Collaboration with Enterprise Architect and LemonTree

Philipp Kalenda

Daniel Siegl

welcome@lieberlieber.com (email us for more info)

FRESH MODEL

VERSIONING

LemonTree©
Fresh Model Versioning
lemontree.lieberlieber.com

Handelskai 340, Wien, Wien 1020, Österreich

Handelskai 340, Wien, Wien 1020, Österreich
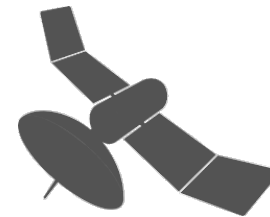
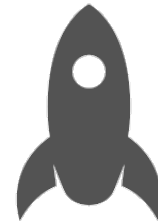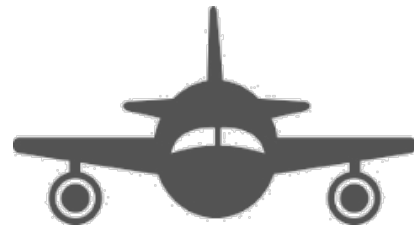Daniel, Velm

Daniel, Velm

Philipp, Ebreichsdorf

Philipp, Ebreichsdorf

Who uses LemonTree with EA?

We target companies manufacturing safety relevant Cyber Physical Systems!

But more and more Models from other Domains use it. (Banks, Insurances, …)

LieberLieber Software
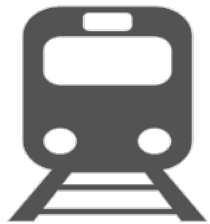
LemonTree © for Safety Projects

"In general, standards such as IEC 61508 demand the application of configuration management.

This refers to all artifacts, including UML models. LemonTree from LieberLieber is our key to revealing the changes that have been made to a revision…"

DIPL.-ING. STEFAN MÜLLER
HIMA PAUL HILDEBRANDT GMBH
SAFETY-RELATED AUTOMATION SOLUTIONS

IEC 61508 and Version Control

5.2.6 The documentation shall:
— be accurate and concise;
— be easy to understand by those persons having to make use of it;
— suit the purpose for which it is intended;
— be accessible and maintainable.

5.2.7 The documentation or set of information shall have titles or names indicating the scope of the contents, and some form of index arrangements so as to allow ready access to the information required in this standard.

5.2.8 The documentation structure may take account of company procedures and the working practices of specific application sectors.

5.2.9 The documents or set of information shall have a revision index (version numbers) to make it possible to identify different versions of the document.

5.2.10 The documents or set of information shall be so structured to make it possible to search for relevant information. It shall be possible to identify the latest revision (version) of a document or set of information.

NOTE The physical structure of the documentation will vary depending upon a number of factors such as the size of the system, its complexity and organizational requirements.

5.2.11 All relevant documents shall be revised, amended, reviewed, approved and be under the control of an appropriate document control scheme.

NOTE Where automatic or semi-automatic tools are used for the production of documentation, specific procedures may be necessary to ensure effective measures are in place for the management of version or other control aspects of the documents.

"The documentation or set of information…"

"…shall have a revision index …"

"…effective measures … for the management of version …"

ISO26262 Software tool evaluation report

Tool:	LieberLieber LemonTree
Tool Version:	LemonTree 2.5 Desktop Version
Date:	
Document Status:	Draft / Released / Active / Expired
AIT Contact:	**Vorname Nachname** Jobdescription

Traceability is the Model Intelligence
The Data is a Graph!

Requirement ← realize ← Component

realize → Requirement

Traceability = Intelligence

Disconnected Cells ➡ NOT INTELLIGENT
Disconnected Model ➡ NOT INTERPRETABLE
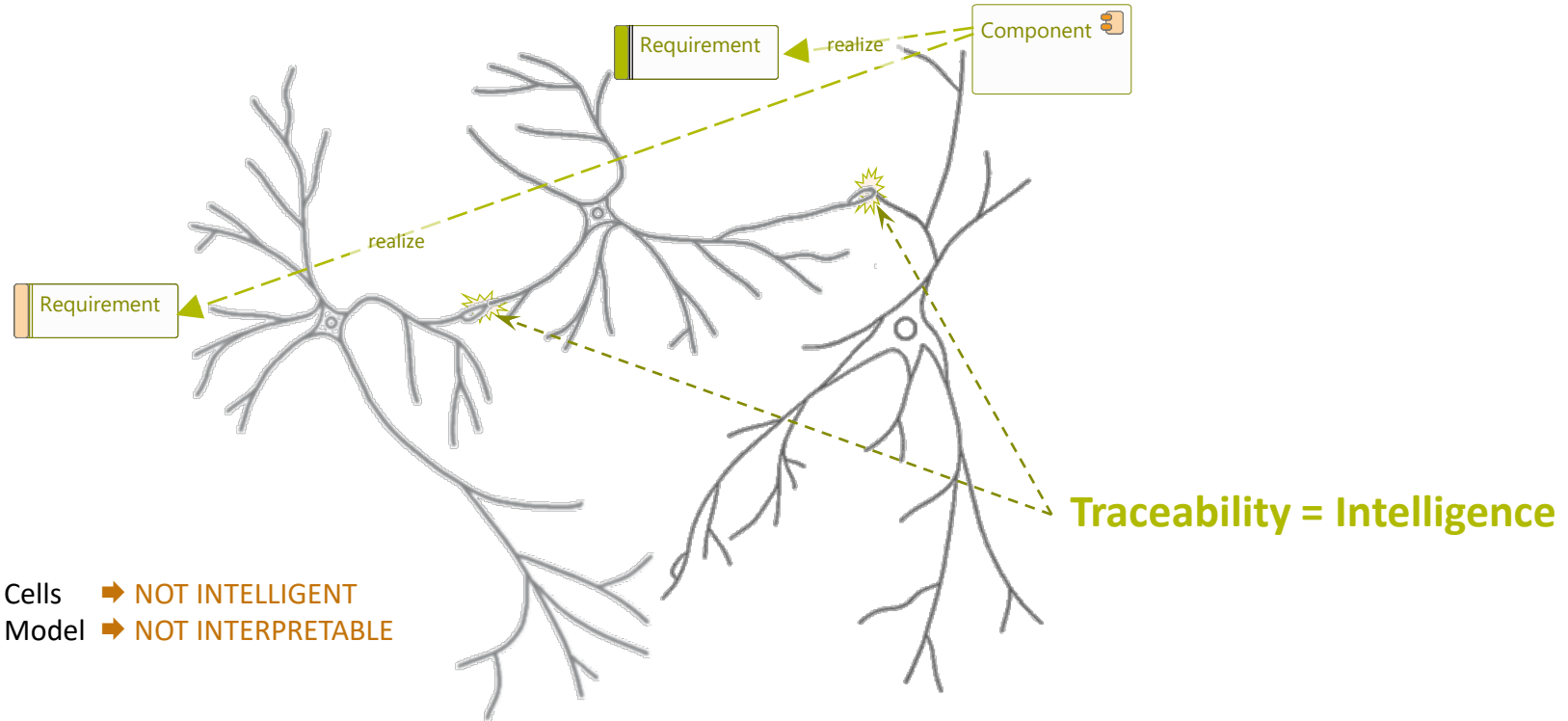
Why not using traditional diff tools?

Impossible to merge XMI

LieberLieber Software

LieberLieber Software
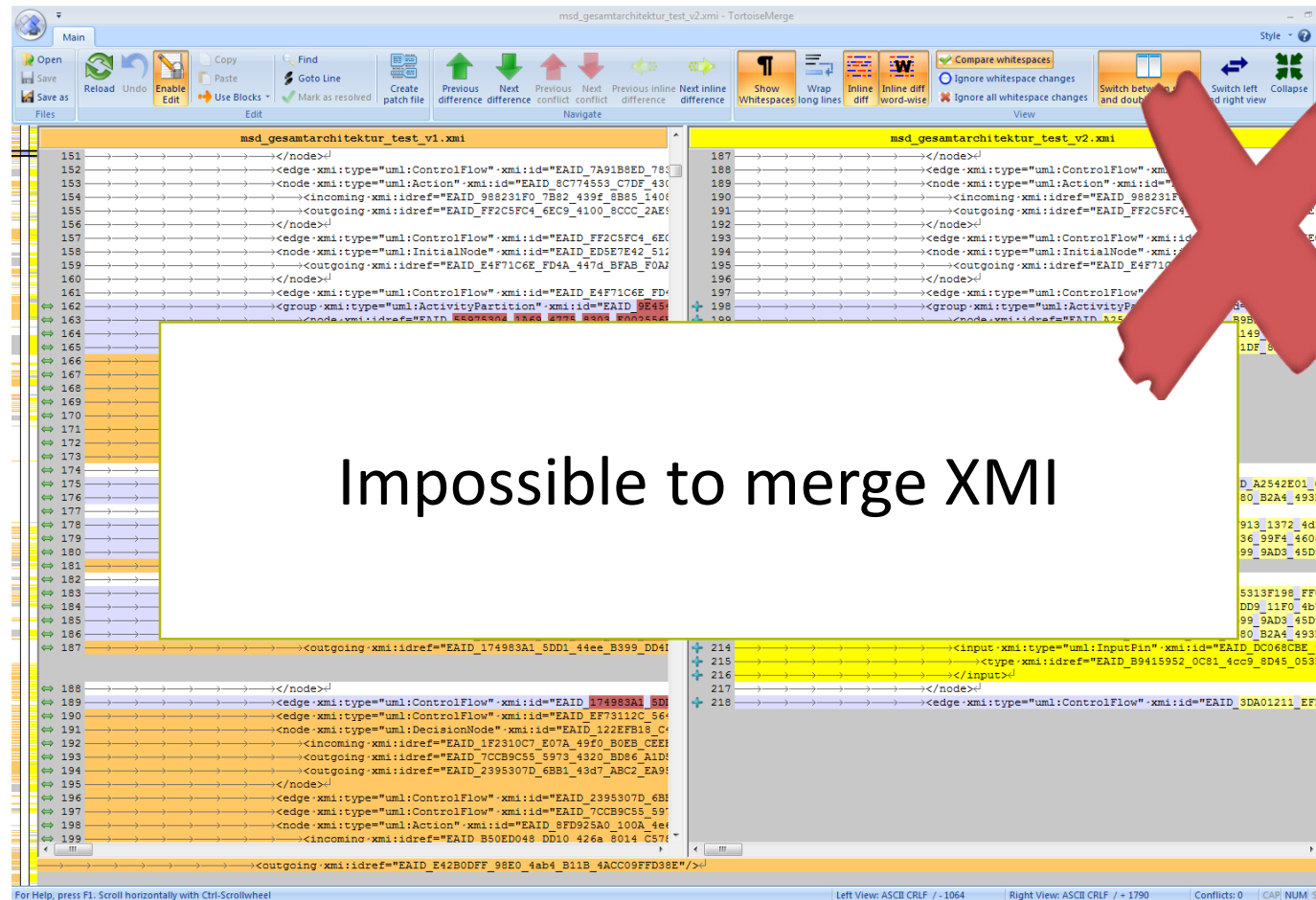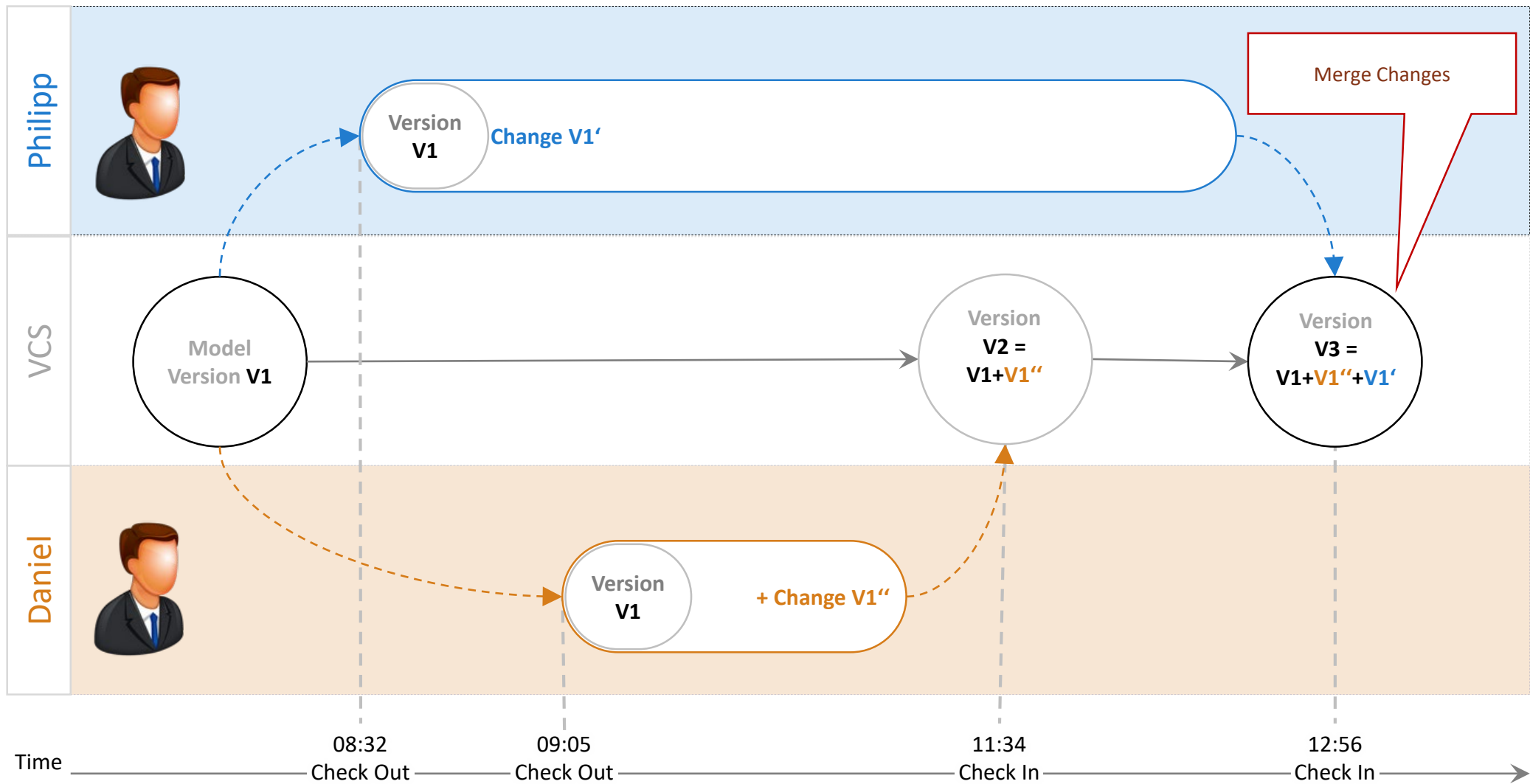
Typical Scenario with Branching

LieberLieber Software
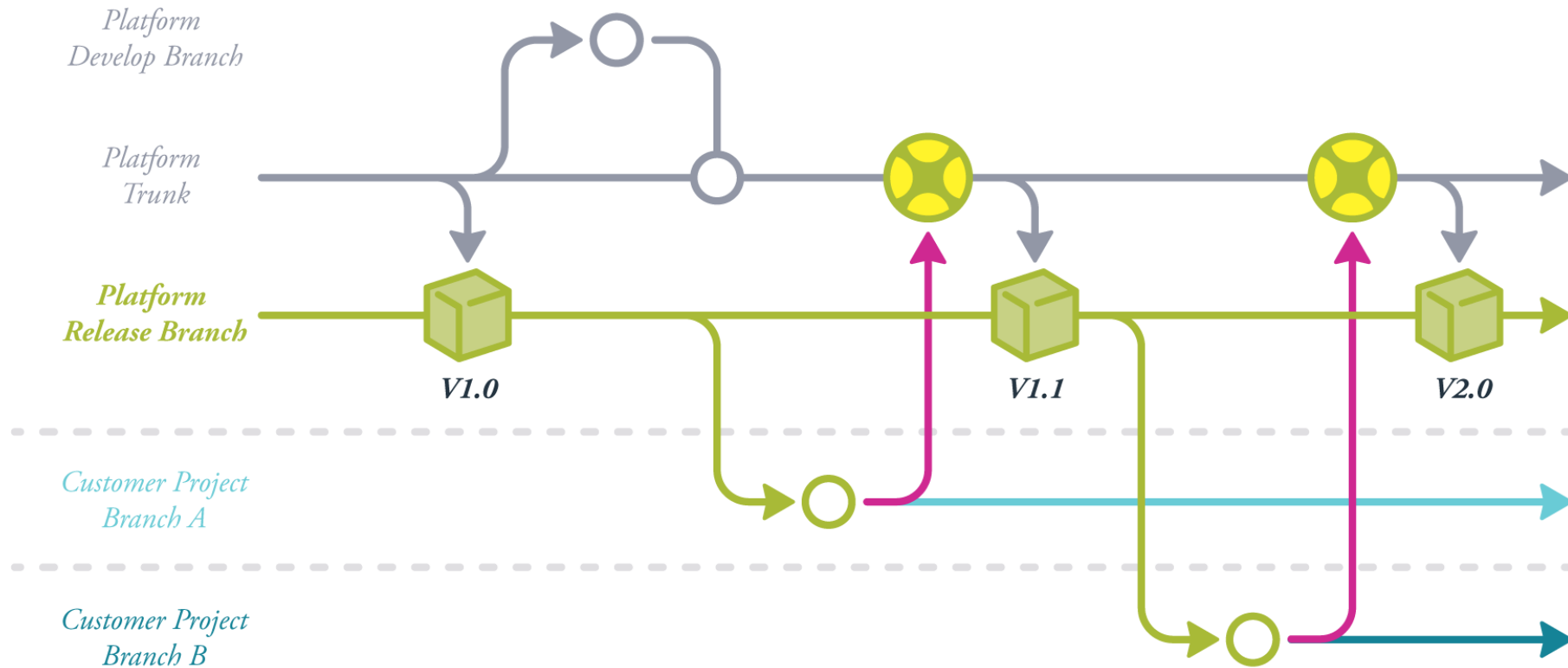
LemonTree © Highlights

✓

Diff & Merge
3-way diffing and merging of Enterprise Architect models

✓

Model Versioning
Parallel editing of models through optimistic model versioning

✓

VCS Integration
Seamless integration with Git, Subversion, PTC, etc.

✓

Branches of models
Parallel developments of versions and variants

✓

Merge Preview
Diagram merge and merge preview

✓

Review
Changes are visualized clearly and understandably for reviews

LemonTree©
Fresh Model Versioning
lemontree.lieberlieber.com

LemonTree

Take Subtree A | Take Subtree B | Start Merge

Impacted Elements [23 / 23] ⚠ 1 Conflicted

Search...

- ▷ ⬤ Configure ADC ⬤ A ⬤ B ✓
- ▷ ▤ ⚠ **Display** ⬤ A ⬤ B ✓
  - On Diagrams: 1 ▾ A: Child modified B: Child modified
  - ⇒◆ ⚠ WriteLL:void ✓
    - On Diagrams: 0 A: Modified
    - B: Modified
- ▷ ◪ DisplayInfo ⬤ A ⬤ B ✓
- ▷ ▭ DisplayInfo ⬤ A ⬤ B ✓
- ▷ ⬭ DisplayInformation ⬤ A ⬤ B ✓
- ▷ ⬤ GetMouseObject ⬤ A ⬤ B ✓

Details ▾ | A - A.eap

- ⇒◆ ⚠ *WriteLL (1)* ►
- ▷ ▤ «executable entry point» Main (15)
  - ◆ «define» SYSTICKS_PER_SECOND ►
  - ▽ ◯ main (15)
    - � main (7)
    - ⬤ ActivityFinal (1)
    - ⬤ Configure ADC ►
    - ▷ ⬤ GetMouseObject (2)
    - ▷ ⬤ Mouse Init ►
    - ▷ ⬤ Move the Mouse ►
    - ▷ ⬤ Set System Tick to 100Hz ►
    - ▷ ⬤ Shutdown (2)
    - ▷ ⬤ WriteLL ►
    - ▷ ◆ [unnamed] (3)
    - ▷ ▯ [unnamed] ►
    - ▷ ⬤ [unnamed] ►
- ▷ ▤ «singleton» Mouse (1)

B - B.eap

- ⇒◆ ⚠ *WriteLL (1)* ►
- ▽ ▤ «executable entry point» Main (28)
  - ◆ «define» SYSTICKS_PER_SECOND (1)
  - ▽ ◯ main (27)
    - � main (14)
    - ⬤ ActivityFinal ►
    - ⬤ Configure ADC (1)
    - ▷ ⬤ GetMouseObject ►
    - ⬤ Mouse Init (3)
    - ⬤ Move the Mouse (1)
    - ⬤ Set System Tick to 100Hz (1)
    - ▷ ⬤ Shutdown ►
    - ▷ ⬤ WriteLL (3)
    - ▷ ◆ [unnamed] ►
    - ▯ [unnamed] (1)
    - ▷ ⬤ [unnamed] (3)
- ▷ ▤ «singleton» Mouse (7) ►

Merge Preview

- ⇒◆ *WriteLL*
- ▤ «executable entry point» Main
  - ◆ «define» SYSTICKS_PER_SECOND
  - ▽ ◯ main
    - � main
    - ⬤ ActivityFinal
    - ⬤ Configure ADC
    - ▷ ⬤ GetMouseObject
    - ⬤ Mouse Init
    - ⬤ Move the Mouse
    - ⬤ Set System Tick to 100Hz
    - ⬤ Shutdown
    - ⬤ WriteLL
    - ▷ ◆ [unnamed]
    - ▯ [unnamed]
    - ▷ ⬤ [unnamed]
- ▷ ▤ «singleton» Mouse

Impacted Diagrams [6 / 6] ✓ 0 Conflicted

Search...

- ▷ 🖧 AcceleratorMouse ⬤ A ⬤ B ✓
- ▷ 🖧 Display ⬤ A ⬤ B ✓
- ▷ 🖧 Main ⬤ A ⬤ B ✓
- ▷ � main ⬤ A ⬤ B ✓
- ▷ 🗒 StateMachine ⬤ A ⬤ B ✓
- ▷ � Transmit ⬤ A ⬤ B ✓

Diagrams ▾ | AcceleratorMouse:LogicalDiagram

Take Diagram B ►►

Properties ▾

⬤ Modified

Method
-

⚠ Code
~~Display_SetLine(0);~~ Display_SetLine(1);
Display_WriteString(LieberLieber);

IsQuery
false

RedefinedOperations

⚠ WriteLL:void

⬤ Modified

Element Properties

Method
-

⚠ Code ►
~~Display_SetLine(0);~~ Display_SetLine(2);
Display_WriteString(LieberLieber);

IsQuery ►
false

RedefinedOperations

Method
-

Code Ⓐ
Display_SetLine(1);
Display_WriteString(Lieber...

IsQuery
false

RedefinedOperations

100%

LemonTree ready

① Filtering

② Diagram Versions

③ List of Impacted Diagrams

④ Changed Element Properties

⑤ Smart Grouping of Changes

⑥ Merge Preview

FRESH MODEL

VERSIONING

LemonTree©
Fresh Model Versioning
lemontree.lieberlieber.com

DEMO

Enterprise Architect + GitFlow + LemonTree Solution

- Enhance modeling processes in the day-to-day work of software configuration management

- **Longer-Term, Parallel Development of Versions and Variants**

- Reuse of existing tools and workflows for system modeling Example: Gitflow for Feature Branch based product development

- **Provide support for Functional Safety Critical Norms** – currently we have a certification tool kit for ISO26262

Summary

- LemonTree is an established commercial 3-Way Diff and Merge Tool for Enterprise Architect Models

- **Changes in both source models and merge result are visualized clearly and understandably**

LieberLieber Software

Key Take Away

- "State of the Art" team collaboration with models
- Consistent development state
- Development risks are reduced
- Perfect triggers for peer reviews

LieberLieber Software

Call to Action

- Download LemonTree – (Install TortoiseGit first)
  https://www.lieberlieber.com/lemontree/en/

- Clone Git Repo from GitHub
  https://github.com/danielsiegl/LemonTreePublicDemo

- Arrange a WebEX to discuss with us
  welcome@lieberlieber.com

Thank You! Questions?

Philipp Kalenda

Daniel Siegl

welcome@lieberlieber.com (email us to get the slides)