

TTPTMMatlink

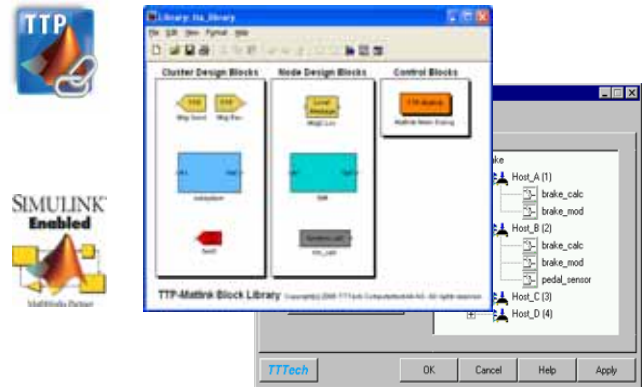
The TTP Simulation and Design Tool

TTPTMMatlink is a rapid prototyping platform for TTP applications. It handles all steps of the application development cycle, including analysis of algorithms, modeling, simulation, visualization and code generation. It improves the development process for TTP systems, shortening its duration and increasing its quality.

TTPTMMatlink provides seamless integration of TTTech's TTPTMTools software development suite with MATLAB[®], Simulink[®], Stateflow[®] and Real-Time Workshop[®] Embedded Coder from The MathWorks.

KEY FEATURES/BENEFITS

- Application design with Simulink and Stateflow
- Rapid prototyping and fast update cycles
- Full simulation of the TTP network
- Verification of the control software
- Code generation for control software
- Configuration generation for OS and middleware
- Faster development cycles



Design and Simulation of Distributed Systems

The TTPTMMatlink blockset facilitates the design and development of distributed real-time systems. The graphical user interface allows the user to intuitively map functionality onto the networks' nodes.

The ability to simulate a TTP system precisely enables designers to develop highly optimized control algorithms. Applications that are designed with MATLAB, Simulink, and Stateflow can be simulated as distributed systems. Sampling effects due to latencies introduced by the TTP bus can be simulated as accurately as effects of faults introduced by loss of sensors or whole nodes.

Data Exchange with TTPTMPlan and TTPTMBuild

TTPTMMatlink interacts with the TTPTMTools components TTPTMPlan and TTPTMBuild, the TTP network and node design tools from TTTech. The interaction with these tools results in the automatic generation of a complete fault-tolerant communication as well as the configuration of the TTPTMOS operating system.

The automatic code generation features of TTPTMMatlink support rapid prototyping and production code generation for distributed fault-tolerant real-time systems. Together with TTPTMBuild the Real-Time Workshop Embedded Coder configures the fault-tolerant communication layer TTPTMFT-COM for each of the nodes defined in the Simulink model. Moreover, these tools generate the functional code according to the simulation results.

Fully Automated Make Procedure

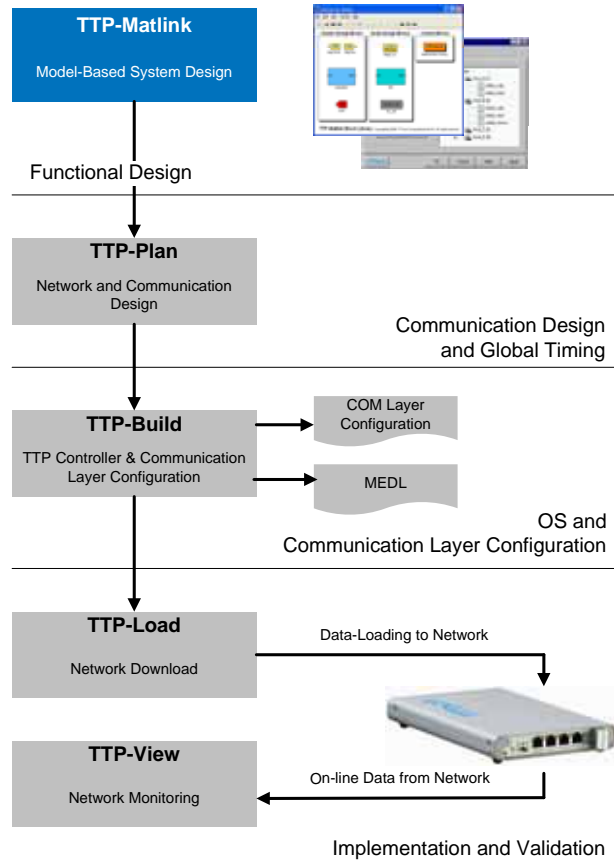
In a final step the C-code is compiled and linked automatically. This make procedure can be launched directly from the main dialog. The resulting machine code is then ready to be downloaded into the distributed system via ^{TTP}Load.

Functionality

- Simulink blockset for TTP communication
- Simulation of sampling effect of TTP schedule
- Modeling of message timing according to generated communication code
- Easy handling of subsystem replication
- Multiple views for better overview of distributed subsystems and nodes
- Simulation of message and subsystem loss
- Transparent data exchange with ^{TTP}Plan and ^{TTP}Build
- Automatic generation of configuration data (MEDLs – message descriptor lists)
- Automatic generation of fault-tolerant communication layer (^{TTP}FT-COM)
- Transparent integration of Real-Time Workshop Embedded Coder
- Code generation from multiple subsystems for distributed systems
- Fully automated generation of download images
- Support for austriamicrosystems AS8202NF TTP communication controller

System Requirements

- Standard PC with Windows XP; 1.5 GHz or above; 1 GB RAM
- ^{TTP}Plan (needed for TTP schedule generation and checking)
- ^{TTP}Build (required for ^{TTP}FT-COM code and operating system configuration)
- MATLAB/Simulink from The MathWorks.
- Real-Time Workshop Embedded Coder from The MathWorks
- Wind River Diab[®] C/C++ Compiler



Order Number

- S07.00.2: ^{TTP}Matlink
- M07.00.0: 1 year software maintenance service for ^{TTP}Matlink

Available Add-On:

- S18.09.1: I/O-Toolbox add-on for ^{TTP}Powernode MPC555
- M18.04.0: 1 year software maintenance service for I/O-Toolbox

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