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1 Introduction and functional overview

This specification describes the API of the Default Error Tracer. All detected development and runtime errors in the Basic Software are reported to this module. The API parameters allow for tracing source and kind of error:

- Module in which error has been detected
- Function in which error has been detected
- Type of error

The functionality behind the API of this module is not in scope of this specification. It is up to the software developer and software integrator to choose the optimal strategy for his specific application and testing environment. Possible functionalities could be:

- Set debugger breakpoint within error reporting API
- Count reported errors
- Handle the runtime errors by using default values
- Log calls and passed parameters in RAM buffer
- Send reported errors via communication interface to external logger

Note: The software requirements of the Default Error Tracer are specified in the SRS Diagnostics document.

2 Acronyms and Abbreviations

The glossary below includes acronyms and abbreviations relevant to the Default Error Tracer module that are not included in the [1, AUTOSAR glossary].

DET: Default Error Tracer.

3 Related documentation

3.1 Input documents & related standards and norms

[1] Glossary
AUTOSAR_FO_TR_Glossary

[2] General Specification of Basic Software Modules
AUTOSAR_CP_SWS_BSWGeneral

[3] Requirements on Diagnostics
AUTOSAR_FO_RS_Diagnostics

[4] General Requirements on Basic Software Modules
AUTOSAR_CP_RS_BSWGeneral

3.2 Related specification

AUTOSAR provides a General Specification on Basic Software modules [2, SWS BSW General], which is also valid for Default Error Tracer.

Thus, the specification SWS BSW General shall be considered as additional and required specification for Default Error Tracer.

4 Constraints and assumptions

4.1 Limitations

This specification does not define the functionality behind the error reporting API.

Memory protection mechanisms of the operating system are not taken into account.

4.2 Applicability to car domains

No restrictions.

5 Dependencies to other modules

5.1 File structure

[SWS_Det_00037]

Upstream requirements: SRS_BSW_00346

⌈Det.h includes all user relevant information for the tracing of errors reported via its services.⌋

6 Requirements Tracing

The following tables reference the requirements specified in [3] and [4] and links to the fulfillment of these. Please note that if column “Satisfied by” is empty for a specific requirement this means that this requirement is not fulfilled by this document.

Requirement	Description	Satisfied by
[SRS_BSW_00101]	The Basic Software Module shall be able to initialize variables and hardware in a separate initialization function	[SWS_Det_00019] [SWS_Det_00020] [SWS_Det_00025]
[SRS_BSW_00159]	All modules of the AUTOSAR Basic Software shall support a tool based configuration	[SWS_Det_00018]
[SRS_BSW_00167]	All AUTOSAR Basic Software Modules shall provide configuration rules and constraints to enable plausibility checks	[SWS_Det_00035]
[SRS_BSW_00171]	Optional functionality of a Basic-SW component that is not required in the ECU shall be configurable at pre-compile-time	[SWS_Det_00015] [SWS_Det_91002]
[SRS_BSW_00310]	API naming convention	[SWS_Det_00008] [SWS_Det_00009] [SWS_Det_00010] [SWS_Det_01001]
[SRS_BSW_00312]	Shared code shall be reentrant	[SWS_Det_00039]
[SRS_BSW_00337]	Classification of development errors	[SWS_Det_00026]
[SRS_BSW_00345]	BSW Modules shall support pre-compile configuration	[SWS_Det_00014] [SWS_Det_00501] [SWS_Det_00503]
[SRS_BSW_00346]	All AUTOSAR Basic Software Modules shall provide at least a basic set of module files	[SWS_Det_00037]
[SRS_BSW_00358]	The return type of init() functions implemented by AUTOSAR Basic Software Modules shall be void	[SWS_Det_00008]
[SRS_BSW_00384]	The Basic Software Module specifications shall specify at least in the description which other modules they require	[SWS_Det_91002]
[SRS_BSW_00392]	Parameters shall have a type	[SWS_Det_00035]
[SRS_BSW_00403]	The Basic Software Module specifications shall specify for each parameter/container whether it supports different values or multiplicity in different configuration sets	[SWS_Det_00018]
[SRS_BSW_00406]	API handling in uninitialized state	[SWS_Det_00024] [SWS_Det_00208]
[SRS_BSW_00414]	Init functions shall have a pointer to a configuration structure as single parameter	[SWS_Det_00008] [SWS_Det_00210]
[SRS_BSW_00447]	Standardizing Include file structure of BSW Modules Implementing Autosar Service	[SWS_Det_91001]
[SRS_BSW_00462]	All Standardized Autosar Interfaces shall have unique requirement Id / number	[SWS_Det_00202] [SWS_Det_00205]
[SRS_BSW_00463]	Naming convention of callout prototypes	[SWS_Det_00180] [SWS_Det_00181] [SWS_Det_00184]

Table 6.1: Requirements Tracing

7 Functional specification

The Default Error Tracer provides functionality to support error detection and tracing of errors during the development and runtime of Software Components and other Basic Software Modules. For this purpose the Default Error Tracer receives and evaluates error messages from these components and modules.

Due to the always specific (non generic!) requirements regarding functionality in error cases there is no explicit specification of the DET implementation, except:

- Configurable lists of error hooks will be executed in case of an error report.
- Interfaces will be provided to report errors, allow optional error recovery after reset,and to handle optional error recovery information.

7.1 Initialization

[SWS_Det_00019]

Upstream requirements: SRS_BSW_00101

⌈The DET shall provide the initialization function `Det_Init` (see [SWS_Det_00008]).⌋

[SWS_Det_00020]

Upstream requirements: SRS_BSW_00101

⌈Each call of the `Det_Init` function shall be used to set the Default Error Tracer to a defined initial status (e.g. by removing optional error recovery information).⌋

Note: [SWS_Det_00020] is not testable without knowledge about the non specified functionality and the probably used optional error recovery information.

Note: The usage and meaning of error recovery information is optional and not specified.

[SWS_Det_00025]

Upstream requirements: SRS_BSW_00101

⌈The Default Error Tracer shall provide the function `Det_Start` (see [SWS_Det_00010]).⌋

Note: The Default Error Tracer's environment can use the function `Det_Start` to trigger the Default Error Tracer module for instance (if needed) in case of completed NVRAM initialization for persistent error storage.

Note: In case the Default Error Tracer does not require a startup call the `Det_Start` function can be empty.

Note: The integrator can decide by configuration of the EcuM, when `Det_Init` will be called.

Note: The integrator can decide by configuration of the EcuM or ModeM, when and whether Det_Start will be called.

7.2 Error Hooks

To support debugging and error tracing during development and runtime, the Default Error Tracer provides functionality for notification of received error reports. Therefore so called error hooks are configurable. The error hooks will be used to forward error notifications. If at least one error hook has been configured, the Default Error Tracer will notify each received error report by calling the configured error hook(s).

Configuration of error hooks is done by the AUTOSAR configuration methods described in chapter 10.

[SWS_Det_00035]

Upstream requirements: SRS_BSW_00167, SRS_BSW_00392

⌈Each Error_Hook shall be called with the same set of parameters as the corresponding functions Det_ReportError and Det_ReportRuntimeError. The configured callout functions are ECU configurations, see DetErrorHook, DetReportRuntimeErrorCallout.⌋

7.3 Error Reporting

[SWS_Det_00024]

Upstream requirements: SRS_BSW_00406

⌈If the Default Error Tracer has not been initialized before Det_ReportRuntimeError reporting function is called, the function shall return immediately without any other action (no Error_Hook shall be used, no implementer specific function shall be performed and no error shall be reported).⌋

[SWS_Det_00208]

Upstream requirements: SRS_BSW_00406

⌈If the Default Error Tracer has not been initialized before Det_ReportError is called, the execution shall stop. (no Error_Hook shall be used, no implementer specific function shall be performed and no error shall be reported).⌋

[SWS_Det_00014]

Upstream requirements: SRS_BSW_00345

⌈The error report functions Det_ReportError and Det_ReportRuntimeError shall call immediately all configured Error_Hooks (see DetReportRuntimeErrorCallout).⌋

[SWS_Det_00018]

Upstream requirements: SRS_BSW_00403, SRS_BSW_00159

⌈The Default Error Tracer shall execute the corresponding list of configured DetError Hook (refer to `DetErrorHook`) in the order given by the configuration.⌋

[SWS_Det_00015]

Upstream requirements: SRS_BSW_00171

⌈Optional implementation specific functionality shall only be performed after all configured Error_Hooks (see `DetReportRuntimeErrorCallout` and ECUC_Det_0011) have been called. Furthermore this functionality shall be pre-compile-time configurable⌋

[SWS_Det_00039]

Upstream requirements: SRS_BSW_00312

⌈The `Det_ReportError` and `Det_ReportRuntimeError` functions shall be reentrant.⌋

[SWS_Det_00026]

Upstream requirements: SRS_BSW_00337

⌈`Det_ReportError` shall stop execution. Ensure that DET runtime errors are handled such that DET is not called recursively.⌋

Note: Such recursive call could happen in case of calling an un-initialized module via an Error_Hook and would lead to a stack overflow.

7.4 Error Classification

The Default Error Tracer has the following AUTOSAR errors:

- Development errors, see Section 7.4.1
- Runtime errors: not applicable
- Production errors: not applicable

The call of default error functions will cause calls to all configured callout functions see parameter `DetErrorHook` and `DetReportRuntimeErrorCallout`

[SWS_Det_00501]

Upstream requirements: SRS_BSW_00345

⌈The calls of `Det_ReportError` shall invoke all callback functions configured in Det ErrorHook (see parameter `DetErrorHook`).⌋

[SWS_Det_00503]

Upstream requirements: SRS_BSW_00345

⌈The calls of `Det_ReportRuntimeError` shall invoke all callback functions configured in `DetReportRuntimeErrorCallout`.⌋

7.4.1 Development Errors

DET cannot report development errors.

7.4.2 Runtime Errors

DET cannot report runtime errors.

7.4.3 Production Errors

There are no production errors in DET.

8 API specification

The specification of the default error tracer API is provided here.

8.1 Imported types

This section lists all imported types used by the API. Even if the DET does not require new types, some RTE or Component types can be used within the configuration of the hook functions. Therefore the DET also has the standardized include structure (see SRS_BSW_00447) for modules with service interfaces.

[SWS_Det_91001] Definition of imported datatypes of module Det

Upstream requirements: SRS_BSW_00447

⌈

Module	*Header File*	*Imported Type*
Std	Std_Types.h	Std_ReturnType

⌋

8.2 Type definitions

8.2.1 Det_ConfigType

[SWS_Det_00210] Definition of datatype Det_ConfigType

Upstream requirements: SRS_BSW_00414

⌈

Name	Det_ConfigType	
Kind	Structure	
Elements	implementation specific	
	Type	–
	Comment	–
Description	Configuration data structure of the Det module.	
Available via	Det.h	

⌋

8.3 Function definitions

This chapter contains all APIs provided by the module.

8.3.1 Det_Init

[SWS_Det_00008] Definition of API function Det_Init

Upstream requirements: SRS_BSW_00310, SRS_BSW_00358, SRS_BSW_00414

⌈

Service Name	Det_Init	

Syntax	`void Det_Init (`
	`  const Det_ConfigType* ConfigPtr`
	`)`	

Service ID [hex]	0x00	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (in)	ConfigPtr	Pointer to the selected configuration set.
Parameters (inout)	None	
Parameters (out)	None	
Return value	None	
Description	Service to initialize the Default Error Tracer.	
Available via	Det.h	

⌋

8.3.2 Det_Start

[SWS_Det_00010] Definition of API function Det_Start

Upstream requirements: SRS_BSW_00310

⌈

Service Name	Det_Start

Syntax	`void Det_Start (`
	`  void`
	`)`

Service ID [hex]	0x02
Sync/Async	Synchronous
Reentrancy	Non Reentrant
Parameters (in)	None
Parameters (inout)	None
Parameters (out)	None
Return value	None
Description	Service to start the Default Error Tracer.
Available via	Det.h

⌋

8.3.3 Det_ReportError

[SWS_Det_00009] Definition of API function Det_ReportError

Upstream requirements: SRS_BSW_00310

⌈

Service Name	Det_ReportError	
Syntax	`Std_ReturnType Det_ReportError ( uint16 ModuleId, uint8 InstanceId, uint8 ApiId, uint8 ErrorId )`	
Service ID [hex]	0x01	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	ModuleId	Module ID of calling module.
	InstanceId	The identifier of the index based instance of a module, starting from 0, If the module is a single instance module it shall pass 0 as the InstanceId.
	ApiId	ID of API service in which error is detected (defined in SWS of calling module)
	ErrorId	ID of detected development error (defined in SWS of calling module).
Parameters (inout)	None	
Parameters (out)	None	
Return value	Std_ReturnType	never returns a value, but has a return type for compatibility with services and hooks
Description	Service to report development errors.	
Available via	Det.h	

⌋

Note: `Det_ReportError` may be callable in interrupt context. Since the DET can be called in normal mode or in interrupt context (from stack or integration) this has to be considered during implementation of the hook functions: `Det_ReportError` can be called in interrupt context; this should be considered when halting the system.

8.3.4 Det_ReportRuntimeError

[SWS_Det_01001] Definition of API function Det_ReportRuntimeError

Upstream requirements: SRS_BSW_00310

⌈

Service Name	Det_ReportRuntimeError	
Syntax	`Std_ReturnType Det_ReportRuntimeError ( uint16 ModuleId, uint8 InstanceId, uint8 ApiId, uint8 ErrorId )`	
Service ID [hex]	0x04	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	ModuleId	Module ID of calling module.
	InstanceId	The identifier of the index based instance of a module, starting from 0, If the module is a single instance module it shall pass 0 as the InstanceId.
	ApiId	ID of API service in which error is detected (defined in SWS of calling module)
	ErrorId	ID of detected runtime error (defined in SWS of calling module).
Parameters (inout)	None	
Parameters (out)	None	
Return value	Std_ReturnType	returns always `E_OK` (is required for services)
Description	Service to report runtime errors. If a callout has been configured then this callout shall be called.	
Available via	Det.h	

⌋

8.4 Expected Interfaces

This chapter specifies all required interfaces of other modules.

8.4.1 Mandatory Interfaces

There are no mandatory expected interfaces.

8.4.2 Optional Interfaces

This chapter defines the interfaces that are required to fulfill an optional functionality of the Default Error Tracer.

[SWS_Det_91002] Definition of optional interfaces requested by module Det

Upstream requirements: SRS_BSW_00171, SRS_BSW_00384

⌈

API Function	Header File	Description
There are no optional interfaces.		

⌋

8.4.3 Configurable Interfaces

[SWS_Det_00180]

Upstream requirements: SRS_BSW_00463

⌈if callout functions are configured, they should have the same signatures as the corresponding functions. If several callouts are defined for the same service they should have the same ID.⌋

If `Det_ReportError` function is called, all configured callout functions shall be called (see [SWS_Det_00501]). User_ErrorHooks functions should have the Service ID 0x10.

[SWS_Det_00181] Definition of configurable interface <User_Error_Hooks>

Upstream requirements: SRS_BSW_00463

⌈

Service Name	<User_Error_Hooks>	
Syntax	`Std_ReturnType <User_Error_Hooks> ( uint16 ModuleId, uint8 InstanceId, uint8 ApiId, uint8 ErrorId )`	
Service ID [hex]	0x10	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	ModuleId	Module ID of calling module.
	InstanceId	The identifier of the index based instance of a module, starting from 0, If the module is a single instance module it shall pass 0 as the InstanceId.
	ApiId	ID of API service in which error is detected (defined in SWS of calling module)
	ErrorId	ID of detected development error (defined in SWS of calling module).
Parameters (inout)	None	
Parameters (out)	None	
Return value	Std_ReturnType	returns always `E_OK` (is required for services)
Description	–	
Available via	Det_Externals.h	

⌋

If `Det_ReportRuntimeError` function is called, all configured callout functions shall be called (see [SWS_Det_00503]). `DetReportRuntimeErrorCallout` functions should have the Service ID 0x11.

[SWS_Det_00184] Definition of configurable interface <DetReportRuntimeError Callout>

Upstream requirements: SRS_BSW_00463

⌈

Service Name	<DetReportRuntimeErrorCallout>	
Syntax	`Std_ReturnType <DetReportRuntimeErrorCallout> ( uint16 ModuleId, uint8 InstanceId, uint8 ApiId, uint8 ErrorId )`	
Service ID [hex]	0x11	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (in)	ModuleId	Module ID of calling module.
	InstanceId	The identifier of the index based instance of a module, starting from 0, If the module is a single instance module it shall pass 0 as the InstanceId.
	ApiId	ID of API service in which error is detected (defined in SWS of calling module)
	ErrorId	ID of detected runtime error (defined in SWS of calling module).
Parameters (inout)	None	
Parameters (out)	None	
Return value	Std_ReturnType	returns always `E_OK` (is required for services)
Description	–	
Available via	Det_Externals.h	

⌋

8.5 Service Interfaces

8.5.1 Specification of the Ports and Port Interfaces

This chapter specifies the ports and port interfaces which are needed in order to operate the Default Error Tracer functionality over the VFB.

Each AUTOSAR SW-C which uses the service must contain "service ports" in its own SW-C description which will be typed by the same interfaces and which has to be connected to the ports of the Default Error Tracer, so that the RTE, the appropriate IDs and the required symbols can be generated.

8.5.1.1 General Approach

The client-server paradigm is used since more than one parameter has to be transferred.

In order to reuse the C API already defined in the Default Error Tracer BSW module, the Default Error Tracer services uses the same argument names as in the C API, even though the names can not directly be mapped into the SW-C world. "Module ID" can preferably be interpreted as either a component or runnable entity but this is the decision of the implementer of the SW-C.

The Default Error Tracer services need a "Module ID" as first argument for the C-function.

In order to keep the client code independent from the configuration of number of clients, the "Module IDs" are not passed from the clients to Default Error Tracer but are modeled as "port defined argument values" of the Provide ports on the Default Error Tracer side. As a consequence, the "Module IDs" will not show up as arguments in the operation of the client-server interface. As a further consequence for this approach, there will be separate ports for each "Module ID" both on the client side as well as on the server side.

The Module ID type is of range 0...65535. Values in the range of 0...254 are reserved for Basic Software Modules, complex drivers use either 255 or a value between 2048 and 4095. All others can be used for application software components.

8.5.1.2 Data Types

No separate data types provided for service interfaces.

8.5.1.3 Port Interface

[SWS_Det_00202] Definition of ClientServerInterface DETService

Upstream requirements: SRS_BSW_00462

⌈

Name	DETService		
Comment	Service of Default Error Tracer		
IsService	true		
Variation	–		
Possible Errors	0	E_OK	Operation successful

Operation	ReportError
Comment	calls Det_ReportError with the Module ID of the port
Relates to	Det_ReportError

⌋

△

Variation	–	
Parameters	ApiId	
	Type	uint8
	Direction	IN
	Comment	ID of API service in which error is detected (defined in SWS of calling module).
	Variation	–
	ErrorId	
	Type	uint8
	Direction	IN
	Comment	ID of detected development error (defined in SWS of calling module).
	Variation	–
Possible Errors	E_OK	

Operation	ReportRuntimeError	
Comment	calls ReportRuntimeError with the Module ID of the port	
Relates to	Det_ReportRuntimeError	
Variation	–	
Parameters	ApiId	
	Type	uint8
	Direction	IN
	Comment	ID of API service in which error is detected (defined in SWS of calling module).
	Variation	–
	ErrorId	
	Type	uint8
	Direction	IN
	Comment	ID of detected runtime error (defined in SWS of calling module).
	Variation	–
Possible Errors	E_OK	

⌋

The arguments of the C-Api ModuleId and InstanceId are used to identify the component and component instance by using "port defined argument values". The arguments ApiId and ErrorId are not standardized by AUTOSAR for software components. It is up to the implementer of a SW-C to decide about the semantics of the arguments. However, the ApiId typically corresponds to the operations that can report an error, and ErrorId corresponds to the type of error that is reported. Both ApiId and ErrorId are numbered 0x00..0xFF without specific order. Note that the returned values is always true (E_OK), since a Std_ReturnType is required for all services

8.5.2 Definition of the Service

The DET shall provide the following Port for each configured SWC module with the given name.

[SWS_Det_00205] Definition of Port Det_{Name}_{Instance} provided by module Det

Upstream requirements: SRS_BSW_00462

⌈

Name	Det_{Name}_{Instance}		
Kind	ProvidedPort	***Interface***	DETService
Description	–		
Port Defined Argument Value(s)	***Type***	uint16	
	Value	{ModuleId}	
	Type	uint8	
	Value	{InstanceId}	

Variation	**FOR**
	`module : ECV.subEltList("Det/DetConfigSet/DetModule");`
	`instance : module.subEltList("DetModuleInstance");`
	LET
	`Name = module.shortname();`
	`Instance = instance.shortname();`
	`ModuleId = module.subElt("DetModuleId").value();`
	`InstanceId = instance.subElt("DetInstanceId").value();`		

⌋

9 Sequence diagrams

9.1 Initialization

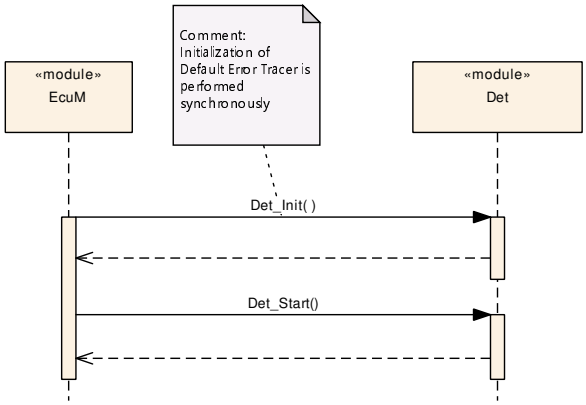

Figure 9.1: Det initialization

9.2 Error Reporting

There are different scenarios: one for each error class (DevelopmentError, RuntimeError) and one for each configuration: no hooks configured, at least one hook configured.

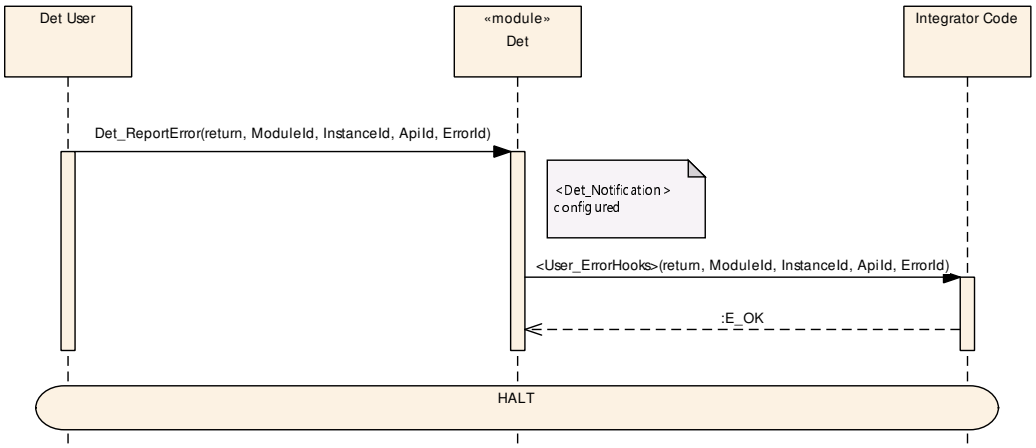

Figure 9.2: Det_ReportError with configured hook

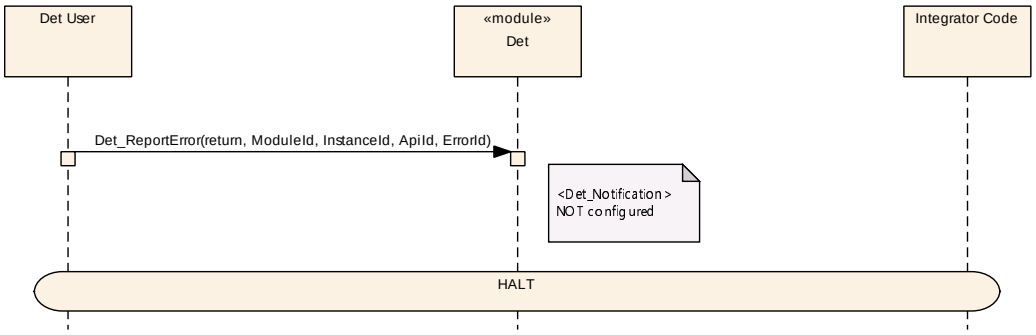

Figure 9.3: Det_ReportError without configured hook

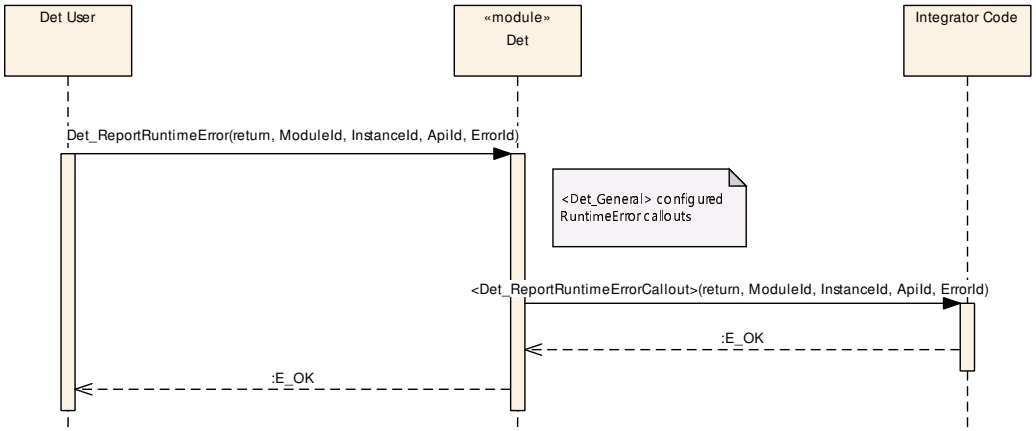

Figure 9.4: Det_ReportRuntimeError with configured hook

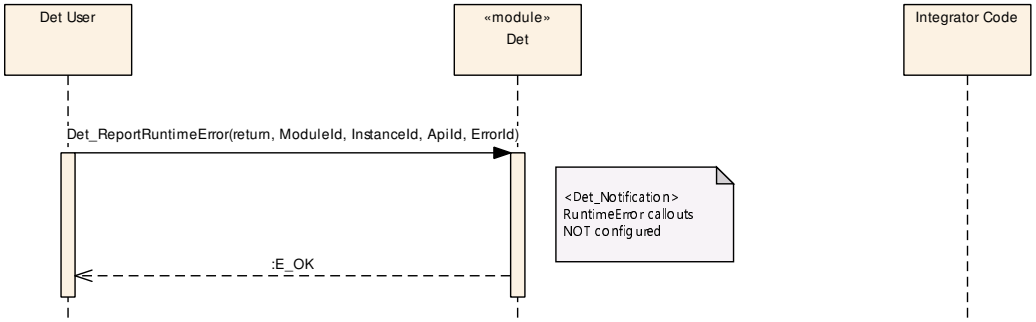

Figure 9.5: Det_ReportRuntimeError without configured hook

10 Configuration specification

In general, this chapter defines configuration parameters and their clustering into containers. In order to support the specification Chapter 10.1 describes fundamentals. It also specifies a template (table) you shall use for the parameter specification. We intend to leave Chapter 10.1 in the specification to guarantee comprehension.

Chapter 10.2 specifies the structure (containers) and the parameters of the module Default Error Tracer.

Chapter 10.4 specifies published information of the module Default Error Tracer.

10.1 How to read this chapter

For details refer to [2] Chapter 10.1 *"Introduction to configuration specification"*.

10.2 Containers and configuration parameters

The Parameters of DET are described in the following sub-sections.

10.2.1 Det

[ECUC_Det_00001] Definition of EcucModuleDef Det ⌈

Module Name	Det
Description	Det configuration includes the functions to be called at notification.
Post-Build Selectable Support	false
Post-Build Loadable Support	false

Included Containers		
Container Name	**Multiplicity**	**Description**
DetConfigSet	0..1	Configuration set container for Det.
DetGeneral	0..1	Generic configuration parameters of the Det module.
DetNotification	0..1	Configuration of the notification functions.

⌋

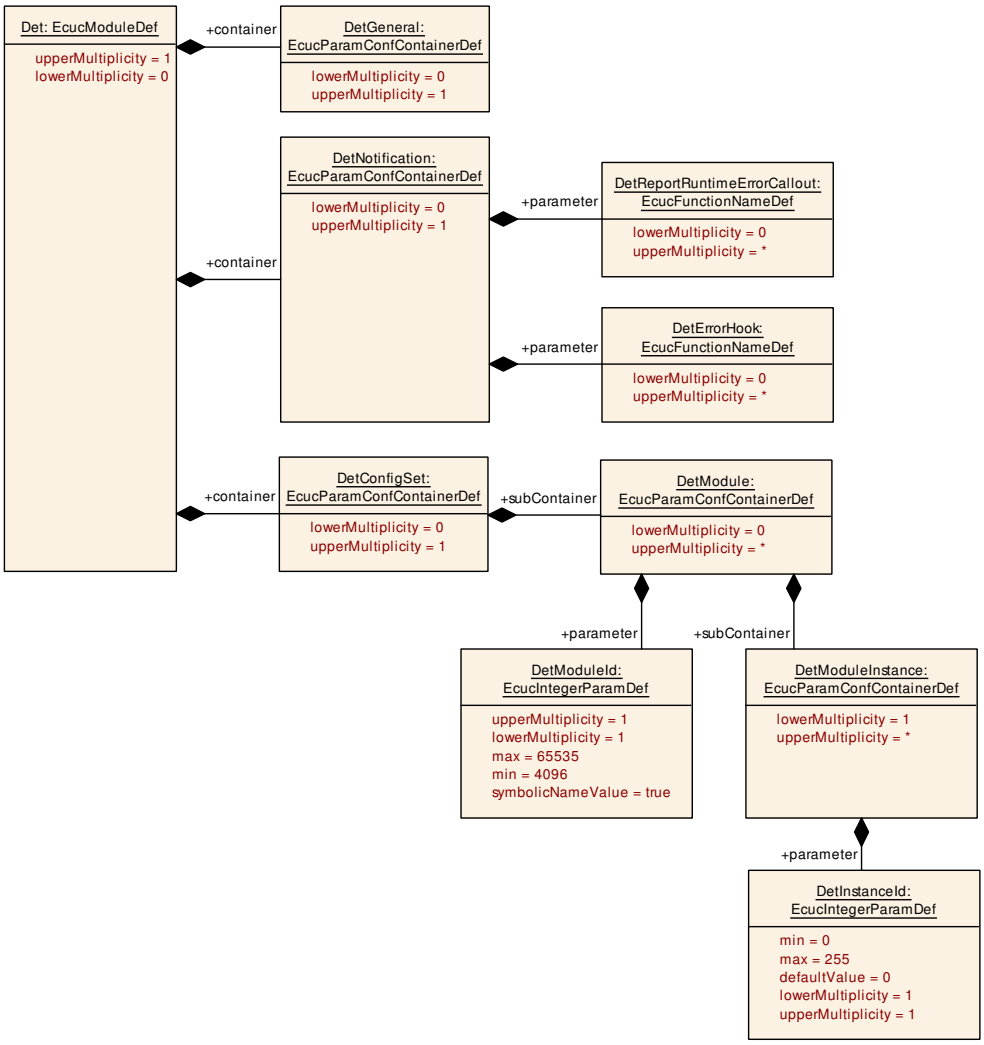

Figure 10.1: Parameters of Det

10.2.2 DetGeneral

[ECUC_Det_00002] Definition of EcucParamConfContainerDef DetGeneral ⌈

Container Name	DetGeneral
Parent Container	Det
Upstream mapping defined	–
Description	Generic configuration parameters of the Det module.
Multiplicity	0..1
Pre-Compile only	true
Configuration Parameters	

No Included Parameters

No Included Containers

⌋

10.2.3 DetNotification

[ECUC_Det_00004] Definition of EcucParamConfContainerDef DetNotification ⌈

Container Name	DetNotification
Parent Container	Det
Upstream mapping defined	–
Description	Configuration of the notification functions.
Multiplicity	0..1
Pre-Compile only	true
Configuration Parameters	

Included Parameters		
Parameter Name	**Multiplicity**	**ECUC ID**
DetErrorHook	0..*	[ECUC_Det_00005]
DetReportRuntimeErrorCallout	0..*	[ECUC_Det_00010]

No Included Containers

⌋

[ECUC_Det_00005] Definition of EcucFunctionNameDef DetErrorHook ⌈

Parameter Name	DetErrorHook
Parent Container	DetNotification
Upstream mapping defined	–
Description	Optional list of functions to be called by the Default Error Tracer in context of each call of Det_ReportError. The type of these functions shall be identical the type of Det_ReportError itself: Std_ReturnType (*f)(uint16, uint8, uint8, uint8).
Multiplicity	0..*
Type	EcucFunctionNameDef
Default value	–
Regular Expression	–
Pre-Compile only	true

⌋

[ECUC_Det_00010] Definition of EcucFunctionNameDef DetReportRuntimeError Callout ⌈

Parameter Name	DetReportRuntimeErrorCallout
Parent Container	DetNotification
Upstream mapping defined	–
Description	This parameter defines the existence and the names of callout functions for the corresponding runtime error handler. The type of these functions shall be identical the type of Det_ReportRuntimeError itself: Std_ReturnType (*f)(uint16, uint8, uint8, uint8)
Multiplicity	0..*
Type	EcucFunctionNameDef

▽

△

Default value	–
Regular Expression	–
Pre-Compile only	true

⌋

10.2.4 DetConfigSet

[ECUC_Det_00007] Definition of EcucParamConfContainerDef DetConfigSet ⌈

Container Name	DetConfigSet
Parent Container	Det
Upstream mapping defined	–
Description	Configuration set container for Det.
Multiplicity	0..1
Pre-Compile only	true
Configuration Parameters	

No Included Parameters

Included Containers		
Container Name	**Multiplicity**	**Description**
DetModule	0..*	This container describes a non BSW module that is using the Det via Service Interface.

⌋

10.2.5 DetModule

[ECUC_Det_00008] Definition of EcucParamConfContainerDef DetModule ⌈

Container Name	DetModule
Parent Container	DetConfigSet
Upstream mapping defined	–
Description	This container describes a non BSW module that is using the Det via Service Interface.
Multiplicity	0..*
Pre-Compile only	true
Configuration Parameters	

Included Parameters		
Parameter Name	**Multiplicity**	**ECUC ID**
DetModuleId	1	[ECUC_Det_00009]

Included Containers		
Container Name	**Multiplicity**	**Description**
DetModuleInstance	1..*	Describes the Instance used for the according Service Port. It shall be used to differentiate software component instances when multiple instantiation is used.

⌋

[ECUC_Det_00009] Definition of EcucIntegerParamDef DetModuleId ⌈

Parameter Name	DetModuleId	
Parent Container	DetModule	
Upstream mapping defined	–	
Description	Unique identifier of the error reporting component. When reporting errors to the DET, a symbolic name derived from the moduleID has to be used to identify the reporter.	
Multiplicity	1	
Type	EcucIntegerParamDef (Symbolic Name generated for this parameter)	
Range	4096 .. 65535	
Default value	–	
Pre-Compile only	true	

⌋

10.2.6 DetModuleInstance

[ECUC_Det_00013] Definition of EcucParamConfContainerDef DetModuleInstance ⌈

Container Name	DetModuleInstance	
Parent Container	DetModule	
Upstream mapping defined	–	
Description	Describes the Instance used for the according Service Port. It shall be used to differentiate software component instances when multiple instantiation is used.	
Multiplicity	1..*	
Post-Build Multiplicity	-	Selectable
Post-Build Value	-	Selectable
Configuration Parameters		

Included Parameters		
Parameter Name	**Multiplicity**	**ECUC ID**
DetInstanceId	1	[ECUC_Det_00012]

No Included Containers

⌋

[ECUC_Det_00012] Definition of EcucIntegerParamDef DetInstanceId ⌈

Parameter Name	DetInstanceId	
Parent Container	DetModuleInstance	
Upstream mapping defined	–	
Description	Describes the InstanceId used for the according Service Port. It shall be used to differentiate software component instances when multiple instantiation is used. Else it shall be set to 0.	
Multiplicity	1	
Type	EcucIntegerParamDef	
Range	0 .. 255	
Default value	0	
Pre-Compile only	true	

⌋

10.3 Published Information

Additional module-specific published parameters are listed below if applicable.

10.4 Published Information

For details refer to [2] Chapter 10.3 *"Published Information"*.

A Not applicable requirements

[SWS_Det_NA_00999]

Upstream requirements: SRS_BSW_00344, SRS_BSW_00404, SRS_BSW_00405, SRS_BSW_00170, SRS_BSW_00380, SRS_BSW_00419, SRS_BSW_00383, SRS_BSW_00388, SRS_BSW_00389, SRS_BSW_00390, SRS_BSW_00393, SRS_BSW_00395, SRS_BSW_00396, SRS_BSW_00397, SRS_BSW_00398, SRS_BSW_00399, SRS_BSW_00400, SRS_BSW_00438, SRS_BSW_00375, SRS_BSW_00416, SRS_BSW_00437, SRS_BSW_00168, SRS_BSW_00423, SRS_BSW_00424, SRS_BSW_00425, SRS_BSW_00426, SRS_BSW_00427, SRS_BSW_00428, SRS_BSW_00429, SRS_BSW_00432, SRS_BSW_00433, SRS_BSW_00336, SRS_BSW_00369, SRS_BSW_00339, SRS_BSW_00422, SRS_BSW_00417, SRS_BSW_00323, SRS_BSW_00004, SRS_BSW_00409, SRS_BSW_00385, SRS_BSW_00386, SRS_BSW_00458, SRS_BSW_00461, SRS_BSW_00478, SRS_BSW_00497

⌈These requirements are not applicable to this specification.⌋

[SWS_Det_NA_00001]

Upstream requirements: SRS_BSW_00452, SRS_BSW_00469, SRS_BSW_00470, SRS_BSW_00471, SRS_BSW_00472

⌈Det does not support this error type.⌋

[SWS_Det_NA_00002]

Upstream requirements: SRS_BSW_00488, SRS_BSW_00489, SRS_BSW_00490, SRS_BSW_00491, SRS_BSW_00493

⌈Det does not report security events.⌋

B History of Requirements

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

B.1 Requirement History of this Document According to AUTOSAR Release R22-11

B.1.1 Added Specification Items in R22-11

[SWS_Det_91001] [SWS_Det_91002] [SWS_Det_NA_00999]

B.1.2 Changed Specification Items in R22-11

[SWS_Det_00008] [SWS_Det_00009] [SWS_Det_00010] [SWS_Det_00011] [SWS_Det_00181] [SWS_Det_00184] [SWS_Det_00187] [SWS_Det_00202] [SWS_Det_00204] [SWS_Det_00205] [SWS_Det_00210] [SWS_Det_00301] [SWS_Det_01001] [SWS_Det_01003]

B.1.3 Deleted Specification Items in R22-11

[SWS_Det_00999]

B.2 Requirement History of this Document According to AUTOSAR Release R23-11

B.2.1 Added Specification Items in R23-11

none

B.2.2 Changed Specification Items in R23-11

none

B.2.3 Deleted Specification Items in R23-11

none

B.3 Requirement History of this Document According to AUTOSAR Release R24-11

B.3.1 Added Specification Items in R24-11

none

B.3.2 Changed Specification Items in R24-11

[ECUC_Det_00004] [SWS_Det_00009] [SWS_Det_00014] [SWS_Det_00024] [SWS_Det_00025] [SWS_Det_00026] [SWS_Det_00034] [SWS_Det_00035] [SWS_Det_00039] [SWS_Det_00187] [SWS_Det_00202] [SWS_Det_00205] [SWS_Det_00501] [SWS_Det_00503] [SWS_Det_01001] [SWS_Det_01003]

B.3.3 Deleted Specification Items in R24-11

[ECUC_Det_00011] [SWS_Det_00502]

B.4 Requirement History of this Document According to AUTOSAR Release R25-11

B.4.1 Added Specification Items in R25-11

none

B.4.2 Changed Specification Items in R25-11

[ECUC_Det_00001] [ECUC_Det_00002] [SWS_Det_00202] [SWS_Det_00503] [SWS_Det_91002]

B.4.3 Deleted Specification Items in R25-11

[ECUC_Det_00006] [SWS_Det_00034] [SWS_Det_00187] [SWS_Det_00200] [SWS_Det_00203] [SWS_Det_00204] [SWS_Det_00206] [SWS_Det_00207] [SWS_Det_01003]

B.5 Requirement History of this Document According to AUTOSAR Release R26-11

B.5.1 Added Specification Items in R26-11

none

B.5.2 Changed Specification Items in R26-11

[ECUC_Det_00001] [ECUC_Det_00002] [ECUC_Det_00004] [ECUC_Det_00005] [ECUC_Det_00007] [ECUC_Det_00008] [ECUC_Det_00009] [ECUC_Det_00010] [ECUC_Det_00012] [ECUC_Det_00013] [SWS_Det_00205] [SWS_Det_91001]

B.5.3 Deleted Specification Items in R26-11

[ECUC_Det_00003] [SWS_Det_00011] [SWS_Det_00052] [SWS_Det_00301]