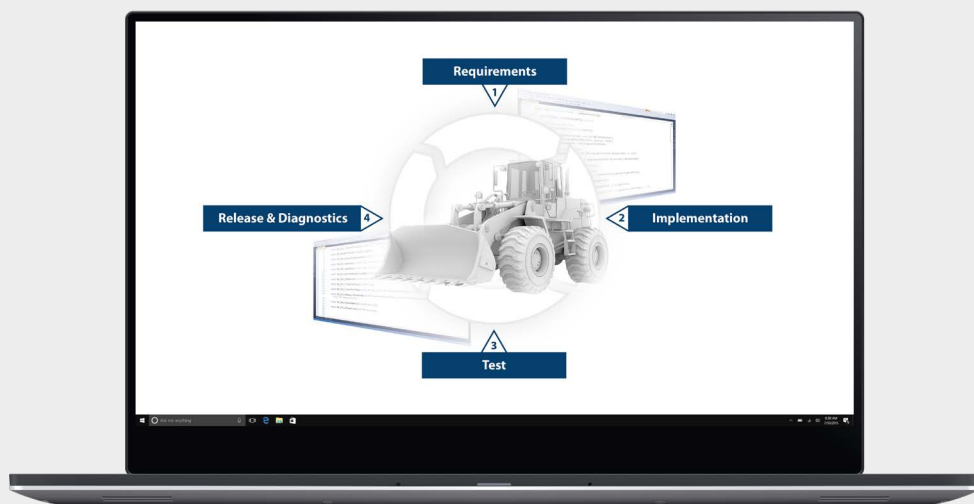
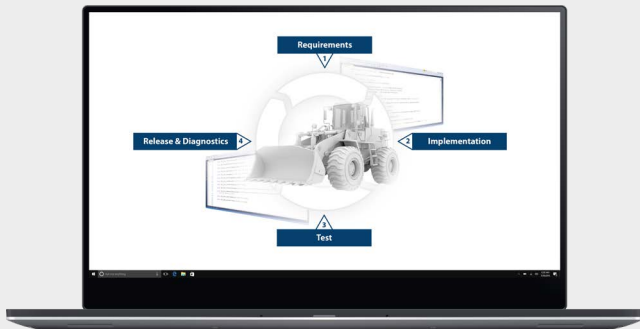


CLCM 2.0

Communication Life Cycle Manager 2.0





Communication Lifecycle Manager 2.0

Key Features



Web-based tool



Management of all fieldbus-based data from specification to release



Development, mapping and maintenance of the communication interfaces of ECUs



Description of the entire data flow between ECUs and in the ECU itself



Simple linking with the Sontheim MDT®



ODX 2.2.0 Support

The Communication Lifecycle Manager 2.0

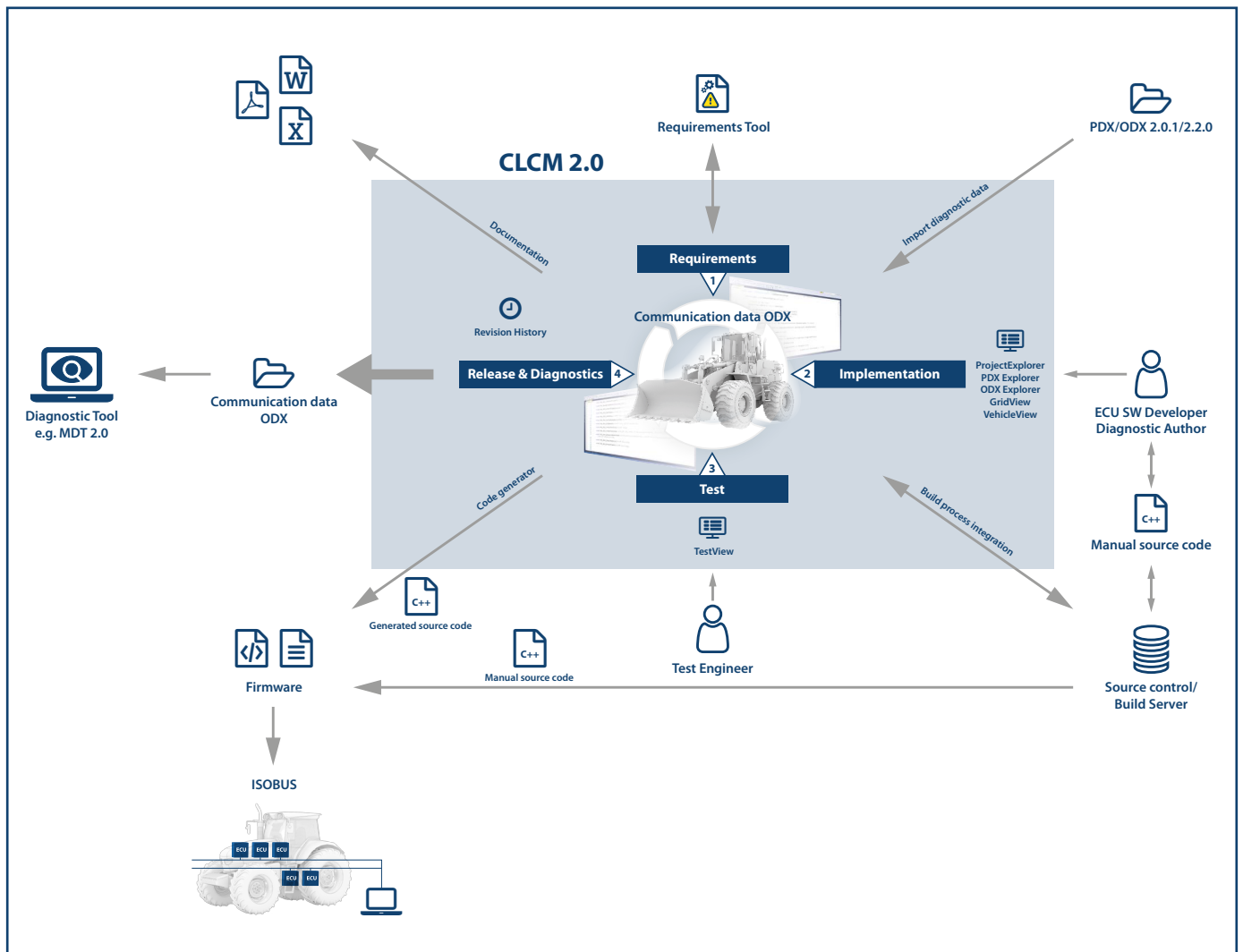
The CLCM 2.0 of the Sontheim Industrie Elektronik GmbH is a centralized system for managing and authoring the diagnostic and communication description of ECUs and complete vehicles. It is a client-server-based web application that allows several users to work collaboratively on the same project. There is no client installation necessary and the server can be accessed from different platforms via browser.

The CLCM 2.0 can be integrated in the existing infrastructure and development workflow. It is intended to accompany the whole development process of ECUs or vehicle:

All advantages at a glance:

- Beginning with a high-level overall vehicle structure during the requirements phase
- More refined specification of the ECUs during implementation phase
- Validation of the described network during testing phase
- Provision of generated source code, documentation and diagnostic description after the release

System Overview

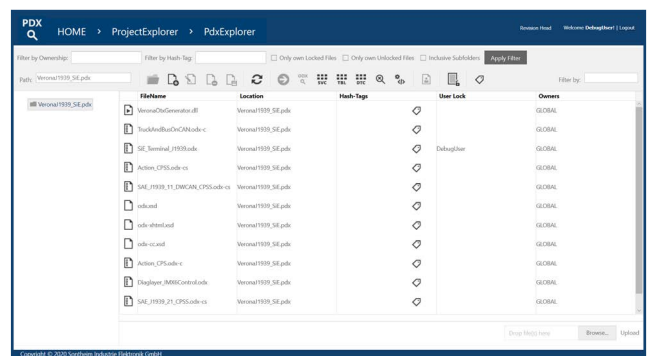
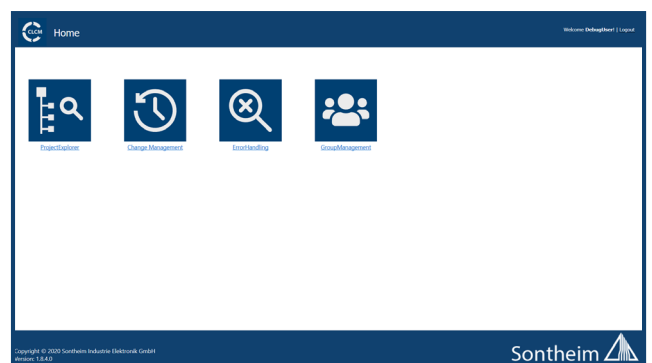


Diagnostic and communication description

The diagnostic interface of the ECUs is defined in ODX 2.2.0 format. In addition, a description of the communication between ECUs within the vehicle network can be added. The described diagnostic data serve as the base data for source code and documentation generation.

The data is stored in a database server that allows management of large diagnostic projects. Existing legacy data or vendor supplied data can be imported. The database keeps a change history that allows to export and view previous (= older) states.

CLCM 2.0 is independent of the protocol and communication system which is used to describe the diagnostics and communication data. Thus, various technologies are supported, including: CAN, K-Line, Ethernet, EtherCAT, J1939, KWP2000onCAN, UDS, CANOpen, UDP, TCP/IP etc.



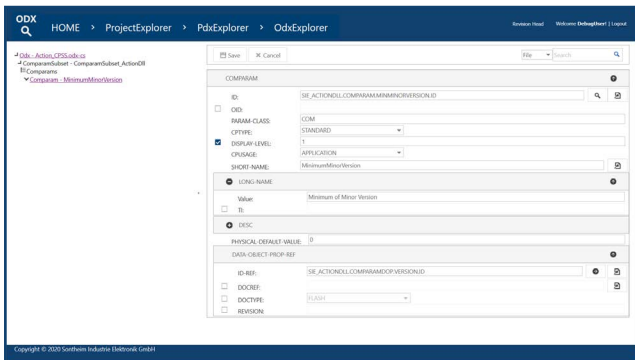
Editing Views

ODX Explorer

The CLCM 2.0 features an ODX Explorer that allows the navigation through the hierarchical structure of an ODX file and provides form-based editors for the elements.

For example, this view allows users with advanced ODX knowledge to define the overall structure of an ODX file and also to make specific changes to certain elements.

The view provides usability features like reference handling, search and copy&paste.

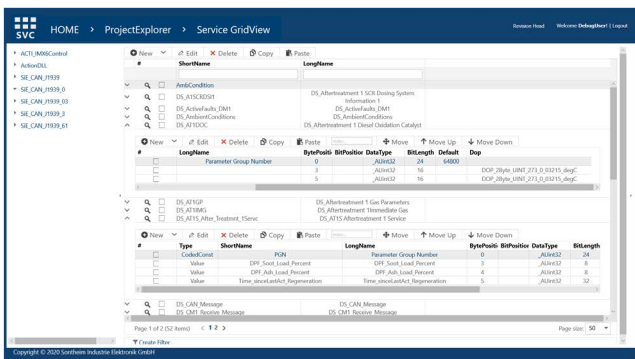


Grid View

The CLCM 2.0 features a Grid View that allows a generic and protocol specific representation of commonly used data structures, e.g.: DIAG-SERVICES, TABLES, DTCS and ENV-DATAS.

For example, this view allows an ECU developer to define multiple diagnostic services that have the same fundamental structure and only have different identifiers and payload data. The underlying complex ODX structures are hidden and displayed in a simplified way to only show the relevant information necessary to accomplish this task.

The Grid View has wide-scaled customization possibilities to incorporate company specific guidelines for the diagnostic description.



Vehicle View

The CLCM 2.0 features a Vehicle View for the high-level management of different vehicle types of a company. For each vehicle model the bus and the connected ECUs can be represented to give an overview of communication within the vehicle network.

It allows the assignment of software packages and the released software version for the ECUs.



Test View

The CLCM 2.0 features a Test View that allows to verify the defined diagnostic services against the actual ECU or simulation. Services are configured and executed using MDT® 2.0. It is a D-PDU API based runtime system. The connection with the ECU is realized either with:

- A locally connected VCI via USB (e.g. SiE MT-API) or
- An ethernet based VCI via LAN/WLAN (e.g. using J2534)

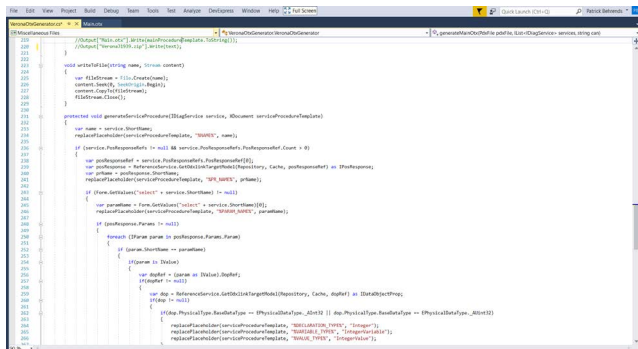
Code Generator

The CLCM 2.0 features a customizable code generation mechanism that can be used to create source code and documentation that is based on the diagnostic data. The output is fully customizable and can be used by different platforms and programming languages. This allows the integration in existing software modules and libraries.

Possible uses cases are:

- Source code for ECU software, diagnostic application and testing environments
- Documentation for development, production and service department

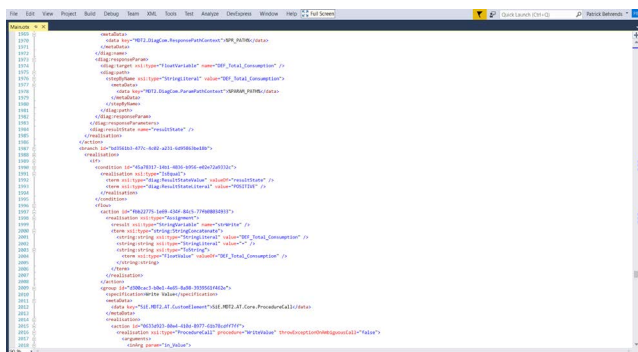
The code generation mechanism can be integrated in the customer specific build infrastructure.



```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using Microsoft.CodeAnalysis;
using Microsoft.CodeAnalysis.CSharp;
using Microsoft.CodeAnalysis.CSharp.Syntax;
using Microsoft.CodeAnalysis.Text;

namespace CLCM20CodeGenerator
{
    class Program
    {
        static void Main(string[] args)
        {
            // ... (code for reading arguments and processing) ...
        }
    }
}
```

Script



```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using Microsoft.CodeAnalysis;
using Microsoft.CodeAnalysis.CSharp;
using Microsoft.CodeAnalysis.CSharp.Syntax;
using Microsoft.CodeAnalysis.Text;

namespace CLCM20CodeGenerator
{
    class Program
    {
        static void Main(string[] args)
        {
            // ... (generated code) ...
        }
    }
}
```

Source code

Extension API

The CLCM 2.0 features an Extension API that allows to modify the default views and also allows the creation of new customer specific views. Extensions are written in a .NET programming language (e.g. C#) and have access to the complete diagnostic data of the projects.

User Management

- Access to data and files can be restricted for specific user groups and individual users
- Features can be enabled/disabled for specific user groups and individual users
- Supports authentication via Active Directory

Technical Data

Server Requirements (Minimum)	Windows Server 2016; IIS 10.0; SQL Server 2016; CPU: 4 Cores; RAM: 6 GB; Storage: 75 GB
Client Requirements (Minimum)	Web Browser (Chrome, Firefox, Edge)

Order information

V940830100	CLC Manager 2.0
C940830100	CLC Manager 2.0 Software Maintenance



Mobile Automation



Industrial Automation



Diagnostics



Connectivity

We are looking forward to your enquiry!

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