



# LieberLieber Software: LemonTree is very popular in higher education

Vince Molnár is an assistant professor at the Budapest University of Technology and Economics, where he teaches MBSE with a groundbreaking paradigm shift towards automated quality gates and reviewing pull requests rather than grading submissions. Last semester he used Enterprise Architect, GitHub with SmartGit and LemonTree with LemonTree.Automation with great success for the first time in a course with over 80 students.

Vienna/Budapest – Vince Molnár is an assistant professor at the Budapest University of Technology and Economics and has also been teaching MBSE (Model Based Systems Engineering) for almost ten years: "In previous years, we have used other tools in teaching, but we were not completely satisfied with them. During my visit to the MBSE Summit 2023, I got to know LieberLieber, and we agreed to try their toolchain with Enterprise Architect, GitHub, and LemonTree. I was completely convinced by this experiment, and our students were also enthusiastic about the new possibilities of the toolchain and the new form of feedback."

Daniel Siegl, responsible for business development at LieberLieber: "I have known Vince Molnár for some time from our work at OMG and INCOSE, and he really appreciates the possibilities of MBSE and wants to spread the word. As a provider of tools in this environment, it made sense for us to support him in his search for a suitable toolchain for teaching. We are very pleased that this 'pilot test' was so successful and hope that other universities will follow his example."

# Seamless integration and automation

In the MBSE course, over 80 students worked in groups of three on a model they had to extend based on additional specifications. In previous editions, students had to create the documentation in PDF and submit them separately, while models were stored in a central model repository. "When we moved to GitHub, we finally had the opportunity to store and version the models and the documentation in the same place. However, GitHub does not understand models, so



#### Vince Molnár assistant professor at the Faculty of

Electrical Engineering and Informatics

In previous years, we have used other tools in teaching, but we were not completely satisfied with them. During my visit to the MBSE Summit 2023, I got to know LieberLieber, and we agreed to try their toolchain with Enterprise Architect, GitHub, and LemonTree. I was completely convinced by this experiment, and our students were also enthusiastic about the new possibilities of the toolchain and the new form of feedback. collaboration between the students suffered heavily due to the need to avoid conflicts. This was the time we learned about LemonTree," says Molnár. LemonTree, integrated with SmartGit, is now used to diff and merge different versions of the models so students can work on their own "feature branch" and seamlessly integrate their changes. "With the diff/merge problem solved, we could really start leveraging the power of GitHub and GitHub Actions. LemonTree.Automation provided us with a way to use pull requests instead of submissions, along with a set of convenience functions like finding and fixing inconsistencies and rendering diagrams automatically. Students could now include the generated images in their Markdown documentation, which always showed the latest version of the models," Molnár recalls.

#### Expansion of the tool chain planned

In the future, Molnár plans to shift to giving feedback in pull requests rather than scoring PDFs. Convinced by the great success of the program, Molnár is also considering integrating the validator from LieberLieber's partner, IncQuery Labs. This would offer further quality checks and guide students through their assignments, for example, by automatically highlighting bad practices and common mistakes in the models. "With Enterprise Architect, GitHub, and LemonTree, we finally have a solution that both students and teaching staff are completely satisfied with, and the assignments are really about learning how to build high-quality models. At the same time, we are working with modern practical tools, which makes it even easier for our graduates to start their careers," says Molnár.



Daniel Siegl Business Developer at LieberLieber

I have known Vince Molnár for some time from our work at OMG and INCOSE, and he really appreciates the possibilities of MBSE and wants to spread the word. As a provider of tools in this environment, it made sense for us to support him in his search for a suitable toolchain for teaching. We are very pleased that this 'pilot test' was so successful and hope that other universities will follow his example.

## DISCUSSION ABOUT SYSML V2

Daniel Siegl from LieberLieber recently organised a top-class discussion on the topic of SysML v2 conformance, which has now been published on the blog "Systems Engineering Trends - News from the world of systems engineering every week". The founder and author of the blog, Michael Jastram, spoke with Andreas Pollom (Fraunhofer IESE), Daniel Siegl, Robert Karban (co-founder of OpenMBEE and until recently at the NASA Jet Propulsion Laboratory) and Vince Molnár (assistant professor at the Budapest University of Technology and Economics).

This panel was organised because SysML v2 conformance is currently in acute danger. If a solution to this problem is not found soon, this could be a major setback for SysML and MBSE. The victims will be the users who expect their work results to be interoperable. Therefore, the panellists appeal to the MBSE community to take action now and actively contribute to the work around SysML v2 conformance!

The discussion was held in English (the video is available in part 1 of the discussion) and summarised in German by Michael Jastram.

More information



## THE LEMONTREE FAMILY

The most important function of LemonTree, when it was first introduced, was to compare and merge different versions of models. A complete modernisation of the data access layer then created a new technical core for LemonTree, enabling today's developments. Currently, the LemonTree family consists of the following products:

- LemonTree.Desktop: Diff/Merge functions
- LemonTree.Web: Functionality like LemonTree.Desktop, available as a web application via browser
- LemonTree.Automation: use in the context of a build server pipeline (without GUI)
- LemonTree.Components: Allows the division of a model created with Enterprise Architect into different sub-models or components.
- LemonTree.Connect: Synchronisation of ALM tools (Codebeamer, Polarion) and Enterprise Architect

More information

# ABOUT THE BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS

The Budapest University of Technology and Economics is Hungary's most important technical university and was founded in 1782 by Emperor Joseph II. It has around 21,000 students, 1,200 professors and academic staff and consists of eight faculties. The largest one is the Faculty of Electrical Engineering and Informatics, with more than 5000 students and 300 staff members.

## ABOUT LIEBERLIEBER SOFTWARE

We are a software engineering company. The know-how of our employees lies in model-based software and system design based on tools such as Enterprise Architect from Sparx Systems.

Our customers are companies that place particular importance on the quality of their software and systems development. They wish to maintain a constant overview of their complex development scenarios while ensuring that security-relevant requirements are clearly represented in models. For this task we provide our own special tools, such as LemonTree and Embedded Engineer. In addition, we offer a range of useful tool integration services to help make our customers' development processes more productive.

LieberLieber is a business unit of Lieber.Group.

More information: www.lieberlieber.com



LieberLieber Software GmbH Gumpendorfer Straße 19, 1060 Vienna, Austria +43 662 90600 2017, welcome@lieberlieber.com, www.lieberlieber.com