



SLOVENSKI STANDARD
SIST EN 303 214 V1.2.1:2012
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Sistem storitev podatkovnih povezav (DLS) - Specifikacija Skupnosti za izvajanje zahtev Uredbe o medobratovnosti na enotnem evropskem nebu EC 552/2004 za zemeljske sestavne dele in preskušanje sistema

Data Link Services (DLS) System - Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 - Requirements for ground constituents and system testing

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**Data Link Services (DLS) System;
Community Specification for application under the
Single European Sky Interoperability Regulation EC 552/2004;
Requirements for ground constituents and system testing**

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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 European Standard (EN) has been produced by ETSI Technical Committee Aeronautics (AERO).

The present document has been produced by ETSI in response to European Commission mandate M/438 for the Interoperability of the European Air Traffic Management Network.

The present document has been developed in cooperation with Eurocae for compliance with the Essential Requirements of the Single European Sky Interoperability Regulation [i.2] and/or requirements given in implementing rules for interoperability based on the Single European Sky Interoperability Regulation.

The presumption of conformity which is linked to the full application of the present document can only be claimed after it has been listed in the Official Journal of the European Union as Community Specification.

General and specific requirements for presumption of conformity to SES Interoperability Regulation 552/2004 [i.6] are given in the normative annexes of the present document.

NOTE: Other requirements and other EU Regulations and/or Directives may be applicable to the product(s) falling within the scope of the present document.

National transposition dates

Date of adoption of this EN:	10 April 2012
Date of latest announcement of this EN (doa):	31 July 2012
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2013
Date of withdrawal of any conflicting National Standard (dow):	31 January 2013

Introduction

The European Union launched the Legislation "Single European Sky" (SES) in 2002 which was adopted in 2004 and amended in 2009 [i.6].

The SES legislation is based on a framework of 4 regulations, which includes the Interoperability Regulation [i.6]. The objective of the Interoperability Regulation is to ensure interoperability of the European Air Traffic Management Network (EATMN) consistent with air navigation services. Under this regulation, the use of a European Standard referenced in the Official Journal of the European Union as Community Specification (CS) is a means of compliance to the essential requirements of the Regulation and/or the relevant implementing rules for interoperability.

The present document takes into account the Council Decision 2009/320/EC [i.8] endorsing the European Air Traffic Management Master Plan for the Single European Sky ATM Research (SESAR) project.

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1 Scope

The present document is applicable to the ground implementation of data link services, derived from the ICAO standard Context Management (CM) and Controller Pilot Data Link Communication (CPDLC) applications, including test procedures.

Any software elements related to the software assurance level of data link ground implementation are outside of the scope of the present document. As such the essential requirements of the Interoperability Regulation are not considered for software elements within the present document.

The present document does not give presumption of conformity to any of the requirements stemming from the Regulation (EC) 216/2008 [i.9] as amended by Regulation (EC) 1108/2009 [i.10].

The present document does not give presumption of conformity related to the maintenance requirements, environmental constraints, effect of harmful interference and civil/military coordination.

NOTE: For these ERs, please refer to the Air Navigation Service Provider procedures.

Requirements in the present document which refer to "should" statements or recommendations in the normatively referenced material (clause 2.1) are to be interpreted as fully normative ("shall") for the purpose of compliance with the present document.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

- [1] ICAO Convention on International Civil Aviation, Annex 10 - Aeronautical Telecommunications, Volume II: "Communications Procedures including those with PANS status", Sixth edition - October 2001, incorporating Amendments 70-85, Amendment 85 (applicable 18/11/2010).
- [2] ICAO Convention on International Civil Aviation, Annex 10 - Aeronautical Telecommunications, Volume III: "Communication Systems, Part I - Digital Data Communication Systems", Second Edition - July 2007, incorporating Amendments 70-85, Amendment 85 (applicable 18/11/2010), Chapter 6 - VHF Air-ground Digital Link (VDL).
- [3] ICAO Doc. 4444-ATM/501: "Procedures for Air Navigation Services - Air Traffic Management", Fifteenth Edition - 2007, incorporating Amendments 1 - 5. ISBN 978-92-92310-11-0.
- [4] ICAO Doc. 9705-AN/956: "Manual of Technical Provisions for the Aeronautical Telecommunications Network (ATN)", Second Edition, December 1999, including identified PDRs.
- [5] ICAO Doc. 9776/AN970: "Manual on VHF Digital Link (VDL) Mode 2", First Edition, 2001.
- [6] EUROCAE Document ED-110B / RTCA DO-280B: "Interoperability Requirements Standard for Aeronautical Telecommunication Network Baseline 1" (ATN B1 Interop Standard) December 2007.

- [7] EUROCAE Document ED-120 / RTCA DO-290: "Safety and Performance Requirements Standard for Initial Air Traffic DLS in Continental Airspace" (SPR IC), May 2004, including Change 1 (April 2007) and Change 2 (October 2007).
- [8] EUROCAE Document ED-111: "Functional Specifications for CNS/ATM Recording", July 2002 including Amendment 1 (30/07/2003).
- [9] EUROCONTROL-SPEC-0106: "EUROCONTROL Specification For On-Line Data Interchange (OLDI)", Edition 4.1, 16 January 2008 (Recognised as SES Community specification, OJ C 149, 14.6.2008, p.22).
- [10] ARINC Specification 631-6: "VHF Digital Link (VDL) Mode 2 Implementation Provisions Standards" (November 2010).
- [11] ICAO EUR Doc 011: "EUR Frequency Management Manual for Aeronautical Mobile and Aeronautical Radio Navigation Services" ICAO European and North Atlantic Office, Edition 2010.

NOTE: Available at http://www.paris.icao.int/documents_open/files.php?subcategory_id=96.

- [12] ETSI EN 301 841-1 (V1.3.1): "VHF air-ground Digital Link (VDL) Mode 2; Technical characteristics and methods of measurement for ground -based equipment; Part 1: Physical layer and MAC sub-layer".
- [13] ETSI EN 301 841-2 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 2; Technical characteristics and methods of measurement for ground -based equipment; Part 2: Upper layers".
- [14] Commission Regulation (EC) No 1702/2003 of 24 September 2003 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations, OJ L 243, 27.09.2003, p.6-79.
- [15] EUROCONTROL-SPEC-0106: "EUROCONTROL Specification For On-Line Data Interchange (OLDI)", Edition 4.2, 16 December 2010 (Recognised as SES Community specification, OJ C 146, 17.05.2011, p.11).
- [16] EUROCONTROL-SPEC-0107: "EUROCONTROL Specification For ATS Data Exchange Presentation (ADEXP)", Edition 3.0, 20 October 2007 (Recognised as SES Community specification, OJ C 68, 13.03.2008, p.5).

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ICAO Convention on International Civil Aviation, Annex 1 - Personnel Licensing, 10th edition, incorporating Amendments 1-167, July 2006. ISBN 92-9194-750-4.
- [i.2] Commission Regulation (EC) No. 29/2009, of 16 January 2009, laying down requirements on data link services for the single European sky, OJ L 13/3 (17.1.2009), including Corrigendum published in the EU Official Journal L104/58 at 24.04.2009.
- [i.3] Commission Regulation (EC) No 30/2009 of 16 January 2009 amending Regulation (EC) No 1032/2006 as far as the requirements for automatic systems for the exchange of flight data supporting data link services are concerned, OJ L 13/20 (17.1.2009).
- [i.4] ICAO Draft Doc. 9880-AN/466 Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI standards and protocols, Part I - Air-Ground Applications, 1st edition (draft v1.1), November 2006.

- [i.5] Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for creation of the single European sky (the framework Regulation), OJ L 96, 31.03.2004, p. 1 as amended by Regulation (EC) No 1070/2009, OJ L 300, 14.11.2009, p. 34.
- [i.6] Regulation (EC) No 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (interoperability Regulation), OJ L 96, 31.03.2004, p. 26 as amended by Regulation (EC) No 1070/2009, OJ L 300, 14.11.2009, p. 34.
- [i.7] ARINC Characteristic 750-4, VHF Data Radio (2004).
- [i.8] Council Decision 2009/320/EC of 30 March 2009 endorsing the European Air Traffic Management Master Plan of the Single European Sky ATM Research (SESAR) project.
- [i.9] Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC, OJ L 79, 19.03.2008, p. 1-49.
- [i.10] Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Directive 2006/23/EC, OJ L 309, 24.11.2009, p. 51-70.
- [i.11] EUROCONTROL Specification on Data Link Services, Eurocontrol -Spec-0116, Edition 2.1 (Edition date 28 January 2009).

3

Definitions and abbreviations

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3.1 Definitions

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For the purposes of the present document, the terms and definitions given in the Framework Regulation [i.5], Interoperability Regulation [i.6] and the Implementing Rule [i.2] apply.

3.2 Abbreviations

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

ACL	ATC Clearances service
ACM	ATC Communications Management service
ADEP	Departure Aerodrome
ADES	Destination Aerodrome
AE	Application Entities
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AMC	ATC Microphone Check service
ANSP	Air Navigation Service Provider
ARINC	Aeronautical Radio Inc.
ARS	Administrative Region Selector field (of NSAP address)
ATC	Air Traffic Control
ATM	Air Traffic Management
ATN	Aeronautical Telecommunication Network
ATS	Air Traffic Services
ATSC	Air Traffic Services Communication
ATSP	Air Traffic Service Provider
C	Conditional
CDA	Current Data Authority
CLNP	Connectionless Network Protocol
CLTP	Connectionless Transport Protocol

CM	Context Management
CNS	Communications, Navigation, Surveillance
CP	Presentation Connect PDU
CPA	Presentation Connect Accept PDU
CPDLC	Controller Pilot Data Link Communication
CPR	Presentation Connect Reject PDU
CS	Community Specification
CSP	Communication Service Provider
DLIC	Data Link Initiation Capability service
DLS	Data Link Service(s)
DM	Downlink Message
EASA	European Aviation Safety Agency
EATMN	European Air Traffic Management Network
EC	European Commission
ED	EUROCAE Document
ER	Essential Requirement
ES	End System
EUROCAE	European Organisation for Civil Aviation Equipment
FIR	Flight Information Regions
FL	Flight Level
HMI	Human-Machine Interface
ICAO	International Civil Aviation Organisation
ICS	ATN Internet Communications Service
IDRP	Inter-Domain Routing Protocol
IEC	International Electrotechnical Commission
IFPS	Initial Flight Plan Processing System
IP	Internet Protocol
ISO	International Organisation for Standardisation
LACK	Logical Acknowledgement
LAM	Logical Acknowledgement Message
LOC	Location field (of NSAP address)
LOF	Log On Forwarding (OLDI Message)
LREF	Local Reference
MAC	Message for the Abrogation of Co-ordination
N	No Response
NAN	Next Authority Notified (OLDI Message)
NDA	Next Data Authority
NPDU	Network Protocol Data Unit
NSAP	Network Service Access Point
NSEL	Network Selector
OICS	Operational Implementation Conformance Statement
OLDI	On-Line Data Interchange
OSI	Open Systems Interconnection
PANS	Procedures for Air Navigation Services
PDR	Proposed Defect Report (to ICAO Doc. 9705)
PER	Packed Encoding Rules (of Abstract Syntax Notation One)
PICS	Protocol Implementation Conformance Statement
PPDU	Presentation Protocol Data Unit
R-ATSU	Receiving Air Traffic Services Unit
RTCA	Radio Technical Commission for Aeronautics, Inc.
SAC	Short Accept SPDU
SACC	Short Accept Continue SPDU
SARPs	ICAO Standards and Recommended Practices
SCN	Short Connect SPDU
SES	Single European Sky
SESAR	Single European Sky ATM Research
SNDCF	Sub-Network Dependent Convergence Function
SO	Safety Objective
SPDU	Session Protocol Data Unit
SPR	Safety and Performance Requirements
SQP	Signal Quality Parameter
SR	Safety Requirement

SRF	Short Refuse SPDU
SRFC	Short Refuse Continue SPDU
SYS	System Identifier field (of NSAP address)
T-ATSU	Transferring Air Traffic Services Unit
TC	Transport Connection
TP4	Transport Protocol Class 4
TPDU	Transfer Protocol data unit
TSEL	Transport Selector
U	Unconditional
UIR	Upper Flight Information Regions
ULCS	ATN Upper Layer Communications Service
UM	Uplink Message
VDL	Very High Frequency Digital Link
VHF	Very High Frequency
WAN	Wide Area Network
X.25	ITU-T Packet Switching standard
XID	eXchange IDentifier

4 Requirements for implementing Data Link Services

4.0 Precedence

In the event of a conflict between the interoperability requirements expressed in ED-110B [6] and the requirements in the present document, the latter shall take precedence.

NOTE: This requirement is equivalent to Eurocontrol DLS Specification [i.11], clause A.2.1.10.

4.1 Constituents of a DLS System

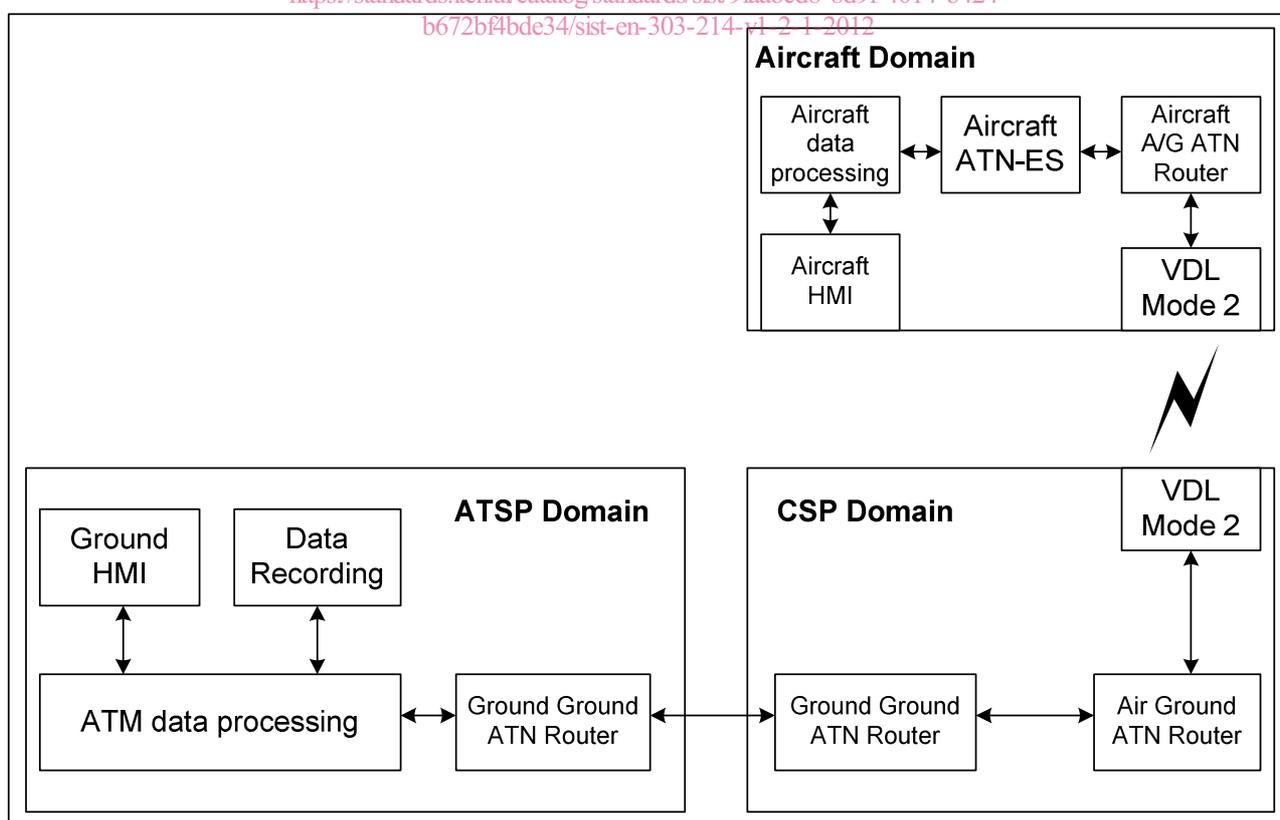


Figure 1: ATN Data Link System Architecture