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Mr. Michael Truss
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Re: Questions and Comments regarding 3GPP SA5 XSD files

Dear Mr. Truss,

3GPP2 TSG-S WG5 thanks 3GPP SA5 for the response liaison received at our December 2004 meeting. We are looking forward to the resolution of the outstanding topics.

Please note in addition that in the 3GPP2 Revision B specifications, we intend to reuse the 3GPP TS 32.615 and 3GPP TS.625 XSD files as part of our Bulk CM IRP support. In doing this, 3GPP2 TSG-S WG5 discovered various issues, leading to the questions and comments provided below.

1. *Interdependencies between XSD Documents*

    The 3GPP2 Bulk CM IRP Revision B solution uses the R5 3GPP TS 32.615 configData.xsd and 3GPP TS 32.625 genericNrm.xsd XSD Documents unchanged. This requires that 3GPP2 include the 3GPP TS 32.635 coreNrm.xsd, 3GPP TS 32.645 utranNrm.xsd and 3GPP TS 32.655 geranNrm.xsd XSD Documents, even though they are not used by 3GPP2. These need to be included because they are referenced in configData.xsd.

    3GPP2 would like 3GPP SA5 to define an R6 (and beyond) solution so that only the XSD Documents that are needed have to be included. In 3GPP2 Revision B, this is accomplished by specifying an XSD Document that only sets up the namespaces. This separates namespace inclusion from XSD data. The other XSD Documents only reference the XSD Documents that they need. This is even more important as the number of XSD Documents specified increases.

This can also be important in 3GPP SA5 for vendors that only use some of the XSD Documents.

In 3GPP2 Revision B, we define the following XSD Document, called PP2ConfigData.xsd:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
3GPP2 S.S0028-B Base XSD
Bulk CM IRP Configuration data file base XML
PP2ConfigData.xsd
-->
<schema xmlns="http://www.w3.org/2001/XMLSchema"
xmlns:xx="http://www.3gpp.org/ftp/specs/archive/32_series/32.615#configData"
xmlns:xn="http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm" xmlns:xg="PP2GenericNRM"
xmlns:xi="PP2InvSignNRM" xmlns:xc="PP2CoreNRM" xmlns:xr="PP2RadioAccessNRM"
xmlns:xsm="PP2StateManagementIRP" targetNamespace="PP2ConfigData" elementFormDefault="qualified">
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.615#configData"/>
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm"/>
    <import namespace="PP2GenericNRM"
schemaLocation="ftp://ftp.3gpp2.org/TSGS/Working/TSG-S_WG5/S.S0028-B_XSD/PP2GenericNRM.xsd"/>
    <import namespace="PP2InvSignNRM"
schemaLocation="ftp://ftp.3gpp2.org/TSGS/Working/TSG-S_WG5/S.S0028-B_XSD/PP2InvSignNRM.xsd"/>
    <import namespace="PP2CoreNRM"
schemaLocation="ftp://ftp.3gpp2.org/TSGS/Working/TSG-S_WG5/S.S0028-B_XSD/PP2CoreNRM.xsd"/>
    <import namespace="PP2RadioAccessNRM"
schemaLocation="ftp://ftp.3gpp2.org/TSGS/Working/TSG-S_WG5/S.S0028-B_XSD/PP2RadioAccessNRM.xsd"/>
    <import namespace="PP2StateManagementIRP"
schemaLocation="ftp://ftp.3gpp2.org/TSGS/Working/TSG-S_WG5/S.S0028-
B_XSD/PP2StateManagementIRP.xsd"/>
</schema>
```

2. *Well formed XSD error in 3GPP SA5 coreNrm.xsd*

In 3GPP TS 32.635 Version 5.4, there is a well-form XSD Document error in coreNrm.xsd. The following segment:

```xml
<element name="SgsnFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">
    <complexType>
        <complexContent>
            <extension base="xn:NrmClass">
                <sequence>
                    <element name="attributes" minOccurs="0">
                        <complexType>
                            <all>
                                <element name="userLabel" minOccurs="0"/>
                                <element name="mccList" minOccurs="0"/>
                                <element name="mncList" minOccurs="0"/>
                                <element name="lacList" minOccurs="0"/>
                                <element name="racList" minOccurs="0"/>
                                <element name="sacList" minOccurs="0"/>
                                <element name="sgsnId" minOccurs="0"/>
                            </all>
                        </complexType>
                    </element>
                    <choice minOccurs="0" maxOccurs="unbounded">
```

```
                    <element name="sgsnFunctionGSMcell"/>
                    <element name="cn: sgsnFunctionExternalGSMcell"/>
                    <element ref="xn:VsDataContainer"/>
                </choice>
            </sequence>
        </extension>
    </complexContent>
  </complexType>

</element>
```

should be adjusted as follows:

```
<element name="SgsnFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">
    <complexType>
        <complexContent>
            <extension base="xn:NrmClass">
                <sequence>
                    <element name="attributes" minOccurs="0">
                        <complexType>
                            <all>
                                <element name="userLabel" minOccurs="0"/>
                                <element name="mccList" minOccurs="0"/>
                                <element name="mncList" minOccurs="0"/>
                                <element name="lacList" minOccurs="0"/>
                                <element name="racList" minOccurs="0"/>
                                <element name="sacList" minOccurs="0"/>
                                <element name="sgsnId" minOccurs="0"/>
                            </all>
                        </complexType>
                    </element>
                    <choice minOccurs="0" maxOccurs="unbounded">
                        <element name="sgsnFunctionGSMcell"/>
                        <element name="sgsnFunctionExternalGSMcell"/>
                        <element ref="xn:VsDataContainer"/>
                    </choice>
                </sequence>
            </extension>
        </complexContent>
    </complexType>
</element>
```

3. *Recommendation to report multiple XSD version in File Format Version, not just one*

The File Format Version string is used in XML configuration data files to define the 3GPP TS 32.615 specification version. In 3GPP2, this is amended to also include the 3GPP2 specification version.

However, in 3GPP and in 3GPP2 there are actually multiple XSD Documents that may be included, each of which may change. As an example, changes to the 3GPP TS 32.625 genericNrm.xsd XSD Document are not reflected in the File Format Version. The IRP Agent

and the IRP Manager need to use the same XSD Document version for all of the XSD Documents.

3GPP2 proposes that the File Format Version string support a sequence of specification versions, one for each XSD Document that is referenced. This allows the 3GPP and 3GPP2 specifications to be added to the File Format Version and it allows all of the referenced XSD documents to be verified.

4. *VsData XSD well form error*

3GPP2 has been unable to get any of the VsData examples in the 3GPP TS 32.615 to function without XSD well form errors. We believe that the issue is due to the definition used in genericNrm.xsd. 3GPP2 recommends that the genericNrm.xsd definition for vsData be changed in R5 (and beyond) from:

```xml
<element name="vsData">
    <complexType/>
</element>
```

to

```xml
<element name="vsData" abstract="true"/>
```

This could result in the following Vendor-specific XSD file:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
Configuration data file vendor-specific XML schema example
VsDataVendor.xsd
-->
<schema elementFormDefault="qualified" xmlns="http://www.w3.org/2001/XMLSchema"
xmlns:xn="http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm"
targetNamespace="VsDataVendor">
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm"/>
    <element name="vsDataRHO" substitutionGroup="xn:vsData">
        <complexType>
            <all>
                <element name="abcMin" minOccurs="0"/>
                <element name="abcMax" minOccurs="0"/>
            </all>
        </complexType>
    </element>
</schema>
```

and subsequently result in the following example XML Configuration File:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
 Vendor specific RHO example
```

VendorExample.xml
-->
```xml
<bulkCmConfigDataFile xmlns="http://www.3gpp.org/ftp/specs/archive/32_series/32.615#configData"
xmlns:xn="http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm" xmlns:vsc="VsDataVendor2"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.3gpp.org/ftp/specs/archive/32_series/32.615#configData
http://www.3gpp.org/ftp/specs/archive/32_series/32.615#configData VsDataVendor2
C:\MyDocuments\corba\3gpp2\2005-1-january\randyr5xsd\VsDataVendor2.xsd">
    <fileHeader fileFormatVersion="32.615 V5.5" senderName="Vendor" vendorName="Vendor"/>
    <configData dnPrefix="DN">
        <xn:SubNetwork id="SubNetworkValue">
            <xn:ManagedElement id="ManagedElementValue">
                <xn:VsDataContainer id="VsDataContainerValue" modifier="create">
                    <xn:attributes>
                        <xn:vsDataType>RHO</xn:vsDataType>
                        <xn:vsDataFormatVersion>VsDataVendor2</xn:vsDataFormatVersion>
                        <vsc:vsDataRHO>
                            <vsc:abcMin>12</vsc:abcMin>
                            <vsc:abcMax>34</vsc:abcMax>
                        </vsc:vsDataRHO>
                    </xn:attributes>
                </xn:VsDataContainer>
            </xn:ManagedElement>
        </xn:SubNetwork>
    </configData>
    <fileFooter dateTime="2001-12-17T09:30:47.0Z"/>
</bulkCmConfigDataFile>
```

5. *How to handle lists in XSD attributes defined as strings*

In 3GPP TS 32.622 R5, the ManagementNode managedElements attribute, the ManagedElement managedBy attribute and the ManagedElement managedElementType attribute may contain multiple values. Yet, these attributes are declared as strings in 3GPP TS 32.615. 3GPP SA5 needs to specify an algorithm for converting these strings to list values. As an example, 3GPP2 uses the following XSD annotation in Revision B to describe an attribute that contains lists of Distinguished Names:

> *A DN List is a sequence of Distinguished Names separated by # characters (note that 32.300 specifies that the # character is not allowed in Distinguished Names). Before or after the # character there may be zero or more blanks or carriage return characters. There must always be at least one Distinguished Name following a # character. For example:*
>   *[empty]*
>   *DN*
>   *DN#DN*
>   *DN # DN*

In 3GPP R6 and beyond, 3GPP2 recommends that the XSD types be XSD lists instead of strings. This does lead to the issue that XSD lists use white space as separators and Distinguished Names currently allow embedded white space.

3GPP2 TSG-S WG5 also recommends that Distinguished Names not include embedded white space.

6. *Issues in R6 State Management XSD Document*

3GPP2 has recognized a number of issues in the 3GPP TS 32.675 Version 6.0.0 specification:

a.   Not all of the types are SimpleType, which is required when including types in attribute clauses.

b.   The state management attributes that are sets typically need to allow empty sets as valid values.

c.   The optional state management attributes are missing.

3GPP2 recommends to 3GPP updates to the state management XSD Document within the R6 version of 32.675 according to the following 3GPP2 Revision B definitions:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
3GPP2 S.S0028-B State Management XML
PP2StateManagementIRP.xsd
-->
<schema xmlns="http://www.w3.org/2001/XMLSchema" xmlns:xsm="PP2StateManagementIRP"
targetNamespace="PP2StateManagementIRP" elementFormDefault="qualified">
    <simpleType name="OperationalStateType">
        <restriction base="string">
            <enumeration value="Disabled"/>
            <enumeration value="Enabled"/>
        </restriction>
    </simpleType>
    <simpleType name="UsageStateType">
        <restriction base="string">
            <enumeration value="Idle"/>
            <enumeration value="Active"/>
            <enumeration value="Busy"/>
        </restriction>
    </simpleType>
    <simpleType name="AdministrativeStateType">
        <restriction base="string">
            <enumeration value="Locked"/>
            <enumeration value="Unlocked"/>
            <enumeration value="ShuttingDown"/>
        </restriction>
    </simpleType>
    <simpleType name="AlarmStatusList">
        <list itemType="xsm:AlarmStatusElementType"/>
    </simpleType>
    <simpleType name="AlarmStatusType">
        <restriction base="xsm:AlarmStatusList">
            <maxLength value="6"/>
        </restriction>
    </simpleType>
    <simpleType name="AlarmStatusElementType">
        <restriction base="string">
            <enumeration value="Cleared"/>
            <enumeration value="Indeterminate"/>
```

```xml
                <enumeration value="Warning"/>
                <enumeration value="Minor"/>
                <enumeration value="Major"/>
                <enumeration value="Critical"/>
            </restriction>
    </simpleType>
    <simpleType name="ProceduralStatusList">
            <list itemType="xsm:ProceduralStatusElementType"/>
    </simpleType>
    <simpleType name="ProceduralStatusType">
            <restriction base="xsm:ProceduralStatusList">
                <maxLength value="5"/>
            </restriction>
    </simpleType>
    <simpleType name="ProceduralStatusElementType">
            <restriction base="string">
                <enumeration value="InitializationRequired"/>
                <enumeration value="NotInitialized"/>
                <enumeration value="Initializing"/>
                <enumeration value="Reporting"/>
                <enumeration value="Terminating"/>
            </restriction>
    </simpleType>
    <simpleType name="AvailabilityStatusList">
            <list itemType="xsm:AvailabilityStatusElementType"/>
    </simpleType>
    <simpleType name="AvailabilityStatusType">
            <restriction base="xsm:AvailabilityStatusList">
                <maxLength value="9"/>
            </restriction>
    </simpleType>
    <simpleType name="AvailabilityStatusElementType">
            <restriction base="string">
                <enumeration value="InTest"/>
                <enumeration value="Failed"/>
                <enumeration value="PowerOff"/>
                <enumeration value="OffLine"/>
                <enumeration value="OffDuty"/>
                <enumeration value="Dependency"/>
                <enumeration value="Degraded"/>
                <enumeration value="NotInstalled"/>
                <enumeration value="LogFull"/>
            </restriction>
    </simpleType>
    <simpleType name="ControlStatusList">
            <list itemType="xsm:ControlStatusElementType"/>
    </simpleType>
    <simpleType name="ControlStatusType">
            <restriction base="xsm:ControlStatusList">
                <maxLength value="4"/>
            </restriction>
    </simpleType>
    <simpleType name="ControlStatusElementType">
            <restriction base="string">
                <enumeration value="SubjectToTest"/>
                <enumeration value="PartOfServicesLocked"/>
```

```xml
            <enumeration value="ReservedForTest"/>
            <enumeration value="Suspended"/>
        </restriction>
    </simpleType>
    <simpleType name="StandbyStatusType">
        <restriction base="string">
            <enumeration value="HotStandby"/>
            <enumeration value="ColdStandby"/>
            <enumeration value="ProvidingService"/>
        </restriction>
    </simpleType>
    <simpleType name="UnknownStatusType">
        <restriction base="string">
            <enumeration value="True"/>
            <enumeration value="False"/>
        </restriction>
    </simpleType>
    <simpleType name="NotDefinedType">
        <restriction base="string">
            <enumeration value="NotDefined"/>
        </restriction>
    </simpleType>
    <simpleType name="OperationalStateTypeOpt">
        <union memberTypes="xsm:OperationalStateType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="UsageStateTypeOpt">
        <union memberTypes="xsm:UsageStateType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="AdministrativeStateTypeOpt">
        <union memberTypes="xsm:AdministrativeStateType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="AlarmStatusTypeOpt">
        <union memberTypes="xsm:AlarmStatusType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="ProceduralStatusTypeOpt">
        <union memberTypes="xsm:ProceduralStatusType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="AvailabilityStatusTypeOpt">
        <union memberTypes="xsm:AvailabilityStatusType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="ControlStatusTypeOpt">
        <union memberTypes="xsm:ControlStatusType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="StandbyStatusTypeOpt">
        <union memberTypes="xsm:StandbyStatusType xsm:NotDefinedType"/>
    </simpleType>
    <simpleType name="UnknownStatusTypeOpt">
        <union memberTypes="xsm:UnknownStatusType xsm:NotDefinedType"/>
    </simpleType>
</schema>
```

3GPP2 TSG-S would appreciate consideration of these aspects of concern and welcome further discussions. If you have additional questions, please contact: Randy Scheer (rjscheer@lucent.com).

Regards,

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