MBD Promotion Through Model Libraries

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Accelerated development by leveraging MBD! Enhanced development capabilities achieved

We worked on MBD (model-based development) to develop and verify models on computers. However, since each department worked on MBD separately, there were drawbacks, such as the duplication of model development. From 2020 to 2021, we conducted activities to standardize MBD and create a system that would allow models to be utilized as assets by the entire engineering department.

This was driven by the rapid changes in the automotive industry environment, such as CASE. To accelerate our response to electrification (E), one of the CASE elements, we strengthened our development capabilities and aimed to achieve mass production of electrified products at an early stage.

In order to develop internal combustion engine (engine-related) products while also developing electrified products, it is essential to improve design efficiency and development speed. Therefore, we promoted the use of MBD within the company to reduce rework and improve development speed. The issue of duplicated model development was resolved by creating a cloud-based storage location (model library) and standardizing the specifications (instruction manuals) format. This has achieved visibility of the model list. Additionally, establishing rules for model construction, such as naming conventions, has made interdepartmental reuse of models easier and resulted in numerous achievements.

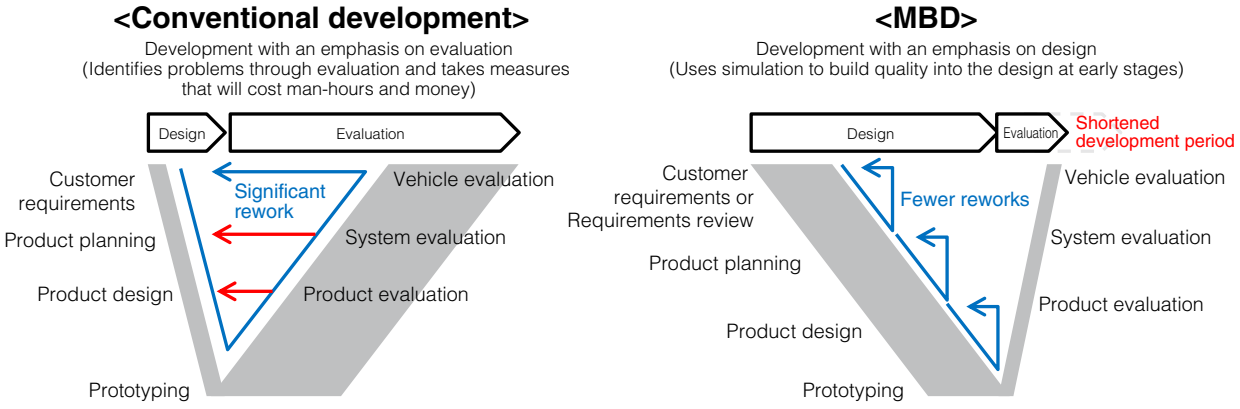
Key Points of Development

01

Development method using MBD

Using MBD makes it possible to use simulation in the early stages of design, implement small PDCA cycles, and build quality in the virtual world.

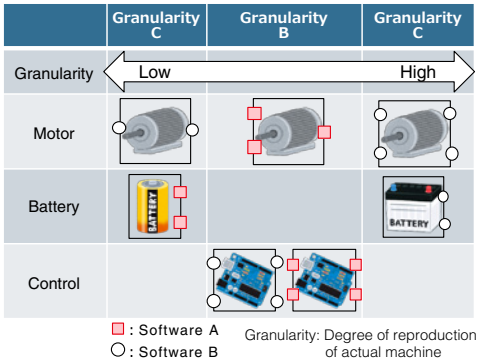
Aiming to accelerate development using MBD



* Excerpt: Modified from the Ministry of Economy, Trade and Industry's "strategic committee for the new era of automobiles (first meeting) materials" to align with Aisan Industry

<Model storage location (model library)>

Listed by product, granularity, and software used
⇒ Emphasizes ease of viewing and searching

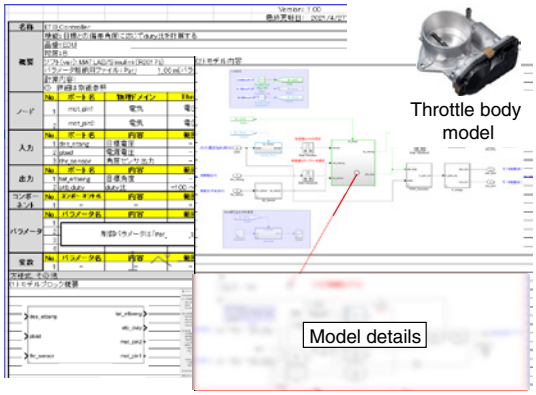


02 Visualization of the development list

We created a model library that emphasizes ease of viewing and searching, as well as model specifications that can be used to record necessary information. This made it easy to visualize the developed models. We also reduced man-hours by utilizing similar models.

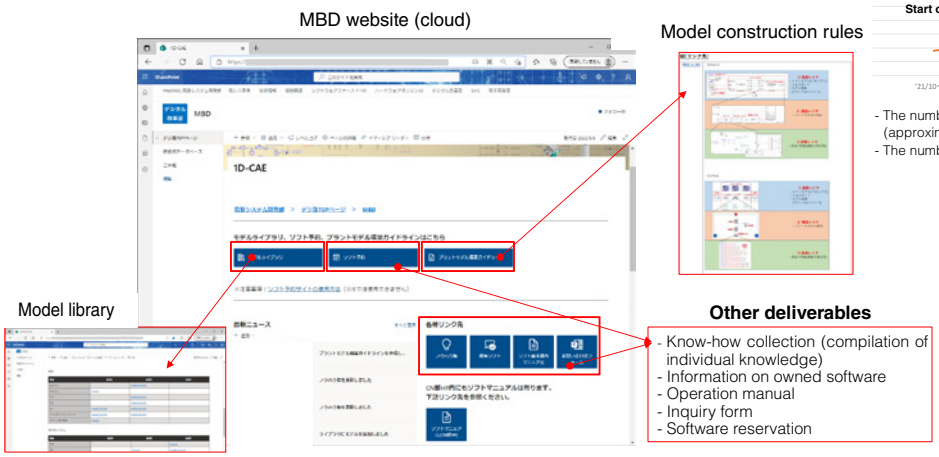
<Model specifications (instruction manuals)>

Model information (input/output, calculation details, granularity), etc.

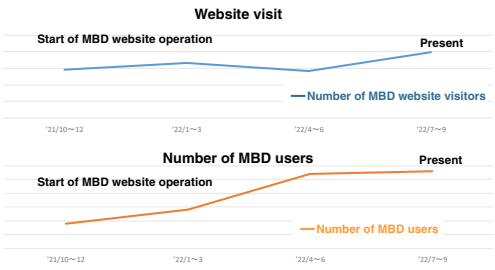


03 MBD website

Through technical skills development, we are promoting the company-wide adoption of MBD. We have also built and operate an MBD website that aggregates all MBD-related information in the cloud.



<Confirmation of the effectiveness of promoting MBD>



- The number of website visitors has **remained constant** (approximately 30% of the technical department per month)
- The number of MBD users has **increased**

Results (Problem Solving)

- Created a model library to avoid duplication in development.
- Established model construction rules to enable the construction of standardized, easy-to-reuse models.
- Increased the number of MBD users by providing basic technical skills.

Future Developments

- We will further enhance our model library to strengthen our development capabilities.