Document Title	Technical Report on AUTOSAR Features
Document Owner	AUTOSAR
Document Responsibility	AUTOSAR
Document Identification No	1104

Document Status	published
Part of AUTOSAR Standard	Foundation
Part of Standard Release	R25-11

Document Change History			
Date	**Release**	**Changed by**	**Description**
2025-11-27	R25-11	AUTOSAR Release Management	• Abbreviations and acronyms table updated with new entries/macros • Further maintenace of features • Removal, adding, adaptions of features
2024-11-27	R24-11	AUTOSAR Release Management	• Initial release

Disclaimer

Table of Contents

1 Introduction

This technical report provides information about the Features of the AUTOSAR Standard. An AUTOSAR Feature is a characteristic of the AUTOSAR Standard to satisfy a user objective. This document represents infomation of the AUTOSAR Features and its Branches of each Feature, presented in a graph (AUTOSAR Feature Graph or in short: Feature Graph) similar to a tree. The Feature Graph release in R24-11 is preliminary and will be developed further in the upcoming release

1.1 Objectives

As a goal, the sum of all AUTOSAR Features shall cover the whole AUTOSAR Standard. That means vice versa, everything in the AUTOSAR Standard shall be covered by an AUTOSAR Feature.

1.2 Scope

The AUTOSAR Features cover a wide range of functionalities, from hardware abstraction and communication to safety, security, and system diagnostics, ensuring that automotive software is interoperable, reliable and future-proof.

1.3 Motivation (UseCase)

In terms of use cases this means for example:

- As a user of the AUTOSAR Standard, I want to select a consistent subset of AUTOSAR documents based on short and expressive terms.
- As an AUTOSAR developer (doc-owner), I want to analyze dependencies to other documents, and I also want to describe dependencies of my own document to other documents.
- As a product manager, I want to discuss and plan implementations based on standardized Features.
- As a concept owner, I want to identify the integrated Features and the respective documents in the Standard.

Example for Feature Branch:

Communication >Network Technology >CAN >(CAN 2.0 , CAN FD, CAN XL)

as a recommended pattern: If the user decide to select CAN, they automatically would get the Standard documents for CAN 2.0 and CAN FD. Optionally they can select the CAN XL which automatically selects Ethernet. Considering the resource consumption

of the CAN XL-Feature and resulting additional costs of a product it makes sense to decide, if the CAN XL-Feature is required or not. Hardware extensions must be foreseen as well. It does not make sense to select that Feature for a single ECU. Also, the respective communication partners should have selected that Feature as well.

It is helpful for a user to select this function under a single term and not to select several SWS elements, which always carries a high risk of forgetting or overlooking something.

2 Definition of acronyms and abbreviations

2.1 Acronyms and abbreviations

The table below contains all acronyms, abbreviations or initialisms that are component-specific and not available in the AUTOSAR glossary [1].

Acronym/ Abbreviation	Description
A	
ADAS	Advanced Driving Assistance Systems
AIF	Application InterFace
B	
BASE-T	Ethernet standard for local area networks with twisted pair cabling
C	
CAN FD	Controller Area Network Flexible Data-Rate
CAN NM	Controller Area Network Network Management
CAN TP	Controller Area Network Transport Protocol
CAN XL	Controller Area Network longer data frames and higher data rates
CXPI	Clock Extension Peripheral Interface
E	
ETH	Ethernet
G	
GPIO	General Purpose Input/Output
H	
HW Support IO	Hardware Support Input Output
I	
I2C	Inter-Integrated Circuit
IDS	Intrusion Detection System
IOC	Inter-Operating System Communication
IP v4	Internet Protocol version 4
IP v6	Internet Protocol version 6
IPDU	Interaction Layer Protocol Data Unit
IPSec	Internet Protocol Security
M	
MACsec	Media Access Control Security
N	
NDP	Neighbor Discovery Protocol
O	
OBDII	On-Board Diagnostics II
S	
SCREIAM	Service Communication Registration, Interaction, and Application Management
SecOC	Secure Onboard Communication
V	
VMCI	Vehicle Motion Control Interface
VSS	Vehicle Signal Specification
W	

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Acronym/ Abbreviation	Description
WETH	Wake-Up-Ethernet

Table 2.1: Acronyms and Abbreviations

The table below contains all document-independant acronyms or abbreviations that are defined in the AUTOSAR glossary [1].

Acronym/ Abbreviation	Description
ADC	See [1]
AP	See [1]
API	See [1]
ARP	See [1]
ARTI	See [1]
ASAM	See [1]
AUTOSAR	See [1]
CAN	See [1]
CP	See [1]
CRC	See [1]
DDS	See [1]
DHCP	See [1]
DIO	See [1]
DTC	See [1]
DoIP	See [1]
E2E	See [1]
ECU	See [1]
EEPROM	See [1]
FO	See [1]
GPT	See [1]
HMI	See [1]
ICMP	See [1]
IO	See [1]
IP	See [1]
ISO	See [1]
LIN	See [1]
MCAL	See [1]
MCU	See [1]

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Acronym/ Abbreviation	Description
MMU	See [1]
MPU	See [1]
Media	See [1]
NM	See [1]
NVRAM	See [1]
NvM	See [1]
OBD	See [1]
OS	See [1]
PDU	See [1]
RAM	See [1]
SAE	See [1]
SDV	See [1]
SOME/IP	See [1]
SOVD	See [1]
SPI	See [1]
TCP	See [1]
TIMEX	See [1]
TLS	See [1]
TP	See [1]
TSN	See [1]
UDP	See [1]
UDS	See [1]
USB	See [1]
V2X	See [1]
VISS	See [1]
XCP	See [1]

Table 2.2: Acronyms and Abbreviations used from AUTOSAR Glossary

3 Related Documentation

[1] Glossary
AUTOSAR_FO_TR_Glossary

[2] AUTOSAR Feature Model
AUTOSAR_FO_MOD_Features

[3] AUTOSAR Feature Model Exchange Format
AUTOSAR_FO_TPS_FeatureModelExchangeFormat

4 Features

This chapter descibes the AUTOSAR Features and its Branches, presented in a Feature Graph. The complete Feature Graph is published separately in the Feature Model documentation [2]. The Feature Graph complies to the AUTOSAR Feature Model Exchange Format [3].

To read the figures in this document properly, please see the legend below:

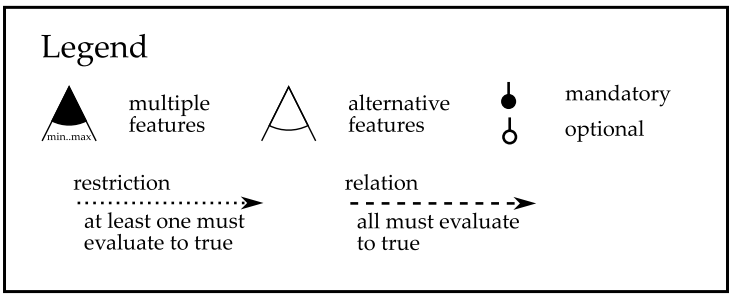

Figure 4.1: Legend for Feature Graph figures

The following chapters present the AUTOSAR Features level by level, starting with root level 1. The Features are ordered alphabetically. Each Feature begins with its name, a graphical representation of its children, followed by a table of the Feature's attributes.

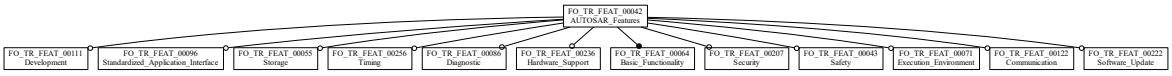

Figure 4.2: AR_Features

4.1 Level 1

4.1.1 [FO_TR_FEAT_00064] Basic_Functionality

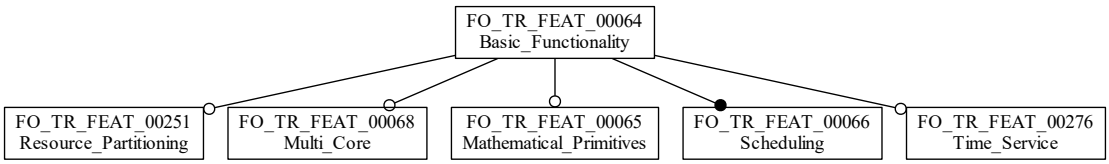

Figure 4.3: Feature FO_TR_FEAT_00064

Short Name:	FO_TR_FEAT_00064
Long Name:	Basic_Functionality
Obligation:	Mandatory
Description:	The Basic Functionality represents the essential services and capabilities as a foundation for developing and operating automotive software applications.
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00065] Mathematical_Primitives • [FO_TR_FEAT_00066] Scheduling • [FO_TR_FEAT_00068] Multi_Core • [FO_TR_FEAT_00276] Time_Service • [FO_TR_FEAT_00251] Resource_Partitioning

Table 4.1: Details FO_TR_FEAT_00064

4.1.2 [FO_TR_FEAT_00122] Communication

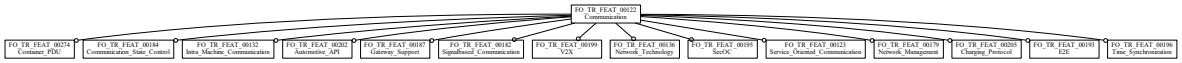

Figure 4.4: Feature FO_TR_FEAT_00122

Short Name:	FO_TR_FEAT_00122
Long Name:	Communication
Obligation:	Optional
Description:	This Feature describes mechanisms and protocols that enable data exchange between different software components, Electronic Control Units (ECUs), and external systems within an automotive environment.
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00123] Service_Oriented_Communication • [FO_TR_FEAT_00132] Intra_Machine_Communication • [FO_TR_FEAT_00136] Network_Technology • [FO_TR_FEAT_00179] Network_Management • [FO_TR_FEAT_00182] Signalbased_Communication • [FO_TR_FEAT_00184] Communication_State_Control • [FO_TR_FEAT_00274] Container_PDU • [FO_TR_FEAT_00187] Gateway_Support • [FO_TR_FEAT_00193] E2E • [FO_TR_FEAT_00195] SecOC • [FO_TR_FEAT_00196] Time_Synchronization • [FO_TR_FEAT_00199] V2X • [FO_TR_FEAT_00202] Automotive_API • [FO_TR_FEAT_00205] Charging_Protocol

Table 4.2: Details FO_TR_FEAT_00122

4.1.3 [FO_TR_FEAT_00111] Development

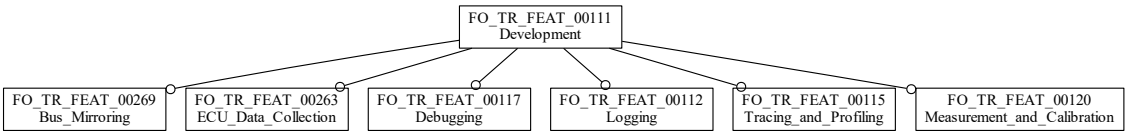

Figure 4.5: Feature FO_TR_FEAT_00111

Short Name:	FO_TR_FEAT_00111
Long Name:	Development
Obligation:	Optional
Description:	This Feature facilitates and enhances the software development process for automotive systems.
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00112] Logging • [FO_TR_FEAT_00115] Tracing_and_Profiling • [FO_TR_FEAT_00117] Debugging • [FO_TR_FEAT_00120] Measurement_and_Calibration • [FO_TR_FEAT_00269] Bus_Mirroring • [FO_TR_FEAT_00263] ECU_Data_Collection

Table 4.3: Details FO_TR_FEAT_00111

4.1.4 [FO_TR_FEAT_00086] Diagnostic

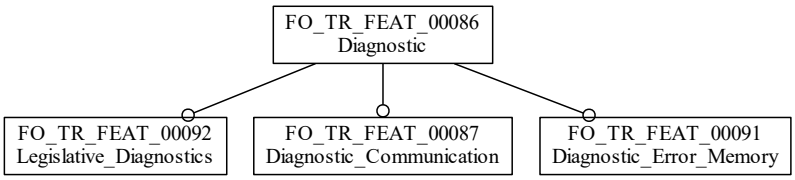

Figure 4.6: Feature FO_TR_FEAT_00086

Short Name:	FO_TR_FEAT_00086
Long Name:	Diagnostic
Obligation:	Optional
Description:	This Feature ensures that diagnostic information is consistently represented,that it allows for effective maintenance and troubleshooting, and that it complies with legislative requirements.
Applies to:	AP, CP

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Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00087] Diagnostic_Communication • [FO_TR_FEAT_00091] Diagnostic_Error_Memory • [FO_TR_FEAT_00092] Legislative_Diagnostics

Table 4.4: Details FO_TR_FEAT_00086

4.1.5 [FO_TR_FEAT_00071] Execution_Environment

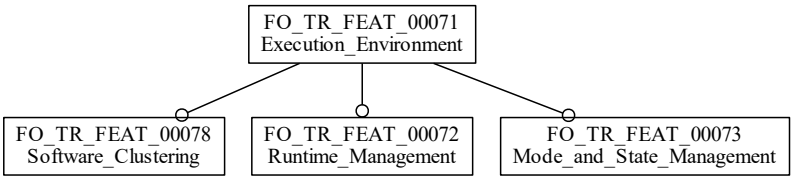

Figure 4.7: Feature FO_TR_FEAT_00071

Short Name:	FO_TR_FEAT_00071
Long Name:	Execution_Environment
Obligation:	Optional
Description:	The Execution Environment describes the underlying infrastructure and support mechanisms that enable the execution of automotive software components on Electronic Control Units (ECUs).
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00072] Runtime_Management • [FO_TR_FEAT_00073] Mode_and_State_Management • [FO_TR_FEAT_00078] Software_Clustering

Table 4.5: Details FO_TR_FEAT_00071

4.1.6 [FO_TR_FEAT_00236] Hardware_Support

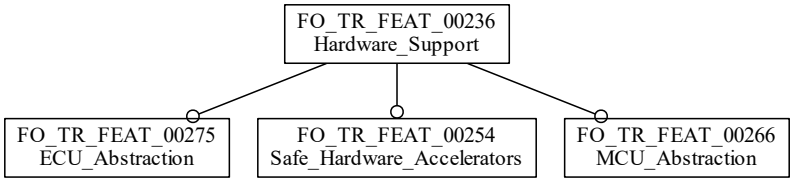

Figure 4.8: Feature FO_TR_FEAT_00236

Short Name:	FO_TR_FEAT_00236
Long Name:	Hardware_Support
Obligation:	Optional
Description:	The Hardware Support in AUTOSAR refers to the Feature that facilitates interaction between the software applications and the vehicle's hardware components.
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00254] Safe_Hardware_Accelerators • [FO_TR_FEAT_00266] MCU_Abstraction • [FO_TR_FEAT_00275] ECU_Abstraction

Table 4.6: Details FO_TR_FEAT_00236

4.1.7 [FO_TR_FEAT_00043] Safety

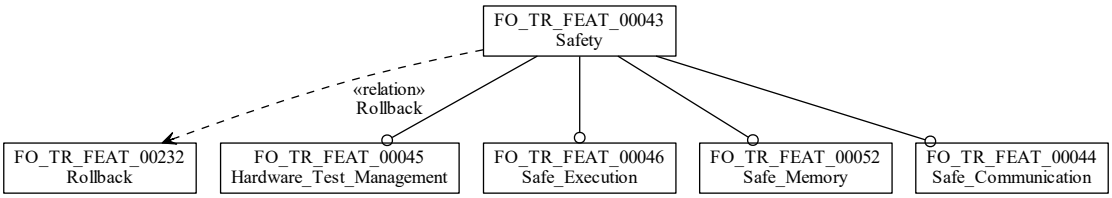

Figure 4.9: Feature FO_TR_FEAT_00043

Short Name:	FO_TR_FEAT_00043
Long Name:	Safety
Obligation:	Optional
Description:	Safety according to ISO26262. The underlying structure follows ISO26262-6:2018.
Applies to:	FO
Relations:	[FO_TR_FEAT_00232] Rollback
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00044] Safe_Communication • [FO_TR_FEAT_00045] Hardware_Test_Management • [FO_TR_FEAT_00046] Safe_Execution • [FO_TR_FEAT_00052] Safe_Memory

Table 4.7: Details FO_TR_FEAT_00043

4.1.8 [FO_TR_FEAT_00207] Security

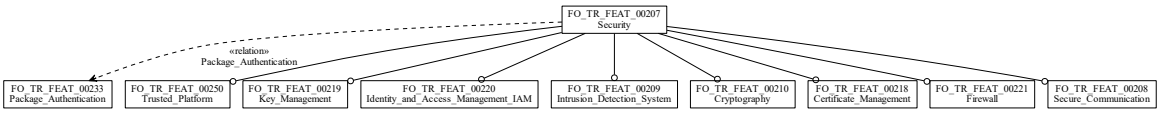

Figure 4.10: Feature FO_TR_FEAT_00207

Short Name:	FO_TR_FEAT_00207
Long Name:	Security
Obligation:	Optional
Description:	The Security Feature encompasses various mechanisms and protocols designed to protect the ECU's sensible resources (e.g. cryptographic keys), the vehicle's network and its communication from unauthorized access.
Relations:	[FO_TR_FEAT_00233] Package_Authentication
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00208] Secure_Communication • [FO_TR_FEAT_00209] Intrusion_Detection_System • [FO_TR_FEAT_00210] Cryptography • [FO_TR_FEAT_00218] Certificate_Management • [FO_TR_FEAT_00219] Key_Management • [FO_TR_FEAT_00220] Identity_and_Access_Management_IAM • [FO_TR_FEAT_00221] Firewall • [FO_TR_FEAT_00250] Trusted_Platform

Table 4.8: Details FO_TR_FEAT_00207

4.1.9 [FO_TR_FEAT_00222] Software_Update

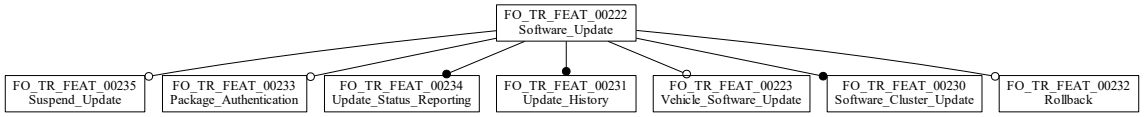

Figure 4.11: Feature FO_TR_FEAT_00222

Short Name:	FO_TR_FEAT_00222
Long Name:	Software_Update
Obligation:	Optional
Description:	The Software Update in AUTOSAR ensures that vehicle software remains up-to-date and functional through a managed process of updates
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features

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Sub Features:	• [FO_TR_FEAT_00223] Vehicle_Software_Update • [FO_TR_FEAT_00230] Software_Cluster_Update • [FO_TR_FEAT_00231] Update_History • [FO_TR_FEAT_00232] Rollback • [FO_TR_FEAT_00233] Package_Authentication • [FO_TR_FEAT_00234] Update_Status_Reporting • [FO_TR_FEAT_00235] Suspend_Update

Table 4.9: Details FO_TR_FEAT_00222

4.1.10 [FO_TR_FEAT_00096] Standardized_Application_Interface

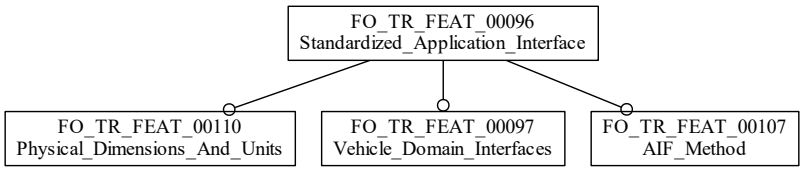

Figure 4.12: Feature FO_TR_FEAT_00096

Short Name:	FO_TR_FEAT_00096
Long Name:	Standardized_Application_Interface
Obligation:	Optional
Description:	This Feature contains definitions for commonly agreed interface definitions to ensure interoperability between applications.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00097] Vehicle_Domain_Interfaces • [FO_TR_FEAT_00107] AIF_Method • [FO_TR_FEAT_00110] Physical_Dimensions_And_Units

Table 4.10: Details FO_TR_FEAT_00096

4.1.11 [FO_TR_FEAT_00055] Storage

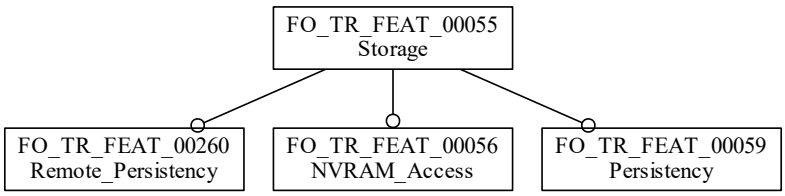

Figure 4.13: Feature FO_TR_FEAT_00055

Short Name:	FO_TR_FEAT_00055
Long Name:	Storage
Obligation:	Optional
Description:	The Feature Storage ensures the reliable and efficient management of data within automotive systems, which allows preservation of critical information even in the event of power loss.
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00056] NVRAM_Access • [FO_TR_FEAT_00059] Persistency • [FO_TR_FEAT_00260] Remote_Persistency

Table 4.11: Details FO_TR_FEAT_00055

4.1.12 [FO_TR_FEAT_00256] Timing

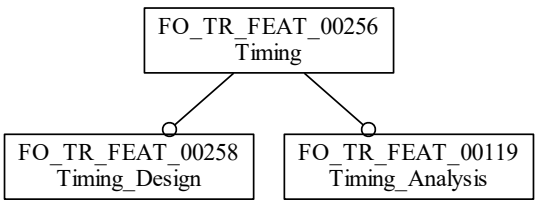

Figure 4.14: Feature FO_TR_FEAT_00256

Short Name:	FO_TR_FEAT_00256
Long Name:	Timing
Obligation:	Optional
Description:	Captures temporal aspects such as durations and coordination relevant to the system's resource-constrained behavior.

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Applies to:	AP, CP
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00042] AUTOSAR_Features
Sub Features:	• [FO_TR_FEAT_00258] Timing_Design • [FO_TR_FEAT_00119] Timing_Analysis

Table 4.12: Details FO_TR_FEAT_00256

4.2 Level 2

4.2.1 [FO_TR_FEAT_00107] AIF_Method

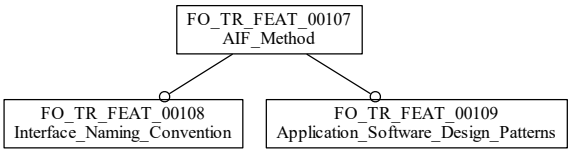

Figure 4.15: Feature FO_TR_FEAT_00107

Short Name:	FO_TR_FEAT_00107
Long Name:	AIF_Method
Obligation:	Optional
Description:	This Feature describes a collection of methods for Interfaces between software applications and components within an automotive system.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00096] Standardized_Application_Interface
Sub Features:	• [FO_TR_FEAT_00108] Interface_Naming_Convention • [FO_TR_FEAT_00109] Application_Software_Design_Patterns

Table 4.13: Details FO_TR_FEAT_00107

4.2.2 [FO_TR_FEAT_00202] Automotive_API

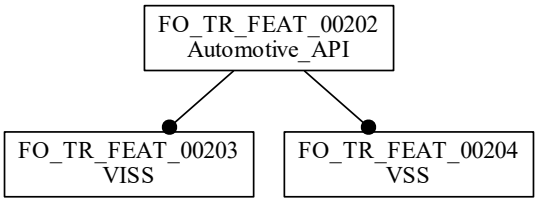

Figure 4.16: Feature FO_TR_FEAT_00202

Short Name:	FO_TR_FEAT_00202
Long Name:	Automotive_API
Obligation:	Optional
Description:	The Automotive API is an interface that allows data-centric communication with the vehicle. It defines how other systems can access selected vehicle data securely and independently of the in-vehicle representation using a standardized interface across vehicle types and manufacturers.
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	• [FO_TR_FEAT_00203] VISS • [FO_TR_FEAT_00204] VSS

Table 4.14: Details FO_TR_FEAT_00202

4.2.3 [FO_TR_FEAT_00269] Bus_Mirroring

Short Name:	FO_TR_FEAT_00269
Long Name:	Bus_Mirroring
Obligation:	Optional
Description:	This Feature enables forwarding of communication on internal buses towards diagnostic connectors. It is used to "debug" networks by using the Bus_Mirror Feature.
Applies to:	CP
Introduced:	R25-11
Relations:	[FO_TR_FEAT_00191] Bus_Mirror
Parent Feature:	[FO_TR_FEAT_00111] Development

Table 4.15: Details FO_TR_FEAT_00269

4.2.4 [FO_TR_FEAT_00218] Certificate_Management

Short Name:	FO_TR_FEAT_00218
Long Name:	Certificate_Management
Obligation:	Optional
Description:	The Certificate Management involves the processes and technologies used to manage digital certificates.
Parent Feature:	[FO_TR_FEAT_00207] Security

Table 4.16: Details FO_TR_FEAT_00218

4.2.5 [FO_TR_FEAT_00205] Charging_Protocol

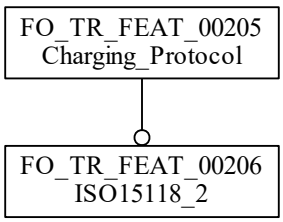

Figure 4.17: Feature FO_TR_FEAT_00205

Short Name:	FO_TR_FEAT_00205
Long Name:	Charging_Protocol
Obligation:	Optional
Description:	This Feature manages the charging protocol of electric vehicles.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	[FO_TR_FEAT_00206] ISO15118_2

Table 4.17: Details FO_TR_FEAT_00205

4.2.6 [FO_TR_FEAT_00184] Communication_State_Control

Short Name:	FO_TR_FEAT_00184
Long Name:	Communication_State_Control
Obligation:	Optional
Description:	The Communication State Control refers to the mechanisms and protocols used to manage the communication states of the network and individual communication channels or protocols.

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Parent Feature:	[FO_TR_FEAT_00122] Communication

Table 4.18: Details FO_TR_FEAT_00184

4.2.7 [FO_TR_FEAT_00274] Container_PDU

Short Name:	FO_TR_FEAT_00274
Long Name:	Container_PDU
Obligation:	Optional
Description:	The Container PDU (Protocol Data Unit) refers to a data structure used to encapsulate multiple individual PDUs into a single container for transmission.
Parent Feature:	[FO_TR_FEAT_00122] Communication

Table 4.19: Details FO_TR_FEAT_00274

4.2.8 [FO_TR_FEAT_00210] Cryptography

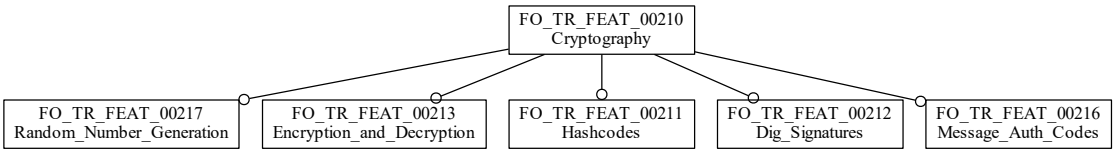

Figure 4.18: Feature FO_TR_FEAT_00210

Short Name:	FO_TR_FEAT_00210
Long Name:	Cryptography
Obligation:	Optional
Description:	The Cryptography in AUTOSAR refers to the techniques and methods used to secure data communication and storage.
Parent Feature:	[FO_TR_FEAT_00207] Security
Sub Features:	• [FO_TR_FEAT_00211] Hashcodes • [FO_TR_FEAT_00212] Dig_Signatures • [FO_TR_FEAT_00213] Encryption_and_Decryption • [FO_TR_FEAT_00216] Message_Auth_Codes • [FO_TR_FEAT_00217] Random_Number_Generation

Table 4.20: Details FO_TR_FEAT_00210

4.2.9 [FO_TR_FEAT_00117] Debugging

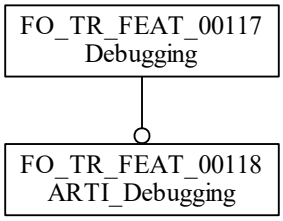

Figure 4.19: Feature FO_TR_FEAT_00117

Short Name:	FO_TR_FEAT_00117
Long Name:	Debugging
Obligation:	Optional
Description:	The Debugging in the AUTOSAR context refers to the process of identifying, analyzing, and resolving defects or issues within automotive software systems.
Parent Feature:	[FO_TR_FEAT_00111] Development
Sub Features:	[FO_TR_FEAT_00118] ARTI_Debugging

Table 4.21: Details FO_TR_FEAT_00117

4.2.10 [FO_TR_FEAT_00087] Diagnostic_Communication

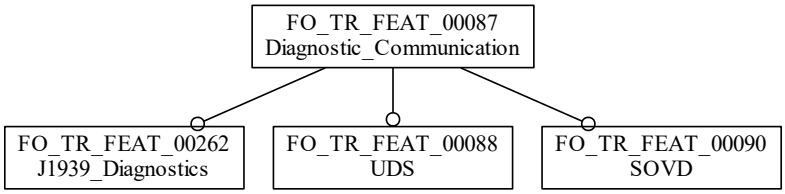

Figure 4.20: Feature FO_TR_FEAT_00087

Short Name:	FO_TR_FEAT_00087
Long Name:	Diagnostic_Communication
Obligation:	Optional
Description:	The Diagnostic_Communication describes the communication between Diagnostics clients and servers according ISO-14229.
Applies to:	CP, AP
Parent Feature:	[FO_TR_FEAT_00086] Diagnostic

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Sub Features:	• [FO_TR_FEAT_00088] UDS • [FO_TR_FEAT_00090] SOVD • [FO_TR_FEAT_00262] J1939_Diagnostics

Table 4.22: Details FO_TR_FEAT_00087

4.2.11 [FO_TR_FEAT_00091] Diagnostic_Error_Memory

Short Name:	FO_TR_FEAT_00091
Long Name:	Diagnostic_Error_Memory
Obligation:	Optional
Description:	This Feature ensures that fault information is recorded accurately and that it can be accessed for diagnostics and repairs by managing the storage and retrieval of Diagnostic Trouble Codes (DTCs) and error information within the vehicle's ECUs.
Applies to:	CP, AP
Parent Feature:	[FO_TR_FEAT_00086] Diagnostic

Table 4.23: Details FO_TR_FEAT_00091

4.2.12 [FO_TR_FEAT_00193] E2E

Short Name:	FO_TR_FEAT_00193
Long Name:	E2E
Obligation:	Optional
Description:	The E2E (End-to-End) Protection is a set of mechanisms and protocols designed to detect communication faults in intra vehicle comunication and to return the results of the checks.
Restrictions:	• [FO_TR_FEAT_00182] Signalbased_Communication • [FO_TR_FEAT_00127] SOME_IP • [FO_TR_FEAT_00124] DDS
Relations:	[FO_TR_FEAT_00246] CRC_Support
Parent Feature:	[FO_TR_FEAT_00122] Communication

Table 4.24: Details FO_TR_FEAT_00193

4.2.13 [FO_TR_FEAT_00275] ECU_Abstraction

Short Name:	FO_TR_FEAT_00275
Long Name:	ECU_Abstraction
Obligation:	Optional

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Description:	ECU Abstraction abstracts the hardware of an ECU. It abstracts the ECU hardware layout , MCU and connected devices to the MCU.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00236] Hardware_Support

Table 4.25: Details FO_TR_FEAT_00275

4.2.14 [FO_TR_FEAT_00263] ECU_Data_Collection

Short Name:	FO_TR_FEAT_00263
Long Name:	ECU_Data_Collection
Obligation:	Optional
Description:	The feature allows capturing and recording of ECU internal data during operation.
Applies to:	CP
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00111] Development

Table 4.26: Details FO_TR_FEAT_00263

4.2.15 [FO_TR_FEAT_00221] Firewall

Short Name:	FO_TR_FEAT_00221
Long Name:	Firewall
Obligation:	Optional
Description:	The Firewall is a security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.
Parent Feature:	[FO_TR_FEAT_00207] Security

Table 4.27: Details FO_TR_FEAT_00221

4.2.16 [FO_TR_FEAT_00187] Gateway_Support

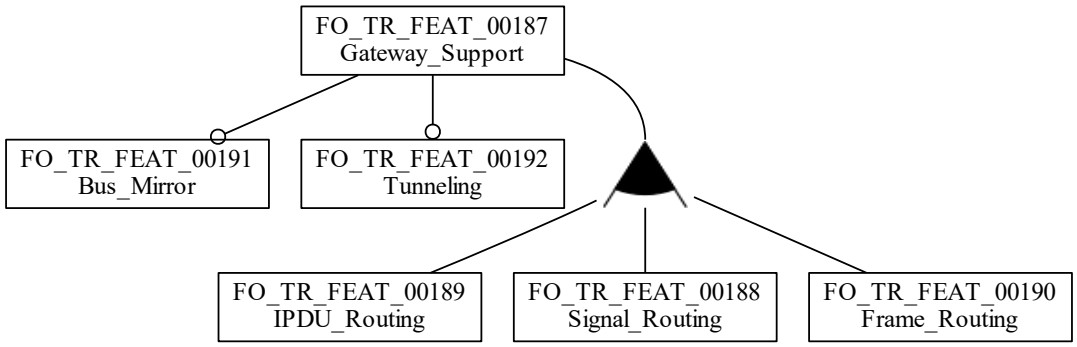

Figure 4.21: Feature FO_TR_FEAT_00187

Short Name:	FO_TR_FEAT_00187
Long Name:	Gateway_Support
Obligation:	Optional
Description:	The Gateway Support describes the functionalities to facilitate routing and transfer of data between different communication networks or protocols within a vehicle.
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	• [FO_TR_FEAT_00188] Signal_Routing • [FO_TR_FEAT_00189] IPDU_Routing • [FO_TR_FEAT_00190] Frame_Routing • [FO_TR_FEAT_00191] Bus_Mirror • [FO_TR_FEAT_00192] Tunneling

Table 4.28: Details FO_TR_FEAT_00187

4.2.17 [FO_TR_FEAT_00045] Hardware_Test_Management

Short Name:	FO_TR_FEAT_00045
Long Name:	Hardware_Test_Management
Obligation:	Optional
Description:	This Feature represents a built-in test at startup or cyclically.
Applies to:	CP, AP
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00043] Safety

Table 4.29: Details FO_TR_FEAT_00045

4.2.18 [FO_TR_FEAT_00220] Identity_and_Access_Management_IAM

Short Name:	FO_TR_FEAT_00220
Long Name:	Identity_and_Access_Management_IAM
Obligation:	Optional
Description:	The Identity and Access Management (IAM) focuses on identifying and controlling who has access to the vehicle's network and ECU's resources.
Parent Feature:	[FO_TR_FEAT_00207] Security

Table 4.30: Details FO_TR_FEAT_00220

4.2.19 [FO_TR_FEAT_00132] Intra_Machine_Communication

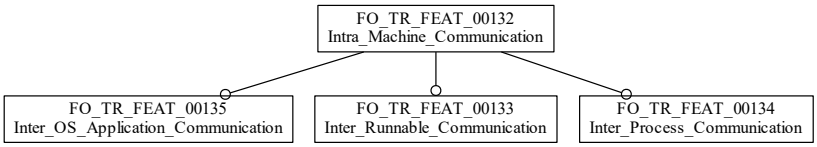

Figure 4.22: Feature FO_TR_FEAT_00132

Short Name:	FO_TR_FEAT_00132
Long Name:	Intra_Machine_Communication
Obligation:	Optional
Description:	This Feature describes the data exchange mechanisms and protocols within a single vehicle's electronic system
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	• [FO_TR_FEAT_00133] Inter_Runnable_Communication • [FO_TR_FEAT_00134] Inter_Process_Communication • [FO_TR_FEAT_00135] Inter_OS_Application_Communication

Table 4.31: Details FO_TR_FEAT_00132

4.2.20 [FO_TR_FEAT_00209] Intrusion_Detection_System

Short Name:	FO_TR_FEAT_00209
Long Name:	Intrusion_Detection_System
Obligation:	Optional
Description:	The Intrusion Detection System (IDS) monitors the vehicle's network and ECU's resources for suspicious activities and potential security breaches.
Parent Feature:	[FO_TR_FEAT_00207] Security

Table 4.32: Details FO_TR_FEAT_00209

4.2.21 [FO_TR_FEAT_00219] Key_Management

Short Name:	FO_TR_FEAT_00219
Long Name:	Key_Management
Obligation:	Optional
Description:	The Key Management encompasses the methods and processes for handling cryptographic keys throughout their lifecycle.
Parent Feature:	[FO_TR_FEAT_00207] Security

Table 4.33: Details FO_TR_FEAT_00219

4.2.22 [FO_TR_FEAT_00092] Legislative_Diagnostics

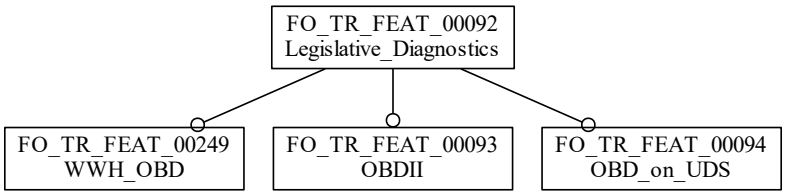

Figure 4.23: Feature FO_TR_FEAT_00092

Short Name:	FO_TR_FEAT_00092
Long Name:	Legislative_Diagnostics
Obligation:	Optional
Description:	This Feature describes the standardized diagnostic protocols and procedures mandated by regulatory authorities to ensure that vehicles comply with environmental and safety regulations.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00086] Diagnostic
Sub Features:	• [FO_TR_FEAT_00093] OBDII • [FO_TR_FEAT_00094] OBD_on_UDS • [FO_TR_FEAT_00249] WWH_OBD

Table 4.34: Details FO_TR_FEAT_00092

4.2.23 [FO_TR_FEAT_00112] Logging

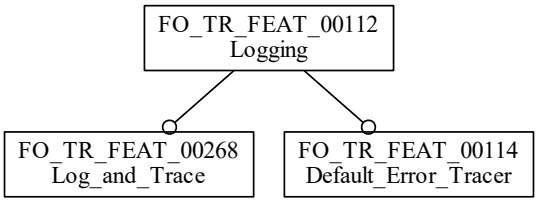

Figure 4.24: Feature FO_TR_FEAT_00112

Short Name:	FO_TR_FEAT_00112
Long Name:	Logging
Obligation:	Optional
Description:	This Feature allows capturing and recording of system events and messages during operation.
Parent Feature:	[FO_TR_FEAT_00111] Development
Sub Features:	• [FO_TR_FEAT_00268] Log_and_Trace • [FO_TR_FEAT_00114] Default_Error_Tracer

Table 4.35: Details FO_TR_FEAT_00112

4.2.24 [FO_TR_FEAT_00065] Mathematical_Primitives

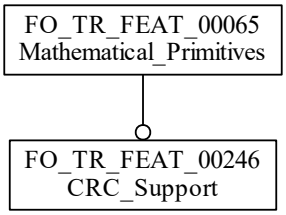

Figure 4.25: Feature FO_TR_FEAT_00065

Short Name:	FO_TR_FEAT_00065
Long Name:	Mathematical_Primitives
Obligation:	Optional
Description:	This feature is basic to perform mathematical computations efficiently and accurately, e.g. libraries.
Parent Feature:	[FO_TR_FEAT_00064] Basic_Functionality
Sub Features:	[FO_TR_FEAT_00246] CRC_Support

Table 4.36: Details FO_TR_FEAT_00065

4.2.25 [FO_TR_FEAT_00266] MCU_Abstraction

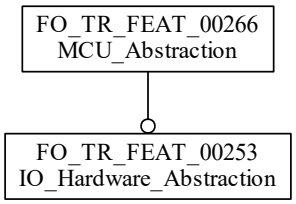

Figure 4.26: Feature FO_TR_FEAT_00266

Short Name:	FO_TR_FEAT_00266
Long Name:	MCU_Abstraction
Obligation:	Optional
Description:	The MCU Abstraction provides a uniform interface to the microcontroller hardware. It abstracts the internal peripherals of the MCU and offers standardized services for upper software layers.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00236] Hardware_Support
Sub Features:	[FO_TR_FEAT_00253] IO_Hardware_Abstraction

Table 4.37: Details FO_TR_FEAT_00266

4.2.26 [FO_TR_FEAT_00120] Measurement_and_Calibration

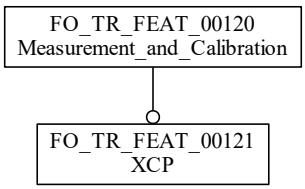

Figure 4.27: Feature FO_TR_FEAT_00120

Short Name:	FO_TR_FEAT_00120
Long Name:	Measurement_and_Calibration
Obligation:	Optional
Description:	The Measurement and Calibration in the AUTOSAR context refer to the processes and tools used to gather data from the automotive system (measurement) and adjust parameters to optimize performance (calibration).
Parent Feature:	[FO_TR_FEAT_00111] Development
Sub Features:	[FO_TR_FEAT_00121] XCP

Table 4.38: Details FO_TR_FEAT_00120

4.2.27 [FO_TR_FEAT_00073] Mode_and_State_Management

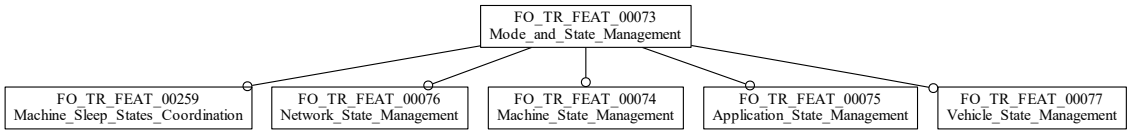

Figure 4.28: Feature FO_TR_FEAT_00073

Short Name:	FO_TR_FEAT_00073
Long Name:	Mode_and_State_Management
Obligation:	Optional
Description:	This Feature describes mechanisms and services that handle the different operational modes and states of the automotive system.
Parent Feature:	[FO_TR_FEAT_00071] Execution_Environment
Sub Features:	• [FO_TR_FEAT_00074] Machine_State_Management • [FO_TR_FEAT_00075] Application_State_Management • [FO_TR_FEAT_00076] Network_State_Management • [FO_TR_FEAT_00077] Vehicle_State_Management • [FO_TR_FEAT_00259] Machine_Sleep_States_Coordination

Table 4.39: Details FO_TR_FEAT_00073

4.2.28 [FO_TR_FEAT_00068] Multi_Core

Short Name:	FO_TR_FEAT_00068
Long Name:	Multi_Core
Obligation:	Optional
Description:	The Feature Multi-Core describes the distribution of applications to multiple cores of a micro controller.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00064] Basic_Functionality

Table 4.40: Details FO_TR_FEAT_00068

4.2.29 [FO_TR_FEAT_00179] Network_Management

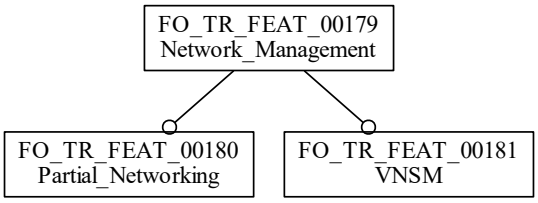

Figure 4.29: Feature FO_TR_FEAT_00179

Short Name:	FO_TR_FEAT_00179
Long Name:	Network_Management
Obligation:	Optional
Description:	The Network Management describes mechanisms and protocols used to control, configure, and monitor the state and operation of the network within a vehicle.
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	• [FO_TR_FEAT_00180] Partial_Networking • [FO_TR_FEAT_00181] VNSM

Table 4.41: Details FO_TR_FEAT_00179

4.2.30 [FO_TR_FEAT_00136] Network_Technology

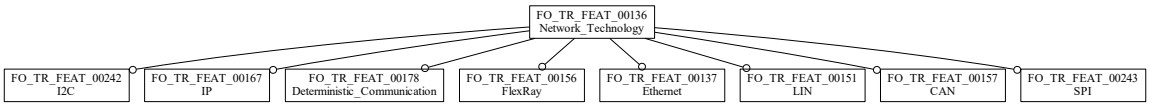

Figure 4.30: Feature FO_TR_FEAT_00136

Short Name:	FO_TR_FEAT_00136
Long Name:	Network_Technology
Obligation:	Optional
Description:	This Feature represents communication protocols, hardware, and software infrastructure that facilitate data exchange between ECUs in automotive systems.
Parent Feature:	[FO_TR_FEAT_00122] Communication

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Sub Features:	• [FO_TR_FEAT_00137] Ethernet • [FO_TR_FEAT_00151] LIN • [FO_TR_FEAT_00156] FlexRay • [FO_TR_FEAT_00157] CAN • [FO_TR_FEAT_00167] IP • [FO_TR_FEAT_00178] Deterministic_Communication • [FO_TR_FEAT_00242] I2C • [FO_TR_FEAT_00243] SPI

Table 4.42: Details FO_TR_FEAT_00136

4.2.31 [FO_TR_FEAT_00056] NVRAM_Access

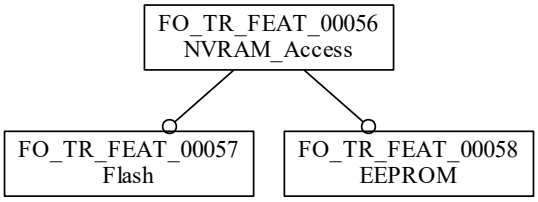

Figure 4.31: Feature FO_TR_FEAT_00056

Short Name:	FO_TR_FEAT_00056
Long Name:	NVRAM_Access
Obligation:	Optional
Description:	The NVRAM Access (non-volatile random-access memory) is used to store data which are retained across power cycles.
Parent Feature:	[FO_TR_FEAT_00055] Storage
Sub Features:	• [FO_TR_FEAT_00057] Flash • [FO_TR_FEAT_00058] EEPROM

Table 4.43: Details FO_TR_FEAT_00056

4.2.32 [FO_TR_FEAT_00233] Package_Authentication

Short Name:	FO_TR_FEAT_00233
Long Name:	Package_Authentication
Obligation:	Optional

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Description:	The Package Authentication involves verifying the integrity and authenticity of the software update packages before they are applied.
Parent Feature:	[FO_TR_FEAT_00222] Software_Update

Table 4.44: Details FO_TR_FEAT_00233

4.2.33 [FO_TR_FEAT_00059] Persistency

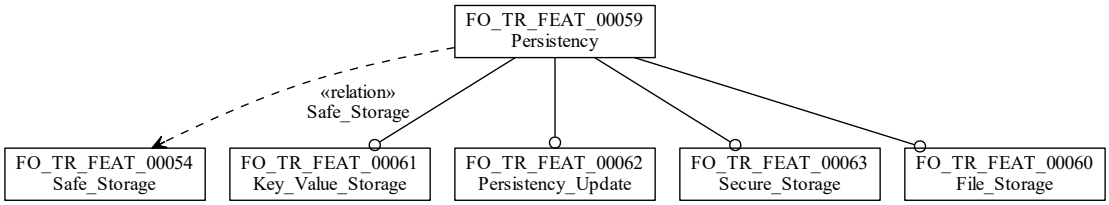

Figure 4.32: Feature FO_TR_FEAT_00059

Short Name:	FO_TR_FEAT_00059
Long Name:	Persistency
Obligation:	Optional
Description:	This Feature ensures that the system can resume operations seamlessly by retaining necessary information.
Relations:	[FO_TR_FEAT_00054] Safe_Storage
Parent Feature:	[FO_TR_FEAT_00055] Storage
Sub Features:	• [FO_TR_FEAT_00060] File_Storage • [FO_TR_FEAT_00061] Key_Value_Storage • [FO_TR_FEAT_00062] Persistency_Update • [FO_TR_FEAT_00063] Secure_Storage

Table 4.45: Details FO_TR_FEAT_00059

4.2.34 [FO_TR_FEAT_00110] Physical_Dimensions_And_Units

Short Name:	FO_TR_FEAT_00110
Long Name:	Physical_Dimensions_And_Units
Obligation:	Optional
Description:	This Feature defines a collection of standardized definitions of physical dimensions and their units.
Applies to:	FO

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Parent Feature:	[FO_TR_FEAT_00096] Standardized_Application_Interface

Table 4.46: Details FO_TR_FEAT_00110

4.2.35 [FO_TR_FEAT_00260] Remote_Persistency

Short Name:	FO_TR_FEAT_00260
Long Name:	Remote_Persistency
Obligation:	Optional
Description:	Remote Persistency provides access to centrally stored data items on one ECU or for a vehicle. Supports different update paths. Access to Remote Persistency is implemented via service interfaces. Therefore, ara::com can be used to read and write data items of the Remote Persistency. IAM protections is expected for the write access.
Applies to:	AP
Relations:	[FO_TR_FEAT_00131] Remote_IAM
Parent Feature:	[FO_TR_FEAT_00055] Storage

Table 4.47: Details FO_TR_FEAT_00260

4.2.36 [FO_TR_FEAT_00251] Resource_Partitioning

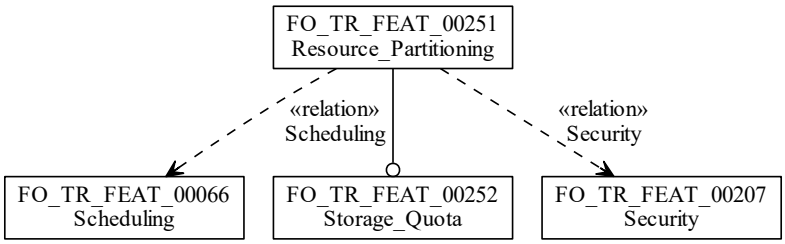

Figure 4.33: Feature FO_TR_FEAT_00251

Short Name:	FO_TR_FEAT_00251
Long Name:	Resource_Partitioning
Obligation:	Optional
Description:	This feature enables the partitioning of system resources such as CPU time and RAM into distinct groups, ensuring that software components are allocated and limited to specific resource sets. By isolating resources, the feature enhances system stability and security, preventing unintended interference or resource contention between different applications. Resource Partitioning also supports safety by containing potential misbehavior, ensuring that critical tasks have the resources they need while maintaining overall system integrity.

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Relations:	• [FO_TR_FEAT_00066] Scheduling • [FO_TR_FEAT_00207] Security
Parent Feature:	[FO_TR_FEAT_00064] Basic_Functionality
Sub Features:	[FO_TR_FEAT_00252] Storage_Quota

Table 4.48: Details FO_TR_FEAT_00251

4.2.37 [FO_TR_FEAT_00232] Rollback

Short Name:	FO_TR_FEAT_00232
Long Name:	Rollback
Obligation:	Optional
Description:	The Rollback refers to the ability to revert to a previous version of the software if the latest update fails or causes issues.
Parent Feature:	[FO_TR_FEAT_00222] Software_Update

Table 4.49: Details FO_TR_FEAT_00232

4.2.38 [FO_TR_FEAT_00072] Runtime_Management

Short Name:	FO_TR_FEAT_00072
Long Name:	Runtime_Management
Obligation:	Optional
Description:	This Feature describes set of services and mechanisms that oversee the execution lifecycle of software components on the ECUs.
Parent Feature:	[FO_TR_FEAT_00071] Execution_Environment

Table 4.50: Details FO_TR_FEAT_00072

4.2.39 [FO_TR_FEAT_00044] Safe_Communication

Short Name:	FO_TR_FEAT_00044
Long Name:	Safe_Communication
Obligation:	Optional
Description:	The Safe Communication provides elements to protect information exchange and enables detection of communication faults.
Applies to:	AP, CP
Relations:	[FO_TR_FEAT_00193] E2E
Parent Feature:	[FO_TR_FEAT_00043] Safety

Table 4.51: Details FO_TR_FEAT_00044

4.2.40 [FO_TR_FEAT_00046] Safe_Execution

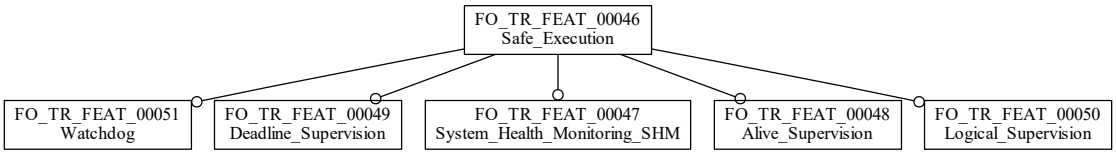

Figure 4.34: Feature FO_TR_FEAT_00046

Short Name:	FO_TR_FEAT_00046
Long Name:	Safe_Execution
Obligation:	Optional
Description:	The Safe Execution enables the detection of faults during SWS execution and provides reactions.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00043] Safety
Sub Features:	• [FO_TR_FEAT_00047] System_Health_Monitoring_SHM • [FO_TR_FEAT_00048] Alive_Supervision • [FO_TR_FEAT_00049] Deadline_Supervision • [FO_TR_FEAT_00050] Logical_Supervision • [FO_TR_FEAT_00051] Watchdog

Table 4.52: Details FO_TR_FEAT_00046

4.2.41 [FO_TR_FEAT_00254] Safe_Hardware_Accelerators

Short Name:	FO_TR_FEAT_00254
Long Name:	Safe_Hardware_Accelerators
Obligation:	Optional
Description:	The Safe Hardware Accelerators in AUTOSAR refers to the Feature that facilitates interaction between the software applications and the vehicle's hardware accelerators.
Applies to:	AP
Parent Feature:	[FO_TR_FEAT_00236] Hardware_Support

Table 4.53: Details FO_TR_FEAT_00254

4.2.42 [FO_TR_FEAT_00052] Safe_Memory

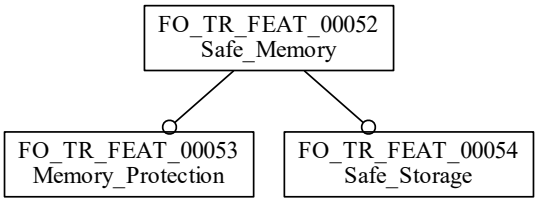

Figure 4.35: Feature FO_TR_FEAT_00052

Short Name:	FO_TR_FEAT_00052
Long Name:	Safe_Memory
Obligation:	Optional
Description:	The Safe Memory provides method for safe storage in volatile and non-volatile memory.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00043] Safety
Sub Features:	• [FO_TR_FEAT_00053] Memory_Protection • [FO_TR_FEAT_00054] Safe_Storage

Table 4.54: Details FO_TR_FEAT_00052

4.2.43 [FO_TR_FEAT_00066] Scheduling

Short Name:	FO_TR_FEAT_00066
Long Name:	Scheduling
Obligation:	Mandatory
Description:	This feature manages the execution order and timing of threads or tasks within the system. It ensures that resources like CPU time are efficiently allocated, coordinating task execution based on priority, deadlines, or specific conditions. By organizing when and how tasks are run, Scheduling ensures system responsiveness, balancing the workload to meet performance, real-time, and safety requirements.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00064] Basic_Functionality

Table 4.55: Details FO_TR_FEAT_00066

4.2.44 [FO_TR_FEAT_00195] SecOC

Short Name:	FO_TR_FEAT_00195
Long Name:	SecOC
Obligation:	Optional
Description:	The SecOC (Secure Onboard Communication) Feature is an AUTOSAR module designed to ensure the authenticity and integrity of communication within a vehicle's network.
Parent Feature:	[FO_TR_FEAT_00122] Communication

Table 4.56: Details FO_TR_FEAT_00195

4.2.45 [FO_TR_FEAT_00208] Secure_Communication

Short Name:	FO_TR_FEAT_00208
Long Name:	Secure_Communication
Obligation:	Optional
Description:	The Secure Communication ensures that data exchanged between ECUs and other components within the vehicle is protected.
Restrictions:	• [FO_TR_FEAT_00145] MACsec • [FO_TR_FEAT_00125] DDS_Security • [FO_TR_FEAT_00195] SecOC • [FO_TR_FEAT_00176] IPSec • [FO_TR_FEAT_00175] TLS • [FO_TR_FEAT_00221] Firewall
Parent Feature:	[FO_TR_FEAT_00207] Security

Table 4.57: Details FO_TR_FEAT_00208

4.2.46 [FO_TR_FEAT_00123] Service_Oriented_Communication

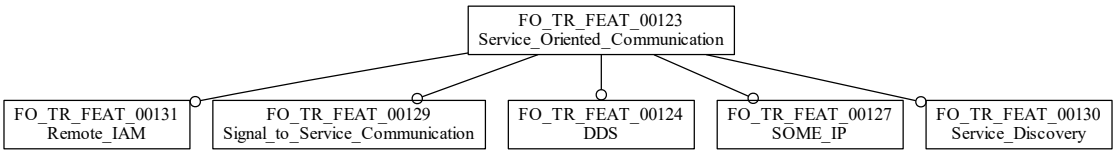

Figure 4.36: Feature FO_TR_FEAT_00123

Short Name:	FO_TR_FEAT_00123
Long Name:	Service_Oriented_Communication
Obligation:	Optional

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Description:	This Feature refers to a communication paradigm that focuses on the interaction between software components through well-defined services.
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	• [FO_TR_FEAT_00124] DDS • [FO_TR_FEAT_00127] SOME_IP • [FO_TR_FEAT_00129] Signal_to_Service_Communication • [FO_TR_FEAT_00130] Service_Discovery • [FO_TR_FEAT_00131] Remote_IAM

Table 4.58: Details FO_TR_FEAT_00123

4.2.47 [FO_TR_FEAT_00182] Signalbased_Communication

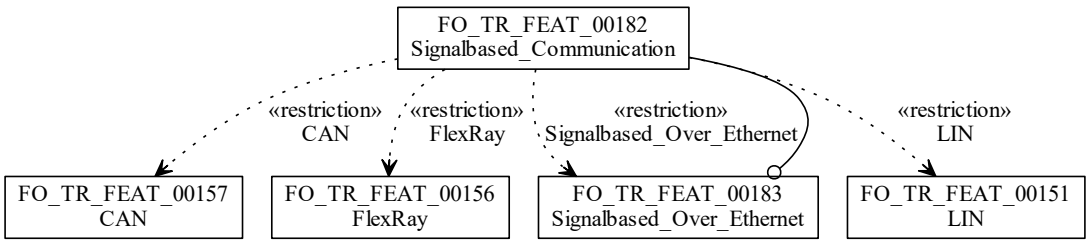

Figure 4.37: Feature FO_TR_FEAT_00182

Short Name:	FO_TR_FEAT_00182
Long Name:	Signalbased_Communication
Obligation:	Optional
Description:	Signalbased Communication refers to a method of data exchange where individual signals are transmitted over the vehicle network.
Restrictions:	• [FO_TR_FEAT_00157] CAN • [FO_TR_FEAT_00151] LIN • [FO_TR_FEAT_00156] FlexRay • [FO_TR_FEAT_00183] Signalbased_Over_Ethernet
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	[FO_TR_FEAT_00183] Signalbased_Over_Ethernet

Table 4.59: Details FO_TR_FEAT_00182

4.2.48 [FO_TR_FEAT_00230] Software_Cluster_Update

Short Name:	FO_TR_FEAT_00230
Long Name:	Software_Cluster_Update
Obligation:	Mandatory
Description:	The Software Cluster Update involves updating specific groups of software components or clusters within a vehicle's systems.
Relations:	[FO_TR_FEAT_00062] Persistency_Update
Parent Feature:	[FO_TR_FEAT_00222] Software_Update

Table 4.60: Details FO_TR_FEAT_00230

4.2.49 [FO_TR_FEAT_00078] Software_Clustering

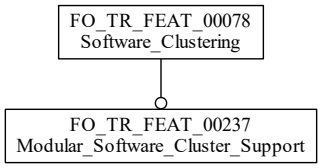

Figure 4.38: Feature FO_TR_FEAT_00078

Short Name:	FO_TR_FEAT_00078
Long Name:	Software_Clustering
Obligation:	Optional
Description:	The Software Clustering describes the organization and grouping of software components based on their functionality, dependencies, and communication needs.
Parent Feature:	[FO_TR_FEAT_00071] Execution_Environment
Sub Features:	[FO_TR_FEAT_00237] Modular_Software_Cluster_Support

Table 4.61: Details FO_TR_FEAT_00078

4.2.50 [FO_TR_FEAT_00235] Suspend_Update

Short Name:	FO_TR_FEAT_00235
Long Name:	Suspend_Update
Obligation:	Optional
Description:	This Feature allows to suspend and resume updates of the vehicle software or software-platform.
Parent Feature:	[FO_TR_FEAT_00222] Software_Update

Table 4.62: Details FO_TR_FEAT_00235

4.2.51 [FO_TR_FEAT_00276] Time_Service

Short Name:	FO_TR_FEAT_00276
Long Name:	Time_Service
Obligation:	Optional
Description:	This feature allows users to get time (or counter) values e.g. to measure time or wait for some real time.
Applies to:	CP
Introduced:	25-11
Parent Feature:	[FO_TR_FEAT_00064] Basic_Functionality

Table 4.63: Details FO_TR_FEAT_00276

4.2.52 [FO_TR_FEAT_00196] Time_Synchronization

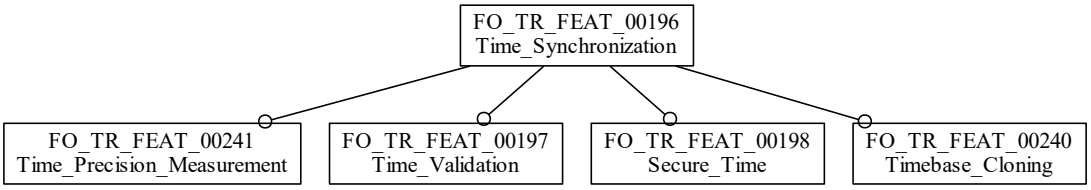

Figure 4.39: Feature FO_TR_FEAT_00196

Short Name:	FO_TR_FEAT_00196
Long Name:	Time_Synchronization
Obligation:	Optional
Description:	The Time Synchronization ensures that all ECUs in the vehicle have a consistent and accurate sense of time.
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	• [FO_TR_FEAT_00197] Time_Validation • [FO_TR_FEAT_00198] Secure_Time • [FO_TR_FEAT_00241] Time_Precision_Measurement • [FO_TR_FEAT_00240] Timebase_Cloning

Table 4.64: Details FO_TR_FEAT_00196

4.2.53 [FO_TR_FEAT_00119] Timing_Analysis

Short Name:	FO_TR_FEAT_00119
Long Name:	Timing_Analysis
Obligation:	Optional

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Description:	Timing Analysis investigates the timing of a system on different levels of abstraction.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00256] Timing

Table 4.65: Details FO_TR_FEAT_00119

4.2.54 [FO_TR_FEAT_00258] Timing_Design

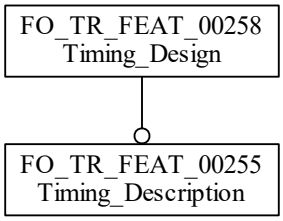

Figure 4.40: Feature FO_TR_FEAT_00258

Short Name:	FO_TR_FEAT_00258
Long Name:	Timing_Design
Obligation:	Optional
Description:	Timing Design models the timing and/or timing constraints of a system on different levels of abstraction.
Applies to:	AP, CP
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00256] Timing
Sub Features:	[FO_TR_FEAT_00255] Timing_Description

Table 4.66: Details FO_TR_FEAT_00258

4.2.55 [FO_TR_FEAT_00115] Tracing_and_Profiling

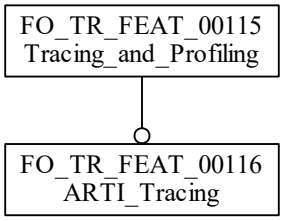

Figure 4.41: Feature FO_TR_FEAT_00115

Short Name:	FO_TR_FEAT_00115
Long Name:	Tracing_and_Profiling
Obligation:	Optional
Description:	This Feature is a set of techniques and tools used to monitor, record, and analyze the execution behavior of software components.
Parent Feature:	[FO_TR_FEAT_00111] Development
Sub Features:	[FO_TR_FEAT_00116] ARTI_Tracing

Table 4.67: Details FO_TR_FEAT_00115

4.2.56 [FO_TR_FEAT_00250] Trusted_Platform

Short Name:	FO_TR_FEAT_00250
Long Name:	Trusted_Platform
Obligation:	Optional
Description:	This feature ensures the authenticity and integrity of executed code and configurations within the system. By implementing robust verification mechanisms, it safeguards against unauthorized modifications and ensures that only validated software components are executed. This feature establishes a secure execution environment and enables compliance with security standards.
Relations:	[FO_TR_FEAT_00071] Execution_Environment
Parent Feature:	[FO_TR_FEAT_00207] Security

Table 4.68: Details FO_TR_FEAT_00250

4.2.57 [FO_TR_FEAT_00231] Update_History

Short Name:	FO_TR_FEAT_00231
Long Name:	Update_History
Obligation:	Mandatory

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Description:	The Update History involves tracking and recording details about past software updates.
Parent Feature:	[FO_TR_FEAT_00222] Software_Update

Table 4.69: Details FO_TR_FEAT_00231

4.2.58 [FO_TR_FEAT_00234] Update_Status_Reporting

Short Name:	FO_TR_FEAT_00234
Long Name:	Update_Status_Reporting
Obligation:	Mandatory
Description:	The Update Status Reporting involves communicating the current status and progress of the software update process.
Parent Feature:	[FO_TR_FEAT_00222] Software_Update

Table 4.70: Details FO_TR_FEAT_00234

4.2.59 [FO_TR_FEAT_00199] V2X

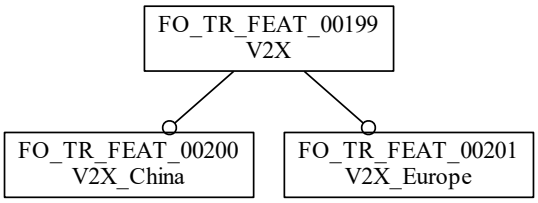

Figure 4.42: Feature FO_TR_FEAT_00199

Short Name:	FO_TR_FEAT_00199
Long Name:	V2X
Obligation:	Optional
Description:	The V2X (Vehicle-to-Everything) communication refers to the exchange of information between a vehicle and various entities in its environment.
Parent Feature:	[FO_TR_FEAT_00122] Communication
Sub Features:	• [FO_TR_FEAT_00200] V2X_China • [FO_TR_FEAT_00201] V2X_Europe

Table 4.71: Details FO_TR_FEAT_00199

4.2.60 [FO_TR_FEAT_00097] Vehicle_Domain_Interfaces

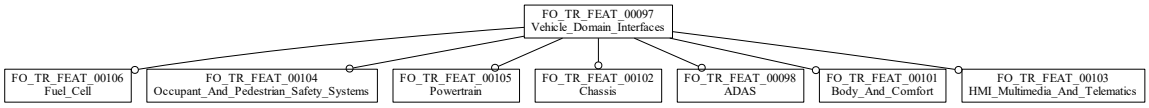

Figure 4.43: Feature FO_TR_FEAT_00097

Short Name:	FO_TR_FEAT_00097
Long Name:	Vehicle_Domain_Interfaces
Obligation:	Optional
Description:	This Feature facilitates communication and integration between various vehicle domains to ensure interoperability and consistency across different ECUs and software components, enabling seamless interaction and data exchange.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00096] Standardized_Application_Interface
Sub Features:	• [FO_TR_FEAT_00098] ADAS • [FO_TR_FEAT_00101] Body_And_Comfort • [FO_TR_FEAT_00102] Chassis • [FO_TR_FEAT_00103] HMI_Multimedia_And_Telematics • [FO_TR_FEAT_00104] Occupant_And_Pedestrian_Safety_Systems • [FO_TR_FEAT_00105] Powertrain • [FO_TR_FEAT_00106] Fuel_Cell

Table 4.72: Details FO_TR_FEAT_00097

4.2.61 [FO_TR_FEAT_00223] Vehicle_Software_Update

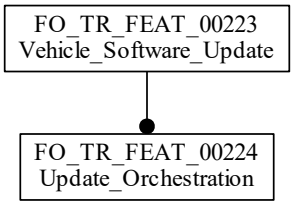

Figure 4.44: Feature FO_TR_FEAT_00223

Short Name:	FO_TR_FEAT_00223
Long Name:	Vehicle_Software_Update
Obligation:	Optional

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Description:	The Vehicle Software Update refers to the capability to update the software components of the vehicle's electronic systems.
Parent Feature:	[FO_TR_FEAT_00222] Software_Update
Sub Features:	[FO_TR_FEAT_00224] Update_Orchestration

Table 4.73: Details FO_TR_FEAT_00223

4.3 Level 3

4.3.1 [FO_TR_FEAT_00098] ADAS

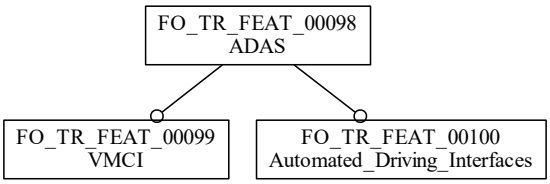

Figure 4.45: Feature FO_TR_FEAT_00098

Short Name:	FO_TR_FEAT_00098
Long Name:	ADAS
Obligation:	Optional
Description:	The ADAS (Advanced Driving Assistance Systems) utilize data from sensors, cameras, and other sources to assist the driver in making informed decisions, reduce human error, and enhance overall vehicle control.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00097] Vehicle_Domain_Interfaces
Sub Features:	• [FO_TR_FEAT_00099] VMCI • [FO_TR_FEAT_00100] Automated_Driving_Interfaces

Table 4.74: Details FO_TR_FEAT_00098

4.3.2 [FO_TR_FEAT_00048] Alive_Supervision

Short Name:	FO_TR_FEAT_00048
Long Name:	Alive_Supervision
Obligation:	Optional
Description:	This Feature ensures the continuous and correct operation of software tasks and functions within ECU. It detects faults in execution and triggers reactions.

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Parent Feature:	[FO_TR_FEAT_00046] Safe_Execution

Table 4.75: Details FO_TR_FEAT_00048

4.3.3 [FO_TR_FEAT_00109] Application_Software_Design_Patterns

Short Name:	FO_TR_FEAT_00109
Long Name:	Application_Software_Design_Patterns
Obligation:	Optional
Description:	This Feature describes standardized, reusable solutions to common software design challenges encountered in automotive software development. It representens a abstraction pattern for solutions.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00107] AIF_Method

Table 4.76: Details FO_TR_FEAT_00109

4.3.4 [FO_TR_FEAT_00075] Application_State_Management

Short Name:	FO_TR_FEAT_00075
Long Name:	Application_State_Management
Obligation:	Optional
Description:	This Feature refers to the control and coordination of the different operational states of software applications within an ECU. it contains tasks like managing transitions between states such as initialization, active operation, standby, and shutdown.
Parent Feature:	[FO_TR_FEAT_00073] Mode_and_State_Management

Table 4.77: Details FO_TR_FEAT_00075

4.3.5 [FO_TR_FEAT_00118] ARTI_Debugging

Short Name:	FO_TR_FEAT_00118
Long Name:	ARTI_Debugging
Obligation:	Optional
Description:	The ARTI Debugging (AUTOSAR Runtime Interface Debugging) refers to a set of standardized interfaces and tools within the AUTOSAR framework.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00117] Debugging

Table 4.78: Details FO_TR_FEAT_00118

4.3.6 [FO_TR_FEAT_00116] ARTI_Tracing

Short Name:	FO_TR_FEAT_00116
Long Name:	ARTI_Tracing
Obligation:	Optional
Description:	The ARTI Tracing (AUTOSAR Runtime Interface Tracing) refers to a standardized method for capturing and analyzing the execution behavior of software components.
Applies to:	AP, CP
Parent Feature:	[FO_TR_FEAT_00115] Tracing_and_Profiling

Table 4.79: Details FO_TR_FEAT_00116

4.3.7 [FO_TR_FEAT_00101] Body_And_Comfort

Short Name:	FO_TR_FEAT_00101
Long Name:	Body_And_Comfort
Obligation:	Optional
Description:	This Feature describes interface definitions for body and comfort control software managing vehicle body functions and comfort Features, such as lighting, climate control, and door systems.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00097] Vehicle_Domain_Interfaces

Table 4.80: Details FO_TR_FEAT_00101

4.3.8 [FO_TR_FEAT_00191] Bus_Mirror

Short Name:	FO_TR_FEAT_00191
Long Name:	Bus_Mirror
Obligation:	Optional
Description:	The Bus_Mirror is a Feature that allows the replication of messages from one network bus to another. It handles the bus mirroring in a "gateway" ECU.
Parent Feature:	[FO_TR_FEAT_00187] Gateway_Support

Table 4.81: Details FO_TR_FEAT_00191

4.3.9 [FO_TR_FEAT_00157] CAN

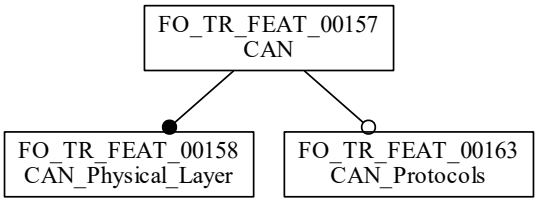

Figure 4.46: Feature FO_TR_FEAT_00157

Short Name:	FO_TR_FEAT_00157
Long Name:	CAN
Obligation:	Optional
Description:	The CAN (Controller Area Network) describes the communcation of microcontrollers and devices with each other without a host computer. This Feature has to be according ISO 11898 and other external specifications.
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology
Sub Features:	• [FO_TR_FEAT_00158] CAN_Physical_Layer • [FO_TR_FEAT_00163] CAN_Protocols

Table 4.82: Details FO_TR_FEAT_00157

4.3.10 [FO_TR_FEAT_00102] Chassis

Short Name:	FO_TR_FEAT_00102
Long Name:	Chassis
Obligation:	Optional
Description:	This Feature is a collection of interface definitions related to chassis domain, including suspension, braking, and stability control.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00097] Vehicle_Domain_Interfaces

Table 4.83: Details FO_TR_FEAT_00102

4.3.11 [FO_TR_FEAT_00246] CRC_Support

Short Name:	FO_TR_FEAT_00246
Long Name:	CRC_Support
Obligation:	Optional
Description:	The Feature CRC (Cyclic Redundancy Check) enables protection of certain values by detecting alteration.

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Applies to:	AP. CP
Parent Feature:	[FO_TR_FEAT_00065] Mathematical_Primitives

Table 4.84: Details FO_TR_FEAT_00246

4.3.12 [FO_TR_FEAT_00124] DDS

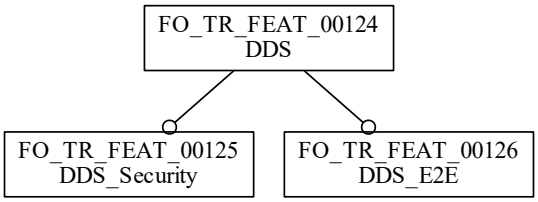

Figure 4.47: Feature FO_TR_FEAT_00124

Short Name:	FO_TR_FEAT_00124
Long Name:	DDS
Obligation:	Optional
Description:	The DDS (Data Distribution Service) is a middleware protocol and API standard for data-centric communication.
Parent Feature:	[FO_TR_FEAT_00123] Service_Oriented_Communication
Sub Features:	• [FO_TR_FEAT_00125] DDS_Security • [FO_TR_FEAT_00126] DDS_E2E

Table 4.85: Details FO_TR_FEAT_00124

4.3.13 [FO_TR_FEAT_00049] Deadline_Supervision

Short Name:	FO_TR_FEAT_00049
Long Name:	Deadline_Supervision
Obligation:	Optional
Description:	This Feature checks if the execution time between two Checkpoints is within minimum/ maximum time limit for real time performance.
Parent Feature:	[FO_TR_FEAT_00046] Safe_Execution

Table 4.86: Details FO_TR_FEAT_00049

4.3.14 [FO_TR_FEAT_00114] Default_Error_Tracer

Short Name:	FO_TR_FEAT_00114
Long Name:	Default_Error_Tracer
Obligation:	Optional
Description:	This Feature standardizes mechanism for reporting and reactions to errors that occur during the software's execution.
Parent Feature:	[FO_TR_FEAT_00112] Logging

Table 4.87: Details FO_TR_FEAT_00114

4.3.15 [FO_TR_FEAT_00178] Deterministic_Communication

Short Name:	FO_TR_FEAT_00178
Long Name:	Deterministic_Communication
Obligation:	Optional
Description:	The Deterministic Communication refers to the ability to guarantee that data is transmitted within a predictable and bounded timeframe.
Restrictions:	[FO_TR_FEAT_00156] FlexRay
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology

Table 4.88: Details FO_TR_FEAT_00178

4.3.16 [FO_TR_FEAT_00212] Dig_Signatures

Short Name:	FO_TR_FEAT_00212
Long Name:	Dig_Signatures
Obligation:	Optional
Description:	The Digital Signatures are cryptographic techniques used to validate the authenticity and integrity of a message or document.
Parent Feature:	[FO_TR_FEAT_00210] Cryptography

Table 4.89: Details FO_TR_FEAT_00212

4.3.17 [FO_TR_FEAT_00058] EEPROM

Short Name:	FO_TR_FEAT_00058
Long Name:	EEPROM
Obligation:	Optional
Description:	The EEPROM (Electrically Erasable Programmable Read-Only Memory) is a type of non-volatile memory, which retains stored data even when the power is turned off, ideal for data where persistence is crucial.

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Parent Feature:	[FO_TR_FEAT_00056] NVRAM_Access

Table 4.90: Details FO_TR_FEAT_00058

4.3.18 [FO_TR_FEAT_00213] Encryption_and_Decryption

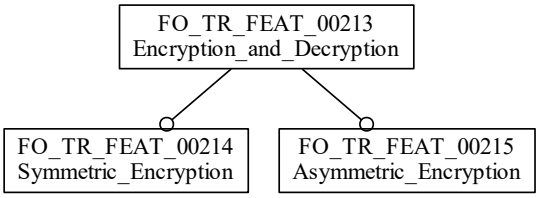

Figure 4.48: Feature FO_TR_FEAT_00213

Short Name:	FO_TR_FEAT_00213
Long Name:	Encryption_and_Decryption
Obligation:	Optional
Description:	The "Encryption and Decryption" are processes used to convert plaintext data into an encrypted data (unreadable format) and decrypt data (readable format).
Parent Feature:	[FO_TR_FEAT_00210] Cryptography
Sub Features:	• [FO_TR_FEAT_00214] Symmetric_Encryption • [FO_TR_FEAT_00215] Asymmetric_Encryption

Table 4.91: Details FO_TR_FEAT_00213

4.3.19 [FO_TR_FEAT_00137] Ethernet

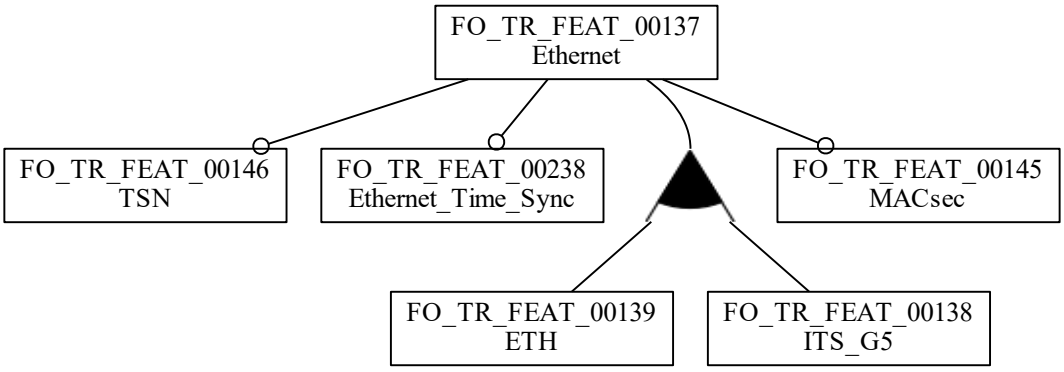

Figure 4.49: Feature FO_TR_FEAT_00137

Short Name:	FO_TR_FEAT_00137
Long Name:	Ethernet
Obligation:	Optional
Description:	This Feature describes a high-speed, standardized communication protocol used for data exchange within the vehicle network.
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology
Sub Features:	• [FO_TR_FEAT_00138] ITS_G5 • [FO_TR_FEAT_00139] ETH • [FO_TR_FEAT_00145] MACsec • [FO_TR_FEAT_00146] TSN • [FO_TR_FEAT_00238] Ethernet_Time_Sync

Table 4.92: Details FO_TR_FEAT_00137

4.3.20 [FO_TR_FEAT_00060] File_Storage

Short Name:	FO_TR_FEAT_00060
Long Name:	File_Storage
Obligation:	Optional
Description:	The File Storage is storing data in a file-based format on non-volatile memory to ensure that important information is preserved across power cycles.
Parent Feature:	[FO_TR_FEAT_00059] Persistency

Table 4.93: Details FO_TR_FEAT_00060

4.3.21 [FO_TR_FEAT_00057] Flash

Short Name:	FO_TR_FEAT_00057
Long Name:	Flash
Obligation:	Optional
Description:	This Feature is used as a type of non-volatile storage to store data that must be retained even when the power is turned off.
Parent Feature:	[FO_TR_FEAT_00056] NVRAM_Access

Table 4.94: Details FO_TR_FEAT_00057

4.3.22 [FO_TR_FEAT_00156] FlexRay

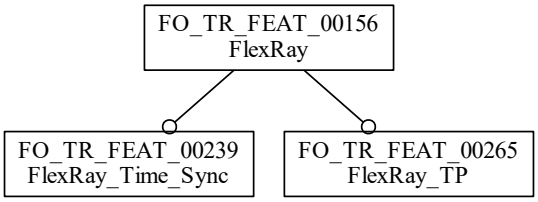

Figure 4.50: Feature FO_TR_FEAT_00156

Short Name:	FO_TR_FEAT_00156
Long Name:	FlexRay
Obligation:	Optional
Description:	The FlexRay is a high-speed, deterministic, and fault-tolerant automotive network protocol designed for advanced control systems.
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology
Sub Features:	• [FO_TR_FEAT_00239] FlexRay_Time_Sync • [FO_TR_FEAT_00265] FlexRay_TP

Table 4.95: Details FO_TR_FEAT_00156

4.3.23 [FO_TR_FEAT_00190] Frame_Routing

Short Name:	FO_TR_FEAT_00190
Long Name:	Frame_Routing
Obligation:	Multiple
Description:	The Frame Routing describes the routing of entire frames between different communication networks,where a frame is a structured data packet used in networking protocols.

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Parent Feature:	[FO_TR_FEAT_00187] Gateway_Support

Table 4.96: Details FO_TR_FEAT_00190

4.3.24 [FO_TR_FEAT_00106] Fuel_Cell

Short Name:	FO_TR_FEAT_00106
Long Name:	Fuel_Cell
Obligation:	Optional
Description:	This Feature describes the interface definitions according the integration and control of the fuel cell systems.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00097] Vehicle_Domain_Interfaces

Table 4.97: Details FO_TR_FEAT_00106

4.3.25 [FO_TR_FEAT_00211] Hashcodes

Short Name:	FO_TR_FEAT_00211
Long Name:	Hashcodes
Obligation:	Optional
Description:	The Hashcodes are fixed-size numerical values derived from input data of arbitrary size through a hash function.
Parent Feature:	[FO_TR_FEAT_00210] Cryptography

Table 4.98: Details FO_TR_FEAT_00211

4.3.26 [FO_TR_FEAT_00103] HMI_Multimedia_And_Telematics

Short Name:	FO_TR_FEAT_00103
Long Name:	HMI_Multimedia_And_Telematics
Obligation:	Optional
Description:	This Feature describes interface definitions related to the user and device Interfaces as in multimedia systems, telematics services, enhancing user experience and connectivity.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00097] Vehicle_Domain_Interfaces

Table 4.99: Details FO_TR_FEAT_00103

4.3.27 [FO_TR_FEAT_00242] I2C

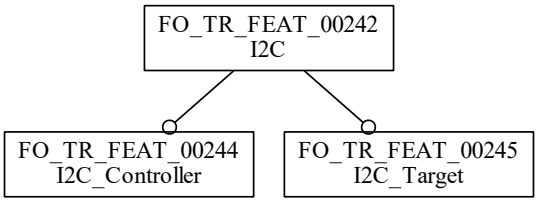

Figure 4.51: Feature FO_TR_FEAT_00242

Short Name:	FO_TR_FEAT_00242
Long Name:	I2C
Obligation:	Optional
Description:	I2C (Inter-Integrated Circuit) is a synchronous, multi-controller/multi-target, single-ended, serial communication bus for attaching lower-speed peripheral integrated circuits (ICs) to processors and microcontrollers in short-distance, intra-board communication.
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology
Sub Features:	• [FO_TR_FEAT_00244] I2C_Controller • [FO_TR_FEAT_00245] I2C_Target

Table 4.100: Details FO_TR_FEAT_00242

4.3.28 [FO_TR_FEAT_00135] Inter_OS_Application_Communication

Short Name:	FO_TR_FEAT_00135
Long Name:	Inter_OS_Application_Communication
Obligation:	Optional
Description:	The Inter_OS_Application_Communication enables the communication between different OS-Applications which are managed by the same OS.
Applies to:	CP
Relations:	[FO_TR_FEAT_00068] Multi_Core
Parent Feature:	[FO_TR_FEAT_00132] Intra_Machine_Communication

Table 4.101: Details FO_TR_FEAT_00135

4.3.29 [FO_TR_FEAT_00134] Inter_Process_Communication

Short Name:	FO_TR_FEAT_00134
Long Name:	Inter_Process_Communication
Obligation:	Optional

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Description:	This Feature describes mechanisms that enable data exchange between different processes running on the same ECU. Processes are independent execution units with their own memory space.
Relations:	[FO_TR_FEAT_00071] Execution_Environment
Parent Feature:	[FO_TR_FEAT_00132] Intra_Machine_Communication

Table 4.102: Details FO_TR_FEAT_00134

4.3.30 [FO_TR_FEAT_00133] Inter_Runnable_Communication

Short Name:	FO_TR_FEAT_00133
Long Name:	Inter_Runnable_Communication
Obligation:	Optional
Description:	This Feature describes data exchange between different runnables within the same ECU. Runnables are the smallest schedulable units of code within an AUTOSAR software component.
Relations:	[FO_TR_FEAT_00071] Execution_Environment
Parent Feature:	[FO_TR_FEAT_00132] Intra_Machine_Communication

Table 4.103: Details FO_TR_FEAT_00133

4.3.31 [FO_TR_FEAT_00108] Interface_Naming_Convention

Short Name:	FO_TR_FEAT_00108
Long Name:	Interface_Naming_Convention
Obligation:	Optional
Description:	The Interface Naming Convention is a standardation for naming the interfaces between software components and modules to achieve consisten, descriptive and easily understandable naming.
Applies to:	FO
Parent Feature:	[FO_TR_FEAT_00107] AIF_Method

Table 4.104: Details FO_TR_FEAT_00108

4.3.32 [FO_TR_FEAT_00253] IO_Hardware_Abstraction

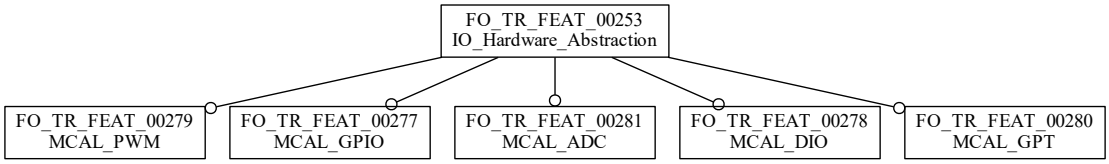

Figure 4.52: Feature FO_TR_FEAT_00253

Short Name:	FO_TR_FEAT_00253
Long Name:	IO_Hardware_Abstraction
Obligation:	Optional
Description:	The IO Hardware Abstraction provides access to MCAL drivers by mapping IO hardware abstration ports to ECU Signals.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00266] MCU_Abstraction
Sub Features:	• [FO_TR_FEAT_00281] MCAL_ADC • [FO_TR_FEAT_00278] MCAL_DIO • [FO_TR_FEAT_00277] MCAL_GPIO • [FO_TR_FEAT_00280] MCAL_GPT • [FO_TR_FEAT_00279] MCAL_PWM

Table 4.105: Details FO_TR_FEAT_00253

4.3.33 [FO_TR_FEAT_00167] IP

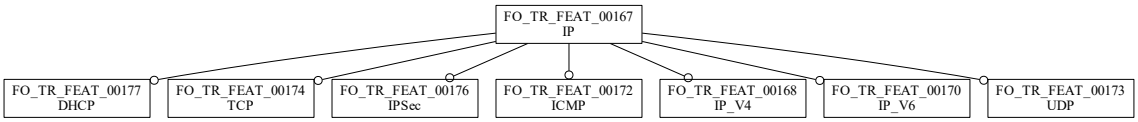

Figure 4.53: Feature FO_TR_FEAT_00167

Short Name:	FO_TR_FEAT_00167
Long Name:	IP
Obligation:	Optional
Description:	The IP (Internet Protocol) in the AUTOSAR context refers to the suite of communication protocols.
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology
Sub Features:	• [FO_TR_FEAT_00168] IP_V4 • [FO_TR_FEAT_00170] IP_V6 • [FO_TR_FEAT_00172] ICMP • [FO_TR_FEAT_00173] UDP • [FO_TR_FEAT_00174] TCP • [FO_TR_FEAT_00176] IPSec • [FO_TR_FEAT_00177] DHCP

Table 4.106: Details FO_TR_FEAT_00167

4.3.34 [FO_TR_FEAT_00189] IPDU_Routing

Short Name:	FO_TR_FEAT_00189
Long Name:	IPDU_Routing
Obligation:	Multiple
Description:	The IPDU Routing (Interaction Layer Protocol Data Unit Routing) involves routing of entire PDUs between networks. PDUs are larger data.
Parent Feature:	[FO_TR_FEAT_00187] Gateway_Support

Table 4.107: Details FO_TR_FEAT_00189

4.3.35 [FO_TR_FEAT_00206] ISO15118_2

Short Name:	FO_TR_FEAT_00206
Long Name:	ISO15118_2
Obligation:	Optional
Description:	The Charging protocol for the European market, focusing on conductive charging.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00205] Charging_Protocol

Table 4.108: Details FO_TR_FEAT_00206

4.3.36 [FO_TR_FEAT_00262] J1939_Diagnostics

Short Name:	FO_TR_FEAT_00262
Long Name:	J1939_Diagnostics
Obligation:	Optional
Description:	This Features enables diagnostics according to SAE J1939-73.
Applies to:	CP
Introduced:	R25-11
Relations:	[FO_TR_FEAT_00267] SAE_J1939
Parent Feature:	[FO_TR_FEAT_00087] Diagnostic_Communication

Table 4.109: Details FO_TR_FEAT_00262

4.3.37 [FO_TR_FEAT_00061] Key_Value_Storage

Short Name:	FO_TR_FEAT_00061
Long Name:	Key_Value_Storage
Obligation:	Optional

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Description:	This Feature is a unique identifier associated with a specific piece of data (the value). This approach is simpler and often faster than file-based storage.
Parent Feature:	[FO_TR_FEAT_00059] Persistency

Table 4.110: Details FO_TR_FEAT_00061

4.3.38 [FO_TR_FEAT_00151] LIN

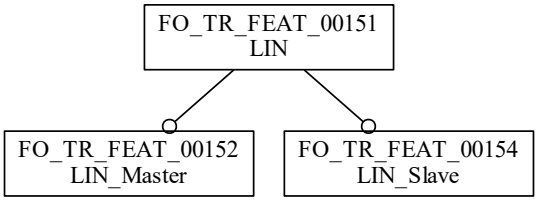

Figure 4.54: Feature FO_TR_FEAT_00151

Short Name:	FO_TR_FEAT_00151
Long Name:	LIN
Obligation:	Optional
Description:	The LIN (Local Interconnect Network) is a low-cost, low-speed communication protocol used in automotive networks for ECU and sensors communcation..
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology
Sub Features:	• [FO_TR_FEAT_00152] LIN_Master • [FO_TR_FEAT_00154] LIN_Slave

Table 4.111: Details FO_TR_FEAT_00151

4.3.39 [FO_TR_FEAT_00268] Log_and_Trace

Short Name:	FO_TR_FEAT_00268
Long Name:	Log_and_Trace
Obligation:	Optional
Description:	This Feature enables comprehensive tracking of software execution and performance, facilitating in-depth analysis and optimization.
Parent Feature:	[FO_TR_FEAT_00112] Logging

Table 4.112: Details FO_TR_FEAT_00268

4.3.40 [FO_TR_FEAT_00050] Logical_Supervision

Short Name:	FO_TR_FEAT_00050
Long Name:	Logical_Supervision
Obligation:	Optional
Description:	This Feature checks if the software (Supervised Entity or set of Supervised Entities) is executed in the sequence defined by the developed code.
Parent Feature:	[FO_TR_FEAT_00046] Safe_Execution

Table 4.113: Details FO_TR_FEAT_00050

4.3.41 [FO_TR_FEAT_00259] Machine_Sleep_States_Coordination

Short Name:	FO_TR_FEAT_00259
Long Name:	Machine_Sleep_States_Coordination
Obligation:	Optional
Description:	The Feature empowers the StateManagement to coordinate the systems sleep states between the Operating System, the Adaptive Applications, and potentially between the FunctionalClusters.
Applies to:	AP
Parent Feature:	[FO_TR_FEAT_00073] Mode_and_State_Management

Table 4.114: Details FO_TR_FEAT_00259

4.3.42 [FO_TR_FEAT_00074] Machine_State_Management

Short Name:	FO_TR_FEAT_00074
Long Name:	Machine_State_Management
Obligation:	Optional
Description:	This Feature refers to the mechanisms and services responsible for handling the various operational states of an ECU or the entire system. Purpose: General: Coordination of different functionalities provided at a particular time. Specific: Coordination of start and stop of processes via function groups. Recovery actions at function group level when processes fail. Coordination of update sessions together with the update configuration management. Handling of network handle states via network management. Coordination of ECU reset together with diagnostig management.
Parent Feature:	[FO_TR_FEAT_00073] Mode_and_State_Management

Table 4.115: Details FO_TR_FEAT_00074

4.3.43 [FO_TR_FEAT_00053] Memory_Protection

Short Name:	FO_TR_FEAT_00053
Long Name:	Memory_Protection
Obligation:	Optional
Description:	This Feature ensures that the main memory used by various software components is managed that way that it preserves system integrity and prevents unintended access or accidental corruption. Examples are Means like CRC, MMU or MPU.
Applies to:	AP, CP
Restrictions:	[FO_TR_FEAT_00246] CRC_Support
Parent Feature:	[FO_TR_FEAT_00052] Safe_Memory

Table 4.116: Details FO_TR_FEAT_00053

4.3.44 [FO_TR_FEAT_00216] Message_Auth_Codes

Short Name:	FO_TR_FEAT_00216
Long Name:	Message_Auth_Codes
Obligation:	Optional
Description:	The Message Authentication Codes are cryptographic tools used to verify the authenticity and integrity of data.
Parent Feature:	[FO_TR_FEAT_00210] Cryptography

Table 4.117: Details FO_TR_FEAT_00216

4.3.45 [FO_TR_FEAT_00237] Modular_Software_Cluster_Support

Short Name:	FO_TR_FEAT_00237
Long Name:	Modular_Software_Cluster_Support
Obligation:	Optional
Description:	The Modular Software Cluster Support enables the effective management and integration of software organized into modular clusters. (CP Flex)
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00078] Software_Clustering

Table 4.118: Details FO_TR_FEAT_00237

4.3.46 [FO_TR_FEAT_00076] Network_State_Management

Short Name:	FO_TR_FEAT_00076
Long Name:	Network_State_Management
Obligation:	Optional

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Description:	This Feature refers to the mechanisms and services that handle the various states and transitions of the in-vehicle communication network. Jobs like managing the network's operational states such as normal operation, sleep, and wake-up, as well as handling error states and recovery processes are part of it.
Relations:	[FO_TR_FEAT_00075] Application_State_Management
Parent Feature:	[FO_TR_FEAT_00073] Mode_and_State_Management

Table 4.119: Details FO_TR_FEAT_00076

4.3.47 [FO_TR_FEAT_00094] OBD_on_UDS

Short Name:	FO_TR_FEAT_00094
Long Name:	OBD_on_UDS
Obligation:	Optional
Description:	The OBD-on-UDS (On-Board Diagnostics on Unified Diagnostic Services) is a diagnostic protocol that integrates traditional OBD-II with the more advanced UDS protocol, allowing for more detailed vehicle diagnostics and fault detection.
Applies to:	CP
Restrictions:	[FO_TR_FEAT_00088] UDS
Parent Feature:	[FO_TR_FEAT_00092] Legislative_Diagnostics

Table 4.120: Details FO_TR_FEAT_00094

4.3.48 [FO_TR_FEAT_00093] OBDII

Short Name:	FO_TR_FEAT_00093
Long Name:	OBDII
Obligation:	Optional
Description:	The OBDII (On-Board Diagnostics II) describes a global standard for monitoring and reporting the performance of emission control systems.
Applies to:	CP
Restrictions:	[FO_TR_FEAT_00262] J1939_Diagnostics
Parent Feature:	[FO_TR_FEAT_00092] Legislative_Diagnostics

Table 4.121: Details FO_TR_FEAT_00093

4.3.49 [FO_TR_FEAT_00104] Occupant_And_Pedestrian_Safety_Systems

Short Name:	FO_TR_FEAT_00104
Long Name:	Occupant_And_Pedestrian_Safety_Systems
Obligation:	Optional

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Description:	This Feature describes interface definitions related to the safety of individuals like airbags, seatbelts, and collision detection.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00097] Vehicle_Domain_Interfaces

Table 4.122: Details FO_TR_FEAT_00104

4.3.50 [FO_TR_FEAT_00180] Partial_Networking

Short Name:	FO_TR_FEAT_00180
Long Name:	Partial_Networking
Obligation:	Optional
Description:	The Partial Networking Feature activates parts of the network as needed, allowing inactive sections to remain in low-power states.
Parent Feature:	[FO_TR_FEAT_00179] Network_Management

Table 4.123: Details FO_TR_FEAT_00180

4.3.51 [FO_TR_FEAT_00062] Persistency_Update

Short Name:	FO_TR_FEAT_00062
Long Name:	Persistency_Update
Obligation:	Optional
Description:	This Feature describes the update of persistent data stored in non-volatile memory (e.g. a file system) within automotive systems.
Parent Feature:	[FO_TR_FEAT_00059] Persistency

Table 4.124: Details FO_TR_FEAT_00062

4.3.52 [FO_TR_FEAT_00105] Powertrain

Short Name:	FO_TR_FEAT_00105
Long Name:	Powertrain
Obligation:	Optional
Description:	This Feature desribes the interface definitions related to propulsion functions like engine, transmission, and hybrid/electric drive components.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00097] Vehicle_Domain_Interfaces

Table 4.125: Details FO_TR_FEAT_00105

4.3.53 [FO_TR_FEAT_00217] Random_Number_Generation

Short Name:	FO_TR_FEAT_00217
Long Name:	Random_Number_Generation
Obligation:	Optional
Description:	The Random Number Generation provides unpredictable and high-quality numbers crucial for various cryptographic operations.
Parent Feature:	[FO_TR_FEAT_00210] Cryptography

Table 4.126: Details FO_TR_FEAT_00217

4.3.54 [FO_TR_FEAT_00131] Remote_IAM

Short Name:	FO_TR_FEAT_00131
Long Name:	Remote_IAM
Obligation:	Optional
Description:	The Remote IAM provides access control on inter-ECU service communication based on whitelists.
Relations:	[FO_TR_FEAT_00220] Identity_and_Access_Management_IAM
Parent Feature:	[FO_TR_FEAT_00123] Service_Oriented_Communication

Table 4.127: Details FO_TR_FEAT_00131

4.3.55 [FO_TR_FEAT_00054] Safe_Storage

Short Name:	FO_TR_FEAT_00054
Long Name:	Safe_Storage
Obligation:	Optional
Description:	This Feature ensures that data stored in non-volatile memory (NvM) is reliably preserved and protected against corruption and data loss.
Applies to:	FO
Relations:	• [FO_TR_FEAT_00056] NVRAM_Access • [FO_TR_FEAT_00246] CRC_Support
Parent Feature:	[FO_TR_FEAT_00052] Safe_Memory

Table 4.128: Details FO_TR_FEAT_00054

4.3.56 [FO_TR_FEAT_00063] Secure_Storage

Short Name:	FO_TR_FEAT_00063
Long Name:	Secure_Storage
Obligation:	Optional

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Description:	This Feature represents methods and mechanisms for securely storing data in non-volatile memory (NvM) within automotive systems.
Relations:	• [FO_TR_FEAT_00216] Message_Auth_Codes • [FO_TR_FEAT_00214] Symmetric_Encryption
Parent Feature:	[FO_TR_FEAT_00059] Persistency

Table 4.129: Details FO_TR_FEAT_00063

4.3.57 [FO_TR_FEAT_00198] Secure_Time

Short Name:	FO_TR_FEAT_00198
Long Name:	Secure_Time
Obligation:	Optional
Description:	The Secure Time Feature involves protecting the integrity and authenticity of time information.
Relations:	[FO_TR_FEAT_00207] Security
Parent Feature:	[FO_TR_FEAT_00196] Time_Synchronization

Table 4.130: Details FO_TR_FEAT_00198

4.3.58 [FO_TR_FEAT_00130] Service_Discovery

Short Name:	FO_TR_FEAT_00130
Long Name:	Service_Discovery
Obligation:	Optional
Description:	This Feature describes mechanisms for discovering available services within the network.
Parent Feature:	[FO_TR_FEAT_00123] Service_Oriented_Communication

Table 4.131: Details FO_TR_FEAT_00130

4.3.59 [FO_TR_FEAT_00188] Signal_Routing

Short Name:	FO_TR_FEAT_00188
Long Name:	Signal_Routing
Obligation:	Multiple
Description:	The Signal Routing describes the process of transferring individual signals from one communication network to another.
Parent Feature:	[FO_TR_FEAT_00187] Gateway_Support

Table 4.132: Details FO_TR_FEAT_00188

4.3.60 [FO_TR_FEAT_00129] Signal_to_Service_Communication

Short Name:	FO_TR_FEAT_00129
Long Name:	Signal_to_Service_Communication
Obligation:	Optional
Description:	This Feature translates traditional signal-based communication into a service-oriented model.
Parent Feature:	[FO_TR_FEAT_00123] Service_Oriented_Communication

Table 4.133: Details FO_TR_FEAT_00129

4.3.61 [FO_TR_FEAT_00183] Signalbased_Over_Ethernet

Short Name:	FO_TR_FEAT_00183
Long Name:	Signalbased_Over_Ethernet
Obligation:	Optional
Description:	The Signalbased Over Ethernet refers to communication data over Ethernet networks with high bandwidth and scalability of Ethernet.
Relations:	• [FO_TR_FEAT_00137] Ethernet • [FO_TR_FEAT_00274] Container_PDU
Parent Feature:	[FO_TR_FEAT_00182] Signalbased_Communication

Table 4.134: Details FO_TR_FEAT_00183

4.3.62 [FO_TR_FEAT_00127] SOME_IP

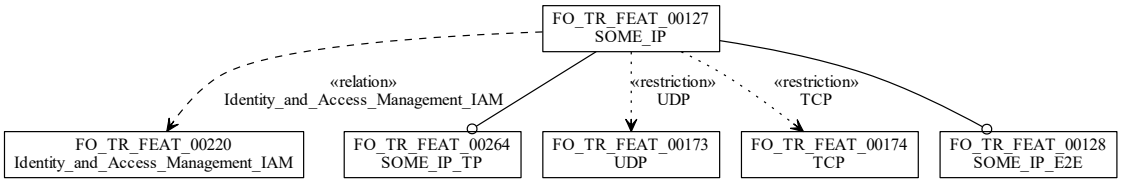

Figure 4.55: Feature FO_TR_FEAT_00127

Short Name:	FO_TR_FEAT_00127
Long Name:	SOME_IP
Obligation:	Optional
Description:	The SOME/IP (Scalable service-Oriented MiddlewarE over IP) is a communication protocol designed for service-oriented communication over IP networks.
Restrictions:	• [FO_TR_FEAT_00173] UDP • [FO_TR_FEAT_00174] TCP
Relations:	[FO_TR_FEAT_00220] Identity_and_Access_Management_IAM

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Parent Feature:	[FO_TR_FEAT_00123] Service_Oriented_Communication
Sub Features:	• [FO_TR_FEAT_00128] SOME_IP_E2E • [FO_TR_FEAT_00264] SOME_IP_TP

Table 4.135: Details FO_TR_FEAT_00127

4.3.63 [FO_TR_FEAT_00090] SOVD

Short Name:	FO_TR_FEAT_00090
Long Name:	SOVD
Obligation:	Optional
Description:	The Service Oriented Vehicle Diagnostics (SOVD) is a Diagnostics API for Software Defined Vehicle (SDV) that shall follow the APIs specifications released by ASAM.
Applies to:	AP
Parent Feature:	[FO_TR_FEAT_00087] Diagnostic_Communication

Table 4.136: Details FO_TR_FEAT_00090

4.3.64 [FO_TR_FEAT_00243] SPI

Short Name:	FO_TR_FEAT_00243
Long Name:	SPI
Obligation:	Optional
Description:	The Serial Peripheral Interface (SPI) is a standard for synchronous serial communication for short-distance wired communication between the ECU and integrated circuits.
Parent Feature:	[FO_TR_FEAT_00136] Network_Technology

Table 4.137: Details FO_TR_FEAT_00243

4.3.65 [FO_TR_FEAT_00252] Storage_Quota

Short Name:	FO_TR_FEAT_00252
Long Name:	Storage_Quota
Obligation:	Optional
Description:	This Features ensures that software uses storage initially allocated for it.
Applies to:	AP
Parent Feature:	[FO_TR_FEAT_00251] Resource_Partitioning

Table 4.138: Details FO_TR_FEAT_00252

4.3.66 [FO_TR_FEAT_00047] System_Health_Monitoring_SHM

Short Name:	FO_TR_FEAT_00047
Long Name:	System_Health_Monitoring_SHM
Obligation:	Optional
Description:	The System Health Monitoring is an essential for safe execution by continuously monitoring, detecting, diagnosing, and responding of automotive systems to faults for a robust system and archieving safety standards.
Parent Feature:	[FO_TR_FEAT_00046] Safe_Execution

Table 4.139: Details FO_TR_FEAT_00047

4.3.67 [FO_TR_FEAT_00241] Time_Precision_Measurement

Short Name:	FO_TR_FEAT_00241
Long Name:	Time_Precision_Measurement
Obligation:	Optional
Description:	The Time_Precision_Measurement enables to verify the precision of each Local Time Base compared to the Global Time Base. It is an optional recording mechanism supported for Time Slaves and Time Gateways.
Parent Feature:	[FO_TR_FEAT_00196] Time_Synchronization

Table 4.140: Details FO_TR_FEAT_00241

4.3.68 [FO_TR_FEAT_00197] Time_Validation

Short Name:	FO_TR_FEAT_00197
Long Name:	Time_Validation
Obligation:	Optional
Description:	The Time Validation ensures that the time information used by ECUs is accurate and reliable.
Parent Feature:	[FO_TR_FEAT_00196] Time_Synchronization

Table 4.141: Details FO_TR_FEAT_00197

4.3.69 [FO_TR_FEAT_00240] Timebase_Cloning

Short Name:	FO_TR_FEAT_00240
Long Name:	Timebase_Cloning
Obligation:	Optional
Description:	The Timebase_Cloning provides means to clone a Time Base by copying its current value, User Data and rate correction to another Time Base.

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Parent Feature:	[FO_TR_FEAT_00196] Time_Synchronization

Table 4.142: Details FO_TR_FEAT_00240

4.3.70 [FO_TR_FEAT_00255] Timing_Description

Short Name:	FO_TR_FEAT_00255
Long Name:	Timing_Description
Obligation:	Optional
Description:	The formal description of a timing is given in TIMEX model elements.
Applies to:	AP, CP
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00258] Timing_Design

Table 4.143: Details FO_TR_FEAT_00255

4.3.71 [FO_TR_FEAT_00192] Tunneling

Short Name:	FO_TR_FEAT_00192
Long Name:	Tunneling
Obligation:	Optional
Description:	The Tunneling involves encapsulating data from one network protocol within the data packets of another protocol to traverse different types of networks.
Parent Feature:	[FO_TR_FEAT_00187] Gateway_Support

Table 4.144: Details FO_TR_FEAT_00192

4.3.72 [FO_TR_FEAT_00088] UDS

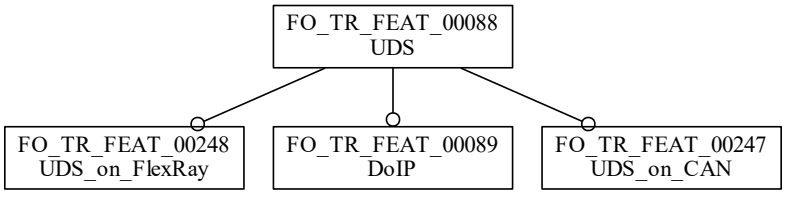

Figure 4.56: Feature FO_TR_FEAT_00088

Short Name:	FO_TR_FEAT_00088
Long Name:	UDS
Obligation:	Optional
Description:	The Unified Diagnostic Services is a standardized protocol for diagnostic communication between ECUs and diagnostic tools. It supports reading and clearing error codes, retrieving ECU information, and performing routine tests.
Applies to:	CP, AP
Parent Feature:	[FO_TR_FEAT_00087] Diagnostic_Communication
Sub Features:	• [FO_TR_FEAT_00089] DoIP • [FO_TR_FEAT_00247] UDS_on_CAN • [FO_TR_FEAT_00248] UDS_on_FlexRay

Table 4.145: Details FO_TR_FEAT_00088

4.3.73 [FO_TR_FEAT_00224] Update_Orchestration

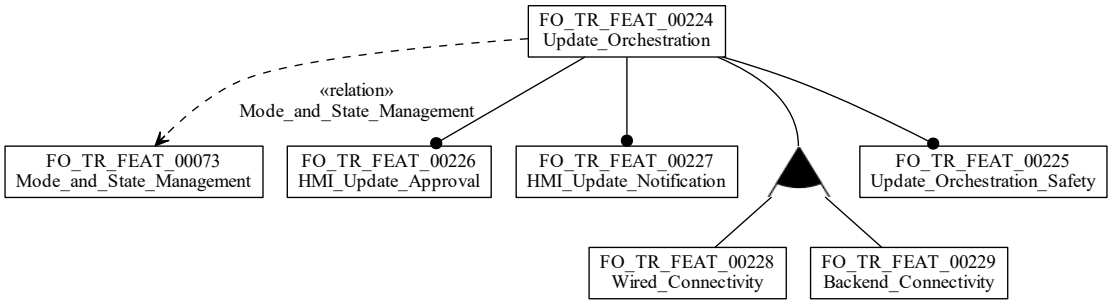

Figure 4.57: Feature FO_TR_FEAT_00224

Short Name:	FO_TR_FEAT_00224
Long Name:	Update_Orchestration
Obligation:	Mandatory
Description:	The Update Orchestration involves the coordination and management of the entire software update process.
Relations:	[FO_TR_FEAT_00073] Mode_and_State_Management
Parent Feature:	[FO_TR_FEAT_00223] Vehicle_Software_Update
Sub Features:	• [FO_TR_FEAT_00225] Update_Orchestration_Safety • [FO_TR_FEAT_00226] HMI_Update_Approval • [FO_TR_FEAT_00227] HMI_Update_Notification • [FO_TR_FEAT_00228] Wired_Connectivity • [FO_TR_FEAT_00229] Backend_Connectivity

Table 4.146: Details FO_TR_FEAT_00224

4.3.74 [FO_TR_FEAT_00200] V2X_China

Short Name:	FO_TR_FEAT_00200
Long Name:	V2X_China
Obligation:	Optional
Description:	The V2X_China refers to the standards, protocols, and technologies specific to V2X communication in China.
Parent Feature:	[FO_TR_FEAT_00199] V2X

Table 4.147: Details FO_TR_FEAT_00200

4.3.75 [FO_TR_FEAT_00201] V2X_Europe

Short Name:	FO_TR_FEAT_00201
Long Name:	V2X_Europe
Obligation:	Optional
Description:	The V2X_Europe refers to the standards, protocols, and technologies specific to V2X communication in Europe.
Parent Feature:	[FO_TR_FEAT_00199] V2X

Table 4.148: Details FO_TR_FEAT_00201

4.3.76 [FO_TR_FEAT_00077] Vehicle_State_Management

Short Name:	FO_TR_FEAT_00077
Long Name:	Vehicle_State_Management
Obligation:	Optional
Description:	This Feature involves overseeing the different operational states of the entire vehicle system, by coordinating interaction between various ECUs and subsystems. Examples can be This includes managing states such as driving, parking, diagnostics, and shutdown.
Parent Feature:	[FO_TR_FEAT_00073] Mode_and_State_Management

Table 4.149: Details FO_TR_FEAT_00077

4.3.77 [FO_TR_FEAT_00203] VISS

Short Name:	FO_TR_FEAT_00203
Long Name:	VISS
Obligation:	Mandatory
Description:	The VISS (Vehicle Information Service Specification) is a standardized API that provides access to vehicle data.

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Parent Feature:	[FO_TR_FEAT_00202] Automotive_API

Table 4.150: Details FO_TR_FEAT_00203

4.3.78 [FO_TR_FEAT_00181] VNSM

Short Name:	FO_TR_FEAT_00181
Long Name:	VNSM
Obligation:	Optional
Description:	The VNSM (Vehicle Network State Manager) manages the overseeing the state of the entire vehicle network.
Relations:	[FO_TR_FEAT_00187] Gateway_Support
Parent Feature:	[FO_TR_FEAT_00179] Network_Management

Table 4.151: Details FO_TR_FEAT_00181

4.3.79 [FO_TR_FEAT_00204] VSS

Short Name:	FO_TR_FEAT_00204
Long Name:	VSS
Obligation:	Mandatory
Description:	The VSS (Vehicle Signal Specification) defines a standardized model for representing vehicle signals and data.
Parent Feature:	[FO_TR_FEAT_00202] Automotive_API

Table 4.152: Details FO_TR_FEAT_00204

4.3.80 [FO_TR_FEAT_00051] Watchdog

Short Name:	FO_TR_FEAT_00051
Long Name:	Watchdog
Obligation:	Optional
Description:	The Watchdog Feature supports supervision of SW execution and can trigger switching to safe state.
Parent Feature:	[FO_TR_FEAT_00046] Safe_Execution

Table 4.153: Details FO_TR_FEAT_00051

4.3.81 [FO_TR_FEAT_00249] WWH_OBD

Short Name:	FO_TR_FEAT_00249
Long Name:	WWH_OBD
Obligation:	Optional
Description:	The WWH-OBD protocol (World-Wide Harmonized On-Board Diagnostics) standardizes global emissions diagnostics, enabling real-time monitoring and fault detection in vehicles. It ensures compliance with international emissions regulations and supports advanced diagnostic communication.
Applies to:	CP
Restrictions:	[FO_TR_FEAT_00262] J1939_Diagnostics
Parent Feature:	[FO_TR_FEAT_00092] Legislative_Diagnostics

Table 4.154: Details FO_TR_FEAT_00249

4.3.82 [FO_TR_FEAT_00121] XCP

Short Name:	FO_TR_FEAT_00121
Long Name:	XCP
Obligation:	Optional
Description:	The XCP (Universal Measurement and Calibration Protocol) Feature represents a protocol used for measuring and calibrating parameters within the vehicle's ECUs.
Parent Feature:	[FO_TR_FEAT_00120] Measurement_and_Calibration

Table 4.155: Details FO_TR_FEAT_00121

4.4 Level 4

4.4.1 [FO_TR_FEAT_00215] Asymmetric_Encryption

Short Name:	FO_TR_FEAT_00215
Long Name:	Asymmetric_Encryption
Obligation:	Optional
Description:	The Asymmetric Encryption uses a pair of keys: a public key for encryption and a private key for decryption.
Parent Feature:	[FO_TR_FEAT_00213] Encryption_and_Decryption

Table 4.156: Details FO_TR_FEAT_00215

4.4.2 [FO_TR_FEAT_00100] Automated_Driving_Interfaces

Short Name:	FO_TR_FEAT_00100
Long Name:	Automated_Driving_Interfaces
Obligation:	Optional
Description:	This Feature describes a collection of sensor interface definitions for enabling automated driving.
Applies to:	AP
Parent Feature:	[FO_TR_FEAT_00098] ADAS

Table 4.157: Details FO_TR_FEAT_00100

4.4.3 [FO_TR_FEAT_00229] Backend_Connectivity

Short Name:	FO_TR_FEAT_00229
Long Name:	Backend_Connectivity
Obligation:	Multiple
Description:	The Backend Connectivity uses wireless communication to deliver software updates to the vehicle.
Parent Feature:	[FO_TR_FEAT_00224] Update_Orchestration

Table 4.158: Details FO_TR_FEAT_00229

4.4.4 [FO_TR_FEAT_00158] CAN_Physical_Layer

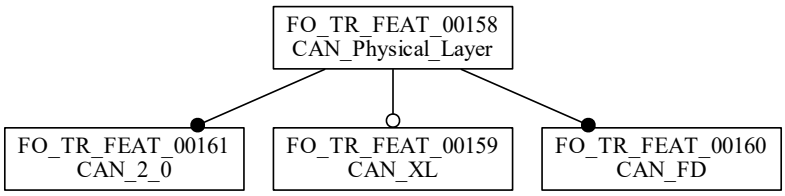

Figure 4.58: Feature FO_TR_FEAT_00158

Short Name:	FO_TR_FEAT_00158
Long Name:	CAN_Physical_Layer
Obligation:	Mandatory
Description:	This Feature defines the hardware aspects of the CAN network, including signal levels, bit timing, connectors, and noise immunity.
Parent Feature:	[FO_TR_FEAT_00157] CAN

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Sub Features:	• [FO_TR_FEAT_00159] CAN_XL • [FO_TR_FEAT_00160] CAN_FD • [FO_TR_FEAT_00161] CAN_2_0

Table 4.159: Details FO_TR_FEAT_00158

4.4.5 [FO_TR_FEAT_00163] CAN_Protocols

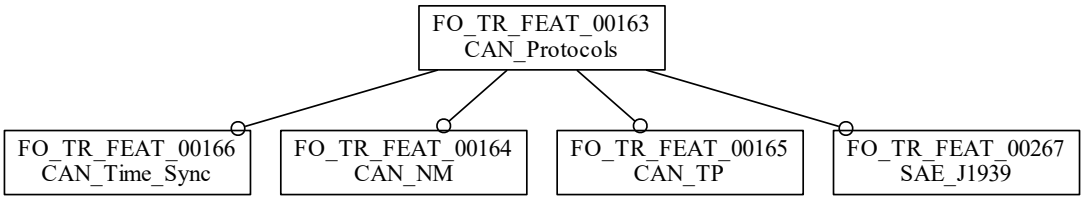

Figure 4.59: Feature FO_TR_FEAT_00163

Short Name:	FO_TR_FEAT_00163
Long Name:	CAN_Protocols
Obligation:	Optional
Description:	The CAN (Controller Area Network) protocols in AUTOSAR provide robust communication standards that describes CAN specific network layers.
Parent Feature:	[FO_TR_FEAT_00157] CAN
Sub Features:	• [FO_TR_FEAT_00164] CAN_NM • [FO_TR_FEAT_00165] CAN_TP • [FO_TR_FEAT_00166] CAN_Time_Sync • [FO_TR_FEAT_00267] SAE_J1939

Table 4.160: Details FO_TR_FEAT_00163

4.4.6 [FO_TR_FEAT_00126] DDS_E2E

Short Name:	FO_TR_FEAT_00126
Long Name:	DDS_E2E
Obligation:	Optional
Description:	The DDS E2E (End-to-End) ensures reliable and timely data delivery through end-to-end mechanisms.
Relations:	[FO_TR_FEAT_00193] E2E

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Parent Feature:	[FO_TR_FEAT_00124] DDS

Table 4.161: Details FO_TR_FEAT_00126

4.4.7 [FO_TR_FEAT_00125] DDS_Security

Short Name:	FO_TR_FEAT_00125
Long Name:	DDS_Security
Obligation:	Optional
Description:	This Feature provides security mechanisms for DDS communication, including authentication, encryption, and access control.
Parent Feature:	[FO_TR_FEAT_00124] DDS

Table 4.162: Details FO_TR_FEAT_00125

4.4.8 [FO_TR_FEAT_00177] DHCP

Short Name:	FO_TR_FEAT_00177
Long Name:	DHCP
Obligation:	Optional
Description:	The DHCP (Dynamic Host Configuration Protocol) is a network management protocol used to automate the process of configuring devices on IP networks.
Parent Feature:	[FO_TR_FEAT_00167] IP

Table 4.163: Details FO_TR_FEAT_00177

4.4.9 [FO_TR_FEAT_00089] DoIP

Short Name:	FO_TR_FEAT_00089
Long Name:	DoIP
Obligation:	Optional
Description:	An Extension of Unified Diagnostic Services (UDS) is Diagnostics over IP (DoIP), that allows diagnostic networks, facilitating faster and more flexible diagnostics as specified in ISO-13400-2.
Applies to:	CP, AP
Parent Feature:	[FO_TR_FEAT_00088] UDS

Table 4.164: Details FO_TR_FEAT_00089

4.4.10 [FO_TR_FEAT_00139] ETH

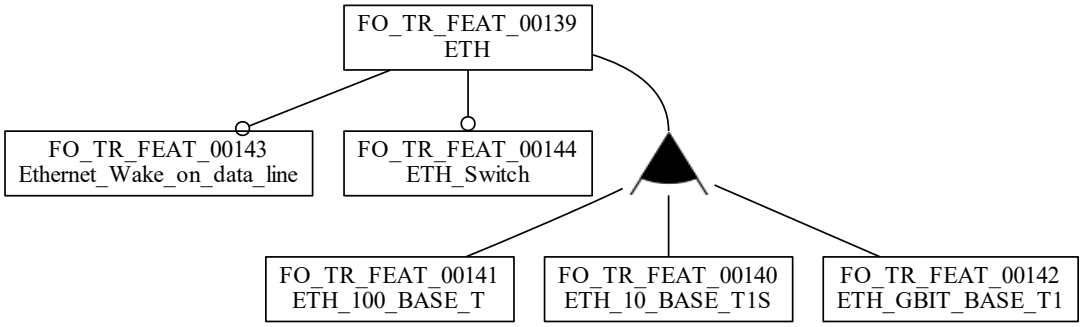

Figure 4.60: Feature FO_TR_FEAT_00139

Short Name:	FO_TR_FEAT_00139
Long Name:	ETH
Obligation:	Multiple
Description:	The ETH (Ethernet) descibes the context encompasses various Ethernet technologies and functionalities tailored for automotive networks. Diagnostics over IP
Parent Feature:	[FO_TR_FEAT_00137] Ethernet
Sub Features:	• [FO_TR_FEAT_00140] ETH_10_BASE_T1S • [FO_TR_FEAT_00141] ETH_100_BASE_T • [FO_TR_FEAT_00142] ETH_GBIT_BASE_T1 • [FO_TR_FEAT_00143] Ethernet_Wake_on_data_line • [FO_TR_FEAT_00144] ETH_Switch

Table 4.165: Details FO_TR_FEAT_00139

4.4.11 [FO_TR_FEAT_00238] Ethernet_Time_Sync

Short Name:	FO_TR_FEAT_00238
Long Name:	Ethernet_Time_Sync
Obligation:	Optional
Description:	The Ethernet Time Sync realizes the Ethernet-specific time synchronization protocol.
Applies to:	AP, CP
Relations:	[FO_TR_FEAT_00196] Time_Synchronization
Parent Feature:	[FO_TR_FEAT_00137] Ethernet

Table 4.166: Details FO_TR_FEAT_00238

4.4.12 [FO_TR_FEAT_00239] FlexRay_Time_Sync

Short Name:	FO_TR_FEAT_00239
Long Name:	FlexRay_Time_Sync
Obligation:	Optional
Description:	The FlexRay Time Sync realizes the FlexRay-specific time synchronization protocol. An access to the synchronized time base by the SWCs requires the Synchronized Time-Base Manager (-> StbM).
Applies to:	CP
Relations:	[FO_TR_FEAT_00196] Time_Synchronization
Parent Feature:	[FO_TR_FEAT_00156] FlexRay

Table 4.167: Details FO_TR_FEAT_00239

4.4.13 [FO_TR_FEAT_00265] FlexRay_TP

Short Name:	FO_TR_FEAT_00265
Long Name:	FlexRay_TP
Obligation:	Optional
Description:	The FlexRay_TP - Transport Protocol is responsible for segmenting the data in the Tx direction, collecting data in the Rx direction and monitoring the data stream.
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00156] FlexRay

Table 4.168: Details FO_TR_FEAT_00265

4.4.14 [FO_TR_FEAT_00226] HMI_Update_Approval

Short Name:	FO_TR_FEAT_00226
Long Name:	HMI_Update_Approval
Obligation:	Mandatory
Description:	The HMI Update Approval involves obtaining user consent through the Human-Machine Interface (HMI) before proceeding with a software update.
Parent Feature:	[FO_TR_FEAT_00224] Update_Orchestration

Table 4.169: Details FO_TR_FEAT_00226

4.4.15 [FO_TR_FEAT_00227] HMI_Update_Notification

Short Name:	FO_TR_FEAT_00227
Long Name:	HMI_Update_Notification
Obligation:	Mandatory

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Description:	The HMI Update Notification provides alerts and information to the user through the Human-Machine Interface (HMI) about the status and details of software updates.
Parent Feature:	[FO_TR_FEAT_00224] Update_Orchestration

Table 4.170: Details FO_TR_FEAT_00227

4.4.16 [FO_TR_FEAT_00244] I2C_Controller

Short Name:	FO_TR_FEAT_00244
Long Name:	I2C_Controller
Obligation:	Optional
Description:	A device controlling other devices (Targets). Further it initiates a transfer, generates clock signals and terminates a transfer. Formerly known as "Master".
Parent Feature:	[FO_TR_FEAT_00242] I2C

Table 4.171: Details FO_TR_FEAT_00244

4.4.17 [FO_TR_FEAT_00245] I2C_Target

Short Name:	FO_TR_FEAT_00245
Long Name:	I2C_Target
Obligation:	Optional
Description:	A device being addressed by a Controller device. Formerly known as "Slave".
Parent Feature:	[FO_TR_FEAT_00242] I2C

Table 4.172: Details FO_TR_FEAT_00245

4.4.18 [FO_TR_FEAT_00172] ICMP

Short Name:	FO_TR_FEAT_00172
Long Name:	ICMP
Obligation:	Optional
Description:	The ICMP (Internet Control Message Protocol) is used by network devices to send error messages and operational information indicating success or failure when communicating with another IP address.
Parent Feature:	[FO_TR_FEAT_00167] IP

Table 4.173: Details FO_TR_FEAT_00172

4.4.19 [FO_TR_FEAT_00168] IP_V4

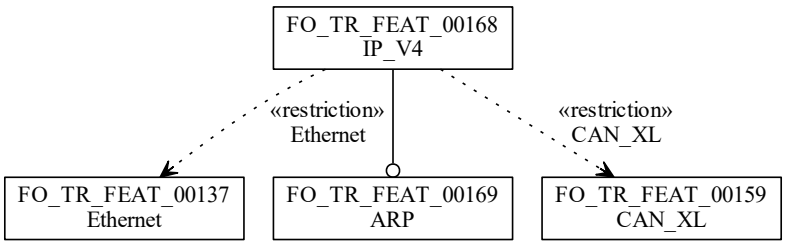

Figure 4.61: Feature FO_TR_FEAT_00168

Short Name:	FO_TR_FEAT_00168
Long Name:	IP_V4
Obligation:	Optional
Description:	The IP_V4 (Internet Protocol version 4) Feature is the fourth version of the Internet Protocol. It is one of the core protocols of internet protokol suite, using 32-bit addresses
Restrictions:	• [FO_TR_FEAT_00137] Ethernet • [FO_TR_FEAT_00159] CAN_XL
Parent Feature:	[FO_TR_FEAT_00167] IP
Sub Features:	[FO_TR_FEAT_00169] ARP

Table 4.174: Details FO_TR_FEAT_00168

4.4.20 [FO_TR_FEAT_00170] IP_V6

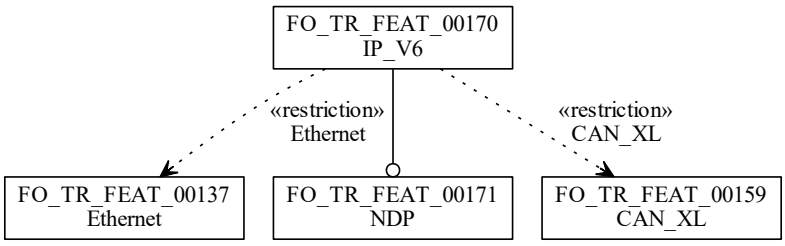

Figure 4.62: Feature FO_TR_FEAT_00170

Short Name:	FO_TR_FEAT_00170
Long Name:	IP_V6
Obligation:	Optional

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Description:	The IP_V6 (Internet Protocol version 6) is the most recent version of the Internet Protocol, designed to address the limitations of IPv4, such as address exhaustion, using 128-bit addresses.
Restrictions:	• [FO_TR_FEAT_00137] Ethernet • [FO_TR_FEAT_00159] CAN_XL
Parent Feature:	[FO_TR_FEAT_00167] IP
Sub Features:	[FO_TR_FEAT_00171] NDP

Table 4.175: Details FO_TR_FEAT_00170

4.4.21 [FO_TR_FEAT_00176] IPSec

Short Name:	FO_TR_FEAT_00176
Long Name:	IPSec
Obligation:	Optional
Description:	The IPSec (Internet Protocol Security) is a suite of protocols designed to ensure the security of data communications over an IP network through cryptographic security services.
Restrictions:	• [FO_TR_FEAT_00168] IP_V4 • [FO_TR_FEAT_00170] IP_V6
Parent Feature:	[FO_TR_FEAT_00167] IP

Table 4.176: Details FO_TR_FEAT_00176

4.4.22 [FO_TR_FEAT_00138] ITS_G5

Short Name:	FO_TR_FEAT_00138
Long Name:	ITS_G5
Obligation:	Multiple
Description:	This Feature represents Wake-Up and Sleep Funcktionality of Ethernet technology to manage the power consumption of automotive networks dynamically according IEEE 802.11p.
Applies to:	CP, AP
Parent Feature:	[FO_TR_FEAT_00137] Ethernet

Table 4.177: Details FO_TR_FEAT_00138

4.4.23 [FO_TR_FEAT_00152] LIN_Master

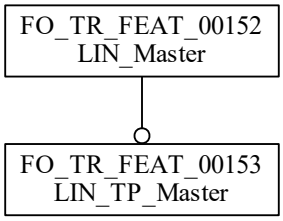

Figure 4.63: Feature FO_TR_FEAT_00152

Short Name:	FO_TR_FEAT_00152
Long Name:	LIN_Master
Obligation:	Optional
Description:	The LIN master is the primary controller in a LIN network. It initiates communication, schedules the data frame transmissions, and ensures the network's overall synchronization.
Parent Feature:	[FO_TR_FEAT_00151] LIN
Sub Features:	[FO_TR_FEAT_00153] LIN_TP_Master

Table 4.178: Details FO_TR_FEAT_00152

4.4.24 [FO_TR_FEAT_00154] LIN_Slave

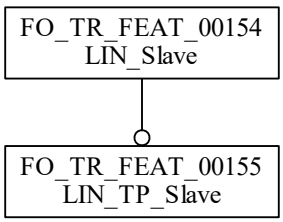

Figure 4.64: Feature FO_TR_FEAT_00154

Short Name:	FO_TR_FEAT_00154
Long Name:	LIN_Slave
Obligation:	Optional
Description:	The LIN slave is a secondary device on the LIN network that respond to the LIN master's requests.

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Parent Feature:	[FO_TR_FEAT_00151] LIN
Sub Features:	[FO_TR_FEAT_00155] LIN_TP_Slave

Table 4.179: Details FO_TR_FEAT_00154

4.4.25 [FO_TR_FEAT_00145] MACsec

Short Name:	FO_TR_FEAT_00145
Long Name:	MACsec
Obligation:	Optional
Description:	The MACsec (Media Access Control Security) is a security protocol that provides data confidentiality, integrity, and origin authenticity for Ethernet frames.
Restrictions:	[FO_TR_FEAT_00219] Key_Management
Parent Feature:	[FO_TR_FEAT_00137] Ethernet

Table 4.180: Details FO_TR_FEAT_00145

4.4.26 [FO_TR_FEAT_00281] MCAL_ADC

Short Name:	FO_TR_FEAT_00281
Long Name:	MCAL_ADC
Obligation:	Optional
Description:	This feature represents the ADC MCAL driver.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00253] IO_Hardware_Abstraction

Table 4.181: Details FO_TR_FEAT_00281

4.4.27 [FO_TR_FEAT_00278] MCAL_DIO

Short Name:	FO_TR_FEAT_00278
Long Name:	MCAL_DIO
Obligation:	Optional
Description:	This feature represents the DIO MCAL driver.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00253] IO_Hardware_Abstraction

Table 4.182: Details FO_TR_FEAT_00278

4.4.28 [FO_TR_FEAT_00277] MCAL_GPIO

Short Name:	FO_TR_FEAT_00277
Long Name:	MCAL_GPIO
Obligation:	Optional
Description:	This feature represents the GPIO (General Purpose Input/Output) MCAL driver.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00253] IO_Hardware_Abstraction

Table 4.183: Details FO_TR_FEAT_00277

4.4.29 [FO_TR_FEAT_00280] MCAL_GPT

Short Name:	FO_TR_FEAT_00280
Long Name:	MCAL_GPT
Obligation:	Optional
Description:	This feature represents the GPT MCAL driver.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00253] IO_Hardware_Abstraction

Table 4.184: Details FO_TR_FEAT_00280

4.4.30 [FO_TR_FEAT_00279] MCAL_PWM

Short Name:	FO_TR_FEAT_00279
Long Name:	MCAL_PWM
Obligation:	Optional
Description:	This feature represents the DIO MCAL driver.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00253] IO_Hardware_Abstraction

Table 4.185: Details FO_TR_FEAT_00279

4.4.31 [FO_TR_FEAT_00128] SOME_IP_E2E

Short Name:	FO_TR_FEAT_00128
Long Name:	SOME_IP_E2E
Obligation:	Optional
Description:	This Feautre ensures the end-to-end data delivery reliability for SOME/IP communication, managing message integrity and error handling.
Relations:	[FO_TR_FEAT_00193] E2E

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Parent Feature:	[FO_TR_FEAT_00127] SOME_IP

Table 4.186: Details FO_TR_FEAT_00128

4.4.32 [FO_TR_FEAT_00264] SOME_IP_TP

Short Name:	FO_TR_FEAT_00264
Long Name:	SOME_IP_TP
Obligation:	Optional
Description:	The SOME/IP TP - Transport Protocol is responsible for segmenting the data in the Tx direction, collecting data in the Rx direction and monitoring the data stream.
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00127] SOME_IP

Table 4.187: Details FO_TR_FEAT_00264

4.4.33 [FO_TR_FEAT_00214] Symmetric_Encryption

Short Name:	FO_TR_FEAT_00214
Long Name:	Symmetric_Encryption
Obligation:	Optional
Description:	The Symmetric Encryption uses the same key for both encryption and decryption, especially for large amounts of data.
Parent Feature:	[FO_TR_FEAT_00213] Encryption_and_Decryption

Table 4.188: Details FO_TR_FEAT_00214

4.4.34 [FO_TR_FEAT_00174] TCP

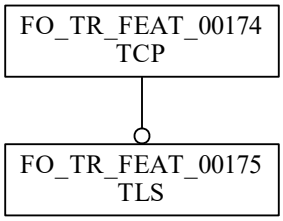

Figure 4.65: Feature FO_TR_FEAT_00174

Short Name:	FO_TR_FEAT_00174
Long Name:	TCP
Obligation:	Optional
Description:	The TCP (Transmission Control Protocol) is a connection-oriented protocol of data between applications running on hosts communicating over an IP network.
Parent Feature:	[FO_TR_FEAT_00167] IP
Sub Features:	[FO_TR_FEAT_00175] TLS

Table 4.189: Details FO_TR_FEAT_00174

4.4.35 [FO_TR_FEAT_00146] TSN

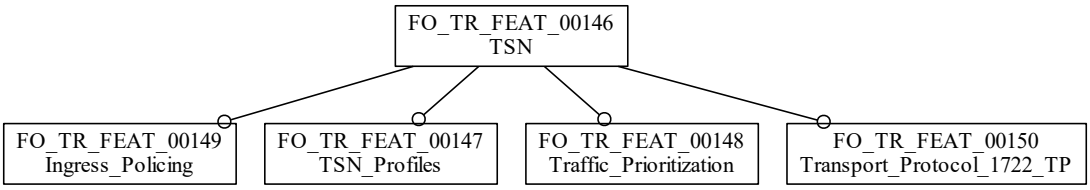

Figure 4.66: Feature FO_TR_FEAT_00146

Short Name:	FO_TR_FEAT_00146
Long Name:	TSN
Obligation:	Optional
Description:	The TSN (Time-Sensitive Networking) describes IEEE standards to support deterministic real-time communication.
Parent Feature:	[FO_TR_FEAT_00137] Ethernet
Sub Features:	• [FO_TR_FEAT_00147] TSN_Profiles • [FO_TR_FEAT_00148] Traffic_Prioritization • [FO_TR_FEAT_00149] Ingress_Policing • [FO_TR_FEAT_00150] Transport_Protocol_1722_TP

Table 4.190: Details FO_TR_FEAT_00146

4.4.36 [FO_TR_FEAT_00173] UDP

Short Name:	FO_TR_FEAT_00173
Long Name:	UDP
Obligation:	Optional
Description:	The UDP (User Datagram Protocol) is a connectionless protocol that provides a lightweight way to send datagrams over an IP network.

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Parent Feature:	[FO_TR_FEAT_00167] IP

Table 4.191: Details FO_TR_FEAT_00173

4.4.37 [FO_TR_FEAT_00247] UDS_on_CAN

Short Name:	FO_TR_FEAT_00247
Long Name:	UDS_on_CAN
Obligation:	Optional
Description:	The UDSonCAN protocol facilitates Diagnsotics Communication over the CAN bus, enabling advanced diagnostics, ECU reprogramming, and fault detection in automotive systems. It ensures standardized, efficient communication between diagnostic tools and vehicle ECUs according to ISO-14229-3.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00088] UDS

Table 4.192: Details FO_TR_FEAT_00247

4.4.38 [FO_TR_FEAT_00248] UDS_on_FlexRay

Short Name:	FO_TR_FEAT_00248
Long Name:	UDS_on_FlexRay
Obligation:	Optional
Description:	The UDSonFR protocol enables Unified Diagnostic Services (UDS) over the FlexRay network, supporting high-speed diagnostics, ECU reprogramming, and fault management in complex automotive systems. It ensures reliable communication in time-critical environments according to ISO-14229-4.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00088] UDS

Table 4.193: Details FO_TR_FEAT_00248

4.4.39 [FO_TR_FEAT_00225] Update_Orchestration_Safety

Short Name:	FO_TR_FEAT_00225
Long Name:	Update_Orchestration_Safety
Obligation:	Mandatory
Description:	The Update Orchestration Safety ensures that the software update process does not compromise the safety of the vehicle.
Parent Feature:	[FO_TR_FEAT_00224] Update_Orchestration

Table 4.194: Details FO_TR_FEAT_00225

4.4.40 [FO_TR_FEAT_00099] VMCI

Short Name:	FO_TR_FEAT_00099
Long Name:	VMCI
Obligation:	Optional
Description:	The VMCI (Vehicle Motion Control Interface) is a standardized interface for controlling and coordinating vehicle motion including managing acceleration, braking, and steering.
Applies to:	CP
Parent Feature:	[FO_TR_FEAT_00098] ADAS

Table 4.195: Details FO_TR_FEAT_00099

4.4.41 [FO_TR_FEAT_00228] Wired_Connectivity

Short Name:	FO_TR_FEAT_00228
Long Name:	Wired_Connectivity
Obligation:	Multiple
Description:	The Wired Connectivity desribes the physical connections to transfer software updates to the vehicle. (e.g. USB, Ethernet, or dedicated diagnostic ports)
Parent Feature:	[FO_TR_FEAT_00224] Update_Orchestration

Table 4.196: Details FO_TR_FEAT_00228

4.5 Level 5

4.5.1 [FO_TR_FEAT_00169] ARP

Short Name:	FO_TR_FEAT_00169
Long Name:	ARP
Obligation:	Optional
Description:	The ARP (Address Resolution Protocol) is a protocol used to map IP addresses to the physical MAC addresses.
Parent Feature:	[FO_TR_FEAT_00168] IP_V4

Table 4.197: Details FO_TR_FEAT_00169

4.5.2 [FO_TR_FEAT_00161] CAN_2_0

Short Name:	FO_TR_FEAT_00161
Long Name:	CAN_2_0
Obligation:	Mandatory

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Description:	This Feature is the classical version of CAN, providing robust error detection, standard and extended frames, and efficient arbitration.
Parent Feature:	[FO_TR_FEAT_00158] CAN_Physical_Layer

Table 4.198: Details FO_TR_FEAT_00161

4.5.3 [FO_TR_FEAT_00160] CAN_FD

Short Name:	FO_TR_FEAT_00160
Long Name:	CAN_FD
Obligation:	Mandatory
Description:	The CAN FD is an extension of CAN protocol that enhances data transfer efficiency by allowing flexible data rates and larger data payloads within the same frame.
Parent Feature:	[FO_TR_FEAT_00158] CAN_Physical_Layer

Table 4.199: Details FO_TR_FEAT_00160

4.5.4 [FO_TR_FEAT_00164] CAN_NM

Short Name:	FO_TR_FEAT_00164
Long Name:	CAN_NM
Obligation:	Optional
Description:	The CAN NM - Network Management coordinates transitions between the wake up and sleep state of the network.
Relations:	[FO_TR_FEAT_00179] Network_Management
Parent Feature:	[FO_TR_FEAT_00163] CAN_Protocols

Table 4.200: Details FO_TR_FEAT_00164

4.5.5 [FO_TR_FEAT_00166] CAN_Time_Sync

Short Name:	FO_TR_FEAT_00166
Long Name:	CAN_Time_Sync
Obligation:	Optional
Description:	The CAN Time Sync realizes the CAN-specific time synchronization protocol. An access to the synchronized time base by the SWCs requires the Synchronized Time-Base Manager (-> StbM).
Applies to:	CP
Relations:	[FO_TR_FEAT_00196] Time_Synchronization
Parent Feature:	[FO_TR_FEAT_00163] CAN_Protocols

Table 4.201: Details FO_TR_FEAT_00166

4.5.6 [FO_TR_FEAT_00165] CAN_TP

Short Name:	FO_TR_FEAT_00165
Long Name:	CAN_TP
Obligation:	Optional
Description:	The CAN TP - Transport Protocol is responsible for segmenting the data in the Tx direction, collecting data in the Rx direction and monitoring the data stream.
Restrictions:	• [FO_TR_FEAT_00264] SOME_IP_TP • [FO_TR_FEAT_00265] FlexRay_TP
Parent Feature:	[FO_TR_FEAT_00163] CAN_Protocols

Table 4.202: Details FO_TR_FEAT_00165

4.5.7 [FO_TR_FEAT_00159] CAN_XL

Short Name:	FO_TR_FEAT_00159
Long Name:	CAN_XL
Obligation:	Optional
Description:	The CAN XL enhances the CAN protocol by supporting longer data frames and higher data rates while maintaining backward compatibility
Relations:	[FO_TR_FEAT_00137] Ethernet
Parent Feature:	[FO_TR_FEAT_00158] CAN_Physical_Layer

Table 4.203: Details FO_TR_FEAT_00159

4.5.8 [FO_TR_FEAT_00141] ETH_100_BASE_T

Short Name:	FO_TR_FEAT_00141
Long Name:	ETH_100_BASE_T
Obligation:	Multiple
Description:	The ETH_100_BASE_T (100BASE-T) is a high-speed Ethernet network connection providing 100 Mbps over twisted pair cables.
Parent Feature:	[FO_TR_FEAT_00139] ETH

Table 4.204: Details FO_TR_FEAT_00141

4.5.9 [FO_TR_FEAT_00140] ETH_10_BASE_T1S

Short Name:	FO_TR_FEAT_00140
Long Name:	ETH_10_BASE_T1S
Obligation:	Multiple

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Description:	ETH_10_BASE_T1S (10BASE-T1S) is a standardized Ethernet physical layer specification for automotive networks providing a 10 Mbps Ethernet connection.
Parent Feature:	[FO_TR_FEAT_00139] ETH

Table 4.205: Details FO_TR_FEAT_00140

4.5.10 [FO_TR_FEAT_00142] ETH_GBIT_BASE_T1

Short Name:	FO_TR_FEAT_00142
Long Name:	ETH_GBIT_BASE_T1
Obligation:	Multiple
Description:	The ETH_XYZ_BASE_T1 (Placeholder for various higher-speed Ethernet standards, such as 1000BASE-T1, 2.5GBASE-T1, etc.) higher-speed Ethernet standards designed for automotive use, offering speeds from 1 Gbps to multiple Gbps over a single twisted pair cable.
Parent Feature:	[FO_TR_FEAT_00139] ETH

Table 4.206: Details FO_TR_FEAT_00142

4.5.11 [FO_TR_FEAT_00144] ETH_Switch

Short Name:	FO_TR_FEAT_00144
Long Name:	ETH_Switch
Obligation:	Optional
Description:	The ETH Switch (Ethernet Switch) describes the connection to multiple Ethernet devices within a vehicle, managing data traffic efficiently.
Parent Feature:	[FO_TR_FEAT_00139] ETH

Table 4.207: Details FO_TR_FEAT_00144

4.5.12 [FO_TR_FEAT_00143] Ethernet_Wake_on_data_line

Short Name:	FO_TR_FEAT_00143
Long Name:	Ethernet_Wake_on_data_line
Obligation:	Optional
Description:	This Feature allows the Ethernet network to wake up from a low-power state when data is detected on the line.
Parent Feature:	[FO_TR_FEAT_00139] ETH

Table 4.208: Details FO_TR_FEAT_00143

4.5.13 [FO_TR_FEAT_00149] Ingress_Policing

Short Name:	FO_TR_FEAT_00149
Long Name:	Ingress_Policing
Obligation:	Optional
Description:	This Feature monitors and regulates the flow of incoming network traffic to fullfill compliance requirements.
Parent Feature:	[FO_TR_FEAT_00146] TSN

Table 4.209: Details FO_TR_FEAT_00149

4.5.14 [FO_TR_FEAT_00153] LIN_TP_Master

Short Name:	FO_TR_FEAT_00153
Long Name:	LIN_TP_Master
Obligation:	Optional
Description:	This TP (Transport Protocol)-Feature is an extension of the LIN master to handle larger data packets across multiple LIN frames.
Parent Feature:	[FO_TR_FEAT_00152] LIN_Master

Table 4.210: Details FO_TR_FEAT_00153

4.5.15 [FO_TR_FEAT_00155] LIN_TP_Slave

Short Name:	FO_TR_FEAT_00155
Long Name:	LIN_TP_Slave
Obligation:	Optional
Description:	This TP (Transport Protocol)-Feature is an extension of the LIN slave to handle larger data packets across multiple LIN frames.
Parent Feature:	[FO_TR_FEAT_00154] LIN_Slave

Table 4.211: Details FO_TR_FEAT_00155

4.5.16 [FO_TR_FEAT_00171] NDP

Short Name:	FO_TR_FEAT_00171
Long Name:	NDP
Obligation:	Optional
Description:	The NDP (Neighbor Discovery Protocol) is a protocol used in IPv6 to discover other devices on the network.
Parent Feature:	[FO_TR_FEAT_00170] IP_V6

Table 4.212: Details FO_TR_FEAT_00171

4.5.17 [FO_TR_FEAT_00267] SAE_J1939

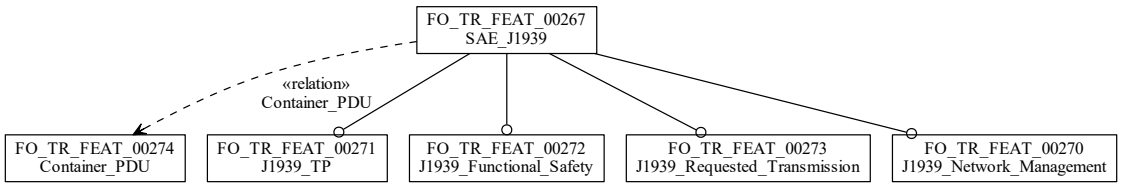

Figure 4.67: Feature FO_TR_FEAT_00267

Short Name:	FO_TR_FEAT_00267
Long Name:	SAE_J1939
Obligation:	Optional
Description:	This Feature enables communication for trucks and agricultural machinery according to SAE J1939.
Applies to:	CP
Introduced:	R25-11
Relations:	[FO_TR_FEAT_00274] Container_PDU
Parent Feature:	[FO_TR_FEAT_00163] CAN_Protocols
Sub Features:	• [FO_TR_FEAT_00270] J1939_Network_Management • [FO_TR_FEAT_00271] J1939_TP • [FO_TR_FEAT_00272] J1939_Functional_Safety • [FO_TR_FEAT_00273] J1939_Requested_Transmission

Table 4.213: Details FO_TR_FEAT_00267

4.5.18 [FO_TR_FEAT_00175] TLS

Short Name:	FO_TR_FEAT_00175
Long Name:	TLS
Obligation:	Optional
Description:	The TLS (Transport Layer Security) is a protocol that provides privacy and data integrity between two communicating applications.
Parent Feature:	[FO_TR_FEAT_00174] TCP

Table 4.214: Details FO_TR_FEAT_00175

4.5.19 [FO_TR_FEAT_00148] Traffic_Prioritization

Short Name:	FO_TR_FEAT_00148
Long Name:	Traffic_Prioritization
Obligation:	Optional
Description:	This Feature describes the assignment of different levels of priority to various types of network traffic to ensure that critical data gets transmitted with higher prioritiy.
Parent Feature:	[FO_TR_FEAT_00146] TSN

Table 4.215: Details FO_TR_FEAT_00148

4.5.20 [FO_TR_FEAT_00150] Transport_Protocol_1722_TP

Short Name:	FO_TR_FEAT_00150
Long Name:	Transport_Protocol_1722_TP
Obligation:	Optional
Description:	This Feature represents the requirements of the IEEE 1722 TP (Transport Protocol) for Audio/Video Bridging (AVB) over Ethernet to ensure timely and synchronized delivery of audio and video streams.
Parent Feature:	[FO_TR_FEAT_00146] TSN

Table 4.216: Details FO_TR_FEAT_00150

4.5.21 [FO_TR_FEAT_00147] TSN_Profiles

Short Name:	FO_TR_FEAT_00147
Long Name:	TSN_Profiles
Obligation:	Optional
Description:	This Feature provides tools and protocols to ensure deterministic data transmission over Ethernet.
Parent Feature:	[FO_TR_FEAT_00146] TSN

Table 4.217: Details FO_TR_FEAT_00147

4.6 Level 6

4.6.1 [FO_TR_FEAT_00272] J1939_Functional_Safety

Short Name:	FO_TR_FEAT_00272
Long Name:	J1939_Functional_Safety
Obligation:	Optional
Description:	This Feature enables safety protected communication according SAE J1939-76.

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Applies to:	CP
Introduced:	R25-11
Relations:	[FO_TR_FEAT_00193] E2E
Parent Feature:	[FO_TR_FEAT_00267] SAE_J1939

Table 4.218: Details FO_TR_FEAT_00272

4.6.2 [FO_TR_FEAT_00270] J1939_Network_Management

Short Name:	FO_TR_FEAT_00270
Long Name:	J1939_Network_Management
Obligation:	Optional
Description:	This Feature enables assignment of node adresses according to SAE J1939-81.
Applies to:	CP
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00267] SAE_J1939

Table 4.219: Details FO_TR_FEAT_00270

4.6.3 [FO_TR_FEAT_00273] J1939_Requested_Transmission

Short Name:	FO_TR_FEAT_00273
Long Name:	J1939_Requested_Transmission
Obligation:	Optional
Description:	This Feature allows requesting messages according SAE J1939-21.
Applies to:	CP
Introduced:	R25-11
Parent Feature:	[FO_TR_FEAT_00267] SAE_J1939

Table 4.220: Details FO_TR_FEAT_00273

4.6.4 [FO_TR_FEAT_00271] J1939_TP

Short Name:	FO_TR_FEAT_00271
Long Name:	J1939_TP
Obligation:	Optional
Description:	The Feature J1939 TP (Transport Protocol) enables transmission of large messages according to SAE J1939-21.
Applies to:	CP
Introduced:	R25-11

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Parent Feature:	[FO_TR_FEAT_00267] SAE_J1939

Table 4.221: Details FO_TR_FEAT_00271

A Change history of AUTOSAR traceable items

Please note that the lists in this chapter also include traceable items that have been removed from the specification in a later version. These items do not appear as hyperlinks in the document.

A.1 Traceable item history of this document according to AUTOSAR Release R25-11

- New Features:
  - FO_TR_FEAT_00253 IO_Hardware_Abstraction
  - FO_TR_FEAT_00254 Safe_Hardware_Accelerators
  - FO_TR_FEAT_00255 Timing_Description
  - FO_TR_FEAT_00256 Timing
  - FO_TR_FEAT_00258 Timing_Design
  - FO_TR_FEAT_00259 Machine_Sleep_States_Coordination
  - FO_TR_FEAT_00260 Remote_Persistency
  - FO_TR_FEAT_00262 J1939_Diagnostics
  - FO_TR_FEAT_00263 ECU_Data_Collection
  - FO_TR_FEAT_00264 SOME_IP_TP
  - FO_TR_FEAT_00265 FlexRay_TP
  - FO_TR_FEAT_00266 MCU_Abstraction
  - FO_TR_FEAT_00267 SAE_J1939
  - FO_TR_FEAT_00268 Log_and_Trace
  - FO_TR_FEAT_00269 Bus_Mirroring
  - FO_TR_FEAT_00270 J1939_Network_Management
  - FO_TR_FEAT_00271 J1939_TP
  - FO_TR_FEAT_00272 J1939_Functional_Safety
  - FO_TR_FEAT_00273 J1939_Requested_Transmission
  - FO_TR_FEAT_00274 Container_PDU
  - FO_TR_FEAT_00275 ECU_Abstraction
  - FO_TR_FEAT_00276 Time_Service

  - FO_TR_FEAT_00277 MCAL_GPIO
  - FO_TR_FEAT_00278 MCAL_DIO
  - FO_TR_FEAT_00279 MCAL_PWM
  - FO_TR_FEAT_00280 MCAL_GPT
  - FO_TR_FEAT_00281 MCAL_ADC
- Removed Features:
  - FO_TR_FEAT_00067 Deterministic_Synchronisation
  - FO_TR_FEAT_00095 Zero_Emission
  - FO_TR_FEAT_00113 Log_and_Trace
  - FO_TR_FEAT_00162 TT_CAN
  - FO_TR_FEAT_00185 Padding
  - FO_TR_FEAT_00186 Container_PDU
- Renamed Features:
  - FO_TR_FEAT_00135 Inter_OS_Application_Communication
  - FO_TR_FEAT_00142 ETH_GBIT_BASE_T1
  - FO_TR_FEAT_00205 Charging_Protocol
  - FO_TR_FEAT_00222 Software_Update
  - FO_TR_FEAT_00236 Hardware_Support
- Relocated Features:
  - FO_TR_FEAT_00119 Timing_Analysis
  - FO_TR_FEAT_00246 CRC_Support
  - FO_TR_FEAT_00251 Resource_Partitioning