Features & Improvements
CODESYS V3.5 SP11
Agenda

1. Runtime
2. Runtime embedded
3. Engineering
4. Application
5. Visualization
6. Motion+CNC
7. Fieldbus
8. Discontinuations
Overview

- CODESYS 64 bit
- Security
  - X.509 Certificate Management
  - OPC UA Server
- Multi-core support [beta]
- CODESYS Control Win
- General improvements
CODESYS 64 bit

Part of CODESYS Development System 64 bit setup:

- CODESYS Control Win 64 bit
  - Parallel installation to 32 bit runtime possible
  - Running as single runtime process
- CODESYS Gateway 64 bit (server and client)
- CODESYS simulation 64 bit
Security

- X.509 certificate management
  - Functional release with V3.5 SP10
  - New: Online interface for communication between runtime and development system
- OPC UA Server
  - Encryption of OPC UA communication based on X.509 certificates
  - OPC standard compliant (OPC test tool not yet available)
Multi-core support [beta]

- Support of multi-core processors for CODESYS Runtime
- Beta release available on selected standard platforms
  - Activation via target setting
  - Delivery available on demand
- Main release planned for V3.5 SP12
CODESYS Control Win

- Separation of installation and working directory

- Before:
  - Installation directory writable for all users

- Now:
  - Change of installation data only by administrators

- Installation directory
  C:\Program Files (x86)\3S CODESYS v3.5.11.0\GatewayPLC\n
- Working directory
  C:\ProgramData\CODESYS\CODESYSControlWinV3\xxxxxxx\
General improvements

- Memory management
  - Infrastructure for definite handles at runtime
  - Generic hash table for runtime system
  - Performance improvements for garbage collector
    - Significant for „heap“ components like OPC UA stack

- PLC shell commands
  - Commands for read/write of real-time clock

- Runtime documentation
  - Code generator target settings: Sorting by plug-ins
Overview

- POU Location editor
- „SL“ control products
  - *New* CODESYS Control for IOT2000 SL
  - *New* CODESYS Control for PFC100 SL
  - CODESYS Control for Raspberry Pi SL
- Runtime update tool
POU Location editor

- Support of multiple code areas (flash areas)
  - New application object „POU Locations“
- Display of current language model location
- Shift of POUs/libraries to new code areas
“SL“ Control Products

- New control products
  - CODESYS Control for IOT2000 SL
  - CODESYS Control for PFC100 SL

- CODESYS Control for Raspberry Pi SL
  - Support of Compute Model

Sales via CODESYS Store
**Runtime update tool**

- General update tool for all Linux SL controls
  - New views and commands
  - Scan dialog
  - System information view
Overview

- CODESYS 64 bit
- Web-based online help
- Notification center
- Data breakpoints
- General improvements
CODESYS 64 bit

- 64 bit version of CODESYS Development System
  - Total usage of free random access memory
  - Time performance equal to 32 bit version

- Add-on compatibility
  - Unified add-on packages for installation on 32 bit and 64 bit CODESYS versions
Web-based online help

- Access to CODESYS online help via browser
- Usage of HTML technologies
  - Improved search functionality
  - Direct change of languages or CODESYS versions
- Existing online help available as offline fallback or permanent option
Notification Center

- Information channel for important CODESYS messages like
  - security issues
  - release information
- No marketing channel
Data breakpoints

- Breakpoints on value change
- Support for x86/Windows
  - CODESYS Control Win (32/64 bit)
  - CODESYS simulation
General improvements

- **Ladder**
  - Multi-select support
  - Usage of boxes in OR branches

- **CFC**
  - Forcing of function block inputs

- **Improvements in symbol configuration**
  - New flag „execute“
  - Support of subrange types
  - Data build from precompile information

- **Cross Reference View**
  - Improved filtering by name or declaration
Overview

- Application libraries
  - PLCopen Behaviour Model Library
  - Collection Library

- General improvements
  - CODESYS Application Composer
  - CODESYS Depictor
Application Libraries

- **New library: Common Behaviour Model**
  - Library for creation of PLCopen-compliant function blocks
  - Release of specification by PLCopen: [Link](#)

- **New library: Element Collections**
  - Library for simplified object management
    - List
    - SortedList
    - Queue
    - Stack
    - Hashtables
    - LinkedList
    - TreeNode
General improvements

- CODESYS Application Composer
  - Support of trend element
  - Persistence manager: generation of file instead of initialization code

- CODESYS Depictor
  - Material for objects
  - Demo mode
  - Alarm color (controlled by Boolean)
  - Denavit-Hartenberg support for pose definition
  - STL support (3D data format)
  - PLY support (3D data format)
Overview

- Touch control
- Trace element
- File transfer
- HMI SL
- General improvements
Touch control

- Scrolling support for visualization elements
  - Frame
  - Tab control
  - Table
  - Combo box

- Support of momentum scrolling
Trace element

- Free variable distribution on multiple diagrams
  - Multiple diagrams with common time base
  - Multiple variables per diagram
File transfer

- Transfer of files between PLC and visualization
- Support for remote TargetVisu and WebVisu
- Transfer of streaming data (from application)
- New input element
- New function in VisuUtils
HMI SL

- Automatic renaming of mapped variables in arrays
- MapToExisting/CreateToExisting
  - Automatic change of variable types for sub types
- Offline browsing of symbol data (V2 and V3)
- Display of external traces
General improvements

- Dialogs
  - Performance improvements for open dialogs
  - Scaling option
  - Opening of dialogs via IEC code (with VisuUtils library)
- Offline rotation of elements
Overview

- Robotics
  - New function blocks
  - Improvements
- SoftMotion CNC
Robotics

- New function blocks
  - MC_GroupInterrupt/MC_GroupContinue
  - MC_GroupSetOverride
  - MC_GroupSetPosition

- Improvements
  - New jogging mode (similar to CP orientation interpolation mode "Axis")
  - Performance improvement of low priority planning task
SoftMotion CNC

- SoftMotion
  - Limit switch supervision by master

- CNC
  - Offline support for SMC_SmoothMerge
  - AP interface for translation of own G-code dialects
Overview

- General improvements
- CANopen
- EtherCAT
- EtherNet/IP
- Modbus
- PROFINET
General improvements

- Search, find and replace support for device configuration
- Search and filter option in device repository dialog
- Reduced initialization code size for task mapping lists
- Improved I/O configuration (when initial value of declaration and default value of configuration are different)
CANopen

- CANopen Configurator
  - Improved update behavior
  - Evaluation of access rights for objects
  - Reduced code size of SDO list

- CANopen Safety Slave Configurator
EtherCAT

- Change of modular device profile
  - I/O channels of modular devices (MDPs) located at modules
  - Connection of logical devices as modules ⇒ safety support for MDP devices

- I/O driver
  - AL status codes as text outputs
  - Parallel usage of EtherCAT and PROFINET
  - Elimination of possible priority inversion ⇒ new device description and library needed
EtherNet/IP

- Support of device scanning
- Performance improvements
  - EtherNet/IP Configurator: insertion of devices in device tree
  - EtherNet/IP Scanner & Adapter: copy of I/O data
- EtherNet/IP Scanner (CIFX): rework of acyclic services
Modbus

- Modbus Serial Master
  - Support of ASCII mode

- Modbus RTU Device
  - Adaptation of Modbus TCP features
  - Support of bit access functions
  - Data checks
PROFINET

- Parallel usage of multiple PROFINET controllers or devices
- Support of reconfiguration at runtime
- PROFINET controller
  - Function blocks for scan, read and write of device parameters
  - Function blocks for read and write of identification and maintenance data
- PROFINET/IO-Link
  - Function block for simplified usage of I/O-Link devices
- Diagnostics
  - Function block for analyzing diagnostics data
- Documentation
  - Extended CommFB documentation and end user documentation for ProfinetCommon library
Discontinuations

Overview

- **AS-i Support**
  - End of sales, care, integration and support (discontinuation - finished)

- **Support of Windows XP and Windows Vista for**
  - CODESYS Automation Platform SDK / CODESYS Development System
  - CODESYS OPC Server
  - CODESYS Gateway
  - CODESYS HMI
  - CODESYS Control Win
  - CODESYS RTE / CODESYS SoftMotion RTE
  - CODESYS RTE / CODESYS SoftMotion RTE (for Beckhoff CX)
  - End of support (discontinuation - finished)
Thank you for your attention.

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