



## **EUROfusion Standard Software**

2<sup>nd</sup> E-TASC General Meeting | Garching | Feb 9-13, 2026

**Frank Jenko**

Head of the DSO & Co-Chair of the E-TASC Scientific Board



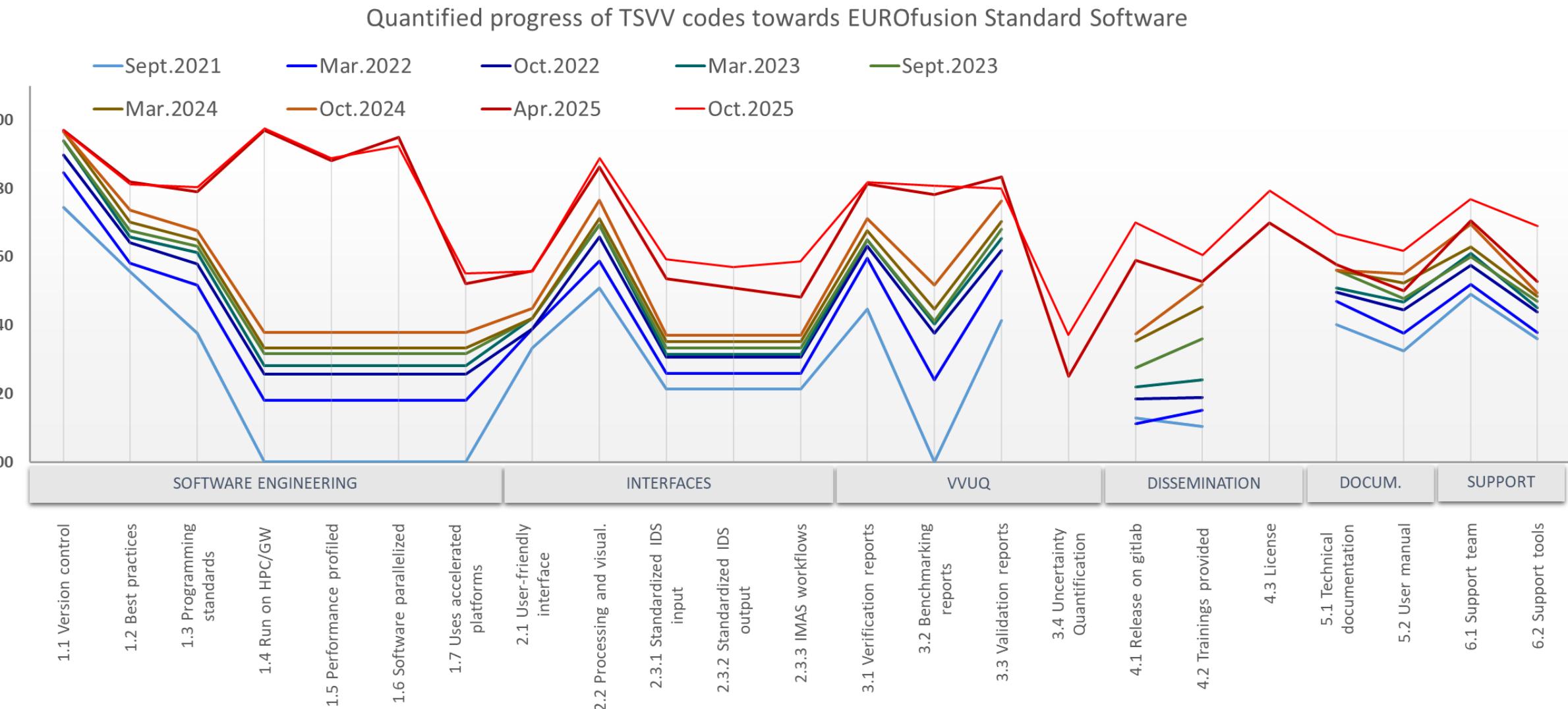
This work has been carried out within the framework of the EUROfusion Consortium, funded by the European Union via the Euratom Research and Training Programme (Grant Agreement No 101052200 — EUROfusion). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them.



EUROfusion standard software will be developed with a very rigorous, consistent quality assurance process that is common across the E-TASC initiative; it is designed to benefit a wide range of users across EUROfusion, well beyond the team of code developers, and will adhere to the following guidelines and criteria:

- Free availability (within EUROfusion) of an up-to-date release version of the source code used for production runs
- Good software engineering practices (version control, regression/unit testing, shared development rules etc.)
- High-quality code documentation via user manuals and reference publications (including, in particular, a detailed description of the underlying model)
- Excellent support of users, co-developers, and support staff within EUROfusion (via contact person, mailing list, issue tracker, and the like)
- Specific plans for code verification and validation (involving a third party), in particular within EUROfusion, including aspects of uncertainty quantification
- User-friendly, intuitive interfaces and visualisation/post-processing tools, including interfaces to the IMAS Data Dictionary (where applicable)
- Specific plans for code dissemination and user training within EUROfusion

# Progress towards EUROfusion Standard Software



The quality assurance framework for EUROfusion Standard Software (endorsed by the E-TASC SB on March 12, 2025)  
<https://idm.euro-fusion.org/?uid=2Q72WQ&version=v2.2>

# GENE/GENE-X user training and tutorial

January 12-16, 2026



- User training event as part of **code dissemination**
- **Hybrid** format: on-site + Zoom
- Mixed **tutorial** and **hands-on** sessions
- **Few prerequisites:** Unix + (some) Python
- **Participants:**
  - ~30 in-person
  - ~50-100 remote

Registration has been closed because of the high number of participants.

# GENE/GENE-X user training and tutorial



## Focus on tutorial and hands-on sessions

# Tutorials

Monday, January 12, 2026		Tuesday, January 13, 2026		Wednesday, January 14, 2026		Thursday, January 15, 2026		Friday, January 16, 2026	
9:00 AM	Setting up GENE simulations - linear, nonlinear, parameter scans, etc - Gabriele Merlo (IPP) Tobias Goerler (IPP)	9:45 AM	Post-processing GENE generated files - Tobias Goerler (IPP) Gabriele Merlo (IPP)	9:00 AM	Welcome & Introduction	9:00 AM	Overview of GENE-X postprocessing tools	9:00 AM	GENE-X equilibrium and data preprocessing
10:30 AM	Coffee Break	10:30 AM	Introduction to GENE-X for users	10:30 AM	Coffee break	10:00 AM	How to install the Torx library	10:00 AM	Hands on: bring your own case to preprocess
11:00 AM	Hands-On Session II: Starting a number of GENE flux-tube simulations	11:00 AM	Installing the code: first steps	11:00 AM	Hands on: installation of Torx and first steps	10:30 AM	Coffee break	10:30 AM	Coffee break
12:00 PM	Lunch break	12:00 PM	Lunch break	12:00 PM	Lunch break	12:00 PM	Lunch break	12:00 PM	Lunch break
1:00 PM	Welcome - Frank Jenko (MPPL)	1:30 PM	Hands-On Session III: Flux-tube simulations and analysis	1:30 PM	Parameters required for a GENE-X simulation	1:30 PM	Optimize simulation performance	1:30 PM	Hands on: setup your own case
1:10 PM	Introduction to GENE - GENE Family, Physics Models used in GENE - Tobias Goerler (IPP)	2:30 PM	Coffee break	2:30 PM	Coffee break	2:15 PM	Simulation pitfalls	2:30 PM	Break
1:55 PM	Break	3:00 PM	Hands-On Session IV: Global GENE simulations	3:00 PM	Hands on: installation and first steps	3:00 PM	Coffee break	2:45 PM	Reserved for requests / Closing
2:00 PM	GENE - Numerical Methods - Tobias Goerler (IPP)	4:00 PM	4:00 PM	4:00 PM	Hands on: setting up a simulation test case	3:30 PM	Hands on: Creating your own postprocessing notebooks with Torx		
2:45 PM	Coffee break	4:30 PM	Final Q&A, closing and contingency	6:30 PM	Workshop Dinner				
3:15 PM	GENE - optimization approaches and pitfalls (CPU/GPU) - Gabriele Merlo (IPP)								
4:00 PM	Installing GENE - basic introduction - Tobias Goerler (IPP)								
4:30 PM	Hands-On Session I: Installing GENE / Running regression tests								
5:15 PM	Q&A and requests for the next day								

# Dinner

# Hands-on

# GENE/GENE-X user training and tutorial

## Training material for users created



☰ GENE-X wiki



Search...

Technical documentation  
Advanced build options  
Build GENE X on machine without internet  
GENE X Bash Functions  
Known issues and fixes  
SLURM gres option  
Setting up CI/CD  
User guide  
Automatic build with Configx  
First steps  
Quickstart instructions  
Running on a cluster  
Testing GENE-X  
Guide to simulation parameters

## Welcome to the GENE-X Wiki!



### "What and what not"

The Wiki provides advanced documentation that is **not** about the source code itself. This includes specific information, quality-of-life features, machine settings, and many more..

#### Hint

Alternative pages with information are

- The [Gitlab pages](#) that provide code-related documentation.
- The [README](#) that provides minimum-required information to do something with the code.

### GENE-X community

Please consult our webpage contact form if any questions arise at any point.

We encourage you to subscribe to the [genex-users](#) mailing list which provides a platform to ask questions and to get the most recent code information.

If you would like to contribute to the documentation of the Slack channel, please consult the

# Users Wiki

> Page contents:

Welcome to the GENE-X Wiki!

"What and what not" 

GENE-X community 

Quick links 

FAQ 

Table of contents 

2\_Installation.mp4 - VLC media player

Media Playback Audio Video Subtitle Tools View Help

ulblp@viper02:~\$ ls -l  
total 84

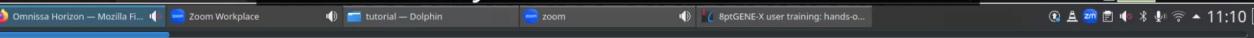
```
drwxr-xr-x 2 ulblp t3tok 4096 14. Jan 11:10 bash
drwxr-xr-x 5 ulblp t3tok 4096 14. Jan 11:10 cicd
drwxr-xr-x 3 ulblp t3tok 4096 14. Jan 11:10 cmake
-rw-r--r-- 1 ulblp t3tok 26636 14. Jan 11:10 CMakeLists.txt
drwxr-xr-x 2 ulblp t3tok 4096 14. Jan 11:10 config
drwxr-xr-x 2 ulblp t3tok 4096 14. Jan 11:10 coverage
drwxr-xr-x 2 ulblp t3tok 4096 14. Jan 11:10 doc
drwxr-xr-x 3 ulblp t3tok 4096 14. Jan 11:10 external
drwxr-xr-x 2 ulblp t3tok 4096 14. Jan 11:10 img
-rw-r--r-- 1 ulblp t3tok 16726 14. Jan 11:10 LICENSE
drwxr-xr-x 2 ulblp t3tok 4096 14. Jan 11:10 parallax
-rw-r--r-- 1 ulblp t3tok 15203 14. Jan 11:10 README.md
drwxr-xr-x 2 ulblp t3tok 4096 14. Jan 11:10 reax
drwxr-xr-x 24 ulblp t3tok 4096 14. Jan 11:10 src
drwxr-xr-x 4 ulblp t3tok 4096 14. Jan 11:10 tools
[ulblp@viper02 genex]$
```

# Recordings



NMPP seminar room

this is what you should see then. So you have basically the same structure as before,



# GENE-X released as Open Source code



[genexcode.org](http://genexcode.org)

- **GENE-X is FOSS now**  
(free and open source software)
- **License is MPL2.0**  
(similar to GPLv3 – compromise between permissive and restrictive)
- Code can be downloaded and built immediately: **frictionless access** for users and training
- **Helpdesk / contact formulary** available on website
- **Slack channel / mailing list** available for users