



VALIDATION, VERIFICATION, AND TESTING PLAN

[Customer Name] Implementation

Integrated Industrial Information, Inc.

[date]

All primary areas that need to be customized per customer are in Red. Remove/Replace all Red text and the Draft watermark by going to the menu bar in MS Word and choosing Format>Background>Printed Watermark and selecting No Watermark before sending this document to the customer. Additional changes need to be made for the primary input source, CSV file or file system, and the appropriate application data types, e.g. Pro/E, SolidWorks, Office, etc.

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	7/11/06	Created



**Validation, Verification and Testing Plan
Authorization Memorandum**

The customer, [customer name], shall be referred to as *Customer* herein.

I have carefully assessed the Validation, Verification, and Testing Plan for Customer's Legend implementation.

We fully accept the changes as needed improvements and authorize initiation of work to proceed. Based on our authority and judgment, the continued operation of the Customer's Legend implementation is authorized.

NAME
PTC Project Manager

DATE

NAME
I-Cubed Project Manager

DATE

NAME
Customer Project Manager

DATE

VALIDATION, VERIFICATION AND TESTING PLAN

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1.0 GENERAL INFORMATION

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1.1 Purpose

The purpose of this Validation plan is to outline the validation requirements necessary for successful validation of the Legend tool in the Customer environment.

1.2 Scope

This validation plan will cover the necessary validation, verification and testing needed to fulfill I-Cubed's SOW obligations.

1.3 Implementation Overview

I-Cubed is responsible for ensuring Legend for PDMLink 8.0 works in the Customer environment. Specifically this requires discrete and clearly defined functionality to work as outlined in this document.

1.4 Project References

- I-Cubed Statement of Work
- Legend 8.0 Implementation Summary
- Legend 8.0 Best Practices Guide

1.5 Acronyms and Abbreviations

- FT – Family Table

1.6 Points of Contact

1.6.1 Information

I-Cubed Customer Support

http://www.i-cubed.com/support/legend_support.php

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I-Cubed Migration Consultant

Name

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name

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2.0 TEST EVALUATION

2.0 TEST EVALUATION

2.1 Requirements Traceability Matrix

Required and supported application functions versus test runs. Fill in the following table with Pass/Fail values.

Test Runs	Parts Load	FT Parts Load	Assemblies Load	Drawings Load	FT Assemblies Load	Mixed File Type Load
Function						
Read CSV						
Read Pro/E Files						
Lifecycle Mapping						
Revision Mapping						
Attribute Mapping						
Load to target context						
Set Extra MetaData						
Build Structure in Windchill						

2.2 Test Evaluation Criteria

This section defines the evaluation criteria for each function.

Read CSV

- Accurately formatted CSV as defined by Best Practices Guide and Legend 8.0 Implementation Summary
- Legend accepts CSV file
- Legend processes inputs information from CSV into Legend engine which then runs the Checker, Reader and Loader phases.

Read Pro/E Files

- All Pro/E files to be loaded have designated parameters and verified family tables
- Dependencies are accurately read
- External references are accurately read
- Family tables are accurately read
- Parameters are accurately read from Pro/E files

Lifecycle Mapping

- Valid lifecycle and lifecycle states as input data in the CSV. Valid is defined by Legend Best Practices Guide and Legend 8.0 Implementation Summary
- Objects loaded into Windchill are set to the CSV defined lifecycle and lifecycle state

Revision Mapping

- Valid revisions as input data in the CSV. Valid is defined by Legend Best Practices Guide and Legend 8.0 Implementation Summary
- Objects loaded into Windchill are set to the correct revision as defined by the CSV input.

Attribute Mapping

- Valid attribute definitions as input data in the CSV. Valid is defined by Legend Best Practices Guide and Legend 8.0 Implementation Summary
- Objects loaded into Windchill have attribute set as defined by CSV input

Load to Target Context

- Target contexts exist as defined by Legend Best Practices Guide and Legend 8.0 Implementation Summary.
- Valid target folder destination as input data in the CSV. Valid is defined by Legend Best Practices Guide and Legend 8.0 Implementation Summary
- Target folders are created as defined by Legend Best Practices Guide
- Windchill objects are loaded into target folders as defined in the CSV input

Set Extra Metadata

- (see Attribute Mapping)

Build Structure in Windchill

- Links are defined on Windchill objects as defined by CAD file structure.

2.3 User Acceptance Criteria

This section describes the minimum functionality required for user acceptance of Legend for PDMLink 8.0.

- Read CSV
- Read Pro/E files
- Lifecycle Mapping
- Revision Mapping
- Attribute Mapping
- Load to Target Context
- Set Extra Metadata
- Build Structure in Windchill
- Bulk load of Pro/E parts, family table parts, assemblies, drawings

User acceptance criteria are met upon all defined test data sets passing the traceability matrix tests.

3.0 TESTING SCHEDULE

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3.1 Overall Test Schedule

3.1.1 Unit Testing

Unit testing will be conducted by I-Cubed. To test Customer issues I-Cubed will have:

- Environment similar to Customer deployed at I-Cubed
 - Windchill Server configurations
 - Pro/ENGINEER configurations
 - Customer will provide I-Cubed with any configuration information required to accurately setup the needed test environment
- Customer test data
 - Customer to provide test sample data to I-Cubed
 - If Customer can not provide test data, unit testing of failures that can not be reproduced at I-Cubed will become the responsibility of Customer.

3.1.2 User Acceptance Testing

User Acceptance testing will be performed by Customer. Customer will validate the testing plan based on the information provided in Section 2.0.

Customer will provide I-Cubed with a signed filled out testing traceability matrix defined in section 2.1.

3.2 Security

Any sample data provided to I-Cubed will be used only for testing in manners described within this document.

3.3 Testing Location 1: I-Cubed Raleigh, NC

3.3.1 Milestone Chart

- Customer specific issues

3.3.2 Personnel Requirements

I-Cubed developers and Q/A engineers will be performing the unit tests.

3.3.3 Deliverable Materials

I-Cubed will deliver a successfully unit tested Legend patch or workaround that fixes the outstanding customer issues defined in section 3.3.1.

[Customer Specific Deliverables]

3.4 Testing Location 2: Customer Site

3.4.1 Milestone Chart

- User acceptance testing includes
 - Parts Load
 - FT Parts Load
 - Assemblies Load
 - Drawings Load
- Validation against traceability matrix.

3.4.2 Personnel Requirements

Customer personnel required for on-site testing and validation.

3.4.3 Deliverable Materials

- Filled out traceability matrix
- Sign-off on user acceptance

4.0 TESTING CHARACTERISTICS

4.0 TESTING CHARACTERISTICS

4.1 Testing Conditions

Testing will use Legend and Windchill configuration as defined in the Legend 8.0 Implementation Summary unless otherwise specified by I-Cubed. I-Cubed should be notified if changes are made to the Windchill server.

4.2 Data Recording

Acceptance testing should be recorded in the traceability matrix. Logs and project files should be kept for each test run and be available upon I-Cubed's request.

4.3 Testing Constraints

- Assembly FT test data include:
 - FT Assemblies
 - FT parts
 - Nested FTs
 - Subassemblies
 - Parts
- Assembly load test data include:
 - Assembly files
 - Parts
 - Subassemblies
 - No FT parts, no FT assemblies included.
- Drawings load test data include:
 - Drawings of parts, assemblies and subassemblies
 - No FT parts
 - No FT assemblies
- Mixed File Type Load test data include:
 - A mixture of all Pro/E data types as described above

Each set of test data will be less than 1000 files and less than 100MB

4.4 Test Progression

N/A

4.5 Test Evaluation

4.5.1 Test Data Criteria

Test loads will be evaluated based on:

- Overall data quantity being loaded into Windchill
- Spot check of data accuracy being loaded into Windchill

4.5.1.1 Tolerance

Overall data quantity loading will be successful upon a minimum of 99% of clean valid data as defined by the Legend Best Practices Guide and Legend 8.0 Implementation Summary being loaded into the customer test server environment.

Data accuracy will be evaluated based on 100% of checked data being accurately loaded as verified against the CSV input data.

5.0 TEST DESCRIPTION

5.0 TEST DESCRIPTION

5.1 Parts Load

The Parts Load test will test the ability for Legend to bulk load Pro/ENGINEER part files into Windchill.

5.1.1 System Functions

- Read CSV
- Read Pro/E Files
- Lifecycle Mapping
- Revision Mapping
- Attribute Mapping
- Load to Target Context
- Set Extra Metadata
- Build Structure in Windchill

5.1.2 Means of Control

Control will be maintained manually by keeping Windchill and Legend configurations constant and known to all parties involved.

5.1.3 Test Data

5.1.3.1 Input Data

Input data will be a valid CSV input file. Input content will be verified and designated Pro/ENGINEER part files. Valid is defined by the Legend Best Practices Guide and the Legend 80 Implementation Summary. CSV must include valid column mappings to test the System Functions defined in section 5.1.1.

5.1.3.2 Input Commands

Legend will be run with a database input criteria.

5.1.3.3 Output Data

Output data will be Windchill objects as evaluated against the test data criteria defined in Section 4.0.

5.1.4 Test Procedures

5.1.4.1 Procedures

1. Create input CSV file
 - a. Include only Pro/E part file paths
 - b. Map the lifecycle with valid CSV column mappings
 - c. Map the revision with valid CSV column mappings
 - d. Map addition attributes (metadata) with valid CSV column mappings

2. Start Legend
3. Choose the CSV created in step 1 as your input
4. Run Legend through the Checker, Reader and Loader phases
5. Validate data against test data criteria
6. Fill in the traceability matrix for the Parts Load test column

5.2 FT Parts Load

The FT Parts Load test will test the ability for Legend to bulk load Pro/ENGINEER FT part files into Windchill.

5.2.1 System Functions

Read CSV
Read Pro/E Files
Lifecycle Mapping
Revision Mapping
Attribute Mapping
Load to Target Context
Set Extra Metadata
Build Structure in Windchill

5.2.2 Means of Control

Control will be maintained manually by keeping Windchill and Legend configurations constant and known to all parties involved.

5.2.3 Test Data

5.2.3.1 Input Data

Input data will be a valid CSV input file. Input content will be verified and designated Pro/ENGINEER FT part files. Valid is defined by the Legend Best Practices Guide and the Legend 80 Implementation Summary. CSV must include valid column mappings to test the System Functions defined in section 5.1.1.

5.2.3.2 Input Commands

Legend will be run with a database input criteria.

5.2.3.3 Output Data

Output data will be Windchill objects as evaluated against the test data criteria defined in Section 4.0.

5.2.4 Test Procedures

5.2.4.1 Procedures

1. Create input CSV file
 - a. Include only Pro/E FT part file paths
 - b. Map the lifecycle with valid CSV column mappings

- c. Map the revision with valid CSV column mappings
 - d. Map addition attributes (metadata) with valid CSV column mappings
2. Start Legend
 3. Choose the CSV created in step 1 as your input
 4. Run Legend through the Checker, Reader and Loader phases
 5. Validate data against test data criteria
 6. Fill in the traceability matrix for the FT Parts Load test column

5.3 Assemblies Load

The Assemblies Load test will test the ability for Legend to bulk load Pro/ENGINEER assembly files into Windchill.

5.3.1 System Functions

Read CSV
Read Pro/E Files
Lifecycle Mapping
Revision Mapping
Attribute Mapping
Load to Target Context
Set Extra Metadata
Build Structure in Windchill

5.3.2 Means of Control

Control will be maintained manually by keeping Windchill and Legend configurations constant and known to all parties involved.

5.3.3 Test Data

5.3.3.1 Input Data

Input data will be a valid CSV input file. Input content will be verified and designated Pro/ENGINEER assembly files. Valid is defined by the Legend Best Practices Guide and the Legend 80 Implementation Summary. CSV must include valid column mappings to test the System Functions defined in section 5.1.1.

5.3.3.2 Input Commands

Legend will be run with a database input criteria.

5.3.3.3 Output Data

Output data will be Windchill objects as evaluated against the test data criteria defined in Section 4.0.

5.3.4 Test Procedures

5.3.4.1 Procedures

1. Create input CSV file

- a. Include only Pro/E assembly file paths
 - b. Map the lifecycle with valid CSV column mappings
 - c. Map the revision with valid CSV column mappings
 - d. Map addition attributes (metadata) with valid CSV column mappings
2. Start Legend
 3. Choose the CSV created in step 1 as your input
 4. Run Legend through the Checker, Reader and Loader phases
 5. Validate data against test data criteria
 6. Fill in the traceability matrix for the Assemblies Load test column

5.4 Drawings Load

The Drawings Load test will test the ability for Legend to bulk load Pro/ENGINEER drawing files into Windchill.

5.4.1 System Functions

Read CSV
Read Pro/E Files
Lifecycle Mapping
Revision Mapping
Attribute Mapping
Load to Target Context
Set Extra Metadata
Build Structure in Windchill

5.4.2 Means of Control

Control will be maintained manually by keeping Windchill and Legend configurations constant and known to all parties involved.

5.4.3 Test Data

5.4.3.1 Input Data

Input data will be a valid CSV input file. Input content will be verified and designated Pro/ENGINEER drawing files. Valid is defined by the Legend Best Practices Guide and the Legend 80 Implementation Summary. CSV must include valid column mappings to test the System Functions defined in section 5.1.1.

5.4.3.2 Input Commands

Legend will be run with a database input criteria.

5.4.3.3 Output Data

Output data will be Windchill objects as evaluated against the test data criteria defined in Section 4.0.

5.4.4 Test Procedures

5.4.4.1 Procedures

1. Create input CSV file
 - a. Include only Pro/E drawing file paths
 - b. Map the lifecycle with valid CSV column mappings
 - c. Map the revision with valid CSV column mappings
 - d. Map addition attributes (metadata) with valid CSV column mappings
2. Start Legend
3. Choose the CSV created in step 1 as your input
4. Run Legend through the Checker, Reader and Loader phases
5. Validate data against test data criteria
6. Fill in the traceability matrix for the Drawings Load test column

5.5 Mixed File Type Load

The Mixed File Type Load test will test the ability for Legend to bulk load mixed Pro/ENGINEER files into Windchill.

5.5.1 System Functions

Read CSV

Read Pro/E Files

Lifecycle Mapping

Revision Mapping

Attribute Mapping

Load to Target Context

Set Extra Metadata

Build Structure in Windchill

5.5.2 Means of Control

Control will be maintained manually by keeping Windchill and Legend configurations constant and known to all parties involved.

5.5.3 Test Data

5.5.3.1 Input Data

Input data will be a valid CSV input file. Input content will be verified and designated Pro/ENGINEER files of all types. Valid is defined by the Legend Best Practices Guide and the Legend 80 Implementation Summary. CSV must include valid column mappings to test the System Functions defined in section 5.1.1.

5.5.3.2 Input Commands

Legend will be run with a database input criteria.

5.5.3.3 Output Data

Output data will be Windchill objects as evaluated against the test data criteria defined in Section 4.0.

5.5.4 Test Procedures

5.5.4.1 Procedures

7. Create input CSV file
 - a. Include all Pro/E file types in file paths
 - b. Map the lifecycle with valid CSV column mappings
 - c. Map the revision with valid CSV column mappings
 - d. Map addition attributes (metadata) with valid CSV column mappings
8. Start Legend
9. Choose the CSV created in step 1 as your input
10. Run Legend through the Checker, Reader and Loader phases
11. Validate data against test data criteria
12. Fill in the traceability matrix for the Mixed File Type Load test column

5.6 Family Table Assemblies Load

The Family Table Assemblies Load test will test the ability for Legend to bulk load FT assembly Pro/ENGINEER files into Windchill.

5.6.1 System Functions

Read CSV
Read Pro/E Files
Lifecycle Mapping
Revision Mapping
Attribute Mapping
Load to Target Context
Set Extra Metadata
Build Structure in Windchill

5.6.2 Means of Control

Control will be maintained manually by keeping Windchill and Legend configurations constant and known to all parties involved.

5.6.3 Test Data

5.6.3.1 Input Data

Input data will be a valid CSV input file. Input content will be verified Pro/ENGINEER FT assemblies. Valid is defined by the Legend Best Practices Guide and the Legend 80 Implementation Summary. CSV must include valid column mappings to test the System Functions defined in section 5.1.1.

5.6.3.2 Input Commands

Legend will be run with a database input criteria.

5.6.3.3 Output Data

Output data will be Windchill objects as evaluated against the test data criteria defined in Section 4.0.

5.6.4 Test Procedures

5.6.4.1 Procedures

13. Create input CSV file
 - a. Include all Pro/E file types in file paths
 - b. Map the lifecycle with valid CSV column mappings
 - c. Map the revision with valid CSV column mappings
 - d. Map addition attributes (metadata) with valid CSV column mappings
14. Start Legend
15. Choose the CSV created in step 1 as your input
16. Run Legend through the Checker, Reader and Loader phases
17. Validate data against test data criteria
18. Fill in the traceability matrix for the FT Assemblies Load test column