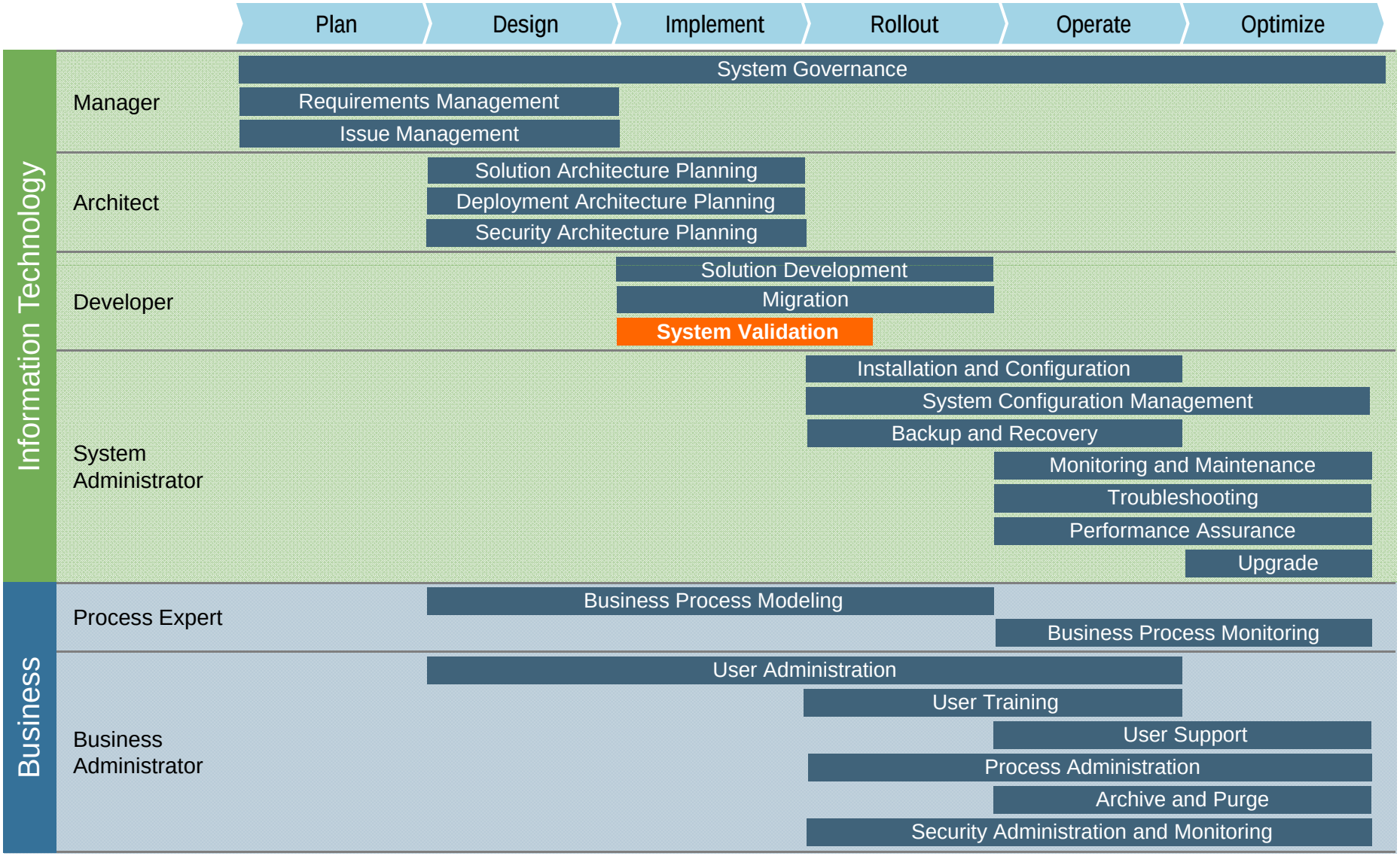
System Validation
Administrative Process Overview

August 2010

Challenges in System Validation Process

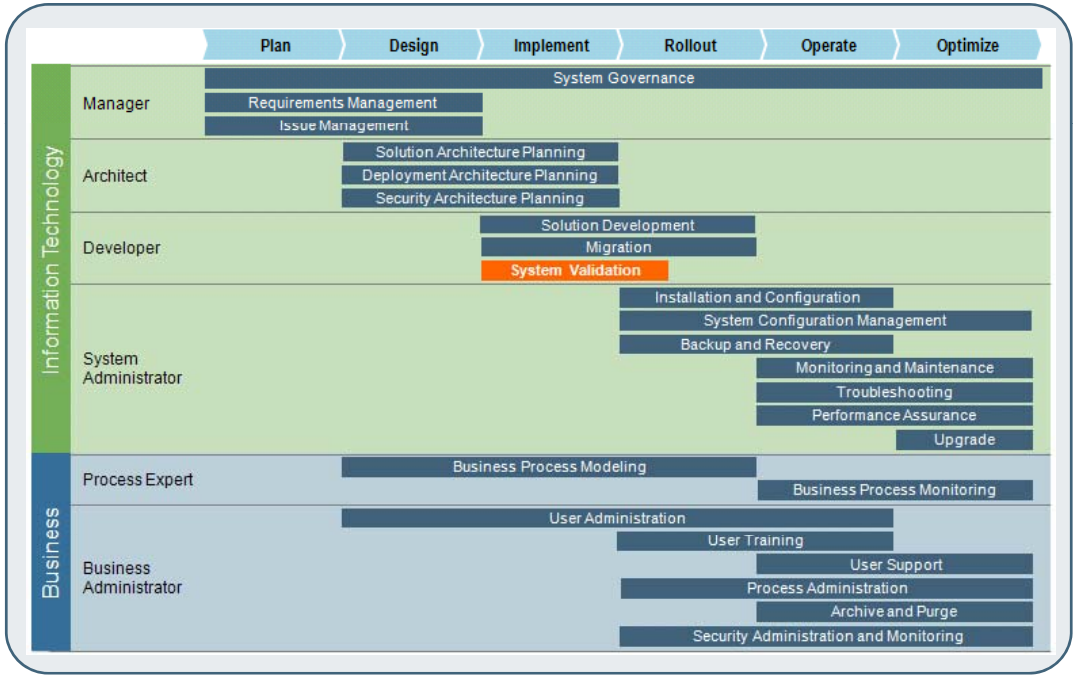
- Amount of work involved
- Insufficient testing of the system
  - Only manual testing i.e. insufficient or limited use of tools
  - No performance or multi-user behaviors not tests
  - No test data to simulate real-world “day in the life” usage
  - No way to test replication, backup, failover
  - Little knowledge of what negative test exist
- Unpredictable behavior of the production system
- Lack of bench mark for validation
  - No Acceptance Test or Release Criteria

PTC Administrative Process Framework



Agenda

- What is System Validation?
  - Inputs and Outputs
  - Administrative Concepts
  - Process Steps and Flow
  - Best Practices
  - Roles and Responsibilities
  - Maturity Model
- How can PTC help?
  - Publications & training
  - Product Roadmap
  - Services



Inputs and Outputs in System Validation

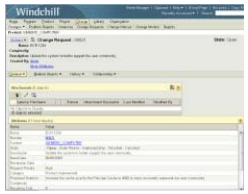
System Validation is the set of activities performed to validate that a Windchill system meets or exceeds the acceptance or release criteria.

INPUTS

Windchill test system

Test Tools

Change Requests, historic test cases



Baseline and desired performance Metrics

System Validation

3rd Party Testing Tools, single-user test tool, multi-user test tool

OUTPUTS

Validation Plan, Release Criteria

Test Results, Go-Live release reports

Issues resolution plan and new refined test cases

Validated System

Key Administrative Concepts in Systems Validation Process

System Validation Plan
- Hardware and Software
- System Configurations
- Human Resources
- Scheduled Testers
- Tests
- Test data
- Test System

Systems
- Integration System
- Pre-Production System
- Production System

Test Cases
- Data Integrity
- Functional
- Install and Configuration
- Performance
- Solution and Security
- User Acceptance

Reports
- Defect Reports
- Go-Live Release Report

Process Steps in System Validation

Small-Medium Customer Deployments

Step 1 – Develop System Validation Plan

- Consider the impact of the change request
- Identify the objects that are new or have been changed
- Identify the features and functions to test within those items. Also identify the features and functions that may need to be regression tested based on these new or changed items
- Identify the features and functions that will NOT be tested
- Identify the risk areas
- Identify the test data
- Identify hardware and software needing to be tested

Step 2 – Prepare Hardware, Software, Data

- Prepare integration system for testers
- Install software to be tested
- Locate and load the test data

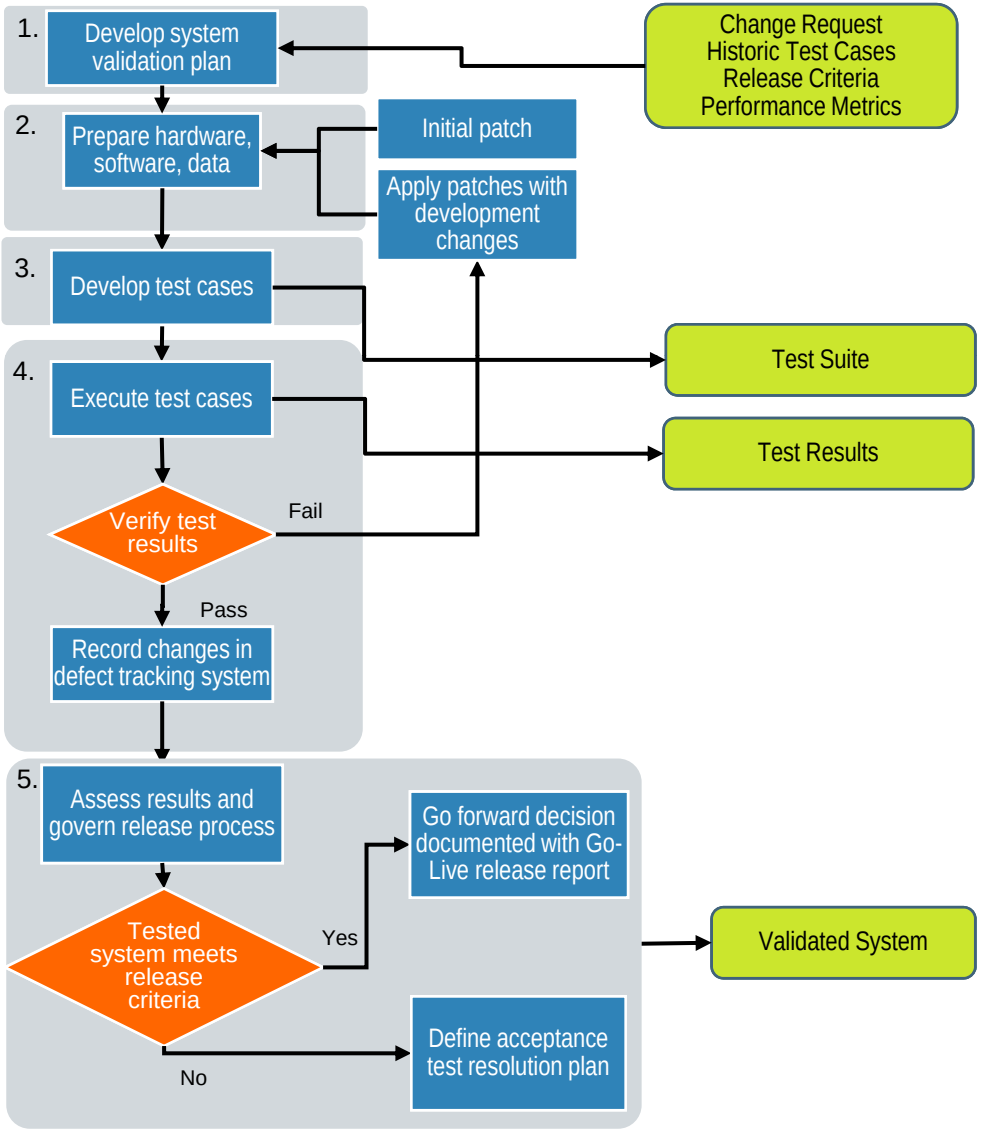
Step 3 – Develop Test Cases

Step 4 – Execute the Test Cases

- Record results and document any defects found in the defect tracking system

Step 5 – Assess Results and Govern Release Process

- Collect and summarize the test results
- If the system meets the acceptance/release criteria, then document the decision in Go-Live release report else define an acceptance test resolution plan



Best Practices for System Validation

- Have acceptance criteria that are approved by the stakeholders
- Adopt standard deployment model and terminology
- Perform a full clone of production system for pre-production validation
- Perform only functional test on production system to mitigate performance impact
- Carefully plan availability of business resources for testing milestones
- Define test data and mission critical scenarios that includes extreme and high complexity scenarios for user acceptance tests

Roles and Responsibilities in System Validation

Solution Architect

- Identify items to be tested
- Identify risk areas
- Identify testing approach
- Identify test deliverables
- Define an acceptance test issue resolution plan

Solution Manager

- Identify features and functions that are to be tested and those that are NOT to be tested
- Identify and schedule testers
- Identify defect tracking mechanism
- Communicate the test results among various stakeholders

QA Engineer / Manager

- Develop test cases
- Identify software/hardware to be tested
- Execute tests to validate systems

Solution Engineer

- Identifies types of test cases
- Indentify automated test tool required
- Clean the test results
- Document the Go-Live release report

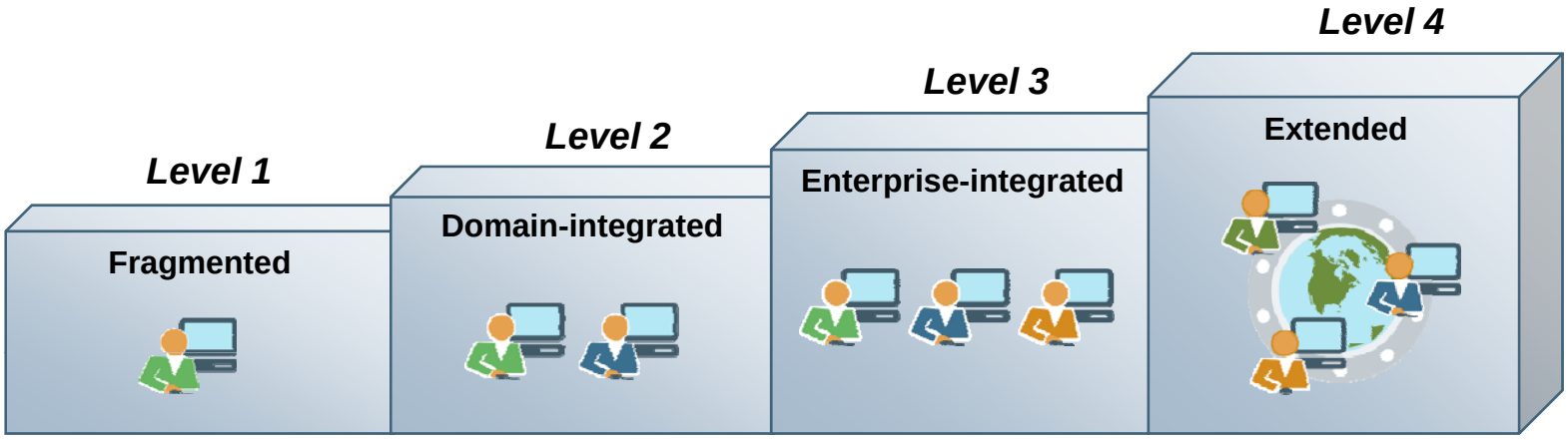
Implementation Consultant

- Assign testers
- Reproduce and fix the defects

Tester

- Execute tests
- Record results and document defects

Maturity Model for Systems Configuration Management



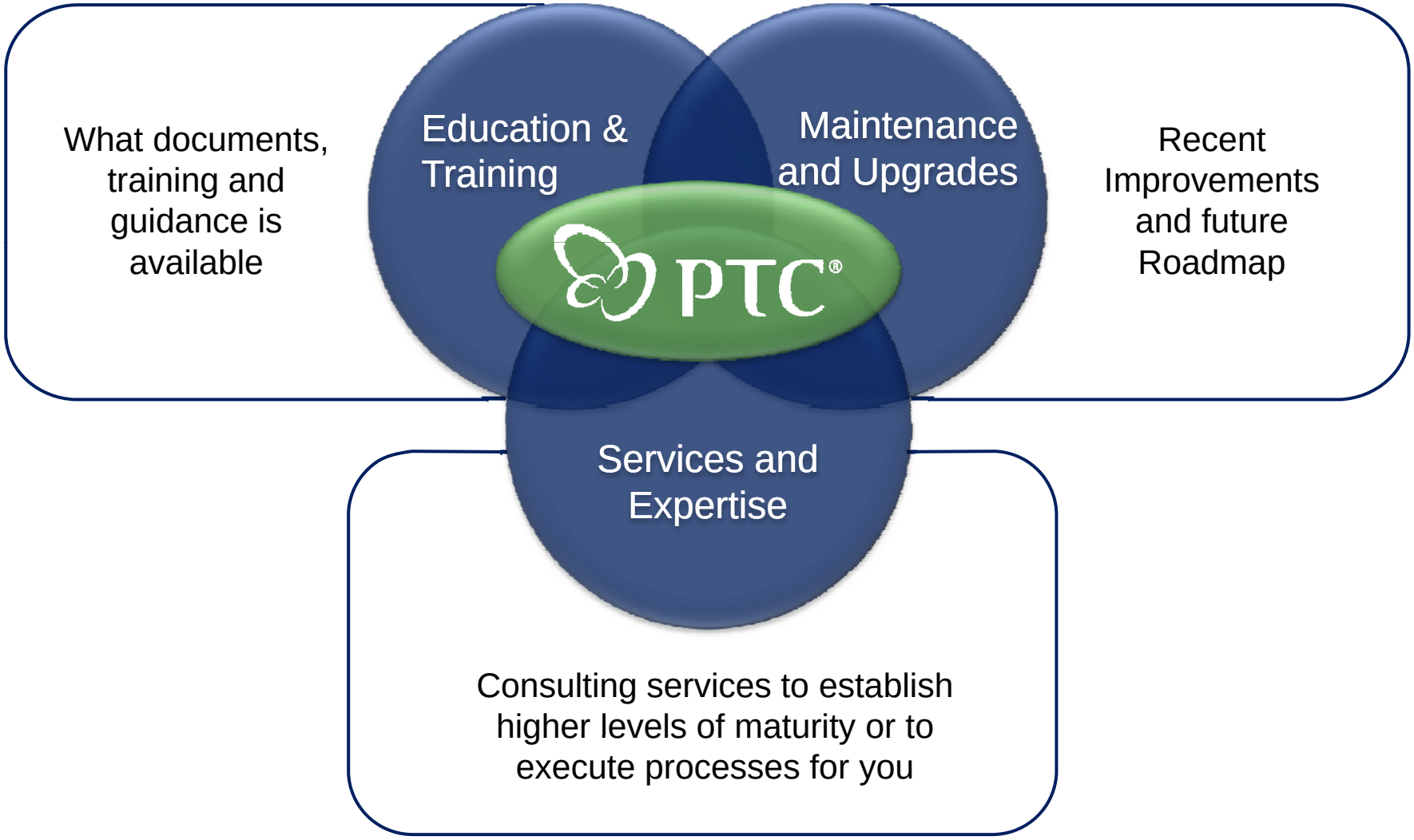
- Perform only manual single-user functional tests
- Create formal user acceptance tests

- Perform multiple-user performance tests in addition to the manual single-user test
- Use test tools to general load with manual performance tests to find bottlenecks
- Manual testing of an ordered set of Test Cases used to validate Processes or key threads (e.g. “day in the life”) through the system
- Use of documented release criteria

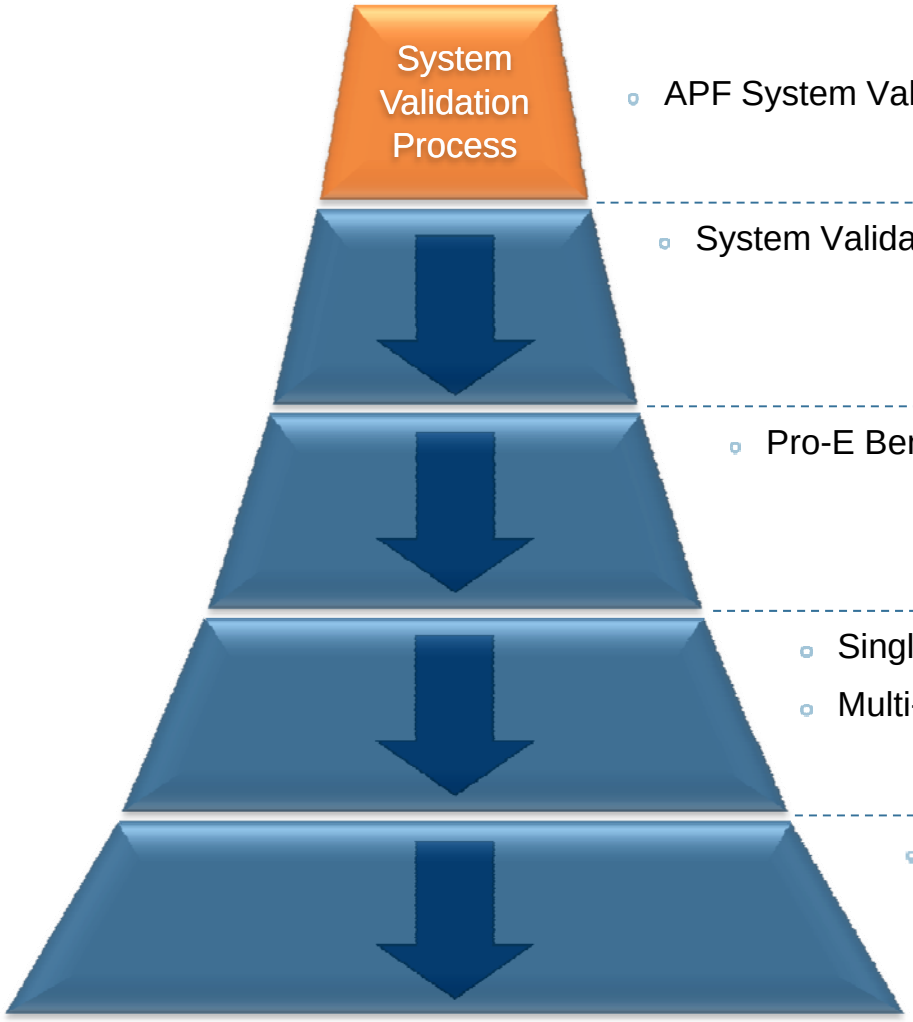
- Perform automated testing with simulated user acceptance tests which emulate “day in the life” scenarios for typical users
- Perform security and other advanced test (manual)
- Replication, backup, failover and decommissioning are tested with some advanced types of tests

- Use of test tools to automate most test cases including security tests and historically troublesome test cases as well as negative test cases
- Automate regression testing with automated notification for all systems

How can PTC Help Improve Your Process?



Publications and Training for System Validation Process



- APF System Validation Process (This Presentation)
- System Validation Technical Brief
- Pro-E Benchmark
- Single-User Test Tool (GSO)
- Multi-User Test Tool (GSO)
- Windchill Rehosting Documentation

Consulting Offerings Supporting Systems Validation

System Validation is a part of typical engagements and not offered separately

Governance

- Technical Management
  - Configuration Management
  - Build Management
  - Issue Tracking & Change Management
  - Patch Process

Infrastructure

- Infrastructure Management and Deployment
  - Deployment Planning
  - Capacity Planning and Scaling
  - Physical Environment Management
  - System Deployment
  - Technology Audit
- Infrastructure Design
  - Security Architecture Design
- Infrastructure Setup
  - System Cloning
  - Installation