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## 1. Preliminary notes

This document describes the changes and enhancements of MSRFMEA-DTD version 3.0.0 compared to version 2.2.1.

Chapter 2 lists the elements modified compared to version 2.2.1. The enhancements of available definitions of elements are marked in red. Chapter 3 describes the newly introduced element definitions. Chapter 4 contains general descriptions and the documentation of unmodeled information stored via the SDGS. Chapter 4 furthermore contains the changelog of this document and respectively the DTD.

Greater importance was attached to the downward and upward compatibility of the DTD. All the new elements are optional.

In the document “Felddoku.fme” and the associated “Felddoku.xml”, the objects and input fields used in IQ FMEA were populated with a numbering system, which enables the assignment of which objects or input fields from IQ FMEA are to be located in which position in the XML entity.

## 2. Modifications of available elements

Within the scope of IQ FMEA version V7, the following modifications were made to available elements (see red markings):

```
<!ELEMENT MSRFMEA (
  SHORT-NAME? ,
  ADMIN-DATA? ,
  FM-HEAD? ,
  FM-TOOL-DATA? ,
  FM-STRUCTURES? ,
  FM-STRUCTURE-ELEMENT-TYPES? ,
  FM-STRUCTURE-ELEMENTS? ,
  FM-FUNCTION-TYPES? ,
  FM-FUNCTIONS? ,
  FM-CHARACTERISTIC-TYPES? ,
  FM-CHARACTERISTICS? ,
  FM-FAULT-TYPES? ,
  FM-FAULTS? ,
  FM-ACTION-TYPES? ,
  FM-ACTIONS? ,
  FM-MEASURE-SEQUENCES? ,
  FM-ERROR-DETECTIONS? ,
  FM-ERROR-RESPONSS? ,
  FM-OPERATING-CONDITION-TYPES? ,
  FM-OPERATING-CONDITIONS? ,
  FM-DRBFM-MODIFICATION-TYPES? ,
  FM-DRBFM-MODIFICATIONS? ,
  FM-FORM-SHEETS? ,
  FM-CONTROL-PLANS? ,
  FM-PROCESS-DIAGRAMS? ,
  FM-DRBFM-SHEETS? ,
  FM-PROJECTS? ,
  FM-DRBFM-PROJECTS? ,
  FM-VARIANTS? ,
  FM-USER-RIGHT-SPEC? ,
  FM-SYMBOL-SPEC? ,
  FM-ASSESSMENT-CATALOGS? ,
  FM-USERDEFINED-ATTRIBUTES? ,
  FM-SYMBOLIC-DATES? ,
```

FM-MACHINES? ,  
FM-TEST-SAMPLES? ,  
FM-TEST-EQUIPMENTS? ,  
FM-FTA-NODES? ,  
FM-PARAMETER-DIAGRAMS? ,  
FM-BLOCK-DIAGRAMS? ,  
FM-DESIGN-VERIFICATION-PLANS? ,  
FM-EIGHT-D-REPORTS? ,  
FM-SCOPE-REPORTS? ,  
FM-CRITICAL-CHARACTERISTICS-REPORTS? ,  
FM-RISK-MATRIX-SETS? ,  
FM-ACTION-PRIORITY-CUBES? ,  
FM-COLLECTIONS? ,  
SPECIAL-DATA? ,  
MSR-PROCESSING-LOG? ,  
MATCHING-DCIS? ,  
LOCS?

)

>

```
<!ELEMENT FM-STRUCTURE (  
  LONG-NAME ,  
  SHORT-NAME? ,  
  DESC? ,  
  CATEGORY? ,  
  ADMIN-DATA? ,  
  ANNOTATIONS? ,  
  FM-USERDEFINED-ATTRIBUTE-REFS? ,  
  FM-LINK-DESTINATIONS? ,  
  FM-ID-NUMBER? ,  
  FM-STRUCTURE-OWNER? ,  
  FM-VARIANT-REFS? ,  
  FM-INTERFACE? ,  
  FM-STRUCTURE-ROOT? ,  
  FM-ORPHAN-HOME? ,  
  USER-COVER-SHEETS? ,  
  FM-FTA-PARAMETERS? ,  
  FM-IEC-PARAMETERS? ,  
  FM-DRBFM-PARAMETERS? ,  
  FM-VERSION-INFO? ,  
  FM-RISK-MATRIX-SET-REFS? ,  
  SDGS? ,  
  MISC-DATA?  
)
```

>

```
<!ELEMENT FM-VARIANT (  
  LONG-NAME ,  
  SHORT-NAME? ,  
  DESC? ,  
  CATEGORY? ,  
  ADMIN-DATA? ,  
  ANNOTATIONS? ,  
  FM-USERDEFINED-ATTRIBUTE-REFS? ,  
  FM-LINK-DESTINATIONS? ,  
  FM-ID-NUMBER? ,  
  FM-VARIANT-REFS? ,  
  FM-COLLECTION-CONTS? ,  
  FM-NET-CONNECTIONS? ,  
  FM-MACHINE-REFS? ,  
  FM-VARIANT-MISC-DATAS? ,  
  FM-VERSION-INFO? ,  
  FM-RISK-MATRIX-SET-REFS? ,
```

```
    SDGS? ,
    MISC-DATA?
)
>
<!ELEMENT FM-STRUCTURE-ELEMENT
(
    LONG-NAME ,
    SHORT-NAME? ,
    DESC? ,
    CATEGORY? ,
    ADMIN-DATA? ,
    ANNOTATIONS? ,
    FM-USERDEFINED-ATTRIBUTE-REFS? ,
    FM-LINK-DESTINATIONS? ,
    FM-ID-NUMBER? ,
    PART-NUMBER? ,
    FM-STRUCTURE-ELEMENT-TYPE-REF? ,
    FM-CLASSIFICATION? ,
    FM-SE-DECOMPOSITION? ,
    FM-SE-FUNCTIONS? ,
    FM-SE-CHARACTERISTICS? ,
    FM-SE-SAFETY-GOALS? ,
    FM-MODULE-REF? ,
    FM-MACHINE-REFS? ,
    TEAM-MEMBER-REF? ,
    FM-FTA-PARAMETERS? ,
    FM-IEC-PARAMETERS? ,
    FM-DRBFM-PARAMETERS? ,
    FM-OVERLAY-IMAGE? ,
    FM-VERSION-INFO? ,
    SDGS? ,
    MISC-DATA?
)
>
<!ELEMENT FM-FUNCTION
(
    LONG-NAME ,
    SHORT-NAME? ,
    DESC? ,
    CATEGORY? ,
    ADMIN-DATA? ,
    ANNOTATIONS? ,
    FM-USERDEFINED-ATTRIBUTE-REFS? ,
    FM-LINK-DESTINATIONS? ,
    FM-ID-NUMBER? ,
    FM-FUNCTION-TYPE-REF? ,
    FM-PREREQUISITES? ,
    FM-FAULT-REFS? ,
    FM-REQUIREMENTS? ,
    FM-ERROR-DETECTION-REFS? ,
    FM-ERROR-RESPONSE-REFS? ,
    FM-CLASSIFICATION? ,
    TEAM-MEMBER-REF? ,
    FM-PARAMETER-DIAGRAM-REF? ,
    FM-IEC-PARAMETERS? ,
    FM-DRBFM-PARAMETERS? ,
    FM-OVERLAY-IMAGE? ,
    FM-VERSION-INFO? ,
    SDGS? ,
    MISC-DATA?
```

```
)
>
<!ELEMENT FM-CHARACTERISTIC
(
  LONG-NAME ,
  SHORT-NAME? ,
  DESC? ,
  CATEGORY? ,
  ADMIN-DATA? ,
  ANNOTATIONS? ,
  FM-USERDEFINED-ATTRIBUTE-REFS? ,
  FM-LINK-DESTINATIONS? ,
  FM-ID-NUMBER? ,
  FM-CHARACTERISTIC-TYPE-REF? ,
  FM-PREREQUISITES? ,
  FM-FAULT-REFS? ,
  FM-CLASSIFICATION? ,
  PRMS? ,
  FM-CONTROL-METHODS? ,
  FM-REACTIONS? ,
  FM-TEST-SAMPLE-REFS? ,
  FM-CATEGORY-REFS? ,
  TEAM-MEMBER-REF? ,
  FIGURE? ,
  FM-DRBFM-PARAMETERS? ,
  FM-OVERLAY-IMAGE? ,
  FM-VERSION-INFO? ,
  SDGS? ,
  MISC-DATA?
)
>
<!ELEMENT FM-CHARACTERISTIC-TYPE
(
  LONG-NAME ,
  SHORT-NAME? ,
  DESC? ,
  CATEGORY? ,
  ADMIN-DATA? ,
  ANNOTATIONS? ,
  FM-USERDEFINED-ATTRIBUTE-REFS? ,
  FM-LINK-DESTINATIONS? ,
  FM-CHARACTERISTIC-TYPE-DECOMPOSITION? ,
  FM-CLASSIFICATION? ,
  PRMS? ,
  FM-VERSION-INFO? ,
  SDGS? ,
  MISC-DATA?
)
>
<!ELEMENT FM-FAULT
(
  LONG-NAME ,
  SHORT-NAME? ,
  DESC? ,
  CATEGORY? ,
  ADMIN-DATA? ,
  ANNOTATIONS? ,
  FM-USERDEFINED-ATTRIBUTE-REFS? ,
  FM-LINK-DESTINATIONS? ,
```

FM-ID-NUMBER? ,  
FM-FAULT-TYPE-REF? ,  
FM-CLASSIFICATION? ,  
FM-CAUSES? ,  
FM-SIGNIFICANCE? ,  
FM-TASK-HISTORY? ,  
FM-FTA-PARAMETERS? ,  
FM-IEC-PARAMETERS? ,  
FM-RSM-PARAMETERS? ,  
FM-FAILURE-RISK-INFOS? ,  
FM-CHANGE-ANALYSIS-PARAMETERS? ,  
FM-DRBFM-PARAMETERS? ,  
FM-OVERLAY-IMAGE? ,  
FM-VERSION-INFO? ,  
SDGS? ,  
MISC-DATA?

)

>

<!ELEMENT FM-TEST-EQUIPMENT

(

LONG-NAME ,  
SHORT-NAME? ,  
DESC? ,  
CATEGORY? ,  
ADMIN-DATA? ,  
ANNOTATIONS? ,  
FM-USERDEFINED-ATTRIBUTE-REFS? ,  
FM-LINK-DESTINATIONS? ,  
FM-ID-NUMBER? ,  
FM-VERSION-INFO? ,  
SDGS? ,  
MISC-DATA?

)

>

<!ELEMENT FM-TEST-SAMPLE

(

LONG-NAME ,  
SHORT-NAME? ,  
DESC? ,  
CATEGORY? ,  
ADMIN-DATA? ,  
ANNOTATIONS? ,  
FM-USERDEFINED-ATTRIBUTE-REFS? ,  
FM-LINK-DESTINATIONS? ,  
FM-ID-NUMBER? ,  
FM-TEST-EQUIPMENT-REFS? ,  
FM-CONTROL-METHODS? ,  
FM-REACTIONS? ,  
FM-ERROR-PROOFING-METHODS? ,  
PRMS? ,  
FM-VERSION-INFO? ,  
SDGS? ,  
MISC-DATA?

)

>

<!ELEMENT FM-DRBFM-PROJECT

(

LONG-NAME ,  
SHORT-NAME? ,  
DESC? ,

CATEGORY? ,  
 ADMIN-DATA? ,  
 ANNOTATIONS? ,  
 FM-USERDEFINED-ATTRIBUTE-REFS? ,  
 FM-DRBFM-MODIFICATION-REFS? ,  
 FM-DRBFM-PROJECT-CONTENTS? ,  
 FM-DRBFM-MODIFICATION-NOTES? ,  
 FM-FORM-HEADER? ,  
 USER-COVER-SHEETS? ,  
 FM-VERSION-INFO? ,  
 SDGS? ,  
 MISC-DATA?

)

>

<!ATTLIST FM-DRBFM-PARAMETERS

S CDATA #IMPLIED  
 SI CDATA #IMPLIED  
 SYSCOND CDATA #IMPLIED  
 T CDATA #IMPLIED  
 VIEW CDATA #IMPLIED  
 ISDRBFMCONCERNED (TRUE | FALSE) #IMPLIED  
 ISDRBFMCONSIDERED (TRUE | FALSE) #IMPLIED  
 ISDRBFMCAUSE (TRUE | FALSE) #IMPLIED  
 ISDRBFMRELEVANT (TRUE | FALSE) #IMPLIED

>

<!ELEMENT FM-TASK-SET

(  
 LONG-NAME ,  
 SHORT-NAME? ,  
 DESC? ,  
 CATEGORY? ,  
 ADMIN-DATA? ,  
 ANNOTATIONS? ,  
 FM-USERDEFINED-ATTRIBUTE-REFS? ,  
 FM-LINK-DESTINATIONS? ,  
 FM-ID-NUMBER? ,  
 FM-DETECTION-TASKS? ,  
 FM-OCCURRENCE-TASKS? ,  
 FM-EXTERNAL-ACTIONS-DETECT? ,  
 FM-EXTERNAL-ACTIONS-OCCURRENCE? ,  
 FM-CLASSIFICATION? ,  
 FM-CATEGORY-REFS? ,  
 FM-RSM-PARAMETERS? ,  
 FM-ANALYSISDESKTOP-PARAMETERS? ,  
 FM-DRBFM-PARAMETERS? ,  
 FM-OVERLAY-IMAGE? ,  
 FM-VERSION-INFO? ,  
 SDGS? ,  
 MISC-DATA?  
 )

>

<!ELEMENT FM-TASK-SETS

(  
 LONG-NAME ,  
 SHORT-NAME? ,  
 DESC? ,  
 CATEGORY? ,  
 ADMIN-DATA? ,  
 ANNOTATIONS? ,  
 FM-USERDEFINED-ATTRIBUTE-REFS? ,

FM-LINK-DESTINATIONS? ,  
 FM-ID-NUMBER? ,  
 DATE-1? ,  
 FM-TASK-SET\* ,  
 FM-CLASSIFICATION? ,  
 FM-CATEGORY-REFS? ,  
 FM-DRBFM-PARAMETERS? ,  
 FM-OVERLAY-IMAGE? ,  
 FM-VERSION-INFO? ,  
 SDGS? ,  
 MISC-DATA?

)  
 >

<!ELEMENT FM-SYMBOLIC-DATE

(  
 LONG-NAME ,  
 SHORT-NAME? ,  
 DESC? ,  
 CATEGORY? ,  
 ADMIN-DATA? ,  
 ANNOTATIONS? ,  
 DATE-1? ,  
 FM-SYMBOLIC-DATE-REFS? ,  
 FM-VERSION-INFO? ,  
 SDGS? ,  
 MISC-DATA?

)  
 >

<!ELEMENT FM-XREF

(  
 #PCDATA  
 )

>

<!ATTLIST FM-XREF

HYNAMES NMTOKENS #FIXED "LINKEND ID-REF"  
 HYTIME NMTOKEN #FIXED "CLINK"  
 ID-CLASS (EXTERNAL|FM-ACTION|FM-ACTION-TYPE|FM-ASSESSMENT-CATALOG|FM-CHARACTERISTIC|FM-CHARACTERISTIC-TYPE|FM-COLLECTION|FM-CONTROL-PLAN|FM-FAULT|FM-FAULT-TYPE|FM-FORM-SHEET|FM-FORM-SHEET-PRESENTATION-VERSION|FM-FUNCTION|FM-FUNCTION-TYPE|FM-PALETTE|FM-PALETTE-COLUMN|FM-PALETTE-ROW|FM-PART-LIST-ENTRY|FM-PROCESS-DIAGRAM|FM-PROJECT|FM-STRUCTURE|FM-STRUCTURE-ELEMENT|FM-TASK-SET|FM-TASK-SETS|FM-TEAM|FM-TOOL|FM-USER-GROUP|FM-VARIANT|SW-USER-ACCESS-CASE|FM-USERDEFINED-ATTRIBUTE) #REQUIRED  
 ID-REF IDREF #IMPLIED  
 S CDATA #IMPLIED  
 SI CDATA #IMPLIED  
 SYSCOND CDATA #IMPLIED  
 T CDATA #IMPLIED  
 VIEW CDATA #IMPLIED

>

<!ELEMENT FM-ASSESSMENT-CATALOG

(  
 LONG-NAME ,  
 SHORT-NAME? ,  
 DESC? ,  
 CATEGORY? ,  
 ADMIN-DATA? ,  
 ANNOTATIONS? ,  
 FM-ASSESSMENT-DISCOVERY-LIST? ,

|  |              |          |
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```

    FM-ASSESSMENT-OCCURRENCE-LIST? ,
    FM-ASSESSMENT-SIGNIFICANCE-LIST? ,
    FM-ASSESSMENT-MIL-LIST? ,
    FM-AIAGDESCS? ,
    SDGS? ,
    MISC-DATA?
)
>
<!ELEMENT FM-ASSESSMENT-ENTRY
(
    LABEL ,
    DESC? ,
    FM-AIAGDESCS? ,
    ANNOTATIONS? ,
    RISK-PRIORITY-FACTOR? ,
    SDGS?
)
>

```



|  |              |          |
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The following two elements were added to all TYPE elements (e.g., FM-STRUCTURE-ELEMENT-TYPES, FM-FAULT-TYPE, FM-FUNCTION-TYPE, FM-CHARACTERISTIC-TYPE):

FM-USERDEFINED-ATTRIBUTE-REFS? ,  
FM-LINK-DESTINATIONS? ,

### Example:

```
<!ELEMENT FM-CHARACTERISTIC-TYPE
(
  LONG-NAME ,
  SHORT-NAME? ,
  DESC? ,
  CATEGORY? ,
  ADMIN-DATA? ,
  ANNOTATIONS? ,
  FM-USERDEFINED-ATTRIBUTE-REFS? ,
  FM-LINK-DESTINATIONS? ,
  FM-CHARACTERISTIC-TYPE-DECOMPOSITION? ,
  FM-CLASSIFICATION? ,
  PRMS? ,
  FM-VERSION-INFO? ,
  SDGS? ,
  MISC-DATA?
)
>
```

The element FM-ID-NUMBER was added to the following elements (for the example, see above FM-STRUCTURE):

FM-ACTION, FM-CHARACTERISTIC, FM-FAULT, FM-FUNCTION, FM-STRUCTURE, FM-STRUCTURE-ELEMENT, FM-TASK-SET, FM-TASK-SETS, FM-TEST-EQUIPMENT, FM-TEST-SAMPLE, FM-VARIANT, FM-ERROR-DETECTION, FM-ERROR-RESPONSE, FM-OPERATING-CONDITION, FM-DRBFM-MODIFICATION.

### 3. New elements

```

<!-- ***** Parameter/Block diagram ***** -->
<!ELEMENT FM-PARAMETER-DIAGRAMS
(
  FM-PARAMETER-DIAGRAM*
)
>
<!ATTLIST FM-PARAMETER-DIAGRAMS
  S      CDATA  #IMPLIED
  SI     CDATA  #IMPLIED
  SYSCOND CDATA  #IMPLIED
  T      CDATA  #IMPLIED
  VIEW   CDATA  #IMPLIED
>
<!ELEMENT FM-PARAMETER-DIAGRAM
(
  LONG-NAME,
  SHORT-NAME?,
  DESC?,
  CATEGORY?,
  ADMIN-DATA?,
  ANNOTATIONS?,
  FM-USERDEFINED-ATTRIBUTE-REFS?,
  FM-FUNCTION-REF?,
  FM-COLLECTION-CONTS*,
  FM-FORM-HEADER?,
  FM-VERSION-INFO?,
  SDGS?,
  MISC-DATA?
)
>
<!ATTLIST FM-PARAMETER-DIAGRAM
  F-ID-CLASS  NMTOKEN #FIXED "FM-PARAMETER-DIAGRAM"
  ID          ID      #IMPLIED
  S           CDATA   #IMPLIED
  SI          CDATA   #IMPLIED
  SYSCOND     CDATA   #IMPLIED
  T           CDATA   #IMPLIED
  VIEW        CDATA   #IMPLIED

```

```

>
<!ELEMENT FM-PARAMETER-DIAGRAM-REF
(
  #PCDATA
)
>
<!ATTLIST FM-PARAMETER-DIAGRAM-REF
  F-ID-CLASS  NMTOKEN #FIXED "FM-PARAMETER-DIAGRAM"
  HYNAMES     NMTOKENS #FIXED "LINKEND ID-REF"
  HYTIME      NMTOKEN  #FIXED "CLINK"
  ID-REF      IDREF    #IMPLIED
  S           CDATA    #IMPLIED
  SI          CDATA    #IMPLIED
  SYSCOND     CDATA    #IMPLIED
  T           CDATA    #IMPLIED
  VIEW        CDATA    #IMPLIED
>
<!ELEMENT FM-BLOCK-DIAGRAMS
(
  FM-BLOCK-DIAGRAM*
)
>
<!ATTLIST FM-BLOCK-DIAGRAMS
  S           CDATA    #IMPLIED
  SI          CDATA    #IMPLIED
  SYSCOND     CDATA    #IMPLIED
  T           CDATA    #IMPLIED
  VIEW        CDATA    #IMPLIED
>
<!ELEMENT FM-BLOCK-DIAGRAM
(
  LONG-NAME ,
  SHORT-NAME? ,
  DESC? ,
  CATEGORY? ,
  ADMIN-DATA? ,
  ANNOTATIONS? ,
  FM-USERDEFINED-ATTRIBUTE-REFS? ,
  MIME-CONTAINER? ,
  FM-REGIONS? ,

```

```

    FM-VERSION-INFO?,
    SDGS?,
    MISC-DATA?
)
>

<!--ATTLIST FM-BLOCK-DIAGRAM
    F-ID-CLASS  NMTOKEN #FIXED "FM-BLOCK-DIAGRAM"
    ID          ID      #IMPLIED
    S           CDATA   #IMPLIED
    SI          CDATA   #IMPLIED
    SYSCOND     CDATA   #IMPLIED
    T           CDATA   #IMPLIED
    VIEW        CDATA   #IMPLIED
>

<!--ELEMENT FM-REGIONS
(
    FM-REGION*
)
>

<!--ATTLIST FM-REGIONS
    S           CDATA   #IMPLIED
    SI          CDATA   #IMPLIED
    SYSCOND     CDATA   #IMPLIED
    T           CDATA   #IMPLIED
    VIEW        CDATA   #IMPLIED
>

<!--ELEMENT FM-REGION
(
    FM-XREF?,
    GRAPHIC*
)
>

<!--ATTLIST FM-REGION
    F-ID-CLASS  NMTOKEN #FIXED "FM-REGION"
    ID          ID      #IMPLIED
    S           CDATA   #IMPLIED
    SI          CDATA   #IMPLIED
    SYSCOND     CDATA   #IMPLIED
    T           CDATA   #IMPLIED

```

*VIEW CDATA #IMPLIED*

>

<!-- \*\*\*\*\* Risikomatrizen \*\*\*\*\* -->

<!ELEMENT FM-RISK-MATRIX-SETS

(  
*FM-RISK-MATRIX-SET\**  
 )

>

<!ATTLIST FM-RISK-MATRIX-SETS

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

<!ELEMENT FM-RISK-MATRIX-SET

(  
*LONG-NAME?* ,  
*SHORT-NAME?* ,  
*DESC?* ,  
*CATEGORY?* ,  
*ADMIN-DATA?* ,  
*ANNOTATIONS?* ,  
*FM-RISK-MATRICES?* ,  
*FM-RISK-MATRIX-COLOR-SCHEMES?* ,  
*FM-RISK-MATRIX-RANKINGS?* ,  
*SDGS?*  
 )

>

<!ATTLIST FM-RISK-MATRIX-SET

*F-ID-CLASS NMTOKEN #FIXED "FM-RISK-MATRIX-SET"*  
*ID ID #IMPLIED*  
*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*  
*EXTENDED (TRUE | FALSE) #IMPLIED*  
*DEFAULT (TRUE | FALSE) #IMPLIED*

```

>
<!ELEMENT FM-RISK-MATRIX-SET-REFS
(
  FM-RISK-MATRIX-SET-REF*
)
>
<!ATTLIST FM-RISK-MATRIX-SET-REFS
  S      CDATA  #IMPLIED
  SI     CDATA  #IMPLIED
  SYSCOND CDATA  #IMPLIED
  T      CDATA  #IMPLIED
  VIEW   CDATA  #IMPLIED
>
<!ELEMENT FM-RISK-MATRIX-SET-REF
(
  #PCDATA
)
>
<!ATTLIST FM-RISK-MATRIX-SET-REF
  F-ID-CLASS  NMTOKEN #FIXED "FM-RISK-MATRIX-SET"
  HYNAMES     NMTOKENS #FIXED "LINKEND ID-REF"
  HYTIME      NMTOKEN  #FIXED "CLINK"
  ID-REF      IDREF    #IMPLIED
  S          CDATA     #IMPLIED
  SI         CDATA     #IMPLIED
  SYSCOND    CDATA     #IMPLIED
  T          CDATA     #IMPLIED
  VIEW       CDATA     #IMPLIED
>
<!ELEMENT FM-RISK-MATRICES
(
  FM-RISK-MATRIX*
)
>
<!ATTLIST FM-RISK-MATRICES
  S      CDATA  #IMPLIED
  SI     CDATA  #IMPLIED
  SYSCOND CDATA  #IMPLIED
  T      CDATA  #IMPLIED
  VIEW   CDATA  #IMPLIED

```

>

<!*ELEMENT FM-RISK-MATRIX*

(  
*LONG-NAME?* ,  
*SHORT-NAME?* ,  
*DESC?* ,  
*CATEGORY?* ,  
*ADMIN-DATA?* ,  
*ANNOTATIONS?* ,  
*FM-RISK-MATRIX-VALUES?* ,  
*FM-RISK-MATRIX-DIM-X?* ,  
*FM-RISK-MATRIX-DIM-Y?* ,  
*SDGS?*  
 )

>

<!*ATTLIST FM-RISK-MATRIX*

*F-ID-CLASS*    *NMTOKEN*    *#FIXED "FM-RISK-MATRIX"*  
*ID*        *ID*    *#IMPLIED*  
*S*        *CDATA*    *#IMPLIED*  
*SI*        *CDATA*    *#IMPLIED*  
*SYSCOND*    *CDATA*    *#IMPLIED*  
*T*        *CDATA*    *#IMPLIED*  
*VIEW*        *CDATA*    *#IMPLIED*

>

<!*ELEMENT FM-RISK-MATRIX-VALUES*

(  
*#PCDATA*  
 )

>

<!*ATTLIST FM-RISK-MATRIX-VALUES*

*S*        *CDATA*    *#IMPLIED*  
*SI*        *CDATA*    *#IMPLIED*  
*SYSCOND*    *CDATA*    *#IMPLIED*  
*T*        *CDATA*    *#IMPLIED*  
*VIEW*        *CDATA*    *#IMPLIED*

>

<!*ELEMENT FM-RISK-MATRIX-DIM-X*

(  
*#PCDATA*  
 )

>

<!*ATTLIST FM-RISK-MATRIX-DIM-X*

*S* *CDATA* *#IMPLIED*  
*SI* *CDATA* *#IMPLIED*  
*SYSCOND* *CDATA* *#IMPLIED*  
*T* *CDATA* *#IMPLIED*  
*VIEW* *CDATA* *#IMPLIED*

>

<!*ELEMENT FM-RISK-MATRIX-DIM-Y*

(  
  *#PCDATA*  
)

>

<!*ATTLIST FM-RISK-MATRIX-DIM-Y*

*S* *CDATA* *#IMPLIED*  
*SI* *CDATA* *#IMPLIED*  
*SYSCOND* *CDATA* *#IMPLIED*  
*T* *CDATA* *#IMPLIED*  
*VIEW* *CDATA* *#IMPLIED*

>

<!*ELEMENT FM-RISK-MATRIX-COLOR-SCHEMES*

(  
  *SHORT-LABEL*\*  
)

>

<!*ATTLIST FM-RISK-MATRIX-COLOR-SCHEMES*

*S* *CDATA* *#IMPLIED*  
*SI* *CDATA* *#IMPLIED*  
*SYSCOND* *CDATA* *#IMPLIED*  
*T* *CDATA* *#IMPLIED*  
*VIEW* *CDATA* *#IMPLIED*

>

<!*ELEMENT FM-RISK-MATRIX-RANKINGS*

(  
  *FM-RISK-MATRIX-RANKING*\*  
)

>

<!*ATTLIST FM-RISK-MATRIX-RANKINGS*

*S* *CDATA* *#IMPLIED*  
*SI* *CDATA* *#IMPLIED*



***SYSCOND CDATA #IMPLIED***

***T CDATA #IMPLIED***

***VIEW CDATA #IMPLIED***

>

***<!ELEMENT FM-RISK-MATRIX-RANKING***

***(  
SHORT-LABEL\*  
)***

>

***<!ATTLIST FM-RISK-MATRIX-RANKING***

***S CDATA #IMPLIED***

***SI CDATA #IMPLIED***

***SYSCOND CDATA #IMPLIED***

***T CDATA #IMPLIED***

***VIEW CDATA #IMPLIED***

>

***<!-- \*\*\*\*\* Actionpriority \*\*\*\*\* -->***

***<!ELEMENT FM-ACTION-PRIORITY-CUBES***

***(  
FM-ACTION-PRIORITY-CUBE\*  
)***

>

***<!ATTLIST FM-ACTION-PRIORITY-CUBES***

***S CDATA #IMPLIED***

***SI CDATA #IMPLIED***

***SYSCOND CDATA #IMPLIED***

***T CDATA #IMPLIED***

***VIEW CDATA #IMPLIED***

>

***<!ELEMENT FM-ACTION-PRIORITY-CUBE***

***(  
LONG-NAME? ,  
SHORT-NAME? ,  
DESC? ,  
CATEGORY? ,  
ADMIN-DATA? ,  
ANNOTATIONS? ,  
FM-RISK-MATRICES? ,  
FM-ACTION-PRIORITY-CUBE-CLUSTERS? ,***

*SDGS?*

)

>

*<!ATTLIST FM-ACTION-PRIORITY-CUBE*

*F-ID-CLASS NMTOKEN #FIXED "FM-ACTION-PRIORITY-CUBE"*

*ID ID #IMPLIED*

*S CDATA #IMPLIED*

*SI CDATA #IMPLIED*

*SYSCOND CDATA #IMPLIED*

*T CDATA #IMPLIED*

*VIEW CDATA #IMPLIED*

*DEFAULT CDATA #IMPLIED*

>

*<!ELEMENT FM-ACTION-PRIORITY-CUBE-CLUSTERS*

(

*FM-ACTION-PRIORITY-CUBE-CLUSTER\**

)

>

*<!ATTLIST FM-ACTION-PRIORITY-CUBE-CLUSTERS*

*S CDATA #IMPLIED*

*SI CDATA #IMPLIED*

*SYSCOND CDATA #IMPLIED*

*T CDATA #IMPLIED*

*VIEW CDATA #IMPLIED*

>

*<!ELEMENT FM-ACTION-PRIORITY-CUBE-CLUSTER*

(

*LONG-NAME? ,*

*SHORT-NAME? ,*

*DESC? ,*

*REMARK? ,*

*CATEGORY? ,*

*ADMIN-DATA? ,*

*ANNOTATIONS? ,*

*FM-SIGNIFICANCE-RANGE? ,*

*FM-INCIDENCE-RANGE? ,*

*FM-DISCOVERY-RANGE? ,*

*FM-ACTION-PRIORITY-NUMBER? ,*

*FM-ACTION-PRIORITY-CUBE-CLUSTERS? ,*

*SDGS?*

```
)
>
<!--ATTLIST FM-ACTION-PRIORITY-CUBE-CLUSTER
    S      CDATA #IMPLIED
    SI     CDATA #IMPLIED
    SYSCOND CDATA #IMPLIED
    T      CDATA #IMPLIED
    VIEW   CDATA #IMPLIED
>
<!--ELEMENT FM-SIGNIFICANCE-RANGE
    (
        LONG-NAME? ,
        SDGS?
    )
>
<!--ATTLIST FM-SIGNIFICANCE-RANGE
    S      CDATA #IMPLIED
    SI     CDATA #IMPLIED
    SYSCOND CDATA #IMPLIED
    T      CDATA #IMPLIED
    VIEW   CDATA #IMPLIED
    BEGIN          CDATA #IMPLIED
    END            CDATA #IMPLIED
>
<!--ELEMENT FM-INCIDENCE-RANGE
    (
        LONG-NAME? ,
        SDGS?
    )
>
<!--ATTLIST FM-INCIDENCE-RANGE
    S      CDATA #IMPLIED
    SI     CDATA #IMPLIED
    SYSCOND CDATA #IMPLIED
    T      CDATA #IMPLIED
    VIEW   CDATA #IMPLIED
    BEGIN          CDATA #IMPLIED
    END            CDATA #IMPLIED
>
<!--ELEMENT FM-DISCOVERY-RANGE
```

```
(
    LONG-NAME? ,
    SDGS?
)
>
<!ATTLIST FM-DISCOVERY-RANGE
    S      CDATA #IMPLIED
    SI      CDATA #IMPLIED
    SYSCOND CDATA #IMPLIED
    T      CDATA #IMPLIED
    VIEW    CDATA #IMPLIED
    BEGIN   CDATA #IMPLIED
    END     CDATA #IMPLIED
>
<!ELEMENT FM-ACTION-PRIORITY-NUMBER
(
    #PCDATA
)
>
<!ATTLIST FM-ACTION-PRIORITY-NUMBER
    S      CDATA #IMPLIED
    SI      CDATA #IMPLIED
    SYSCOND CDATA #IMPLIED
    T      CDATA #IMPLIED
    VIEW    CDATA #IMPLIED
>
<!ELEMENT FM-CHANGE-ANALYSIS-PARAMETERS
(
    LONG-NAME? ,
    SHORT-NAME? ,
    DESC? ,
    CATEGORY? ,
    ADMIN-DATA? ,
    ANNOTATIONS? ,
    SDGS?
)
>
<!ATTLIST FM-CHANGE-ANALYSIS-PARAMETERS
    S      CDATA #IMPLIED
```

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*SI* *CDATA* *#IMPLIED*  
*SYSCOND* *CDATA* *#IMPLIED*  
*T* *CDATA* *#IMPLIED*  
*VIEW* *CDATA* *#IMPLIED*

>

<!-- \*\*\*\*\* DVP&R \*\*\*\*\* -->

<!ELEMENT FM-DESIGN-VERIFICATION-PLANS

(  
*FM-DESIGN-VERIFICATION-PLAN\**  
 )

>

<!ATTLIST FM-DESIGN-VERIFICATION-PLANS

*S* *CDATA* *#IMPLIED*  
*SI* *CDATA* *#IMPLIED*  
*SYSCOND* *CDATA* *#IMPLIED*  
*T* *CDATA* *#IMPLIED*  
*VIEW* *CDATA* *#IMPLIED*

>

<!ELEMENT FM-DESIGN-VERIFICATION-PLAN

(  
*LONG-NAME* ,  
*SHORT-NAME?* ,  
*DESC?* ,  
*CATEGORY?* ,  
*ADMIN-DATA?* ,  
*ANNOTATIONS?* ,  
*FM-USERDEFINED-ATTRIBUTE-REFS?* ,  
*FM-STRUCTURE-ELEMENT-REFS?* ,  
*FM-FORM-HEADER?* ,  
*USER-COVER-SHEETS?* ,  
*FM-DESIGN-VERIFICATION-PLAN-TESTS?* ,  
*FM-VERSION-INFO?* ,  
*SDGS?* ,  
*MISC-DATA?*  
 )

>

<!ATTLIST FM-DESIGN-VERIFICATION-PLAN

*F-ID-CLASS* *NMTOKEN* *#FIXED* "FM-DESIGN-VERIFICATION-PLAN"  
*ID* *ID* *#IMPLIED*

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

<!ELEMENT FM-DESIGN-VERIFICATION-PLAN-TESTS

(  
*FM-DESIGN-VERIFICATION-PLAN-TEST\**  
 )

>

<!ATTLIST FM-DESIGN-VERIFICATION-PLAN-TESTS

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

<!ELEMENT FM-DESIGN-VERIFICATION-PLAN-REPORTS

(  
*FM-DESIGN-VERIFICATION-PLAN-REPORT\**  
 )

>

<!ATTLIST FM-DESIGN-VERIFICATION-PLAN-REPORTS

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

<!ELEMENT FM-DESIGN-VERIFICATION-PLAN-TEST

(  
*LONG-NAME?* ,  
*SHORT-NAME?* ,  
*DESC?* ,  
*CATEGORY?* ,  
*ADMIN-DATA?* ,  
*ANNOTATIONS?* ,  
*FM-USERDEFINED-ATTRIBUTE-REFS?* ,  
*FM-LINK-DESTINATIONS?* ,

*FM-DESIGN-VERIFICATION-PLAN-REPORTS?*,

*FM-VERSION-INFO?*,

*SDGS?*,

*MISC-DATA?*

)

>

<!*ATTLIST FM-DESIGN-VERIFICATION-PLAN-TEST*

*F-ID-CLASS NMTOKEN #FIXED "FM-DESIGN-VERIFICATION-PLAN-TEST"*

*ID ID #IMPLIED*

*S CDATA #IMPLIED*

*SI CDATA #IMPLIED*

*SYSCOND CDATA #IMPLIED*

*T CDATA #IMPLIED*

*VIEW CDATA #IMPLIED*

>

<!*ELEMENT FM-DESIGN-VERIFICATION-PLAN-REPORT*

(

*LONG-NAME?*,

*SHORT-NAME?*,

*DESC?*,

*CATEGORY?*,

*ADMIN-DATA?*,

*ANNOTATIONS?*,

*FM-USERDEFINED-ATTRIBUTE-REFS?*,

*FM-LINK-DESTINATIONS?*,

*FM-VERSION-INFO?*,

*SDGS?*,

*MISC-DATA?*

)

>

<!*ATTLIST FM-DESIGN-VERIFICATION-PLAN-REPORT*

*F-ID-CLASS NMTOKEN #FIXED "FM-DESIGN-VERIFICATION-PLAN-REPORT"*

*ID ID #IMPLIED*

*S CDATA #IMPLIED*

*SI CDATA #IMPLIED*

*SYSCOND CDATA #IMPLIED*

*T CDATA #IMPLIED*

*VIEW CDATA #IMPLIED*

>

```

<!-- ***** Eight D Reports ***** -->
<!ELEMENT FM-EIGHT-D-REPORTS
(
  FM-EIGHT-D-REPORT*
)
>
<!ATTLIST FM-EIGHT-D-REPORTS
  S      CDATA  #IMPLIED
  SI     CDATA  #IMPLIED
  SYSCOND CDATA  #IMPLIED
  T      CDATA  #IMPLIED
  VIEW   CDATA  #IMPLIED
>
<!ELEMENT FM-EIGHT-D-REPORT
(
  LONG-NAME,
  SHORT-NAME?,
  DESC?,
  CATEGORY?,
  ADMIN-DATA?,
  ANNOTATIONS?,
  FM-USERDEFINED-ATTRIBUTE-REFS?,
  FM-EIGHT-D-REPORT-ENTRIES*,
  FM-FORM-HEADER?,
  FM-VERSION-INFO?,
  SDGS?,
  MISC-DATA?
)
>
<!ATTLIST FM-EIGHT-D-REPORT
  F-ID-CLASS  NMTOKEN #FIXED "FM-EIGHT-D-REPORT"
  ID          ID      #IMPLIED
  S           CDATA   #IMPLIED
  SI          CDATA   #IMPLIED
  SYSCOND     CDATA   #IMPLIED
  T           CDATA   #IMPLIED
  VIEW        CDATA   #IMPLIED
>
<!ELEMENT FM-EIGHT-D-REPORT-ENTRIES

```



```

(
  FM-EIGHT-D-REPORT-ENTRY*
)
>
<!--ATTLIST FM-EIGHT-D-REPORT-ENTRIES
  S      CDATA #IMPLIED
  SI      CDATA #IMPLIED
  SYSCOND CDATA #IMPLIED
  T      CDATA #IMPLIED
  VIEW    CDATA #IMPLIED
>
<!--ELEMENT FM-EIGHT-D-REPORT-ENTRY
(
  LONG-NAME? ,
  SHORT-NAME? ,
  DESC? ,
  CATEGORY? ,
  ADMIN-DATA? ,
  ANNOTATIONS? ,
  FM-USERDEFINED-ATTRIBUTE-REFS? ,
  FM-LINK-DESTINATIONS? ,
  FM-VERSION-INFO? ,
  SDGS? ,
  MISC-DATA?
)
>
<!--ATTLIST FM-EIGHT-D-REPORT-ENTRY
  F-ID-CLASS  NMTOKEN #FIXED "FM-EIGHT-D-REPORT-ENTRY"
  ID          ID      #IMPLIED
  S          CDATA    #IMPLIED
  SI         CDATA    #IMPLIED
  SYSCOND    CDATA    #IMPLIED
  T          CDATA    #IMPLIED
  VIEW       CDATA    #IMPLIED
>
<!-- ***** FmeaScopeReports *****-->

<!--ELEMENT FM-SCOPE-REPORTS
(

```

***FM-SCOPE-REPORT\****

)

>

***<!ATTLIST FM-SCOPE-REPORTS***

***S CDATA #IMPLIED***

***SI CDATA #IMPLIED***

***SYSCOND CDATA #IMPLIED***

***T CDATA #IMPLIED***

***VIEW CDATA #IMPLIED***

>

***<!ELEMENT FM-SCOPE-REPORT***

(

***LONG-NAME,***

***SHORT-NAME?,***

***DESC?,***

***CATEGORY?,***

***ADMIN-DATA?,***

***ANNOTATIONS?,***

***FM-USERDEFINED-ATTRIBUTE-REFS?,***

***FM-SCOPE-REPORT-ENTRIES?,***

***FM-SCOPE-REPORT-CATEGORIES?,***

***FM-FORM-HEADER?,***

***FM-VERSION-INFO?,***

***SDGS?,***

***MISC-DATA?***

)

>

***<!ATTLIST FM-SCOPE-REPORT***

***F-ID-CLASS NMTOKEN #FIXED "FM-SCOPE-REPORT"***

***ID ID #IMPLIED***

***S CDATA #IMPLIED***

***SI CDATA #IMPLIED***

***SYSCOND CDATA #IMPLIED***

***T CDATA #IMPLIED***

***VIEW CDATA #IMPLIED***

>

***<!ELEMENT FM-SCOPE-REPORT-CATEGORIES***

(

***FM-USERDEFINED-ATTRIBUTE-REF\****

)

>

<!*ATTLIST FM-SCOPE-REPORT-CATEGORIES*

*S CDATA #IMPLIED*

*SI CDATA #IMPLIED*

*SYSCOND CDATA #IMPLIED*

*T CDATA #IMPLIED*

*VIEW CDATA #IMPLIED*

>

<!*ELEMENT FM-SCOPE-REPORT-ENTRIES*

(

*FM-SCOPE-REPORT-ENTRY\**

)

>

<!*ATTLIST FM-SCOPE-REPORT-ENTRIES*

*S CDATA #IMPLIED*

*SI CDATA #IMPLIED*

*SYSCOND CDATA #IMPLIED*

*T CDATA #IMPLIED*

*VIEW CDATA #IMPLIED*

>

<!*ELEMENT FM-SCOPE-REPORT-ENTRY*

(

*LONG-NAME?*,

*SHORT-NAME?*,

*DESC?*,

*CATEGORY?*,

*ADMIN-DATA?*,

*ANNOTATIONS?*,

*FM-USERDEFINED-ATTRIBUTE-REFS?*,

*FM-STRUCTURE-ELEMENT-REF?*,

*FM-SCOPE-REPORT-REFERENCE-INFO?*,

*FM-SCOPE-REPORT-INFORMATION-SOURCE?*,

*FM-SCOPE-REPORT-REFERENCE-FMEA?*,

*FM-SCOPE-REPORT-NOTES?*,

*FM-SCOPE-REPORT-RATINGS?*,

*FM-VERSION-INFO?*,

*SDGS?*

)

>

<!*ATTLIST FM-SCOPE-REPORT-ENTRY*

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```

F-ID-CLASS NMTOKEN #FIXED "FM-SCOPE-REPORT-ENTRY"
ID ID #IMPLIED
S CDATA #IMPLIED
SI CDATA #IMPLIED
SYSCOND CDATA #IMPLIED
T CDATA #IMPLIED
VIEW CDATA #IMPLIED
NO-CONSIDERATION-REQUIRED (TRUE | FALSE) #IMPLIED
>
<!/ELEMENT FM-SCOPE-REPORT-REFERENCE-INFO
(
  LABEL?
)
>
<!/ATTLIST FM-SCOPE-REPORT-REFERENCE-INFO
  S CDATA #IMPLIED
  SI CDATA #IMPLIED
  SYSCOND CDATA #IMPLIED
  T CDATA #IMPLIED
  VIEW CDATA #IMPLIED
>
<!/ELEMENT FM-SCOPE-REPORT-INFORMATION-SOURCE
(
  LABEL?
)
>
<!/ATTLIST FM-SCOPE-REPORT-INFORMATION-SOURCE
  S CDATA #IMPLIED
  SI CDATA #IMPLIED
  SYSCOND CDATA #IMPLIED
  T CDATA #IMPLIED
  VIEW CDATA #IMPLIED
>
<!/ELEMENT FM-SCOPE-REPORT-REFERENCE-FMEA
(
  LABEL?
)
>
<!/ATTLIST FM-SCOPE-REPORT-REFERENCE-FMEA
  S CDATA #IMPLIED

```

*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

**<!--ELEMENT FM-SCOPE-REPORT-NOTES**

(  
*ANNOTATIONS?*  
 )

>

**<!--ATTLIST FM-SCOPE-REPORT-NOTES**

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

**<!--ELEMENT FM-SCOPE-REPORT-RATINGS**

(  
*MISC-DATA?*  
 )

>

**<!--ATTLIST FM-SCOPE-REPORT-RATINGS**

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

**<!-- \*\*\*\*\* SpecialCharacteristicsReport \*\*\*\*\* -->**

**<!--ELEMENT FM-CRITICAL-CHARACTERISTICS-REPORTS**

(  
*FM-CRITICAL-CHARACTERISTICS-REPORT\**  
 )

>

**<!--ATTLIST FM-CRITICAL-CHARACTERISTICS-REPORTS**

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*

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*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

*<!ELEMENT FM-CRITICAL-CHARACTERISTICS-REPORT*

*(*  
*LONG-NAME,*  
*SHORT-NAME?,*  
*DESC?,*  
*CATEGORY?,*  
*ADMIN-DATA?,*  
*ANNOTATIONS?,*  
*FM-USERDEFINED-ATTRIBUTE-REFS?,*  
*FM-STRUCTURE-ELEMENT-REF?,*  
*FM-CRITICAL-CHARACTERISTICS-REPORT-ENTRIES?,*  
*FM-FORM-HEADER?,*  
*FM-VERSION-INFO?,*  
*SDGS?,*  
*MISC-DATA?*  
*)*

>

*<!ATTLIST FM-CRITICAL-CHARACTERISTICS-REPORT*

*F-ID-CLASS NMTOKEN #FIXED "FM-CRITICAL-CHARACTERISTICS-REPORT"*  
*ID ID #IMPLIED*  
*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

*<!ELEMENT FM-CRITICAL-CHARACTERISTICS-REPORT-ENTRIES*

*(*  
*FM-CRITICAL-CHARACTERISTICS-REPORT-ENTRY\**  
*)*

>

*<!ATTLIST FM-CRITICAL-CHARACTERISTICS-REPORT-ENTRIES*

*S CDATA #IMPLIED*  
*SI CDATA #IMPLIED*  
*SYSCOND CDATA #IMPLIED*  
*T CDATA #IMPLIED*  
*VIEW CDATA #IMPLIED*

>

<!*ELEMENT FM-CRITICAL-CHARACTERISTICS-REPORT-ENTRY*

```
(
  LONG-NAME? ,
  SHORT-NAME? ,
  DESC? ,
  CATEGORY? ,
  ADMIN-DATA? ,
  ANNOTATIONS? ,
  FM-USERDEFINED-ATTRIBUTE-REFS? ,
  FM-VERSION-INFO? ,
  SDGS?
)
```

>

<!*ATTLIST FM-CRITICAL-CHARACTERISTICS-REPORT-ENTRY*

```
F-ID-CLASS  NMTOKEN  #FIXED "FM-CRITICAL-CHARACTERISTICS-REPORT-ENTRY"
ID         ID        #IMPLIED
S          CDATA     #IMPLIED
SI         CDATA     #IMPLIED
SYSCOND    CDATA     #IMPLIED
T          CDATA     #IMPLIED
VIEW       CDATA     #IMPLIED
```

>

<!-- *miscellaneous -->*

<!*ELEMENT FM-SYMBOLIC-DATE-REFS*

```
(
  FM-SYMBOLIC-DATE-REF*
)
```

>

<!*ATTLIST FM-SYMBOLIC-DATE-REFS*

```
S          CDATA     #IMPLIED
SI         CDATA     #IMPLIED
SYSCOND    CDATA     #IMPLIED
T          CDATA     #IMPLIED
VIEW       CDATA     #IMPLIED
```

>

<!*ELEMENT FM-ID-NUMBER*

```
(
  #PCDATA
)
```

>

<!*ATTLIST FM-ID-NUMBER*

```
S          CDATA     #IMPLIED
SI         CDATA     #IMPLIED
```

***SYSCOND CDATA #IMPLIED***  
***T CDATA #IMPLIED***  
***VIEW CDATA #IMPLIED***

>

<!***ELEMENT FM-ERROR-PROOFING-METHODS***

(  
***FM-ACTION-REF\****  
 )

>

<!***ATTLIST FM-ERROR-PROOFING-METHODS***

***S CDATA #IMPLIED***  
***SI CDATA #IMPLIED***  
***SYSCOND CDATA #IMPLIED***  
***T CDATA #IMPLIED***  
***VIEW CDATA #IMPLIED***

>

<!***ELEMENT FM-SE-SAFETY-GOALS***

(  
***FM-FUNCTION-REF\****  
 )

>

<!***ATTLIST FM-SE-SAFETY-GOALS***

***S CDATA #IMPLIED***  
***SI CDATA #IMPLIED***  
***SYSCOND CDATA #IMPLIED***  
***T CDATA #IMPLIED***  
***VIEW CDATA #IMPLIED***

>

<!***ELEMENT FM-AIAGDESCS***

(  
***DESC\****  
 )

>

<!***ATTLIST FM-AIAGDESCS***

***S CDATA #IMPLIED***  
***SI CDATA #IMPLIED***  
***SYSCOND CDATA #IMPLIED***  
***T CDATA #IMPLIED***  
***VIEW CDATA #IMPLIED***

>



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## 4. General description and changelog

The general description lists new unmodeled fields that were added compared to version 2.2.1.

### ***Other unmodeled values (SDGS)***

#### **FM-STRUCTURE**

##### **Unmodeled via SDGS:**

milOperatingTime: Fault tree extension MB required (time of consideration)

operatingTime: Fault tree extension MB required (time of consideration)

isMainStructure: Indicates whether the structure is a main structure within the associated variants

numberOfInstallations: Number of installations

userDefinedDegreeOfProgress: Progress of project

#### **FM-STRUCTURE-ELEMENT**

##### **Unmodeled via SDGS:**

actionType: Classification

sortedOrder: Sorting order of assigned functions and characteristics

#### **FM-FAULT**

##### **Unmodeled via SDGS:**

milSignificance: S rating (MIL)

milDataSource: MIL data source for Lambda P

occurrenceCount: ppm per time unit

timeUnit: Number of time units

timeWindow: Time unit (e.g., years)

notesSignificance: Notes on S rating

#### **FM-ACTION**

##### **Unmodeled via SDGS:**

supplementaryText: Deadline properties of actions “descriptive text”

isGlobal: Is “true” for global actions

recordingMethod: Recording method (available only in the corresponding Control Plan add-on)

isFmedaRelevant: Is considered in the FMEDA form

#### **FM-ACTION-TYPE**

##### **Unmodeled via SDGS:**

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isGlobal: Indicates whether the type is used for global actions

## **FM-CHARACTERISTIC**

**Unmodeled via SDGS:**

isFailureRecordRelevant: Properties of characteristic attributes “failure record”

isInspectionRecordRelevant: Properties of characteristic attributes “test report”

Within the bounds of PCP-ISO/TS 16949:

correctiveActionObject: Corrective action

failureSafetyObject: Failure safety

## **FM-FUNCTION-TYPE/FM-CHARACTERISTIC-TYPE**

**Unmodeled via SDGS:**

assessment: criticalFunction | sideFunction | riskyFunction | mainFunction

## **FM-MEASURE-SEQUENCE (action sequences in ANALYSISDESKTOP)**

**Unmodeled via SDGS:**

responsibleIdentity: For responsibilities, the identity of the responsible person is stored in addition to his/her name, so that the responsible person, if available, can be reconstructed in case of a roundtrip.

## **FM-TASK-SET**

**Modeled via MISC-DATA:**

notesIncidence: Multilingual note text on O rating

notesDiscovery: Multilingual note text on D rating

notesRisk: Multilingual note text on RPN

## **TEAM-MEMBER/FM-TEAM**

In order to keep the requests for changes compared to the predefined ASAM elements at the possible minimum, the element FM-VERSION-INFO was forgone at this point. That is why poolTypeInfo (element from a structure version) is stored in the SDGS.

LdapId: The ID used in LDAP, if available

## **FM-CATEGORY-REFS**

The concept of user-defined attributes was generalized to the effect that so-called action categories, note categories, and function categories were introduced. Those categories are implemented similarly to user-defined attributes. That is why the FM-CATEGORY-REFS contain a number of FM-USERDEFINED-ATTRIBUTE-REF. Like user-defined attributes, the categories are contained in the container FM-USERDEFINED-ATTRIBUTES.

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## PIM bookmarks

The stored PIM bookmarks can be optionally (workstation settings) exported into XML. They are not defined initially as separate elements and are exported into the SDG container in <SDG SI="DICTIONARY" GID="PimEntryPool">.

Each bookmark (example of the public PIM) has the following structure:

```
<SDG SI="DICTIONARY" GID="U72BE91E0A00091">
  <SD SI="String" GID="identity">U72BE91E0A00091</SD>
  <SDG SI="DICTIONARY" GID="name">
    <SD SI="UnicodeString" GID="DE">User-defined bookmark</SD>
  </SDG>
  <SD SI="String" GID="parent">U72BE91CC300045</SD>
  <SDG SI="DICTIONARY" GID="textRaw">
    <SD SI="EMBEDDED-HTML" GID="DE">&lt;BODY&gt;Text of the user-defined
bookmark.&lt;/BODY&gt;</SD>
  </SDG>
  <SD SI="Symbol" GID="type">public</SD>
</SDG>
```

## FM-IEC-PARAMETER

This is a container of Functional Safety values. The Functional Safety modeling was enhanced to the effect that the safety goal is used as an explicit function, which again owns five definitely defined failures. They are the categories of failures in the failure net that lead to the safety goal not being achieved.

Therefore, the following references (ID) to failures were added to the previously possible values:

- saveFailureAnchor (safety goal not achieved)
- singlePointFailureAnchor (hazardous single-point failure)
- multiplemultiplePointFailureAnchor (hazardous multiple-point failure)
- safetyGoalFailure (safe failure)
- notSafetyRelevantAnchor (NSR not safety-relevant failure)

The functions and failures mentioned are assigned with the value FM-SAFETY-GOAL-FUNCTION or FM-SAFETY-GOAL-FAILURE in the element <CATEGORY>.

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## ***Field assignments***

In IQ FMEA, the files Felddoku.fme and Felddoku.xml are provided among others as examples in the Data/XML subdirectory. In the Felddoku.fme file, the XML element names, a sequential number, and the ID used in the XML are assigned as names. These names are also contained in the Felddoku.xml file, so that the unambiguous assignment, how to interpret XML elements and attributes in the IQ FMEA, can be reproduced.

## ***Description of field names in header data and coversheets***

### **General:**

Field name internal => Field name in IQ FMEA (user interface)

The field contents are the values of the respective XML elements (appear in user-coversheet, fm-form-header, and misc-data)

### **Header data and other forms:**

Field => Field content pairs are in general stored in SDGs or MISC:

Coversheets => user-coversheets

Header data => fm-form-header

### **Control Plan header:**

headerPrototype => Prototype

headerPrelaunch => Pre-series

headerProduction => Series

headerPlanNumber => Control Plan number

headerPartNumber => Part number

headerPartName => Part name/description

headerSupplierName => Supplier/location

headerSupplierCode => Supplier code

headerKeyContact => Contact/phone number

headerCoreTeam => Core team

headerSupplierDate => Supplier/location approval/date

headerOtherApproval => Date/other approval (if necessary)

headerDateCreated => Date of initial approval

headerDateModified => Date of modification

headerEngineerApproval => Date/Approval by customer engineering (if necessary)

headerQualityApproval => Date/Approval by customer quality department (if necessary)

headerOther => Date/Other approval (if necessary)

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headerCustomer => Customer

headerCustomerCode => Customer code

headerEngineeringChangeLevel => Engineering change level

## Form header:

headerStructureType => Type

headerFmeaNumber => Number

headerTypeModel => Type/model/manufacture/batch

headerModelYears => Model year(s)/vehicle(s)

headerStructItemCode => Item code

headerStructState => Revision state

headerStructResponsible => Responsible

headerStructCompany => Company

headerStructCreated => Created

headerStructureElement => FMEA/system element

headerFmeaResponsible => Responsible

obsolete: headerProcessResponsible => Process responsibility (value from headerFmeaResponsible)

obsolete: headerDesignResponsible => Design responsibility (value from headerFmeaResponsible)

headerKeyDate => Completion date

headerPreparedBy => Prepared by

headerFmeaState => Revision state

headerFmeaCompany => Company

headerDescription11 => Field 1

headerDescription12 => Field 2

headerDescription13 => Field 3

headerDescription21 => Field 4

headerDescription22 => Field 5

headerDescription23 => Field 6

headerFmeaNumber => Number

headerTeam => Team

headerItemCode => Number

headerDateCreated => Created

headerDateModified => Modified

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headerProduct => Product

headerFmeaItemCode => Work step number

headerSubsystem => Subsystem

headerDrawings => Drawings

headerSupplier => Supplier/location

headerFmeaType => FMEA type

headerIssue => Issue

headerFmeaDept => DPT.

headerFmeaCreated => created

headerDocuments => Documents

headerDiagrams => Function diagrams

headerFmeaModified => Modified

headerComponent => Component

headerSystem => System

headerSpecification => Specification

headerAircraft => Aircraft

Specific header data fields for AIAG/VDA:

headerAiagVdaConfidentialityLevel => Confidentiality level

headerAiagVdaCustomerName => Customer name

headerAiagVdaLocation => Engineering location

headerAiagVdaIdentification => DFMEA ID

### **Process Flow Diagram header:**

headerProgram => Program

headerPartNumber => Part number

headerPartDesc => Part description

headerRevisionLevel => Revision state

headerTreatedBy => Edited by

headerDateCreated => Created

headerDateModified => Modified

### **Coversheet:**

actions => 3. Actions

distributor => Distributor

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enclosure => 4. Enclosures

originalFile => Originally filed by

result => 2. Result

task => 1. Task

workGroup => Workgroup

headerCustomerDrawingIssue => Customer drawing issue

headerCustomerDrawingNumber => Customer drawing number

headerCustomerNumber => Customer(s)

headerCustomerPartNumber => Customer part number

headerDrawingIssue => Issue

headerDrawingNumber => Drawing number

headerEditionNumber => Issue no.

headerFmeaPages => FMEA pages

headerNotes => Notes

headerFmeaNumber => FMEA no.

headerFmeaType => FMEA type

headerItemCode => Number

headerItemNumber => Item no.

headerProduct => Production

headerRevisionLevel => Revision level

Examined topics (values at SE):

revisionLevel => Revision state

drawingNumber => Drawing number

customerPartNumber => Customer part number

customerDrawingNumber => Customer drawing number

customerDrawingIssue => Customer issue

drawingIssue => Issue

## Header data PCP:

HeaderNumber => Number

headerIssueDate => Issue date

headerPartName => Part name/Description

headerKeyContact => Key contact/Phone

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headerOrganization => Organization name/site designation

headerDateModifiedPcp => Revision date

headerPartNumber => Part number

headerAuthor => Author, issued by

## Coversheet PCP:

HeaderAttachments => Attachments

headerCustomerRequirements => Customer information (customer requirements)

headerEngineeringChangeLevel => Engineering change level

headerFmeaNumberPcp => FMEA number

headerResponsibleDepartment => Responsible department

headerSpecialCharacteristics => Special characteristics

## Variant-specific values in fm-variant-misc-data

itemCode => Item number

deviation => Characteristics: deviation

operator => Characteristics: operator

unit => Characteristics: unit

value => Characteristics: value

significance => S rating

discovery => D rating

incidence => O rating

deadline => Deadline

responsible => Responsible

classification => Classification

FORMHEADERID => Identity of variant-specific fields in header data

COVERSHEETID => Identity of variant-specific fields on coversheets

## Classes of header data and coversheets:

Overview of all additional classes of header data and coversheets, which may be variant-specific and for which an identity is stored:

FmeaObjectInfoData

Fmea8DReport

FmeaBasicData

FmeaControlPlanHeader

FmeaCoverSheet

FmeaDrbfmHeader



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FmeaEtaHeader

FmeaEvaluationHeader

FmeaFormHeader

FmeaLogData

FmeaProcessFlowHeader

FmeaQA1Header

FmeaStructureHeader

## Document settings (doc-type-info):

dbOptionCalculateClassification => Calculate classification in FMEA form automatically

dbOptionControlPlanRequirementNet => Control Plan/Process Flow Diagram: Indication of process characteristics is based on characteristics/function net

dbOptionCsaWebCopyDatabase => Store database in archive

dbOptionCsaWebCreateHtml => Create Web Publisher export files

dbOptionCssModuleUpdateKeepItemCode => Keep item number/work step number when updating a module

dbOptionCssModuleUpdateKeepNumber => Keep number when updating a module

dbOptionDefaultDeadlineStatus => Standard deadline status

dbOptionFullyPasswordProtected => If the option is enabled, a password must be assigned to every newly created person

dbOptionFunctionEnumAsInt => Numbering of functions with figures

dbOptionClassificationAssignmentMode => Classification (C column) with failure mode

dbOptionClassificationAssignmentCause => Classification (C column) with failure cause

dbOptionClassificationAssignmentEffect => Classification (C column) with failure effect

dbOptionRevisionStateFirstHasDeadline => Initial state is to have deadline

dbOptionRevisionStateFirstHasResponsible => Initial state is to have responsible person

dbOptionNotesCategory => Set notes category

dbOptionParenthesisForRisk => RPN in parentheses (not completed)

dbOptionReadOnlyRecommended => Read-only recommended

dbOptionShowChecklist => Show notes column "Check list"

dbOptionTypeHierarchyNameRepresentation => Representation of hierarchical name

dbOptionUseTypeHierarchy => Use hierarchy

dbOptionUseCalWeekForDeadline => Show deadlines in calendar weeks

dbOptionRequirementUseUpperLowerLimit => Use specification of characteristic "lower limit / upper limit" instead of "deviation"

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dbOptionShowMeasureSupplementaryText => Show supplementary text for actions as name affix

dbOptionControlPlanMethodStrategy => Control method/reaction plan

dbOptionControlPlanNew => Use new control plan strategy

dbOptionFunctionalSafetySilType => Determination of SIL according to

localRefPath => Reference directory of the current document

showRiskForVisibleEffectsOnly => Calculate RPN from the effects visible in the form

effectsView => Describes the strategy applied to show the effects in the form. This is the basis of the calculation of the RPN, if the option showRiskForVisibleEffectsOnly is enabled, and can be one of the following values:

- effects => All effects
- effectsRejectDuplicates => All effects, but filter out redundant effects
- effectsDirect => Only direct effects
- effectsTop => Only top-level effects
- effectsDirectTop => Only direct and top-level effects
- effectsMaxSignificance => Only the effects with the highest S rating

causesView => Describes the strategy applied to show the causes in the form and can be one of the following values:

- causesAll => All causes
- causesDirect => Only direct causes
- causesLeaves => Only root causes
- causesDirectLeaves => Only direct and root causes

## Meeting logs:

There is a number of MeetingLogs for each fme. They are all summarized in a sub-tree below SpecialData. The value (GID) of this is fmeaMeetingLogs. A sub-tree with the value (GID) fmeaMeetingLog is created for each MeetingLog. They contain values for the following fields (assigned by the program):

- timeStamp (time stamp upon export)
- identity (serves as identification characteristic)

or modified via the interface:

- location
- headerNotes
- headerDateModified
- headerSubLogo
- timeStampStart

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- timeStampEnd

Each of those MeetingLogs is represented via an SDG, which then again contains an SDG that contains the individual MeetingLog entries. Each of these entries in the MeetingLog consists of the following fields (not all of them must be populated):

- identity
- itemId
- itemClass
- itemString
- itemIcon
- comment
- style
- entryType
- timeStampRaw

These “MeetingLogEntries” again are implemented via separate SDGs (subordinate in the tree).

Note: As the export of MeetingLogs may take up a lot of space in the XML file and also takes a lot of time (depending on the data volume), you can use the workstation settings (HTML/XML-EXPORT) to set whether to export the logs or not.

## Shown actions:

Actions can be shown in the form. That means, these shown actions are not anchored to this revision state, but to a failure mode or failure effect within this cause and effect chain. This is noted with the revision state intended to show the shown action. As the identical failure cause may occur in different locations within the form, this “note” shall indicate, to which failure effect it refers and its rating within the context. They are shown via the elements FM-EXTERNAL-ACTIONS-DETECT (detection) and FM-EXTERNAL-ACTIONS-OCCURRENCE (prevention) below FM-TASK-SET. Each shown action contains the three mentioned values FM-ACTION-REF, FM-FAULT-REF, and RISK-PRIORITY-FACTOR.

## Rules to calculate the RPN:

As the RPN of a failure cause is not unambiguous, it must be calculated in relation to the context. That means that the actions of a failure cause may have a different RPN in each location where they are connected to a failure mode (because the S rating of the failure effect may be different). If only one RPN for an action is to be used for the analyses, then the maximum of all possible RPN should be used (to be on the safe side, so to speak). Nevertheless, we have to point out that the reduced information in that case will lead to incorrect “output“ in all additional anchoring locations (with a lesser RPN).

## Postponing deadlines:

If the document setting “Initial state has deadline” (dbOptionMeasureChangeFirstHasDeadline) is disabled, you cannot enter postponements. In that case, the action is regarded as completed and an

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fm-history-state is created with the attribute si="statusChange", the current time stamp (NOT the deadline, but the time of creation in that case) as fm-task-schedule, completed as fm-action-state, and with the Misc value "finishedHistoryInfo".

If the document setting "Initial state has deadline" is enabled, then the same applies initially to all actions of the initial state (as they are by definition completed). If they are set to "not completed", no fm-history-state would be created initially, unless a deadline is agreed or postponed. The actions will then behave as if they were anchored to a revision state.

When deadlines are assigned, an fm-history-state with the attribute si="define" and the current time stamp (NOT the deadline, but in that case the time of the deadline assignment) is created initially as fm-task-schedule for actions in revision states. In case of postponement, another fm-history-state with the attribute si="postpone" and the PREVIOUS deadline in fm-task-schedule is created.

If only the status is changed, then no fm-history-state is created. If the same deadline is entered, no additional fm-history-state is created either. If the deadline is later reset to a deadline that had been defined previously, then an fm-history-state is created.

If the document setting "Initial state has deadline" is set to inactive again, the assigned deadline/status applies to the actions of the initial state anyway and the fm-history-states created previously are exported.

If an action is set to completed, then the final fm-history-state with the attribute si="statusChange" is created. The date of completion is stored as fm-task-schedule, the PREVIOUS status as fm-action-state, and additionally the Misc value "finishedHistoryInfo" (see above).

Explanation:

- "Initial state" is also called the first revision state (FM-TASK-SETS).
- Revision state is the state of an action after the initial state.

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## **5. Changelog**

*Changelog of DTD:*