

CEN

CWA 15537

WORKSHOP

April 2006

AGREEMENT

ICS 13.200

English version

Network Enabled Abilities - Service-Oriented Architecture for civilian and military crisis management

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

The formal process followed by the Workshop in the development of this Workshop Agreement has been endorsed by the National Members of CEN but neither the National Members of CEN nor the CEN Management Centre can be held accountable for the technical content of this CEN Workshop Agreement or possible conflicts with standards or legislation.

This CEN Workshop Agreement can in no way be held as being an official standard developed by CEN and its Members.

This CEN Workshop Agreement is publicly available as a reference document from the CEN Members National Standard Bodies.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

© 2006 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No.:CWA 15537:2006 E

Dit document is een voorbeeld van NEN / This document is a preview by NEN

Dit document mag slechts op een stand-alone PC worden geïnstalleerd. Gebruik op een netwerk is alleen toestaan als een aanvullende licentieovereenkomst voor netwerkgebruik met NEN is afgesloten. This document may only be used on a stand-alone PC. Use in a network is only permitted when a supplementary license agreement for us in a network with NEN has been concluded.

Contents

Contents.....	2
Foreword.....	5
Introduction.....	6
1 Scope.....	7
2 References.....	7
3 Definitions, symbols and abbreviations.....	7
3.1 Definitions.....	7
3.2 Symbols.....	8
3.3 Abbreviations.....	8
4 Service-Oriented Architecture.....	13
4.1 Motivation.....	13
4.2 Architecture requirements.....	13
4.2.1 Location transparency.....	13
4.2.2 Formal service descriptions.....	14
4.2.3 Security principles.....	14
4.2.4 Reuse of infrastructure components and code.....	14
4.2.5 Dynamic configuration.....	15
4.2.6 Logical architecture.....	15
4.2.7 Physical Architecture.....	16
4.2.8 Other service architectures.....	16
4.3 Lifecycle processes.....	16
4.3.1 The NEA environment.....	16
4.3.2 Establishing the NEA environment.....	17
4.3.3 Specification of service types.....	17
4.3.4 Development of services.....	17
4.3.5 Deployment of services.....	18
4.3.6 Development of applications.....	18
4.3.7 Deployment and execution of application instances.....	18
5 Items of a network enabled abilities environment.....	18
5.1 General summary.....	18
5.1.1 Items.....	18
5.1.2 Non-service based applications.....	19
5.1.3 Communities of interest.....	19
5.1.4 Relevant standards.....	20
5.2 Policies.....	20
5.2.1 General.....	20
5.2.2 Policy: Directories.....	21
5.2.3 Policy: Security.....	21
5.2.4 Policy: Metadata.....	22
5.2.5 Policy: Ontology.....	23
5.2.6 Policy: Service definition.....	23
5.2.7 Policy: Quality of services.....	23
5.2.8 Policy: Modelling language.....	24
5.2.9 Policy: Commercial conditions.....	24
5.2.10 Policy: System chaining.....	24
5.3 Service area: Infrastructure and enablers.....	24
5.3.1 General.....	24
5.3.2 Service: Service repository.....	25
5.3.3 Service: Service registry.....	25
5.3.4 Service: Application repository.....	25
5.3.5 Security concept: Authentication.....	25
5.3.6 Security concept: Identification.....	26

5.3.7	Security concept: Roles, definition	26
5.3.8	Security concept: Authorization	26
5.3.9	Security concept: Certificate	26
5.3.10	Security concept: Letter of credit	27
5.3.11	Security concept: Access control	27
5.3.12	Security concept: Keys and key distribution	27
5.3.13	Security concept: Trusted credential	28
5.3.14	Security concept: Digital signing	28
5.3.15	Security concept: Non repudiation	28
5.3.16	Security concept: Data integrity	28
5.3.17	Security concept: Confidentiality	28
5.3.18	Security concept: Auditing	28
5.3.19	Security concept: Flow control	28
5.3.20	Security concept: Security policy monitoring	29
5.3.21	Security concept: Security information sharing	29
5.3.22	Service area: Contract and payment	29
5.3.23	Concept: Help desk	31
5.3.24	Concept: Computer-based training	31
5.3.25	Concept: Tutorials	31
5.3.26	Concept: Testing	31
5.3.27	Concept: Software Engineering (Development)	31
5.3.28	Service: Time	32
5.3.29	Concept: Quality of Services supervision	32
5.3.30	Service: Catalogue	32
5.3.31	Concept: Publish/subscribe	32
5.3.32	Concept: Broadcasting	32
5.3.33	Service: Events	33
5.3.34	Service: Telephone and video conference	33
5.3.35	Concept: Systems and resources management	34
5.3.36	Concept: Security Management	34
5.3.37	Concept: Service management	35
5.3.38	Concept: Instant messaging	35
5.3.39	Service: Messaging Services	35
5.4	Service area: Geographic information services	36
5.4.1	General	36
5.4.2	Service: Geographic features service	36
5.4.3	Service: Map service	37
5.4.4	Service: Positioning service	37
5.4.5	Service: Coordinate transformation services	38
5.4.6	Other identified geographic services	38
5.5	Service area: Information management and information sharing	38
5.5.1	General	38
5.5.2	Service: Data management and publishing	39
5.5.3	Service: Data storage	39
5.5.4	Service: Data visibility services	40
5.5.5	Service: Shared space and accessibility	40
5.5.6	Service: Metadata registry and discovery	40
5.5.7	Service: Publish and subscribe	41
5.5.8	Service: Data replication and synchronizing	42
5.5.9	Service: Time synchronisation	43
5.5.10	Service: Data warehousing	43
5.5.11	Service: Information fusion	43
5.5.12	Service: Data mediating	43
5.5.13	Concept: Ontology	44
5.5.14	Service: Sensor data access	44
5.5.15	Service: Sensor coverage information	45
5.6	Service area: Legislation	45
5.6.1	Service: Lawful interception	45
5.6.2	Other identified legislation items	45
5.7	Service area: Traffic monitoring and control	45
5.7.1	General	45

5.7.2	Standards.....	45
5.7.3	Traffic management services.....	46
5.7.4	Route planning services.....	46
5.7.5	Navigation services.....	46
5.7.6	Vehicle tracking services.....	46
5.8	Service area: Situation picture.....	46
5.8.1	General.....	46
5.8.2	Service: Subject based picture.....	47
5.8.3	Service: Role based picture.....	47
5.8.4	Service: Picture of interest.....	47
5.8.5	Service: Scaleable level of detail.....	48
5.8.6	Service: Overlay service.....	48
5.8.7	Service: Information capturing.....	48
5.8.8	Service: Information filtering.....	48
5.8.9	Service: Information analysis.....	48
5.8.10	Service: History tracking.....	48
5.8.11	Service: Alert & info service.....	48
5.8.12	Service: Export service.....	49
5.8.13	Service: Content management.....	49
5.8.14	Service: Source management.....	49
5.8.15	Service: Role management.....	49
5.8.16	Service: Visualization management.....	49
5.9	Service area: Decision support services.....	49
5.10	Other items specific for a community of interest.....	49
Annex A - Inventory of ongoing projects (informative).....		50

Draft
 Preview

Foreword

This CEN Workshop Agreement has been developed by the CEN/ISSS Workshop on Network Enabled Abilities (WS/NEA), launched on 22 September 2004.

Workshop meetings took place on 24-25 November 2004 (Brussels), 2-3 February 2005 (Brussels), 2-4 May 2005 (Stockholm), 28-29 September (Brussels) and 7-8 February 2006 (Brussels).

An electronic endorsement process of the CWA, resulting from the last meeting, was organized, which started on 22 February 2006 and ended on 9 March 2006. This endorsement process demonstrated the consensus reached within the Workshop.

The final document was sent on 21 March 2006 to the CEN Management Centre for publication.

The document has been developed through the collaboration of a number of contributing partners, representing a wide mix of interests. The list of participants supporting this CEN Workshop Agreement is:

Bundesamt für Wehrtechnik und Beschaffung (Germany)
 Bundeswehr IT-Office (Germany)
 DGA, French Defence Standardisation Center
 EADS Defence and Security Systems SA
 EADS Deutschland GmbH
 EADS Telecom
 Eberhardt Consulting
 Ericsson Microwave Systems AB
 ESG Elektroniksystem- und Logistik- GmbH
 German delegation to NATO
 IT-Consulting Hase
 National Land Survey of Sweden
 PKN, Polish Committee for Standardization
 Polish Ministry of Home Affairs
 Rheinmetall Defence Electronics GmbH
 Ruag Electronics
 Saab Aerotech
 Saab Systems
 SIST, Slovenian Institute for Standardization
 Swedish Armed Forces
 Swedish Defence Materiel Administration
 Swedish Emergency Management Agency

This CEN Workshop Agreement is publicly available as a reference document from the National Members of CEN: AENOR, AFNOR, ASRO, BSI, CSNI, CYS, DIN, DS, ELOT, EVS, IBN, IPQ, IST, LVS, LST, MSA, MSZT, NEN, NSAI, ON, PKN, SEE, SIS, SIST, SFS, SN, SNW, SUTN and UNI.

This CEN Workshop Agreement is publicly available as a reference document from the National Members of CEN. Comments or suggestions from the users of the CEN Workshop Agreement are welcome and should be addressed to the CEN Management Centre.

Introduction

The overall strategic objective of this CEN Workshop Agreement (CWA) is to make more efficient use of multi-national resources in command and control of future European network centric operations (i.e. military as well as civilian operations), e.g. search and rescue operations and environmental protection operations. Such combined military and civil operations include armed forces, police, coast guard, and emergency agencies, etc. Network Enabled Abilities, NEA, address information system abilities for such network centric operations.

This CWA promotes a Service-Oriented Architecture to be used for Network Enabled Abilities, including the aspects to be considered during development and implementation. The Service-Oriented Architecture makes it possible to utilize resources anywhere in a network; they do not have to be channelled to a specific centre or command post.

This CWA promotes an open environment with utilization of common standards. Required functionality, such as maps, radar pictures, live video pictures, weather information, and use of various types of forces, is described as services. For each service, relevant standards, or the need for standards, are listed.

The name "Network Enabled Abilities" and the acronym NEA was chosen in 2001 to also include homeland security and civil emergency operations and, at that time, the discussion on network centric operations was mainly military driven. Today, NEA seems to be equivalent to network centric operations (NCO) or Network Enabled Capabilities (NEC).

Copyright
Preview

1 Scope

This CWA specifies services and other items mandatory or optional for a Network Enabled Abilities environment. It also includes an inventory of standards and standard-like specifications applicable to each such item. These items include recommended general principles and framework for system design, overall architectures, generic functionality to be considered, concepts, conventions and terminology in order to ensure an optimum multi-purpose interoperability, in particular of national and multi-national military and civil operations.

This CWA is applicable to the full life cycle of information system abilities for network centric operations, including specification, development, deployment, registration, and execution.

The main audience of this document is individuals and organisations participating in the further development of information system abilities for network centric operations.

The identification of services and other items of a NEA environment is non-exhaustive. The items were originally identified as a result of the examination of a number of scenarios.

There might also be other standards and standardisation initiatives than those identified in this CWA. The listed standards are to be regarded as relevant standards known by the workshop participants. However, where there are no standards listed, this might indicate that NEA-specific standards have to be developed.

The evaluation and selection of standards for NEA is identified as a very important task. Yet this is beyond the scope of this CWA and regarded as the subject of a future CWA or standard.

Specifications for design of products and commercial services, decisions on technologies or development of specific applications are issues not in the scope of this CWA.

2 References

This document is an inventory of standards and other specifications relevant for NEA. Due to this, references of these standards and specifications are made at the location where they are mentioned in the document (Chapter 5 - **Items of a network enabled abilities environment**).

3 Definitions, symbols and abbreviations

3.1 Definitions

network centric operations

operations combining military and civil resources

Network Enabled Abilities

information system abilities for network centric operations

NEA environment

environment for managing the full life cycle of network enabled abilities

service area

an abstraction of a set of service types

service

functionality provided through communication and information systems described by an interface

NOTE ISO/IEC TR 14252 defines a service as "distinct part of the functionality that is provided by an entity through interfaces"

service consumer

actor that initiates an execution of a service by making a request

service description

formal specification of a service instance

service implementation

software application implementing the interface of a service

service instance

service implementation deployed by a service provider

Service-Oriented Architecture

software technology for building systems using loosely coupled functions

service provider

actor that executes a service on reception of a request

service registry

directory of available deployed services

service repository

directory for managing services through their full lifecycles, including development and deployment

service type

abstraction of service instances with the same interface

Web Services

specific Software Oriented Architecture specified by W3C

3.2 Symbols

N/A

3.3 Abbreviations

AAA	Authentication, Authorization and Accounting
ACM	Association for Computing Machinery
AFS	Andrew File System
AGLS	Australian Government Locator Service
AIFF	Audio Interchange File Format
B2B	Business to Business
BPEL	Business Process Execution Language
BSM	Base Service Model
CAP	Common Alerting Protocol
CBT	Computer Based Training
CEN	Comité Européen de Normalisation (European Committee for Standardization)
CIFS	Common Internet File System
COM	Common Object Model
CORBA	Common Request Broker Architecture???
CRISP-DM	CRoss Industry Standard Process for Data Mining

CROP	Common Relevant Operational Picture
CWA	CEN Workshop Agreement
CWM	Common Warehouse Metadata
DAP	Digital Audio Broadcasting
DCMI	Dublin Core Metadata Initiative
DDF	Disk Data Format
DDMS	Department of Defense Discovery Metadata Specification
DDS	Data Distribution Service
DGI	Digital Geospatial Information
DGIWG	Digital Geospatial Information Working Group
DISA	Defence Information Systems Agency
DoD	Department of Defense
EAP	Extensible Authentication Protocol
ebXML	Electronic Business using eXtensible Markup Language
EDXL	Emergency Data Exchange Language
ETSI	European Telecommunications Standards Institute
FCIP	Fibre Channel over IP
FTP	File Transfer Protocol
GIF	Graphics Interchange Format
GML	Geography Markup Language
GPS	Global Positioning System
HMAC	Hash Message Authentication Code
HTTP	Hypertext Transfer Protocol
ICT	Information and Communication Technology
IEC	International Electrotechnical Commission
IETF	Internet Engineering Task Force
INSPIRE	Infrastructure for Spatial Information in Europe
IP	Internet Protocol
IPIWG	Intelligence Projects Integrated Working Group
IRC	Internet Relay Chat Protocol
IRIS	Infrastructure for Resilient Internet Systems
iSCSI	Internet SCSI
ISDN	Integrated Services Digital Network
ISO	International Standards Organization

CWA 15537:2006 (E)

IT	Information Technology
ITCM	Information Technology and Crisis Management
ITIL	Information Technology Infrastructure Library
JC3IEDM	Joint Command, Control, Computer Interoperability Exchange Data Model
JDM	Java Data Mining
JEP	Java Mathematical Expression Parser
JMS	Java Messaging Service
JPEG	Joint Photographic Experts Group
JSR	Java Specification Request
LDAP	Lightweight Directory Access Protocol
LI	Lawful Interception
MAC	Message Authentication Code
MDR	Metadata Registry
MIP	Multilateral Interoperability Programme
MOF	Meta-Object Facility
NAS	Network-attached storage
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organisation
NCES	National Center for Education Statistics
NCO	Network Centric Operations
NCOIC	Network Centric Operations Industrial Consortium
NCW	Network Centric Warfare
NDAG	NATO Data Administration Group
NDDS	Network Data Distribution Service
NEA	Network Enabled Abilities
NEC	Network Enabled Capabilities
NNTP	Network News Transport Protocol
NTP	Network Time Protocol
NTP	Network Time Protocol
OASIS	Organization for the Advancement of Structured Information Standards (http://www.oasis-open.org)
OASIS	Organization for the Advancement of Structured Information Standards
OGC	Open Geospatial Consortium
OGSI	Open Grid Service Infrastructure
OLAP	Online Analytical Processing

OLE	Object Linking and Embedding
OLE DB	Object Linking and Embedding Data Base
OMA	Open Mobile Alliance
OMG	Object Management Group
OWL	Ontology Web Language
P2P	Peer to Peer
PHP	Personal Home Page
PHP	PHP Hypertext Preprocessor
PMML	Predictive Model Markup Language
QoS	Quality of Service
RADIUS	Remote Authentication Dial In User Service
RAID	Redundant Array of Independent Disks
RDF	Resource Description Framework
RFC	Remote Function Call
RMI	Remote Method Invocation
RSS	Really Simple Syndication
RTPS	Real-Time Publish-Subscribe
SAML	Security Assertion Markup Language
SAN	Storage Area Network
SCSI	Small Computer System Interface
SDK	Software Development Kit
SensorML	Sensor Modelling Language
SFTP	Simple File Transfer Protocol
SLD	Styled Layer Description
SMI-S	Storage Management Initiative Specification
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol
SQL	Structured Query Language
SSL	Secure Sockets Layer
SUMO	Suggested Upper Merged Ontology
SyncML	Synchronization Markup Language
TACACS	Terminal Access Controller Access Control System
TADIL	Tactical Digital Information Links
TC	Technical Committee

CWA 15537:2006 (E)

TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TIBCO	
TLS	Transport Layer Security
TSCP	Transatlantic Secure Collaboration Program
UDDI	Universal Description, Discovery and Integration
UML	Unified Modelling Language
US	United States
W3C	World Wide Web Consortium
WCS	Web Coverage Server
WebNFS	Web Network File System
WFS	Web Feature Server
WG	Working Group
WMS	Web Map Server
WS	Web Service
WSDL	Web Services Description Language
WSRF	Web Service Resource Framework
XACML	eXtensible Access Control Markup Language
XKMS	XML Key Management Specification
XMI	XML Metadata Interchange
XML	eXtensible Markup Language
XML ENC	XML Encryption
XML-DSIG	XML Digital Signature

ALTIJD DE ACTUELE NORM IN UW BEZIT HEBBEN?

Nooit meer zoeken in de systemen en uzelf de vraag stellen:
'Is CWA 15537:2006 en de laatste versie?'

Via het digitale platform NEN Connect heeft u altijd toegang tot de meest actuele versie van deze norm. Vervallen versies blijven ook beschikbaar. **U en uw collega's** kunnen de norm via NEN Connect makkelijk raadplagen, online en offline.

Kies voor slimmer werken en bekijk onze mogelijkheden op www.nenconnect.nl.

Heeft u vragen?

Onze Klantenservice is bereikbaar maandag tot en met vrijdag, van 8.30 tot 17.00 uur.

Telefoon: 015 2 690 391

E-mail: klantenservice@nen.nl

