Centralised Service on Management of Common Network Resources / Mode S Interrogator Code Allocation (CNR/MICA)

Concept of Operations (CONOPS)
DOCUMENT CHARACTERISTICS

TITLE
Centralised Service on Management of Common Network Resources / Mode S Interrogator Code Allocation (CNR/MICA)

Concept of Operations (CONOPS)

Abstract
This document describes the concept of operations and the interactions between the service and the actors that are concerned by the implementation of CS6-2, Centralised Service on Management of Common Network Resources Service / Mode S Interrogator Code Allocation (CNR/MICA).

The CNR/MICA service aims at supporting the coordination and the management of the allocation of Interrogator Codes and coverage maps to Mode S Interrogators, civil and military, within the International Civil Aviation Organisation (ICAO) European (EUR) and Middle-East (MID) region.

Keywords
CONOPS Centralised Service CNR MICA
Mode S Interrogator Code IC Allocation IC Application
MICA Cell Operator Focal Points

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EXECUTIVE SUMMARY

In order to ensure a safe operation of Mode S Interrogators, it is necessary to have a centralised interrogator code allocation system.

Over the last decade, the coordination and the management of the Mode S Interrogator Codes has become a critical activity with the continued increase of Interrogator Code requests for the installation of new Mode S Interrogators.

CS6-2, the Centralised Service on Management of Common Network Resources Service/Mode S Interrogator Code Allocation (CNR/MICA) will support EUROCONTROL as the Network Manager in its Mode S Interrogator Code Allocation (MICA) function aiming at ensuring the smooth and safe deployment of Mode S Interrogators, civil and military, in ICAO European region and ICAO Middle-East region.

CS6-2 will deliver an improvement to the existing centralised interrogator code allocation service by maintaining/enhancing and hosting the MICA Website which is used by stakeholders as the main interface to the system, and by maintaining the MICA tools which are used to allocate Interrogator Code to Mode S Interrogators.

After introducing the central services concept and the main purpose of CS6-2, this document describes the detailed scope, the components of CS6-2 and the roles and responsibilities of the different parties involved.
INTRODUCTION

Introduction by the Director General of EUROCONTROL

Following a request of the European Commission in November 2012, EUROCONTROL developed the concept of Centralised Services (CS).

Version 2.0, dated March 2013 of the EUROCONTROL proposal for a first set of nine Centralised Services to contribute to SES Performance Achievement is attached as Annex 1. A short description of the proposed CS is attached as Annex 2.

The Agency proposed the CS concept in order to significantly support:

- The Member States and their ANSPs to reach or at least to come closer to the EU performance targets;
- The implementation of SESAR results on a central pan-European level;
- The development of high tech solutions by European ATM manufacturers to be deployed on a central level providing the services to all ANSPs of the EUROCONTROL Member States;
- The creation of pan-European operational concepts for the Centralised Services proposed;
- The creation of a pan-European market for these ANS support services;
- The implementation of market mechanisms for some ANS support services through tendering of the services with time limited performance based contracts;
- The creation of market opportunities for the ANSPs of EUROCONTROL Member States to provide services outside of their national boundaries, cooperating in newly founded consortia;
- The strengthening of the European Network, increasing capacity and safety and
- Optimised usage of scarce resources such as frequencies.

EUROCONTROL works closely with the Member States, ANSPs, civil and military airspace users, airports, the aerospace industry, professional organisations, intergovernmental organisations and the European institutions.

On 29 April 2013 EUROCONTROL invited the Airspace Users to participate in a workshop where the concept of Centralised Services was briefed. The Minutes of this Workshop are attached as Annex 3.

EUROCONTROL also invited the EUROCONTROL Member States on 4 March 2013, the ANSPs on 24 April 2013 and the ATM Manufacturing Industry on 17 May 2013 to demonstrate the Centralised Services concept. The minutes of these workshops are
respectively attached as Annex 4, 5 and 6.

Following the PC/39 on 16 May 2013 and PCC/31 on 2 July 2013 EUROCONTROL updated on the CS concept. The working papers and slides presented as well as an extract from the Minutes of both meetings are respectively attached as Annex 7 and 8.

EUROCONTROL advisory groups such as AAB, NMB, MAB, CMIC, as well as EU bodies such as the SSC, ICB and its subgroups were briefed. These briefings were followed by so called CS specific workshops. This was a series of 9 workshops held in June and July 2013 - for each proposed CS one specific workshop was held; CS6 (CNR) workshop was held on 5 July 2013. The slides presented as well as the minutes of this meeting are attached as Annex 9.

The questions asked and answered in an intensive dialogue since the beginning of the program are publicly available. We like to refer to the FAQ list that is constantly updated and available on the EUROCONTROL homepage.

The CBA figures presented in detail for all the 9 CS support the initial assessment done, that a 150 to 200 million € cost reduction for the airspace users is possible through the implementation of the 9 centralised services proposed by EUROCONTROL. Specific focus was put on the synergy effects foreseen between the different centralised services.

It was agreed with the stakeholders, that the Agency would invite the participants to the individual CS workshops, as well as the existing EUROCONTROL advisory groups to participate in specific meetings in September and October 2013 to develop a pan-European ops concept for each of the Centralised Services.

By Directive No14/83 of the Permanent Commission dated 3 February 2014, the EUROCONTROL Member States tasked the Agency with the development, set up and demonstration of CS6; and proceeding to implementation of each CS only after a positive decision of the PC/CN.

Based on inputs received from stakeholders, the Agency has decided to break down the initial nine services into eighteen in order to provide a much more pragmatic and efficient approach, as well as giving even more opportunities for ANSPs to participate in providing pan-European services that will be world leaders. As a result, CS6 has been broken into CS6-1, CS6-2, CS6-3, CS6-4, CS6-5, CS6-6 and CS6-7.

Our partners are involved at every level of the corporate governance structure. The deployment and operation of CS will impact the remit of the Network Manager. Therefore, its governing body, i.e. the Network Management Board where the EC, EUROCONTROL, ANSPs, airspace user, airports and the military are represented could be extended in the future, the operation of the CS being overseen by EASA; the latter is already supporting the European Commission in the oversight of the Network Manager. Through its nomination as Network Manager, EUROCONTROL will be entrusted to manage the centralised services.

Frank Brenner
Director General of EUROCONTROL
December 2014
CHAPTER 1 – Context

1.1 Geographical Applicability

The services of CS6-2: Centralised Service on Management of Common Network Resources Service/Mode S Interrogator Code Allocation (CNR/MICA) shall be provided to all EUROCONTROL Member States, to all Member States of the ICAO European (EUR) region and to all Member States of the ICAO Middle-East (MID) region.

The geographical scope may be expanded to additional States under specific agreements for the benefits for the ATM network.

1.2 Aim

CS6-2 will support EUROCONTROL as the Network Manager (NM) in its Mode S Interrogator Code Allocation (MICA) function aiming at ensuring the smooth and safe deployment of Mode S Interrogators, civil and military, in ICAO EUR region and ICAO MID region by maintaining/enhancing and hosting the Mode S Interrogator Code Allocation website (hereinafter MICA Website) which is used by stakeholders as the main interface to the system, and by maintaining the MICA tools which are used to allocate Interrogator Code (IC) to Mode S Interrogators.

CS6-2 service will build on the experience of the existing MICA activities and in particular on the existing MICA Website and the existing MICA tools.

CS6-2 involves the current MICA actors, respecting the current agreed governance and roles and responsibilities. CNR/MICA will be run under the auspices of EUROCONTROL as the Network Manager (NM).

The objective of this document is to describe the operational concept of CNR/MICA and to identify the impact on the most important stakeholders that would result from CS6-2 implementation.

1.3 Intended Audience

The intended audience are the CS6 CONOPS workshop participants and all the Stakeholders who are interested in the development of CS6-2. The document will also be used to define the operational requirements for the Call-for-Tenders for the CS6-2 CNR/MICA.

1.4 Intended Benefits

Many benefits have already been achieved by centralising activities related to the IC Allocation to Mode S Interrogators. CS6-2 expects to maintain/improve these benefits via the
1.5 Centralised Mode S IC Allocation Service Context

Whilst traditional Mode A/C Secondary Surveillance Radar (SSR) stations continuously interrogate all aircraft within their range, Mode S Interrogators perform selective interrogations.

In order to avoid ambiguity in the operation of the system it is essential that each Eligible Mode S Interrogator is allocated an Eligible Interrogator Code (IC) and is protected from interference by other Mode S Interrogators operating in overlapping or contiguous airspace.

The introduction of Mode S Interrogators in the ICAO EUR region has identified the need for a coordinated approach to the allocation and implementation of the ICs used by ground-based, airborne and shipborne platforms.

Provisions regarding the implementation and monitoring of Mode S IC Allocations in the ICAO EUR region have been initially defined by ICAO in the European Basic Air Navigation Plan (EUR ANP) (Doc 7745, Volume I) and the European Facilities and Services Implementation Document (EUR FASID) (Doc 7754, Volume II). In 2011, the 53rd Meeting of the ICAO EANPG decided that the EUR Principles and Procedures for SSR Mode S Interrogator Code (IC) Allocation should be transferred from the ICAO EUR ANP (Doc 7754) to a new separate document, ICAO EUR DOC 024 ([RD 1]).

The design of the Mode S system limits the number of Interrogator Code (IC) available to 16 Interrogator Identifier (II) codes and 63 Surveillance Identifier (SI) codes. Due to the limited number of ICs, it is necessary to have a centralised IC Allocation system to ensure an optimised allocation and a safe operation. In the ICAO EUR region, the centralised IC Allocation system is exercised by EUROCONTROL on behalf of the European regional office of ICAO.

The EUROCONTROL Provisional Council recognised the need for a centralised Mode S IC Allocation mechanism at the 13th Session on 11 April 2002 and requested to set up the necessary arrangements.

The Mode S Interrogator Code Allocation Cell (hereinafter MICA Cell) has been created to provide the centralised service of IC Allocation to Mode S Operators through their competent State Focal Point.

The Mode S Interrogator Codes Co-ordination Group (MICoG) had been created to oversee the allocation process and provide guidance to the MICA Cell. Presently, the Surveillance Ground Environment Group - Mode S Interrogator Codes Co-ordination Group (hereinafter SGEG-MICoG) performs this task.

In 2009, the following European Regulation entered into force ([RD 2]):

**COMMISSION REGULATION (EC) No 262/2009 of 30 March 2009**

*laying down requirements for the coordinated allocation and use of Mode S Interrogator codes for the single European sky*

It defines regulatory provisions applicable to Mode S Interrogator operators, air navigation service providers (ANSPs) and EU Member States with respect, in particular, to:

1. Interoperability and performance requirements on Mode S Interrogators.
3. Contingency requirements.
In 2011, the ICAO MID regional office requested EUROCONTROL to formally provide support for Mode S Interrogator code allocation in ICAO MID region. It has been agreed that the MICA Cell will also support the ICAO MID regional office, with the same standard bi-annual MICA Cycle as that for Mode S Interrogators within EUR region. This includes a coordinated listing of IC and coverage for Mode S Interrogators in MID region. It has also been agreed that a single ICAO MID Regional Officer CNS will coordinate directly with the MICA Cell for all countries in MID region.
CHAPTER 2 – Operational Concept

2.1 Scope

CS6-2 will provide the maintenance/enhancement and hosting of the existing MICA Website, and the maintenance of the MICA tools which are used to allocate IC to Mode S Interrogators.

CS6-2 will provide the maintenance/enhancement and hosting of the existing MICA Website which is the main interface to the centralised interrogator code allocation service and is part of the interrogator code allocation system. It is used for several years to coordinate and manage the allocation of ICs and coverage maps to Mode S Interrogators in the ICAO EUR region and in the ICAO MID region. It is the place for Stakeholders to submit IC requests for new Mode S Interrogators, and to retrieve the corresponding IC Allocations to be programmed in the Mode S Interrogators.

It is not in the scope of the CS6-2 to allocate IC to Mode S interrogators. The MICA Cell in NM provides the centralised interrogator code allocation service to Mode S Operators through their competent State Focal Point and will continue to provide this service when CS6-2 will be operational.

Currently, the MICA Website is hosted inside EUROCONTROL and the access is done through the EUROCONTROL OneSkyOnline portal. The access rights are managed by the MICA Cell.

CS6-2 will also provide the maintenance of the MICA tools which are used for several years to allocate IC to Mode S Interrogators.

There are four MICA tools to maintain:

- The Interrogator Code Allocation Tool + (ICAT+) is used to perform IC allocation plan update simulations on the basis of the pending IC Applications. It supports the design of Mode S Interrogator visibility and surveillance coverage, the allocation of IC and the clustering of Mode S Interrogators. Lockout coverages are not supported by ICAT+ tool and are processed afterwards with the SMGET tool.

- The System Map Generator and Extractor Tool (SMGET) is a tool which allows the user to define the coverage maps (Surveillance, Lockout and Datalink coverage), the IC and other radar parameters for Mode S Interrogators working alone or together in the same cluster, and to export the coverage map definitions either in the European Mode S Coverage Map ICD format ([RD 4]) or in range per sector around the Mode S interrogator position.

- SmgetToSkyview2 is a tool which allows to export the coverage maps provided in the European Mode S Coverage Map ICD format in order to display them either in Google Earth or Skyview2.

- DiffMapTool is a tool which allows to compare two coverage maps in the European Mode S Coverage Map ICD format.
ICAT+ is only used by the EUROCONTROL MICA Cell. SMGET is used by the EUROCONTROL MICA Cell and the Mode S Operators. SmgetToSkyview2 and DiffMapTool may be used the EUROCONTROL MICA Cell and the Mode S Operators.

### 2.2 Roles and Responsibilities

In the ICAO EUR region, the interrogator code allocation system is exercised by the EUROCONTROL NM on behalf of the European regional office of ICAO.

The EUROCONTROL NM also provides support for Mode S IC Allocation to the Middle-East regional office of ICAO with the same standard bi-annual MICA Cycle as that for Mode S Interrogators within EUR region.

In NM, the centralised interrogator code allocation service is provided by the MICA Cell.

The users of the interrogator code allocation system are the Competent States:

a) in the case of an ANSP from an EU Member State or States having chosen to transpose the EU regulation, the State that has certified the provider in accordance with Commission Regulation (EC) No 1035/2011 repealing Regulation 2096/2005;

b) in other cases for an EU Member State or States having chosen to transpose the EU regulation, the State within the area of responsibility in which the Mode S Operator operates, or intends to operate, an Eligible Mode S Interrogator.

c) for States not subject to EU regulation, the State within the area of responsibility in which the Mode S Operator operates, or intends to operate, an Eligible Mode S Interrogator in accordance with the ICAO EUR FASID and EUR Doc024 (European Principles And Procedures for the Allocation of Secondary Surveillance Radar Mode S Interrogator Codes (IC)).

d) States from ICAO MID region

In the ICAO EUR region, competent States shall nominate a Focal Point responsible for the coordination of all matters concerning the allocation of ICs between the MICA Cell and the Mode S Operators in their area of responsibility.

In the ICAO MID region, the ICAO MID regional office shall nominate a Focal Point who is responsible for the coordination of all matters concerning the allocation of ICs between the MICA Cell and Mode S Operators that operate in the ICAO MID region.

A Mode S Operator is a person, organisation or enterprise operating or offering to operate a Mode S Interrogator, including:

- Air navigation service providers;
- Mode S Interrogators manufacturers;
- Airport operators;
- Military authorities (national and international organisation (e.g. NATO));
- Research establishments;
- Any other entity entitled to operate a Mode S Interrogator;

For more information on roles and responsibilities of customers, please refer to [RD 3].

The CS6-2 Service Provider shall support the centralised interrogator code allocation service:

- by maintaining/enhancing and hosting the MICA Website
by maintaining the MICA tools which are used to allocate IC to Mode S Interrogators and updating the related documentation.

The CS6-2 Service Provider shall also support training courses at IANS for the MICA related applications (MICA website and SMGET).

The MICA Website is currently in operation for several years. A transition to the CS6-2 Service provider will have to be established.

EUROCONTROL will continue to represent the service in all the governance related meetings with the support of the CS6-2 Service provider.

2.3 Service Operation

The centralised interrogator code allocation service is in operation for 10 years now.

The following figure describes the interactions between the main actors of the centralised interrogator code allocation service.
Centralised Service on Management of Common Network Resources / Mode S Interrogator Code Allocation (CNR/MICA)

Concept of Operations (CONOPS)

The IC Allocations to Mode S Interrogators are generally processed during a Mode S IC Allocation Cycle (hereinafter MICA Cycle). There are two MICA Cycles per year (at 168 days intervals). The IC Allocations may also be processed on an Ad-Hoc basis, but this process must not impact any existing Mode S IC Allocation issued to other Mode S Interrogator.

For more information on the MICA Cycle, the Ad-Hoc allocation process or the overall MICA process, please refer to [RD 3].

ICAT+ and SMGET tools are used during the MICA process. For more information on the way the MICA tools are used, please refer to [RD 5].

2.3.1 IC Application Submission

Civil or military Mode S Operators intending to operate, or operating, an Eligible Mode S Interrogator for which no IC has been allocated, shall submit an IC Application to the responsible Focal Point. An IC Application may also be submitted to request an update of an existing IC Allocation.

The Focal Points shall check the validity of received IC Applications before they are submitted to the interrogator code allocation system.

The IC Allocation submission is done on the MICA Website.

For more information on the IC Application procedures, please refer to chapter 3 of [RD 3].

2.3.2 IC Application Processing

The centralised interrogator code allocation service processes with ICAT+ and then SMGET the IC Applications submitted on the MICA Website during the MICA Cycle or in Ad-Hoc, and proposes an update of the Mode S IC Allocation plan to be reviewed and approved by the Focal Points.

The proposed updated plan is provided on the MICA Website and contains an IC Allocation proposal for every IC Application under process.

During this process, the MICA Cell may encounter difficulties to meet the requested operational requirements for some IC Applications. In such cases, the MICA Cell needs guidance from and coordination with Focal Points and/or Mode S Operators, civil and military, to complete that task. Operational compromises between the different Mode S operators, civil and military, may have to be adopted in order to secure network performance, locally and globally.

2.3.3 Issued IC Allocation Plan

After the approval by the Focal Points, the MICA Cell updates the Mode S IC Allocation plan on the MICA Website.

The issued IC Allocations may then be programmed in Mode S Interrogators (SMGET may be used by Mode S Operators to program their Mode S Interrogators). However, the programming of some IC Allocations may depend on the programming of some other IC Allocations. In that case the IC Allocation programming must be coordinated.

The Interrogator Code Allocation Plan is provided to ICAO EUR regional office (Attachment to EUR Doc 024).

2.3.4 IC Conflict Management

A Mode S Interrogator may not be programmed correctly, because the issued IC Allocation is not correctly programmed in the Mode S Interrogators, or because the Mode S Interrogator starts operation without IC Allocation.
The incorrectly programmed Mode S Interrogator may create an IC Conflict.

An IC Conflict is defined as an uncoordinated overlap of Lockout coverage of two or more Mode S Interrogators operating on the same IC, potentially resulting in aircraft remaining undetected by at least one of the Mode S Interrogators.

The interrogator code allocation system provides a means to report an IC Conflict through a reporting mechanism implemented in the MICA Website. The MICA Cell coordinates the investigation with Mode S operators, civil and military, impacted by an IC Conflict to identify the source of the IC Conflict and resolve it.

For more information on the IC Conflict, please refer to chapter 6 of [RD 3].

2.4 Safety

CNR/MICA is not an operational service, therefore it is not expected to be necessary to perform a thorough safety case.

2.5 Security

Critical and sensitive information will be handled by the CNR/MICA service including commercial in confidence/ state data about surveillance sensor configurations and locations. All these information shall be protected against the use by non-authorised persons. The data will not belong to the companies to which tasks will be outsourced. This will be protected by specific Non-Disclosure Agreements. The contractor will need to develop a security plan to ensure the protection of data.

2.6 Service level Agreement

The service provided is not an operational service and can accommodate some interruptions. A minimum operational availability will be defined in the SLA (Service Level Agreement).

2.7 Governance

The Mode S Interrogator Codes Co-ordination Group (MiCoG) had been created to oversee the allocation process and provide guidance to the MICA Cell. Presently, the Surveillance Ground Environment Group - Mode S Interrogator Codes Co-ordination Group (hereinafter SGEG-MiCoG) performs this task.

The SGEG-MiCoG members are people involved in the IC Allocation process including the Agency staff, nominated representatives of States or international organisations implementing and planning to operate Mode S sensors and subject to Commission Regulation (EC) No 262/2009, Focal Points nominated by States or international organisations implementing and planning to operate Mode S sensors in accordance with the ICAO EUR FASID and Doc024, NATO representative designated for the submission of IC Allocation applications, representatives of ICAO MID regional office.

The SGEG-MiCoG is established under, and is accountable to the Surveillance Steering Group (SURSG) of the Communications, Navigation and Surveillance Infrastructure (CNS) Team.

The SGEG-MiCoG works in close coordination with ICAO EUR regional office on behalf of
which the allocation is performed.

The CS6-2 Service Provider may have to attend the SPEG-MICoG meetings. There are 2 meetings a year.

2.8 AGREEMENTS

In 2002, it was determined that regional air navigation agreement on Mode S ICs allocation principles and procedures was necessary. Accordingly the ICAO European Air Navigation Planning Group (EANPG), at its 44th meeting on 2-5 December 2002, formally agreed to the inclusion of the EUR principles and procedure Procedures for Mode S Interrogator Code (IC) Allocation in the ICAO EUR Air Navigation Plan (Doc 7754).

In 2011, the 53rd Meeting of the ICAO EANPG determined that the EUR Principles and Procedures for Mode S Interrogator Code (IC) Allocation should be transferred from the ICAO EUR ANP (Doc 7754) into a separate ICAO EUR Doc 024 [RD 1]. The EUR Doc 024 states that “the regional coordination is conducted through the IC Allocation Cell provided by EUROCONTROL on request of the ICAO EANPG”.

The Attachment to EUR Doc 024 provides the latest status of the SSR Mode S IC Allocations for the ICAO EUR Region.

In 2011, the ICAO MID regional office requested EUROCONTROL to formally provide support for Mode S Interrogator code allocation in ICAO MID region. It has been agreed that the MICA Cell will also support the ICAO MID regional office, with the same standard biannual MICA Cycle as that for Mode S Interrogators within EUR region. This includes a coordinated listing of IC and coverage for Mode S Interrogators in MID region. It has also been agreed that a single ICAO MID Regional Officer CNS will coordinate directly with the MICA Cell for all countries in MID region.
CHAPTER 3 – REGULATORY REQUIREMENTS

Without prejudice to the applicability of additional or future regulations, MICA has to be developed and operated considering the following SES regulatory framework:


4. Commission Regulation (EC) No 482/2008 of 30 May 2008 establishing a software safety assurance system to be implemented by air navigation service providers;


CHAPTER 4 – Links of the CS5 (EAIMS) to SESAR deployment, ESSIP, ICAO GANP – current procedures and future evolution

4.1 Baseline – Interim Deployment Programme (IDP)

Centralised Services (CS) are in line with the Interim Deployment Programme (IDP). The conformity analysis was initiated by EUROCONTROL and further completed at the Interim Deployment Steering Group (IDSG) Expert Team in the meeting of 27 June 2013.

The possible relationships between CS and IDP deployments have been analysed and clustered in four categories of potential interactions, which are:

1. **No relationships** between IDP activities and CS. This means that the functions and services deployed in a centralised manner by the CS do not directly interface any of the deployments of the IDP.

2. IDP deployment is improved by the independent CS capabilities. The functions and services deployed in a centralised manner by the CS will be used by one or several IDP deployments but in an independent way. This is the case when CS does not impact functionalities already deployed, i.e. **Independent function improvements**, or when the CS implements some add-on function or services such as equipment performance monitoring, centralised management of shared parameters, i.e. **Development of supporting option**.

3. IDP is a **pre-requisite** for CS. This means that the functions and services deployed in a centralised manner by the CS reuse an IDP deployment.

4. IDP deployment is an **alternative** to the CS solution. The functions and services deployed in a centralised manner by the CS offer a different implementation of an IDP deployment.

The CNR/MICA centralised service proposes services to support in a cost-effective way the Mode S Interrogator Code Allocation.

This centralised service is categorised as **no relationships**, as IDP has no surveillance related deployments. There are no conflicts between the use of CS6-2 and the IDP deployments.

4.2 Pilot Common Projects (PCP) and Common Projects (CP)

Centralised Services interact with the Pilot Common Project (PCP). Interdependencies
between Centralised Services and the six ATM Functionalities (AFs) of the Pilot Common Projects (PCP) have been analysed.

The CNR/MICA centralised service has no relationships with the PCP deployments.

### 4.3 European Single Sky ImPlementation (ESSIP)

The possible relationships between CS and ESSIP, being the Level 3 of the European ATM Master Plan, have been analysed.

The CNR/MICA centralised service is categorised as **development of supporting options** of the ESSIP surveillance Objectives (e.g. ITY-SPI “Surveillance performance and Interoperability”, ITY-ACID “Aircraft Identification”).

The CNR/MICA is a basic enabler for Mode S operation.

### 4.4 ICAO Global Air Navigation Plan (GANP)

The possible relationships between CS and ICAO Global Air Navigation Plan (GANP) have been analysed.

No ICAO GANP enablers have been identified that address directly the scope of the CNR/MICA.
ANNEX 1 – EUROCONTROL
Proposal for a first set of Centralised Services to contribute to SES Performance Achievement, March 2013
ANNEX 2  – Brief description of the Centralised Services
ANNEX 3 – Minutes of the 29 April 2013 Airspace Users CS workshop
ANNEX 4 – Minutes of the 4 March 2013 Member States CS workshop
ANNEX 5 – Minutes of the 24 April 2013 ANSPs CS workshop
ANNEX 6 – Minutes of the 17 May 2013 Manufacturing Industry CS workshop
ANNEX 7 – Working papers, slides and extract from the Minutes of PC/39, 16 May 2013
ANNEX 8 – Working papers, slides and extract from the Minutes of PCC/31, 02 July 2013
ANNEX 9 – Slides and Minutes of CS6 specific workshop of 05 July 2013
ANNEX 10 – Definitions

Eligible Interrogator Code: any code among the II codes and the SI codes, except:

1. II code 0;
2. the interrogator code(s) reserved for military entities, including intergovernmental organisations in particular North Atlantic Treaty Organisation (NATO) management and allocation;

Eligible Mode S Interrogator: Mode S Interrogator for which at least one of the following conditions is satisfied:

1. the interrogator relies, at least partly, on Mode S all call interrogations and replies for Mode S targets acquisition; or
2. the interrogator locks out acquired Mode S targets in reply to Mode S all call interrogations, permanently or intermittently, in part or totality of its coverage; or
3. the interrogator uses multi-site communications protocols for data link applications;

Focal Point: a person representing a competent State or an international organisation applying for Interrogator Codes, who is responsible for the coordination of all matters concerning the IC Allocations between the MICA Cell and the Mode S Operators in his area of oversight.

IC Allocation (Interrogator Code Allocation): an Interrogator Code, a Surveillance Coverage and a Lockout Coverage provided by the Interrogator Code Allocation System to a Mode S Interrogator granting the right to this interrogator to apply lockout on a given IC in a given volume of airspace.

IC Allocation Plan (Interrogator Code Allocation Plan): the most recently approved complete set of Interrogator Code Allocations.

IC Application (Interrogator Code Application): an application from a Mode S Operator for the allocation of an Eligible Interrogator Code.

IC Conflict (Interrogator Code Conflict): uncoordinated coverage overlap of two or more Mode S Interrogators operating on the same interrogator code, potentially resulting in aircraft remaining undetected by at least one of the Mode S Interrogators.

Lockout: protocol that allows the suppression of Mode S all call replies from already acquired Mode S targets.

Lockout Coverage: Mode S Interrogator configuration defining where and how to apply Lockout to Mode S targets. The Lockout Coverage can be provided in different formats depending on Mode S Interrogator capabilities: European Mode S Coverage Map ICD, Lockout range per sector, unique Lockout range.

MICA Cell (Mode S Interrogator Code Allocation Cell): the EUROCONTROL Team operating the interrogator code allocation system in accordance with its associated
Centralised Service on Management of Common Network Resources / Mode S Interrogator Code Allocation

(CNR/MICA)

Concept of Operations (CONOPS)

procedures in order to provide a centralised interrogator code allocation service.

**MICA Cycle (Mode S Interrogator Code Allocation Cycle):** a recurrent 6 monthly procedure for Mode S IC Allocation.

**MICA Website:** the Mode S IC Allocation web-based application is used to coordinate and manage the allocation of Eligible Interrogator Code to Eligible Mode S Interrogators in ICAO EUR region and ICAO MID region. The access to the web application is managed through the Eurocontrol OneSkyOnline portal. The MICA Website is part of the interrogator code allocation system.

**Mode S:** cooperative surveillance technique for air traffic control which enables the selective interrogation of aircraft and the extraction of air derived data through which new air traffic management functionalities can be developed.

**Mode S Interrogator:** a system composed of antenna and electronics, supporting addressing of individual aircraft through the Mode Select, known as Mode S.

**Mode S Operator:** a person, organisation or enterprise operating or offering to operate a Mode S Interrogator, including:

(a) Air navigation service providers;
(b) Mode S Interrogators manufacturers;
(c) Airport operators;
(d) Military authorities;
(e) Research establishments;
(f) Any other entity entitled to operate a Mode S Interrogator;

**Super Focal Point:** a person representing all competent State of an ICAO region applying for Interrogator Codes, who is responsible for the coordination of all matters concerning the IC Allocations between the MICA Cell and the Mode S Operators in his area of oversight.
# ANNEX 11 – Glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANS</td>
<td>Air Navigation Service</td>
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<tr>
<td>ANSP</td>
<td>Air Navigation Service Provider</td>
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<tr>
<td>ATM</td>
<td>Air Traffic Management</td>
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<tr>
<td>CONOPS</td>
<td>Concept of Operations</td>
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<tr>
<td>CNR</td>
<td>Common Network Resources</td>
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<tr>
<td>CNS</td>
<td>Communications, Navigation and Surveillance</td>
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<tr>
<td>CS</td>
<td>Centralised Service(s)</td>
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<tr>
<td>EANPG</td>
<td>European Air Navigation Planning Group</td>
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<tr>
<td>EASA</td>
<td>European Aviation Safety Agency</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<tr>
<td>ESSIP</td>
<td>European Single Sky ImPlementation</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>EUR</td>
<td>Europe (ICAO region)</td>
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<tr>
<td>FAQ</td>
<td>Frequently Asked Questions</td>
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<tr>
<td>GANP</td>
<td>Global Air Navigation Plan (ICAO)</td>
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<tr>
<td>IC</td>
<td>Interrogator Code</td>
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<td>ICAT+</td>
<td>Interrogator Code Allocation Tool +</td>
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<td>ICAO</td>
<td>International Civil Aviation Organization</td>
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<td>IDP</td>
<td>Interim Deployment Programme</td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>IDSG</td>
<td>Interim Deployment Steering Group</td>
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<td>MICA</td>
<td>Mode S Interrogator Code Allocation</td>
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<td>MICoG</td>
<td>Mode S Interrogator Codes Co-ordination Group</td>
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<tr>
<td>MID</td>
<td>Middle-East (ICAO region)</td>
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<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organization</td>
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<tr>
<td>NM</td>
<td>Network Manager</td>
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<td>PCP</td>
<td>Pilot Common Projects</td>
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<td>SES</td>
<td>Single European Sky</td>
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<td>SESAR</td>
<td>Single European Sky ATM Research</td>
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<td>SGEG</td>
<td>Surveillance Ground Environment Group</td>
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<td>SMGET</td>
<td>System Map Generator and Extractor Tool</td>
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<tr>
<td>SURSG</td>
<td>Surveillance Steering Group</td>
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ANNEX 12 – References

ICAO EUR DOC 024 – July 2012

laying down requirements for the coordinated allocation and use of Mode S Interrogator codes for the single European sky

[RD 3] EUROCONTROL Specification for the Mode S IC Allocation Coordination and IC Conflict Management
EUROCONTROL-SPEC-153 - 14th June 2013

[RD 4] European Mode S Station Coverage Map Interface Control Document, Ed. 1.16
EUROCONTROL – 9 May 2005

[RD 5] EUROCONTROL Process to operate the Centralised Mode S Interrogator Code Allocation Service
EUROCONTROL – Edition 1.0 - 30th September 2013