



# Primavera P6 EPPM Upgrade

## Experiences in an Integrated Application Landscape



Session: CON4586



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# About the Presenter

- James Minks, CSX Technology
  - 29 Years in Technologies
    - Development
    - Technical Support
    - Project Management
  - 17 years at Oracle
    - Technical Support
    - Global IT
    - Development
  - Joined CSX Technology in February 2011
    - Project Manager for Project Controls
    - Project Manager for Oracle Enterprise Performance Management (EPM), Hyperion HFM and Planning Suites

# Agenda

- CSX Transportation Overview
- CSX Upgrade Overview
- What is New in Primavera P6 R8.4?
- Why should CSX upgrade to P6 R8.4?
- Components to be upgraded?
- Project Scope, Timeline and Schedule
- Upgrade Challenges
- Q&A
- Websites and Email

# CSX Transportation Overview



## Our Vision

To be the safest, most progressive, North American railroad, relentless in the pursuit of customer and employee excellence

**Operate in every major population and industrial center east of the Mississippi and two Canadian provinces**

- **\$12.7B in Revenue**
- **21,000+ route miles / Over 32,000 employees**
- **4,100 locomotives / 72,000 freight cars**
- **Operates an average of 1,450 trains per day**
- **Transports an average of 22,000 carloads per day**
- **Transports 6.9 million carloads of products and raw materials a year**



# CSX Technology Overview

- As a result of CSX's ongoing commitment to excellence and quality in the Information Technology (IT) workplace, the company was named a "Best Place to Work in IT" by IDG's Computerworld for the **third consecutive year**.
- The company ranked 31st among large organizations receiving high marks for employee training and engagement.



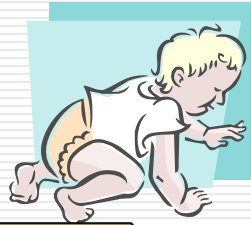
## EMPLOYEE STATISTICS

Total U.S.-based employees	30,974
Total U.S.-based IT employees	479
IT employee turnover in 2013	4%
IT employee promotions in 2013	6%

## TRAINING

Training days offered per IT employee in 2013	8
Training budget per IT employee in 2013	\$1,378

# Where CSX Began (2011)



Crawl



Walk



Run

2011-12

- Standardized business processes
- Rolled-out P6 8.0 & CM 13.0
- Project Manager training
- Basic Integration with Oracle Financials

2012-13

- Advanced dashboard analytics
- Improved resource management
- Improved OP3 interface
- Technology upgrades
  - P6 from 8.0 to 8.2
  - CM from 13.0 to 14.0
- Implemented Oracle AutoVue

2014+

- Technology Upgrades:
- Primavera P6 8.3.2
  - P6 Team Member 8.3.2
  - Primavera Contract Manager 14.0.3.2
  - Oracle WebLogic 10.3.6
  - Universal Content Management 11gR1 11.1.1.7
  - Oracle AutoVue 20.2.2
  - Oracle Vuelink 20.1
  - New DEV and UAT environments

2015+

- Upgraded the technology stack of the Oracle Primavera application platform to the latest software releases to apply the newest bug fixes, position P6 for integration with Unifier and latest functionality. This includes:
- P6 Web Release 8.4.5.3
  - P6 Pro 8.4.5.1
  - ECM 11.1.1.8.0
  - PCM 14.1.1.1
  - Visualizer 8.4.5.1
  - Team Member 8.4.5.0
  - BI 11.1.7.140415
  - Weblogic 10.3.6.0.8

# Primavera - Key Metrics

	2011-2012	2013-2014	2015
<b>Number of Users</b>	100	131	246
<b>Number of Projects</b>	300	4500	3800
<b>Number of Activities</b>	34,000	650,000	1,500,000
<b>Budget for Projects</b>	\$488M	\$2.5B	\$2.3B
	<b>Technology Release</b>		
<b>P6</b>	8.0	8.2 / 8.3.2 (Aug. 2014)	8.4.5.1
<b>Primavera Contract Mgt.</b>	13.0	14.0	14.1.1
<b>OP3 Interface</b>	2.5.10	2.5.10	2.5.10
<b>Oracle Financials</b>	12.1.3	12.1.3	12.2.3

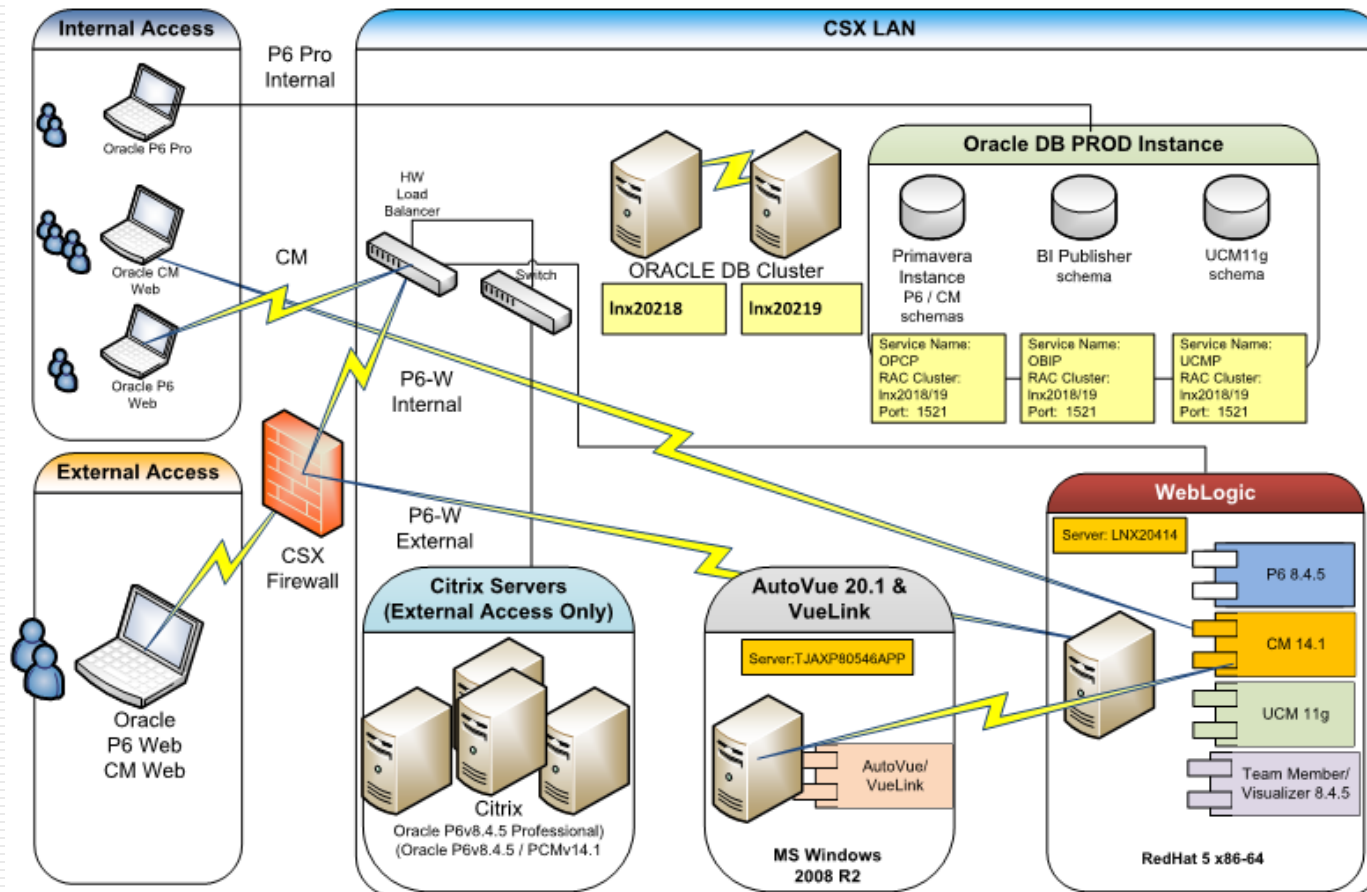


# Current Technical Architecture

CSX

5/27/2015

## Technical Architecture of **PROD** instance Engineering Project Controls



# Primavera P6 (2015)

ORACLE Primavera P6

Welcome, Jim Minks   Administrator   Print   Help   Logout

Dashboards   Portfolios   **Projects**   Resources   Reports

EPS   Activities   Issues   Risks   Workspace   Team Usage   Documents

Enterprise Project Structure

Actions   Edit   View

EPS / Project Name	Project ID	Proj Mgr Pc	Current Budget Amt	Total Budget Amt	YTD Cost	Quarter 1 Outlook	Quarter 2 Outlook
CSX Rail Road Prod			\$2,318,942,740.43	\$171,316,499.20	\$208,858,489.78	\$108,115,...	\$118,279,2...
CSX Projects			\$2,311,942,740.43	\$171,316,499.20	\$206,827,385.85	\$108,115,...	\$118,079,2...
Projects Bridge			\$230,849,696.00	\$15,047,086.00	\$24,221,267.40	\$47,681,1...	\$8,625,000....
Projects Commercial			\$8,215,833.00		\$5,720.45		
Projects Comms and Signals			\$21,460,743.00		\$521,338.60	\$346,000.00	\$0.00
Projects Design and Construction			\$1,810,211,874.64	\$156,269,413.20	\$156,657,185.75	\$59,790,3...	\$109,204,2...
Projects D and C Capital			\$1,338,017,193.28	\$156,269,413.20	\$121,795,001.52	\$59,515,3...	\$109,179,2...
BLCP/MBTA			\$5,030,892.00	\$4,930,458.00	\$4,967.90	\$0.00	\$0.00
CREATE			\$43,568,463.00	\$18,856,609.00	(\$806,354.30)	\$0.00	\$0.00
Export Coal			\$49,325,373.00	\$6,000,000.00	(\$5,747,053.04)	\$5,077,20...	\$7,450,000....
Field Capital Planning Team			\$4,691,274.00		\$980,267.35	\$556,937.00	\$210,000.00
Florida Improvement Projects			\$149,963,124.00		\$8,951,770.06	\$2,781,82...	\$2,150,000....
Florida S-Line			\$148,580,527.00	\$39,141,192.00	\$2,705,713.65	\$0.00	\$0.00
Infrastructure			\$1,299,238.00		\$21,502.55	\$0.00	\$0.00
Industrial/Regional Development			\$11,624,096.00		\$2,570,469.14	\$1,573,90...	\$998,000.00

- 3,800 projects
- 1.5M activities
- \$2.3B in capital and public projects

# *What is New in Primavera P6 R8.4?*

## **Primavera P6 R8.4 release comes with many new features and enhancements.**

- Enhanced Integration with Primavera Unifier
  - ✓ Enables P6 to export activity, resource, and expense data to Unifier application, and then perform cost analysis on that data in Unifier.
  - ✓ P6 and projects are linked via Primavera Gateway.
  - ✓ Can use Unifier's advanced costing, cash flow, and earned value functionality to analyze P6 data.
  - ✓ Integration between P6 and Unifier runs as a job service in the background of the application. Integration can be scheduled to run at a set time or on-demand.
- Integration with Primavera Prime for Risk and Scope management functionalities
- P6 Visualizer Enhancements
  - ✓ Use shift as date interval
  - ✓ Legend can be included in Header or Footer
  - ✓ Option to copy bar settings
  - ✓ Multi-select in manage layouts

# *What is New in Primavera P6 R8.4?*

- Team Member application enhancements:
  - ✓ Primavera Team Member and Primavera Progress Reporter applications are consolidated into a single application for activity status update and timesheet entry.
  - ✓ A picture taken from a mobile device may be attached to a task.
  - ✓ Notebook topics can be updated.
  - ✓ New method to update current period units.
  - ✓ Enhanced sorting capabilities.
  - ✓ Status Other Resources – a primary resource, an activity owner, or a user with a Team Member distribution filter can update the details of labor, non-labor, and material resources assigned to the task
- Import XML as a service
- Update baseline as service
- Global Data transfer between Primavera P6 databases made easier.

# Why P6 R8.4 Upgrade for CSX?

- Recommended by the CSX Primavera Unifier Implementation team.
  - ✓ P6 R8.4 has Improved Unifier integration through the Primavera Gateway application.
- Useful P6 Visualizer Enhancements.
  - ✓ New Visualizer functionality enables us to add legends to our headers and footers, add shifts as date intervals, copy chart bar settings and manage multiple layouts at the same time.
- Team Member application Enhancements.
- Stay current with Primavera P6 EPPM suite of applications and benefit out of bug fixes, new features and enhancements.
- Usability Enhancements.
  - ✓ Additional search attributes when assigning resources
  - ✓ View project users
  - ✓ Assign multiple users to multiple OBS nodes simultaneously
  - ✓ Reassign relationships by activity ID

# Components to be Upgraded?

- First we analyzed our current Primavera application landscape with tested configuration of P6 R8.4. Then we identified application upgrade and change requirements.

CSX Infrastructure Gaps for P6 R8.4 upgrade				
S.No	Software	Current version (for R8.3.2)	Tested Config (for R8.4.1)	Upgrade Action
1	App Server JDK	Jrockit JDK 1.6.0_65	Oracle JDK 1.7.0.67	To be updated during Weblogic installation
2	Client JRE	1.7.0.55	Oracle JRE 1.7.0_71, 1.8.0_25	To be updated in Citrix
5	PCM	CM 14.0.3.2	CM 14.1	To be upgraded
6	Oracle ECM	11.1.1.7	11.1.1.8	To be upgraded
7	BI Publisher	11.1.1.6	11.1.1.7.140415	To be upgraded
3	Linux for App server	Red Hat EL 5.6 x86_64	Red Hat EL 5 (UL10) x86_64, Red Hat EL 6 (UL4) x86_64	May skip if app server supports current version
4	Linux for DB server	Red Hat EL 5.6 x86_64	Red Hat EL 5 (UL10) x86_64, Red Hat EL 6 (UL4) x86_64	May skip if Oracle DB supports current version
8	Weblogic	11gR1(10.3.6.0)	11gR1(10.3.6.0.8), 12cR2(12.1.2.0.0)	
9	OP3	OP3 2.5.10 worked fine with R8.3.	OP3 2.5.12.2 is the certified version.	We can do testing with OP3 2.5.10 and Project Partners are OK provide support for any issues.
10	AutoVue	20.2.2 (VueLink 20.1)	20.2.2(VueLink 20.1 for ECM is supported only with Oracle WebCenter Content Core Capabilities 11.1.1.8.0.)	
11	LDAP	Windows 2003, 2008, 2012	Windows 2008, 2012	
12	Oracle Client	11.2.0.1 (32 bit)	11.2.0.1.0 (32 bit)	
13	Oracle DB	11.2.0.4	12.1.0.2, 11.2.0.4	



# Key Challenges

- OP3 Integration
  - CSX currently uses OP3 version 2.5.10
  - 2.5.12.2 is the Certified OP3 version with P6 R8.4.
  - Project Partners ready to support any issues with the current OP3 2.5.10 testing with P6 R8.4.
- Primavera Gateway for Unifier Integration
  - Primavera Gateway application needs to be implemented for integration with Unifier.
- Citrix Infrastructure Upgrade
  - Any impact due to Citrix Infrastructure upgrade planned at CSX

# Scope

- Upgraded Primavera P6 EPPM R8.3.2 to Primavera P6 EPPM R8.4.
- Coordinated with CSX Citrix support for P6 client and package changes and deployment.
- Coordinated with CSX DBA and infrastructure support for environment back up and restoration.
- Upgraded Primavera Contract Management to version 14.1.
- Updated Oracle ECM to 11.1.1.8.
- Updated Oracle BI Publisher to 11.1.1.7.
- Instances to be upgraded are development, test and production.
- Established a sandbox environment for the current P6 R8.3.2 alone by taking a production copy.

# Assumptions

- Primavera Gateway implementation not considered for integration with Unifier application.
- Connectivity to CSX IT infrastructure should be available to Infosys development centers in India.
- DBA, Citrix and other infrastructure related support will be available from CSX.
- User training was not required for the upgrade.
- CSX will provide access to existing configuration and documents for all in-scope applications and vendor support.
- Only high-level functional, technical and integration testing was completed by IT support team; detailed functional testing was not considered.
- Upgrade activities were executed from offshore at Infosys development centers in India during IST working hours.

# Upgrade Timeline

June 2015

July 2015

August 2015

August 2015

## Dev Upgrade

- Data Refresh
- Environment Setup
- Upgrade
- Citrix Deployment
- Testing Document

## IT and BP Testing Signoff

- System Testing
- Issue Resolution
- Documentation
- Business Partner Testing
- Sign-off

## PROD Upgrade

- Environment preparation
- Upgrade
- Go-Live
- UAT Instance upgrade
- Post Go-Live Support

## UAT Upgrade

- UAT Instance testing
- Post Go-Live Support

# Schedule

P6 R8.3 to R8.4 Upgrade for CSX																		
Project Phases	Tasks and Timeline																	
	Weeks->	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	
Kick off	Product Certification, DEV Refresh with PROD																	
DEV	Upgrade to P6 R8.4, Upgrade to CM 14.1																	
	System set-up and other Configuration (BI & UCM)																	
	Deploy Custom Integration components (OP3), Citrix Update																	
	SIT																	
BP Testing	User Acceptance Testing on DEV																	
PROD	Production Upgrade & Go-Live																	
TEST Refresh	Test Refresh with PROD																	
	IT & BP Testing on TEST instance																	
Support	Post Go-Live Support																	

# *Highlights – CSX P6 Upgrade Playbook*

- One of the most valuable tools we developed was the playbook of all upgrade activities for production.
- This consisted of several sections:
  - Milestone Tracker
  - Detailed Task List
  - Upgrade Back-out steps
    - P6, PCM, ECM, BI Publisher
  - Technical and Business Contacts



# Primavera P6 8.4.5.3 Upgrade Playbook

<div>OPCP</div> <div>ORACLE PRIMAVERA</div>				
2015 - CSX Oracle Primavera P6 8.4.5.3 Upgrade				
Doc Ref: <a href="https://teamsites.csx.com/sites/EPC/Primavera%20Support/P6%20v%208.3%20Upgrade%20Documentation/P6_832_UPGRADE_PLAYBOOK_PROD.xlsx">https://teamsites.csx.com/sites/EPC/Primavera Support/P6 v 83 Upgrade Documentation/P6_832_UPGRADE_PLAYBOOK_PROD.xlsx</a>				
Change Request: C107736				
Systems Mgmt: 1-800-920-1948, option 2 for sys mgt				
	Mile Stone	Status	Expected Time*	Notes
PreSTEP1	Prepare App Server		May 13, Wednesday 8:00 AM	
PreSTEP2	P6 Job services & Application Shutdown		May 15, Friday 2:00 PM	IT Checkpoint - Please call into Bridge line
PreSTEP3	Stop Mainframe jobs		May 15, Friday 2:30 PM	Checkpoint GO/No GO call, see detailed notes for specific process and email to be sent to scheduling !
PreSTEP5	Database Backup		May 15, Friday 2:30 PM	Contact Duane to start Backup - SR SR607921
PreSTEP6	Database Upgrade		May 15, Friday 3:00 PM	Upgrade OPCP - SR607953 SR607932
PreSTEP7	Create new Weblogic Domain for P6 8.4.5 and CM 14.1		May 15, Friday 3:30 PM	
PreSTEP8	App Server Backup		May 15, Friday 4:00 PM	SR606703 – SR with UNIX team for prod server backup
STEP 1	Deploying P6 8.4.5 to citrix		May 15, Friday 3:30 PM	
Track 1	P6 Upgrade			
STEP 2	Pre-Upgrade steps		May 16, Saturday 5:00 AM	
STEP 3	Upgrade Weblogic to 10.3.6.0.8		May 16, Saturday 5:30 AM	
STEP 4	Install P6 8.4.5		May 16, Saturday 6:00 AM	
STEP 5	Deploy P6 8.4.5.3 components to Weblogic		May 16, Saturday 7:00 AM	
STEP 6	Install and configure P6 Team Member		May 16, Saturday 7:30 AM	
STEP 7	Testing Team Member		May 16, Saturday 8:00 AM	
STEP 8	Post P6 Upgrade changes		May 16, Saturday 8:30 AM	
STEP 9	Testing P6 Web & P6 Pro		May 16, Saturday 9:30 AM	BP & IT Checkpoint #1 - Status
STEP 10	Setup OP3		May 16, Saturday 10:00 AM	
STEP 11	Testing OP3		May 16, Saturday 10:30 AM	Significant Checkpoint
Track 2	CM & UCM Upgrade			
<div>OPCP Upgrade MileStone Tracker</div> <div>OPCP 8.4 TaskList</div> <div>OPCP Backout Steps</div> <div>OPCP Backout TaskList</div> <div>CONTACTS</div>				

## Parallel Upgrade Tracks

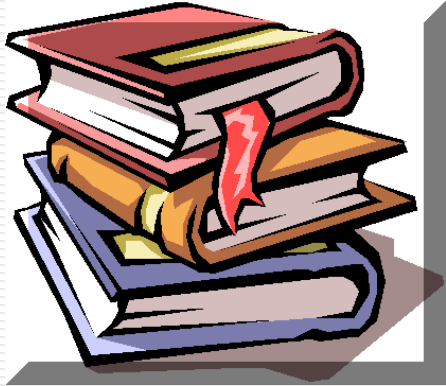
- P6 Pro / Web
  - CM & ECM Upgrades
- ### Business Partner Fully Engaged

- Zero defects identified
- Two minor items which Infosys is addressing
- 100% of milestones were met

## IT Ops provided excellent support

- Citrix
- Oracle DBA

# Highlights – Upgrade Library



- Completed for DEV, TEST and PROD environments.
- Broken down by technology components:
  - Oracle BI Publisher
  - Primavera Contract Management
  - Oracle Enterprise Content Management
  - Primavera P6 (66 pages)
  - Team Member
  - Oracle Weblogic

## Highlights – Testing New Features

**CSX UAT Primavera 8.4 Test Case Sandbox and UAT.xlsx - Excel**

Minks, James

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ADD-INS

Paste Clipboard Font Alignment Number Conditional Formatting Styles Cell Styles Insert Delete Format Cells Editing

G12

A B C D E F G H I J K L M N

**CSX PRIMAVERA**

Key: New Features in Primavera R8.4 Acceptable Unacceptable

Instructions: Each of the Test Cases Listed below for the new features that have been included in Primavera R8.4 were performed for sandbox and UAT environment and the results are marked as either acceptable or unacceptable. For Test Cases marked down as unacceptable a conclusive reason of why this is the case shall be

Ref	Test Case	Guidance	UAT	Comments
<b>TEAM MEMBER</b>				
1	Updating Current Period Units		Acceptable	
2	Application Settings		Acceptable	
3	Setting Preferences		Acceptable	
4	Statusing Other Resources		Acceptable	
5	Enhanced Sorting		Acceptable	
6	Updating Notebooks		Acceptable	
7	Filtering by Resource		Acceptable	
<b>EXTENDED ENTERPRISE</b>				
8	Update Baselines		Acceptable	
9	Add New Column in Highlighted Position		Acceptable	
10	Additional Search Attributes When Assigning Resources		Acceptable	
11	Reassign Relationships by Activity ID		Acceptable	
12	View Service Status on EPS Page		Acceptable	
13	View Project Users		Acceptable	
14	Expand All/Collapse All on Users Page		Acceptable	
15	Assign Multiple Responsible Managers to a User		Acceptable	
16	Select a Project Security Profile When Assigning Users to an OB		Acceptable	
17	Assign Multiple Users to Multiple OBS Nodes Simultaneously		Acceptable	
18	Select Multiple Values in Report Settings		Acceptable	
<b>VISUALIZER</b>				
19	Shift as a Date Interval		Acceptable	
20	Include Legend in Header or Footer		Acceptable	
21	Manage Multiple Layouts Simultaneously		Acceptable	
22	Copy Bar Settings		Acceptable	
<b>P6 PROFESSIONAL</b>				
23	Manage Baselines as Job Services		Acceptable	
24	Import XML as a Job Service		Acceptable	

HL-Test Cases - Thick Client HL-Test Cases - DEV Web **Test Cases - R8.4 New Features**

READY 669

## IT Support Center Extensive System Testing of New Features

- 24 Test Cases
- Testing performed in DEV, UAT, and PROD environments
- 100% Pass Rate
- P6 Pro and P6 Professional

## IT Support Conducted Extensive System Testing of New Features

- 24 Test Cases
- Testing performed on DEV, UAT, and PROD environments
- 100% Pass Rate
- P6 Pro and P6 Web

# Highlights – System Test Cases

## IT Support Completed Thorough System Testing

- 31 Test Cases
- Testing performed on DEV, UAT and PROD environments
- 100% Pass Rate
- P6 Pro and P6 Web

1	System Test Cases
2	Check access to Databases is possible
3	Loading a Project from Project window
4	Adding and deleting a new activity in activities window
5	Assign and Delete a new resource to an activity from resource tab in activities window
6	Schedule a project with a defined period
7	Baseline - Add and Delete
8	Copying a Project
9	Scrolling timeline, Gantt chart alterations functionality operate correctly.
10	Charts & Graphs functionality operate correctly
11	Fill Down codes functionality
12	Create and Delete WBS
13	Add and Delete a new Resource in the resources window
14	Creating codes (Activity, Project, Resource)
15	Assigning Codes to the activities
16	Creating UDF Fields
17	Create a new filter and use to filter our activities
18	Group and Sort activities
19	Addition and deletion of Gantt Chart Bars
20	Printing options
21	Generate Reports from P6. Set the header/footer sections accordingly and print on different sizes (A4, A3) & validate as part of the print output
22	Print of the schedule
23	New report creation using wizard
24	P6 Reports in XPS - Generate Reports from P6 and test the output in XPS format
25	P6 Reports to printer
26	P6 Reports in html - Generate Reports from P6 and test the output in HTML format
27	Export the project in XER, XIS and XML format
28	Importing of Project
29	Copy the contents from Activity Layouts to Excel
30	Copy the contents from Activity Codes, Code values, UDFs screens to Excel
31	Claim Digger

# Questions



# Contact Information

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