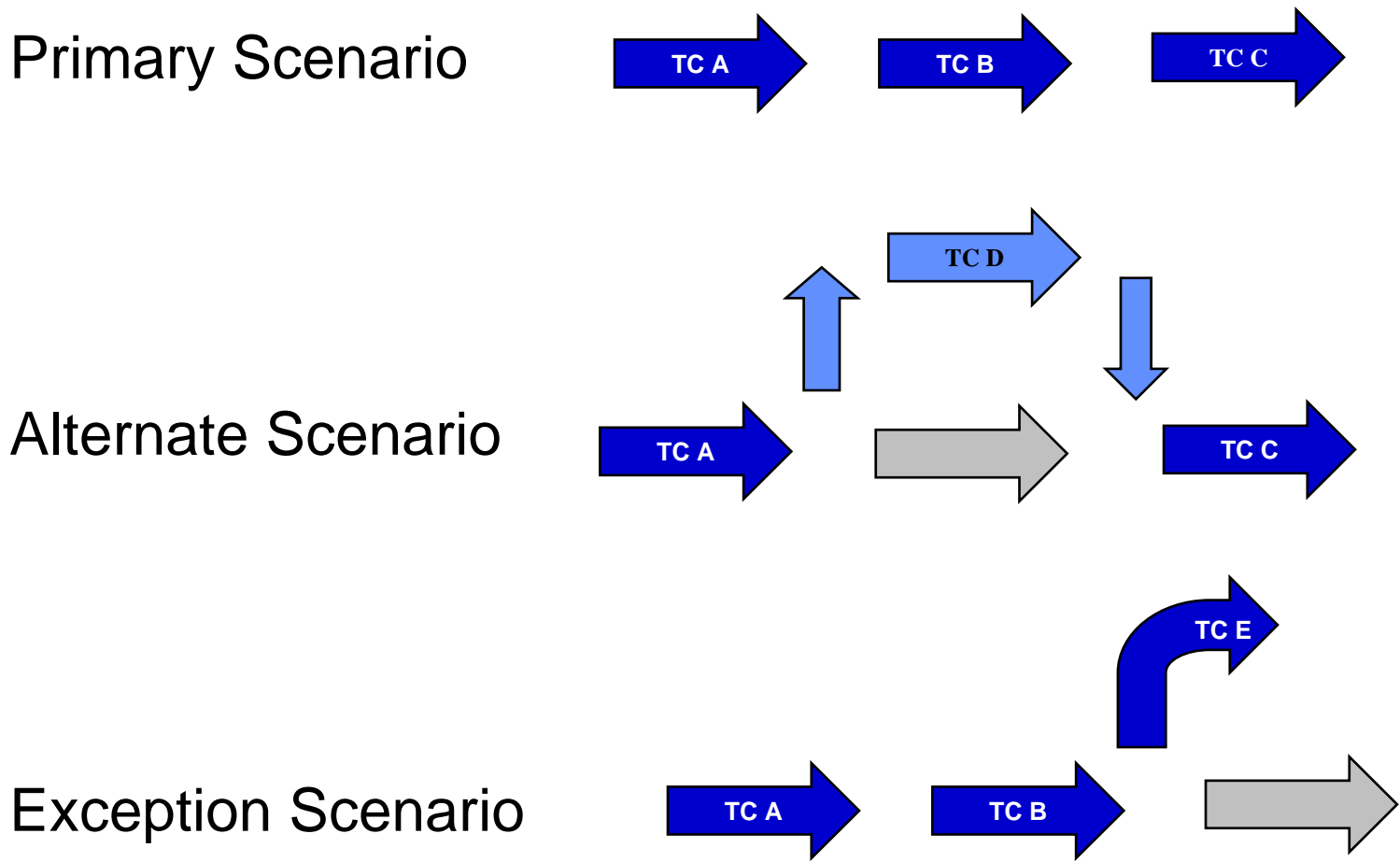


Creating Scenarios

- ◆ Used test tool
 - Use single objective test cases
 - Combine them to form business processes
 - Allows for testing that mimics business processes
- ◆ Can use the same scenario with different data



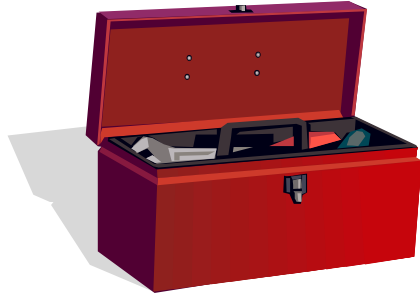
Describing Business Scenarios



Benefits of Modular Test Cases

- ◆ Provide opportunity to exhaustively test high-risk areas
- ◆ Reuse test cases for different types of data
- ◆ Modify a single test case for functionality changes
- ◆ Reduce the amount of time required to isolate, investigate, and re-test defects
- ◆ Continue to build up more complete scenarios and not add additional time to write these scenarios
- ◆ Use the prioritized population of total test case titles to make informed, risk-based decisions

Tools



Process	Tools
Test Case Development	HP/Mercury Test Director – Test Plan Excel Spreadsheet
Test Case Execution	HP/Mercury Test Director – Test Lab Excel Spreadsheet
Automated Test Case Execution	HP/Mercury Quick Test Pro
Performance Testing Tool	HP/Mercury LoadRunner
Defect Tracking	Serena TeamTrack Access Database Bugzilla
Source Code Control	Serena Version Manager Fileshare
Environment Change Control	ECC database in eRoom converted to Serena TeamTrack database HP/Mercury Deployment Management
Environment Access	Environment Access database in eRoom



Numbers

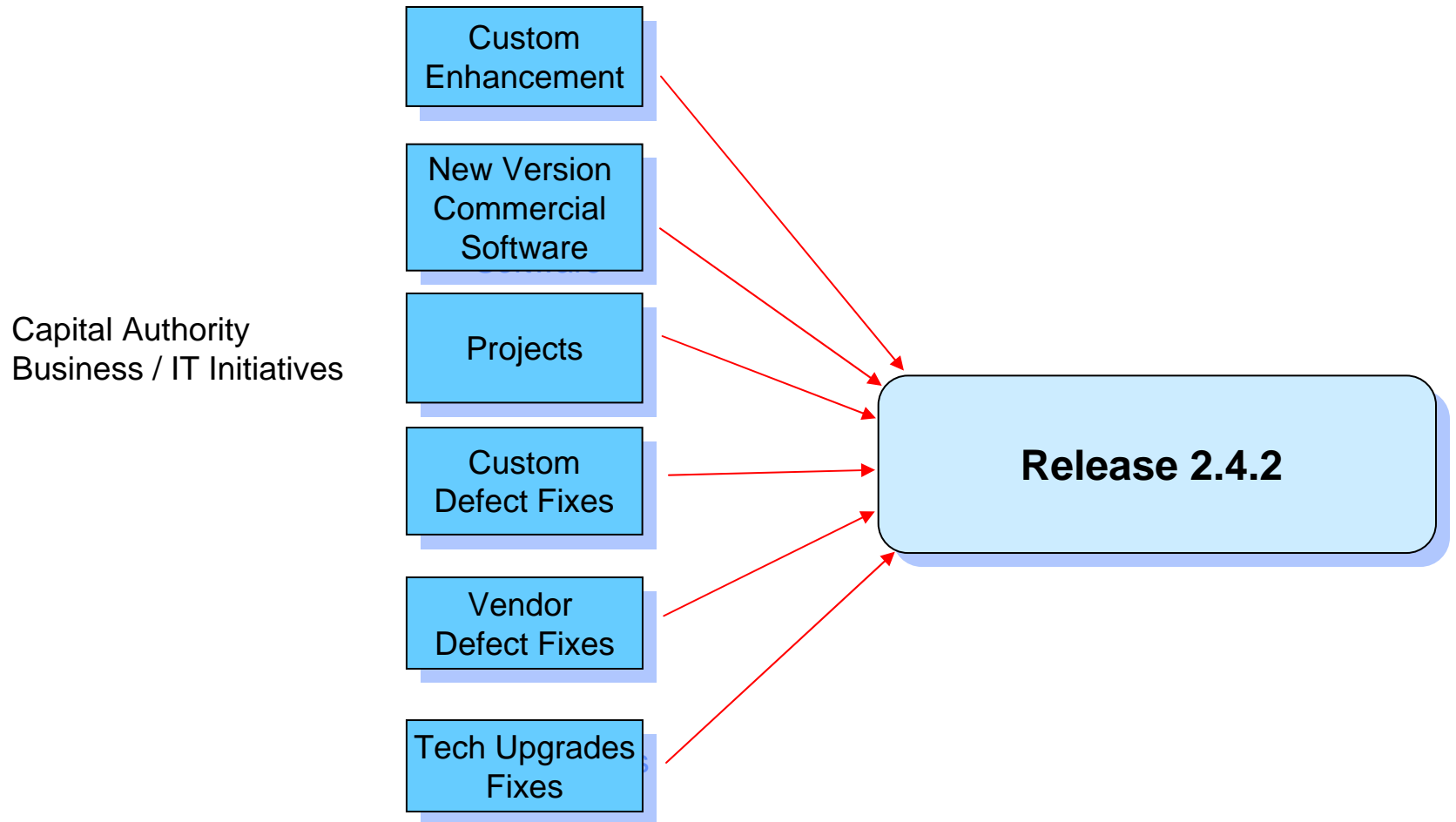
- ◆ Implemented 17 Oracle Modules
- ◆ Wrote 7459 Test Cases
- ◆ Executed 16,056 Test Cases
- ◆ Logged 5985 Defects



What Happens After Go-live

Release Management

What is a release?



Release Management

- ◆ Scope Change Control Board
- ◆ Defect prioritization
- ◆ Development
- ◆ Enhancement and defect testing
- ◆ Regression testing
- ◆ Release rehearsal



Release Facts

139	Average number of change requests in a release this year, which averages 5.3 changes per business day
2,100	Number of test cases per system test
2,800	Number of test cases per regression test
66	Average number of defects identified during test phases and fixed before the release reached production

Lessons Learned

Management Support

- ◆ Functional users on project
- ◆ Functional users trained on testing

Partnership Across Teams

Functional Testing

- ◆ Reviews needed on test cases
- ◆ Metrics needed to drive completion
- ◆ Business scenarios



More Lessons Learned

Resources for Quality Assurance

Metrics

Prerequisites Were Critical

Same As Custom Code