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GB/T 29618.5110—2021/IEC/TR 62453-51-10：2017

现场设备工具(FDT)接口规范 第5110部分:通用对象模型的通信实现 IEC 61784 CPF 1

Field device tool (FDT) interface specification—Part 5110:Communication implementation for common object model—IEC 61784 CPF 1

[IEC/TR 62453-51-10:2017,Field device tool (FDT) interface specification—Part 51-10:Communication implementation for common object model—IEC 61784 CPF 1,IDT]

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前　言

本文件按照GB/T 1.1—2020《标准化工作导则　第1部分：标准化文件的结构和起草规则》的规定起草。

本文件是GB/T 29618《现场设备工具(FDT)接口规范》的第5110部分。GB/T 29618已经发布了以下部分：

——第1部分：概述和导则；
——第2部分：概念和详细描述；
——第301部分：通信行规集成　FF现场总线规范；
——第302部分：通信行规集成　通用工业协议；
——第306部分：通信行规集成　INTERBUS现场总线规范；
——第309部分：通信行规集成　可寻址远程传感器高速通道；
——第315部分：通信行规集成　MODBUS现场总线规范；
——第41部分：对象模型行规集成　通用对象模型；
——第42部分：对象模型行规集成　通用语言基础结构；
——第515部分：通用对象模型的通信实现　MODBUS现场总线规范；
——第5110部分：通用对象模型的通信实现　IEC 61784 CPF 1；
——第5120部分：通用对象模型的通信实现　IEC 61784 CPF 2；
——第5231部分：通用语言基础结构的通信实现　IEC 61784 CP3/1和CP3/2；
——第5232部分：通用语言基础结构的通信实现　IEC 61784 CP3/4，CP3/5和CP3/6；
——第529部分：通用语言基础结构的通信实现　IEC 61784 CPF 9；
——第5215部分：通用语言基础结构的通信实现　IEC 61784 CPF 15；
——第61部分：通用对象模型的设备类型管理器样式指南；
——第62部分：现场设备工具(FDT)样式指南。

本文件使用翻译法等同采用IEC/TR 62453-51-10：2017《现场设备工具(FDT)接口规范　第51-10部分：通用对象模型的通信实现　IEC 61784 CPF 1》。

与本文件中规范性引用的国际文件有一致性对应关系的我国文件如下：

——GB/T 29618.1—2017　现场设备工具(FDT)接口规范　第1部分：概述和导则(IEC 62453-1：2016，IDT)
——GB/T 29618.2—2017　现场设备工具(FDT)接口规范　第2部分：概念和详细描述(IEC 62453-2：2016，IDT)
——GB/T 29618.41—2013　现场设备工具(FDT)接口规范　第41部分：对象模型行规集成　通用对象模型(IEC 62453-41：2009，IDT)
——GB/T 29618.301—2015　现场设备工具(FDT)接口规范　第301部分：通信行规集成　FF现场总线规范(IEC 62453-301：2009，IDT)

本文件做了下列编辑性修改：

——本标准名称改为《现场设备工具(FDT)接口规范　第5110部分：通用对象模型的通信实现　IEC 61784 CPF 1》；
——删除了第2章中正文未引用的文件：IEC 61784-1：2014　Industrial communication networks—Profiles—Part 1：Fieldbus profiles；

——根据正文内容，将第2章中IEC/TR 62453-41：2016修改为IEC/TR 62453-41，IEC 62453-301：2009/AMD1：2016修改为IEC 62453-301。

请注意本文件的某些内容可能涉及专利。本文件的发布机构不承担识别专利的责任。

本文件由中国机械工业联合会提出。

本文件由全国工业过程测量控制和自动化标准化技术委员会(SAC/TC 124)归口。

本文件起草单位：西南大学、重庆川仪自动化股份有限公司、深圳市尔泰科技有限公司、陕西创威科技有限公司、厦门宇电自动化科技有限公司、广州市熙泰自控设备有限公司、汉威科技集团股份有限公司、厦门安东电子有限公司、重庆数隆信息技术有限责任公司、机械工业仪器仪表综合技术经济研究所、上海自动化仪表有限公司、施耐德电气(中国)有限公司、赫优信(上海)自动化系统贸易有限公司、苏州美名软件有限公司、浙江大学。

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引　言

本文件是一种接口规范，该规范针对在客户端/服务器架构中进行功能控制和数据访问的 FDT 组件开发者。本文件是标准接口开发的分析结果和设计过程，旨在促进不同制造商开发的服务器和客户端之间的无缝互操作。

将现场总线集成到控制系统中需要完成一些其他的任务。除了现场总线和设备特定的工具以外，有必要将其他工具集成到更高级别的、整个系统范围的规划或工程工具中。特别是，对于在扩展和异构控制系统中的使用，尤其在过程工业的领域中，工程接口的明确定义使得所有参与者易于使用，这是非常重要的。

设备类型管理器(DTM，Device Type Manager)是设备特定的软件组件。由设备制造商将 DTM 软件和设备一起提供给用户。通过该规范中定义的 FDT 接口将 DTM 集成到工程工具中。通常，该集成方法对所有的现场总线是开放的，因此满足在异构控制系统中集成不同类型的设备的要求。

图 1 给出了本文件在 GB/T 29618 系列结构中的位置。

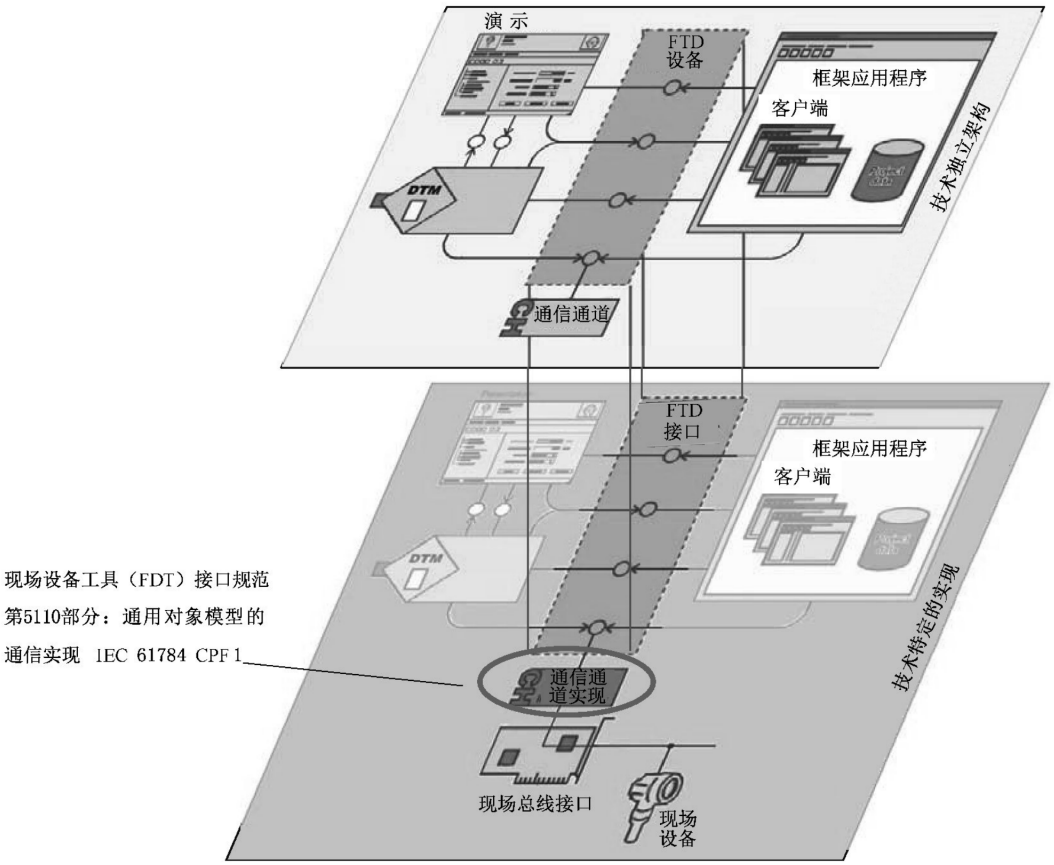

图 1　GB/T 29618 中的本部分

GB/T 29618 旨在为现场设备工具(FDT)提供接口规范，拟由以下几部分组成：

——第 1 部分：概述和导则。目的在于规定 GB/T 29618 系列的概述和导则，包括：

- 说明 GB/T 29618 系列的结构和内容；
- 提供通用于 GB/T 29618 系列其他部分的一些说明；
- 描述与 GB/T 29618 的其他部分的关系。

——第 2 部分：概念和详细描述。目的在于解释现场设备工具概念的通用原则，同时规定通用对象、通用对象行为和通用对象之间的交互。

——第 41 部分：对象模型行规集成　通用对象模型。目的在于定义基于 MS COM 技术的通用 FDT 原理的实现，包括通过 COM 接口实现的对象行为和对象交互。

——第 42 部分：对象模型行规集成　通用语言基础结构。目的在于定义基于微软.NET 技术的通用 FDT 原理的实现，包含通过.NET 接口实现的对象行为和对象交互。

——第 5110 部分：通用对象模型的通信实现　IEC 61784 CPF 1。目的在于提供将基金会现场总线(FF)技术集成到基于 COM 的 FDT 接口规范(IEC/TR 62453-41)的实现方法。

——第 5120 部分：通用对象模型的通信实现　IEC 61784 CPF 2。目的在于提供将 CIP 技术集成到基于 COM 的 FDT 接口规范(IEC/TR 62453-41)的实现方法。

——第 5131 部分：通用对象模型的通信实现　IEC 61784 CP 3/1 和 CP 3/2。目的在于提供将现场总线技术集成到基于 COM 的 FDT 接口规范(IEC/TR 62453-41)的实现方法。

——第 5132 部分：通用对象模型的通信实现　IEC 61784 CP 3/4，CP 3/5 和 CP 3/6。目的在于提供将 PROFINET® 技术集成到基于 COM 的 FDT 接口规范(IEC/TR 62453-41)的实现方法。

——第 5160 部分：通用对象模型的通信实现　IEC 61784 CPF 6。目的在于提供将 INTERBUS 技术集成到基于 COM 的 FDT 接口规范(IEC/TR 62453-41)的实现方法。

——第 5190 部分：通用对象模型的通信实现　IEC 61784 CPF 9。目的在于提供将 HART 技术集成到基于 COM 的 FDT 接口规范(IEC/TR 62453-41)的实现方法。

——第 5115 部分：通用对象模型的通信实现　IEC 61784 CPF 15。目的在于提供将 Modbus 技术集成到基于 COM 的 FDT 接口规范(IEC/TR 62453-41)的实现方法。

——第 5231 部分：通用语言基础结构的通信实现　IEC 61784 CP 3/1 和 CP 3/2。目的在于提供将现场总线技术集成到 FDT 接口规范(GB/T 29618.42)中基于 CLI 实现的信息，并规定基于 IEC 62453 303-1 的通信实现和其他服务。

——第 5232 部分：通用语言基础结构的通信实现　IEC 61784 CP 3/4，CP 3/5 和 CP 3/6。目的在于提供将 PROFINET® 技术集成到 FDT 接口规范(GB/T 29618.42)中基于 CLI 实现的信息，并规定基于 IEC 62453-303-2 的通信实现和其他服务。

——第 5290 部分：通用语言基础结构的通信实现　IEC 61784 CPF 9。目的在于提供将 HART 技术集成到 FDT 接口规范(GB/T 29618.42)中基于 CLI 实现的信息，并规定基于 GB/T 29618.309 的通信和其他服务的实现。

——第 5215 部分：通用语言基础结构的通信实现　IEC 61784 CPF 15。目的在于提供了将 Modbus 技术集成到 FDT 接口规范(GB/T 29618.42)中基于 CLI 实现的信息，并规定基于 GB/T 29618-315 的通信和其他服务的实现。

——第 61 部分：通用对象模型的设备类型管理器样式指南。目的在于提出设备 DTM 的用户接口和功能实现的一些准则和规范。

——第 62 部分：现场设备工具(FDT)通用语言基础结构样式指南。目的在于解释基于 CLI(通用语言架构)实现 DTM 以及与用户界面和行为相关的框架应用程序部分的指南和准则。

——第 301 部分：通信行规集成　IEC 61784 CPF 1。目的在于提供将基金会现场总线(FF)技术

集成到 FDT 接口规范(GB/T 29618.2)的信息，并规定通信和其他服务。

——第 302 部分：通信行规集成　IEC 61784 CPF 2。目的在于提供将 CIP 技术集成到 FDT 接口规范(GB/T 29618.2)的信息，并规定通信和其他服务。

——第 303-1 部分：通信行规集成　IEC 61784 CP 3/1 和 CP 3/2。目的在于提供将现场总线技术集成到 FDT 接口规范(GB/T 29618.2)的信息，并规定通信和其他服务。

——第 303-2 部分：通信行规集成　IEC 61784 CP 3/4，CP 3/5 和 CP3/6。目的在于提供将 PROFINET®技术集成到 FDT 接口规范(GB/T 29618.2)的信息，并规定通信和其他服务。

——第 306 部分：通信行规集成　IEC 61784 CPF 6。目的在于提供将 INTERBUS 技术集成到 FDT 接口规范(GB/T 29618.2)的信息，并规定通信和其他服务。

——第 309 部分：通信行规集成　IEC 61784 CPF 9。目的在于提供将 HART 技术集成到 FDT 接口规范(GB/T 29618.2)的信息，并规定通信和其他服务。

——第 315 部分：通信行规集成　IEC 61784 CPF 15。目的在于提供将 Modbus TCP 和 Modbus Serial Line 技术集成到 FDT 接口规范(GB/T 29618.2)的信息，并规定通信和其他服务。

现场设备工具(FDT)接口规范
第5110部分：通用对象模型的通信实现
IEC 61784 CPF 1

1 范围

本文件提供了额外的将基金会现场总线(FF)协议集成到基于COM的FDT规范(IEC/TR 62453-41)的实现方法。

本文件描述了通信定义、协议特定的扩展以及块(例如变送器块、资源块或功能块)的表示方法。

协议特定的定义基于FF规范的H1和HSE协议。此外，这些定义含有系统进行FF设备配置所需的信息。

本文件的范围仅限于基金会现场总线的设备和系统特定的定义。

本文件规定了基于IEC 62453-301的通信和其他服务的实现。

本文件既不包含FDT规范，也不修改它。

2 规范性引用文件

下列文件中的内容通过文中的规范性引用而构成本文件必不可少的条款。其中，注日期的引用文件，仅该日期对应的版本适用于本文件；不注日期的引用文件，其最新版本(包括所有的修改单)适用于本文件。

IEC 62453-1：2016 现场设备工具(FDT)接口规范 第1部分：概述和导则[Field device tool (FDT) interface specification—Part 1：Overview and guidance]

IEC 62453-2：2016 现场设备工具(FDT)接口规范 第2部分：概念和详细描述[Field device tool (FDT) interface specification—Part 2：Concepts and detailed description]

IEC/TR 62453-41 现场设备工具(FDT)接口规范 第41部分：对象模型集成总则 一般对象模型[Field device tool (FDT) interface specification—Part 41：Object Model Integration profile—Common object model]

IEC 62453-301 现场设备工具(FDT)接口规范 第301部分：通信总则集成IEC 61784 CPF 1[Field device tool (FDT) interface specification—Part 301：Communication profile integration—IEC 61784 CPF 1]

3 术语、定义、符号、缩略语和约定

3.1 术语和定义

IEC 62453-1、IEC 62453-2、IEC/TR 62453-41和IEC 62453-301界定的术语和定义适用于本文件。

ISO和IEC在以下地址维护有用于标准化的术语数据库：

- IEC国际电学词汇在线：http://www.electropedia.org/
- ISO在线浏览平台：http://www.iso.org/obp

3.2 符号和缩略语

IEC 62453-1、IEC 62453-2、IEC/TR 62453-41和IEC 62453-301界定的符号和缩略语适用于本文件。

3.3 约定

3.3.1 数据类型名和数据类型引用

命名和引用数据类型的约定详见 IEC 62453-2:2016 中 A.1 的规定。

3.3.2 词汇要求

规定要求时,使用以下表达。
使用“应”或“强制”表示不允许例外。
使用“宜”或“推荐”表示强烈推荐。在特殊例外的情况下,可以与描述的行为不同。
使用“能”或“可选”表示可提供的功能或行为,取决于所定义的条件。

3.3.3 UML 的使用

本文件中的图使用的都是定义在 IEC 62453-1:2016 附录 A 中的 UML 符号。

4 总线类别

IEC 61784 CPF 1 协议由标识符定义,如在 IEC 62453-301 中的规定。

5 访问实例和设备数据

常用方法如下:

- IDtmParameter 方法;
- IDtmSingleDeviceDataAccess 方法;
- IDtmSingleInstanceDataAccess 方法。

这些方法(根据 IEC/TR 62453-41,如果支持)至少应提供对 IEC 62453-301 中定义参数的访问。

6 通用数据类型的协议特定用法

表 1 给出了通用数据类型是如何与 IEC 61784 CPF1 设备一起使用的。

表 1 通用数据类型的协议特定用法

属性	用法描述
fdt:address	FDTDatatype 架构(Schema)的所有这些属性按照 IEC 62453-301 中的定义来使用
fdt:protocolId	
fdt:deviceTypeId	
fdt:deviceTypeInformation	
fdt:deviceTypeInformationPath	
fdt:manufacturerId	
fdt:semanticId	
fdt:applicationDomain	
fdt:tag	

7 协议特定的通用数据类型——FdtFFDataTypesSchema

本章规定协议特定的通用数据类型。它可用于定义其他的数据类型。

```
〈Schema name = "FdtFFDataTypesSchema" xmlns = "urn:schemas-microsoft-com:xml-data"
      xmlns:dt = "urn:schemas-microsoft-com:datatypes"
      xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉
    〈! --
    Common definitions of datatypes for Fieldbus Foundation
    use name space prefix fftypes when referencing
    --〉
    〈! --Definition of Attributes--〉
    〈! -- VFD Reference according to FF-880 section 8 --〉
    〈AttributeType name = "vfdRef" dt:type = "ui4"/〉
    〈AttributeType name = "vfdTag"dt:type = "string"/〉
    〈AttributeType name = "communicationReference" dt:type = "uuid"/〉
    〈AttributeType name = "sublndex" dt:type = "ui4"/〉
    〈AttributeType name = "versionOd" dt:type = "i2"/〉
    〈AttributeType name = "versionNumber" dt:type = "bin.hex"/〉
    〈AttributeType name = "devlD" dt:type = "string"/〉
    〈AttributeType name = "ip" dt:type = "string"/〉
    〈AttributeType name = "port" dt:type = "ui2"/〉
    〈AttributeType name = "devicelndex" dt:type = "ui4"/〉
    〈AttributeType name = "IistCount" dt:type = "ui4"/〉
    〈AttributeType name = " smServicelD" dt: type = " enumeration" dt: values = " SmSetPDTag
SmSetAddress SmClearAddress Smldentify SmFindTagQuery SmClearAssignmentInfo SmSetAssign-
mentlnfo"/〉
    〈AttributeType name = "deviceType" dt:type = "enumeration" dt:values = "IinkingDevice io-
Gateway hseFieldDevice h1Device"/〉
    〈! --Attributes of element DataLinkAddress - Denotes the Data link (DL) Addresses. see FF-
822 Annex A --〉
    〈! -- Link designator according to FF-822 --〉
    〈AttributeType name = "Iinkld" dt:type = "ui2"/〉
    〈! -- Node designator according to FF-822 --〉
    〈AttributeType name = "nodeId" dt:type = "ui2"/〉
    〈! -- Selector according to FF-822 --〉
    〈AttributeType name = "selector" dt:type = "ui2"/〉
    〈! -- See FF-870 section 3.3.4 - FMS services and the options supported by the server --〉
    〈AttributeType name = "fmsFeaturesSupported" dt:type = "bin.hex"/〉
    〈! -- Management attributes --〉
    〈AttributeType name = "smSupport" dt:type = "bin.hex"/〉
    〈AttributeType name = "macroCycleDuration" dt:type = "ui4"/〉
```

```
〈AttributeType name = "operationalPowerup" dt:type = "ui4"/〉
〈AttributeType name = "scheduleActivation" dt:type = "ui4"/〉
〈AttributeType name = "timeValue" dt:type = "bin.hex"/〉
〈AttributeType name = "domain" dt:type = "bin.hex"/〉
〈! -- represent parameters DEV_REV and DD_REV from the resource block--〉
〈AttributeType name = "deviceRevision" dt:type = "ui1" /〉
〈AttributeType name = "ddRevision" dt:type = "ui1"/〉
〈AttributeType name = "devType" dt:type = "ui2" /〉
〈! --Definition of Elements--〉
〈! --Element DataLinkAddress - Denotes the Data link (DL) Addresses. see FF -822 Annex A --〉
〈ElementType name = "DataLinkAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "linkId" required = "yes"/〉
    〈attribute type = "nodeId" required = "yes"/〉
    〈attribute type = "selector" required = yes"/〉
〈/ElementType〉
〈! --Element index --〉
〈ElementType name = "Index" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈! --Element SubIndex --〉
〈ElementType name = "SubIndex" content = "empty" model = " closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "subIndex" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "IndexList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "listCount" required = "yes"/〉
    〈element type = "Index" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉
〈ElementType name = "IP" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "ip" required = "yes"/〉
    〈attribute type = "port" required = "no"/〉
〈/ElementType〉
〈! -- Management elements --〉
〈ElementType name = "VfdTag" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
```

```
    〈attribute type = "vfdTag" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "VfdRef" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "vfdRef" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "OperationalPowerup" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAcess" required = "no"/〉
    〈attribute type = "operationalPowerup" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "PdTag" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAcess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:tag" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DeviceId" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" default = "1" required = "no"/〉
    〈attribute type = "devID" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MacrocycleDuration" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "macroCycleDuration" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "CurrentTime" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "timeValue" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "SmSupport" content = "empty"model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "smSupport" required = "yes"/〉
```

```
    〈/ElementType〉
    〈ElementType name = "VfdIdentification" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "ddRevision" required = "yes" /〉
        〈attribute type = "deviceRevision" required = "yes" /〉
        〈attribute type = "devType" required = "yes" /〉
        〈attribute type = "dt:manufacturerId" required = "no"/〉
        〈attribute type = "vfdTag" required = "yes"/〉
    〈/ElementType〉
〈/Schema〉
```

8 网络管理数据类型

8.1 概述

本章规定的数据类型用于以下方法：

- IDtmParameter:GetParameters
- IDtmParameter:SetParameters

在作为内联框架(schema)的“BusInformation\UserDefinedBus”元素的 DTMParameterSchema 实例中，管理框架(schema)按照内联框架(schema)来使用。

8.2 H1 管理——FdtFFH1ManagementSchema

```
〈Schema name = "FdtFFH1ManagementSchema"
    xmlns = "urn:schemas-microsoft-com:xml-data"
      xmlns:dt = "urm:schemas-microsoft-com:datatypes"
      xmlns:fftypes = "x-schema:FdtFFDataTypesSchema.xml"
      xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"〉
〈! -- ********************************************************************************** --〉
〈! --         Definition of Attributes         --〉
〈! -- ********************************************************************************** --〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉

    〈! -- ********************************************************************** --〉
    〈! -- System management Information base (SMIB) attributes as in FF-880 section 8 --〉

    〈! -- "SmAgent" attributes --〉
    〈AttributeType name = "t1" dt:type = "ui4"/〉
    〈AttributeType name = "t2" dt:type = "ui4"/〉
    〈AttributeType name = "t3" dt:type = "ui4"/〉

    〈! -- "SyncAndScheduling" attributes --〉
    〈AttributeType name = "localTimeDiff" dt:type = "ui4"/〉
    〈AttributeType name = "applicationClockSyncInterval" dt:type = "ui1"/〉
    〈AttributeType name = "timeLastReceived" dt:type = "bin.hex"/〉
```

```
〈AttributeType name = "primaryApplicationTimePublisher"dt:type = "ui1"/〉
〈AttributeType name = "timePublisherAddress" dt:type = "ui1"/〉
〈! -- "FbSchedule" attributes --〉
〈AttributeType name = "startTimeOffset" dt:type = "ui4"/〉

〈! -- ********************************************************************************** --〉
〈! -- Network management information base (NMIB) attributes as in FF-801 section 8 --〉

〈! -- "DlmeLinkSettings" attributes --〉
〈AttributeType name = "slotTime" dt:type = "ui2"/〉
〈AttributeType name = "perDlpduPhlOverhead" dt:type = "ui1"/〉
〈AttributeType name = "maxResponseDelay"dt:type = "ui1/〉
〈AttributeType name = "firstUnpolledNodeId" dt:type = "ui1"/〉
〈AttributeType name = "thisLink" dt:type = "ui2"/〉
〈AttributeType name = "minlnterPduDelay"dt:type = "ui1"/〉
〈AttributeType name = "numConsecUnpolledNodeId"dt:type = "ui1"/〉
〈AttributeType name = "preambleExtension" dt:type = "ui1"/〉
〈AttributeType name = "postTransGapExtension" dt:type = "ui1"/〉
〈AttributeType name = "maxlnterChanSignalSkew" dt:type = "ui1"/〉
〈AttributeType name = "timeSyncClass" dt:type = "ui1"/〉

〈! -- "ScheduleDescriptor" attributes --〉
〈AttributeType name = "timeResolution" dt:type = "ui2"/〉

〈! -- "StackCapabilities" attributes --〉
〈AttributeType name = "fasArTypesAndRolesSupported" dt:type = "ui4"/〉
〈AttributeType name = "maxDIsapAddressesSupported" dt:type = "ui2"/〉
〈AttributeType name = "maxDIcepAddressesSupported" dt:type = "ui2"/〉
〈AttributeType name = "dlcepDeliveryFeaturesSupported" dt:type = "ui1"/〉
〈AttributeType name = "agentFunctionsSupported" dt:type = "ui2"/〉

〈! -- "ListCharacteristics" attributes --〉
〈AttributeType name = "maxEntries" dt:type = "ui2"/〉
〈AttributeType name = "numPermanentEntries" dt:type = "ui2"/〉
〈AttributeType name = "numCurrentlyConfigured" dt:type = "ui2"/〉
〈AttributeType name = "firstUnconfiguredEntry" dt:type = "ui2"/〉
〈AttributeType name = "dynamicsSupportedFlag" dt:type = "boolean"/〉
〈AttributeType name = "statisticsSupported" dt:type = "ui1"/〉
〈AttributeType name = "numOfStatisticsEntries" dt:type = "ui2"/〉

〈! -- "VcrStaticEntry" attributes --〉
〈AttributeType name = "fasArTypeAndRole" dt:type = "ui1"/〉
〈AttributeType name = "fasDIILocalAddr" dt:type = " ui4"/〉
```

```
〈AttributeType name = "fasDIIConfiguredRemoteAddr"dt:type  = "ui4"/〉
〈AttributeType name = "fasDIISDAP" dt:type = "ui1"/〉
〈AttributeType name = "fasDIIMaxConfirmDelayOnConnect" dt:type = "ui2"/〉
〈AttributeType name = "fasDIIMaxConfirmDelayOnData" dt:type = "ui2"/〉
〈AttributeType name = "fasDIIMaxDlsduSize" dt:type = "ui2"/〉
〈AttributeType name = "fasDllResidualActivitySupported" dt:type = "boolean"/〉
〈AttributeType name = "fasDIITimelinessClass" dt:type = "ui1/〉
〈AttributeType name = "fasDIIPublisherTimeWindowSize" dt:type = "ui2"/〉
〈AttributeType name = "fasDIIPublisherSynchronizingDlcep" dt:type = "ui4"/〉
〈AttributeType name = "fasDIISubscriberTimeWindowSize" dt:type = "ui2"/〉
〈AttributeType name = "fasDIISubscriberSynchronizingDlcep" dt:type  = "ui4"/〉
〈AttributeType name = "fmsVfdld" dt:type = "ui4"/〉
〈AttributeType name = "fmsMaxOutstandingServicesCalling" dt:type = "ui1"/〉
〈AttributeType name = "fmsMaxOutstandingServicesCalled" dt:type = "ui1"/〉

〈! -- "VcrDynamicEntry" attributes --〉
〈AttributeType name = "fmsState" dt:type = "ui1"/〉
〈AttributeType name = "fmsActualMaxOutstandingServicesCalling" dt:type = "ui1"/〉
〈AttributeType name = "fmsActualMaxOutstandingServicesCalled" dt:type = "ui1"/〉
〈AttributeType name = "fmsOutstandingServicesCounterCalling" dt:type = "ui1"/〉
〈AttributeType name = "fmsOutstandingServicesCounterCalled" dt:type = "ui1"/〉
〈AttributeType name = "fasState" dt:type = "ui1"/〉
〈AttributeType name = "fasDIIActualRemoteAddress" dt:type = "ui4"/〉
〈AttributeType name = "fasDIIMaxSendingQueueDepth" dt:type = "ui1"/〉
〈AttributeType name = "fasDIIMaxReceivingQueueDepth" dt:type = "ui1"/〉

〈! -- "VcrStatisticsEntry" attributes --〉
〈AttributeType name = "clearVcrStatistics" dt:type = "boolean"/〉
〈AttributeType name = "fasNumOfAbortsCtr" dt:type = "ui2"/〉
〈AttributeType name = "fasLocallyGeneratedLastAborted" dt:type = "boolean"/〉
〈AttributeType name = "fasReasonLastAborted" dt:type = "ui2"/〉
〈AttributeType name = "dllNumOfDtPdusSent" dt:type = "ui2"/〉
〈AttributeType name = "dllNumOfDtPdusReceived" dt:type = "ui2"/〉
〈AttributeType name = "dllNumOfDIDataTransferTimeoutFailures" dt:type = "ui2"/〉
〈AttributeType name = "dllNumOfRcvrQuFullDIDataFailures" dt:type = "ui2"/〉

〈! -- "DImeBasicCharacteristics" attributes --〉
〈AttributeType name = "basicStatisticsSupportedFlag" dt:type = "boolean"/〉
〈AttributeType name = "dlOperatFunctionalClass" dt:type = "ui1"/〉
〈AttributeType name = "dlDeviceConformance" dt:type = "ui4"/〉

〈! -- "DlmeBasiclnfo" attributes --〉
〈! -- AttributeType name = "slotTime" already defined in DlmeLinkSettings /--〉
```

```
〈! -- AttributeType name = "perDlpduPhlOverhead" already defined in DimeLinkSettings /--〉
〈! -- AttributeType name = "maxResponseDelay" already defined in DlmeLinkSettings /--〉
〈AttributeType name = "thisNode" dt:type = "ui1"/〉
〈! -- AttributeType name = "thisLink" already defined in DlmeLinkSettings /--〉
〈! -- AttributeType name = "minlnterPduDelay" already defined in DlmeLinkSettings /--〉
〈! -- AttributeType name = "timeSyncClass" already defined in DlmeLinkSettings /--〉
〈! -- AttributeType name = "preambleExtension" already defined in DlmeLinkSettings /--〉
〈! -- AttributeType name = "postTransGapExtension" already defined in DlmeLinkSettings /--〉
〈! -- AttributeType name = "maxlnterChanSignalSkew" already defined in DlmeLinkSettings /--〉

〈! -- "DlmeBasicStatistics" attributes --〉
〈AttributeType name = "numOfDlpduTransmitted" dt:type = "ui4"/〉
〈AttributeType name = "numOfGoodDlpduReceived" dt:type = "ui4"/〉
〈AttributeType name = "numOfPartialReceivedDlpdu" dt:type = "ui4"/〉
〈AttributeType name = "numOfFcsFailures" dt:type = "ui4"/〉
〈AttributeType name = "numOfNodeTimeOffsetDiscontinuousChanges" dt:type = "ui4"/〉

〈! -- "DlmeLinkMasterInfo" attributes --〉
〈AttributeType name = "maxSchedulingOverhead" dt:type = "ui1"/〉
〈AttributeType name = "defMinTokenDelegTime" dt:type = "ui2"/〉
〈AttributeType name = "defTokenHoldTime" dt:type = "ui2"/〉
〈AttributeType name = "targetTokenRotTime" dt:type = "ui2"/〉
〈AttributeType name = "linkMaintTokHoldTime" dt:type = "ui2"/〉
〈AttributeType name = "timeDistributionPeriod" dt:type = "ui4"/〉
〈AttributeType name = "maximumlnactivityToClaimLasDelay" dt:type = "ui2"/〉
〈AttributeType name = "lasDatabaseStatusSpduDistributionPeriod" dt:type = "ui2"/〉

〈! -- "DlmeLinkMasterStatistics" attributes --〉
〈AttributeType name = "numLasRoleDelegOrClaimOrDelegTokenHoldTimeout" dt:type = "ui2"/〉

〈! -- "LastValues" attributes --〉
〈AttributeType name = "frameControlOctetN" dt:type = "ui1"/〉
〈AttributeType name = "addressSubfieldsN" dt:type = "bin.hex"/〉
〈AttributeType name = "frameControlOctetNminus1" dt:type = "ui1"/〉
〈AttributeType name = "addressSubfieldsNminus1" dt:type = "bin.hex"/〉
〈AttributeType name = "frameControlOctetNminus2" dt:type = "ui1"/〉
〈AttributeType name = "addressSubfieldsNminus2" dt:type = "bin.hex"/〉
〈AttributeType name = "frameControlOctetNminus3" dt:type = "ui1"/〉
〈AttributeType name = "addressSubfieldsNminus3" dt:type = "bin.hex"/〉

〈! -- "LinkScheduleListCharacteristics" attributes --〉
```

```
    〈AttributeType name = "numOfSchedules" dt:type  = "ui1"/〉
    〈AttributeType name = "numOfSubSchedulesPerSchedule" dt:type = "ui1"/〉
    〈AttributeType name = "activeScheduleStartingTime" dt:type = "bin.hex"/〉

    〈! -- "PlmeBasicCharacteristics" attributes --〉
    〈AttributeType name = "channelStatisticsSupported" dt:type = "ui1"/〉
    〈AttributeType name = "mediumAndDataRatesSupported" dt:type = "bin.hex"/〉
    〈AttributeType name = "numOfChannels" dt:type = "ui1"/〉
    〈AttributeType name = "powerMode" dt:type = "ui1"/〉

    〈! -- "PlmeBasiclnfo" attributes --〉
    〈AttributeType name = "interfaceMode" dt:type = "ui1"/〉
    〈AttributeType name = "loopBackMode" dt:type = "ui1"/〉
    〈AttributeType name = "xmitEnabled" dt:type  = "ui1"/〉
    〈AttributeType name = "rcvEnabled" dt:type = " ui1"/〉
    〈AttributeType name = "preferredReceiveChannel" dt:type = "ui1"/〉
    〈AttributeType name = "mediaTypeSelected" dt:type = "ui1"/〉
    〈AttributeType name = "receiveSelect" dt:type = "ui1"/〉

    〈! -- "MmeWireStatistics" attributes --〉
    〈AttributeType name = "channelNumber" dt:type = "ui1"/〉
    〈AttributeType name = "totalGoodMsgsSent" dt:type = "ui4"/〉
    〈AttributeType name = "totalGoodMsgsRcvd" dt:type = "ui4"/〉
    〈AttributeType name = "numOfJabberFaults" dt:type = "ui2"/〉
    〈AttributeType name = "numOflntemAndJabberFaults" dt:type = "ui2"/〉
    〈AttributeType name = "numEndActivityBeforeEndData" dt:type = "ui2"/〉

    〈! -- "VcrList" attributes --〉
    〈AttributeType name = "listControl" dt:type = "ui1"/〉

    〈! -- "DlmeLinkMaster" attributes --〉
    〈AttributeType name = "dlmeLinkMasterCapabilities" dt:type = "ui1"/〉
    〈AttributeType name = "primaryLinkMasterFlag" dt:type = "boolean"/〉
    〈AttributeType name = "liveListStatusArray" dt:type = "bin.hex"/〉
    〈AttributeType name = "maxTokenHoldTime" dt:type = "bin.hex"/〉
    〈AttributeType name = "bootOperatFunctionalClass" dt:type = "ui1"/〉

    〈! -- "PlmeBasic" attributes --〉
    〈AttributeType name = "channelStates" dt:type = "bin.hex"/〉

〈! -- ********************************************************************************** --〉
〈! -- Definition of Elements --〉
〈! -- ********************************************************************************** --〉
```

```
<! -- ********************************************************************************** -->
<! -- SMIB elements for basic variables as in FF-880 section 8-->
<! -- ********************************************************************************** -->

<! -- "SmAgent" elements -->
<ElementType name = "T1" content = "empty" model = "closed">
    <attribute type = "fdt:nodeId" required = "no"/>
    <attribute type = "fdt:readAccess" required = "no"/>
    <attribute type = "fdt:writeAccess" required = "no"/>
    <attribute type = "t1" required = "yes"/>
</ElementType>
<ElementType name = "T2" content = "empty" model = "closed">
    <attribute type = "fdt:nodeId" required = "no"/>
    <attribute type = "fdt:readAccess" required = "no"/>
    <attribute type = "fdt:writeAccess" required = "no"/>
    <attribute type = "t2" required = "yes"/>
</ElementType>
<ElementType name = "T3" content = "empty" model = "closed">
    <attribute type = "fdt:nodeId" required = "no"/>
    <attribute type = "fdt:readAccess" required = "no"/>
    <attribute type = "fdt:writeAccess" required = "no"/>
    <attribute type = "t3" required = "yes"/>
</ElementType>

<! -- "SyncAndScheduling" elements -->
<ElementType name = "LocalTimeDiff" content = "empty" model = "closed">
    <attribute type = "fdt:nodeId" required = "no"/>
    <attribute type = "fdt:readAccess" required = "no"/>
    <attribute type = "fdt:writeAccess" required = "no"/>
    <attribute type = "localTimeDiff" required = "yes"/>
</ElementType>
<ElementType name = "ApplicationClockSynclnterval" content = "empty" model = "closed">
    <attribute type = "fdt:nodeId" required = "no"/>
    <attribute type = "fdt:readAccess" required = "no"/>
    <attribute type = "fdt:writeAccess" required = "no"/>
    <attribute type = "aplicationClockSyncInterval" required = "yes"/>
</ElementType>
<ElementType name = "TimeLastReceived" content = "empty" model = "closed">
    <attribute type = "fdt:nodeId" required = "no"/>
    <attribute type = "fdt:readAccess" required = "no"/>
    <attribute type = "fdt:writeAccess" required = "no"/>
    <attribute type = "timeLastReceived" required = "yes"/>
```

```
    〈/ElementType〉
    〈ElementType name = "PrimaryApplicationTimePublisher" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required  = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "primaryApplicationTimePublisher"required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "TimePublisherAddress" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "timePublisherAddress" required = "yes"/〉
    〈/ElementType〉

    〈-- "FbSchedule" elements --〉
    〈ElementType name = "StartTimeOffset" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "startTimeOffset" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FbObjectlndex" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fdt:index" required = "yes"/〉
    〈/ElementType〉

    〈! -- ********************************************************************************** --〉
    〈! -- NMIB elements for basic variables as in FF-801 section 8 --〉
    〈! -- ********************************************************************************** --〉

    〈! -- "DlmeLinkSettings" elements --〉
    〈ElementType name = "SlotTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt.readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "slotTime" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "PerDlpduPhlOverhead" content = " empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
```

```
    〈attribute type = "perDlpduPhlOverhead" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxResponseDelay" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxResponseDelay" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FirstUnpolledNodeId" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "firstUnpolledNodeId" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ThisLink" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈atrribute type = "thisLink" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MinlnterPduDelay" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "minlnterPduDelay" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumConsecUnpolledNodeId" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numConsecUnpolledNodeId" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "PreambleExtension" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "preambleExtension" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "PostTransGapExtension" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required  = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "postTransGapExtension" required = "yes"/〉
```

```
〈/ElementType〉
〈ElementType name = "MaxlnterChanSignalSkew"content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxlnterChanSignalSkew" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "TimeSyncClass" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "timeSyncClass" required = "yes"/〉
〈/ElementType〉

〈! -- "ScheduleDescriptor" elements --〉
〈ElementType name = "TimeResolution" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "timeResolution" required = "yes"/〉
〈/ElementType〉

〈! -- "StackCapabilities" elements --〉
〈ElementType name = "FasArTypesAndRolesSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasArTypesAndRolesSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxDlsapAddressesSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxDlsapAddressesSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxDlcepAddressesSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxDlcepAddressesSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DlcepDeliveryFeaturesSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "dlcepDeliveryFeaturesSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "VersionOfNmSpecSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:versionNumber" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "AgentFunctionsSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "agentFunctionsSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FmsFeaturesSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:fmsFeaturesSupported" required = "yes"/〉
〈/ElementType〉

〈! -- "ListCharacteristics" elements --〉
〈ElementType name = "MaxEntries" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxEntries" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumPermanentEntries" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numPermanentEntries" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumCurrentlyConfigured" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numCurrentlyConfigured" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FirstUnconfiguredEntry" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "firstUnconfiguredEntry" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DynamicsSupportedFlag" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "dynamicsSupportedFlag" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "StatisticsSupported" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "statisticsSupported" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "NumOfStatisticsEntries" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfStatisticsEntries" required = "yes"/〉
    〈/ElementType〉

    〈! -- "VcrStaticEntry" elements --〉
    〈ElementType name = "FasArTypeAndRole" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt.readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no/〉
        〈attribute type = "fasArTypeAndRole" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDllLocalAddr" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllLocalAddr" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDIIConfiguredRemoteAddr" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllConfiguredRemoteAddr required = "yes"/〉
    〈/ElementType〉
```

```
〈ElementType name = "FasDllSDAP" content = " empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasDllSDAP" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllMaxConfirmDelayOnConnect" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasDllMaxConfirmDelayOnConnect" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllMaxConfirmDelayOnData" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasDllMaxConfirmDelayOnData" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllMaxDlsduSize" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required  = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasDllMaxDIsduSize" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllResidualActivitySupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasDllResidualActivitySupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllTimelinessClass" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasDllTimelinessClass" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllPublisherTimeWindowSize" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasdDllPublisherTimeWindowSize" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllPublisherSynchronizingDlcep" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllPublisherSynchronizingDlcep" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDllSubscriberTimeWindowSize" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllSubscriberTimeWindowSize" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDllSubscriberSynchronizingDlcep" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllSubscriberSynchronizingDlcep" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FmsVfdId" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsVfdId" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FmsMaxOutstandingServicesCalling" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsMaxOutstandingServicesCalling" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FmsMaxOutstandingServicesCalled" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsMaxOutstandingServicesCalled" required = "yes"/〉
    〈/ElementType〉

    〈! -- "VcrDynamicEntry" elements --〉
    〈ElementType name = "FmsState" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsState" required = "yes"/〉
    〈/ElementType〉
```

```
    〈ElementType name = " FmsActualMaxOutstandingServicesCalling" content = " empty" model = "
closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsActualMaxOutstandingServicesCalling" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FmsActualMaxOutstandingServicesCalled" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsActualMaxOutstandingServicesCalled" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FmsOutstandingServicesCounterCaling" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsOutstandingServicesCounterCalling" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FmsOutstandingServicesCounterCalled" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fmsOutstandingServicesCounterCalled" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasState" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasState" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDllActualRemoteAddress" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllActualRemoteAddress" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDllMaxSendingQueueDepth" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllMaxSendingQueueDepth" required = "yes"/〉
    〈/ElementType〉
```

```
〈ElementType name = "FasDllMaxReceivingQueueDepth" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasDllMaxReceivingQueueDepth" required = "yes"/〉
〈/ElementType〉

〈! -- "VcrStatisticsEntry" elements --〉
〈ElementType name = "VcrStaticEntryOdlndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ClearVcrStatistics" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "clearVcrStatistics" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasNumOfAbortsCtr" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasNumOfAbortsCtr" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasLocallyGeneratedLastAborted" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasLocallyGeneratedLastAborted" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasReasonLastAborted" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fasReasonLastAborted" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DllNumOfDtPdusSent" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "dllNumOfDtPdusSent" required = "yes"/〉
```

```
〈/ElementType〉
〈ElementType name = "DllNumOfDtPdusReceived" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required  = "no"/〉
    〈attribute type = "fdt:writeAccess" required  = "no"/〉
    〈attribute type = "dllNumOfDtPdusReceived" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DllNumOfDlDataTransferTimeoutFailures" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "dllNumOfDIDataTransferTimeoutFailures" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DllNumOfRcvrQuFullDIDataFailures" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "dllNumOfRcvrQuFullDIDataFailures" required = "yes"/〉
〈/ElementType〉

〈! -- "DlmeBasicCharacteristics" elements --〉
〈ElementType name = "Version" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:versionNumber" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "BasicStatisticsSupportedFlag" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "basicStatisticsSupportedFlag" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DlOperatFunctionalClass" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "dlOperatFunctionalClass" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DIDeviceConformance" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
```

```
        〈attribute type = "dlDeviceConformance" required = "yes"/〉
    〈/ElementType〉

    〈! -- "DlmeBasiclnfo" elements --〉
    〈! -- AttributeType name = "SlotTime" already defined in DlmeLinkSettings /--〉
    〈! -- AttributeType name = "maxResponseDelay" already defined in DlmeLinkSettings /--〉
    〈ElementType name = "ThisNode" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "thisNode" required = "yes"/〉
    〈/ElementType〉
    〈! -- AttributeType name = "ThisLink" already defined in DlmeLinkSettings /--〉
    〈! -- AttributeType name = "timeSyncClass" already defined in DlmeLinkSettings /--〉
    〈! -- AttributeType name = "preambleExtension" already defined in DlmeLinkSettings /--〉
    〈! -- AttributeType name = "postTransGapExtension" already defined in DlmeLinkSettings /--〉
    〈! -- AttributeType  name = " maxlnterChanSignalSkewthisLink" already defined in DlmeLinkSet-
tings/--〉

    〈! -- "DlmeBasicStatistics" elements --〉
    〈ElementType name = "NumOfDlpduTransmitted" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfDlpduTransmitted" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "NumOfGoodDlpduReceived" dt:type = "ui4"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfGoodDlpduReceived" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "NumOfPartialReceivedDlpdu" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfPartialReceivedDlpdu" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "NumOfFcsFailures" content = "empty" model = " closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfFcsFailures" required = "yes"/〉
```

```
    〈/ElementType〉
    〈ElementType name = "NumOfNodeTimeOffsetDiscontinuousChanges" content = "empty" model = "
closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfNodeTimeOffsetDiscontinuousChanges" required = "yes"/〉
    〈/ElementType〉

    〈! -- "DlmeLinkMasterlnfo" elements --〉
    〈ElementType name = "MaxSchedulingOverhead" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maxSchedulingOverhead" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DefMinTokenDelegTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "defMinTokenDelegTime" required = "yes"〉
    〈/ElementType〉
    〈ElementType name = "DefTokenHoldTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "defTokenHoldTime" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "TargetTokenRotTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "targetTokenRotTime" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "LinkMaintTokHoldTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "linkMaintTokHoldTime" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "TimeDistributionPeriod" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
```

```
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "timeDistributionPeriod" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MaximumlnactivityToClaimLasDelay" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maximumlnactivityToClaimLasDelay" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "LasDatabaseStatusSpduDistributionPeriod" content = "empty" model = "
closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "lasDatabaseStatusSpduDistributionPeriod" required = "yes"/〉
    〈/ElementType〉

    〈! -- "DlmeLinkMasterStatistics" elements --〉
    〈ElementType name = " NumLasRoleDelegOrClaimOrDelegTokenHoldTimeout" content = " empty"
model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numLasRoleDelegOrClaimOrDelegTokenHoldTimeout" required = "yes"/〉
    〈/ElementType〉

    〈! -- "LastValues" elements --〉
    〈ElementType name = "FrameControlOctetN" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "frameControlOctetN" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "AddressSubfieldsN" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "addressSubfieldsN" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FrameControlOctetNminus1" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
```

```
    〈attribute type = "frameControlOctetNminus1" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "AddressSubfieldsNminus1" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "addressSubfieldsNminus1" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FrameControlOctetNminus2" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "frameControlOctetNminus2" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "AddressSubfieldsNminus2" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "addressSubfieldsNminus2" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FrameControlOctetNminus3" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "frameControlOctetNminus3" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "AddressSubfieldsNminus3" content = "empty"model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "addressSubfieldsNminus3" required = "yes"/〉
〈/ElementType〉

〈! -- "LinkScheduleListCharacteristics" elements --〉
〈ElementType name = "NumOfSchedules" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "ldt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfSchedules" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfSubSchedulesPerSchedule" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
```

```
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfSubSchedulesPerSchedule" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ActiveScheduleVersion" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ActiveScheduleOdlndex" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fdt:index" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ActiveScheduleStartingTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "activeScheduleStartingTime"required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ScheduleDomain" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess"required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:domain" required = "yes"/〉
    〈/ElementType〉

    〈! --"PlmeBasicCharacteristics" elements --〉
    〈ElementType name = "ChannelStatisticsSupported" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "channelStatisticsSupported" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MediumAndDataRatesSupported" content = " empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "mediumAndDataRatesSupported" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "lecVersion" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:versionNumber required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfChannels" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfChannels" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "PowerMode" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "powerMode" required = "yes"/〉
〈/ElementType〉

〈! -- "PlmeBasiclnfo" elements --〉
〈ElementType name = "lnterfaceMode" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "interfaceMode" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "LoopBackMode" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "loopBackMode" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "XmitEnabled" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "xmitEnabled" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "RcvEnabled" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess"required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "rcvEnabled" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "PreferredReceiveChannel" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "preferredReceiveChannel" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MediaTypeSelected" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "mediaTypeSelected" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ReceiveSelect" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "receiveSelect" required = "yes"/〉
    〈/ElementType〉

    〈! -- "MmeWireStatistics" elenents --〉
    〈ElementType name = "ChannelNumber" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "channelNumber" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "TotalGoodMsgsSent" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "totalGoodMsgsSent" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "TotalGoodMsgsRcvd" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "totalGoodMsgsRcvd" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "NumOfJabberFaults" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "numOfJabberFaults" required = "yes"/〉
    〈/ElementType〉
```

```
〈ElementType name = "NumOflnternAndJabberFaults" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOflnternAndJabberFaults" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumEndActivityBeforeEndData" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numEndActivityBeforeEndData" required = " yes"〉
〈/ElementType〉

〈! -- "VcrList" elements --〉
〈ElementType name = "ListControl" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "listControl" required = "yes"/〉
〈/ElementType〉

〈! -- "DlmeLinkMaster" elements --〉
〈ElementType name = "DlmeLinkMasterCapabilities" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "dlmeLinkMasterCapabilities" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "PrimaryLinkMasterFlag" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "primaryLinkMasterFlag" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "LiveListStatusArray" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "liveListStatusArray" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxTokenHoldTime" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
```

```
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maxTokenHoldTime required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "BootOperatFunctionalClass" content = "empty" model = " closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "bootOperatFunctionalClass" required = "yes"/〉
    〈/ElementType〉

    〈ElementType name = "LinkScheduleActivation" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:scheduleActivation" required = "yes"/〉
    〈/ElementType〉

    〈! -- "PlmeBasic" elements --〉
    〈ElementType name = "ChannelStates" content = "empty" model = " closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "channelStates" required = "yes"/〉
    〈/ElementType〉

    〈! -- SMIB level 3 --〉

    〈ElementType name = "VfdRefEntry" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "fftypes:VfdRef" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "fftypes:VfdTag" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FbStartEntry" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "StartTimeOffset" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FbObjectIndex" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "fftypes:VfdRef" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈! -- SMIB level 2--〉

    〈ElementType name = "SmAgent" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
    〈element type = "fftypes:SmSupport" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "T1" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "T2" minOccurs = " 1" maxOccurs = "1"/〉
    〈element type = "T3" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "SyncAndScheduling" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"〉
    〈element type = "fftypes:CurrentTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "LocalTimeDiff"minOccurs = "1" maxOccurs = "1"〉
    〈element type = "ApplicationClockSyncInterval" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TimeLastReceived" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "PrimaryApplicationTimePublisher" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TimePublisherAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:MacrocycleDuration" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "AddressAssignment" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "fftypes:DeviceId" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:PdTag" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:OperationalPowerup" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "VfdList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "VfdRefEntry" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉

〈ElementType name = "ListOfFbStartEntries" content = "eltOnly"model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "FbStartEntry" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉

〈ElementType name = "FbSchedule" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "Version" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ListOfFbStartEntries" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈! -- SMIB level 1 --〉
```

```
〈ElementType name = "SMIB" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "SmAgent" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "SyncAndScheduling" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "AddressAssignment" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "VfdList" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FbSchedule" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈! -- ********************************************************************************** --〉
〈! -- NMIB elements as in FF-801 section 8 --〉

〈! -- NMIB level 4 --〉

〈ElementType name = "DlmeLinkSettings" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "SlotTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "PerDlpduPhlOverhead" minOccurs = "1" maxOccurs = " 1“/〉
    〈element type = "MaxResponseDelay" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FirstUnpolledNodeId" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ThisLink" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MinInterPduDelay" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumConsecUnpolledNodeId" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "PreambleExtension" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "PostTransGapExtension" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MaxlnterChanSignalSkew" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TimeSyncClass" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "ScheduleDescriptor" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "Version" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:MacrocycleDuration" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TimeResolution" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈! -- NMIB level 3--〉

〈ElementType name = "StackCapabilities" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "FasArTypesAndRolesSupported" minOccurs = "1" maxOccurs = "1/〉
    〈element type = "MaxDlsapAddressesSupported" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MaxDlcepAddressesSupported" minOccurs = "1" maxOccurs = "1"/〉
```

```
    〈element type = "DlcepDeliveryFeaturesSupported" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "VersionOfNmSpecSupported" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "AgentFunctionsSupported" minOccurs = "1" maxOccurs = "1/〉
    〈element type = "FmsFeaturesSupported" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "ListCharacteristics" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "Version" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MaxEntries" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumPermanentEntries" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumCurrentlyConfigured" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FirstUnconfiguredEntry" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DynamicsSupportedFlag" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "StatisticsSupported" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOfStatisticsEntries" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "VcrStaticEntry" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "FasArTypeAndRole" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllLocalAddr"minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllConfiguredRemoteAddr minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllSDAP" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllMaxConfirmDelayOnConnect minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllMaxConfirmDelayOnData" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllMaxDlsduSize" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllResidualActivitySupported" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllTimelinessClass" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllPublisherTimeWindowSize" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllPublisherSynchronizingDlcep" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FasDllSubscriberTimeWindowSize" minOccurs = "1" maxOccurs = "1"/〉
   〈element type = "FasDllSubscriberSynchronizingDlcep" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FmsVfdld" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FmsMaxOutstandingServicesCalling" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FmsMaxOutstandingServicesCalled" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FmsFeaturesSupported" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "VcrDynamicEntry" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "FmsState" minOccurs = "1" maxOccurs = "1"/〉
   〈element type = "FmsActualMaxOutstandingServicesCalling" minOccurs = "1" maxOccurs = "1"/〉
```

```
        〈element type = "FmsActualMaxOutstandingServicesCalled" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FmsOutstandingServicesCounterCalling" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FmsOutstandingServicesCounterCalled" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FasState"minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FasDllActualRemoteAddress" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FasDllMaxSendingQueueDepth" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FasDllMaxReceivingQueueDepth minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "VcrStatisticsEntry" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "VcrStaticEntryOdlndex" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ClearVcrStatistics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FasNumOfAbortsCtr" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FasLocallyGeneratedLastAborted" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FasReasonLastAborted" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DllNumOfDtPdusSent" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DllNumOfDtPdusReceived" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DllNumOfDIDataTransferTimeoutFailures" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DllNumOfRcvrQuFullDIDataFailures" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "DlmeBasicCharacteristics" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "Version" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "BasicStatisticsSupportedFlag" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlOperatFunctionalClass" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DIDeviceConformance" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "DlmeBasiclnfo" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "SlotTime" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "PerDlpduPhlOverhead" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxResponseDelay" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ThisNode" minOccurs = " 1" maxOccurs = "1"/〉
        〈element type = "ThisLink" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MinlnterPduDelay" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "TimeSyncClass" minOccurs = "1" maxOccurs = "1/〉
        〈element type = "PreambleExtension" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "PostTransGapExtension" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxlnterChanSignalSkew" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
```

```
〈ElementType name = "DlmeBasicStatistics" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "NumOfDlpduTransmitted" minOccurs = "1" maxOccurs = "1/〉
    〈element type = "NumOlGoodDlpduReceived" minOccurs = "1" maxOccurs = " 1"/〉
    〈element type = "NumOfPartialReceivedDlpdu" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOfFcsFailures" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOfNodeTimeOffsetDiscontinuousChanges" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "DlmeLinkMasterlnfo" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "MaxSchedulingOverhead" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DefMinTokenDelegTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DefTokenHoldTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TargetTokenRotTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "LinkMaintTokHoldTime" minOccurs  = "1" maxOccurs = "1"/〉
    〈element type = "TimeDistributionPeriod minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MaximumlnactivityToClaimLasDelay" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "LasDatabaseStatusSpduDistributionPeriod" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "DlmeCurrentLinkSettings" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "DlmeLinkSettings" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "DlmeConfiguredLinkSettings" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "DlmeLinkSettings" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "DlmeLinkMasterStatistics" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "NumLasRoleDelegOrClaimOrDelegTokenHoldTimeout" minOccurs = "1" max-
Occurs = "1"/〉
〈/ElementType〉

〈ElementType name = "LastValues" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "FrameControlOctetN" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "AddressSubfieldsN"minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FrameControlOctetNminus1" minOccurs = "1" maxOccurs = "1"/〉
```

```
        〈element type = "AddressSubfieldsNminus1" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FrameControlOctetNminus2" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "AddressSubfieldsNminus2" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FrameControlOctetNminus3" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "AddressSubfieldsNminus3" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = " LinkScheduleListCharacteristics" content = " eltOnly" model = "
closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "NumOfSchedules" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfSubSchedulesPerSchedule" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ActiveScheduleVersion" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ActiveScheduleOdlndex" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ActiveScheduleStartingTime" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "ListOfScheduleDescriptors" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "ScheduleDescriptor" minOccurs = "1" maxOccurs = " * "/〉
    〈/ElementType〉

    〈ElementType name = "ListOfScheduleDomains" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "ScheduleDomain" minOccurs = "1" maxOccurs = " * "/〉
    〈/ElementType〉

    〈ElementType name = "PlmeBasicCharacteristics" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "ChannelStatisticsSupported" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MediumAndDataRatesSupported" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "lecVersion" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfChannels" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "PowerMode" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "PlmeBasiclnfo" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "InterfaceMode" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "LoopBackMode" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "XmitEnabled" minOccurs = "1" maxOccurs = "1"/〉
```

```
    〈element type = "RcvEnabled" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "PreferredReceiveChannel" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MediaTypeSelected" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ReceiveSelect" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "MmeWireStatistics" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "ChannelNumber" minOccurs  = "1" maxOccurs = "1"/〉
    〈element type = "TotalGoodMsgsSent" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TotalGoodMsgsRcvd" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOfJabberFaults" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOflnternAndJabberFaults" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumEndActivityBeforeEndData" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈! -- NMIB level 2 --〉

〈ElementType name = "StackMgmt" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "StackCapabilities" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "ListOfVcrStaticEntries" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "VcrStaticEntry" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉

〈ElementType name = "ListOfVcrDynamicEntries" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "VcrDynamicEntry" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉

〈ElementType name = "ListOfVcrStatisticsEntries" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "VcrStatisticsEntry" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉

〈ElementType name = "VcrList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
        〈element type = "ListControl" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfVcrStaticEntries" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfVcrDynamicEntries" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "ListOfVcrStatisticsEntries" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "DlmeBasic" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "DlmeBasicCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DImeBasiclnfo" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeBasicStatistics" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "DlmeLinkMaster" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "DlmeLinkMasterCapabilities" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "PrimaryLinkMasterFlag" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "LiveListStatusArray" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxTokenHoldTime" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "BootOperatFunctionalClass" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeLinkMasterlnfo" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeCurrentLinkSettings" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeConfiguredLinkSettings" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeLinkMasterStatistics" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "LastValues" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "LinkScheduleList" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "LinkScheduleActivation" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "LinkScheduleListCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfScheduleDescriptors" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfScheduleDomains" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "DlmeBridge" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- Nothing yet defined in here, listed for completeness only --〉
    〈/ElementType〉

    〈ElementType name = "PlmeBasic" content = "eltOnly" model = "closed"〉
        〈atribute type = "fdt:nodeId" required = "no"/〉
```

```
        〈element type = "ChannelStates" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "PlmeBasicCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "PlmeBasicInfo" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "ListOfMmeWireStatistics" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "MmeWireStatistics" minOccurs = "1" maxOccurs = " * "/〉
    〈/ElementType〉

    〈! -- NMIB level 1 --〉

    〈ElementType name = "NMIB" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "StackMgmt" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "VcrList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeBasic" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeLinkMaster" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "LinkScheduleList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeBridge" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "PlmeBasic" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfMmeWireStatistics" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉

    〈! -- Schema root level (0) --〉

    〈ElementType name = "H1NmaVfd" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:linkId" required = "no"/〉
        〈attribute type = "fftypes:nodeId" required = "no"/〉
        〈attribute type = "fftypes:selector" required = "no"/〉
        〈element type = "SMIB" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NMIB" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "ListOfH1NmaVfds" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "H1NmaVfd" minOccurs = "1" maxOccurs = " * "/〉
    〈/ElementType〉
〈/Schema〉
```

8.3 HSE 管理——FdtFFHseManagementSchema

```
〈Schema name = "FdtFFHseManagementSchema"
xmlns = "urn:schemas-microsoft-com:xml-data"
xmlns:dt = "urn:schemas-microsoft-com:datatypes"
xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
xmlns:fftypes = "x-schema:FdtFFDataTypesSchema.xml"〉

〈! -- ********************************************************************************** --〉
〈! --         Definition of Attributes         --〉
〈! -- ********************************************************************************** --〉

    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉

    〈! -- ********************************************************************************** --〉
    〈! -- System management information base (SMIB) attributes as in FF-589 section 6--〉

    〈! -- "SmCharacteristics" elements --〉
    〈! -- "ListOfVersionNumbers" --〉
    〈AttributeType name = "maxNumberOfInterfaces" dt:type = "ui4"/〉
    〈AttributeType name = "installedInterfaces" dt:type = "bin.hex"/〉
    〈AttributeType name = "maxNumberOfVFDs" dt:type = "ui4"/〉
    〈AttributeType name = "actualNumberOfVFDs" dt:type = "ui4"/〉

    〈! -- "SyncAndScheduling" elements --〉
    〈! -- "SyncAndSchedulingCharacteristics" --〉
    〈AttributeType name = "standardTimeDifference" dt:type = "i4"/〉
    〈AttributeType name = "timeRequestTimeout" dt:type = "ui4"/〉
    〈AttributeType name = "timeRequestInterval" dt:type = "ui4"/〉
    〈AttributeType name = "capableTimeSyncClass" dt:type = "ui4"/〉
    〈AttributeType name = "targetTimeSyncClass" dt:type = "ui4"/〉
    〈AttributeType name = "scheduleSyncPeriod" dt:type = "ui4"/〉
    〈AttributeType name = "daylightTimeDifference" dt:type = "i4"/〉
    〈! -- "ListOfSNTPTimeStamps" --〉
    〈AttributeType name = "sntpTimestamp" dt:type = "ui4"/〉

    〈! -- "VfdList" elements --〉
    〈! -- "VfdRefEntry" --〉
    〈AttributeType name = "vfdServerSelector" dt:type = "ui4"/〉

    〈! --"FbSchedule" elements--〉
    〈! -- "ScheduleListCharacteristics" --〉
    〈AttributeType name = "numberOfSchedule" dt:type = "ui2"/〉
```

```
〈! -- "ListOfFBScheduleDescriptors" --〉
〈! -- "SyncAndScheduling"--〉
〈AttributeType name = "lastSNTPMessage" dt:type = "bin.hex"/〉

〈! -- ********************************************************************** --〉
〈! -- Network management information base (NMIB) attr. as in FF-803 sect. 5 and 7 --〉

〈! -- "ListHeader" attributes --〉
〈AttributeType name = "maxNumEntries" dt:type = "ui4"/〉
〈AttributeType name = "numConfigured" dt:type = "ui4"/〉
〈! -- "SessionEndpoint" attributes --〉
〈AttributeType name = "endpointType" dt:type = "ui1"/〉
〈AttributeType name = "msgHdrOptions" dt:type = "bin.hex"/〉
〈AttributeType name = "state" dt:type = "ui1"/〉
〈AttributeType name = "transportProtocol" dt:type = "ui1"/〉
〈AttributeType name = "nmaConfigurationUse" dt:type = "ui1"/〉
〈AttributeType name = "bufferSize" dt:type = "ui4"/〉
〈AttributeType name = "transmitDelayTime" dt:type = "ui4"/〉
〈AttributeType name = "inactivityCloseTime" dt:type = "ui4"/〉
〈AttributeType name = "maxMessageLength" dt:type = "ui4"/〉
〈! -- "HseVcrEndpoint" attributes --〉
〈AttributeType name = "hseVcrType" dt:type = "ui4"/〉
〈AttributeType name = "fdaAddress" dt:type = "bin.hex"/〉
〈AttributeType name = "hseSubnetMask" dt:type = "bin.hex"/〉
〈AttributeType name = "vcrUserId" dt:type = "ui4"/〉
〈AttributeType name = "onChangeThreshold" dt:type = "ui4"/〉
〈! -- "SessionStatisticsEntry" attributes --〉
〈AttributeType name = "statisticsControl" dt:type = "ui1"/〉
〈AttributeType name = "maxNumOfVcrs" dt:type = "ui4"/〉
〈AttributeType name = "numOfMsgsReceived" dt:type = "ui4"/〉
〈AttributeType name = "numOfInvalidMsgsReceived" dt:type = "ui4"/〉
〈AttributeType name = "numOfMsgsSent dt:type = "ui4"/〉
〈AttributeType name = "numOfOpenStateCtr dt:type = "ui4"/〉
〈! -- "HseVcrStatisticsEntry" attributes --〉
〈AttributeType name = "numOfConnects" dt:type = "ui4"/〉
〈AttributeType name = "numOfAborts" dt:type = "ui4"/〉
〈AttributeType name = "numOfUnconfirmedMessagesSent" dt:type = "ui4"/〉
〈AttributeType name = "numOfUnconfirmedMessagesReceived" dt:type = "ui4"/〉
〈AttributeType name = "numOfConfirmedRequestMessagesSent" dt:type = "ui4"/〉
〈AttributeType name = "numOfResponseMessagesSent" dt:type = "ui4"/〉
〈AttributeType name = "numOfErrorMessagesSent" dt:type = "ui4"/〉
〈AttributeType name = "numOfConfirmedRequestMessagesReceived" dt:type = "ui4"/〉
〈AttributeType name = "numOfResponseMessagesReceived" dt:type = "ui4"/〉
```

```
〈AttributeType name = "numOfErrorMessagesReceived" dt:type = "ui4"/〉
〈AttributeType name = "numOfNonMisorderedMessages" dt:type = "ui4"/〉
〈AttributeType name = "numOfDuplicatedMessages" dt:type = "ui4"/〉
〈AttributeType name = "numOfLateMessages" dt:type = "ui4"/〉
〈AttributeType name = "numOfMissedMessages" dt:type = "ui4"/〉
〈AttributeType name = "numOfLossOfSyncMessages" dt:type = "ui4"/〉
〈! -- "BridgeCharacteristic" attributes --〉
〈AttributeType name = "numberOflnterfaces" dt:type = "ui1"/〉
〈AttributeType name = "rootlnterface" dt:type = "ui1"/〉
〈AttributeType name = "interfaceStatisticsSupported" dt:type = "bin.hex"/〉
〈AttributeType name = "maxForwardingDelayUrgent" dt:type = "ui2"/〉
〈AttributeType name = "minForwardingDelayUrgent" dt:type = "ui2"/〉
〈AttributeType name = "maxForwardingDelayNormal" dt:type = "ui2"/〉
〈AttributeType name = "minForwardingDelayNormaL" dt:type = "ui2"〉
〈AttributeType name = "maxForwardingDelayTimeAvailable" dt:type = "ui2"/〉
〈AttributeType name = "minForwardingDelayTimeAvailable" dt:type = "ui2"/〉
〈AttributeType name = "minRepublishingDelay" dt:type = "ui2"/〉
〈AttributeType name = "republishingDatabaseListHeaderOdlndex" dt:type = "ui4"/〉
〈AttributeType name = "filteringDatabaseListHeaderOdlndex" dt:type = "ui4"/〉
〈! -- "NmaConfigurationAccess" attributes --〉
〈AttributeType name = "h1ConfiguratorAddress" dt:type = "ui4"/〉
〈! -- "RepublishingEntry" attributes --〉
〈AttributeType name = "subAddress" dt:type = "ui4"/〉
〈AttributeType name = "repubAddress" dt:type = "ui4"/〉
〈AttributeType name = "fasDllMaxConfirmDelayOnConnect" dt:type = "ui2"/〉
〈AttributeType name = "fasDllMaxDlsduSize" dt:type = "ui2"/〉
〈AttributeType name = "fasDllSDAP" dt:type = "ui1"/〉
〈! -- "FilteringEntry" attributes --〉
〈AttributeType name = "dstLinkAddress" dt:type = "ui4"/〉
〈AttributeType name = "interfaceNumber" dt:type = "ui1"/〉
〈! -- "InterfaceStatisticsEntry" attributes --〉
〈AttributeType name = "forwardedlnbound" dt:type = "ui4"/〉
〈AttributeType name = "ignoredlnbound" dt:type = "ui4"/〉
〈AttributeType name = "discardedForLackOfBuffers" dt:type = "ui4"/〉
〈AttributeType name = "discardedForForwardingDelayExceeded" dt:type = "ui4"/〉
〈! -- "NmCharacteristics" attributes --〉
〈AttributeType name = "h1DlOperatFunctionalClassSupported" dt:type = "ui1"/〉
〈AttributeType name = "tcpProtocolSupported" dt:type = "boolean"/〉
〈AttributeType name = "msgHdrOptionsSupported" dt:type = "bin.hex"/〉
〈AttributeType name = "onChangeRefreshRate" dt:type = "ui1"/〉
〈AttributeType name = "hseSubnetMaskBits" dt:type = "bin.hex"/〉
〈AttributeType name = "fdaGuardBand" dt:type = "ui4"/〉
〈AttributeType name = "h1Timeout" dt:type = "ui4"/〉
```

```
    〈AttributeType name = "sessionMaxOutstanding" dt:type = "ui4"/〉
    〈AttributeType name = "sessionStatisticsControlDefaultValue" dt:type = "ui1"/〉
    〈AttributeType name = "vcrStatisticsControlDefaultValue" dt:type = "ui1"/〉
    〈AttributeType name = "restartStatisticsCollectionControl" dt:type = "ui1"/〉
    〈! -- "DlmeBridge" attributes --〉
    〈AttributeType name = "interfaceLinkId" dt:type = "ui2"/〉
    〈AttributeType name = "interfaceNodeId" dt:type = "ui1"/〉
    〈AttributeType name = "interfaceStateArray" dt:type = "bin.hex"/〉

〈! -- ********************************************************************************** --〉
    〈! --         Definition of Elements         --〉
〈! -- ********************************************************************************** --〉

      〈! -- ************************************************************************** --〉
        〈! -- SMIB elements for simple variables as in FF-589 section 6 --〉
      〈! -- ************************************************************************** --〉
        〈! -- "ListOfVersionNumbers" elements --〉
        〈! -- "MIBVersion" --〉
    〈ElementType name = "NMIBVersion" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "SMIBVersion" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
    〈/ElementType〉
    〈-- "VFDVersion" --〉
    〈ElementType name = "VFDVersion" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
    〈/ElementType〉

    〈! -- "SmCharacteristics" elements --〉
    〈! -- "ListOfVersionNumbers" --〉
    〈ElementType name = "HSEDeviceVersion" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
```

```
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MaxNumberOfInterfaces" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maxNumberOfInterfaces" required = " yes"/〉
    〈/ElementType〉
    〈ElementType name = "InstalledInterfaces" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "installedInterfaces" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MaxNumberOfVFDs" content = "empty"model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maxNumberOfVFDs" required  = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ActualNumberOfVFDs" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "actualNumberOfVFDs" required = "yes"/〉
    〈/ElementType〉
    〈! -- "ListOfLocallPAddresses" --〉
    〈ElementType name = "LocallPAddress" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:ip" required = "yes"/〉
    〈/ElementType〉

    〈! -- "SyncAndScheduling" elements --〉
    〈! -- "SyncAndSchedulingCharacteristics" --〉
    〈ElementType name = "StandardTimeDifference" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "standardTimeDifference" required = "yes"/〉
    〈/ElementType〉
```

```
〈ElementType name = "PrimaryTimeServer" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:ip" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "SecondaryTimeServer" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:ip" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "TimeRequestTimeout" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "timeRequestTimeout" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "TimeRequestlnterval" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "timeRequestlnterval" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "CapableTimeSyncClass" content = "empty"model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "capableTimeSyncClass" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "TargetTimeSyncClass" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "targetTimeSyncClass" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ScheduleSyncPeriod" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "scheduleSyncPeriod" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DaylightTimeDifference" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "daylightTimeDifference" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "StartDaylightTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:timeValue" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "EndDaylightTime" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:timeValue" required = "yes"/〉
    〈/ElementType〉

    〈! -- "ListOfSNTPTimeStamps" --〉
    〈ElementType name = "SNTPTimestamp" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "sntpTimestamp" required = "yes"/〉
    〈/ElementType〉

    〈! -- "VfdList" elements --〉
    〈! -- "VfdRefEntry" --〉
    〈ElementType name = "VfdServerSelector" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "vfdServerSelector required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DDDomainlndex" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fdt:index" required = "yes"/〉
    〈/ElementType〉

    〈! -- "FbSchedule" elements --〉
    〈! -- "ScheduleListCharacteristics" --〉
```

```
〈ElementType name = "NumberOfSchedule" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numberOfSchedule" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ActiveScheduleVersion" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:versionNumber" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ActiveScheduleIndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈! -- "FBScheduleDescriptor" elements --〉
〈ElementType name = "ScheduleVersion" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:versionNumber" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DomainIndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉

〈! -- "SmCharacteristics" --〉
〈ElementType name = "OperationallPAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:ip" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DeviceContentsDomain" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
```

```
        〈attribute type = "fftypes:domain" required = "yes"/〉
    〈/ElementType〉

    〈! -- "SyncAndScheduling" --〉
    〈ElementType name = "LastSNTPMessage" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "lastSNTPMessage" required = "yes"/〉
    〈/ElementType〉

    〈! -- "DeviceIdentification" --〉
    〈ElementType name = "DeviceIndex" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId"required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:deviceIndex" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DeviceType" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "ffypes:deviceType" required = "yes"/〉
    〈/ElementType〉

    〈! -- "FbSchedule" --〉
    〈ElementType name = "ScheduleActivation content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:scheduleActivation" required = "yes"/〉
    〈/ElementType〉

    〈! -- ********************************************************************************** --〉
    〈! -- NMIB elements for simple variables as in FF-803 sections 5 and 7 --〉
    〈! -- ********************************************************************************** --〉

    〈! -- "ListHeader" elements --〉
    〈ElementType name = "Version" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
```

```
〈/ElementType〉
〈ElementType name = "FirstConfiguredIndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no" /〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FirstUnconfiguredIndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxNumEntries" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxNumEntries" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumConfigured" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numConfigured" required = "yes"/〉
〈/ElementType〉
〈! -- "SessionEndpoint" elements --〉
〈ElementType name = "RemotePdTag" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:tag" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "RemoteIpAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:ip" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "EndpointType" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "endpointType" required = "yes"/〉
```

```
〈/ElementType〉
〈 ElementType name = "MsgHdrOptions" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "msgHdrOptions" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "State" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "state" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "TransportProtocol" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "transportProtocol" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NmaConfigurationUse" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "nmaConfigurationUse" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "UdpPortNumber" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:port" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "BufferSize" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "bufferSize" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "TransmitDelayTime" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "transmitDelayTime" required = "yes"/〉
〈/ElementType〉
```

```
〈ElementType name = "InactivityCloseTime" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "inactivityCloseTime" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxMessageLength" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxMessageLength" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "StatisticsEntryOdlndex" content  = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈! -- "HseVcrEndpoint" elements --〉
〈ElementType name = "HseVcrType" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "hseVcrType" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FdaAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required =  "no"/〉
    〈attribute type = "fdaAddress" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "RelatedSessionEndpointOdlndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "HseSubnetMask" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "hseSubnetMask" required = "yes"/〉
〈/ElementType〉
```

```
〈ElementType name = "VcrUserId" content = "empty" model = "closed"〉
〈attribute type = "fdt:nodeId" required = "no"/〉
〈attribute type = "fdt:readAccess" required = "no"/〉
〈attribute type = "fdt:writeAccess" required = "no"/〉
〈attribute type = "vcrUserId" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "OnChangeThreshold" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "onChangeThreshold" required = "yes"/〉
〈/ElementType〉
〈! -- "SessionStatisticsEntry" elements --〉
〈ElementType name = "SessionEndpointEntryOdIndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "StatisticsControl" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "statisticsControl" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "StatisticsCollectionStartTime" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:timeValue" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxNumOfVcrs" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "maxNumOfVcrs" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfMsgsReceived" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfMsgsReceived" required = "yes"/〉
〈/ElementType〉
```

```
〈ElementType name = "NumOfInvalidMsgsReceived" content = "empty" model = "closed"〉
〈attribute type = "fdt:nodeId" required = "no"/〉
〈attribute type = "fdt:readAccess" required = "no"/〉
〈attribute type = "fdt:writeAccess" required = "no"/〉
〈attribute type = "numOfInvalidMsgsReceived" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfMsgsSent" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfMsgsSent" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfOpenStateCtr" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfOpenStateCtr" required = "yes"/〉
〈/ElementType〉
〈! -- "HseVcrStatisticsEntry" elements --〉
〈ElementType name = "HseVcrEntryOdIndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfConnects" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfConnects" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfAborts" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfAborts" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfUnconfirmedMessagesSent" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfUnconfirmedMessagesSent" required = "yes"/〉
〈/ElementType〉
```

```
〈ElementType name = "NumOfUnconfirmedMessagesReceived" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfUnconfirmedMessagesReceived" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfConfirmedRequestMessagesSent" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfConfirmedRequestMessagesSent" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfResponseMessagesSent" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfResponseMessagesSent" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfErrorMessagesSent" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfErrorMessagesSent" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfConfirmedRequestMessagesReceived" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfConfirmedRequestMessagesReceived" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfResponseMessagesReceived" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfResponseMessagesReceived" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfErrorMessagesReceived" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfErrorMessagesReceived" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfNonMisorderedMessages" content = "empty" model = "closed"〉
```

```
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfNonMisorderedMessages" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfDuplicatedMessages" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfDuplicatedMessages" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfLateMessages" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfLateMessages" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfMissedMessages" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfMissedMessages" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "NumOfLossOfSyncMessages" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numOfLossOfSyncMessages" required = "yes"/〉
〈/ElementType〉
〈! -- "BridgeCharacteristic" elements --〉
〈ElementType name = "NumberOflnterfaces" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "numberOflnterfaces" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "Rootlnterface" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "rootlnterface" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MaxForwardingDelayUrgent" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maxForwardingDelayUrgent" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MinForwardingDelayUrgent" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "minForwardingDelayUrgent" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MaxForwardingDelayNormal" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maxForwardingDelayNormal" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MinForwardingDelayNormal" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "minForwardingDelayNormal" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MaxForwardingDelayTimeAvailable" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "maxForwardingDelayTimeAvailable" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MinForwardingDelayTimeAvailable" content = "empty"model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "minForwardingDelayTimeAvailable" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "MinRepublishingDelay" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "minRepublishingDelay"required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "InterfaceStatisticsSupported" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "interfaceStatisticsSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "RepublishingDatabaseListHeaderOdlndex" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FilteringDatabaseListHeaderOdlndex" content = "empty" model = "closed"〉
〈attribute type = "fdt:nodeId" required = "no"/〉
〈attribute type = "fdt:readAccess" required = "no"/〉
〈attribute type = "fdt:writeAccess" required = "no"/〉
〈attribute type = "fdt:index" required = "yes"/〉
〈/ElementType〉
〈! -- "NmaConfigurationAccess" elements --〉
〈ElementType name = "H1ConfiguratorAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "h1ConfiguratorAddress" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "HseConfiguratorlpAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:ip" required = "yes"/〉
〈/ElementType〉
〈! -- "RepublishingEntry" elements --〉
〈ElementType name = "SubAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "subAddress" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "RepubAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "repubAddress" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FasDllMaxConfirmDelayOnConnect" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllMaxConfirmDelayOnConnect" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDllMaxDlsduSize" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllMaxDlsduSize" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FasDllSDAP" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "fasDllSDAP" required = "yes"/〉
    〈/ElementType〉
    〈! -- "FilteringEntry" elements --〉
    〈ElementType name = "DstLinkAddress" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "dstLinkAddress" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "lnterfaceNumber" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "interfaceNumber" required = "yes"/〉
    〈/ElementType〉
    〈! -- "InterfaceStatisticsEntry" elements --〉
    〈ElementType name = "Forwardedlnbound" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "forwardedlnbound" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "Ignoredlnbound" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "ignoredlnbound" required = "yes"/〉
    〈/ElementType〉
```

```
〈ElementType name = "DiscardedForLackOfBuffers" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "discardedForLackOfBuffers" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DiscardedForForwardingDelayExceeded" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "discardedForForwardingDelayExceeded" required = "yes"/〉
〈/ElementType〉
〈! -- "NmCharacteristics" elements --〉
〈ElementType name = "NmibRevision" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:versionNumber" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "H1DIOperatFunctionalClassSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "h1DIOperatFunctionalClassSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "TcpProtocolSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "tcpProtocolSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "MsgHdrOptionsSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "msgHdrOptionsSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "OnChangeRefreshRate" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "onChangeRefreshRate" required = "yes"/〉
〈/ElementType〉
```

```
〈ElementType name = "HseSubnetMaskBits" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "hseSubnetMaskBits" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FmsFeaturesSupported" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fftypes:fmsFeaturesSupported" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FdaGuardBand" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "fdaGuardBand" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "H1Timeout" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "h1Timeout" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "SessionMaxOutstanding" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "sessionMaxOutstanding" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "SessionStatisticsControlDefaultValue" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "sessionStatisticsControlDefaultValue" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "VcrStatisticsControlDefaultValue" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "vcrStatisticsControlDefaultValue" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "RestartStatisticsCollectionControl" content = "empty" model = "closed"〉
```

```
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "restartStatisticsCollectionControl" required = "yes"/〉
〈/ElementType〉
〈! -- "DlmeBridge" elements --〉
〈ElementType name = "NmaConfigurationAccess" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "H1ConfiguratorAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "HseConfiguratorIpAddress" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "CurrentNmaConfigurationAccess" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈element type = "NmaConfigurationAccess" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "PreviousNmaConfigurationAccess" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈element type = "NmaConfigurationAccess" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "InterfaceAddress" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "interfaceLinkId" required = "yes"/〉
    〈attribute type = "interfaceNodeId" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "InterfaceAddressArray" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "InterfaceAddress" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉
〈ElementType name = "InterfaceDesiredStateArray" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:readAccess" required = "no"/〉
    〈attribute type = "fdt:writeAccess" required = "no"/〉
    〈attribute type = "interfaceStateArray" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "InterfaceActualStateArray" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:readAccess" required = "no"/〉
        〈attribute type = "fdt:writeAccess" required = "no"/〉
        〈attribute type = "interfaceStateArray" required = "yes"/〉
    〈/ElementType〉

    〈! -- ********************************************************************** --〉
    〈! -- SMIB elements for structured variables as in FF-589 section6 --〉
    〈! -- ********************************************************************** --〉

    〈! -- SMIB level 4 --〉

    〈! -- "ListOfVersionNumbers" elements --〉
    〈ElementType name = "MIBVersion" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "NMIBVersion" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "SMIBVersion" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈! -- SMIB level 3 --〉

    〈! -- "SmCharacteristics" elements --〉
    〈ElementType name = "ListOfVersionNumbers" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "HSEDeviceVersion" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxNumberOfInterfaces" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "InstalledInterfaces" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxNumberOfVFDs" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ActualNumberOfVFDs" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MIBVersion" minOccurs = "1" maxOccurs = " * "/〉
        〈element type = "VFDVersion" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "ListOfLocallPAddresses" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "LocallPAddress" minOccurs = "1" maxOccurs = " * "/〉
    〈/ElementType〉

    〈! -- "SyncAndScheduling" elements --〉
    〈ElementType name = "SyncAndSchedulingCharacteristics" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "fftypes:CurrentTime" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "StandardTimeDifference" minOccurs = "1" maxOccurs = "1"/〉
```

```
    〈element type = "PrimaryTimeServer" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "SecondaryTimeServer" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TimeRequestTimeout" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TimeRequestInterval" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "CapableTimeSyncClass" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TargetTimeSyncClass" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ScheduleSyncPeriod" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DaylightTimeDifference" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "StartDaylightTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "EndDaylightTime" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "ListOfSNTPTimestamps" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "SNTPTimestamp" minOccurs = "1" maxOccurs = " * "/〉
〈/ElementType〉

〈! -- "VfdList" elements --〉
〈ElementType name = "VfdRefEntry" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "fftypes:VfdRef" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:VfdTag" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "VfdServerSelector" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DDDomainIndex" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈! -- "FbSchedule" elements --〉
〈ElementType name = "ScheduleListCharacteristics" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "NumberOfSchedule" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ActiveScheduleVersion" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ActiveScheduleIndex" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "FBScheduleDescriptor" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "ScheduleVersion" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:MacrocycleDuration" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DomainIndex" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "ListOfFBScheduleDescriptors" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "FBScheduleDescriptor" minOccurs = "1" maxOccurs = " * "/〉
```

```
    〈/ElementType〉

    〈! -- SMIB level 2 --〉
    〈ElementType name = "SmCharacteristics" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "fftypes:SmSupport" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "fftypes:OperationalPowerup" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfVersionNumbers" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "OperationallPAddress" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfLocallPAddresses" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DeviceContentsDomain" minOccurs = "1" maxOccurs = "1/〉
    〈/ElementType〉
    〈ElementType name = "SyncAndScheduling" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "SyncAndSchedulingCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "LastSNTPMessage" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfSNTPTimestamps" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "Deviceldentification" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "fftypes:Deviceld" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "fftypes:PdTag" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "Devicelndex" minOccurs = "1" maxOccurs = "1/〉
        〈element type = "DeviceType" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "VfdList" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "VfdRefEntry" minOccurs = "1" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "FbSchedule" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "ScheduleActivation" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ScheduleListCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfFBScheduleDescriptors" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈! -- SMIB level 1 --〉
    〈ElementType name = "SMIB" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "SmCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "SyncAndScheduling" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "Deviceldentification" minOccurs = "1" maxOccurs = "1"/〉
```

```
    〈element type = "VfdList" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FbSchedule" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈! -- ********************************************************************** --〉
〈! -- NMIB elements for structured variables as in FF-803 sections 5 and 7 --〉
〈! -- ********************************************************************** --〉

〈! -- NMIB level 3 --〉
〈ElementType name = "ListHeader" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "Version" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FirstConfiguredIndex" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FirstUnconfiguredIndex" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MaxNumEntries" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumConfigured" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈! -- "SessionList" elements --〉
〈ElementType name = "SessionEndpoint" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "RemotePdTag" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "LocallPAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "RemotelpAddress" minOccurs = "1" maxOccurs = "1"〉
    〈element type = "EndpointType" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MsgHdrOptions" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "State" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TransportProtocol" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NmaConfigurationUse" minOccurs = "1"maxOccurs = "1"/〉
    〈element type = "UdpPortNumber" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "BufferSize" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "TransmitDelayTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "InactivityCloseTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MaxMessageLength" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "StatisticsEntryOdIndex" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "ListOfSessionEndpoints" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "SessionEndpoint" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
```

```
〈! -- "HseVcrL.ist" elements --〉
〈ElementType name = "HseVcrEndpoint" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "HseVcrType" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FdaAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "RelatedSessionEndpointOdlndex" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "VcrUserId" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "HseSubnetMask" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "OnChangeThreshold" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "InactivityCloseTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "StatisticsEntryOdlndex" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "ListOfHseVcrEndpoints" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "HseVcrEndpoint" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉

〈! -- "SessionStatistics" elements --〉
〈ElementType name = "SessionStatisticsEntry" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required =  "no"/〉
    〈element type = "SessionEndpointEntryOdlndex" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "StatisticsControl" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "StatisticsCollectionStartTime" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "MaxNumOfVcrs" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOfMsgsReceived" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOflnvalidMsgsReceived" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOfMsgsSent" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "NumOfOpenStateCtr" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "ListOfSessionStatisticsEntries" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:listCount" required = "yes"/〉
    〈element type = "SessionStatisticsEntry" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉

〈! -- "HseVcrStatistics" elements --〉
〈ElementType name = "HseVcrStatisticsEntry" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "HseVcrEntryOdlndex" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "StatisticsControl" minOccurs = "1" maxOccurs = "1"/〉
```

```
        〈element type = "StatisticsCollectionStartTime" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "VcrUserId" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfConnects" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfAborts" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfUnconfirmedMessagesSent" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfUnconfirmedMessagesReceived" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfConfimmedRequestMessagesSent" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfResponseMessagesSent" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfErrorMessagesSent" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfConfirmmedRequestMessagesReceived" minOccurs = "1" maxOccurs
= "1"/〉
        〈element type = "NumOfResponseMessagesReceived" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfErrorMessagesReceived" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfNonMisorderedMessages" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfDuplicatedMessages" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfLateMessages" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfMissedMessages" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumOfLossOfSyncMessages" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈ElementType name = "ListOfHseVcrStatisticsEntries" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "HseVcrStatisticsEntry" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉

    〈! -- "DImeBridge" elements --〉
    〈ElementType name = "BridgeCharacteristics" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "Version" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "NumberOfInterfaces" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "RootInterface" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "InterfaceStatisticsSupported" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxForwardingDelayUrgent" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MinForwardingDelayUrgent" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxForwardingDelayNormal" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MinForwardingDelayNormal" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MaxForwardingDelayTimeAvailable" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MinForwardingDelayTimeAvailable" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MinRepublishingDelay" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "RepublishingDatabaseListHeaderOdlndex" minOccurs = "1" maxOccurs =
"1"/〉
        〈element type = "FilteringDatabaseListHeaderOdlndex" minOccurs = "1" maxOccurs =
```

```
"1"/>
    </ElementType>

    <ElementType name = "RepublishingEntry" content = "eltOnly" model = "closed">
        <attribute type = "fdt:nodeId" required = "no"/>
        <element type = "SubAddress" minOccurs = "1" maxOccurs = "1"/>
        <element type = "RepubAddress" minOccurs = "1" maxOccurs = "1"/>
        <element type = "FasDllMaxConfirmDelayOnConnect" minOccurs = "1" maxOccurs = "1"/>
        <element type = "FasDllMaxDlsduSize" minOccurs = "1" maxOccurs = "1"/>
        <element type = "FasDllSDAP" minOccurs = "1" maxOccurs = "1"/>
    </ElementType>

    <ElementType name = " ListOfRepublishingDatabaseRecords " content = " eltOnly" model =
"closed">
        <attribute type = "fdt:nodeId" required = "no"/>
        <attribute type = "fftypes:listCount" required = "yes"/>
        <element type = "RepublishingEntry" minOccurs = "0" maxOccurs = " * "/>
    </ElementType>

    <ElementType name = "RepublishingDatabase" content = "eltOnly" model = "closed">
        <attribute type = "fdt:nodeId" required = "no"/>
        <element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/>
        <element type = "ListOfRepublishingDatabaseRecords" minOccurs = "1" maxOccurs = "1"/>
    </ElementType>

    <ElementType name = "FilteringEntry" content = "eltOnly" model = "closed">
        <attribute type = "fdt:nodeId" required = "no"/>
        <element type = "DstLinkAddress" minOccurs = "1" maxOccurs = "1"/>
        <element type = "lnterfaceNumber" minOccurs = "1" maxOccurs = "1"/>
    </ElementType>

    < ElementType name = " ListOfFilteringDatabaseRecords " content = " eltOnly" model =
"closed">
        <attribute type = "fdt:nodeId" required = "no"/>
        <attribute type = "fftypes:listCount" required = "yes"/>
        <element type = "FilteringEntry" minOccurs = "0" maxOccurs = " * "/>
    </ElementType>

    <ElementType name = "FilteringDatabase" content = "eltOnly" model = "closed">
        <attribute type = "fdt:nodeId" required = "no"/>
        <element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/>
        <element type = "ListOfFilteringDatabaseRecords" minOccurs = "1" maxOccurs = "1"/>
    </ElementType>
```

```
    〈ElementType name = "InterfaceStatisticsEntry" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "Forwardedlnbound" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "lgnoredlnbound" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DiscardedForLackOfBuffers" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DiscardedForForwardingDelayExceeded" minOccurs = "1" maxOccurs =
"1"/〉
    〈/ElementType〉

    〈ElementType name = "InterfaceStatisticsList" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "InterfaceStatisticsEntry" minOccurs = "0" maxOccurs = "*"/〉
    〈/ElementType〉

    〈! -- NMIB level 2 --〉
    〈ElementType name = "NmCharacteristics" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "NmibRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "H1DIOperatFunctionalClassSupported" minOccurs = "1" maxOccurs =
"1"/〉
        〈element type = "TcpProtocolSupported"minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "MsgHdrOptionsSupported" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "OnChangeRefreshRate" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "HseSubnetMaskBits" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FmsFeaturesSupported" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "FdaGuardBand" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "H1Timeout" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "SessionMaxOutstanding" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "SessionStatisticsControlDefaultValue" minOccurs = "1" maxOccurs =
"1"/〉
        〈element type = "VcrStatisticsControlDefaultValue" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "RestartStatisticsCollectionControl" minOccurs = "1" maxOccurs =
"1"/〉
    〈/ElementType〉

    〈ElementType name = "ConfiguredSessionList" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ListOfSessionEndpoints" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
```

```
〈ElementType name = "AutomaticSessionList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ListOfSessionEndpoints" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "SessionStatisticsList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ListOfSessionStatisticsEntries" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "HseConfiguredVcrList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ListOfHseVcrEndpoints" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "HseAutomaticVcrList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ListOfHseVcrEndpoints" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "HseVcrStatisticsList" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "ListHeader" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ListOfHseVcrStatisticsEntries" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "DlmeBridge" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈element type = "BridgeCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "CurrentNmaConfigurationAccess" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "PreviousNmaConfigurationAccess" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "InterfaceAddressArray" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "InterfaceDesiredStateArray" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "InterfaceActualStateArray" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "InterfaceStatisticsList" minOccurs = "0" maxOccurs = "1"/〉
    〈element type = "RepublishingDatabase" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "FilteringDatabase" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
```

```
    〈! -- NMIB level 1 --〉

    〈ElementType name = "NMIB" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "NmCharacteristics" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ConfiguredSessionList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "AutomaticSessionList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "SessionStatisticsList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "HseConfiguredVcrList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "HseAutomaticVcrList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "HseVcrStatisticsList" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DlmeBridge" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉

    〈! -- Schema root level (0) --〉

    〈ElementType name = "HseNmaVfd" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "SMIB" minOccurs = "1"maxOccurs = "1"/〉
        〈element type = "NMIB" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
〈/Schema〉
```

8.4 地址管理

设备或块的地址在〈BusInformation/UserdefinedBus〉中管理。

8.5 FF 特定的参数集

设备或块应提供 IEC 62453-301 中定义的数据。

9 通信数据类型

9.1 概述

本章规定的数据类型用于 IFdtCommunication 方法。

9.2 FMS 通信——FdtFFFmsSchema

```
〈Schema name = "FdtFFFmsSchema" xmlns = "urn:schemas-microsoft-com:xml-data" xmlns:dt = "urn:
schemas-microsoft-com:datatypes"00
    xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
    xmlns:fftypes = "x-schema:FdtFFDataTypesSchema.xml"〉

    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉
```

〈! -- Indicates which option is to be used to open the FMS connection. See FF-588 section 6.5.3.2 --〉

〈AttributeType name = "connectOption" dt:type = "enumeration" dt:values = "VCRSelector NMAAccess FBAPConnect"/〉

〈! -- See FF-870 section 3.2.6 OD shall be transferred in the short form (false) or in the long form (true). --〉

〈AttributeType name = "allAttributes" dt:type = "boolean"/〉

〈! -- See FF-588 section 6.5.3.7.1 - get multiple consecutive OD entries true / false --〉

〈AttributeType name = "startFlag" dt:type = "boolean"/〉

〈! -- See FF-870 section 3.2.6 - more object descriptions follow --〉

〈AttributeType name = "moreFollows" dt:type = "boolean"/〉

〈! -- See FF-870 section 3.2.6 - number of object descriptions --〉

〈AttributeType name = "numberOfObjectDescriptions" dt:type = "ui1"/〉

〈! -- See FF-870 section 3.3.4 - version of the clients Object Dictionary --〉

〈AttributeType name = "versionOdCalling" dt:type = "i2"/〉

〈! -- See FF-870 section 3.3.4 - Profile Number of the client. --〉

〈AttributeType name = "profileNumberCalling" dt:type = "ui2"/〉

〈! -- See FF-870 section 3.3.4 - Access Protection Supported attribute of the clients OD object description. --〉

〈AttributeType name = "accessProtectionSupportedCalling" dt:type = "boolean"/〉

〈! -- See FF-870 section 3.3.4 - password to be used for the access to all objects of the server on this VCR and membership in access groups --〉

〈AttributeType name = "passwordAndAccessGroupsCalling" dt:type = "bin.hex"/〉

〈! -- See FF-870 section 3.3.4 - maximum length of the FMS PDU to be sent on VCR --〉

〈AttributeType name = "maxFmsPduSendingCalled" dt:type = "ui1"/〉

〈! -- See FF-870 section 3.3.4 - maximum length of the FMS PDU to be received --〉

〈AttributeType name = "maxFmsPduReceivingCalled" dt:type = "ui1"/〉

〈! -- See FF-870 section 3.3.4 - Profile Number of the server. --〉

〈AttributeType name = "profileNumberCalled" dt:type = "ui2"/〉

〈! -- See FMS-870 section 3.3.4 - Access Protection Supported attribute of the servers OD object description. --〉

〈AttributeType name = "accessProtectionSupportedCalled" dt:type = "boolean"/〉

〈! -- See FMS-870 section 3.3.4 --〉

〈AttributeType name = "passwordAndAccessGroupsCalled" dt:type = "ui2"/〉

〈! -- See FMS-870 section 3.6.3.6 - Access groups and access rights --〉

〈AttributeType name = "accessProtection" dt:type = "bin.hex"/〉

〈! --Attributes of element FmsStatusResponse --〉

〈! -- See FMS-870 section 3.1.3.1 - state of the communication capabilities of the device. --〉

〈AttributeType name = "logicalStatus" dt:type = "enumeration" dt:values = "StateChangesAllowed

limitedServicesPermitted odLoadingNonlnteracting odLoadinglnteracting"/〉

〈! -- See FMS-870 section 3.1.3.1 - coarse summary of the State of the real device. --〉

```
〈AttributeType name = "physicalStatus" dt:type = "enumeration" dt:values = "operational
partiallyOperational inoperable needsCommissioning"/〉
〈! -- See FMS-870 section 3.1.3.1 - local State of the application and the device. --〉
〈AttributeType name = "localDetail" dt:type = "bin.hex"/〉
〈! -- Attributes of element FmsIdentifyResponse --〉
〈! -- See FMS-870 section 3.1.3.3 - model name --〉
〈AttributeType name = "modelName" dt:type = "string"/〉
〈! -- See FMS-870 section 3.1.3.3- Revision attribute of the VFD. --〉
〈AttributeType name = "revision" dt:type = "string"/〉
〈! -- Attribute of element FmsStandardResponse - refers to NULL response according
  to FF-870 section 10 --〉
〈AttributeType name = "responseType" dt:type = "enumeration" dt:values = "FmsWrite Fms-
DeleteVariableList
FmsGenericlnitiateDownloadSequence FmsGenericDownloadSegment FmsAbort"/〉
〈! -- Attributes for elements regarding domain management --〉
〈! -- See FMS-870 section 3.4.3.3 - informs client whether or not the server successfully fin-
ished the Download.--〉
〈AttributeType name = "finalResult" dt:type = "boolean" default = "1"/〉
〈! -- Attributes for element FmsServiceError --〉
〈! -- See FMS-870 section 6.1--〉
〈AttributeType name = "additionalCode" dt:type = "ui2"/〉
〈! -- See FMS-870 section 6.1--〉
〈AttributeType name = "additionalDescription" dt:type = "string"/〉
〈! -- Error codes for Errorlnfo element according to FF-870 section 6.1 and 10.1.4.4
    the error code values defined with the attribute errorCode shall comply with the codes
defined with FF-870 section 10.1.4.4 --〉
〈AttributeType name = "errorCode" dt:type = "i1"/〉
〈! -- Error classes for Errorlnfo element according to FF-870 section 6.1 and 10.1.4.4
    the error class values defined with the attribute errorClass shall comply with the
codes defined with FF-870 section 10.1.4.4 --〉
〈AttributeType name = "errorClass" dt:type = "i1"/〉
〈! -- See FMS-870 section 3.3.4.2--〉
〈AttributeType name = "abortReason" dt:type = "ui1"/〉
〈AttributeType name = "abortIdentifier" dt:type = "enumeration" dt:values = "FMSUSER FMS
FAS DLL"/〉
〈AttributeType name = "locallyGenerated" dt:type = "boolean"/〉
〈AttributeType name = "abortDetail" dt:type = "bin.hex"/〉
〈! -- ********************************************************************** --〉
〈! --Definition of Elements--〉
〈! -- Element VariableName identifies the name for a variable.
    Used by variable access services - see FF-870 section 3.6.3 and section 10.1.10 --〉
〈ElementType name = "VariableName" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:name" required = "yes"/〉
    〈/ElementType〉
    〈! -- Element VariableListName identifies the name of variable list.
        Used by variable access services - see FF-870 section 3.6.3 and section 10.1.10
        and OD management service see FF-870 section 3.2.6 --〉
    〈ElementType name = "VariableListName" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:name" required = "yes"/〉
    〈/ElementType〉
    〈! -- Element DomainName identifies name of a domain.
        Used by OD management (see FF-870 section 3.2.6)
        and Domain management services (see FF-870 section3.4.3) --〉
    〈ElementType name = "DomainName" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:name" required = "yes"/〉
    〈/ElementType〉
    〈! -- Element EventName identifies name of a event.
        Used by OD management (see FF-870 section 3.2.6) services --〉
    〈ElementType name = "EventName" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:name" required = "yes"/〉
    〈/ElementType〉
    〈! -- Element PiName identifies name of a program invocation object.
        Used by OD management services (see FF-870 section 3.2.6) --〉
    〈ElementType name = "PiName" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:name" required = "yes"/〉
    〈/ElementType〉
    〈! -- lndex, starting with which the object descriptions shall be read.
        OD management (see FF-870 section 3.2.6) services --〉
    〈ElementType name = "Startlndex" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:index" required = "yes"/〉
    〈/ElementType〉
    〈! -- Element AccessSpecificationVar - Selection of type of variable access used
    for variable access services (see FF-870 section 3.6.3) --〉
    〈ElementType name = "AccessSpecificationVar" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
            〈element type = "fftypes:lndex"/〉
        〈/group〉
    〈/ElementType〉
```

```
〈! -- Element AccessSpecificationVL - Selection of type of variable list access
    used for service FMS DeleteVariableList (see FF-870 section 3.6.3.7) --〉
〈ElementType name = "AccessSpecificationVL" content "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "fftypes:Index"/〉
        〈element type = "VariableListName"/〉
    〈/group〉
〈/ElementType〉
〈! -- Element VariableListItem - Selection of type of variable access
    used for service FMS DefineVariableList (see FF-870 section 3.6.3.6)
    see also element FmsDefineVariableListRequest --〉
〈ElementType name = "VariableListItem" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "fftypes:Index"/〉
        〈element type = "VariableName"/〉
    〈/group〉
〈/ElementType〉
〈! -- Element AccessSpecificationOd - Selection of type of OD access
    used by OD management services (see FF-870 section 3.2.6).
    See also element FmsGetOdRequest --〉
〈ElementType name = "AccessSpecificationOd" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "fftypes:Index"/〉
        〈element type = "VariableName"/〉
        〈element type = "VariableListName"/〉
        〈element type = "DomainName"/〉
        〈element type = "EventName"/〉
        〈element type = "PiName"/〉
        〈element type = "StartIndex"/〉
    〈/group〉
〈/ElementType〉
〈! -- Element AccessSpecificationDomain - Selection of type of domain access
    used for Domain management services (see FF-870 section 3.4.3). --〉
〈ElementType name = "AccessSpecificationDomain" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "fftypes:Index"/〉
        〈element type = "DomainName"/〉
    〈/group〉
〈/ElementType〉
```

```
<! -- ********************************************************************** -->
  <ElementType name = "ErrorDescription" content = "eltOnly" model = "closed">
      <! -- Error description shall contain the following entries:
           One EnumeratorEntry for the error class describing the error class.
           One EnumeratorEntry for the error code.

           EnumeratorEntry for error class:
           EnumeratorEntry/@index - shall contain the error class according to FF-870 section 10.1.4.4
           EnumeratorEntry/@name - shall contain a descriptive name of the error class that complies with
           the error class names defined with FF-870 section 10.1.4.4 (e.g. access).
           EnumeratorEntry/@descriptor - free description of error class - could also be a localized text.

           EnumeratorEntry for error code:
           EnumeratorEntry/@index - shall contain the error code according to FF-870 section 10.1.4.4
           EnumeratorEntry/@name - shall contain a descriptive name of the error code that complies with
           the error code names defined with FF-870 section 10.1.4.4 (e.g. invalid-address).
           EnumeratorEntry/@descriptor - free description of error code - could also be a localized text.
  -->
      <element type = "fdt:EnumeratorEntry" minOccurs = "1" maxOccurs = "1"/>
      <element type = "fdt:EnumeratorEntry" minOccurs = "1" maxOccurs = "1"/>
  </ElementType>
  <! -- ErrorInfo element according to error classes FF-870 section 10.1.4.4 -->
  <ElementType name = "ErrorInfo" content = "eltOnly" model = "closed">
      <attribute type = "fdt:nodeId" required = "no"/>
      <attribute type = "errorClass" required = "yes" />
      <attribute type = "errorCode" required = "yes" />
      <attribute type = "additionalCode" required = "no"/>
      <attribute type = "additionalDescription" required = "no"/>
      <! -- optional error description -->
      <element type = "ErrorDescription" minOccurs = "0" maxOccurs = "1"/>
  </ElementType>
  <ElementType name = "CommonErrorType" content = "eltOnly" model = "closed">
      <attribute type = "fdt:nodeId" required = "no"/>
      <element type = "ErrorInfo" minOccurs = "1" maxOccurs = "1"/>
  </ElementType>
  <ElementType name = "OdErrorType" content = "eltOnly" model = "closed">
      <attribute type = "fdt:nodeId" required = "no"/>
      <element type = "ErrorInfo" minOccurs = "1" maxOccurs = "1"/>
      <element type = "fftypes:Index" minOccurs = "1" maxOccurs = "1"/>
  </ElementType>
  <! -- ********************************************************************** -->
  <! -- Context management see FF-870 section 3.3.4 and section 10.1.7 -->
  <ElementType name = "FmsInitiateRequest" content = "eltOnly" model = "closed">
```

```
    〈! -- Corresponds to Initiate-RequestPDU --〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "connectOption" required = "yes"/〉
    〈! -- this is the FDT communication reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- PD Tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "versionOdCalling" required = "no"/〉
    〈attribute type = "profileNumberCalling" required = "no"/〉
    〈attribute type = "accessProtectionSupportedCalling" required = "no"/〉
    〈attribute type = "passwordAndAccessGroupsCalling" required = "no"/〉
    〈! -- additional data for FMS Initiate --〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:VfdTag" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉

〈ElementType name = "FmslnitiateResponse" content = "empty" model = "closed"〉
    〈! -- Corresponds to Initiate-ResponsePDU --〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈attribute type = "fftypes:versionOd" required = "no"/〉
    〈attribute type = "profileNumberCalled" required = "no"/〉
    〈attribute type = "accessProtectionSupportedCalled" required = "no"/〉
    〈attribute type = "passwordAndAccessGroupsCalled" required = "no"/〉
〈/ElementType〉
〈ElementType name = "FmsInitiateError" content = "eltOnly" model = "closed"〉
    〈! -- Corresponds to Initiate-ErrorPDU --〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- Since no FMS connection has been established this is the FDT communication reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈attribute type = "maxFmsPduSendingCalled" required = "no"/〉
    〈attribute type = "maxFmsPduReceivingCalled" required = "no"/〉
    〈attribute type = "fftypes:fmsFeaturesSupported" required = "no"/〉
    〈element type = "CommonErrorType" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "FmsAbortRequest" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈attribute type = "abortIdentifier" required = "yes"/〉
    〈attribute type = "abortReason" required = "yes"/〉
    〈attribute type = "abortDetail" required = "no"/〉
```

```
〈/ElementType〉
〈! -- Abort response is FmsStandardResponse with responseType = FmsAbort --〉
〈! -- FMS abort indication where the device is the source i.e. is not a request issued by the DTM --〉
〈ElementType name = "FmsAbortIndication" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈attribute type = "locallyGenerated" required = "yes"/〉
    〈attribute type = "abortIdentifier" required = "yes"/〉
    〈attribute type = "abortReason" required = "yes"/〉
    〈attribute type = "abortDetail" required = "no"/〉
〈/ElementType〉
〈! -- ********************************************************************** --〉
〈! -- Element FmsStandardResponse - refers to NULL response according
  to FF-870 section 10 --〉
〈ElementType name = "FmsStandardResponse" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference"required = "yes"/〉
    〈attribute type = "responseType" required = "yes"/〉
〈/ElementType〉
〈! -- ********************************************************************** --〉
〈! -- Element FmsServiceError - refers to FMS SeryiceError response according
  to FF-870 section 10.1.4 --〉
〈ElementType name = "FmsServiceError" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "CommonErrorType"/〉
        〈element type = "OdErrorType"/〉
    〈/group〉
〈/ElementType〉
〈! -- ********************************************************************** --〉
〈! -- VFD Support see FF-870 section 3.1.3 and section 10.1.5 --〉
〈ElementType name = "FmsStatusRequest" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes.communicationReference" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FmsStatusResponse" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
```

```
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈attribute type = "logicalStatus" required = "yes"/〉
    〈attribute type = "physicalStatus" required = "yes"/〉
    〈attribute type = "localDetail" required = "no"/〉
〈/ElementType〉
〈ElementType name = "FmsIdentifyRequest" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FmsIdentifyResponse" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈attribute type = "fdt:vendor" required = "yes"/〉
    〈attribute type = "modelName" required = "yes"/〉
    〈attribute type = "revision" required = "yes"/〉
〈/ElementType〉
〈! -- ********************************************************************** --〉
〈! -- Variable access see FF-870 section 3.6.3 and section 10.1.10 --〉
〈ElementType name = "FmsReadRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈element type = "AccessSpecificationVar" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:SubIndex" minOccurs = "0" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "FmsReadResponse" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈element type = "fdt:CommunicationData" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "FmsWriteRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FMS connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈element type = "AccessSpecificationVar" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fftypes:SubIndex" minOccurs = "0" maxOccurs = "1"/〉
    〈element type = "fdt:CommunicationData" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "FmsDefineVariableListRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "accessProtection" required = "yes"/〉
        〈! -- extension as optional byte array --〉
        〈attribute type = "fdt:byteArray" required = "no"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈element type = "VariableListItem" minOccurs = "1" maxOccurs = " * "/〉
        〈element type = "VariableListName" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FmsDefineVariableListResponse" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈element type = "fftypes:lndex" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FmsDeleteVariableListRequest" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈element type = "AccessSpecificationVL" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈! -- ********************************************************************** -- 〉
    〈! -- OD Management see FF-870 section 3.2.6 and section 10.1.6 --〉
    〈ElementType name = "FmsGetOdRequest" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "allAttributes" required = "yes"/〉
        〈attribute type = "startFlag" required = "yes"/〉
        〈element type = "AccessSpecificationOd" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FmsGetOdResponse" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "moreFollows" required = "yes"/〉
        〈attribute type = "numberOfObjectDescriptions" required = "yes"/〉
        〈element type = "fdt:CommunicationData" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈! -- ********************************************************************** -- 〉
    〈! -- Domain management see FF-870 section 3.4.3 and section 10.1.8 --〉
    〈ElementType name = " FmsGenericlnitiateDownloadSequenceRequest" content = " eltOnly"
model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈element type = "AccessSpecificationDomain" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FmsGenericDownloadSegmentRequest" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "moreFollows" required = "yes"/〉
        〈element type = "AccessSpecificationDomain" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "fdt:CommunicationData" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FmsGenericTerminateDownloadSequenceRequest" content = "eltOnly" model =
"closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈element type = "AccessSpecificationDomain" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FmsGenericTerminateDownloadSequenceResponse" content = "empty" model =
"closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FMS connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "finalResult" required = "no"/〉
    〈/ElementType〉
    〈! -- ********************************************************************** -- 〉
〈/Schema〉
```

9.3 H1 通信——FdtFFH1CommunicationSchema

```
〈Schema name = "FdtFFH1CommunicationSchema" xmlns = "urn:schemas-microsoft-com:xml-data"
xmlns:dt = "urn:schemas-microsoft-com:datatypes" xmlns:fdt = "x-schema:FDTDataTypesSchema.
xml" xmlns:fftypes = "x-schema:FdtFFDataTypesSchema.xml"
xmlns:fms = "x-schema:FdtFFFmsSchema.xml"〉

    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉
    〈! -- Period of time in [ms] for the whole sequence --〉
    〈AttributeType name = "sequenceTime" dt:type = "ui4"/〉
    〈! -- Delay time in [ms] between two communication calls --〉
```

```
〈AttributeType name = "delayTime" dt:type = "ui4"/〉
〈! -- System management related attributes --〉
〈! -- Determines whether the tag is to be set or cleared. Used with system management
    service Set PD-Tag see FF-880 section 5.2.1.1.2
    see element SmSetPDTagRequest --〉
〈AttributeType name = "clearPDTag" dt:type = "boolean"default = "0"/〉
〈! -- Reason code according to FF-880 section7 - used for H1 system management services. --〉
〈AttributeType name = "reasonCode" dt:type = "enumeration" dt:values = "success serviceNotSupported invalidParameter
errorDLLInsufficientResources errorDLLSendingQueueFull
errorDLLErrorTimeOutBeforeTransmission errorDLLReasonUnspecified
deviceFailedRespondSetPDTag deviceFailedRespondWhoHasPDTag
deviceFailedRespondSetAddress deviceFailedRespondIdentify
deviceFailedRespondEnableSMOp deviceFailedRespondClearAddress
mutipleResponsefromWhoHasPDTag nonMatchingPDTagfromWhoHasPDTag
nonMatchingPDTagfromIdentify nonMatchingdevIDfromIdentify
remoteErrorInvalidState remoteErrorPDTagMatch
remoteErrordevIDMatch remoteErrorSMIBWriteFailed
remoteErrorStartingSMOperational"/〉
〈! -- Attributes of element SmSetAddressRequest --〉
〈! -- Application clock synchronization interval for the link on which the field device resides.
    See system management service Set Address FF-880 section 5.2.1.2.2.
    Refer also to element SmSetAddressRequest.
--〉
〈AttributeType name = "smAPClockSyncInterval" dt:type = "ui1"/〉
〈! -- This is the address of the primary application clock time publisher for the link on which the field device resides.
    See system management service Set Address FF-880 section 5.2.1.2.2. Refer also to element
    SmSetAddressRequest. --〉
〈AttributeType name = "smPrimaryAPTimePublisher" dt:type = "ui1"/〉
〈! -- Used by system management service Find Tag Query according to FF-880 section 5.5.2.1 This is the unsigned 32-bit integer that, when present, together with the Tag identifies the element (e.g. FB parameter) to be located. See also element SmQueryFB and SmFindTagQuery --〉
〈AttributeType name = "elementID" dt:type = "ui4"/〉
〈! -- Used by system management service Find Tag Reply according to FF-880 section 5.5.2.2. This Boolean flag is true when there are additional communication relationships in the remote device which may be used for the communication path. See also elements SmReplyVFD, SmReplyFB and SmFindTagReply --〉
〈AttributeType name = "moreVCRL" dt:type = "boolean" default = "0"/〉
〈! -- ********************************************************************** -- 〉
```

```
〈! --Definition of Elements--〉
〈! -- System management related elements --〉
〈! -- Designates the type of query for PD Tag. Used by element SmFindTagQuery --〉
〈ElementType name = "SmQueryPhysicalDevice" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:tag" required = "yes"/〉
〈/ElementType〉
〈! -- Designates the type of query for VFD Tag. Used by element SmFindTagQuery --〉
〈ElementType name = "SmQueryVFD" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "fftypes:vfdTag" required = "yes"/〉
〈/ElementType〉
〈! -- Designates the type of query for Function block/ Function block parameter. Used by element SmFindTagQuery. --〉
〈ElementType name = "SmQueryFB" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- acts as function block tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "elementID" required = "no"/〉
〈/ElementType〉
〈! -- Denotes type of reply for a PD Tag find tag query. Refer to element SmFindTagReply --〉
〈ElementType name = "SmReplyPhysicalDevice" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:devlD" required = "yes"/〉
〈/ElementType〉
〈! -- Denotes type of reply for a VFD Tag find tag query. Refer to element SmFindTagReply. --〉
〈ElementType name = "SmReplyVFD" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:vfdRef" required = "yes"/〉
    〈attribute type = "moreVCRL" required = "no"/〉
    〈attribute type = "fftypes:versionOd" required = "yes"/〉
    〈! -- represents a list of VcrStaticEntryOdIndices
    see FF-801 section 5.2.3 --〉
    〈element type = "fftypes:lndexList" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈! -- Denotes type of reply for a Function block or Function block parameter find tag query.
Refer to element SmFindTagReply --〉
〈ElementType name = "SmReplyFB" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:VfdRef" required = "yes"/〉
```

```
        〈attribute type = "moreVCRL" required = "no"/〉
        〈attribute type = "fftypes:versionOd" required = "yes"/〉
        〈! -- index of object - see FF-880 section 5.5.2.2 --〉
        〈element type = "fftypes:lndex" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- represents a list of VcrStaticEntryOdIndices
        see FF-801 section 5.2.3 --〉
        〈element type = "fftypes:lndexList" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈! -- ********************************************************************** --〉
    〈! -- Context management see FF-870 section 3.3.4 and section 10.1.7 --〉
    〈ElementType name = "ConnectRequest" content = "empty" model = "closed"〉
        〈! -- establish a FDT connection --〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
    〈/ElementType〉
    〈ElementType name = "ConnectResponse" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DisconnectRequest" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DisconnectResponse" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈/ElementType〉
    〈! -- ********************************************************************** --〉
    〈! -- System management services see FF-880 section 5 --〉
    〈ElementType name = "SmStandardResponse" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "reasonCode" required = "yes"/〉
        〈attribute type = "fftypes:smServicelD" required = "yes"/〉
    〈/ElementType〉
    〈! -- System management service Set PD-Tag see FF-880 section 5.2.1.1.2 --〉
    〈ElementType name = "SmSetPDTagRequest" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈! -- acts as PD-Tag --〉
        〈attribute type = "fdt:tag" required = "yes"/〉
```

```
    〈attribute type = "fftypes:nodeId" required = "yes"/〉
    〈attribute type = "fftypes:devlD" required = "yes"/〉
    〈attribute type = "clearPDTag" required = "no"/〉
〈/ElementType〉
〈! -- System management service Set Address see FF-880 section 5.2.1.2.2 --〉
〈ElementType name = "SmSetAddressRequest" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- acts as PD-Tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "fftypes:nodeId" required = "yes"/〉
    〈attribute type = "smAPClockSynclnterval" required = "yes"/〉
    〈attribute type = "smPrimaryAPTimePublisher" required = "yes"/〉
〈/ElementType〉
〈! -- System management service Clear Address see FF-880 section 5.2.1.3.1 --〉
〈ElementType name = "SmClearAddressRequest" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- acts as PD-Tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "fftypes:nodeId" required = "yes"/〉
    〈attribute type = "fftypes:devlD" required = "yes"/〉
〈/ElementType〉
〈! -- System management service SM ldentify see FF-880 section 5.3.1 --〉
〈ElementType name = "SmldentifyRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- for multicasts refer to FF-822 Annex B --〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "SmldentifyResponseEntry" content = "empty" model = "closed"〉
    〈! -- acts as PD-Tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "fftypes:devlD" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "SmldentifyResponse" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈element type = "SmldentifyResponseEntry" minOccurs = "0" maxOccurs = " * "/〉
```

```
〈/ElementType〉
〈! -- System management service Find Tag Query see FF-880 section 5.5.2.1
if the SmFindTagQuery could not be transmitted, a SmStandardResponse
with reasonCode will be received
--〉
〈ElementType name = "SmFindTagQuery" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "SmQueryPhysicalDevice"/〉
        〈element type = "SmQueryVFD"/〉
        〈element type = "SmQueryFB"/〉
    〈/group〉
〈/ElementType〉
〈! -- System management service Find Tag Reply see FF-880 section 5.5.2.2 --〉
〈ElementType name = "SmFindTagReply" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- Dest-Addr --〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈! -- Src-Addr --〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈! -- resource node address --〉
    〈attribute type = "fftypes:nodeId" required = "yes"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "SmReplyPhysicalDevice"/〉
        〈element type = "SmReplyVFD"/〉
        〈element type = "SmReplyFB"/〉
    〈/group〉
〈/ElementType〉
〈! -- ********************************************************************** --〉
〈! -- General sequence support see FDT spec IFdtCommunication sequence processing --〉
〈! -- Describes the sequence begin --〉
〈ElementType name = "SequenceBegin" content = "empty" model = "closed"〉
    〈attribute type = "sequenceTime" required = "no"/〉
    〈attribute type = "delayTime" required = "no"/〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈! -- Describes the sequence end --〉
〈ElementType name = "SequenceEnd" content = "empty" model = "closed"〉
```

```
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈! -- Describes the sequence start --〉
〈ElementType name = "SequenceStart" content = "empty" model = "closed"〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈! -- Describes the abort --〉
〈ElementType name = "Abort" content = "empty" model = "closed"〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FDT" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "ConnectRequest"/〉
        〈element type = "ConnectResponse"/〉
        〈element type = "DisconnectRequest"/〉
        〈element type = "DisconnectResponse"/〉
        〈element type = "fms:FmsInitiateRequest"/〉
        〈element type = "fms:FmsInitiateResponse"/〉
        〈element type = "fms:FmsInitiateError"/〉
        〈element type = "fms:FmsAbortRequest"/〉
        〈element type = "fms:FmsAbortIndication"/〉
        〈element type = "fms:FmsStandardResponse"/〉
        〈element type = "fms:FmsStatusRequest"/〉
        〈element type = "fms:FmsStatusResponse"/〉
        〈element type = "fms:FmsServiceError"/〉
        〈element type = "fms:FmsIdentifyRequest"/〉
        〈element type = "fms:FmsIdentifyResponse"/〉
        〈element type = "fms:FmsReadRequest"/〉
        〈element type = "fms:FmsReadResponse"/〉
        〈element type = "fms:FmsWriteRequest"/〉
        〈element type = "fms:FmsDefineVariableListRequest"/〉
        〈element type = "fms:FmsDefineVariableListResponse"/〉
        〈element type = "fms:FmsDeleteVariableListRequest"/〉
        〈element type = "fms:FmsGetOdRequest"/〉
        〈element type = "fms:FmsGetOdResponse"/〉
        〈element type = "fms:FmsGenericInitiateDownloadSequenceRequest"/〉
        〈element type = "fms:FmsGenericDownloadSegmentRequest"/〉
        〈element type = "fms:FmsGenericTerminateDownloadSequenceRequest"/〉
        〈element type = "fms:FmsGenericTerminateDownloadSequenceResponse"/〉
        〈element type = "SmStandardResponse"/〉
        〈element type = "SmSetPDTagRequest"/〉
        〈element type = "SmSetAddressRequest"/〉
```

```
            〈element type = "SmClearAddressRequest"/〉
            〈element type = "SmIdentifyRequest"/〉
            〈element type = "SmIdentifyResponse"/〉
            〈element type = "SmFindTagQuery"/〉
            〈element type = "SmFindTagReply"/〉
            〈element type = "SequenceBegin"/〉
            〈element type = "SequenceEnd"/〉
            〈element type = "SequenceStart"/〉
            〈element type = "Abort"/〉
            〈element type = "fdt:CommunicationError"/〉
        〈/group〉
    〈/ElementType〉
〈/Schema〉
```

9.4 HSE 通信——FdtFFHseCommunicationSchema

```
〈Schema name = "FdtFFHseCommunicationSchema" xmlns = "urn:schemas-microsoft-com:xml-data"
xmlns:dt = "urn:schemas-microsoft-com:datatypes" xmlns:fdt = "x-schema:FDTDataTypesSchema.
xml" xmlns:fftypes = "x-
schema:FdtFFDataTypesSchema.xml" xmlns:fms = "x-schema:FdtFFFmsSchema.xml" xmlns:ffh1 = "x-
schema:FdtFFH1CommunicationSchema.xml"〉

    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉
    〈! -- Period of time in [ms] for the whole sequence --〉
    〈AttributeType name = "sequenceTime" dt:type = "ui4"/〉
    〈! -- Delay time in [ms] between two communication calls --〉
    〈AttributeType name = "delayTime" dt:type = "ui4"/〉
    〈! -- NMA configuration use - see FF-588 6.5.1.1.1 --〉
    〈AttributeType name = "configurationUseNMA" dt:type = "boolean"/〉
    〈! -- Indicates the type of query for SM Find Tag Query service
    See FF-588 section 6.5.2.1 and FF-589 5.3.1 --〉
    〈AttributeType name = "queryType" dt:type = "enumeration" dt:values = "queryPrimaryPD
    queryVFD queryFB queryElementId queryVFDRef queryDeviceIndex querySecondaryPD"/〉
    〈! -- indicates duplicate detection State received with SM Find Tag Reply
    See FF-588 section 6.5.2.2 and FF-589 5.3.2 --〉
    〈AttributeType name = "duplicateDetectionState" dt:type = "ui1"/〉
    〈! -- State of HSE SMK as define with FF-589 --〉
    〈AttributeType name = "stateSMK" dt:type = "ui1"/〉
    〈! -- Redundant Device Type Capability - see FF-588 section 6.5.2.7.1
        used with response to SM Identify service --〉
    〈AttributeType name = "redundantCapability" dt:type = "enumeration" dt:values = "D1 D2 D3"/〉
    〈! -- Device Redundancy State - see FF-589 and FF -588 section 6.5.2.7.1
    used with response to SM Identify service --〉
```

```
〈AttributeType name = "deviceRedundancyState" dt:type = "ui1"/〉
〈! -- HSE Repeat time for device annunciations see FF-589 --〉
〈AttributeType name = "repeatTimeHSE" dt:type = "ui4"/〉
〈! -- maximum value that the device index may have. See the Redundancy specification FF-593 -- 〉
〈AttributeType name = "maxDeviceIndex" dt:type = "ui2"/〉
〈! -- Version number of SM annunciation message - see FF-589 --〉
〈AttributeType name = "versionAnnunciation" dt:type = "ui4"/〉
〈! -- version of the List of Version Numbers in SM Characteristics in the SMIB - see FF-589--〉
〈AttributeType name = "versionHSEDevice" dt:type = "ui4"/〉
〈! -- identifies the HSE interface to be cleared. see FF-589 --〉
〈AttributeType name = "interfaceToClear" dt:type = "ui1"/〉
〈! -- Indicates that no error occured. Used by SmStandardResponse to encode a SM service
response with no error --〉
〈AttributeType name = "noError" dt:type = "boolean" default = "1"/〉
〈! --Definition of elements --〉
〈! -- Common Elements --〉
〈! -- IP address from which a request was sent --〉
〈ElementType name = "SourceIP" content = "eltOnly" model = "closed"〉
    〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈! -- Operational IP address of the device responding --〉
〈ElementType name = "OperationalIP" content = "eltOnly" model = "closed"〉
    〈element type = "fftypes:IP" minOccurs =  "1"maxOccurs = "1"/〉
〈/ElementType〉
〈! -- Session management as defined with FF-588 section 6.5.1.1.1
    is up to the COMM DTM or communication channel
    - hence no session management services are defined here.
    Parameters for session management like Inactivity close time
    can be adjusted via a GUl of the COMM DTM or communication
    channel.
--〉
〈ElementType name = "OpenSessionRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- PD Tag of HSE device resp. linking device --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈! -- NMA configuration use was missing --〉
    〈attribute type = "configurationUseNMA" required = "yes"/〉
    〈! -- IP address of HSE device to connect to --〉
    〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈! -- Elements for system management services --〉
〈! -- Designates the type of query for VFD Reference. Used by element SmFindTagQuery--〉
〈ElementType name = "SmQueryVFDRef" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:tag" required = "yes"/〉
        〈attribute type = "fftypes:vfdRef" required = "yes"/〉
    〈/ElementType〉
    〈! -- Designates the type of query for a device index. Used by element SmFindTagQuery--〉
    〈ElementType name = "SmQueryDeviceIndex" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:deviceIndex" required = "yes"/〉
    〈/ElementType〉
    〈! -- See FF-588 section 6.5.2.1 and FF-589 5.3.1 --〉
    〈ElementType name = "SmFindTagQuery" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "queryType" required = "yes"/〉
        〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
        〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
            〈element type = "ffh1:SmQueryPhysicalDevice"/〉
            〈element type = "ffh1:SmQueryVFD"/〉
            〈element type = "ffh1:SmQueryFB"/〉
            〈element type = "SmQueryVFDRef"/〉
            〈element type = "SmQueryDeviceIndex"/〉
        〈/group〉
    〈/ElementType〉
    〈! -- See FF-588 section 6.5.2.2 and FF-589 5.3.2 --〉
    〈ElementType name = "SmFindTagReply" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "queryType" required = "yes"/〉
        〈attribute type = "duplicateDetectionState" required = "yes"/〉
        〈! -- Queried object FDA address link ID --〉
        〈attribute type = "fftypes:linkId" required = "yes"/〉
        〈! -- Queried object H1 node address (if H1 device) --〉
        〈attribute type = "fftypes:nodeId" required = "no"/〉
        〈! -- PD Tag --〉
        〈attribute type = "fdt:tag" required = "yes"/〉
        〈! -- IP address from which the matching Find Tag Query was sent --〉
        〈element type = "SourceIP" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- Queried object IP address --〉
        〈element type = "OperationalIP" minOccurs = "1" maxOccurs = "1"/〉
        〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
```

```
            〈element type = "ffh1:SmReplyPhysicalDevice"/〉
            〈element type = "ffh1:SmReplyVFD"/〉
            〈element type = "ffh1:SmReplyFB"/〉
        〈/group〉
    〈/ElementType〉
    〈! -- Encodes device information of HSE device - used with SM Identify service. See element SmIdentifyResponse --〉
    〈ElementType name = "DeviceInformation" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "redundantCapability" required = "yes"/〉
        〈attribute type = "fftypes:deviceIndex" required = "no"/〉
        〈attribute type = "maxDeviceIndex" required = "no"/〉
    〈/ElementType〉
    〈! -- Encodes redundancy state/information of HSE device - used with SM Identify service. See element SmIdentifyResponse --〉
    〈ElementType name = "RedundancyInformation" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "deviceRedundancyState" required = "yes"/〉
        〈! -- LAN redundancy port --〉
        〈attribute type = "fftypes:port" required = "yes"/〉
    〈/ElementType〉
    〈! -- see element VersionInformation --〉
    〈ElementType name = "H1LiveListVersion" content = "empty" model = "closed"〉
        〈attribute type = "fftypes:linkId" required = "yes"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
    〈/ElementType〉
    〈! -- see element VersionInformation --〉
    〈ElementType name = "H1NodeAddressVersion" content = "empty" model = "closed"〉
        〈attribute type = "fftypes:nodeId" required = "yes"/〉
        〈attribute type = "fftypes:versionNumber" required = "yes"/〉
    〈/ElementType〉
    〈! -- Encodes optional version information of device - used with SM Identify service. See element SmIdentifyResponse--〉
    〈ElementType name = "VersionInformation" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "versionAnnunciation" required = "yes"/〉
        〈attribute type = "versionHSEDevice" required = "yes"/〉
        〈attribute type = "fftypes:listCount" required = "yes"/〉
        〈group order = "one" minOccurs = "0" maxOccurs = " * "〉
            〈element type = "H1LiveListVersion"/〉
            〈element type = "H1NodeAddressVersion"/〉
        〈/group〉
    〈/ElementType〉
```

```
    〈! -- See FF-588 section 6.5.2.3 and FF-589 5.3.3 --〉
    〈ElementType name = "SmIdentifyRequest" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈! -- IP address to which the service request is to be sent. --〉
        〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- FDA address to which the service request is to be sent. --〉
        〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "SmIdentifyResponseEntry" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:deviceType" required = "yes"/〉
        〈! -- acts as PD-Tag --〉
        〈attribute type = "fdt:tag" required = "yes"/〉
        〈! -- Device ID --〉
        〈attribute type = "fftypes:devID" required = "yes"/〉
        〈attribute type = "stateSMK" required = "yes"/〉
        〈attribute type = "repeatTimeHSE" required = "no"/〉
        〈attribute type = "duplicateDetectionState" required = "no"/〉
        〈! --Operational IP address --〉
        〈attribute type = "fftypes:ip" required = "no"/〉
        〈! -- IP address of the device that responded. --〉
        〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- FDA address of the responder. --〉
        〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DeviceInformation" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "RedundancyInformation" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "VersionInformation" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈! -- See FF-588 section 6.5.2.7 and FF-589 5.3.3 --〉
    〈ElementType name = "SmIdentifyResponse" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈element type = "SmIdentifyResponseEntry" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈! -- Standard response for HSE SM services - contains possible error information as
well. --〉
    〈ElementType name = "SmStandardResponse" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
```

```
    〈attribute type = "fftypes:smServiceID" required = "yes"/〉
    〈attribute type = "noError" required = "no"/〉
    〈! -- IP address of the device that responded. --〉
    〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
    〈! -- FDA address of the responder. --〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "fms:CommonErrorType"/〉
〈/ElementType〉
〈! -- See FF-588 section 6.5.2.4 and FF-589 5.3.4 --〉
〈ElementType name = "SmClearAddressRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- acts as PD-Tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "fftypes:devlD" required = "yes"/〉
    〈attribute type = "interfaceToClear" required = "no"/〉
    〈! -- IP address to which the service request is to be sent. --〉
    〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
    〈! -- FDA address to which the service request is to be sent. --〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈! -- See FF-588 section 6.5.2.6 and FF-589 5.3.5 --〉
〈ElementType name = "SmClearAssignmentInfoRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- acts as PD-Tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "fftypes:devlD" required = "yes"/〉
    〈! -- IP address to which the service request is to be sent. --〉
    〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
    〈! -- FDA address to which the service request is to be sent. --〉
    〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
〈/ElementType〉
〈! -- See FF-588 section 6.5.2.5 and FF-589 5.3.6 --〉
〈ElementType name = "SmSetAssignmentInfoRequest" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈! -- this is the FDT connection reference --〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈! -- acts as PD-Tag --〉
    〈attribute type = "fdt:tag" required = "yes"/〉
    〈attribute type = "fftypes:devlD" required = "yes"/〉
```

```
        〈attribute type = "fftypes:deviceIndex" required = "no"/〉
        〈attribute type = "maxDeviceIndex" required = "no"/〉
        〈attribute type = "repeatTimeHSE" required = "no"/〉
        〈! -- Operational IP address --〉
        〈attribute type = "fftypes:ip" required = "no"/〉
        〈! -- Used to clear - Clear Duplicate Detection State --〉
        〈attribute type = "duplicateDetectionState" required = "no"/〉
        〈! -- H1 New Address --〉
        〈attribute type = "fftypes:nodeId" required = "no"/〉
        〈! -- IP address to which the service request is to be sent. --〉
        〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- FDA address to which the service request is to be sent. --〉
        〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "RedundancyInformation" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈! -- See FF-588 section 6.5.2.5 and FF-589 5.3.6 --〉
    〈ElementType name = "SmSetAssignmentInfoResponse" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "repeatTimeHSE" required = "no"/〉
        〈attribute type = "maxDeviceIndex" required = "no"/〉
        〈! -- IP address of the device that responded. --〉
        〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- FDA address of the responder. --〉
        〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈! -- ********************************************************************** --〉
    〈! -- Context management see FF-588 section 6.5.3.2 and FF-870 sections 3.3.4 and 10.1.7 --〉
    〈ElementType name = "ConnectRequest" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- if not there indicates a simple FDT connection intended for SM services --〉
        〈element type = "OpenSessionRequest" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "ConnectResponse" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈! -- this is the FDT connection reference --〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈! -- if FDT connection could not be opened --〉
        〈element type = "fms:CommonErrorType" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "DisconnectRequest" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DisconnectResponse" content = "empty" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈! -- ********************************************************************** --〉
〈! -- General sequence support see FDT spec IFdtCommunication sequence processing --〉
〈! -- Describes the sequence begin --〉
〈ElementType name = "SequenceBegin" content = "empty" model = "closed"〉
    〈attribute type = "sequenceTime" required = "no"/〉
    〈attribute type = "delayTime" required = "no"/〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈! -- Describes the sequence end --〉
〈ElementType name = "SequenceEnd" content = "empty" model = "closed"〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈! -- Describes the sequence start --〉
〈ElementType name = "SequenceStart" content = "empty" model = "closed"〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈! -- Describes the abort --〉
〈ElementType name = "Abort" content = "empty" model = "closed"〉
    〈attribute type = "fftypes:communicationReference" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "FDT" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:nodeId" required = "no"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = "1"〉
        〈element type = "SmFindTagQuery"/〉
        〈element type = "SmFindTagReply"/〉
        〈element type = "SmIdentifyRequest"/〉
        〈element type = "SmIdentifyResponse"/〉
        〈element type = "SmClearAddressRequest"/〉
        〈element type = "SmClearAssignmentInfoRequest"/〉
        〈element type = "SmSetAssignmentInfoRequest"/〉
        〈element type = "SmSetAssignmentInfoResponse"/〉
        〈element type = "SmStandardResponse"/〉
        〈element type = "ConnectRequest"/〉
        〈element type = "ConnectResponse"/〉
        〈element type = "DisconnectRequest"/〉
        〈element type = "DisconnectResponse"/〉
        〈element type = "fms:FmsInitiateRequest"/〉
```

```
            〈element type = "fms:FmsInitiateResponse"/〉
            〈element type = "fms:FmsInitiateError"/〉
            〈element type = "fms:FmsAbortRequest"/〉
            〈element type = "fms:FmsAbortIndication"/〉
            〈element type = "fms:FmsServiceError"/〉
            〈element type = "fms:FmsStandardResponse"/〉
            〈element type = "fms:FmsStatusRequest"/〉
            〈element type = "fms:FmsStatusResponse"/〉
            〈element type = "fms:FmsIdentifyRequest"/〉
            〈element type = "fms:FmsIdentifyResponse"/〉
            〈element type = "fms:FmsReadRequest"/〉
            〈element type = "fms:FmsReadResponse"/〉
            〈element type = "fms:FmsWriteRequest"/〉
            〈element type = "fms:FmsGetOdRequest"/〉
            〈element type = "fms:FmsGetOdResponse"/〉
            〈element type = "fms:FmsDefineVariableListRequest"/〉
            〈element type = "fms:FmsDefineVariableListResponse"/〉
            〈element type = "fms:FmsDeleteVariableListRequest"/〉
            〈element type = "fms:FmsGenericInitiateDownloadSequenceRequest"/〉
            〈element type = "fms:FmsGenericDownloadSegmentRequest"/〉
            〈element type = "fms:FmsGenericTerminateDownloadSequenceRequest"/〉
            〈element type = "fms:FmsGenericTerminateDownloadSequenceResponse"/〉
            〈element type = "SequenceBegin"/〉
            〈element type = "SequenceEnd"/〉
            〈element type = "SequenceStart"/〉
            〈element type = "Abort"/〉
            〈element type = "fdt:CommunicationError"/〉
        〈/group〉
    〈/ElementType〉
〈/Schema〉
```

9.5 标准块通信——BtmFFCommunicationSchema

```
〈Schema name = "BtmFFCommunicationSchema"
    xmlns = "urn:schemas-microsoft-com:xml-data"
    xmlns:dt = "urn:schemas-microsoft-com:datatypes"
    xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
    xmlns:btm = "x-schema:BtmDataTypesSchema.xml"
    xmlns:fms = "x-schema:FdtFFFmsSchema.xml"
    xmlns:fftypes = "x- schema:FdtFFDataTypesSchema.xml"
〉
    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉
```

```
    〈! --Definition of Elements--〉
    〈ElementType name = "BlockAddress" content = "eltOnly" model = "open"〉
        〈attribute type = "btm:blockTag" required = "yes"/〉
        〈! -- the index represents the absolute index of the block --〉
        〈attribute type = "fdt:index" required = "yes"/〉
    〈/ElementType〉

    〈--Definition of Elements--〉
    〈ElementType name = "ConnectRequest" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "BlockAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "ConnectResponse" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈element type = "BlockAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "DisconnectRequest" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DisconnectResponse" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "FDT" content = "eltOnly" model = "open"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈group order = "one" minOccurs = "0" maxOccurs = "1" 〉
            〈element type = "ConnectRequest"/〉
            〈element type = "ConnectResponse"/〉
            〈element type = "DisconnectRequest"/〉
            〈element type = "DisconnectResponse"/〉
            〈element type = "fms:FmsReadRequest"/〉
            〈element type = "fms:FmsReadResponse"/〉
            〈element type = "fms:FmsWriteRequest"/〉
            〈element type = "fms:FmsStandardResponse"/〉
            〈element type = "fms:FmsServiceError"/〉
            〈element type = "fdt:CommunicationError"/〉
        〈/group〉
    〈/ElementType〉
〈/Schema〉
```

10 通道参数数据类型——FdtFFChannelParameterSchema

本章规定的数据类型用于以下方法：

- IFdtChannel::GetChannelParameters()
- IFdtChannel::SetChannelParameters()

```
〈Schema name = "FdtFFChannelParameterSchema" xmlns = "urn:schemas-microsoft-com:xml-data"
xmlns:dt = "urn:schemas-microsoft-com:datatypes"
    xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
    xmlns:fftypes = "x-schema:FdtFFDataTypesSchema.xml"
    xmlns:appld = "x-schema:FDTApplicationldSchema.xmI"〉

    〈! -Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉
    〈AttributeType name = "frameApplicationTag" dt:type = "string"/〉
    〈AttributeType name = "gatewayBusCategory" dt:type = "uuid"/〉
    〈! -- dataTypes define the data type of the channel variable. The frame application can un-
pack the value using the coding rules according to the FF specification--〉
    〈AttributeType name = "dataType" dt:type = "enumeration" dt:values = "Boolean Integer8 In-
teger16 Integer32 Unsigned8 Unsigned16 Unsigned32 FloatingPoint Visible String Octet String
Date TimeofDay Time DifferenceBit TimeValue ValueStatusFloat ValueStatusDiscrete ValueSta-
tusBitstring Scaling Mode AccessPermissions AlarmFloat AlarmDiscrete EventUpdate AlarmSummary
AlertAnalog AlertDiscrete AlertUpdate TrendFloat TrendDiscrete TrendBitstring FBLink Simu-
lateFloat SimulateDiscrete SimulateBitstring Test Action Custom other"/〉
    〈AttributeType name = "invalidBit" dt:type = "ui4"/〉
    〈AttributeType name = "logic" dt:type = "enumeration" dt:values = "positive negative"/〉
    〈AttributeType name = "number" dt:type = "ui4"/〉
    〈AttributeType name = "protectedByChannelAssignment" dt:type = "boolean"/〉
    〈AttributeType name = "simulationBit" dt:type = "ui4"/〉
    〈AttributeType name = "statusChannel" dt:type = "boolean"/〉
    〈AttributeType name = "substituteValueBit" dt:type = "ui4"/〉
    〈AttributeType name = "index" dt:type = "ui4"/〉
    〈AttributeType name = "sublndex" dt:type = "ui4"/〉

    〈! --Definition of Elements--〉
    〈ElementType name = "ParameterAddress" content = "empty" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:communicationReference" required = "yes"/〉
        〈attribute type = "index" required = "yes"/〉
        〈attribute type = "sublndex" default = "0" required = "no"/〉
    〈/ElementType〉
```

```
    〈ElementType name = "FDTChannel" content = "eltOnly" model = "closed" order = "seq"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fdt:tag" required = "yes"/〉
        〈attribute type = "fdt:id" required = "yes"/〉
            〈attribute type = "fdt:descriptor" required = "no"/〉
        〈attribute type = "protectedByChannelAssignment" required = "yes"/〉
        〈attribute type = "number" required = "yes"/〉
        〈attribute type = "dataType" required = "yes"/〉
        〈attribute type = "fdt:signalType" required = "yes"/〉
        〈attribute type = "frameApplicationTag" required = "no"/〉
        〈attribute type = "appld:applicationld" required = "no"/〉
        〈attribute type = "logic" default = "positive" required = "no"/〉
        〈element type = "fdt:SemanticInformation" minOccurs = "0" maxOccurs = " * "/〉
        〈element type = "fdt:BitEnumeratorEntries" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "fdt:EnumeratorEntries" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "fdt:Unit" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "ParameterAddress" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "fdt:Alarms" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "fdt:Ranges" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "fdt:Deadband" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "fdt:SubstituteValue" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FDTChannelType" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "fdt:VersionInformation" minOccurs = "1" maxOccurs = "1"/〉
        〈attribute type = "gatewayBusCategory" required = "no"/〉
        〈attribute type = "statusChannel" required = "no"/〉
    〈/ElementType〉
    〈ElementType name = "FDT" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "FDTChannelType" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "FDTChannel" minOccurs = "0" maxOccurs = "1/〉
    〈/ElementType〉
〈/Schema〉
```

11 设备标识

11.1 设备类型标识的数据类型——FDTFieldbusIdentSchema

```
〈Schema name = " FDTFieldbusIdentSchema" xmlns = " urn: schemas-microsoft-com: xml-data"
xmlns:dt = "urn:schemas-microsoft- com:datatypes"〉
    〈--Definition of Attributes--〉
```

〈AttributeType name="schemaVersion" dt:type="number" default="1.21"/〉

〈AttributeType name="busProtocol" dt:type="enumeration" dt:values="protocol_FF_H1 protocol_FF_HSE protocol_FF_Block"/〉

〈AttributeType name="manufacturerSpecificExtension" dt:type="string"/〉

〈! --　　--〉

〈! --　FF H1　--〉

〈! --　　--〉

〈AttributeType name="deviceAddress" dt:type="string"/〉

〈! -- Node address assigned to the device - FF-581 - System Architecture chapter 7.4 - "Node-Address" FF-880 - System Management chapter 5.2 Address Assignment --〉

〈AttributeType name="manufacturerlD" dt:type="ui4"/〉

〈! -- MANUFAC_ID：Resource Block lndex 10 - FF-891 chapter 3.1 --〉

〈AttributeType name="dev_type" dt:type="ui2"/〉

〈! -- idDeviceTypelD (DEV_TYPE：Resource Block lndex 11 - FF-891 chapter 3.1--〉

〈AttributeType name="device_dd_Revision" dt:type="ui2"/〉

〈! -- DEV_REV（Resource Block lndex 12）multiplied by 256 + DD_REV（Resource Block lndex 13)- FF-891 chapter3.1 --〉

〈AttributeType name="pd_tag" dt:type="string"/〉

〈-- PD-TAG - Physical device tag from SM-IDENTIFY - String[32] - fixed array，left trimmed filled with spaces - FF-581 - System Architecture FF880 - System Management chapter 5.3.1 --〉

〈AttributeType name="dev_id" dt:type="string"/〉

〈! -- Dev-ID - unique identifier for a device instance =Serial Number - not a device type - fixed array，left trimmed，filled with spaces - FF-581 - System Architecture chapter 7.4.2 See also TN002-1.1 --〉

〈! --　　--〉

〈! --　FF HSE　--〉

〈! --　　--〉

〈AttributeType name="dataLinkAddress" dt:type="bin.hex"/〉

〈! -- data link address as defined in FF-588 Field Device Access Agent - Annex B --〉

〈! -- reused from FF H1：

〈AttributeType name="manufacturerlD" dt:type="ui4"/〉

To be extracted from first 6 CHAR（0-based）CHAR[0] - CHAR[5] from DEV_ID by CommChannel - TN002-1.1

〈AttributeType name="dev_type" dt:type="ui2"/〉

To be extracted from（0-based）CHAR[6] - CHAR[9] from DEV_ID by CommChannel.

〈AttributeType name="pd_tag" dt:type="string"/〉

Physical Device Tag. Octed string [32] - FF-588 Field Device Access（FDA）Agent. FF-803 FS 1.19 NM Section 5.2.1 -Physical device tag

〈AttributeType name="dev_jid" dt:type="string"/〉

Dev-ID - unique identifier for a device instance =Serial Number - not a device type - fixed array，left trimmed，filled with spaces FF-581 - System Architecture chapter 7.4.2 See also TN002-1.1

```
-->
〈! --Attributes without semantic identification -->
〈AttributeType name="deviceClass" dt:type="enumeration" dt:values="linkingDevice ioGateway hseFieldDevice h1Device"/〉
〈! -- FF-588 chapter Annex A - DeviceType FDA Agent Internal interface (informative). -->
〈AttributeType name="vendorName" dt:type="string"/〉
〈! -- As defined in FMS identify reply. FF 588. chapter 6.5.3.6.2.Visible string[32] -->
〈AttributeType name="modelName" dt:type="string"/〉
〈! -- As defined in FMS identify reply. FF 588. chapter 6.5.3.6.2. Visible string[32] -->
〈AttributeType name="revision" dt:type="string"/〉
〈! -- As defined in FMS identify reply. FF 588. chapter 6.5.3.6.2.Visible string[32] -->
〈! --          -->
〈! --     FF Block     -->
〈! --          -->
〈! -- reused from H1
〈AttributeType name="manufacturerlD" dt:type="ui4"/〉
    MANUFAC_ID: Resource Block lndex 10 - FF-891 chapter 3.1
〈Attribute Type name="dev_type" dt:type="ui2"/〉
    idDeviceTypelD DEV_TYPE: Resource Block lndex 11 - FF-891 chapter 3.1
〈AttributeType name="device_dd_Revision" dt:type="ui2"/〉
    DEV_REV (Resource Block lndex 12) multiplied by 256 + DD_REV (Resource Block lndex 13) - FF-891 chapter 3.1
-->
〈AttributeType name="blockTag" dt:type="string"/〉
〈! -- Block tag in Object Dictionary.FF-890 Function Block part 1. Chapter 5.14.1. Block structure.-->
〈AttributeType name="blocklndex" dt:type="ui4"/〉
〈! -- Block index in Object Dictionary.FF-890 Function Block part 1. Chapter 5.4. Directory Object -->
〈AttributeType name="ddMemberlD" dt:type="ui4"/〉
〈! --DDMemberID in Object Dictionary. FF-890 Function Block part 1. Chapter 5. 14. 1 Block structure. -->
〈AttributeType name="ddltemld" dt:type="ui4"/〉
〈! --DDltemld in Object Dictionary.FF -890 Function Block part 1. Chapter 5.14.1. Block structure. -->
〈AttributeType name="ddRevision" dt:type="ui2"/〉
〈! -- DDRevision in Object Dictionary.FF-890 Function Block part 1. Chapter 5.14.1. Block structure.-->
〈AttributeType name="profile" dt:type="ui2"/〉
〈! -- profile in Object Dictionary.FF-890 Function Block part 1. Chapter 5.14.1. Block structure. -->
〈AttributeType name="profileRevision" dt:type="ui2"/〉
〈! -- FF-890 Function Block part 1. Chapter 5.14.1. Block structure.-->
〈AttributeType name="idDTMSupportLevel" dt:type="enumeration" dt:values="genericSupport profileSupport blockspecificProfileSupport specificSupport identSupport"/〉
〈AttributeType name="match" dt:type="string"/〉
```

```
    〈AttributeType name＝"nomatch" dt:type＝"string"/〉
    〈ElementType name＝"RegExpr" content＝"empty" model＝"closed"/〉
〈/Schema〉
```

11.2 拓扑扫描的数据类型

11.2.1 概述

用于 IDtmEvents::OnScanResponse()

11.2.2 扫描设备——DtmFFSchema

本 XML 文档描述了已扫描到设备列表的设备入口。

```
〈? xml version = "1.0"?〉
〈Schema name = "DtmFFSchema"
    xmlns = "urn:schemas-microsoft-com:xml-data"
    xmlns:dt = "urn:schemas-microsoft-com:datatypes"
    xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
    xmlns:fftypes = "x-schema:FdtFFDataTypesSchema.xml"
    xmlns:ffhse = "x-schema:FdtFFHseCommunicationSchema.xmI"
    xmlns:ffblock = "x-schema:FdtFFBlockSchema.xml"
〉

    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉

    〈! --Definition of Elements--〉
    〈ElementType name = "blockList" content = "eltOnly" model = "open"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈element type = "ffblock:BlockInformation" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "HSEDevicelnformation" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "ffhse:stateSMK" required = "yes"/〉
        〈attribute type = "ffhse:repeatTimeHSE" required = "no"/〉
        〈attribute type = "ffhse:duplicateDetectionState" required = "no"/〉
        〈! -- Operational IP address --〉
        〈attribute type = "fftypes:ip" required = "no"/〉
        〈! -- IP address of the device that responded. --〉
        〈element type = "fftypes:IP" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ffhse:Devicelnformation" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ffhse:RedundancyInformation" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "ffhse:VersionInformation" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
```

```
    〈ElementType name = "FoundationFieldbusH1Device" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:deviceType" required = "yes"/〉
        〈! -- acts as PD-Tag --〉
        〈attribute type = "fdt:tag" required = "yes"/〉
        〈! -- Device ID --〉
        〈attribute type = "fftypes:devID" required = "yes"/〉
        〈element type = "fftypes:Vfdldentification" minOccurs = "1" maxOccurs = " * "/〉
        〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "FoundationFieldbusHSEDevice" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
        〈attribute type = "fftypes:deviceType" required = "yes"/〉
        〈! -- acts as PD-Tag --〉
        〈attribute type = "fdt:tag" required = "yes"/〉
        〈! -- Device ID --〉
        〈attribute type = "fftypes:devlD" required = "yes"/〉
        〈element type = "fftypes:Vfdldentification" minOccurs = "1" maxOccurs = " * "/〉
        〈element type = "HSEDevicelnformation" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- H1 device - nodeId contains node address
            HSE device - linkId = 0 nodeId = 0 selector = 2 --〉
        〈element type = "fftypes:DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
〈/Schema〉
```

11.2.3 块扫描——FdtFFBlockSchema

本 XML 文档描述已扫描到块的列表的块入口。

```
〈? xml version = "1.0"?〉
〈Schema name = "FdtFFBlockSchema"
    xmlns = "urn:schemas-microsoft-com:xml-data"
    xmlns:dt = "urn:schemas-microsoft-com:datatypes"
    xmlns:btm = "x-schema:BtmDataTypesSchema.xml"
    xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
〉
    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "string" default = "1.21"/〉

    〈! --Definition of Elements--〉
    〈! -- Block address for scanning --〉
    〈ElementType name = "BlockInformation" content = "eltOnly"〉
        〈attribute type = "fdt:nodeId" required = "no"/〉
```

```
        〈attribute type = "btm:blockTag" required = "yes"/〉
        〈! -- the index represents the absolute index of the block --〉
        〈attribute type = "fdt:index" required = "yes"/〉
        〈attribute type = "btm:profile" required = "yes"/〉
        〈attribute type = "btm:profileRevision" required = "yes"/〉
        〈attribute type = "fdt:descriptor" required = "no"/〉
        〈element type = "btm:BtmBlockType" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
〈/Schema〉
```

11.3 扫描标识的数据类型——FDTFieldbusScanIdentSchema

本框架(schema)定义的 XML 文档,由网络的扫描响应来提供。

```
〈Schema name = "FDTFieldbusScanldentSchema" xmlns = "urn:schemas-microsoft-com:xml-data"
xmlns:dt = "urn:schemas-microsoft-com:datatypes" xmlns:fieldbusident = "x-schema:FDTField-
busldentSchema.xml" xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"〉
    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "number" default = "1.21"/〉
    〈AttributeType name = "resultState" dt:type = "enumeration" dt:values = "provisional final
error"/〉
    〈AttributeType name = "configuredState" dt:type = "enumeration" dt:values = "configured
unConfigured"/〉
    〈! --Definition of elements--〉
    〈ElementType name = "IdBusProtocol" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:busProtocol" required = "yes"/〉
    〈/ElementType〉
    〈! --         --〉
    〈! --    FF H1    --〉
    〈! --         --〉
    〈ElementType name = "IdAddress" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:deviceAddress" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ldManufacturer" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:manufacturerlD" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "IdTypelD" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:dev_type" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "IdHardwareRevision" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:device_dd_Revision" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "IdSoftwareRevision" content = "empty" model = "closed"〉
```

```
    〈attribute type = "fieldbusident:device_dd_Revision" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ldTag" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:pd_tag" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ldSerialNumber" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:dev_id" required = "yes"/〉
〈/ElementType〉
〈! --         --〉
〈! --    FF HSE    --〉
〈! --         --〉
〈ElementType name = "DataLinkAddress" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:dataLinkAddress" required = "yes"/〉
〈/ElementType〉
〈! -- reused from H1
〈ElementType name = "IdTag" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:pd-tag" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ldTypelD" content = "empty" modlel = "closed"〉
    〈attribute type = "fieldbusident:dev_id" required = "yes"/〉
〈/ElementType〉
--〉
〈ElementType name = "DeviceClass" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:deviceClass" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "VendorName" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:vendorName" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "ModelName" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:modelName" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "Revision" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:revision" required = "yes"/〉
〈/ElementType〉
〈! --         --〉
〈! --    FF Block    --〉
〈! --         --〉
〈ElementType name = "Blocklndex" content = "empty" model = "closed"〉
    〈attribute type = "fieldbusident:blocklndex" required = "yes"/〉
〈/ElementType〉
〈ElementType name = "DDMemberlD" content = "empty" model = "closed"〉
```

```
        〈attribute type = "fieldbusident:ddMemberlD" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DDltemld" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:ddltemld" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DDRevision" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:ddRevision" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ldProfile" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:profile" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "IdProfileRevision" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:profileRevision" required = "yes"/〉
    〈/ElementType〉
    〈! -- reused from H1
    〈ElementType name = "ldManufacturer" content = "empty" model = "closed"〉
        〈attribute type = "feldbusident:manufacturerlD" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "ldTypelD" content = "empty" model = "closed"〉
        〈attribute type = fieldbusident:dev_type" required = "yes"/〉
    〈/ElementType〉
    --〉
    〈! --         --〉
    〈! --         --〉
    〈! --          --〉
    〈ElementType name = "ManufacturerSpecificExtension" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:manufacturerSpecificExtension" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "Scanldentification_FF_H1" content = "eltOnly" model = "closed"〉
        〈attribute type = "configuredState" required = "no"/〉
        〈! -- attributes with semantic meaning: --〉
        〈element type = "fdt:CommunicationError" minOccurs = "0" maxOccurs = "1"/〉
        〈element type = "IdAddress" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdTypelD" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldBusProtocol" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldManufacturer" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldHardwareRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldSoftwareRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldTag" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdSerialNumber" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- manufacturer specific extension, added in manufacturer specific identification --〉
        〈element type = "ManufacturerSpecificExtension" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
```

```
〈ElementType name = "ScanIdentification_FF_HSE" content = "eltOnly" model = "closed"〉
    〈attribute type = "configuredState" required = "no"/〉
    〈! -- attributes with semantic meaning: --〉
    〈element type = "fdt:CommunicationError" minOccurs = "0" maxOccurs = "1"/〉
    〈element type = "DataLinkAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdTypeID" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdBusProtocol" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdManufacturer" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdTag" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdSerialNumber" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DeviceClass" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "VendorName" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "ModelName" minOccurs = "1" maxOccurs  = "1"/〉
    〈element type = "Revision" minOccurs = "1" maxOccurs = "1"/〉
    〈! -- manufacturer specific extension, added in manufacturer specific identification --〉
    〈element type = "ManufacturerSpecificExtension" minOccurs = "0" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "ScanIdentification_FF_Block" content = "eltOnly" model = "closed"〉
    〈attribute type = "configuredState" required = "no"/〉
    〈! -- attributes with semantic meaning: --〉
    〈element type = "fdt:CommunicationError" minOccurs = "0" maxOccurs = "1"/〉
    〈element type = "IdAddress" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdTypeID" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdBusProtocol" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdManufacturer" minOccurs "1" maxOccurs = "1"/〉
    〈element type = "IdHardwareRevision" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdSoftwareRevision" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdTag" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "BlockIndex" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DDMemberID" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DDItemId" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "DDRevision" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdProfile" minOccurs = "1" maxOccurs = "1"/〉
    〈element type = "IdProfileRevision" minOccurs = "1" maxOccurs = "1"/〉
    〈! -- manufacturer specific extension, added in manufacturer specific identification --〉
    〈element type = "ManufacturerSpecificExtension" minOccurs = "0" maxOccurs = "1"/〉
〈/ElementType〉
〈ElementType name = "ScanIdentifications" content = "eltOnly" model = "closed"〉
    〈attribute type = "fdt:busCategory" required = "yes"/〉
    〈attribute type = "resultState" required = "yes"/〉
    〈group order = "one" minOccurs = "1" maxOccurs = " * "〉
        〈element type = "ScanIdentification_FF_H1" minOccurs = "0" maxOccurs = " * "/〉
        〈element type = "ScanIdentification_FF_HSE" minOccurs  = "0" maxOccurs = " * "/〉
```

```
            〈element type = "ScanIdentification_FF_Block" minOccurs = "0" maxOccurs = " * "/〉
        〈/group〉
    〈/ElementType〉
    〈ElementType name = "FDT" content = "eltOnly" model = "closed"〉
        〈element type = "ScanIdentifications" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
〈/Schema〉
```

11.4 设备类型标识的数据类型——FDTFieldbusDeviceIdentSchema

本条定义的数据类型用于设备类型的协议特定信息。

```
〈Schema name = "FDTFieldbusDeviceIdentSchema" xmlns = "urn:schemas-microsoft-com:xml-data"
xmlns:dt = "urn:schemas-microsoft-com:datatypes" xmlns:fieldbusident = "x-schema:FDTField-
busIdentSchema.xml" xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"〉
    〈! --Definition of Attributes--〉
    〈AttributeType name = "schemaVersion" dt:type = "number" default = "1.21"/〉
    〈ElementType name = "IdBusProtocol" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:busProtocol" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈! --        --〉
    〈! --  FFH1   --〉
    〈! --        --〉
    〈ElementType name = "IdDeviceAddress" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:deviceAddress" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "IdManufacturer" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:manufacturerID" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "IdTypeID" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:dev_type" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "IdHardwareRevision" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:device_dd_Revision" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "IdSoftwareRevision" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:device_dd_Revision" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0"maxOccurs = " * "/〉
```

```
〈/ElementType〉
〈ElementType name = "ldTag" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:pd_tag" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
〈ElementType name = "ldSerialNumber" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:dev_id" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
〈! --     --〉
〈! -- FF HSE --〉
〈! --     --〉
〈ElementType name = "DeviceClass" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:deviceClass" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
〈ElementType name = "VendorName" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:vendorName" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
〈ElementType name = "ModelName" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:modelName" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
〈ElementType name = "Revision" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:revision" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
〈! --         --〉
〈! --  FF Block  --〉
〈! --         --〉
〈ElementType name = "Blocklndex" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:blocklndex" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
〈! --
〈ElementType name = "IdTag_Block" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:blockTag" required = "no"/〉
    〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
〈/ElementType〉
--〉
〈ElementType name = "DDMemberlD" content = "eltOnly" model = "closed"〉
    〈attribute type = "fieldbusident:ddMemberlD" required = "no"/〉
```

```
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "DDItemId" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:ddItemId" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "DDRevision" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:ddRevision" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "IdProfile" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:profile" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈ElementType name = "IdProfileRevision" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:profileRevision" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    〈! -- reused from H1
    〈ElementType name = "IdManufacturer" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:manufacturerID" required = "no"/〉
        〈element type = "fieldbusident:RegExpr" minOccurs = "0" maxOccurs = " * "/〉
    〈/ElementType〉
    --〉
    〈-- --〉
    〈-- --〉
    〈-- --〉
    〈ElementType name = "ManufacturerSpecificExtension" content = "empty" model = "closed"〉
        〈attribute type = "fieldbusident:manufacturerSpecificExtension" required = "yes"/〉
    〈/ElementType〉
    〈ElementType name = "DeviceIdentification_FF_H1" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:idDTMSupportLevel" required = "yes"/〉
        〈element type = "IdTypeID" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdBusProtocol" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdManufacturer" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdHardwareRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdSoftwareRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- manufacturer specific extensiong, added in manufacturer specific identification --〉
        〈element type = "ManufacturerSpecificExtension" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "DeviceIdentification_FF_HSE" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:idDTMSupportLevel" required = "yes"/〉
        〈element type = "IdTypeID" minOccurs = "1" maxOccurs = "1"/〉
```

```
        〈element type = "IdBusProtocol" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldManufacturer" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DeviceClass" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "VendorName" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ModelName" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "Revision" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- manufacturer specific extension, added in manufacturer specific identification --〉
        〈element type = "ManufacturerSpecificExtension" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "Deviceldentification_FF_Block" content = "eltOnly" model = "closed"〉
        〈attribute type = "fieldbusident:idDTMSupportLevel" required = "yes"/〉
        〈element type = "ldTypelD" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldBusProtocol" minOccurs  = "1" maxOccurs = "1"/〉
        〈element type = "ldManufacturer" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldHardwareRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdSoftwareRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "Blocklndex" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DDMemberlD" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DDItemld" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "DDRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "IdProfile" minOccurs = "1" maxOccurs = "1"/〉
        〈element type = "ldProfileRevision" minOccurs = "1" maxOccurs = "1"/〉
        〈! -- manufacturer specific extension, added in manufacturer specific identification --〉
        〈element type = "ManufacturerSpecificExtension" minOccurs = "0" maxOccurs = "1"/〉
    〈/ElementType〉
    〈ElementType name = "Deviceldentifications" content = "eltOnly" model = "closed"〉
        〈attribute type = "fdt:busCategory" required = "yes"/〉
        〈group order = "one" minOccurs = "1" maxOccurs = " * "〉
            〈element type = "Deviceldentification_FF_H1" minOccurs = "0" maxOccurs = " * "/〉
            〈element type = "Deviceldentification_FF_HSE" minOccurs = "0" maxOccurs = " * "/〉
            〈element type = "Deviceldentification_FF_Block" minOccurs = "0" maxOccurs = " * "/〉
        〈/group〉
    〈/ElementType〉
    〈ElementType name = "FDT" content = "eltOnly" model = "closed"〉
        〈element type = "Deviceldentifications" minOccurs = "1" maxOccurs = "1"/〉
    〈/ElementType〉
〈/Schema〉
```

11.5 XSLT 转换

```
〈? xml version = "1.0" encoding = "UTF-8"?〉

〈! --
FDT: device identification transformation for FF device identification xml files
```

```
-->
<xsl:transform xmlns:xsl = "http://www.w3.org/1999/XSL/Transform"
        xmlns:str = "http://xsltsl.org/string"
        xmlns:ident = "x-schema:DTMIdentSchema.xml"
        xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
        xmlns:scanident = "x-schema:DTMScanIdentSchema.xml"
        xmlns:devident = "x-schema:DTMDeviceTypeIdentSchema.xml"
        xmlns:ffident = "x-schema:FDTFieldbusIdentSchema.xml"
        xmlns:ffdevice = "x-schema:FDTFieldbusDeviceTypeIdentSchema.xml"
        xmlns:ffscan = "x-schema:FDTFieldbusScanIdentSchema.xml" version = "2.0">
    <xsl:output method = "xml" omit-xml-declaration = "yes" indent = "yes"/>
<! --
FDT: version of this file
-->

    <xsl:variable name = "FileVersion">
        <xsl:number value = "1.21"/>
    </xsl:variable>
    <xsl:output method = "xml" omit-xml-declaration = "yes" indent = "yes"/>
<! --
root: transform device or scan identification
-->
    <xsl:template match = "/">
            <xsl:apply-templates select = "//ffscan:ScanIdentifications"/>
            <xsl:apply-templates select = "//ffdevice:DeviceIdentifications"/>
    </xsl:template>
<! --
FF identification list <? xml version = "1.0"?>
-->
    <xsl:template match = "ffdevice:DeviceIdentifications">
        <xsl:text disable-output escaping = "yes">&lt;? xml version = "1.0"? &gt;
    &It;! -- This file is created by FDTxxxIdentTransformation.xsl after transformation of xxx-
DTMDeviceIdentificationInstance.xml
--&gt;
    &It;FDT xmlns = "x-schema:DTMDeviceTypeIdentSchema.xml"
    xmlns:ident = "x-schema:DTMIdentSchema.xml" xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
&gt;</xsl:text>
                <xsl:element name = "DeviceIdentifications">
                    <xsl:apply-templates select = "ffdevice:DeviceIdentification_FF_H1"/>
                    <xsl:apply-templates select = "ffdevice:DeviceIdentification_FF_HSE"/>
                    <xsl:apply-templates select = "ffdevice:DeviceIdentification_FF_Block"/>
                </xsl:element>
        <xsl:text disable-output-escaping = "yes">&lt;/FDT&gt; </xsl:text>
```

```
    〈/xsl:template〉
〈! --
FF scan list
--〉
    〈xsl:template match = "ffscan:Scanldentifications"〉
            〈xsl:text disable-output-escaping = "yes"〉&lt;? xml version = "1.0"? &gt;
    &It;! -- This file is created by FDTxxxldentTransformation.xsl after transformation of xxx-
DTMScanldentificationInstance.xml --
&gt;&It;FDT xmlns = "x-schema:DTMScanldentSchema.xml"
    xmlns:ident = "x-schema:DTMldentSchema.xmI" xmlns:fdt = "x-schema:FDTDataTypesSchema.xml"
&gt;〈/xsl:text〉
                〈xsl:element name = "Scanldentifications"〉
                    〈xsl:attribute name = "fdt:busCategory"〉
                        〈xsl:value-of select = "@fdt:busCategory"/〉
                    〈/xsl:attribute〉
                    〈xsl:attribute name = "resultState"〉
                        〈xsl:value-of select = "@resultState/〉
                    〈/xsl:attribute〉
                    〈xsl:apply-templates select = "ffscan:Scanldentification_FF_H1"/〉
                    〈xsl:apply-templates select = "ffscan:Scanldentification_FF_HSE"/〉
                    〈xsl:apply-templates select = "ffscan:Scanldentification_FF_Block"/〉
                〈/xsl:element〉
        〈xsl:text disable-output-escaping = "yes"〉&lt;/FDT&gt;〈/xsl:text〉
    〈/xsl:template〉
〈! --
FF H1 catalog identification
--〉
    〈xsl:template match = "ffdevice:Deviceldentification_FF_H1"〉
            〈xsl:element name = "Deviceldentification"〉
                〈xsl:attribute name = "ident:idDTMSupportLevel"〉
                    〈xsl:value-of select = "@ffident:idDTMSupportLevel"/〉
                〈/xsl:attribute〉
                〈xsl:apply-templates select = "ffdevice:ldBusProtocol"/〉
                〈xsl:element name = "ldBusProtocolVersion" 〉
                    〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/xsl:attribute〉
                〈/xsl:element 〉
                〈xsl:apply-templates select = "ffdevice:ldManufacturer"/〉
                〈xsl:apply-templates select = "ffdevice:ldTypelD"/〉
                〈xsl:apply-templates select = "ffdevice:ldSoftwareRevision"/〉
                〈xsl:apply-templates select = "ffdevice:ldHardwareRevision"/〉
                〈xsl:element name = "ldValues"〉
                    〈xsl:apply-templates select = "ffdevice:ManufacturerSpecificExtension"/〉
                〈/xsl:element〉
```

```
            〈/xsl:element〉
    〈/xsl:template〉
〈! --
FF H1 scan identification
--〉
    〈xsl:template match = "ffscan:ScanIdentification_FF_H1"〉
            〈xsl:element name = "ScanIdentification"〉
                〈xsl:apply-templates select = "@configuredState"/〉
                〈xsl:apply-templates select = "fdt:CommunicationError"/〉
                〈xsl:apply-templates select = "ffscan:IdBusProtocol"/〉
                〈xsl:element name = "ldBusProtocolVersion" 〉
                    〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/xsl:attribute〉
                〈/xsl:element 〉
                〈xsl:apply-templates select = "ffscan:IdAddress"/〉
                〈xsl:apply-templates select = "ffscan:ldManufacturer"/〉
                〈xsl:apply-templates select = "ffscan:ldTypelD"/〉
                〈xsl:apply-templates select = "ffscan:ldSoftwareRevision"/〉
                〈xsl:apply-templates select = "ffscan:ldHardwareRevision"/〉
                〈xsl:apply-templates select = "ffscan:ldTag"〉
                〈xsl:apply-templates select = "ffscan:ldSerialNumber"/〉
                〈xsl:element name = "IdValues"〉
                    〈xsl:apply-templates select = "ffscan:ManufacturerSpecificExtension"/〉
                〈/xsl:element〉
            〈/xsl:element〉
    〈/xsl:template〉
〈! --
FF HSE catalog identification
--〉
    〈xsl:template match = "ffdevice:Deviceldentification_FF_HSE"〉
            〈xsl:element name = "Deviceldentification"〉
                〈xsl:attribute name = "ident:idDTMSupportLevel"〉
                    〈xsl:value-of select = "@ffident:idDTMSupportLevel"/〉
                〈/xsl:attribute〉
                〈xsl:apply-templates select = "ffdevice:ldBusProtocol"/〉
                〈xsl:element name = "ldBusProtocolVersion" 〉
                    〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/xsl:attribute〉
                〈/xsl:element〉
                〈xsl:element name = "IdManufacturer" 〉
                    〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/xsl:attribute〉
                〈/xsl:element〉
                〈xsl:apply-templates select = "ffdevice:ldTypelD"/〉
                〈xsl:element name = "IdSoftwareRevision"〉
                     〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
```

```
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:element name = "ldHardwareRevision"〉
                    〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/xsl:attribute〉
                〈/xsl:element〉
                〈xsl:element name = "ldValues"〉
                    〈xsl:apply-templates select = "ffdevice:DeviceClass"/〉
                    〈xsl:apply-templates select = "ffdevice:VendorName"/〉
                    〈xsl:apply-templates select = "ffdevice:ModelName"/〉
                    〈xsl:apply-templates select = "ffdevice:Revision"/〉
                    〈xsl:apply-templates select = "ffdevice:ManufacturerSpecificExtension"/〉
                〈/xsl:element〉
            〈/xsl:element〉
    〈/xsl:template〉
〈! --
FF HSE scan identification
--〉
    〈xsl:template match = "ffscan:ScanIdentification_FF_HSE"〉
            〈xsl:element name = "ScanIdentification"〉
                〈xsl:apply-templates select = "@configuredState" /〉
                〈xsl:apply-templates select = "fdt:CommunicationError"/〉
                〈xsl:apply-templates select = "ffscan:IdBusProtocol"/〉
                〈xsl:element name = "ldBusProtocolVersion"〉
                     〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:apply-templates select = "ffscan:DataLinkAddress"/〉
                〈xsl:element name = "IdManufacturer"〉
                     〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:apply-templates select = "ffscan:ldTypelD"/〉
                〈xsl:element name = "ldSoftwareRevision"〉
                     〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:element name = "IdHardwareRevision"〉
                     〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:apply-templates select = "ffscan:ldTag"/〉
                〈xsl:element name = "ldSerialNumber"〉
                     〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
```

```
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:element name = "ldValues"〉
                    〈xsl:apply-templates select = "ffscan:DeviceClass"/〉
                    〈xsl:apply-templates select = "ffscan:VendorName"/〉
                    〈xsl:apply-templates select = "ffscan:ModelName"/〉
                    〈xsl:apply-templates select = "ffscan:Revision"/〉
                    〈xsl:apply-templates select = "ffscan:ManufacturerSpecificExtension"/〉
                〈/xsl:element〉
            〈/xsl:element〉
    〈/xsl:template〉
〈! --
FF Block catalog identifcation
--〉
    〈xsl:template match = "ffdevice:Deviceldentification_FF_Block"〉
            〈xsl:element name = "Deviceldentification"〉
                〈xsl:attribute name = "ident:idDTMSupportLevel"〉
                    〈xsl:value-of select = "@ffident:idDTMSupportLevel"/〉
                〈/xsl:attribute〉
                〈xsl:apply-templates select = "ffdevice:ldBusProtocol"/〉
                〈xsl:element name = "ldBusProtocolVersion" 〉
                       〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:apply-templates select = "ffdevice:ldManufacturer"/〉
                〈xsl:apply-templates select = "ffdevice:ldTypelD"/〉
                〈xsl:apply-templates select = "ffdevice:DDRevision"/〉
                〈xsl:element name = "ldHardwareRevision"〉
                       〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:element name = "ldValues"〉
                  〈xsl:apply-templates select = "ffdevice:Blocklndex"/〉
                  〈xsl:apply-templates select = "ffdevice:DDMemberlD"/〉
                  〈xsl:apply-templates select = "ffdevice:DDItemld"/〉
                  〈xsl:apply-templates select = "ffdevice:ldProfile"/〉
                  〈xsl:apply-templates select = "ffdevice:ldProfileRevision"/〉
                  〈xsl:apply-templates select = "ffdevice:ManufacturerSpecificExtension"/〉
                〈/xsl:element〉
            〈/xsl:element〉
    〈/xsl:template〉
〈!
FF Block scan identification
```

```
--〉
    〈xsl:template match = "ffscan:Scanldentification_FF_Block"〉
            〈xsl:element name = "Scanldentification"〉
                〈xsl:apply-templates select = "@configuredState" /〉
                〈xsl:apply-templates select = "fdt:CommunicationError"/〉
                〈xsl:apply-templates select = "ffscan:ldBusProtocol"/〉
                〈xsl:element name = "ldBusProtocolVersion" 〉
                      〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:apply-templates select = "ffscan:IdAddress"/〉
                〈xsl:apply-templates select = "ffscan:ldManufacturer"/〉
                〈xsl:apply-templates select = "ffscan:ldTypelD"/〉
                〈xsl:apply-templates select = "ffscan:DDRevision"/〉
                〈xsl:element name = "ldHardwareRevision"〉
                      〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:apply-templates select = "ffscan:ldTag"/〉
                〈xsl:element name = "ldSerialNumber"〉
                      〈xsl:attribute name = "ident:protocolSpecificName"〉not applicable〈/
xsl:attribute〉
                〈/xsl:element〉
                〈xsl:element name = "IdValues"〉
                    〈xsl:apply-templates select = "ffscan:Blocklndex"/〉
                    〈xsl:apply-templates select = "ffscan:DDMemberlD"/〉
                    〈xsl:apply-templates select = "ffscan:DDltemld"/〉
                    〈xsl:apply-templates select = "ffscan:ldProfile"/〉
                    〈xsl:apply-templates select = "ffscan:ldProfileRevision"/〉
                    〈xsl:apply-templates select = "ffscan:ManufacturerSpecificExtension"/〉
                〈/xsl:element〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
configured attribute
--〉
    〈xsl:template match = "@configuredState"〉
            〈xsl:attribute name = "configuredState"〉
                〈xsl:value-of select = "."/〉
            〈/xsl:attribute〉
    〈/xsl:template〉
```

```
〈! --
device tag
--〉
    〈xsl:template match = "ffscan:ldTag"〉
            〈xsl:element name = "ldDeviceTag"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉SM-IDENTIFY〈/xsl:attrib-
ute〉
                〈xsl:attribute name = "ident:value"〉〈xsl:value-of select = "@ffident:pd-
tag"/〉〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
communicationError
--〉
    〈xsl:template match = "fdt:CommunicationError"〉
            〈xsl:element name = "fdt:CommunicationError"〉
                〈xsl:attribute name = "communicationError"〉〈xsl:value-of select = "@commu-
nicationError"/〉〈/xsl:attribute〉
                〈xsl:attribute name = "tag"〉〈xsl:value-of select = "@tag"/〉〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉
〈! --
Serialnumber
--〉
    〈xsl:template match = "ffscan:ldSerialNumber"〉
            〈xsl:element name = "ldSerialNumber"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DEV_lD〈/xsl:attribute〉
                〈xsl:attribute name = "ident:value"〉〈xsl:value-of select = "@fident:dev-
id"/〉〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉
〈! --
DataLinkAddress
--〉
    〈xsl:template match = "ffscan:DataLinkAddress"〉
            〈xsl:element name = "IdAddress"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉Node address〈/xsl:at-
tribute〉
                〈xsl:attribute name = "ident:value"〉〈xsl:value-of select = "@ffident:dat-
aLinkAddress"/〉〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉
```

```
〈! --
busaddress
--〉
    〈xsl:template match = "ffscan:IdAddress"〉
            〈xsl:element name = "IdAddress"〉
                 〈xsl:attribute name = " ident:protocolSpecificName"〉Node address〈/xsl:attribute〉
                〈xsl:attribute name = " ident:value"〉〈xsl:value-of select = "@ffident:deviceAddress"/〉〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
DeviceClass, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:DeviceClass"〉
            〈xsl:param name = "value" select = "@ffident:deviceClass"/〉
            〈xsl:element name = "IdValue"〉
                〈xsl:attribute name = "ident:name"〉DeviceClass〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉Device Class〈/xsl:attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:DeviceClass"〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉DeviceClass〈/xsl:attribute〉
                 〈xsl:attribute name = " ident:protocolSpecificName"〉Device Class〈/xsl:attribute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:deviceClass"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
VendorName, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:VendorName"〉
            〈xsl:param name = "value" select = "@ffident:vendorName"/〉
            〈xsl:element name = "ldValue"〉
```

```
                <xsl:attribute name = "ident:name">VendorName</xsl:attribute>
                <xsl:attribute name = "ident:protocolSpecificName">Vendor Name</xsl:attrib-
ute>
                <xsl:call-template name = "genMatch">
                    <xsl:with-param name = "value" select = " $ value"/>
                </xsl:call-template>
            </xsl:element>
    </xsl:template>
    <xsl:template match = "ffscan:VendorName">
            <xsl:element name = "IdValue">
                <xsl:attribute name = "ident:name">VendorName</xsl:attribute>
                <xsl:attribute name = "ident:protocolSpecificName">Vendor Name</xsl:attrib-
ute>
                <xsl:attribute name = "ident:value">
                    <xsl:value-of select = "@ffident:vendorName"/>
                </xsl:attribute>
            </xsl:element>
    </xsl:template>
<! --
ManufacturerSpecificExtension, saved as protocol specific value
-->
    <xsl:template match = "ffdevice:ManufacturerSpecificExtension">
            <xsl:param name = "value" select = "@ffident:manufacturerSpecificExtension"/>
            <xsl:element name = "ldValue">
                 <xsl:attribute name = "ident:name">ManufacturerSpecificExtension</xsl:at-
tribute>
                <xsl:attribute name = "ident:protocolSpecificName">??? </xsl:attribute>
                <xsl:call-template name = "genMatch">
                    <xsI:with-param name = "value" select = " $ value"/>
                </xsl:call-template>
            </xsl:element>
    </xsl:template>
    <xsl:template match = "ffscan:ManufacturerSpecificExtension">
            <xsl:element name = "ldValue">
                 <xsl:attribute name = "ident:name">ManufacturerSpecificExtension</xsl:at-
tribute>
                <xsl:attribute name = "ident:protocolSpecificName">??? </xsl:attribute>
                <xsl:attribute name = "ident:value">
                    <xsl:value-of select = "@ffident:manufacturerSpecificExtension"/>
                </xsl:attribute>
            </xsl:element>
    </xsl:template>
```

```
〈! --
ModelName, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:ModelName"〉
            〈xsl:param name = "value" select = "@ffident:modelName"/〉
            〈xsl:element name = "IdValue"〉
                〈xsl:attribute name = "ident:name"〉Model Name〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉Vendor Name〈/xsl:attrib-
ute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:ModelName"〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉ModelName〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉Model Name〈/xsl:attrib-
ute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:modelName"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
Devld:ldBusProtocol
--〉
    〈xsl:template match = "ffdevice:ldBusProtocoll"〉
            〈xsl:param name = "manid" select = "@ffident:busProtocol"/〉
            〈xsl:element name = "ldBusProtocol"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉FF Bus Protocol〈/xsl:at-
tribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ manid"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:ldBusProtocol"〉
            〈xsl:element name = "IdBusProtocol"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉FF Bus Protocol〈/xsl:at-
tribute〉
                〈xsl:attribute name = "ident:value"〉
```

```
                    〈xsl:value-of select = "@ffident:busProtocol"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
Revision, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:Revision"〉
            〈xsl:param name = "value" select = "@ffident:revision"/〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉Revision〈/xsl:attribute〉
                 〈xsl:attribute name = "ident:protocolSpecificName"〉Revision〈/xsl:attrib-
ute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:Revision"〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉Revision〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉Revision〈/xsl:attribute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:revision"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
Blocklndex, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:Blocklndex"〉
            〈xsl:param name = "value" select = "@ffident:blocklndex"/〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉Blocklndex〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉Block lndex〈/xsl:attrib-
ute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
```

```
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:Blocklndex"〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉Blocklndex〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉Block lndex〈/xsl:attrib-
ute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:blocklndex"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! -
DDMemberID, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:DDMemberlD"〉
            〈xsl:param name = "value" select = "@ffident:ddMemberlD"/〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉DDMemberlD〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD Member lD〈/xsl:attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:DDMemberlD"〉
            〈xsl:element name = "IdValue" 〉
                〈xsl:attribute name = "ident:name"〉DDMemberlD〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD Member lD〈/xsl:attribute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:ddMemberlD"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
DDItemld, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:DDltemld"〉
            〈xsl:param name = "value" select = "@ffident:ddltemld"/〉
```

```
            〈xsl:element name = "IdValue"〉
                〈xsl:attribute name = "ident:name"〉DDltemld〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD Item lD〈/xsl:attrib-
ute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:DDltemld"〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉DDltemld〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD Item lD〈/xsl:attrib-
ute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:ddltemld"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
IDProfile, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:ldProfile"〉
            〈xsl:param name = "value" select = "@ffident:profile"/〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉ldProfile〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉??? 〈/xsl:attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:ldProfile"〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉ldProfile〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉 ??? 〈/xsl:attribute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:profile"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉
```

```
〈! -
ldProfileRevision, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:ldProfileRevision"〉
            〈xsl:param name = "value" select = "@ffident:profileRevision"/〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉ldProfileRevision〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉??? 〈/xsl:attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:ldProfileRevision"〉
            〈xsl:element name = "IdValue"〉
                〈xsl:attribute name = "ident:name"〉ldProfileRevision〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉??? 〈/xsl:attribute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:profileRevision"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
DeviceDDRevision, saved as protocol specific value
--〉
    〈xsl:template match = "ffdevice:DeviceDDRevision"〉
            〈xsl:param name = "value" select = "@ffident:deviceDDRevision"/〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉DeviceDDRevision〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉??? 〈/xsl:attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:DeviceDDRevision"〉
            〈xsl:element name = "ldValue"〉
                〈xsl:attribute name = "ident:name"〉DeviceDDRevision〈/xsl:attribute〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉??? 〈/xsl:attribute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:deviceDDRevision"/〉
                〈/xsl:attribute〉
```

```
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
Manufacturer
--〉
    〈xsl:template match = "ffdevice:ldManufacturer"〉
            〈xsl:param name = "manid" select = "@ffident:manufacturerlD"/〉
            〈xsl:element name = "ldManufacturer"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉MANUFAC_lD〈/xsl:attrib-
ute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ manid"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:ldManufacturer"〉
            〈xsl:element name = "ldManufacturer"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉MANUFAC_lD〈/xsl:attrib-
ute〉
                〈xsl:attribute name = "ident:value"〉
                    〈xsl:value-of select = "@ffident:manufacturerlD"/〉
                〈/xsl:attribute〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
Manufacturer
--〉
    〈xsl:template match = "ffdevice:Device_man_id"〉
            〈xsl:param name = "manid" select = "@ffident:device_man_id"/〉
            〈xsl:element name = "IdManufacturer"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉MANUFAC_lD〈/xsl:attrib-
ute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ manid"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
    〈xsl:template match = "ffscan:Device_man_id"〉
            〈xsl:element name = "IdManufacturer"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉MANUFAC_lD〈/xsl:attrib-
ute〉
```

```
                <xsl:attribute name = "ident:value">
                    <xsl:value-of select = "@ffident:device_man_id"/>
                </xsl:attribute>
            </xsl:element>
    </xsl:template>

<! --
device type
-->
    <xsl:template match = "ffdevice:ldTypelD">
            <xsl:param name = "value" select = "@ffident:dev_type"/>
            <xsl:element name = "IdTypelD">
                <xsl:attribute name = "ident:protocolSpecificName">DEV_TYPE </xsl:attrib-
ute>
                <xsl:call-template name = "genMatch">
                    <xsl:with-param name = "value" select = " $ value"/>
                </xsl:call-template>
            </xsl:element>
    </xsl:template>
    <xsl:template match = "ffscan:ldTypelD">
            <xsl:element name = "ldTypelD">
                <xsl:attribute name = "ident:protocolSpecificName">DEV_TYPE</xsl:attrib-
ute>
                <xsl:attribute name = "ident:value">
                    <xsl:value-of select = "@ffident:dev_type"/>
                </xsl:attribute>
            </xsl:element>
    </xsl:template>


<! --
software revision
-->
    <xsl:template match = "ffdevice:ldSoftwareRevision">
            <xsl:param name = "value" select = "@ffident:device_dd_Revision"/>
            <xsl:element name = "ldSoftwareRevision">
                <xsl:attribute name = "ident:protocolSpecificName">DD_REV and DD_REV</xsl:
attribute>
                <xsl:call-template name = "genMatch">
                    <xsl:with-param name = "value" select = " $ value"/>
                </xsl:call-template>
            </xsl:element>
    </xsl:template>
```

```
            〈xsl:template match = "ffscan:ldSoftwareRevision"〉
            〈xsl:param name = "value" select = "@ffident:device_dd_Revision"/〉
            〈xsl:element name = "ldSoftwareRevision"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD_REV and DD_REV〈/xsl:
attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉


〈! --
hardware revision
--〉
    〈xsl:template match = "ffdevice:ldHardwareRevision"〉
            〈xsl:param name = "value" select = "@ffident:device_dd_Revision"/〉
            〈xsl:element name = "ldHardwareRevision"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD_REV and DD_REV〈/xsl:
attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
            〈xsl:template match = "ffscan:ldHardwareRevision"〉
            〈xsl:param name = "value" select = "@ffident:device_dd_Revision"/〉
            〈xsl:element name = "ldHardwareRevision"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD_REV and DD_REV〈/xsl:
attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
DDRevision
--〉
    〈xsl:template match = "ffdevice:DDRevision"〉
            〈xsl:param name = "value" select = "@ffident:ddRevision"/〉
            〈xsl:element name = "ldSoftwareRevision"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD_REV and DD_REV〈/xsl:
```

```
attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
            〈xsl:template match = "ffscan:DDRevision"〉
            〈xsl:param name = "value" select = "@ffident:ddRevision"/〉
            〈xsl:element name = "IdSoftwareRevision"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD_REV and DD_REV〈/xsl:
attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
DeviceRevision
--〉
    〈xsl:template match = "ffdevice:DeviceRevision"〉
            〈xsl:param name = "value" select = "@ffident:deviceRevision"/〉
            〈xsl:element name = "IdHardwareRevision"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD_REV and DD_REV〈/xsl:
attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉
            〈xsl:template match = "ffscan:DeviceRevision"〉
            〈xsl:param name = "value" select = "@ffident:deviceRevision"/〉
            〈xsl:element name = "ldHardwareRevision"〉
                〈xsl:attribute name = "ident:protocolSpecificName"〉DD_REV and DD_REV〈/xsl:
attribute〉
                〈xsl:call-template name = "genMatch"〉
                    〈xsl:with-param name = "value" select = " $ value"/〉
                〈/xsl:call-template〉
            〈/xsl:element〉
    〈/xsl:template〉

〈! --
generate matching information
```

```
--〉
    〈xsl:template name = "genMatch"〉
            〈xsl:param name = "value"/〉
            〈xsl:param name = "empty"/〉
            〈xsl:if test = " $ value! = $ empty"〉
                〈xsl:attribute name = "ident:value"〉〈xsl:value-of select = " $ value"/〉〈/xsl:
attribute〉
            〈/xsl:if〉
            〈xsl:apply-templates select = "ffident:RegExpr"/〉
    〈/xsl:template〉

〈! --
generate regular exressions
--〉
    〈xsl:template match = "ffident:RegExpr"〉
            〈! -- copy pattern info --〉
            〈xsl:call-template name = "genPattern"〉
                〈xsl:with-param name = "match" select = "@match"/〉
                〈xsl:with-param name = "nomatch" select = "@nomatch"/〉
            〈/xsl:call-template〉
    〈/xsl:template〉

〈! --
generate pattern information
--〉
    〈xsl:template name = "genPattern"〉
            〈xsl:param name = "match"/〉
            〈xsl:param name = "nomatch"/〉
            〈xsl:param name = "empty"/〉
            〈xsl:choose〉
            〈xsl:when test = " $ match! = $ empty"〉
                〈xsl:element name = "ident:RegExpr"〉
                    〈xsl:attribute name = "match"〉〈xsl:value-of select = " $ match"/〉〈/xsl:
attribute〉
                    〈xsl:if test = " $ nomatch! = $ empty"〉
                        〈xsl:attribute name = "nomatch"〉〈xsl:value-of select = " $ nomatch"/〉
〈/xsl:attribute〉
                    〈/xsl:if〉
                〈/xsl:element〉
            〈/xsl:when〉
            〈xsl:when test = " $ nomatch! = $ empty"〉
                〈xsl:element name = "ident:RegExpr"〉
                    〈xsl:attribute name = "nomatch"〉〈xsl:value-of select = " $ nomatch"/〉〈/
```

```
xsl:attribute〉
                    〈xsl:if test = " $ match!  = $ empty"〉
                        〈xsl:attribute name = "match"〉〈xsl:value-of select = " $ match"/〉〈/
xsl:attribute〉
                    〈/xsl:if〉
                〈/xsl:element〉
            〈/xsl:when〉
            〈/xsl:choose〉
    〈/xsl:template〉
〈/xsl:transform〉
```

参 考 文 献

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