

ECRIT	B. Rosen	
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Intended status: Standards Track	H. Tschofenig	
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## **Additional Data related to a Call for Emergency Call Purposes draft-rosen-ecrit-additional-data-00.txt**

### **Abstract**

When an emergency call is sent to a PSAP, the device that sends it, as well as any service provider in the path of the call may have information about the call which the PSAP may be able to use. This document describes an XML data structure that contains this kind of information in a standardized form. A URI that points to the structure can be included in the SIP signaling with the call.

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## 1. Introduction

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When an emergency call is sent to a PSAP, there is a rich set of data in the headers with the call, but the device, as well as any other service provider in the path may have even more information that would be useful to a PSAP. This information may include the identity and contact information of the service provider, subscriber identity and contact information, the type of service the service provider provides,

what kind of device the user has, etc. Some kinds of devices or services have device or service dependent data. For example, a car telematics system or service may have crash information. A medical monitoring device may have sensor data. While the details of the information may vary by device or service, there needs to be a common way to send such data to a PSAP.

For the call takers this will enable more intelligent decision making and therefore better response in case of an emergency. A pre-requisite is to offer the technical capabilities to let call takers to gain access to this information stored elsewhere (granted that they have authorization to access it).

This document focuses on the data that can be obtained about a call and an existing SIP header field, the Call-Info header, is used for this purpose by defining a new token, namely 'emergencyCallData' carried in the "purpose" parameter. If the "purpose" parameter set to 'emergencyCallData' then the Call-Info contains a HTTPS URL that points to an XML data structure with information about the call. The initial XML data structure was defined by a working group within the National Emergency Number Association (NENA) and is included in this document. The data structure contains an element which itself is a URI that has device or service dependent data. Thus the common Additional Data about a Call defined by this document contains a 'hook', in the form of a URI for a device or service dependent data structure.

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## 2. Terminology

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The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119 \(Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels," March 1997.\)](#) [RFC2119].

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## 3. Additional Data about a Call

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The Additional Data about a Call is information specific to a call known by the device that sends it or a service provider in the path of a call. The Additional Data about a Call is an XML data structure. An HTTPS URI to that structure may be inserted in a SIP INVITE or MESSAGE transaction with a Call-Info header containing a purpose of "emergencyCallData". The data, which must conform to the schema in [Section 4 \(XML Schema\)](#) may be retrieved with an HTTPS Get. HTTPS MUST be used.

More than one Call-Info header with an emergencyCallData purpose can be expected. The device may insert one, and any intermediary service

provider may insert its own. When there are multiple intermediaries each intermediary may each insert one. For example, a device may provide one, a telematics service provider may provide one and the mobile carrier handling the call may provide one.

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### 3.1. Data Provided by

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**Data Element:** Data Provided by

**Use:** Required

**XML Element:** <DataProvidedBy>

**Description:** This is a plain language string suitable for displaying the name of the service provider that created the additional data structure. If the device created the structure the value is identical to the contact header in the SIP Invite. This data is required and should reflect the contact information of the owner of the device.

**Reason for Need:** Inform the call taker about the identity of the entity providing the additional call data structure.

**How Used by Call Taker:** Allows the call taker to interpret the data in this structure. The source of the information often influences how the information is used, believed or verified.

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### 3.2. Provided by Company ID

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**Data Element:** Provided by Company ID

**Use:** Conditional

**XML Element:** <ProviderCompanyID>

**Description:** A jurisdiction specific code for the provider shown in the <DataProvidedBy> element that created the structure of the call. NOTE: In the US, the NENA Company ID must appear here. Additional information may be found at <http://www.nena.org/nena-company-id>. The NENA Company ID shall be in the form of any URI for example: urn:nena:companyid:<NENA Company ID>. This data is required unless the additional data structure is provided by the device.

**Reason for Need:**

Inform the call taker about the identity of the entity providing the additional call data structure.

**How Used by Call Taker:** Where jurisdictions have lists of providers the Provider Company ID can lead to a wealth of information associated with the code.

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**3.3. Provided by Contact URI**[TOC](#)

**Data Element:** Provided by Contact URI

**Use:** Required

**XML Element:** <ContractURI>

**Description:** For a Service Provider the contact should be a 24x7 contact number. If provided by an entity without a 24X7, they must provide the provided by contact information. This must be a SIP URI. If a telephone number is the contact address it should be provided in the form of sip:telephonenumber@serviceprovider:user=phone. If the call is from a device, this data is required and should reflect the contact information of the owner of the device.

**Reason for Need:** Additional data providers may need to be contacted for error or other unusual circumstances.

**How Used by Call Taker:** To contact the supplier of the additional data provider structure.

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**3.4. Provided by Languages(s) supported**[TOC](#)

**Data Element:** Provided by Language(s) supported

**Use:** Conditional

**XML Element:** <LanguagePreference>

**Description:** Provided by's alpha 2-character code as defined in ISO 639-1:2002 ([http://www.iso.org/iso/catalogue\\_detail?csnumber=22109](http://www.iso.org/iso/catalogue_detail?csnumber=22109)) Codes for the representation of names of languages -- Part 1: Alpha-2 code Multiple instances of this

element may occur. Order is significant; preferred language should appear first. This data is required unless the message is from a data only device.

**Reason for Need:** Information needed to determine if 9-1-1 Authority can communicate with the Service Provider or if language line will be needed.

**How Used by Call Taker:** If call taker cannot speak language(s) supported by the Service Provider, language line will need to be added in to conversation.

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### 3.5. vCARD of Provided By

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**Data Element:** vCARD of Provided By

**Use:** Optional

**XML Element:** <ProvidedByContact>

**Description:** There are many fields in the vCARD. The creator of the data structure is encouraged to provide as much information as they have available. A minimum of subscriber provided by's name, address and contact number should be provided.

**Reason for Need:** Information needed to determine additional contact information.

**How Used by Call Taker:** Assists call taker by providing additional contact information that may not be included in the SIP invite or the PIDF-LO. Can display a picture of the caller to the call taker.

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### 3.6. Service Environment

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**Data Element:** Service Environment

**Use:** Required

**XML Element:** <SvcEnvironment>

**Description:** This defines if the call service type is a Business or Residence caller. Currently, the only valid entries are Business

or Residence.

**Reason for Need:** To assist in determining equipment and manpower requirements.

**How Used by Call Taker:** Information may be used to determine equipment and manpower requirements for emergency responders.

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### 3.7. Service Delivered by Provider to End User

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**Data Element:** Service Delivered by Provider to End User

**Use:** Required

**XML Element:** <SvcDelByProvider>

**Description:** This defines the type of service the end user has subscribed to. The implied mobility of this service can not be relied upon. A registry will reflect the following valid entries:

\*Mobile Telephone Service: Includes Satellite, CDMA, GSM, Wi-Fi, WiMAX, LTE (Long Term Evolution)

\*Fixed Public Pay/Coin telephones: Any coin or credit card operated device.

\*One way outbound service

\*Inmate call/service

\*Soft dialtone/quick service/warm disconnect/suspended

\*Multi-line telephone system (MLTS): Includes all PBX, Centrex, key systems, Shared Tenant Service.

\*Sensor, unattended: Includes devices that generate DATA ONLY. This is one-way information exchange and there will be no other form of communication.

\*Sensor, attended: Includes devices that are supported by a monitoring service provider or automatically open a two-way communication path.

\*Wireline: Plain Old Telephone Service (POTS).

\*VoIP Telephone Service: A type of service that offers communication over internet protocol, such as Fixed, Nomadic, Mobile, Unknown

**Reason for Need:** Knowing the type of service may assist the PSAP with the handling of the call.

**How Used by Call Taker:** Calltaker may be able to determine if the caller is stationary or mobile and if they will have voice communications with the caller or is it a data only event.

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### 3.8. Device Classification

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**Data Element:** Device Classification

**Use:** Optional

**XML Element:** <DeviceClassification>

**Description:** If the device provides the data structure, the device information should be provided. If the Service Provider provides the structure and it knows what the device is, the Service Provider should provide the device information. Often the carrier does not know what the device is. It is possible to receive 2 data structures, one created by the device and one created by the Service Provider. Information about the device, not how it is being used. This data element defines the kind of device making the emergency call. A registry will reflect the following valid entries:

\*Cordless handset

\*Fixed phone

\*Mobile handset

\*ATA – analog terminal adapter

\*Satellite phone

\*Stationary computing device (alarm system, data sensor)

\*Guardian devices



- \*Desktop PC
- \*Laptop computing device
- \*Tablet computing device
- \*Alarm system
- \*Data sensor
- \*Personal beacons (spot)
- \*Auto telematics (indicates VEDS data set)
- \*Trucking telematics
- \*Farm equipment telematics
- \*Marine telematics
- \*PDA (personal digital assistant)
- \*PND (personal navigation device)
- \*Smart phone
- \*Internet tablet
- \*Gaming console
- \*Video phone
- \*Other text device
- \*Not Available

**Reason for Need:** The device classification describes the capability of the calling device. For example, does the device require human intervention to initiate a call or is this call the result of programmed instructions. Does the calling device have the ability to rebid for location or condition changes? Is this device interactive or a one-way reporting device?

**How Used by Call Taker:** May assist with location of caller. For example, a cordless handset may be outside or next door. May provide calltaker some context about the caller.

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### 3.9. Device Manufacturer

[TOC](#)

**Data Element:** Device Manufacturer

**Use:** Optional

**XML Element:** <DeviceMfgr>

**Description:** Manufacturer is electronically stored on the device. Different devices may use different conventions to provide their information. We need to know what it represents, so a registry is in order. Need to be able to standardize as much as possible with a uniform naming convention. A registry will reflect the valid entries.

**Reason for Need:** Used by PSAP management for post-mortem investigation/resolution.

**How Used by Call Taker:** Probably not used by calltaker, but by PSAP management.

---

### 3.10. Device Model Number

[TOC](#)

**Data Element:** Device Model Number

**Use:** Optional

**XML Element:** <DeviceModelNr>

**Description:** Model number is electronically stored on the device.

**Reason for Need:** Used by PSAP management for after action investigation/resolution.

**How Used by Call Taker:** Probably not used by calltaker, but by PSAP management.

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### 3.11. Unique Device Identifier

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**Data Element:** Unique Device Identifier

**Use:**

Optional

**XML Element:** <UniqueDeviceID>

**Description:** Characters that identify the specific device making the call or creating an event.

**Reason for Need:** May be needed when trying to obtain a subpoena to obtain customer information in instances where location info did not display or someone is making false emergency calls. May also be used when working with safe houses that are using non-initialized phones.

**How Used by Call Taker:** Probably not used by calltaker they would need to refer to management for investigation.

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### 3.12. Type of Device Identifier

[TOC](#)

**Data Element:** Type of Device Identifier

**Use:** Optional

**XML Element:** <TypeOfDeviceID>

**Description:** Identifies the type of device identifier being generated in the unique device identifier data element. A registry will reflect the following valid entries:

- \*MEID (CDMA)
- \*ESN (Electronic Serial Number - superseded by MEID)
- \*MAC (Media Access Control) Address - any IEEE device with an Ethernet, Wi-Fi connection
- \*WiMAX has a device certificate
- \*IMEI (International Mobile Equipment Identifier - GSM)
- \*Unique Device Identifier (Unique identifier for medical devices)
- \*RFID (Radio Frequency Identification)
- \*Sensors (types to be identified in a future document version)

\*Manufacturer Serial Number

**Reason for Need:** Calls from uninitiated devices would give an identifier that could be associated with erroneous calls --- use the number to identify what type of capabilities there are. Could also use this information to block specific types of calls.

**How Used by Call Taker:** Additional information that may be used to assist with call handling.

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### 3.13. Device/service specific additional data structure

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**Data Element:** Device/service specific additional data structure

**Use:** Optional

**XML Element:** <devicespecificSchema>

**Description:** A URI representing additional data whose schema is specific to the device or service which created it. An example is the VEDs structure for a vehicle telematics device. The structure can be referenced via URI and used in the policy routing function business rules/policies or for access by call takers or responders. Non-NENA XML schemas must be registered. Some possible sources are:

\*NPAC

\*Hazmat International Association of Fire Chiefs

\*DHS/EPA E-Plan for HazMat

\*NFPA - National Fire Protection Association

\*National Alliance for Public Safety GIS (NA-PSG)

\*US DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) examples of additional data.

\*Fire Service Data Model

\*IEEE 1512 - USDOT Model for traffic incidents

\*Smart Building (NIST)

\*VEDS

Different data may be created by each classification; i.e., telematics creates VEDS data set - can be different types of data depending on device. May want to describe type of data for each device.

**Reason for Need:** This data element will allow for identification of externally defined schemas, which may have additional data that will assist in emergency response.

**How Used by Call Taker:** This data element will allow the end user (calltaker or first responder) to know what type of additional data may be available to aid in providing the needed emergency services.

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### 3.14. Telephone Number Privacy Indicator

[TOC](#)

**Data Element:** Telephone Number Privacy Indicator

**Use:** Required

**XML Element:** <TNPrivacyIndicator>

**Description:** Some State regulations require that Non-Published subscriber name remains private to all including 9-1-1. Where this regulation is in place, the end user's name must be overlaid with blanks or the verbiage, "Non-Published Number."

**Reason for Need:** Some State regulations require that Non-Published subscriber name remains private to all including emergency calls. Where this regulation is in place, the end user's name must be overlaid with blanks or the verbiage, "Non-Published Number".

**How Used by Call Taker:** This is not beneficial to PSAPs; however, they must follow state regulations. This indicator will allow for coding that overlays the non-published subscriber name with the verbiage "Non-Published Number."

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### 3.15. vCARD for Subscriber's Data

[TOC](#)

**Data Element:** vCARD for Subscriber's Data

**Use:**

Required

**XML Element:** <SubscriberData>

**Description:** Information known by the Service Provider about the subscriber; i.e., Name, Address, Calling Party Number, Main Telephone Number and any other data. If the subscriber is an enterprise, this is the vCARD of the enterprise and the Company Name is used not the Name of the Caller. The telephone number is the main telephone number at the location of the call. The address should be where the call is originating from.

**Reason for Need:** Critical information required for proper call handling and dispatching.

**How Used by Call Taker:** Critical information required for proper call handling and dispatching.

---

#### 4. XML Schema

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---

```

<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns="urn:nena:xml:ns:es:NG:Call"
  targetNamespace="urn:nena:xml:ns:es:NG:Call"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified" version="1.0">
  <xsd:include schemaLocation="NGTypeLib.xsd"/>
  <xsd:element name="DataAssociatedWithCall">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element name="DataProvidedBy"
          type="sourceProviderType" minOccurs="0"/>
        <xsd:element ref="CallerDataURL" minOccurs="0"/>
        <xsd:element ref="ServiceEnvironment"/>
        <xsd:element ref="ServiceDeliveredByProvider"/>
        <xsd:element ref="DeviceClassification"/>
        <xsd:element ref="DeviceManufacturer"/>
        <xsd:element name="DeviceModel" type="xsd:token"/>
        <xsd:element name="DeviceID" type="xsd:token"/>
        <xsd:element ref="DeviceIDType"/>
        <xsd:element name="DeviceSpecificSchema"
          type="ExtensionType" minOccurs="0"/>
        <xsd:element ref="PrivacyIndicator"/>
        <xsd:element ref="SubscribervCARD"/>
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
  <xsd:element name="CallerDataURL" type="xsd:anyURI">
  </xsd:element>
  <xsd:element name="ServiceDeliveredByProvider" type="xsd:token">
  </xsd:element>
  <xsd:element name="DeviceClassification" type="xsd:token">
  </xsd:element>
  <xsd:element name="DeviceManufacturer" type="xsd:token">
  </xsd:element>
  <xsd:element name="DeviceIDType" type="xsd:token">
  </xsd:element>
  <xsd:element name="PrivacyIndicator" type="privacyIndicatorType">
  </xsd:element>
  <xsd:simpleType name="privacyIndicatorType">
    <xsd:restriction base="xsd:token">
      <xsd:enumeration value="Published"/>
      <xsd:enumeration value="Non-Published"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:element name="SubscribervCARD" type="vCARDType">

```

```
</xsd:element>
</xsd:schema>
```

**Figure 1: XML Schema**

**5. Security Considerations**

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The information in this data structure will usually be considered private. HTTPS is specified to require the provider of the information to validate the credentials of the requester. While the creation of a PKI that has global scope may be difficult, the alternatives to creating devices and services that can provide critical information securely are more daunting.

The Call-info header with purpose='emergencyCallData' MUST only be sent on an emergency call, which can be ascertained by the presence of an emergency service urn in a Route header of a SIP message.

<how recipient validates credentials of sender>

<how sender validates credentials of recipient>

<how sender validates credentials of anyone requesting device dependent data>

**6. IANA Considerations**

[TOC](#)

**6.1. 'emergencyCallData' Purpose Parameter Value**

[TOC](#)

This document defines the 'emergencyCallData' value for the "purpose" parameter of the Call-Info header field. A reference to this RFC (in double brackets) has been added to the existing "purpose" Call-Info parameter entry in the SIP Parameters registry, which currently looks as follows:

Header Field	Parameter Name	Predefined	
		Values	Reference
Call-Info	purpose	Yes	[RFC3261][RFC5367]



## 6.2. URN Sub-Namespace Registration for urn:ietf:params:xml:ns:additional-data

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This section registers a new XML namespace, as per the guidelines in [\[RFC3688\]](#) (Mealling, M., "The IETF XML Registry," January 2004.).

**URI:** urn:ietf:params:xml:ns:additional-data

**Registrant Contact:** IETF, ECRIT working group, <ecrit@ietf.org>, as delegated by the IESG <iesg@ietf.org>.

**XML:**

```
BEGIN
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML Basic 1.0//EN"
    "http://www.w3.org/TR/xhtml-basic/xhtml-basic10.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <meta http-equiv="content-type"
        content="text/html; charset=iso-8859-1"/>
    <title>Additional Data Namespace</title>
</head>
<body>
    <h1>Namespace for Additional Data </h1>
    <h2>urn:ietf:params:xml:ns:additional-data</h2>
    <p>See [TBD].</p>
</body>
</html>
END
```

---

## 6.3. Additional Data Schema Registration

[TOC](#)

This specification registers a schema, as per the guidelines in [\[RFC3688\]](#) (Mealling, M., "The IETF XML Registry," January 2004.).

**URI:** urn:ietf:params:xml:schema:additional-data

**Registrant Contact:** IETF, ECRIT Working Group (geopriv@ietf.org), as delegated by the IESG (iesg@ietf.org).

**XML:** The XML can be found as the sole content of [Section 4 \(XML Schema\)](#).

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## 7. Acknowledgments

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## 8. Normative References

[TOC](#)

[RFC2119]	<a href="#">Bradner, S.</a> , " <a href="#">Key words for use in RFCs to Indicate Requirement Levels</a> ," BCP 14, RFC 2119, March 1997 ( <a href="#">TXT</a> , <a href="#">HTML</a> , <a href="#">XML</a> ).
[RFC3688]	Mealling, M., " <a href="#">The IETF XML Registry</a> ," BCP 81, RFC 3688, January 2004 ( <a href="#">TXT</a> ).

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## Authors' Addresses

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	Brian Rosen
	NeuStar
	470 Conrad Dr.
	Mars, PA 16046
	US
Phone:	+1 724 382 1051
Email:	<a href="mailto:br@brianrosen.net">br@brianrosen.net</a>
	Hannes Tschofenig
	Nokia Siemens Networks
	Linnoitustie 6
	Espoo 02600
	Finland
Phone:	+358 (50) 4871445
Email:	<a href="mailto:Hannes.Tschofenig@gmx.net">Hannes.Tschofenig@gmx.net</a>

URI: <http://www.tschofenig.priv.at>