Synopsys – Accelerating Innovation

• Largest Electronic Design Automation (EDA) company based on market share and revenue

Primary areas of focus:
• EDA Tools
• Semiconductor IP
• Manufacturing Tools
Synopsys – Company Overview

• Founded in 1986
• Revenue Fiscal 2013: $1.96 Billion
• Over 9,225 Employees (5,234 Masters / PhD)
• 83 Offices Worldwide
• 33% of Annual Revenues Invested in R&D
• Over 2,248 Patents Granted
AMS & SEG Tech Pubs

• Team of 26 writers who prepare product documentation for Synopsys AMS & SEG products.

• Tools:
  – Structured FrameMaker (FM) to create and update documentation
  – WebWorks ePublisher to create online Help collections of FM books
  – Acrobat to generate PDFs of the same FM books
  – Perforce for documentation archiving, retrieval, and version control
Outline

Content reuse challenges for AMS & SEG Tech Pubs
Why not a CMS?
InsetPlus
Content reuse solution with InsetPlus
Benefits and limitations
Future work
Content Reuse Challenges for AMS & SEG Tech Pubs

• Product-specific documentation scenarios:
  – Cross-integration between products
  – Different flavors of a product for different customers
  – New product combining best features of two or more existing products
  – Different products but with certain common basic functionalities

• Quickly respond to changing demands while maintaining the accuracy and consistency of documents and document sets
Why Not a CMS?

• Expensive
• Extensive features, yet none meet 100% of our perceived needs
• Requires extensive customization to integrate seamlessly with our existing writing, production, and version control systems
• Complex, requires training to use
• In structured FM, all content is contained in elements. The content reuse solution only needs to enable sharing of elements across documents/books.
Objectives

• Inexpensive solution for content reuse, without any complex tool

• Solution that is compatible with our current authoring, production, and revision control systems

• Solution that leverages the markup of structured documents and enhances it to allow granular content reuse

• Simple, easy-to-use, and effective
InsetPlus

- Free content inset tool for structured FM from West Street Consulting which is owned and managed by Russ Ward
- Allows for copy and reuse of structured FM elements, along with their structure and data, between documents/books.
- Provides more features and flexibility as compared to text insets

### Capabilities

<table>
<thead>
<tr>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live, editable content insets</td>
</tr>
<tr>
<td>Optional reverse path to update a source module</td>
</tr>
<tr>
<td>No limitation on source and reused modules</td>
</tr>
<tr>
<td>Support for nested reuse</td>
</tr>
<tr>
<td>Better visibility and management of reused content</td>
</tr>
<tr>
<td>Support for tracking where source modules are used</td>
</tr>
<tr>
<td>Use of books as source module repositories</td>
</tr>
</tbody>
</table>
How InsetPlus Works

- Emulates FM’s traditional text inset concept using structured FM elements.
- A module of content is stored in one location (source) and reused in one or more other locations (references).
- Reusable source module: a valid EDD element with a unique value assigned to its ID attribute.
- Reused reference: uses the same element tag as its source; inserted where you want to reuse the source content; indicates the ID and file name of the source in a content reference (conref) attribute defined in your InsetPlus settings.
- For each inset reference, InsetPlus uses its conref attribute to locate the source and insert its structured content in the reference.
- The functional model of InsetPlus is based on the DITA conref mechanism.
How InsetPlus Works: Example 1

Source Module Reuse

The `conref` attribute of the reference points to the ID and file name of the source.
How InsetPlus Works: Example 2

Reused Module Edit

Reference is edited to include a *Body* and a *Table*. *Table* is reused from another source.
How InsetPlus Works: Example 3

Reused Module Update

Changes to source. Reference can be refreshed from the source.

Source

<table>
<thead>
<tr>
<th>Section</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Id</td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>+</td>
</tr>
<tr>
<td>Body</td>
<td>+</td>
</tr>
<tr>
<td>List</td>
<td>+</td>
</tr>
<tr>
<td>Figure</td>
<td>+</td>
</tr>
<tr>
<td>Procedure</td>
<td>+</td>
</tr>
</tbody>
</table>

Reference

systemnav_install_guide.fm

- Section +
  - conref
    - camelot_install_guide.fm#SettingEnvironmentVariables
  - Head +
  - Body +
  - List +
  - Figure +
  - Procedure +

camelot_install_guide.fm

- Id
  - Section +
    - Id
      - Head +
        - Body +
          - List +
            - Figure +
              - Procedure +

= SettingEnvironmentVariables

Setting an Environment Variable ...

To set an environment variable i...
How InsetPlus Works: Example 4

Reused Module Reporting

<table>
<thead>
<tr>
<th>#1</th>
<th>Element tag</th>
<th>Section</th>
<th>Source module ID:</th>
<th>Setting environment variables</th>
<th>Source file:</th>
<th>camelot_in_install_guides.fm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Path type:</td>
<td>Relative</td>
<td>Derived absolute path:</td>
<td>Q:\Users\seethas\Documents\tech_pubs\pubs_products\reuse_testing\seethas_test_books\install_guides\systemnav_install_guide.fm</td>
<td>camelot_in_install_guides.fm</td>
<td></td>
</tr>
</tbody>
</table>

| #2 | Element tag | Table | Source module ID: | Optional Environment variables | Source file: | camelot_in_install_guides.fm |

Document processing complete.
2 reference insert(s) found in document.
How InsetPlus Works: Example 5

Source Module Reporting

--- InsetPlus Report ---

Source Module Tracking Report

November 28, 2014 - 12:06:36

Source module usage report for:

C:\Users\seethas\Documents\tech_pubs\pubs_products\reuse_testing\seethas_test_books\install_guides\camelot_install_guide.fm

(All modules)

Source module usage report for:

C:\Users\seethas\Documents\tech_pubs\pubs_products\reuse_testing\seethas_test_books\install_guides\excalibur_install_guide.fm

(All modules)

>> Module: SettingEnvironmentVariables :: Reference element tag: <Section>

C:\Users\seethas\Documents\tech_pubs\pubs_products\reuse_testing\seethas_test_books\install_guides\systemnav_install_guide.fm

(Relative path link)

• Reference #1

Total references found for this module (at report generation): 1

>> Module: OptionalEnvironmentVariables :: Reference element tag: <Table>

C:\Users\seethas\Documents\tech_pubs\pubs_products\reuse_testing\seethas_test_books\install_guides\systemnav_install_guide.fm

(Relative path link)

• Reference #1

Total references found for this module (at report generation): 1
1. Identified the set of reusable elements in our EDD
   – 25+ elements including Section, Reference-section, Figure, Procedure, Table, and List, for the pilot system.

2. Updated the EDD to add a conref attribute to these elements
   – The conref attribute for a reference module contains the FM file name and ID of the source module that it references:

   ../SystemNav/dataexplorer_ug/using_dataexplorer.fm#About_DataExplorer
Building the Content Reuse Solution With InsetPlus (2 of 2)

3. Configured InsetPlus settings
   - List of names/tags of the reusable elements
   - Actual name of the content reference attribute of reusable elements (*conref*, in our case)
   - Whether inset references should use the relative or absolute paths to source files

4. Tested reuse with InsetPlus
   - Proof-of-concept tests with live examples of scenarios
   - Timing tests on documents containing a large number of insets
Benefits (1 of 2)

• Reuse existing content. Scenarios:
  – Moderately divergent content for similar products
    ▪ Quickly and easily create content
    ▪ Flexibility in the granularity of reused content
    ▪ Keep reused content editable
  – Duplicated information in multiple documents for similar products
    ▪ Maintain accuracy and consistency
  – Product documents sharing the same source through extensive use of conditional text and variables
    ▪ Produce accurate output with minimum effort
Benefits (2 of 2)

• Reduce the effort in maintaining reused content
  – Keep reused content synchronized
• Reduce the effort in maintaining boilerplate content in our books
• Report reuse and track source modules
Limitations

- Unresolved cross-references in reused elements.
- Cannot search and locate content for reuse from our content repository.
- Does not provide features for notifications to borrower and sharer of content.
- Cannot track reuse of content and report reuse statistics at various levels.
Future Work

Reuse Management System (RMS)

Content Repository

Production

Reusable Elements

PDF

Online Help

Product 1
Guide 1

Product 1
Guide 2

Product 2
Guide

Product 3
Guide
RMS Workflow (Future)

- Content Repository
  - Extract content for reuse
  - Keep reuse metadata synchronized

- Draft Book
  - Preview, reuse, and assemble FM files and book
  - Add new content

- Published Book
  - Store book
  - Store reuse statistics

- RMS Metadata
  - Keep reuse metadata synchronized
Questions

Email: seethas@synopsys.com
Thank You