

MBSE meets Industrial IoT: Introducing the new MagicDraw Connex DDS Plug-in

Industrial IoT applications can be very challenging: they are highly distributed, deploying components across nodes spanning from small Devices to Edge computers to the Cloud. Moreover, they have strict requirements in terms of performance, robustness, and security. The OMG Data Distribution Service (DDS) is a middleware standard addressing publish-subscribe communications for real-time and embedded systems. With support for security and fine-grained Quality of Service (QoS), DDS is considered the core connectivity framework for Software Integration and Autonomy by the Industrial Internet Consortium. RTI Connex DDS is the leading implementation of the DDS standard, proven in thousands of critical deployments.

While the benefits of Model-Based Systems Engineering (MBSE) and SysML to tackle complexity are well established, until now it wasn't possible to harness this power to design larger and more complex Industrial IoT applications. This talk introduces a new **MagicDraw plug-in for RTI Connex** that provides a robust way to connect applications running across different computers, especially when the security and quality of service of individual data flows matter. Based on a new profile for SysML, the plug-in can generate the artifacts that configure the DDS databus (Topics, Data Types, QoS, etc.) and use the Connex SDK to generate the adapters to native code (e.g. C++ or Java).

As part of the talk, we'll overview the main features, and demonstrate how easy it is to go from a high-level design in MagicDraw, to fine-tuning QoS parameters in RTI System Designer, and finally to generate a deployable DDS configuration that can be executed, without any manual coding.