Collaboration in Teams: Simulink Projects Demonstration

김종헌 차장
Senior Application Engineer
MathWorks Korea
Agenda

- Motivation
- 7 common technical challenges
- Next steps
- Q & A
  - allen.kim@mathworks.com
“Can I Do Parallel Development of Control Algorithm and Plant?”
Follow-up Questions

- How do I reuse parts of my design across projects?
- The software group has a process by which they manage their source code—can I translate this to Simulink models?
  - Most of my design engineers are unfamiliar with source control tools—do they have to learn it?
- Do you have best practices for teams starting out with Model-Based Design?
A brief introduction to Simulink Projects
Click to Play
7 Most Common “How Do I...” Questions

- **Organize** and **manage** files?
- **Access** to project-level utilities
- **Associate** project level information with files?
- **Transfer** knowledge across projects?
- **Repeat** common tasks on models
- **Use** source control functionality within the design environment
- **Track** design changes?
Challenge #1: Organize and Manage Files?

- Use a single file for multiple engineers
- Chaotic
- Email
- High cost
- Keeping track of file dependencies
Demo:
Organize and manage design-related files efficiently within Simulink
Challenge #2: Access to Project-level Utilities?

- Inconsistent loading of environment parameters
  - Declaration of variables in base workspace
  - Setting up paths for files and folders, customizations
  - Cleanup-switching between different projects

- Executing automated tasks
  - Generating reports for a model
  - Code generation settings
  - Running Model Advisor checks

- Access to key files
Demo:
Access and execute utility script and key files using Simulink Project Shortcuts
Challenge #3: **Associate Project-Level Information with Files**

- Inability to distinguish between file types such as those for design, derived from design, source code, data, or artifacts
- Hard to track file status through different stages of the development process
- How to establish file ownership?

**Type of file**
- Design
- Artifact
- Data
- External

**Association?**
Demo:
Associate project-level information using Labels
Challenge #5: **Transfer Knowledge across Projects?**

- How to transfer knowledge across projects?
  - Creating a folder structure that conforms to a standard
  - Adding standard utility scripts
Demo: Define project presets for use across teams with Simulink Project Templates
Challenge #5: Repeat Common Tasks on Project Files

- Execute component tests on a set of model files?
- Execute model checks on the files themselves and display the result?
Batch Operations on Project Files

Execute project-wide operations authored in MATLAB on batches of files

- Execute a MATLAB function on some or all of files in a project from the GUI for automation tasks
- Filtering based on labels supports selection the files
- Results displayed in the Batch Job View
Challenge #6: Access Source Control Functionality?

- Design engineers have to learn a source control tool outside the design environment.
- How do I make Simulink work with a preferred source control tool?
- Is there connectivity to popular open source control tools?
Simulink Project Source Control Adapter SDK

Use author adapters to connect Simulink Projects with source control tools.

- Java and OSGi based
- SDK includes:
  - JavaDoc for shipping API
  - Developer’s guide
  - Source code for SVN example integration
VisualSVN Server Support in R2012b

Connect to VisualSVN Server based repositories

- SVN adapter supports connectivity VisualSVN server repositories on Windows
- HTTP protocol speeds up file checkouts and commits over traditional file-based approach
- Enforce password protections on repository and restrictions on file access

http://www.visualsvn.com/
Challenge #7: Track Design Changes?

- How to compare and merge changes?
- How to do peer reviews interactively?
Configuration Management: Typical Workflow

Sync sandbox
Check out file(s)
Design
Test / Review
Peer Review
Submit: automatic checker, regression test, gen code, build code, test code
Store artifacts

File Repository

Performed from the sandbox - Automated
Demo:
Simplified Configuration Management Demo
with Simulink Projects
Resources

[Google search results for 'simulink projects']

About 3,120,000 results (0.22 seconds)

**Simulink Projects - MATLAB and Simulink**
www.mathworks.com/discovery/simulink-projects.html

Learn how to use Simulink Projects to manage your project files and connect to source control software. Resources include videos and examples on how teams ...
Resources

Simulink Projects

Team collaboration in Model-Based Design

Simulink Projects is an interactive tool in Simulink® for managing your project files and connecting to source control software. It promotes effective collaboration across teams by enabling you to:

- Find all the files that belong with your project
- Create shortcuts for accessing common operations and initializing and shutting down projects
- View and label modified files for peer review workflows
- Share projects using built-in integration with Subversion® (SVN), an external source control tool

In addition to connecting to Subversion, you can use the SDK to create custom adaptors to other tools for source control, version control, software configuration management (SCM), product lifecycle management (PLM), and application lifecycle management (ALM).

Examples and How To

- Using a Simulink Project (Example)
- Creating a Simulink Project 2:41 (Video)
- Creating and Using Shortcuts 1:37 (Video)
- Labels with Simulink Projects 4:33 (Video)

Videos, Webinars, Papers
Next Steps

- Simulink Projects helps create an environment that supports collaborative development
  - Simulink-centered workflow
  - Facilitates effective component-based modeling
  - Standard way to enable access to company standard tools and libraries
  - Simplified configuration management
  - Peer review workflow

- Contact Young-Joon or me for a detailed demonstration onsite.
  - Step by step walkthrough with your team
  - Process assessment and evaluation
  - Adoption of Simulink Projects with best practices