

FrontISTR v5.7 Release Note

FrontISTR commons

FrontISTR v5.7 has been released!

FrontISTR v5.7

- Release date: March 28, 2025
- Changes from v5.6
 - Improvements: 12 issues + 1 merge request
 - Specification changes: 5 issues + 3 MRs
 - Bug fixes: 15 issues
 - Others: 4 issues



version	release date
Ver. 4.4	2015/02/17
Ver. 4.5	2016/07/22
Ver. 4.6	2017/09/14
Ver. 5.0	2019/10/18
Ver. 5.1	2020/06/30
Ver. 5.1.1	2020/11/13
Ver. 5.2	2021/04/09
Ver. 5.3	2021/11/11
Ver. 5.4	2022/07/08
Ver. 5.5	2023/02/24
Ver. 5.6	2024/05/24
Ver. 5.7	2025/03/28

Improvements (1/2)

- [#594](#) Modification and Addition of Dirichlet B.C.
 - In the previous implementation, the displacement increment at a given step was treated as the Dirichlet boundary condition.
 - By using !BOUNDARY, GRPID=[n], TOTAL, it is now possible to set the total displacement from the initial configuration as the Dirichlet B.C. (it cannot be used for rotations).
 - The default behavior of !BOUNDARY remains unchanged (backward compatibility is maintained).
- [#679](#) Implementation of Quasi-Newton Method
 - Nonlinear static analysis can now be solved using the quasi-Newton method.
 - It is available by specifying !NONLINEAR_SOLVER, METHOD=QUASINEWTON

Improvements (2/2)

- [#608](#) Output CONTACT_NFORCE, CONTACT_TFORCE even when !CONTACT, INTERACTION=TIED
- [#612](#) OpenMP addition to DIAG and SAINV preconditioning
- [#581](#) Partitioning information input/output function for partitioner

Elastoplastic related (cf. [!456](#))

- [#624](#) Enable setting number of state variables for user defined yield type
- [#227](#) Elastoplastic consistent tangential stiffness (Drucker-Prager and Mohr-Coulomb)
- [#623](#) Add dilatancy angle as input to Mohr-Coulomb and Drucker-Prager

CI related

- [#637](#) Automatic generation of deb for Ubuntu 24.04
- [#675](#) End of support for Ubuntu 20.04

(Merge requests without issues)

- [!462](#) Support !AMPLITUDE for static analysis
 - !AMPLITUDE can now be applied to !BOUNDARY and other boundary conditions in static analysis.

Specification changes

- [#613](#) Expand forall into multiple do loops
- [#626](#) Change directory structure under hecmw1/src/solver/precond

Build related

- [#652](#) Preparation for rewriting CMakeLists.txt
- [#650](#) Remove relevant parts of ParMETIS from installation scripts
- [#604](#) Delete description of ParMETIS

(Merge requests without issues)

- [!470](#) Integrate dynamic analyses with and without contact
- [!472](#) Trivial changes to use as a dynamic library
- [!475](#) Deletion of HECMW cmat structure

Bug fixes

- [#606](#) Argument error in matvec for MPC?
- [#609](#) Fixed defects that incorrect reaction force was output when setting embedding constraints
- [#610](#) No branch from hecmw_matvec to {1,2} degrees of freedom
- [#595](#) Corrections and improvements to user-defined elastoplastic functions
- [#619](#) NR will not converge if there is a master element constrained to displacement at all points with contact master-slave elimination
- [#620](#) Tests for embedded elements may fail
- [#625](#) Trilinos-15.1.1 is not available
- [#621](#) Module defect in hecmw_estimate_condition.F90
- [#639](#) Visualization of nodal temperature
- [#647](#) Mistakes in message output when using STATICEIGEN
- [#628](#) Fix "has not been explicitly declared" variables
- [#668](#) AMP of !STEP is no longer considered in static analysis

Elastoplastic related (cf. [!456](#))

- [#593](#) Mohr-Coulomb defects
- [#622](#) Fix input of multilinear hardening for Mohr-Coulomb and Drucker-Prager
- [#592](#) Drucker-Prager defects

Others

- [#614](#) SSOR_22 does not converge with some solver combinations
- [#618](#) Non-zero determination in contact master-slave elimination using only the profile
- [#640](#) Support incompatible-pointer-type in GCC14
- [#602](#) URL for inquiries to FrontISTR Commons is forcibly redirected

Acknowledgements

- Contributors

FrontISTR.git

Author	commits
Kazuya Goto	47
Inagaki	30
Suwa	15
Naoki Morita	12
Kanato Kono	9
Toru Ando	8
Michio Ogawa	3
Yu Ihara	2

FrontISTR_manual.git

Author	commits
Michio Ogawa	9
Kazuya Goto	5
Masae Hayashi	2
Tokunaga	1

- Count the number of commits merged into the release branch in the git repository (Merge commits are not counted).
- Command:
`git log --no-merges [previous release branch]..[this release branch] | grep -e Author | sort | uniq -c | sort -nr`
- Author name deviations are manually merged.

Thank you very much for your cooperation!



**Version 5.7 now
available**