## ETSITS 132 643 V5.5.0 (2005-03)

Technical Specification

Universal Mobile Telecommunications System (UMTS);

**Telecommunication management;** 

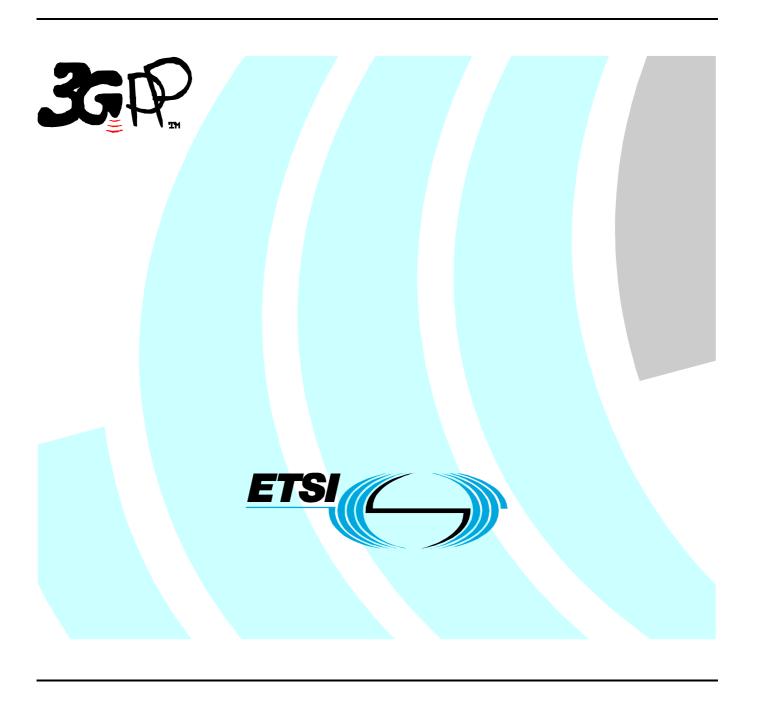
**Configuration Management (CM);** 

**UTRAN** network resources Integration Reference Point (IRP):

**Common Object Request Broker Architecture (CORBA)** 

**Solution Set (SS)** 

(3GPP TS 32.643 version 5.5.0 Release 5)



Reference
RTS/TSGS-0532643v550

Keywords

UMTS

#### **ETSI**

650 Route des Lucioles F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C Association à but non lucratif enregistrée à la Sous-Préfecture de Grasse (06) N° 7803/88

#### Important notice

Individual copies of the present document can be downloaded from: <u>http://www.etsi.org</u>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<a href="http://portal.etsi.org/tb/status/status.asp">http://portal.etsi.org/tb/status/status.asp</a></a>

If you find errors in the present document, please send your comment to one of the following services: http://portal.etsi.org/chaircor/ETSI\_support.asp

#### Copyright Notification

No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2005. All rights reserved.

**DECT**<sup>TM</sup>, **PLUGTESTS**<sup>TM</sup> and **UMTS**<sup>TM</sup> are Trade Marks of ETSI registered for the benefit of its Members. **TIPHON**<sup>TM</sup> and the **TIPHON logo** are Trade Marks currently being registered by ETSI for the benefit of its Members. **3GPP**<sup>TM</sup> is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://webapp.etsi.org/IPR/home.asp).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## **Foreword**

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <a href="http://webapp.etsi.org/key/queryform.asp">http://webapp.etsi.org/key/queryform.asp</a>.

## Contents

Intell	ellectual Property Rights					
Forev	word		2			
Forev	word		4			
Intro	duction		4			
1	Scope		5			
2	References		5			
3		eviations				
3.1 3.2						
4		S				
4.1	Notifications		6			
5	11 0					
5.1	11 0					
5.2 5.2.1		rmation Object Class (IOC) mapping				
5.2.1						
5.2.3		ction				
5.2.4						
5.2.5		ion				
5.2.6		ranCell				
6	Rules for managemen	nt information model extensions	9			
6.1	Allowed extensions		9			
6.2		wed				
Anne	ex A (normative):	CORBA IDL, NRM Definitions	10			
Anne	ex B (informative):	Change history	13			
Histo	ry					

## **Foreword**

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

## Introduction

The present document is part of a TS-family covering the 3<sup>rd</sup> Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Configuration Management (CM), as identified below:

32.641:	"UTRAN network resources Integration Reference Point (IRP): Requirements".
32.642:	"UTRAN network resources Integration Reference Point (IRP): Network Resource Model (NRM)".
32.643:	"UTRAN network resources Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".
32.644:	"UTRAN network resources Integration Reference Point (IRP): Common Management Information Protocol (CMIP) Solution Set (SS)".
32.645:	"UTRAN network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition".

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G-network as it evolves. CM actions have the objective to control and monitor the actual configuration on the NEs and NRs, and they may be initiated by the operator or functions in the OSs or NEs.

CM actions may be requested as part of an implementation programme (e.g. additions and deletions), as part of an optimisation programme (e.g. modifications), and to maintain the overall Quality of Service (QoS). The CM actions are initiated either as a single action on a Network Element (NE) of the 3G-network or as part of a complex procedure involving actions on many NEs.

The Itf-N interface for Configuration Management is built up by a number of Integration Reference Points (IRPs) and a related Name Convention, which realise the functional capabilities over this interface. The basic structure of the IRPs is defined in 3GPP TS 32.101 [1] and 3GPP TS 32.102 [2]. For CM, a number of IRPs (and the Name Convention) are defined herein, used by this as well as other technical specifications for telecom management produced by 3GPP.

## 1 Scope

The purpose of this UTRAN Network Resources IRP: CORBA Solution Set is to define the mapping of the IRP information model (see 3GPP TS 32.642 [4]) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

This Solution Set specification is related to 3GPP TS 32.642 V5.6.X.

## 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.
- [1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".
- [2] 3GPP TS 32.102: "Telecommunication management; Architecture".
- [3] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".
- [4] 3GPP TS 32.642: "Telecommunication management; Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP): Network Resource Model (NRM)".
- [5] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".
- [6] OMG Notification Service, Version 1.0.
- [7] OMG CORBA services: Common Object Services Specification, Update: November 22, 1996.
- [8] The Common Object Request Broker: Architecture and Specification (for specification of valid version, see [1]).
- [9] 3GPP TS 32.303: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".
- [10] 3GPP TS 32.111-3: "Telecommunication management; Fault Management; Part 3: Alarm Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

## 3 Definitions and abbreviations

## 3.1 Definitions

For terms and definitions please refer to 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.600 [3] and 3GPP TS 32.642 [4].

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

**CORBA** Common Object Request Broker Architecture DN Distinguished Name Information Service IS Interface Definition Language (OMG) **IDL** IOC Information Object Class **IRP Integration Reference Point** MO Managed Object MOC Managed Object Class Network Resource Model NRM **OMG** Object Management Group SS Solution Set

## 4 Architectural features

The overall architectural feature of UTRAN Network Resources IRP is specified in 3GPP TS 32.642 [4]. This clause specifies features that are specific to the CORBA SS.

#### 4.1 Notifications

Notifications are sent according to the Notification IRP: CORBA SS (see 3GPP TS 32.303 [9]).

## 5 Mapping

## 5.1 General mappings

The IS parameter name managedObjectInstance is mapped into DN.

Attributes modelling associations as defined in the NRM (here also called 'reference attributes') are in this SS mapped to attributes. The names of the reference attributes in the NRM are mapped to the corresponding attribute names in the MOC. When the cardinality for an association is 0..1 or 1..1 the datatype for the reference attribute is defined as an MOReference. The value of an MO reference contains the distinguished name of the associated MO. When the cardinality for an association allows more than one referred MO, the reference attribute will be of type MOReferenceSet, which contains a sequence of MO references.

If a reference attribute is changed, an Attribute Value Change notification is emitted.

## 5.2 UTRAN NRM Information Object Class (IOC) mapping

#### 5.2.1 IOC RncFunction

Table 5.1: Mapping from NRM IOC RncFunction attributes to SS equivalent MOC RncFunction attributes

NRM Attributes of IOC RncFunction in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
rncFunctionId	rncFunctionId	string	M	M	-
userLabel	userLabel	string	М	M	М
mcc	mcc	long	М	M	М
mnc	mnc	long	М	M	М
rncld	rncld	long	M	M	М

## 5.2.2 IOC UtranCell

Table 5.2: Mapping from NRM IOC UtranCell attributes and associations to SS equivalent MOC UtranCell attributes

utranCellId userLabel cld	string string	М	М	
	string		IVI	1 _
cld		M	М	M
	long	М	М	М
localCellId	long	M	М	M
uarfcnUl	long	M	М	M
uarfcnDl	long	M	М	M
primaryScramblingCo de	long	М	M	М
primaryCpichPower	long	М	М	M
maximumTransmissio nPower	long	М	M	М
primarySchPower	long	М	М	M
secondarySchPower	long	М	М	М
bchPower	long	М	М	М
lac	long	М	М	М
rac	long	O See note.	M	М
sac	long	М	М	M
uraList	LIST of long	O See note.	M	М
utranCelllubLink	GenericNRIRPSystem:: AttributeTypes::MORef erence	М	M	-
operationalState	StateManagementIRP OptConstDefs::Operati onalStateTypeOpt	0	М	-
	uarfcnUl uarfcnDl primaryScramblingCo de primaryCpichPower maximumTransmissio nPower primarySchPower secondarySchPower bchPower lac rac sac uraList utranCelllubLink	uarfcnUI     long       uarfcnDI     long       primaryScramblingCo     long       de     primaryCpichPower       primaryCpichPower     long       maximumTransmissio     long       nPower     long       secondarySchPower     long       bchPower     long       lac     long       rac     long       sac     long       uraList     LIST of long       utranCelllubLink     GenericNRIRPSystem:: <ul> <li>AttributeTypes::MORef</li> <li>erence</li> </ul> operationalState     StateManagementIRP       OptConstDefs::Operati     onalStateTypeOpt	uarfcnUI     long     M       uarfcnDI     long     M       primaryScramblingCo     long     M       de     maximumTransmissio     long     M       primaryCpichPower     long     M       maximumTransmissio     long     M       nPower     long     M       primarySchPower     long     M       bchPower     long     M       lac     long     M       rac     long     O       sac     long     O       uraList     LIST of long     O       utranCelllubLink     GenericNRIRPSystem::     AttributeTypes::MOReference       operationalState     StateManagementIRP OptConstDefs::Operati     O	uarfcnUI     long     M     M       uarfcnDI     long     M     M       primaryScramblingCo     long     M     M       de     primaryCpichPower     long     M     M       primaryCpichPower     long     M     M       nPower     long     M     M       primarySchPower     long     M     M       secondarySchPower     long     M     M       bchPower     long     M     M       lac     long     M     M       rac     long     O     M       sac     long     O     M       uraList     LIST of long     O     M       utranCelllubLink     GenericNRIRPSystem::         AttributeTypes::MORef erence     M     M       operationalState     StateManagementIRP         O     M       OptConstDefs::OperationalState     OptConstDefs::OperationalState     O     M

## 5.2.3 IOC NodeBFunction

Table 5.3: Mapping from NRM IOC NodeBFunction attributes and associations to SS equivalent MOC NodeBFunction attributes

NRM Attributes of IOC NodeBFunction in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
nodeBFunctionId	nodeBFunctionId	string	М	М	-
userLabel	userLabel	string	М	М	М
ConnectedTo/ nodeBFunction-lubLink	nodeBFunctionIubLink	GenericNRIRPS ystem::Attribute Types::MORefe rence	M	М	-

## 5.2.4 IOC lubLink

Table 5.4: Mapping from NRM IOC lubLink attributes and associations to SS equivalent MOC lubLink attributes

NRM Attributes of IOC lubLink in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
iubLinkld	iubLinkld	string	М	М	-
userLabel	userLabel	string	M	M	М
AssociatedWith/iubLink-UtranCell	iubLinkUtranCell	GenericNRIRPSystem:: AttributeTypes::MORef erenceSet	M	М	M
ConnectedTo/ iubLink-NodeBFunction	iubLinkNodeBFunction	GenericNRIRPSystem:: AttributeTypes::MORef erence	M	M	-

## 5.2.5 IOC UtranRelation

Table 5.5: Mapping from NRM IOC UtranRelation attributes and associations to SS equivalent MOC UtranRelation attributes

NRM Attributes of IOC UtranRelation in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
utranRelationId	utranRelationId	string	M	М	•
adjacentCell	adjacentCell	string	M	М	М
uarfcnUl	uarfcnUl	long	0	М	•
uarfcnDI	uarfcnDl	long	0	М	-
primaryScramblingCode	primaryScramblingCode	long	0	М	•
primaryCpichPower	primaryCpichPower	long	0	М	-
lac	lac	long	0	М	-

## 5.2.6 IOC ExternalUtranCell

Table 5.6: Mapping from NRM IOC ExternalUtranCell attributes and associations to SS equivalent MOC ExternalUtranCell attributes

NRM Attributes of IOC ExternalUtranCell in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
externalUtranCellId	externalUtranCellId	string	M	М	-
userLabel	userLabel	string	M	М	M
cld	cld	long	M	М	M
mcc	mcc	long	M	М	M
mnc	mnc	long	M	М	М
rncld	rncld	long	M	М	М
uarfcnUl	uarfcnUl	long	M	М	М
uarfcnDl	uarfcnDl	long	М	М	М
primaryScramblingCode	primaryScramblingCode	long	М	М	М
primaryCpichPower	primaryCpichPower	long	М	М	М
lac	lac	long	M	М	М
rac	rac	long	O See note	M	М

## 6 Rules for management information model extensions

This clause discusses how the models and IDL definitions provided the present document can be extended for a particular implementation and still remain compliant with 3GPP SA5's specifications.

#### 6.1 Allowed extensions

Vendor-specific IOCs may be supported. The vendor-specific IOCs may support new types of attributes. The 3GPP SA5-specified notifications may be issued referring to the vendor-specific IOCs and vendor-specific attributes. New IOCs shall be distinguishable from 3GPP SA5 IOCs by name. 3GPP SA5-specified and vendor-specific attributes may be used in vendor-specific IOCs. Vendor-specific attribute names shall be distinguishable from existing attribute names.

NRM IOCs may be subclassed. Subclassed IOCs shall maintain the specified behaviour of the 3GPP SA5's superior classes. They may add vendor-specific behaviour with vendor-specific attributes. When subclassing, naming attributes cannot be changed. The subclassed IOC shall support all attributes of its superior class. Vendor-specific attributes cannot be added to 3GPP SA5 NRM IOCs without subclassing.

When subclassing, the 3GPP SA5-specified containment rules and their specified cardinality shall still be followed. As an example, ManagementNode (or its subclasses) shall be contained under SubNetwork (or its subclasses).

Managed Object Instances may be instantiated as CORBA objects. This requires that the IOCs be represented in IDL. 3GPP SA5's NRM IOCs are not currently specified in IDL, but may be specified in IDL for instantiation or subclassing purposes. However, management information models should not require that IRPManagers access the instantiated managed objects other than through supported methods in the present document.

Extension rules related to notifications (Notification categories, Event Types, Extended Event Types etc.) are for further study.

## 6.2 Extensions not allowed

The IDL specifications in the present document cannot be edited or altered. Any additional IDL specifications shall be specified in separate IDL files.

IDL interfaces (note: not IOCs) specified in the present document may not be subclassed or extended. New interfaces may be defined with vendor-specific methods.

## Annex A (normative): CORBA IDL, NRM Definitions

```
#ifndef UtranNetworkResourcesNRMDefs idl
#define UtranNetworkResourcesNRMDefs_idl
#pragma prefix "3gppsa5.org"
 \mbox{\scriptsize \star} This module defines constants for each MO class name and
 * the attribute names for each defined MO class.
module UtranNetworkResourcesNRMDefs
       * Definitions for MO class RncFunction
      interface RncFunction
         const string CLASS = "RncFunction";
         // Attribute Names
         const string rncFunctionId = "rncFunctionId";
         const string userLabel = "userLabel";
         const string mcc= "mcc";
         const string mnc= "mnc";
         const string rncId= "rncId";
      };
       * Definitions for MO class UtranCell
      interface UtranCell
         const string CLASS = "UtranCell";
         // Attribute Names
         const string utranCellId = "utranCellId";
         const string userLabel = "userLabel";
         const string utranCellIubLink = "utranCellIubLink";
         const string cId= "cId";
         const string localCellId= "localCellId";
         const string uarfcnUl= "uarfcnUl";
         const string uarfcnDl= "uarfcnDl";
         const string primaryScramblingCode= "primaryScramblingCode";
         const string primaryCpichPower= "primaryCpichPower";
         const string maximumTransmissionPower= "maximumTransmissionPower";
         const string primarySchPower= "primarySchPower";
         const string secondarySchPower= "secondarySchPower";
         const string bchPower= "bchPower";
         const string lac= "lac";
         const string rac= "rac";
         const string sac= "sac";
```

```
const string uraList= "uraList";
         const string operationalState = "operationalState";
      };
       * Definitions for MO class NodeBFunction
      interface NodeBFunction
         const string CLASS = "NodeBFunction";
         // Attribute Names
         const string nodeBFunctionId = "nodeBFunctionId";
         const string userLabel = "userLabel";
         const string nodeBFunctionIubLink = "nodeBFunctionIubLink";
      };
      /**
      * Definitions for MO class IubLink
      interface IubLink
         const string CLASS = "IubLink";
         // Attribute Names
         //
         const string iubLinkId = "iubLinkId";
         const string userLabel = "userLabel";
         const string iubLinkNodeBFunction = "iubLinkNodeBFunction";
         const string iubLinkUtranCell = "iubLinkUtranCell";
      };
};
       * Definitions for MO class UtranRelation
      interface UtranRelation
      {
         const string CLASS = "UtranRelation";
         // Attribute Names
         //
         const string utranRelationId = "utranRelationId";
         const string adjacentCell = "adjacentCell";
         const string uarfcnUl= "uarfcnUl";
         const string uarfcnDl= "uarfcnDl";
         const string primaryScramblingCode= "primaryScramblingCode";
         const string primaryCpichPower= "primaryCpichPower";
         const string lac= "lac";
};
       * Definitions for MO class ExternalUtranCell
```

```
interface ExternalUtranCell
  const string CLASS = "ExternalUtranCell";
  // Attribute Names
  const string externalUtranCellId = "externalUtranCellId";
  const string userLabel = "userLabel";
  const string cId= "cId";
  const string mcc= "mcc";
  const string mnc= "mnc";
  const string rncId= "rncId";
  const string uarfcnUl= "uarfcnUl";
  const string uarfcnDl= "uarfcnDl";
  const string primaryScramblingCode= "primaryScramblingCode";
  const string primaryCpichPower= "primaryCpichPower";
  const string lac= "lac";
  const string rac= "rac";
};
```

#endif

# Annex B (informative): Change history

	Change history						
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010283			Approved at TSG SA #12 and placed under Change Control	2.0.0	4.0.0
Dec 2001	S_14	SP-010646	001		Change type "integer" to "long" in the UTRAN Network Resources IRP: CORBA SS	4.0.0	4.1.0
Sep 2002	S_17	SP-020493	002		Upgrade to Rel-5	4.1.0	5.0.0
Jun 2003	S_20	SP-030283	004		Deletion of UTRAN attribute relationType from CORBA SS.	5.0.0	5.1.0
Dec 2003	S_22	SP-030646	006		Correction of the number of possible URAs from 1 to 8	5.1.0	5.2.0
Jun 2004	S_24	SP-040254	800		The specification does not support all UMTS frequency bands	5.2.0	5.3.0
Sep 2004	S_25	SP-040589	010		Add the operationalState to the UtranCell – Align the CORBA SS with 32.642 CM; UTRAN network resources IRP NRM	5.3.0	5.4.0
Sep 2004	S_25	SP-040586	014		Align the CORBA SS with 32.642 Configuration Management (CM); UTRAN network resources IRP NRM	5.3.0	5.4.0
Mar 2005	S_27	SP-050048	020		Align with SA2"s 23.221, for allowing only CS CN in a PLMN	5.4.0	5.5.0

## History

	Document history						
V5.0.0	September 2002	Publication					
V5.1.0	June 2003	Publication					
V5.2.0	December 2003	Publication					
V5.3.0	June 2004	Publication					
V5.4.0	September 2004	Publication					
V5.5.0	March 2005	Publication					