NATO STANDARD

APP-15

NATO INFORMATION EXCHANGE REQUIREMENT SPECIFICATION PROCESS

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NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

5 June 2020

1. The enclosed Allied Procedures Publication APP-15 Edition A, Version 3, NATO INFORMATION EXCHANGE REQUIREMENT SPECIFICATION PROCESS, which has been approved by the nations in the Military Committee Joint Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2519.

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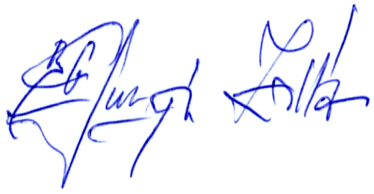

Zoltán GULYÁS
Brigadier General, HUNAF
Director, NATO Standardization Office

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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CHAPTER 1 GENERAL INFORMATION

1.1. INTRODUCTION

1.1.1. Purpose

1. The ability to transfer information between cooperating NATO headquarters, NATO and non-NATO forces, and other organizations is essential to the effective conduct of NATO military operations. Moreover, it is the fundamental basis for the NATO military capability of Consultation, Command and Control. The description of the requirement to transfer information within NATO is expressed in the form of NATO Information Exchange Requirements (IERs).

2. APP-15 describes the development and specification process of generic NATO IERs to express and detail the operational need to exchange information. These IERs will feed the development of appropriate technical solutions which may include formatted messages, structured messages, or voice templates for information exchange.

3. The development of precise IERs is essential to the exchange of information within NATO, providing a significant input into defining the requirement for information exchange in the NATO Network-enabled Capability (NNEC) environment. NATO-wide coordinated and validated IERs form the basis for the development of NATO interoperability standards.

1.1.2. Aim

The aim of this document is to describe the NATO IER Specification Process.

1.1.3. Scope

APP-15 defines the necessary steps to produce harmonized IERs and to execute IER configuration management (CM). It does not cover the development of the appropriate technical solution, though it describes the necessary interface between the operational and technical community.

1.1.4. Responsibilities

1. Operational User. NATO HQs at strategic, operational or tactical level and other relevant NATO bodies (e.g. NATO Support Procurement Agency (NSPA) or national commands are considered as Operational Users, having requirements to send or receive information in order to fulfil their mission or tasks. The Operational User is responsible for the identification of his specific information requirements (IRs) and to provide any details necessary to specify a corresponding IER.

2. Operational Authority. The Operational Authority is responsible for the overall direction of the IER development within its area of interest. Within NATO, it is usually

one of the Military Committee Standardization Boards (MCSB) acting as the Operational Authority, under which Operational Sponsors reside. For logistic IERs the Logistics Committee (LC) equivalent DTA acts as the Operational Authority.

3. Operational Sponsor. An Operational Sponsor is a body that assumes responsibility for the development and maintenance of an IER. Normally, it is a MCSB WG which acts as Operational Sponsor, but could also be Strategic Commands for strategic Joint IER's. For logistic IERs a WG under LC substructure acts as Operational Sponsor. The WG may form Functional IER Panels or assign representatives to conduct this role. Each IER must be able to trace its need back to an operational requirement in a STANAG/AP in the sponsor's portfolio. The requirement will specify what information is to be obtained and is to be revalidated during the normal review cycle of the STANAG/AP.

4. Harmonization Authority. For each operational environment, Land, Air, Maritime, and Joint, the MCSB has established a Senior IER Panel (SIERP), the SLIERP, SAIERP, SMIERP, SJIERP, all to coordinate and harmonize IERs within and across their environment(s). IERs developed outside the MC structure will be coordinated and harmonized through the SJIERP. Their work is coordinated through the MC Joint Standardization Board Information Exchange Requirements Harmonization Working Group (MCJSB IERHWG), subsequently referred to as the IERHWG.

5. Technical Authority. The NATO Consultation, Command and Control Board (C3B) is responsible for providing technical solutions (i.e. Information Exchange Specification - IES) in response to IERs and therefore represents the Technical Authority. With regards to the IER process, the C3B will delegate most of the detailed staffing to its substructure, namely the Communication and Information Services Capability Panel (CIS CaP) and its subordinate Capability Teams. However, the aim of APP-15 is not to describe the internal steps followed by the Technical Authority with regards to the IER process. Therefore, the Technical Authority will be seen here as a single entity and only required steps and products will be mentioned in this document.

1.1.5. Terminology

1. Information Element (IE):
   The factual content of information described by terms referring to specific concepts with their unique characteristics and relationships.

2. Information Requirement (IR):
   An operational statement that describes the need to provide or consume one or more information elements, supplemented by meta information which comprehensively describes the operational need of why, when and how the information is provided or needed by whom.

3. Information Exchange Requirement (IER):
A finalised, harmonized and detailed operational expression of an IR, complemented by other operational constraints, that allow appropriate technical solutions to be identified and designed.

4. Information Exchange Specification (IES):
A comprehensive and detailed description of the translation of an IER into a specific technical solution, including appropriate justifications[1].

[1] As the information exchange specification links operational requirements to technical details, the impact of technical changes on operational requirements and vice versa becomes traceable.

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CHAPTER 2 NATO IER SPECIFICATION PROCESS

2.1. INTRODUCTION

2.1.1. General

1. Harmonized IERs are the basis for the development and update of interoperability standards. The requirement to exchange information is deduced from NATO architectures, NATO doctrine, and NATO operational requirements.

2. The IER must contain all the information that is needed to enable the Technical Authority to specify the IES(s).

3. An IES is to be regarded as the interface between the operational and technical communities allowing the linkage of the initial requirement with the final technical solution(s). It also allows the comparison and evaluation of newly expressed requirements against requirements already identified, and the assessment of the operational impact of a proposed technical change.

2.1.2. Overview

1. The IR expresses a need to share information and is the operational input to the NATO IER Specification Process.

2. The IR is processed and analysed by the Functional IER Panel of the appropriate WG. The resulting Draft IER will be refined in the SIERPs (Refined IER) and jointly validated by the IERHWG (Finalised IER). In some cases, the Senior IER Panel will serve as the Functional IER Panel.

3. The Finalised IER is submitted to the Technical Authority for the development of the required IES(s).

4. The Technical Authority will produce one or more IES(s) for implementation into the existing standard(s). The resulting updated standard(s) will then be published by the NSO for use by system implementers.

5. A graphical overview of the NATO IER Specification Process with its steps is provided in Annex A. The sequential steps of the NATO IER Specification Process are described in the following paragraphs.

2.1.3. NATO Architecture Framework (NAF) V4 Compliance

1. The NATO IER Specification Process is based on the NATO Architecture Framework (NAF). The NAF provides the rules, guidance and product descriptions for developing, presenting and communicating an architecture.

2. The application of NAF will enable the development of architectures which will determine the information to be exchanged and its specification on the basis of common semantics.

3. Although APP-15 does not specifically address the design of NAF views, the textual products of the IER process (described in annexes B and C) enable the development of the appropriate views that ensure the compliance with NAF V4.

4. Experience has found that the operational community is not well versed in the existence or application of the NAF. APP-15 provides a simplified format that can be compiled using Office software.

2.1.4. IR Development (Step 1) - Process Initiation

Input: Doctrine and/or operational requirement

Output: Information Requirement

Responsible Body: MCSB Working Groups / NATO HQs / Agencies / National Force Elements.

1. The requirement to produce or consume information, the IR, may be identified either by an operational user (bottom-up) or derived from conceptual documents like operational doctrine or operating procedures (top-down).

2. The information necessary to process the requirement should be provided as complete and accurate as possible, using the template provided in Annex C.

3. The IR is staffed through the operational chain of command and forwarded to the appropriate Functional IER Panel.

4. The Functional IER Panel will ensure publication of the IR into the IER Repository.

5. NAF Compliance. The resulting textual Information Requirement provides the required elements enabling the development of a LOGICAL INTERACTIONS VIEW 3 (L-3) in compliance with the NATO Architecture Framework V4 (NAF V4).

2.1.5. Draft IER Development (Step 2)

Input: Information Requirement

Output: Draft Information Exchange Requirement

Responsible Body: Functional IER Panel

1. The identification and description of an IR, together with the identification and specification of its IE(s) and information exchange attributes, form the basis of the IER specification process.

2. After the IR is submitted, the tasks of the Functional IER Panel are:

   a. to confirm that the IR is not satisfied by an existing IER.

   b. to produce the Draft IER using the template provided in Annex C by:

      (1) supplementing the necessary information of the IR (with the support of the IR originator as required).

      (2) refining (or providing) Information Elements (IEs).

      (3) drafting Data Elements (DEs), Data Items (DIs), Allowable Values (AVs).

      (4) defining the draft IER attributes.

3. When refining the IEs and drafting the DEs, support can be provided by the NHQC3 Staff to the functional IER Panel in order to enable reuse of existing elements (Paragraph 2.1.10 – Data Harmonization refers).

4. The Functional IER Panel will ensure publication of the Draft IER into the IER Repository for further processing.

5. For those IERs supporting the development of Voice Templates (VTs) or Structured Messages (SMs), IER development will be finalised at Step 2 with the definition of the IEs and archived in the IER repository for potential future re-use in the development of alternative IES.

6. NAF Compliance: The resulting textual Information Exchange Requirement, including its IEs, DEs, DIs and AVs, provides the required elements enabling the development of a LOGICAL DATA MODEL VIEW 7 (L-7), in compliance with the NATO Architecture Framework V4 (NAF V4).

2.1.6. Refined IER Development (Step 3)

Input: Draft Information Exchange Requirement

Output: Refined Information Exchange Requirement

Responsible Body: Senior IER Panel (SIERP)

1. The SIERPs are responsible for the refinement, horizontal (domain) integration and harmonization analysis of the IER. To this end, the SIERPs, in consultation with their functional IER panels, will perform the following:

a. Validate that the IER meets the operational requirement from the single service perspective. For IERs developed outside the MC the validation will be performed by the SJIERP by checking across all domains.

b. Validate that the IER is compliant with the current Operational Doctrine.

c. Refine the draft IER, following the template provided in annex C, by:

(1) Including all required elements, with the required level of detail (IER, IEs, DEs) :

(2) Ensuring appropriate reuse of already designed IEs and DEs.

(3) Identifying and triggering harmonization tasks as required.

2. When refining the IEs and DEs, support can be provided by the NHQC3Staff to the Senior IER Panel in order to enable reuse of existing IEs and DEs and identify potential harmonization tasks. (Paragraph 2.1.10 – Data Harmonization refers).

3. The SIERP will then:

a. Ensure publication of the Refined IER into the IER Repository for further processing by the IERHWG.

b. Recommend a development priority within its area of responsibility, a desired implementation date and an operational justification to the IERHWG for joint prioritization purposes.

4. NAF Compliance: The resulting textual Information Exchange Requirement, including its IR, IEs, DEs, DIs and AVs, provides the required elements enabling the development of LOGICAL INTERACTIONS VIEW 3 (L-3) and LOGICAL DATA MODEL VIEW 7 (L-7), in compliance with the NATO Architecture Framework V4 (NAF V4).

2.1.7. Finalised IER Joint Validation (Step 4)

Input: Refined Information Exchange Requirement

Output: Finalised Information Exchange Requirement

Responsible Body: IERHWG

1. The IERHWG is responsible for de-conflicting / harmonizing IERs pertaining to Allied Publications (APs), Standardization Agreements (STANAGs) and other documents. As such, the IERHWG is the focal point of IER harmonization coordination NATO-wide, not just for MCSB WGs. Furthermore, the IERHWG will liaise with other organizations/WGs to keep them abreast of new IER developments that will impact standardization efforts. (Paragraph 2.1.10 – Data Harmonization refers).

2. Upon receipt of the Refined IER, the IERHWG will:

   a. Produce a Notice establishing a 30 days silence procedure for agreement of the IER by the Nations.

   b. Forward the refined IER to the Technical Authority for technical assessment.

3. At the end of the silence procedure, the IERHWG will:

   a. Finalize the IER as a jointly validated and harmonized operational requirement.

   b. Set the priority for the Finalised IERs by considering:

      (1) The operational needs.

      (2) The evolutions of the operational doctrine.

      (3) The development of Information Systems, etc.

   c. Register the Finalised IER into the IER repository.

4. The IERHWG will forward the Finalised IER to the Technical Authority for IES development.

2.1.8. IES(s) Development (Step 5)

Input: Finalised Information Exchange Requirement

Output: Information Exchange Specification

Responsible Body: Technical Authority

1. The Technical Authority will task the appropriate bodies to:

   a. Develop the required Information Exchange Specification(s) (IES).

   b. Register the IES(s) in the appropriate registries/repositories.

2.1.9. Solution(s) Publication (Step 6) – Process Termination

1. In most cases, an IES will generate a proposal to change an existing standardization document. These changes will be incorporated by the custodian of the standardization document(s) in accordance with the AAP-03 DIRECTIVE FOR THE PRODUCTION, MAINTENANCE AND MANAGEMENT OF NATO STANDARDIZATION DOCUMENTS.

2. In very few cases, it might be necessary to develop a new standardization document.

3. NATO standardization documents are processed by the NSO in accordance with AAP-03.

2.1.10. Data Harmonization

1. One of the objectives of data harmonization is to maximise the reuse of existing data.

Single domain data harmonization:

2. Single domain data harmonization falls under the responsibility of the SIERPs.

3. This task is conducted by the Functional IER Panels and SIERPs in steps 1 and 2 of the IER process as follows:

a. In step 1, when developing a new IER, a Functional IER panel should attempt to identify if any element of its requirement has already been met by an existing data component of its domain. If modification of an existing data would satisfy the requirement, the Functional IER panel should approach the sponsor and users of the data to gain their consent. If this is not forthcoming, the matter should be referred to the Senior IER Panel for resolution.

b. In step 2, when refining the IER, the SIERP should ensure that single domain data harmonization is properly carried out.

Cross domain data harmonization:

4. Cross domain data harmonization falls under the responsibility of the IERHWG.

5. This task is conducted by the SIERPs and IERHWG in steps 2 and 3 of the IER process as follows:

a. In step 2, when refining an IER, a SIERP should attempt to identify if any element of its requirement has already been met by an existing data component of multiple domains. If modification of an existing data would satisfy the requirement, the SIERP should approach the sponsor and users of the data to

gain their consent. If this is not forthcoming, the matter should be referred to the IERHWG for resolution.

b. In step 3, the IERHWG in its role of cross-domain validation will forward the IERs to all SIERPs for final comments and recommendations.

2.1.11. Timescales

In order to meet the operational requirements by the specified date and in accordance with the priorities specified, it is imperative that all bodies involved in the process fulfil their tasks in a minimum timeframe. This may include expedited staffing and intense coordination between formal meetings.

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CHAPTER 3 CONFIGURATION MANAGEMENT

3.1. INTRODUCTION

3.1.1. General

1. Configuration Management (CM) is the systematic, planned control and coordination of one or more Configuration Item(s) (CIs) as well as the supervision of the integrity, consistency and continuity of the CI(s) during development, modification, and use (lifecycle).

2. It consists of the following functions:

   a. CI Identification – the identification of the current, approved documentation for a CI.

   b Configuration Audit – the checking of a CI for compliance with doctrine.

   c. Configuration Control – the systematic evaluation, coordination, approval or rejection, and dissemination of all proposed changes to a CI and/or configuration documentation and the verification of the implementation of all approved changes.

   d. Configuration Status Accounting – the recording and reporting of all changes (the history).

3. During the NATO IER Specification Process IERs and IESs are the two products that are developed and need to be considered as CIs, as they require to be clearly identified, audited, controlled and traced to preserve their integrity throughout their lifecycle.

3.1.2. Responsibilities

1. Responsibility for configuration management:

   a. Of IERs rests with the Operational Sponsor.

   b. Of IESs rests with the Technical Authority and therefore is not addressed in APP-15.

   c. Of the IER repository rests with the IERHWG.

2. Throughout the IER development process, the responsibility for CM of the IER resides with the Chairman of the responsible body identified for each step. The Configuration Manager from the MCJSB IERHWG will maintain an oversight of the IER repository.

3. The IERHWG secretary will produce the required NATO notes and ensure the transmission of IERs to the Technical Authority.

3.1.3. IERs Configuration Management Functions

1. Identification:

   The identification of the current, approved documentation of an IER requires that IERs are to be stored centrally into the IER Repository.

2. Configuration Audit:

   The configuration audit of IERs is conducted by SIERPs:

   a. As part of Step 3 of the IER Process (Refined IER Development).

   b. As part of the periodical IER Configuration Control function.

3. Configuration Control:

   The configuration control of IERs is conducted by SIERPs:

   a. When a doctrinal change needs to be reflected.

   b. When addressing an issue raised by the Operational User on the usage of an IES, in order to identify potential required IER updates.

   c. When new information technologies might be introduced.

4. It is to be noted that in order to conduct effective IER configuration control, references to appropriate associated materials such as STANAGs and APs should be scrutinized.

5. The configuration control of an IER might result in:

   a. No change required to the IER.

   b. A required IER update: in this case, a new version of the IER is developed, starting at Step 2 (Refined IER Development) of the IER Process.

   c. Retirement of the IER (obsolete requirement).

6. Configuration Status Accounting:

The recording and reporting of IER changes and reviews are to be captured within the IER Repository.

3.1.4. Further Configuration Management Considerations

1. Although Configuration Management of IERs and IESs fall under different authorities and apply different processes, it is required to establish and maintain specific links between these different CIs in order to ensure consistency and synchronisation between Operational Requirements (IERs) and their derived Technical Solutions (IESs).

2. In order to fulfil this requirement, appropriate procedures have to be agreed on a case by case basis between the appropriate Configuration Management Authorities.

3.1.5. Version Control

1. Version control is an important part of ensuring that all stakeholders are referring to the same document at any given time.

2. The version numbering system to be used for IERs and recorded in the Life Cycle Spread sheet is, X.Y where X is the step and the Y is the change within that step. The original document in each step will be x.0, thereafter the Y value will increment with each change; e.g. the Initial IR will be v 1.0, the next change to the IR will be 1.1 etc.

3. File Naming. Consistent naming of IER files assist with configuration management. The convention that should be used is <Date (YYYYMMDD)>_<Classification>_<IER Name>-V<version number (X-Y)>[2] . E.g. "20091119_NU_OPSITREP_IA-V1-1.xls". While the NSO forum is being used as the APP-15 IER repository, the dot (.) in the file name must be replaced with a dash (-).

4. Postings to the Repository. All postings to the repository should be notified to the repository subscribers.

[2] AC/322-N(2010)0025 dated 4 May 2010.

3.1.6. IER Repository Process

1. The IER Repository is hosted on the NSO protected site within the MC – Joint Standardisation Board area. The IER Repository is comprised of 5 main folders which are used to store/archive IERs at their respective stage in IER development. The process whereby IERs are posted to the IER Repository is as follows:

a. Step 1 IRs:

(1). When the Functional IER Panel has drafted the initial Information Requirement (IR), the IER Sponsor/IER Panel representative posts the Step 1 IR (using the APP-15 file naming convention) to the root of the "Step 1" folder with an appropriate notification/message.

(2). When an agreed IR reaches Step 2 Draft IER, the Sponsor/IER Panel representative requests the IERHWG Secretary to relocate the superseded Step 1 IR file and associated messages to the Archive sub-folder within the "Step 1" folder.

b. Step 2 Draft IERs:

(1). The IER Sponsor/IER Panel representative posts the new Step 2 Draft IER (using the APP-15 file naming convention) to the root of the "Step 2" folder with an appropriate notification/message.

(2). When the Draft IER reaches Step 3 Refined IER, the Sponsor/IER Panel representative requests the IERHWG Secretary to relocate the superseded Step 2 Draft IER file and associated messages to the Archive sub-folder within the "Step 2" folder.

(3). Draft IERs supporting the development of VTs/SMs are not progressed beyond Step 2. Once the VT/SM Draft IER development is completed, the Sponsor/IER Panel representative requests the IERHWG Secretary to relocate the Draft IER to the "VT/SM" sub-folder of the "Step 2" folder where it will be stored for potential future re-use for an alternative IES.

c. Step 3 Refined IERs:

(1). The IER Sponsor/IER Panel representative posts the new Step 3 Refined IER (using the APP-15 file naming convention) to the root of the "Step 3" folder with an appropriate notification/message.

(2). When the Refined IER reaches Step 4 Finalised IER, the Sponsor/IER Panel representative requests the IERHWG Secretary to relocate the superseded Step 3 Refined IER file and associated messages to the "Archive" sub-folder within the "Step 3" folder.

d. Step 4 Finalised IERs:

(1). The IER Sponsor/IER Panel representative posts the new Step 4 Finalised IER (using the APP-15 file naming convention) to the root of the "Step 4" folder with an appropriate notification/message.

(2). As this is the final Step in the IER development, when Joint validated, the IER will be relocated to the "Final IER" sub-folder within the "Step 4" folder.for potential future adaptation or re-use.

e. Deleted or retired IERs:

(1). IERs which the IERHWG has approved for deletion or retirement are to be archived in the "Disposal" folder in the IER Repository.

3.1.7. Optional Extensions to the IER Format

The format of the IER template is defined in Annex C. Whilst IER panels are required to adhere to the approved format to capture the IER data, panels are free to use colour fill and borders to enhance readability, as well as create additional information views/worksheets to facilitate the operational and technical communities in developing and interpreting an IER. These additional information views/worksheets can be tailored to meet the requirements of individual panels, but must be considered as optional extensions that are not part of the agreed IER format. The responsible SIERP should highlight in the post that the IER contains an optional extension to the IER format that is not subject to comment.

3.1.8. Retiring or deleting an IER.

An operational sponsor wishing to delete/retire an IER is to submit an IER lifecycle to their respective SIERP requesting that the IER be retired/deleted from APP-11 NATO Message Catalogue. The SIERP is to then present the IER for deletion/retirement to the IERHWG for final approval.

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ANNEX A NATO IER SPECIFICATION PROCESS - DEVELOPMENT STEPS

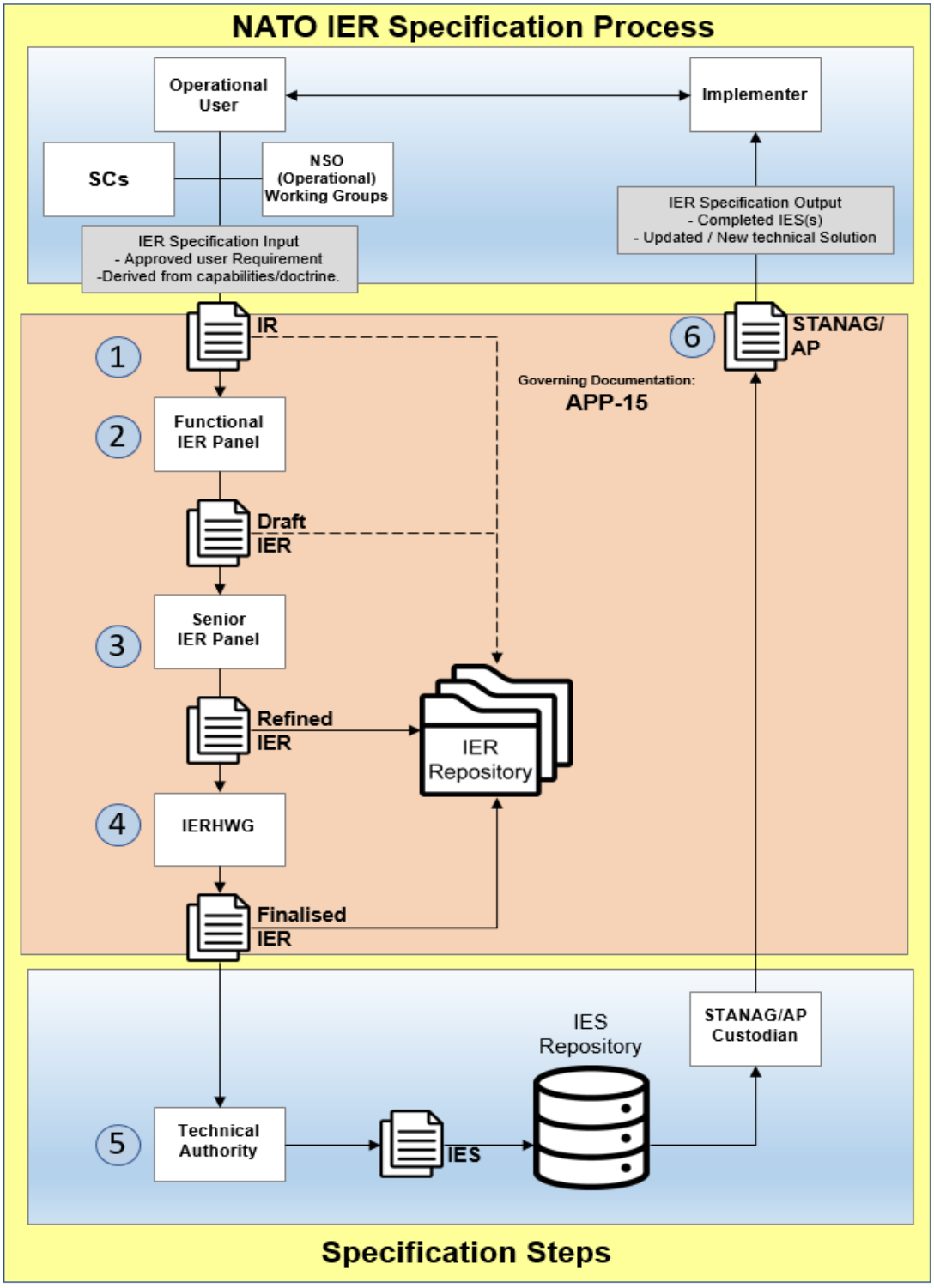

Figure A-1: NATO IER Specification Process – Graphical overview

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ANNEX B NATO IER SPECIFICATION PROCESS - PRODUCTS

				Step 1	Step 2	Step 3	Step 4
				IR	Draft IER	Refined IER	Final IER
Information Requirement (IR)	Admin:	IR1	IR Name	F (M)			
		IR2	IR Originator	F (M)			
		IR3	Desired operational date	F (M)			
		IR4	Source	D	D (M)	R	F
	Content:	IR5	Purpose	F (M)			
		IR6	Concept of use	F (M)			
		IR7	Receiver	D	D (M)	R	F
		IR8	Originator	D	D (M)	R	F
		IR9	Operational activity	D	D (M)	R	F
		IR10	Transaction type	D	D (M)	R	F
		IR11	Triggering event	D	D (M)	R	F
		IR12	Periodicity	D	D (M)	R	F
		IR13	Timeliness	D	D (M)	R	F
		IR14	Language	D	D (M)	R	F
		IR15	Comments / Remarks	D	D (O)	R	F
Information Element (IE) *Repeatable component*	Admin:	IE1	IE Name	D	D (M)	R	F
	Content:	IE2	Definition / Description	D	D (M)	R	F
		IE3	Business Rules	D	D (M)	R	F
		IE4	Occurrence	D	D (M)	R	F
		IE5	Repeatability	D	D (M)	R	F
		IE6	Not Used				
		IE7	IE Sponsor	D	D (M)	R	F
		IE8	Related Documents	D	D (O)	R	F
		IE9	Comments / Remarks	D	D (O)	R	F
Data Element (DE) *Repeatable component*	Admin:	DE1	DE Name		D (M)	R	F
	Content:	DE2	Definition / Description		D (M)	R	F
		DE3	Occurrence		D (M)	R	F
		DE4	Repeatability		D (M)	R	F
		DE5	Example		D (O)	R	F
		DE6	DE Sponsor		D (M)	R	F
		DE7	Related Documents		D (O)	R	F
		DE8	Comments / Remarks		D (O)	R	F
Data Item (DI) *Repeatable component*	Admin:	DI1	DI Name		D (M)	R	F
	Content:	DI2	Definition / Description		D (M)	R	F
		DI3	Data Type		D (M)	R	F
		DI4	List of Values version		D (O)	R	F
		DI5	Minimum		D (O)	R	F
		DI6	Maximum		D (O)	R	F
		DI7	DI Sponsor		D (M)	R	F
		DI8	Related Documents		D (O)	R	F
		DI9	Comments / Remarks		D (O)	R	F
Allowable Value (AV) *Repeatable component*	Admin:	AV1	AV Name		D (M)	R	F
	Content:	AV2	AV Code		D (M)	R	F
		AV3	Definition / Description		D (M)	R	F
		AV4	AV Sponsor		D (M)	R	F
		AV5	Related Documents		D (O)	R	F
		AV6	Comments / Remarks		D (O)	R	F
Information Exchange Requirement (IER)	Admin:	IER1	IER Name		D (M)	R	F
		IER2	IER Short Name		D (M)	R	F
		IER3	Operational Sponsor (WG)		D (M)	R	F
		IER4	Senior IER Panel (SIERP)		D (M)	R	F
		IER5	Functional IER Panel		D (M)	R	F
	Content:	IER6	Description		D (M)	R	F
		IER7	Transmission Type		D (M)	R	F
		IER8	Comments / Remarks		D (O)	R	F

D = Draft / R = Refined / F = Final / (M) = Mandatory / (O) = Optional

TABLE B-1 : IER SPECIFICATION PRODUCTS

INFORMATION REQUIREMENT (IR) ATTRIBUTES

Admin:	IR1	IR Name	Unique label to identify the IR.
	IR2	IR Originator	NATO or National Command that submitted the IR.
	IR3	Desired operational date	Date when the Information Exchange Requirement should be available to the Operational Community.
	IR4	Source	Source documents include doctrine, STANAG/APs, etc from which the IR is derived
Content:	IR5	Purpose	Overall statement of the reasoning behind a new requirement.
	IR6	Concept of use	General statement of the overall use of a new requirement.
	IR7	Receiver	Organisational element(s) that require(s) the information: Consumer.
	IR8	Originator	Organisational element(s) with the capability to provide the information: Producer.
	IR9	Operational activity	Activity/Mission/Scenario in which the IR is active.
	IR10	Transaction type	Voice, video, data, full motion video…
	IR11	Triggering event	Operational event that causes the need for information.
	IR12	Periodicity	How often is the information (update) needed (e.g. once a day, every hour, once after every triggering event ...)
	IR13	Timeliness	Time interval between event and information (e.g. real time, within 1 hour, ...)
	IR14	Language	Language of the information
	IR15	Comments / Remarks	Any additional information, comment or remark on the IR.

TABLE B-2 : IR ATTRIBUTES

INFORMATION ELEMENT (IE) ATTRIBUTES

Admin:	IE1	IE Name	Unique label to identify the IE.
Content:	IE2	Definition / Description	Definition of the IE or short text describing the content of the IE.
	IE3	Business Rules	Describes any dependencies between IEs. Business rules for new IERs should be written in plain English, not Structured Language.
	IE4	Occurrence	Sets the conditions under which the IE is to be used. (Mandatory, Operationally determined).
	IE5	Repeatability	Specifies whether the IE can be repeated (YES/NO). If YES, the number of allowed repetitions (2, 3, …x, unlimited) can be specified.
	IE6	Not Used[3]	
	IE7	IE Sponsor	Name of the organisation that originally described the IE. (Usually Senior or Functional IER Panel)
	IE8	Related Documents	Official NATO approved publications related to the IE (e.g. AJP, APP, etc.)
	IE9	Comments / Remarks	Any additional information, comment or remark on the IE.

TABLE B-3 : IE ATTRIBUTES

DATA ELEMENT (DE) ATTRIBUTES

[3] The 45th IERHWG agreed that this attribute was deemed to be IES specific and was not required to be completed by IER panels.

Admin:	DE1	DE Name	Unique label to identify the DE.
Content:	DE2	Definition / Description	Definition of the DE or short text describing the content of the DE.
	DE3	Occurrence	Sets the conditions under which the DE is to be used. (Mandatory, Conditional, Operationally determined).
	DE4	Repeatability	Specifies whether the DE can be repeated (YES/NO). If YES, the number of allowed repetitions (2, 3, …x, unlimited) can be specified.
	DE5	Example	Free text to exemplify the use of the DE.
	DE6	DE Sponsor	Name of the organisation that originally described the DE. (Usually Senior or Functional IER Panel)
	DE7	Related Documents	Official NATO approved publications related to the DE. (e.g. AJP, APP, etc.)
	DE8	Comments / Remarks	Any additional information, comment or remark on the DE.

TABLE B-4 : DE ATTRIBUTES

DATA ITEM (DI) ATTRIBUTES

Admin:	DI1	DI Name	Unique label to identify the DI.
Content:	DI2	Definition / Description	Definition of the DI or short text describing the content of the DI.
	DI3	Data Type	String, decimal, integer, list of values, etc.
	DI4	List of Values Version	Identifies the list of values version number. This only applies when data type is List of Values and when (re)using sponsored lists of values.
	DI5	Minimum	Minimum number of characters to be entered for a "String" data type DI or minimum inclusive value for a "decimal" or "integer" data type DI.
	DI6	Maximum	Maximum number of characters to be entered for a "String" data type DI or maximum inclusive value for a "decimal" or "integer" data type DI.
	DI7	DI Sponsor	Name of the organisation that originally described the DI. (Usually Senior or Functional IER Panel)
	DI8	Related Documents	Official NATO approved publications related to the DI. (e.g. AJP, APP, etc.)
	DI9	Comments / Remarks	Any additional information, comment or remark on the DI.

TABLE B-5 : DI ATTRIBUTES

ALLOWABLE VALUE (AV) ATTRIBUTES

Admin:	AV1	AV Name	Unique label to identify the AV.
Content:	AV2	AV Code	An alphanumeric character string encoding the AV.
	AV3	Definition / Description	Definition of the AV or short text describing the content of the AV.
	AV4	AV Sponsor	Name of the organisation that originally described the AV. (Usually Senior or Functional IER Panel)
	AV5	Related Documents	Official NATO approved publications related to the AV. (e.g. AJP, APP, etc.)
	AV6	Comments / Remarks	Any additional information, comment or remark on the AV.

TABLE B-6 : AV ATTRIBUTES

INFORMATION EXCHANGE REQUIREMENT (IER) ATTRIBUTES

Admin:	IER1	IER Name	Unique label to identify the IER.
	IER2	IER Short Name	A shortened name to refer to the IER.
	IER3	Operational Sponsor (WG)	The body responsible for the development and the maintenance of the IER. Traditionally an MCSB WG. (Can be delegated to a SIERP).
	IER4	Senior IER Panel (SIERP)	The Senior IER Panel in charge of the single domain data harmonization and the refinement of the IER.
	IER5	Functional IER Panel	The Functional IER Panel in charge of the drafting of the IER.
Content:	IER6	Description	Information with regard to the Purpose and Concept of use previously provided in the IR.
	IER7	Transmission Type	Human/human, human/machine, machine/machine
	IER8	Comments / Remarks	Any additional information, comment or remark on the IER.

TABLE B-7 : IER ATTRIBUTES

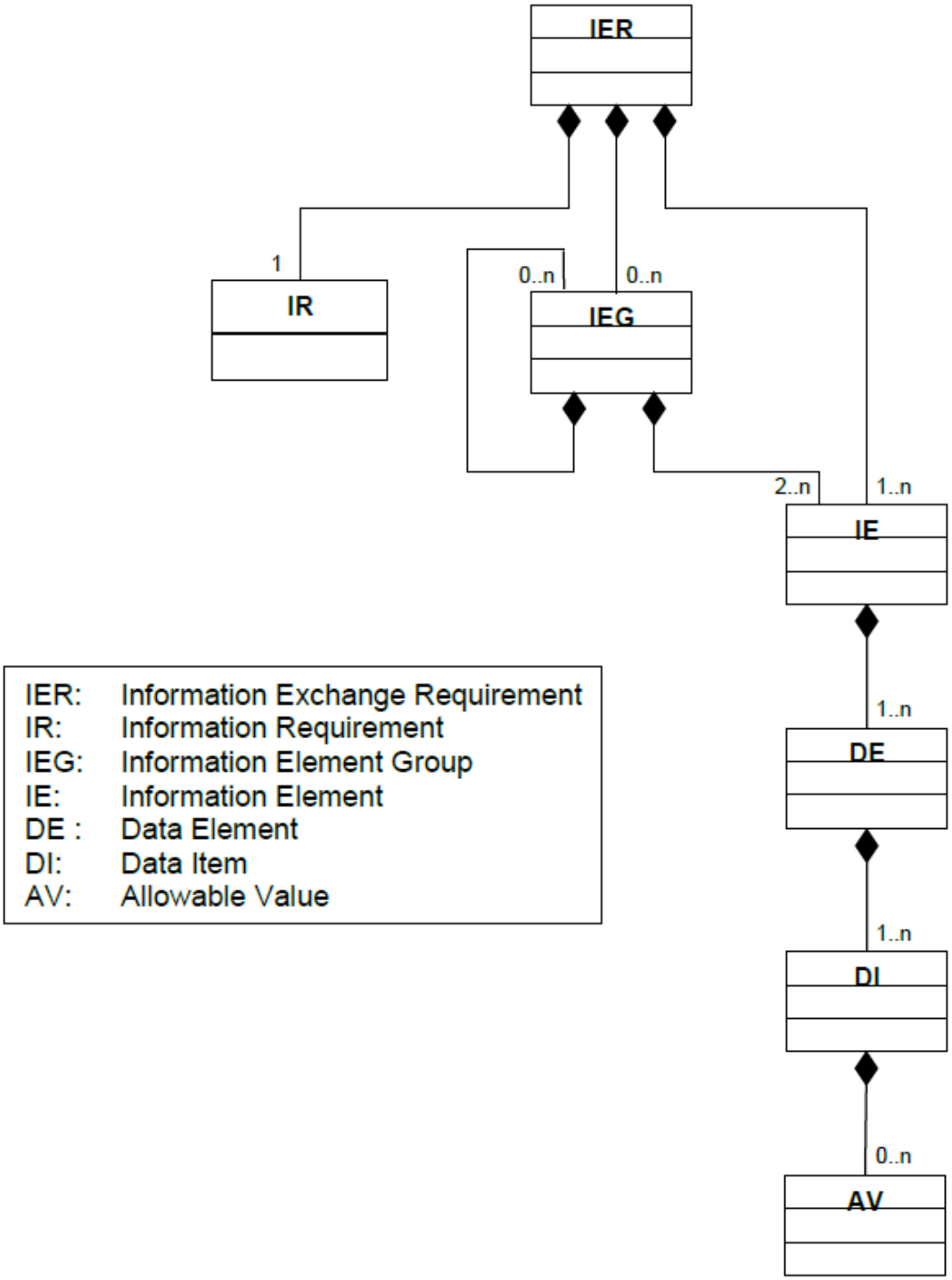

Figure B-1a: IER Conceptual Model (1/3)

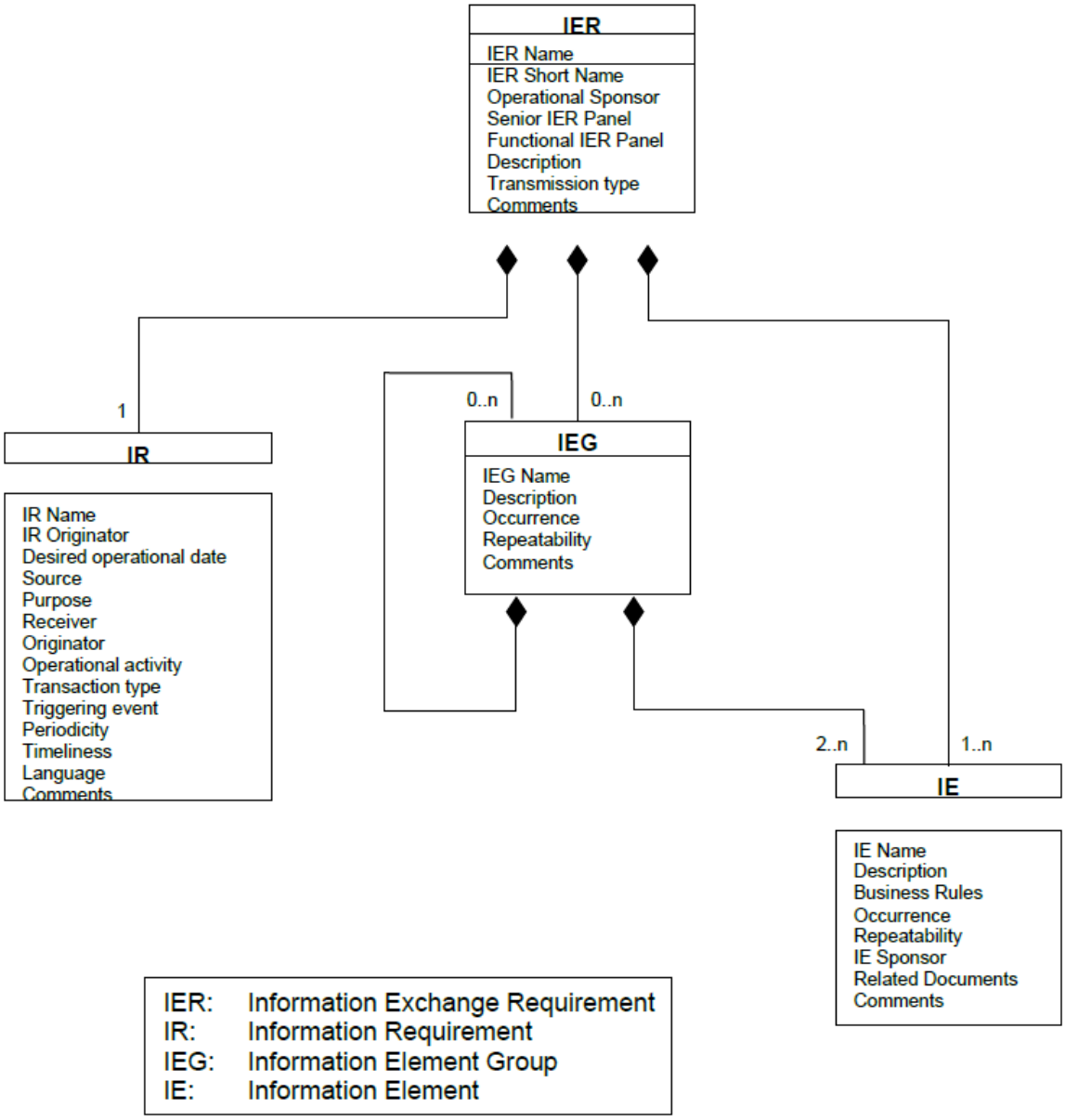

Figure B-1b: IER Conceptual Model (2/3)

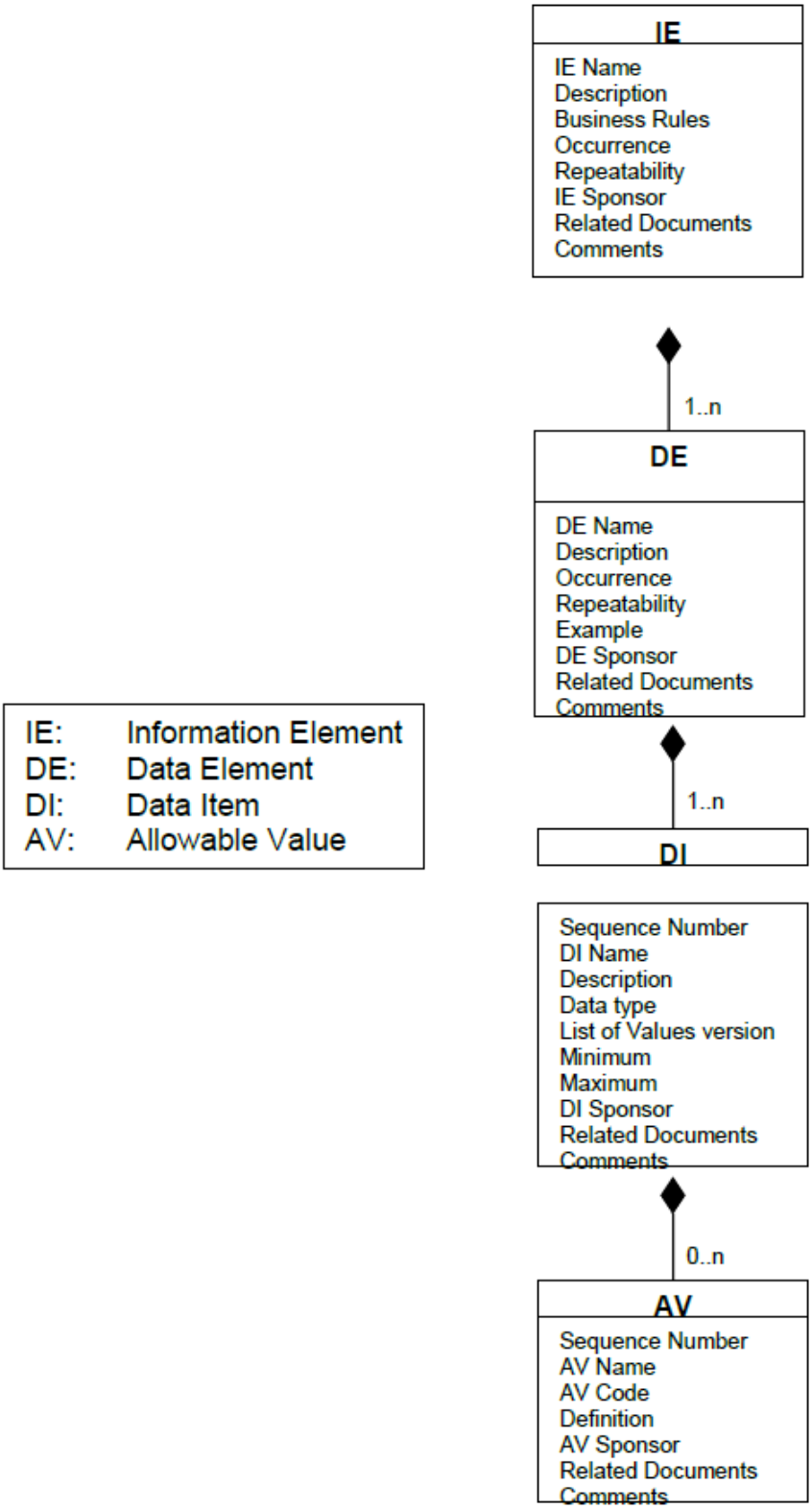

Figure B-1c: IER Conceptual Model (3/3)

1. IERs are composed of 1 IR, 1 to unlimited IEs and 0 to unlimited IEGs.

2. IEGs are optional artificial artefacts that enable the grouping of IEs under the same conditions of repeatability and occurrence.

3. IEGs can be nested to design complex information structures.

4. IEGs are represented within IERs using the IE template by providing their sequence number (IEGx, IEGx.x when nested, etc.), name, description (Start IEG x, End IEG x), repeatability, occurrence and comments.

5. As an example, in order to list details of multiple persons within a group, a mandatory repeatable IEG called “Person” can be created to embed a non-repeatable mandatory IE called “Person identification” (to uniquely identify a single individual), a non-repeatable operationally determined IE called “Person address” (to provide its address if known) and a repeatable operationally determined IE called “Person affiliation” (to provide its many potential affiliation details if known). (Example provided in Annex G).

6. IEGs embed a set of minimum 2 IEs and/or nested IEGs, starting with a “Start IEGx” row and ending with an “End IEG x” row. (See example in Annex G).

7. IEs are composed of DEs.

8. A DE is a unit or class of information which has a unique meaning and may embrace data items (DIs) of distinct units or values.

Example: military grade, geographic location, country of the world.

9. A DI is a sub-unit of descriptive information or value classified under a data element.

10. DEs are composed of 1 to unlimited DIs.

11. DEs can be composed of multiple DIs to enable the construction of complex data types.
Example of complex data type: a character string starting with 3 characters chosen within a predefined list, followed by a 3 digit number. (Example provided in Annex G).

12. DIs can be composed of unlimited AVs when their Data Type is “List of Values”.

13. An AV is a specific value that represents a DI which has “List of Values” as Data Type.

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ANNEX C NATO IER SPECIFICATION PROCESS - TEMPLATES

IER LIFECYCLE

IER NAME:	
Current Version:	
Current Status	
Date:	

IER DEVELOPMENT

Information Requirement:

IR Name:	
Source:	
Submission date:	
Subject Matter Expert:	
E-mail:	

Draft IER:

Version:	
Date:	

Refined IER:

Version:	
Date:	

Finalised IER:

Version:	
Date:	
Proposed Technical Solution(s):	

IER MANAGEMENT

Review history:

Reviewer	Version	Date

Retirement:

Version:	
Date:	

TABLE C-1: IER LIFECYCLE TEMPLATE
INFORMATION REQUIREMENT (IR)

IR Name:

Current version :

Status :

Date (submission) :

Admin:

IR2	IR Originator	
IR3	Desired operational date	
IR4	Source	

Content:

IR5	Purpose	
IR6	Concept of use	
IR7	Receiver	
IR8	Originator	
IR9	Operational activity	
IR10	Transaction type	
IR11	Triggering event	
IR12	Periodicity	
IR13	Timeliness	
IR14	Language	
IER LIFECYCLE	Comments / Remarks	

TABLE C-2 : IR TEMPLATE

INFORMATION EXCHANGE REQUIREMENT (IER)

IER Name :

Current version :

Status :

Date (submission) :

Admin:

IER2	IER Short Name	
IER3	Operational Sponsor (WG)	
IER4	Senior IER Panel (SIERP)	
IER5	Functional IER Panel	

Content:

IER6	Description	
IER7	Transmission Type	
IER8	Comments / Remarks	

TABLE C-3 : IER TEMPLATE

INFORMATION ELEMENT (IE)

IE Seq. Num.	IE Name	Definition	Business rules	Occurrence	Repeatability	Not Used	IE Sponsor	Rel. Docs.	Comments
	(IE1)	(IE2)	(IE3)	(IE4)	(IE5)	(IE6)	(IE7)	(IE8)	(IE9)
1									
2									
3									
4									
5									
6									
7									
8									

TABLE C-4 : IE TEMPLATE

When creating an IER to update an existing MTF, the mapping between the IE Sequence Number and the related Sequence Number (Set sequence number, Segment sequence number) must be described in the "Comments" column (IE9).

The 45th IERHWG agreed that the IE6 Example attribute was deemed to be IES specific and was not required to be completed by IER panels

DATA ELEMENT (DE)

IE Seq. Num.	IE Name	DE Seq. Num.	DE Name	Definition	Occur.	Repeat.	Example	DE Sponsor	Rel. Docs.	Comments
	(IE1)		(DE1)	(DE2)	(DE3)	(DE4)	(DE5)	(DE6)	(DE7)	(DE8)
1	IE Name1	1								
1	IE Name1	2								
1	IE Name1	3								
1	IE Name1	4								
2	IE Name2	1								
2	IE Name2	2								
2	IE Name2	3								
2	IE Name2	4								

TABLE C-5 : DE TEMPLATE

When creating an IER to update an existing MTF, the mapping between the DE Sequence Number and the related Sequence Number (Field number) must be described in the "Comments" column (DE8).

DATA ITEM (DI)

IE Seq. Num.	IE Name	DE Seq. Num.	DE Name	DI Seq. Num.	DI Name	Definition	Data Type	LoV vers.	Min.	Max.	DI Sponsor	Rel. Docs.	Comments
	(IE1)		(DE1)		(DI1)	(DI2)	(DI3)	(DI4)	(DI5)	(DI6)	(DI7)	(DI8)	(DI9)
a	IE Name a	b	DE Name b	1									
c	IE Name c	d	DE Name d	1									
c	IE Name c	d	DE Name d	2									
c	IE Name c	d	DE Name d	3									

TABLE C-6 : DI TEMPLATE

When creating an IER to update an existing MTF, the mapping between the DI Sequence Number and the related Sequence Number (Field alternatives) must be described in the "Comments" column (DI9).

ALLOWABLE VALUE (AV)

DI Name	AV Seq. Num.	AV Name	AV Code	Definition	AV Sponsor	Rel. Docs.	Comments
(DI1)		(AV1)	(AV2)	(AV3)	(AV4)	(AV5)	(AV6)
DI Name a	1	AV Name a1					
DI Name a	2	AV Name a2					
DI Name a	3	AV Name a3					
DI Name a	4	AV Name a4					
DI Name b	1	AV Name b1					
DI Name b	2	AV Name b2					
DI Name b	3	AV Name b3					
DI Name b	4	AV Name b4					

TABLE C-7 : AV TEMPLATE

When creating an IER to update an existing List of values, the mapping between the AV Sequence Number and the related Sequence Number (DI Sequence number) can be described in the "Comments" column (AV6)

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ANNEX D NATO IER SPECIFICATION PROCESS - EXAMPLE

IER LIFECYCLE

IER NAME:	AIRSPACE CONTROL ORDER
Current Version:	5.2
Current Status	
Date:	

IER DEVELOPMENT

Information Requirement:

IR Name:	ACO
Source:	
Submission date:	
Subject Matter Expert:	NSA (AIR) AIR OPERATIONS WORKING GROUP (AOWG)
E-mail:	

Draft IER:

Version:	
Date:	

Refined IER:

Version:	
Date:	

Finalised IER:

Version:	
Date:	
Proposed Technical Solution(s):	

IER MANAGEMENT

Review history:

Reviewer	Version	Date

Retirement:

Version:	
Date:	

TABLE D-1 : IER LIFECYCLE EXAMPLE

INFORMATION EXCHANGE REQUIREMENT (IER)

IER Name : AIRSPACE CONTROL ORDER

Current version : 5.2

Status :

Date :

Admin:

IER2	**IER Short Name**	ACO
IER3	**Operational Sponsor (WG)**	NSA (AIR) AIR OPERATIONS WORKING GROUP (AOWG)
IER4	**Senior IER Panel (SIERP)**	
IER5	**Functional IER Panel**	

Content:

IER6	**Description**	
IER7	**Transmission Type**	
IER8	**Comments / Remarks**	

TABLE D-2 : IER EXAMPLE

INFORMATION REQUIREMENT (IR)

IR Name: AIRSPACE CONTROL ORDER

Current version : 5.2

Status :

Date :

Admin:

IR2	IR Originator	NSA (AIR) AIR OPERATIONS WORKING GROUP (AOWG)
IR3	Desired operational date	
IR4	Source	ATP-3.2, AIR-COM RAMSTEIN SUPLAN 24610M COPPER CANYON AIRSPACE CONTROL PLAN, AJP-3.3.5, AJP-1 (B), AAP-6, ATP-3.3.2.1 (A)

Content:

IR5	Purpose	The ACO is used to provide specific detailed orders for airspace management and control from a higher command to subordinate units.
IR6	Concept of use	
IR7	Receiver	
IR8	Originator	
IR9	Operational activity	
IR10	Transaction type	
IR11	Triggering event	
IR12	Periodicity	
IR13	Timeliness	
IR14	Language	
IR15	Comments / Remarks	

TABLE D-3 : IR EXAMPLE

INFORMATION ELEMENT (IE)

IE Seq	IE Name (IE1)	Definition (IE2)	Business rules (IE3)	Occur. (IE4)	Repeat. (IE5)	(IE6) Not Used	IE Sponsor (IE7)	Rel. Docs. (IE8)	Comments (IE9)
Only 1 of the following 2 children may be selected (mutually exclusive none required)									
1	EXERCISE IDENTIFICATION	Provides the Exercise name. Identifies the Exercise the message pertains to. Not to be used in conjunction with set OPER.		O	No				
2	OPERATION CODEWORD	Provides the Operation codeword. Identifies the Operation the message pertains to. Not to be used in conjunction with set EXER.		O	No				
End of alternative content									
3	MESSAGE IDENTIFIER	Specifies the message identifier, message originator and other message identifying details.	FIELD 1 IN SET 3 (MSGID) IS ASSIGNED THE VALUE /ACO/.	M	No		MC JSB IERHWG		
4	REFERENCE	Specifies identifying details regarding a document, image or other information exchange media that is applicable to the content of this message.		O	Unlimited				
S5 Start	AIRSPACE CONTROL ORDER SEGMENT	Identifies validity and details of the ACO. The Sets "ACOID" through "CORDLEVL" form a segment.	The following children, starting at position 5 and ending at position 26, are part of repeating group AIRSPACE CONTROL ORDER SEGMENT	M	Unlimited				

TABLE D-4 : IE EXAMPLE

DATA ELEMENT (DE)

IE Seq. Num.	IE Name (IE1)	DE Seq. Num.	DE Name (DE1)	Definition (DE2)	Occur. (DE3)	Repeat. (DE4)	Example (DE5)	Sponsor (DE6)	Rel. Docs. (DE7)	Comments (DE8)
1	EXERCISE IDENTIFICATION	1	EXERCISE NICKNAME		M	No				
		1A	EXERCISE NICKNAME	Enter the code name or nickname of the exercise to which the message pertains, for example: "CMX 95".			CMX 95			
		2	EXERCISE IDENTIFIER	Provides additional information for the conduct of the exercise.	O	No				
		2A	EXERCISE ADDITIONAL IDENTIFIER	Enter the exercise additional identifier, for example: "DISTAFF".			DISTAFF			
		2B	EXERCISE ADDITIONAL NICKNAME	Enter "NICK:" followed by the exercise additional nickname, for example: "NICK:COBRA GOLD".			COBRA GOLD			
2	OPERATION CODEWORD	1	OPERATION CODEWORD		M	No				
		1A	OPERATION CODEWORD	Enter the assigned operation name or nickname as established by the appropriate authority, for example: "DENY FLIGHT".			DENY FLIGHT			
		2	PLAN ORIGINATOR AND NUMBER		O	No				
		2A	PLAN ORIGINATOR AND NUMBER	Enter the operation plan originator and number, for example: "SACEUR 106".			SACEUR 106			
		3	OPTION NICKNAME		O	No				
		3A	OPTION NICKNAME	Enter the nickname of the primary option within the operation plan, for example: "PAPER WASTE".			PAPER WASTE			
		4	SECONDARY OPTION NICKNAME		O	No				
		4A	SECONDARY OPTION NICKNAME	Enter the nickname of the secondary option within the operation plan, for example: "ORANGE".			ORANGE			
3	MESSAGE IDENTIFIER	1	MESSAGE TEXT FORMAT IDENTIFIER		M	No				
		1A	MESSAGE TEXT FORMAT IDENTIFIER	Enter the Message Text Format identifier, for example: "OPGEN".			OPGEN			
		2	STANDARD		M	No				
		2A	STANDARD OF MESSAGE TEXT FORMAT	Enter the publication that includes the formatted message specification, for example: "APP-11(D)".			APP-11(D)			
		3	VERSION		M	No				
		3A	VERSION OF MESSAGE TEXT FORMAT	Enter the change state of the publication that includes the formatted message specification, for example: "1"			1			

TABLE D-5 : DE EXAMPLE

DATA ITEM (DI)

IE Seq. Nu	IE Name (IE1)	De Seq. Num.	DE Name (DE1)	DI Seq Num.	DI Name (DI1)	Definition (DI2)	Data Type (DI3)	LoV Ver. (DI	Min. (DI5)	Max. (DI6)	Sponsor (DI7)	Rel. Docs. (DI8)	Comments (DI9)
1	EXERCISE IDENTIFICATION	1A	EXERCISE NICKNAME		EXERCISE NICKNAME		String (ABNS)		1	56			
		2A	EXERCISE ADDITIONAL IDENTIFIER		EXERCISE ADDITIONAL IDENTIFIER		List of Values		4	16			
		2B	EXERCISE ADDITIONAL NICKNAME		EXERCISE ADDITIONAL NICKNAME		String (ABNS)		1	16			
2	OPERATION CODEWORD	1A	OPERATION CODEWORD		OPERATION CODEWORD		String (ABNS)		1	32			
		2A	PLAN ORIGINATOR AND NUMBER		PLAN ORIGINATOR AND NUMBER	THE OFFICIAL IDENTIFIER OF A MILITARY ESTABLISHMENT WHICH IS RESPONSIBLE FOR A SPECIFIC OPERATION PLAN, AND THE IDENTIFICATION NUMBER ASSIGNED TO THAT SPECIFIC OPERATION PLAN.	Complex		5	36		NONE	Complex data item comprising of 3 simple types in the following sequence.
		2A	PLAN ORIGINATOR AND NUMBER	1	PLAN ORIGINATOR		String (ABNS)		3	20			
		2A	PLAN ORIGINATOR AND NUMBER	2	BLANK SPACE CHARACTER	Blank or space.	String (B)		1	1			

TABLE D-6 : DI EXAMPLE

ALLOWABLE VALUE (AV)

DI Name (DI1)	AV Seq. Num	AV Name (AV1)	AV Code (AV2)	Definition (AV3)	Sponsor (AV4)	Rel. Docs. (AV5)	Comments (AV6)
EXERCISE ADDITIONAL IDENTIFIER	1	MSG BETWEEN "BLUE" PLAYERS	BLUE				
EXERCISE ADDITIONAL IDENTIFIER	2	MSG ADDRESSED TO PLAYERS TO CONTROL THE EXERCISE	CONTROL				
EXERCISE ADDITIONAL IDENTIFIER	3	MSG FOR DISTAFF OR DICONSTAFF ONLY	DISTAFF				
EXERCISE ADDITIONAL IDENTIFIER	4	MSG FOR TEST OR PRACTICE NOT RELATED TO THE EXERCISE	DRILL				
EXERCISE ADDITIONAL IDENTIFIER	5	MSG NOT PART OF PLAY BUT AFFECTING THE EXERCISE	NO PLAY				
EXERCISE ADDITIONAL IDENTIFIER	6	MSG INTERCEPTION NOT FOR USE IN DIRECTION FINDING	NODUF				
EXERCISE ADDITIONAL IDENTIFIER	7	MSG BETWEEN "ORANGE" PLAYERS	ORANGE				
EXERCISE ADDITIONAL IDENTIFIER	8	MSG ORIGINATED BY A COMMANDER ASSIGNED A "PURPLE" ROLE	PURPLE				
EXERCISE ADDITIONAL IDENTIFIER	9	MSG ORIGINATED BY AN UMPIRE	UMPIRE				
EXERCISE ADDITIONAL IDENTIFIER	10	MSG ADDRESSED TO UMPIRES ONLY	UMPIRE EYES ONLY				
MONTH NAME, ABBREVIATED	1	JANUARY	JAN				
MONTH NAME, ABBREVIATED	2	FEBRUARY	FEB				
MONTH NAME, ABBREVIATED	3	MARCH	MAR				
MONTH NAME, ABBREVIATED	4	APRIL	APR				

TABLE D-7 : AV EXAMPLE

APP-15(A)(3)