Where will JMAG go from here?

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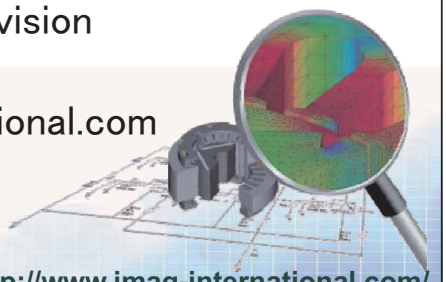

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Contents

- The Roadmap and V11
- JMAG-VTB
- JMAG-SuperExpress
- Open Interface

The Roadmap and V11

Our Vision for JMAG

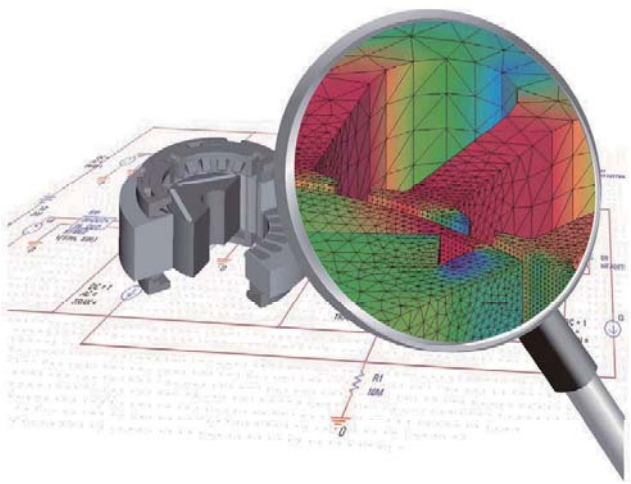
- Providing a cutting-edge analysis tool for electromechanical design based on high-speed simulation technology with comprehensive support

Precise Analysis

High-speed Processing

High Productivity

Open Interface



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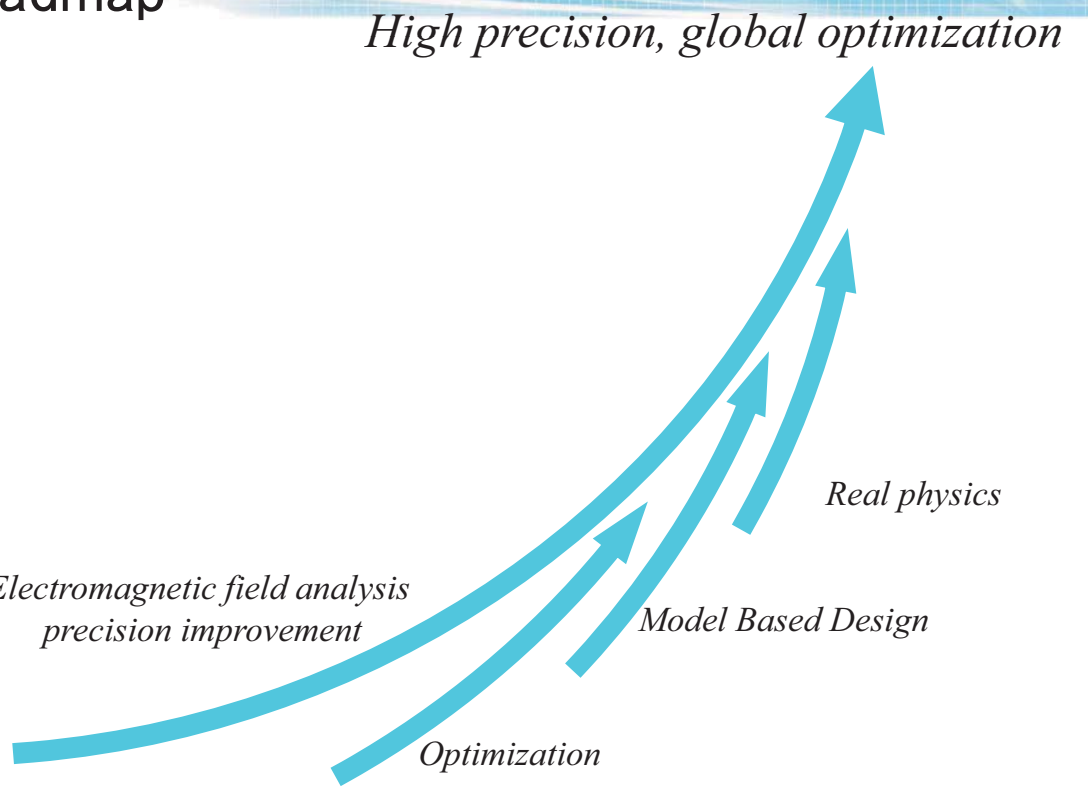
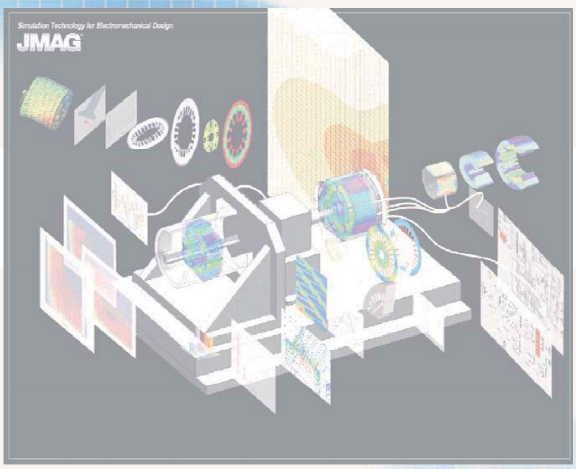
Roadmap



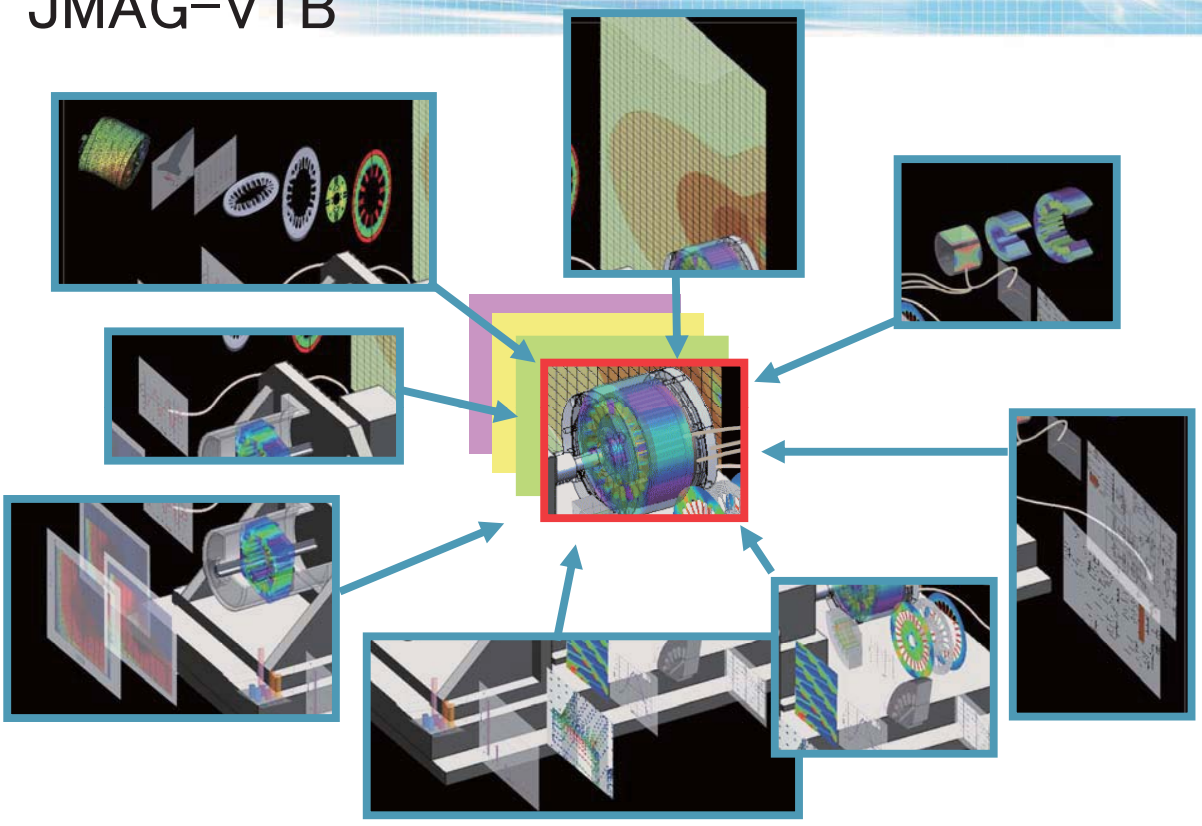
V11 and Future Planning

	V11	V12	V13
Precise analysis	Improved vibration and noise analysis Enhanced structural coupling (1) Improved result analysis functions (1)	Improved precision in high magnetic flux density regions Magnetless motor support Stronger structural coupling (2) Improved result analysis functions (2) IH temperature distribution	Modeling that accounts for processing Motor drive integration simulation Fluid coupling Induction heating control coupling
High-speed processing	Faster transient analysis Mesh functions with high computational efficiency	Improved nonlinear iteration convergence GPU support IH calculation streamlining	Many-core support
High productivity	Stronger 3D modeling functions Improved meshes for rotating machines Improved multiple case processing capabilities Scenario functions (VTB)	Improved mesh quality Optimization (local) Data mining	Geometry direct modeling Optimization (Global) A Web usage environment
Open interface	Stronger HILS coupling	A collaborative analysis environment (MBD) Multiphysics	Distributed processing Interface maintenance for integration with other systems

JMAG-VTB



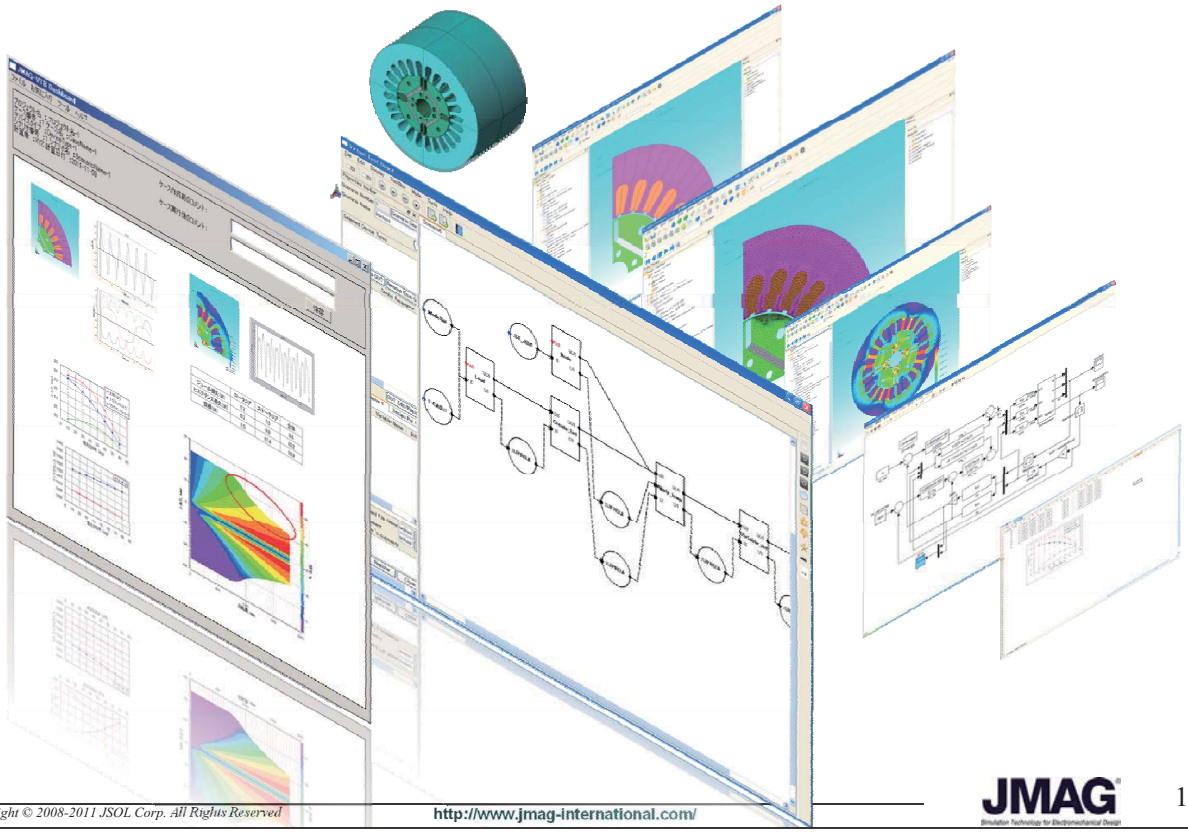
JMAG-VTB



What is JMAG-VTB?

- An analysis automation that obtains results by applying predefined JMAG analysis scenarios to an analysis target
  - The large number of included scenarios covers a wide range of analysis objectives.
  - Adding and correcting scenarios are possible.
  - User intervention and data correction while the scenario is being run are also possible.
  - Database functions: The user can reuse case models and data searches that have finished operation, by entering the analysis target, scenario, and result value as search keys.
  - It is also possible to use programs other than JMAG within the scenario.

An image of JMAG-VTB



The benefits of JMAG-VTB

- Users can obtain results without confusion, even if it is their first analysis or a complicated analysis.
  - The scenario provides the analysis steps and parameter decision information.
  - It is possible to view all of the results on the dashboard.
  - A large number of scenarios is included, so analysis can be run directly after installation.
- JMAG-VTB records information as scenarios and makes it possible to reuse them.
- Users can customize the analysis while still getting the benefits of a predefined scenario.
  - Users can intervene in processing that concerns them, and can also confirm and correct data and models with the normal JMAG operations.
- JMAG-VTB's database allows users to search for and reuse results, operation situations, and models that have finished running,; this feature greatly improves the efficiency of analysis operations.

What We Are Aiming For With JMAG-VTB

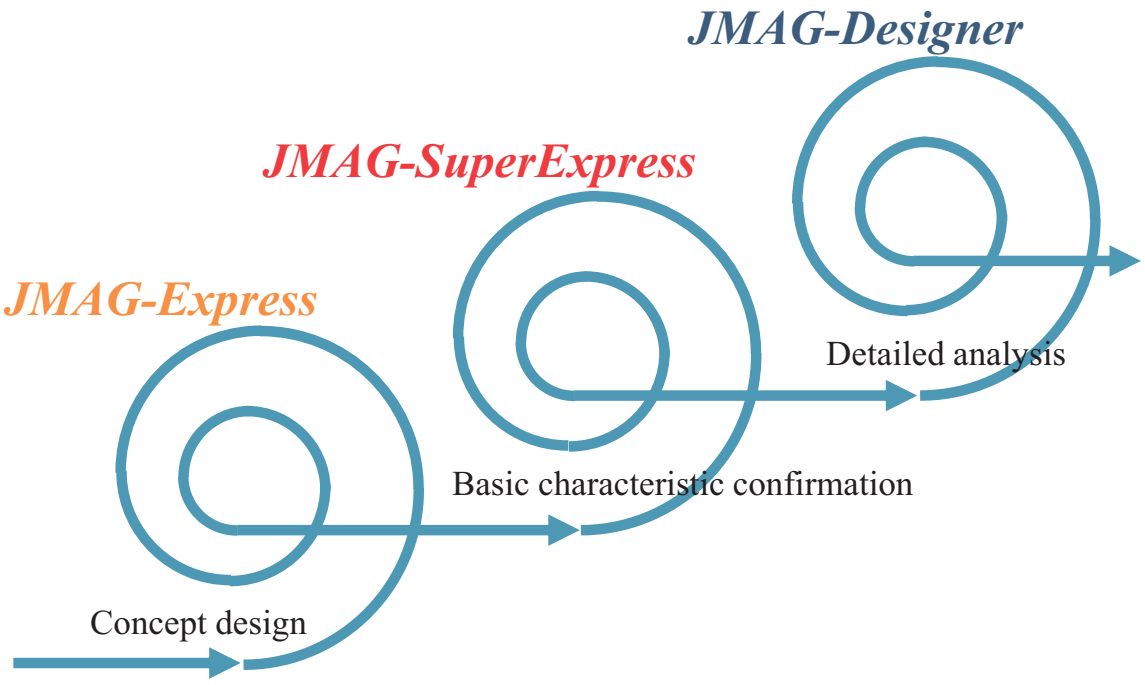
- To provide simulations that approach actual measurements, and to provide simulation value that cannot be obtained from actual measurements.
- To leave the analysis steps that complicate things up to the system and allow the user to concentrate on understanding phenomena and design work.
- To provide the latest and most advanced simulation technology to all of the users.
- To actualize demands to the point of the user's personalized details by opening the analysis process and allowing user intervention.

Future Planning for JMAG-VTB

- Upgrading and expanding scenarios
  - Coordination with JMAG application notes
- Publishing fixed scenarios to JMAG-Bus and using them on the Web
- Upgrading data processing tools that can be used in JMAG-VTB

JMAG-SuperExpress

The role of JMAG-SuperExpress



JMAG-SuperExpress

- Making detailed motor analysis a reality through finite element analysis (FEA) that is obtained from simple operations
  - Combining the operability of JMAG-Express with the detailed analysis of FEA
    - Analysis with just the parameter specification for the motor template and analysis scenario selection
    - Seeing the results on the dashboard
  - Analysis items
    - No-load analysis: Cogging torque, induced voltage
    - Load analysis: Torque, current and voltage, loss
    - Efficiency map generation: Efficiency map, NT curve, inductance map
    - JMAG-RT model generation
    - Torque separation
- Covering the entire motor development process, along with JMAG-Express and JMAG-Designer, from concept design to detailed analysis.
- The ability to browse and reuse models and results whose operations have finished by using the database functions

Characteristics of JMAG-SuperExpress

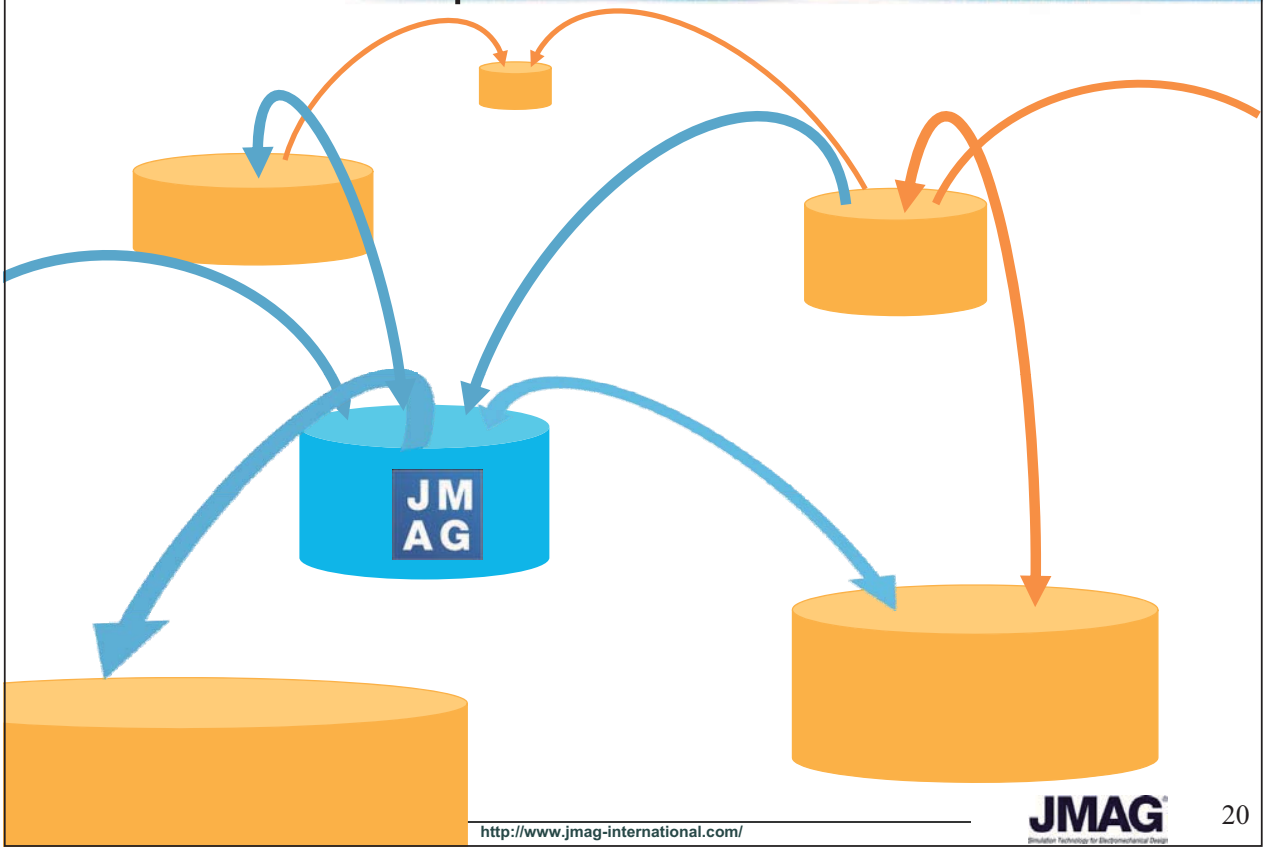
	JMAG-Express	JMAG-SuperExpress	JMAG-Designer
FEA know-how	Unnecessary	Unnecessary	Necessary
Level of detail	Low	High	High
Calculation speed	Almost instantaneous	JMAG fast FEA	FEA level
Degree of freedom	Dependent on the template	Dependent on the template and the analysis scenario	High

The Future of JMAG-SuperExpress

- Upgrading and expanding the supported target motors
- Expanding to 3D analysis
- Analysis scenario enhancement

Open Interface

The Value of Open Interface



The Value of Open Interface

- Simulation expansion through coupling with other software and systems
  - Promoting model based design
    - By sharing models between different groups it becomes possible to reduce the number of repeats and shorten the development period.
  - Pursuing real physics simulations
    - Reproducing "natural" physical phenomena with coupling analysis that has a high degree of coupling
  - Embedding JMAG into analysis and design systems
- Using the optimal software for individual problem resolution

In Conclusion

- JMAG aims at achieving total optimization that has a high degree of trust, which is necessary for the design and development of electrical equipment, through high precision simulation technology.
- With JMAG-Designer V11 we are striving for function improvement centered mainly around improvement in performance.
- JMAG-VTB will be released. Users will be able to carry out complicated analysis steps without hesitation and improve analysis operation efficiency.
- With JMAG-SuperExpress, it will be easy to carry out motor FEA.
- Thanks to the promotion of open interface, JMAG's solution range has expanded.