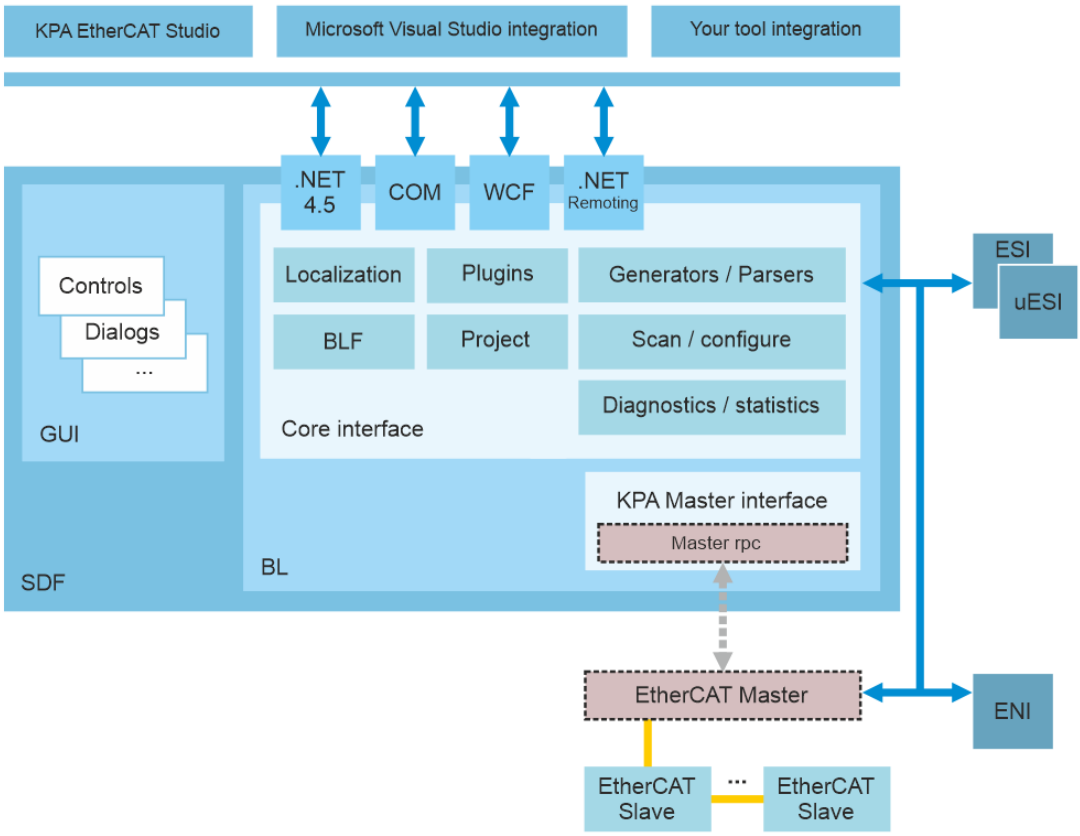
KPA EtherCAT Studio Development Framework

KPA EtherCAT Studio Development Framework (SDF) is a set of business logic and user interface components providing software developers possibility to build a custom EtherCAT configuration and diagnostic tool. KPA EtherCAT Studio is based on SDF and may be represented as an example of EtherCAT configuration tool.

SDF Architecture and integration



SDF provides front-end interfaces:

- .NET remoting to connect to running SDF instance remotely
- WCF
- COM, etc.

SDF has online connection to KPA EtherCAT Master as back end and supports all ETG specifications. SDF could be integrated into any IDE.

SDF components

SDF core interfaces and GUI components provide a full set of objects for custom EtherCAT configuration tool using BLF procedure (brand labeling).

User interface (UI)

- Dialogs
- Controls

Automation interface/business objects (BL)

- core interfaces representing EtherCAT object model:
  - project, security
  - master, slave, process image, etc.
  - slave library
  - online interface to master over remote procedure calls (RPC)
- features:
  - plug-ins configuring specific devices:
    CAN Interface, CANopen Master/Slave (EL6751), M2M, MDP Modules, Profibus slave, Virtual Serial COM, IO-Link, Profibus Master Gateway Profile 3100
  - tools:
    Data Logger, EEPROM Editor, ESI and EEPROM Comparator, Frame Logger, Motion Configuration Utility, Process Image Viewer, Runtime Data Logger, S2S Communication Editor, Snapshot Viewer, Topology Viewer
- customizations:
  - localizations
  - brand labeling

SDF is already localized to several languages and can be localized to any language through localization procedure.
Any brand could be applied to labeling.
SDF functionality can be extended by writing custom tools and plug-ins.

Features description

Plugins configuring specific devices

- EL6751:
  - CANopen Master plugin allows the user to adapt CANopen Master configuration got by scanning CAN bus.
  - CAN Interface plugin is intended to configure device in CAN Interface (raw CAN) mode to be used with/without CAN DBC driver on Master side. Data exchange through the driver can be done either through the specified signals (adding messages from a DBC file) or by sending/receiving unspecified messages via driver's queue.
- EL6692/EL6695:
  - M2M plugin - is intended to configure the both sides of the EtherCAT bridge terminal (Primary and Secondary).
- Modular devices:
  - MDP Modules is intended to configure Slave supporting Modular Device Profile with modules specified in its ESI file.
- EL6731-0010:
  - Profibus Slave plugin - is intended to configure device for communication between EtherCAT and PROFIBUS.

- EL600x/EL602x/EP6002/EP6002-0002:
  - koenig-pa offers an easy way of data exchange with devices with serial interface (RS232/RS422/RS485).
    KPA EtherCAT Master supports Virtual COM communication. It allows you to communicate with the serial device (connected via Serial to EtherCAT gateway device) from your Windows application via Virtual COM port. Master transmits data got from the serial terminal or the Virtual COM device to the recipient.
    To set such communication KPA EtherCAT Master requires the KPA Virtual COM driver being installed in the Windows and the corresponding feature must present in Master's license. KPA Virtual COM driver is provided as a separate module and can be installed independently of Master. It is not required additional configuring with COM settings (baud rate, data bits, parity etc.).
- EL622x/EP622x/EJ622x
  - Support for IO-Link protocol devices allows to enhance flexibility in managing and automating industrial devices using the IO-Link protocol. IO-Link device can be easily configured directly within the plugin. A built-in expandable library of supported IO-Link devices grants quick and easy integration.
- EL6731
  - MDP plugin for Profibus Master Gateway Profile 3100 is intended to configure a slave supporting Profibus Master (3100) profile.

Data Logger

The tool manages the data logging on the Master side.

EEPROM Editor

The tool allows to read EEPROM, to generate ESI from a binary file or directly from the Slave, view it by bits or in Hex Editor, to navigate through the EEPROM using quick access to certain parameter, to edit it. Besides working with read data, the user may create new EEPROM categories and add new data. Modified EEPROM can be saved to a binary file, ESI or directly to the Slave.

ESI and EEPROM Comparator

The tool enables comparison of EEPROM content acquired directly from a Slave device or provided in a binary file against the content of a file either assigned to the Salve or chosen by a user. Differences are highlighted with customizable colors; properties values are displayed.

Frame logger

The tool is the visualizator of time information on EtherCAT packets: duration of packet assembling, time of received frame parsing, time of setting frame to queue for sending, etc.

Motion Configuration Utility

Motion Configuration Utility is intended to configure motion trajectory and generates an INI file with corresponding settings.

Process Image Viewer

The tool shows allocation of inputs and outputs in memory. Using this tab you can see location, type,

length and offset size of a Signal (including alignment signals).

Runtime Data Logger

The tool manages the data logging on the Master side. The KPA EtherCAT Studio retrieves the stored data and enables building of charts for signals picked from a defined set.

S2S Communication Editor

The tool allows to map input process data of one device to output process data another device without wiring (via the Master). Copying of the data is handled by the Master stack.

Snapshot Viewer

Signal values are gathered during operation and stored to make a snapshot. The viewer then displays the snapshot. Taking snapshots reduces overall load on the system in order not to affect hard real-time performance.

Topology Viewer

Displays Network and Master configurations simultaneously. The tool displays Slaves' state. If there is a problem with Slave(s) in configuration, it also will be marked by a corresponding icon and the problems will be displayed in the Slave tooltip.

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