FMI

The New Standard for Model Sharing and Collaboration

4 Benefits of Incorporating the FMI Standard Into Your Modeling Workflows

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THE NEED FOR A NEW SOLUTION

In the world of virtual engineering, system and simulation engineers have a variety of tools at their disposal to design the products of the future; like fully electrified commercial aircraft or cars that charge themselves. Effective innovation requires modeling and simulation technology that **1)** can adapt to changing needs, and **2)** be deployed easily across a broad range of stakeholders – making collaboration between teams easy and time efficient. This eBook outlines four reasons why the FMI standard can be your secret weapon.

WHY FMI?

The Functional Mock-up Interface is a tool independent standard for sharing and integrating models easily across different platforms. FMI-compliant models give engineers the freedom to use a wide variety of tools, and share amongst peers.

The FMI standard has been in existence for about ten years, and in that short time has been widely accepted and deployed with success. Popular organizations such as PDES, Inc.®, prostep ivip, NAFEMS and INCOSE endorse the FMI Standard. Today, it's used by more than 100 well-known tools of varying utilities and across all major industries, with the list of FMI compliant tools growing.

Click here to view the full list of FMI-compliant tools

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1 BUILD COLLABORATIVELY

Most engineering groups at large industrial organizations are split into multiple teams, with each team specializing in a specific domain. Typically, these teams use different tools to accomplish their goals. When it's time to work cross-functionally, however, engineers can find it a struggle to share their work with other teams, and vice versa. This, ultimately, causes product development inefficiency, siloed teams, and significant lost opportunity.

Using FMI, organizations can substantially improve collaborative engineering, models can be shared across teams and throughout their supply chain, regardless of what tool the model came from. Multi-disciplinary teams gain the flexibility of working from the same page, and can more easily combine their sub-system models into a full system. The FMI standard is also careful to bring models to the same level of communication while not compromising quality. Models with different attributes, such as FEA, CFD, 1-D and block diagram controls models, can all be exported as FMUs regardless of their underlying numerics.

FMU

2

COMBINE SOFTWARE AND HARDWARE

Connecting the virtual world and physical world is a powerful and growing trend in which FMI is a natural enabler. FMI technology seamlessly connects software components with hardware components, whether it be for real-time simulation, predictive simulation, or both.

Today, major HIL vendors such as dSPACE, National Instruments™, Concurrent Real-Time, IPG Automotive, and Speedgoat fully support the FMI standard, making controller design testing more accessible than ever. Additionally, FMI supports digital twin simulations by providing a platform with a suitable interface for channeling data from a physical object to its simulation twin model. As a result, simulated models can easily be kept up-to-date and return more accurate results and actionable insights.

3

SHARE ACROSS YOUR NETWORK

FMI also supports collaboration within engineering workflows. Engineers spend countless hours building, calibrating and optimizing component and system models, but often hit major roadblocks when the time comes to share these models within, and outside, their organization. In addition, security around engineering IP is a high profile issue everywhere, and can introduce major concerns when an engineering team wants to share their results.

Again, FMI provides a strong solution. Sharing models regardless of the complexity of the model, becomes as simple as emailing from person to person. Not only does this enable faster sharing within an organization, but across the entire supplier network of an OEM. FMI also enables custom IP protection during model export, helping organizations keep their data secured.

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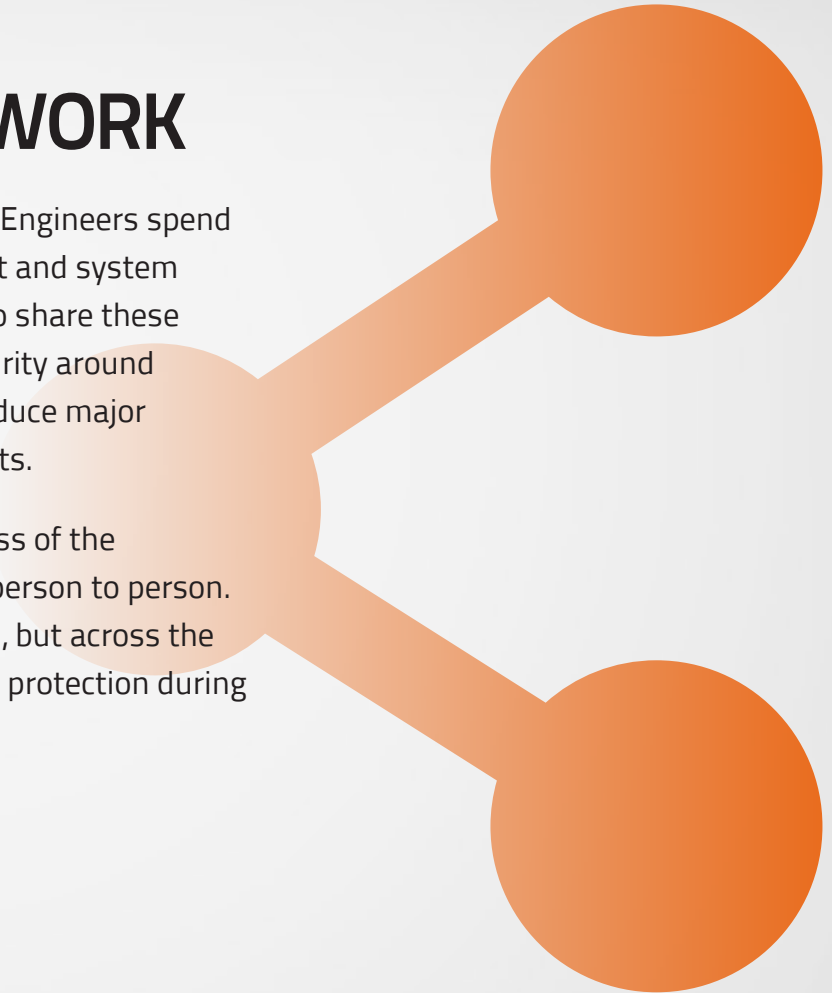
4 AVOID VENDOR LOCK-IN

As an open standard, with full transparency provided publicly, FMI is a technology that can significantly de-risk an organization's concerns around vendor lock-in. Large industrial companies continue to invest in front-loaded engineering, placing more and more emphasis (and budget) on virtual engineering, and software tools. A common concern is that engineering workflows and knowledge bases become dependent on 3rd party providers. As workflows and knowledge built around a specific tool grows, so does the 'switching cost' to change software platforms; by cost we mean the time and money it takes to retrain users, migrate data and adjust workflows. High switching costs can be enough to prevent organizations from deploying better tools that serve their present and future needs, and in the worst case can chain engineering organizations to increasingly outdated solutions.

By adopting FMI-based workflows, organizations can significantly reduce switching costs with the assurance that their FMI-based workflows will transfer seamlessly into a new tool.

QUESTIONS? WE CAN HELP.

Would you like to discuss how FMI can benefit your organization? Talk to an expert ! At Modelon, a global organization that specializes in systems simulation and modeling, we're dedicated to helping people understand and implement FMI at their respective organizations.

Get in touch with us today.

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