Improvements of database system and analysis suite in VEST

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Efforts to improve the compatibility and efficiency of data analysis between fusion devices are emphasized. Currently, VEST's database system uses MySQL for storing raw experimental data, and each diagnostic data is managed separately. [1] The mapping of the ODS developed to unify the data structure for nuclear fusion and the existing VEST data, as well as the connection to OMFIT [2], a data analysis framework, was brought in along with the construction of the EFIT workflow. In addition to this previous process, this project aims to achieve complementarity and efficiency gains through the standardization of additional data and the improvement of the workflow. MDSPlus [3,4], optimized for fusion experimental data, was introduced through tree-based centralized data storage, a database server infrastructure storing standardized data was initially established through ODS mapping, and overall data analysis workflow improvement work was performed using the OMFIT profile [5]. A new VEST tree structure was designed for the storage of the standardized data, and a workflow was constructed to store the existing VEST data following the structure. Through the linkage between MDSPlus and OMFIT, the equilibrium information can be loaded and stored in MDSPlus. It has been possible to fit a kinetic profile for transport simulation based on equilibrium and Thomson scattering Diagnostics data by building the workflow in OMFITprofile. This supports data management and research in the fusion field by improving data compatibility and accessibility. In addition, by establishing a database server infrastructure suitable for fusion experiments, the efficiency of research has been increased by securing access to diagnostic data requiring individual access.

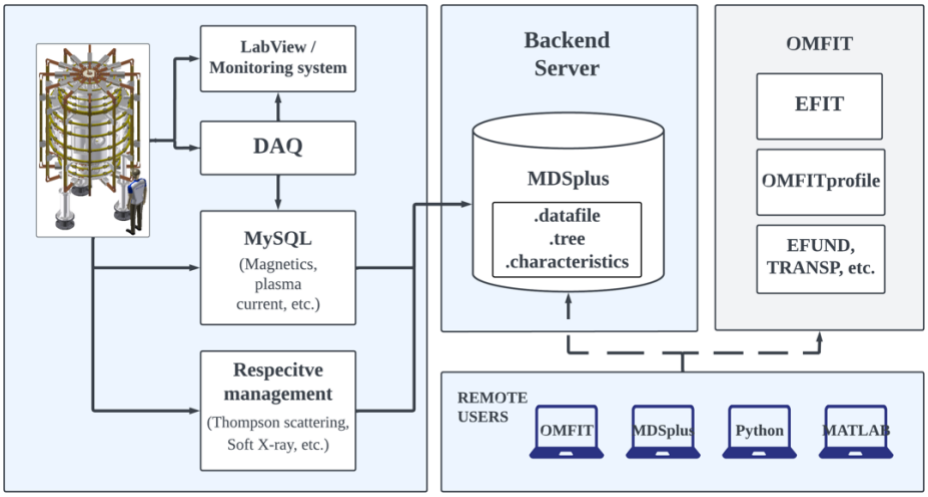

Fig. 1 VEST database systems reconstructed through data standardization.

References

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