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**MNE5 Coalition Logistics
Information Sharing
(NATO IR Decomposition
Methodology)**



(Version 16-Jul-08)

Final MNE 5 product

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14. ABSTRACT The ability of nations to successfully participate in multinational (MN) operations depends on seamlessly exchanging and sharing information to support collaborative planning and information sharing capabilities. Timely, accurate and relevant information are all factors needed to make effective decisions. Proposed North Atlantic Treaty Organization (NATO) Logistics Information Requirements (IRs), once decomposed from task item descriptions to task item detail and then, further refined to entities and attributes, will allow Coalition Nations to interoperate and share logistic information. The method used to select, decompose, expand, and populate NATO IRs (derived from the Coalition Logistics Information Exchange Requirements - CLIERS) is explained by this document with a step by step approach.					
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MNE5 Logistics Focus Area

MNE5 Coalition Information Sharing

(Information Requirement Selection, Decomposition,
Expansion, Population, and Reporting Methodology)

Introduction:

The ability of nations to successfully participate in multi-national (MN) operations depends on seamlessly exchanging and sharing information to support collaborative planning and information sharing capabilities. Timely, accurate and relevant information are all factors needed to make effective decisions. Proposed North Atlantic Treaty Organization (NATO) Logistics Information Requirements (IRs), once decomposed from task item descriptions to task item detail and then, further refined to entities and attributes, will allow Coalition Nations to interoperate and share logistic information.

This is the second version of this paper. The techniques described in this paper (Version 4-Jun-08) were utilized at the Multinational Experiment 5 (MNE5) Logistics Proof of Concept Limited Objective Experiment (LOE), 14-18 April 2008 in Enköping, Sweden and supersedes the previous version (Version 14-Sep-07) that was utilized during the 15-24 August 2007 MNE5 Logistics Workshop held at held at the United States Joint Forces Command (USJFCOM) J9 Building in Suffolk, VA.

Purpose:

The purpose of this document is to provide the methodology used to construct the environment to exchange operationally focused logistic information to adequately facilitate and enable decision making. By decomposing IRs down to the entity and attribute level (data element level); population of a logistics knowledge base enables logistics staffs to fuse information within a Common Operational Picture (COP). The method used to select, decompose, expand, and populate NATO IRs (Derived from the Coalition Logistics Information Exchange Requirements - CLIERS) will be explained by this document with a step by step approach. The IRs were populated and expanded by using coalition recognized Multinational Interoperability Programme (MIP) and NATO entity and attributes.

IRs are significant to Coalition Information sharing because they provide an agreed center from which the multinational members can communicate and exchange operationally focused logistic information and in some cases strategic information. A coalition or alliance logistics information exchange environment must include standards and protocols required to assure the accuracy, reliability, consistency and timeliness of information exchange.

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The Five levels of IR detail that were developed are as follows:

<u>Hierarchy</u>	<u>Example</u>
Level 1: Information Requirement (IR)	APOD Infrastructure Information (6.7.1)
Level 2: Task Item Description (Decomposed)	Air Traffic Control Capability
Level 3: Task Item Detail (Decomposed)	Communications
Level 4: Entities (MIP-NATO)	AIR-ROUTE
Level 5: Attributes (MIP-NATO)	AIRSPACE-SECTOR CALL SIGN NAME

Once expanded, the IRs were populated with National, Coalition Task Force (CTF), Host Nation, and World Wide Web open sources of information. The MNE5 Logistics Focus Area had a requirement to populate IRs with necessary element level information, with existing source logistics information, to enable a Course of Action (COA) recommendation to a CTF Commander. The focal point for reporting the culmination of this information was the MNE5 Logistics Common Operational Picture (Log COP).

The platform selected to serve as the Log COP, for demonstrating the decomposition of the IRs, was NATO's Baseline for Rapid Iterative Transformational Experimentation (BRITE). It is a futuristic experimentation portal with framework that allows for the rapid implementation of new ideas and capabilities.

The MNE5 Logistics Proof of Concept LOE, held in Enköping, Sweden from 14-18 April 2008 was the venue for demonstrating this version of the IR decomposition process.

Guidelines:

The Process Development Guidelines include:

- Adopt NATO IRs as a starting point for information requirements and supporting Standardization Agreement (STANAGs) for information management.
- The ability to duplicate the expansion process to include the vetting process.
- Be able to leverage, to the extent possible, other published and accepted multinational working group products and limit “blue sky” development.
- Limit the use of nation centric products in order to keep the concept multinational.
- Utilize technology (tools, spreadsheets, and software) that is familiar to all participants.
- Results should be in a format that can serve as the foundation for a relational data base.

Process:

Step 1: Selection of IRs.

The MN Logistics Team, which consists of members from Australia, Canada, Finland, Germany, Greece, Romania, Poland, Sweden, United Kingdom, and the United States, selected 6 IRs from the original 58 NATO IRs for decomposition and development of a working Log COP. The selection of the IRs was completed during the 15-18 May 07 Workshop held at the J9 Building in Suffolk, VA. These IRs are the first and most summarized level of commander's requirement descriptors. All of these IRs were displayed in an IR Database (Excel) and screened for the following parameters:

- Which IRs is NATO currently working with for experimentation purposes?
- Was the IR related to the MNE5 Comprehensive Approach?
- Would the IR be technically feasible to release from national systems?
- Would the supporting source information be unclassified?

The 6 most appropriate NATO IRs, that were chosen with the above parameters were:

- IR 1.2.2: Common Record of Logistics Reconnaissance
- IR 1.11.1: Civil Military Support--Details of logistics support to civil authorities. Provide tracking of logistics support in the form of materiel, facilities, services and administrative support to national governments and civil populations in areas where own, coalition partners and Allied military forces are employed.
- IR 5.2.1: Provide the capability to integrate and display logistics information and data, by host nation, about existing excess host nation capabilities, resources and infrastructure available for future use by own, Coalition Partners and Allies, and as appropriate, other agencies.
- IR 6.3.1: Provide details to plan, manage and track strategic and/or Inter/Intra-theater ground lift (road) by military and commercial means for cargo and personnel. To include bridge/tunnels situation and details of the military load classification (MLC) system of the main supply routes (MSR).

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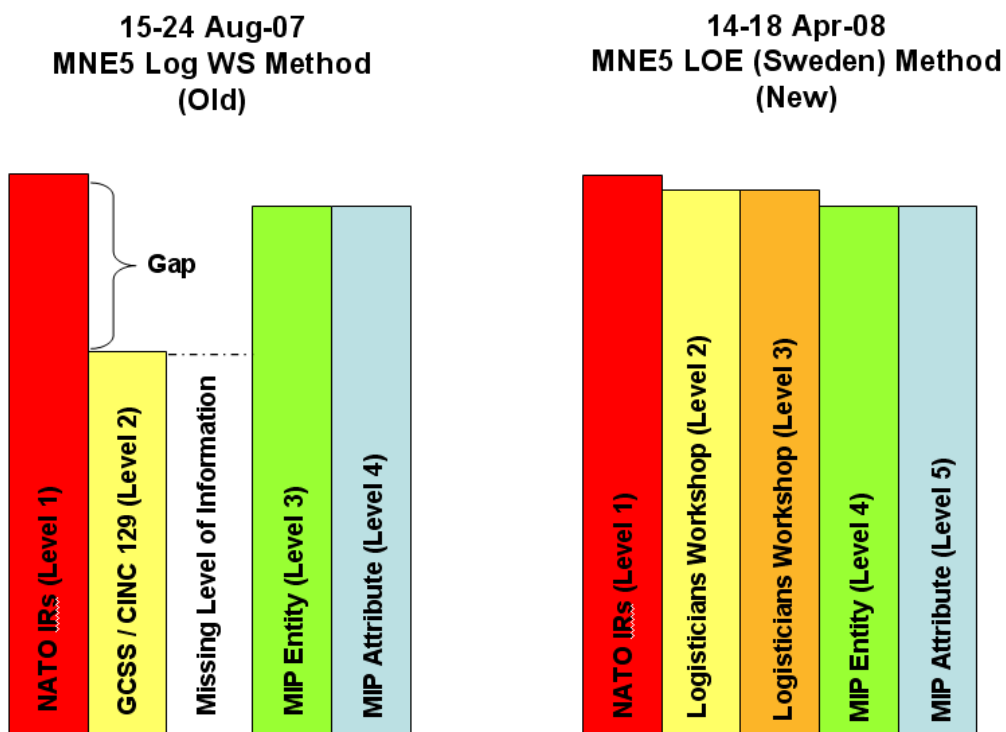
- IR 6.7.1: Provide accurate engineer and general infrastructure information on all APODs (to include data involving POL capacity, on-hand quantities by type, Maximum Aircraft on Ground (MOG) capabilities, ramp space, Fire Fighting Equip, runway length and strength, transit accommodation, MHE, Host Nation air space restrictions, etc).
- IR 8.5.1: Provide timely and accurate information on the location, status and identity of own, Host Nation, Coalition Partners and Allies Logistic Engineering Units for MSR and runway repair, logistic bridging, engineer materials and aggregates and infra repair and Specialist Teams (design and architecture etc) . Including National and Host Nations bore holes and desalinization capabilities, water purification kit and capabilities. Location of source of construction materials (such as quarries and DIY warehouses), construction suppliers (building materials and fittings, concrete plants and testing laboratories), location of earthmoving and engineer construction machinery fleet or hire companies, general information about construction contractors, sources of artisan and unskilled labor. Need of knowledge about location of oil refineries, power stations, and specialist teams (design and architecture etc.). Including National and Host Nation bore holes and desalination capabilities, water purification kits and capabilities.

Step 2: Decomposition of IRs:

MN Logistics Team members, consisting of experienced logisticians with a broad range of logistics related backgrounds, formed an IR decomposition working group during September 2007 and logically decomposed IRs (Level 1) to Task Item Description (Level 2) and Task Item Detail (Level 3). After that, MIP / NATO entity and attributes were posted as Level 4 and 5. This method added Level 3 (Task Item Detail), allowing for a more logical transition of information from top to bottom. The IRs, with the associated Levels 2 and 3 posted to them, significantly increased the number of line items in the IR Database.

The previous method to decompose the NATO IRs, posted the Global Combat Support System (GCSS) Commander In Chief's 129 (CINC 129) requirements (Level 2) to NATO IRs (Level 1). This was done by scanning GCSS CINC 129 for closely related similarities and posting them to the NATO IRs. This method proved to be more difficult to associate information due to cultural and language differences between the IRs and the US centric GCSS CINC 129 Level 2 information requirements. This created a condition that the association of information between Level 1 and 2 wasn't always as synchronized as it could have been. During the 15-24 August 2007 MNE5 Logistics Workshop, it was determined that many of the associations between the NATO IRs (Level 1) and GCSS CINC 129 (Level 2) were not always entirely aligned. It was for this reason that the method for decomposition of NATO IRs changed. GCSS CINC 129 were now used as a guideline to establish Level 2 data but, no longer limited Level 2 requirements to just what was contained in GCSS CINC 129. A graphic example of this is as follows:

Example:



- The earlier method of linking exclusively GCSS / CINC 129 (Level 2) information to NATO IRs (Level 1) left “gaps” of information missing between levels in the IR Database.

- There was a consistent level of information emerging that was either lost or moved to coexist with Level 2 or Level 3 data. By missing this level, the result was that it became more difficult to link levels of information from top to bottom.

- With experienced logisticians populating Level 2 and a new Level 3 and using GCSS / CINC 129 as a guide only, the IR Database had minimal “gaps”.

- Level 3 (Orange) was added, allowing for a more logical transition of information from top to bottom.

Step 3: Construction of the IR Database:

The IRs that exist as sentences and paragraphs in the NATO IRs were carefully read by the IR decomposition working group during September 2007. Efforts to determine the actual levels of information requirements that are contained in each IR were made. Information was categorized and segregated into the level of information contained in each of the IR descriptions. Levels 1 through 3 descriptions were summarized in the IR Database as much as possible while holding to the true meaning of the IR statements. All possible combinations of IR information were considered. With each new IR level expansion, the number of line items in the IR Database increased significantly.

When each of the IR sentences / paragraphs were broken down into their component levels and placed in the IR Database, it became possible to post entity and attributes (Levels 4 and 5) and source information to them.

Using NATO IR 6.3.1, the following are three examples of IR decomposition and the construction of the IR Database to Level 3:

Example 1:

IR:

6.3.1	Provide details to plan , manage and track strategic and/or Intratheater ground lift (road) by military and commercial means for cargo and personnel. To include bridge / tunnels situation and details of the Military Load Classification (MLC) of the Main Supply Routes (MSR) .
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Decomposed into the IR Database:

IR No.	Level 1 (NATO IR)	Level 2 (Task Item Description)	Level 3 (Task Item Detail)
6.3.1	Road Transport and Movement	Road Transport Plan	Intertheater (Operational): MSR / Bridge

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Example 2:

IR:

6.3.1	Provide details to plan, manage and track strategic and/or Intratheater ground lift (road) by military and commercial means for cargo and personnel . To include bridge / tunnels situation and details of the Military Load Classification (MLC) of the Main Supply Routes (MSR) .
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Decomposed into the IR Database:

IR No.	Level 1 (NATO IR)	Level 2 (Task Item Description)	Level 3 (Task Item Detail)
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): MSR / Bridge

Example 3:

IR:

6.3.1	Provide details to plan, manage and track strategic and/or Intratheater ground lift (road) by military and commercial means for cargo and personnel . To include bridge / tunnels situation and details of the Military Load Classification (MLC) of the Main Supply Routes (MSR).
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Decomposed into the IR Database:

IR No.	Level 1 (NATO IR)	Level 2 (Task Item Description)	Level 3 (Task Item Detail)
6.3.1	Road Transport and Movement	Road Transport Track	Intertheater (Operational): Military Cargo

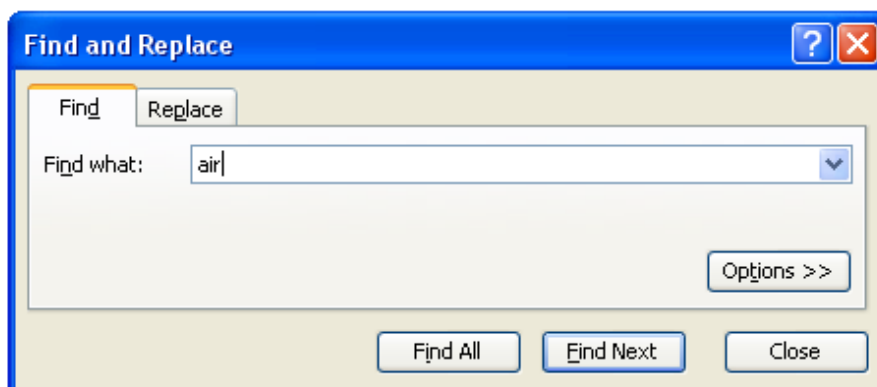
Step 4: NATO / MIP Entities and Attributes are Selected, then Posted to the IR Database:

The Multilateral Interoperability Programme (MIP) entity and attribute listings of fourth and fifth levels of descriptors were posted to each of the line items contained in the IR Database. The reason the NATO and MIP entity / attribute listings were selected is because they are multinational defined and accepted.

Before the NATO and MIP entities / attributes are searched for IR compatibility, the data sets must be configured to be able to copy and paste into the existing IR Database. This means that the fields must be available within the IR Database in order to post information from the NATO and MIP entity / attribute sets. Also, in the case of the MIP set, the data had to be converted from an Adobe (.pdf) to an Excel (.xls) file and appended to the NATO set.

Once the IR Database and entity / attribute set were prepared, key words from the information contained in the existing IR Database were used to search the entity / attribute data set. Using the most basic words for the searches proved to be the best way to locate matching information from the entity / attribute set. An example would be if a person were searching for an IR requirement of “Monitor, track, and display the flow of Assets – Air”, they might want to search the entity / attribute for the singular words “Air” or “Assets”. The idea was that it was better to have more data than have missed it because of a query that was too specific.

The method for searching the entities / attributes in the excel file was by using “Ctrl, F”, typing in the search word, and clicking on Find Next:



It is worth noting that when each of the Excel data sets is sorted in various ways, it can bring together groups of similar information and ease the effort of pairing the various levels of information.

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The configuration of the IR Database Fields at this Step is as follows:

- IR No.: The IR number that maps back to the original NATO IR source
- Level 1: Summarized NATO IR (Overall implied requirement of the IR)
- Level 2: Task Item Description (Decomposed from Level 1)
- Level 3: Task Item Detail (Decomposed from Level 2)
- Level 4: Entity is the implied information requirement of Levels 1, 2, and 3 that was taken from NATO and MIP databases.
- Level 5: Attribute is a further detail of Level 4 and is more specific to the type of information required. This information requirement is taken from NATO and MIP databases.
- Attribute Definition: This is the definition of the Level 5 Attribute and is taken from the NATO and MIP databases.

Example:

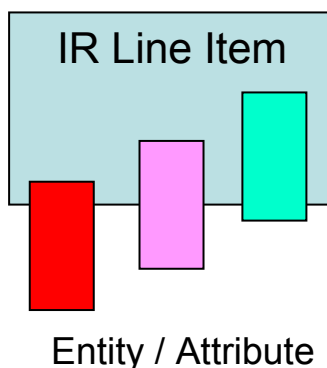
IR No.	Level 1 (NATO IR)	Level 2 (Task Item Description)	Level 3 (Task Item Detail)	Level 4 (Entity)	Level 5 (Attribute)	Attribute Definition
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): MSR / Bridge	BRIDGE	bridge-id	The facility-id of a specific BRIDGE (a role name for object-item-id).
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): MSR / Bridge	BRIDGE	bridge-longest-span-length-dimension	The one-dimensional linear distance representing the longest span's length in a specific BRIDGE.
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): MSR / Bridge	BRIDGE	bridge-span-count	The integer value representing the number of sections that a specific BRIDGE may have.
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): MSR / Bridge	BRIDGE	bridge-usage-code	The specific value that represents the usage of a specific BRIDGE.
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): MSR / Bridge	BRIDGE-TYPE	bridge-type-design-type-code	The specific value that represents the design class of BRIDGE-TYPE.
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): MSR / Bridge	BRIDGE-TYPE	bridge-type-id	The facility-type-id of a specific BRIDGE-TYPE (a role name for object-type-id).

During this Step, it's worth noting (and a person should beware) that while linking the IRs, there were instances that the following anomalies occurred:

- Many of the MIP entities and attributes were Civil Engineering Centric.

Example: Most Water Attributes are described as Depth, Length of Waterway, and Water Control Structures. However, there was very little information about Potable Water Supplies or other logistics based needs.
- MIP attributes can appear to be a mix of entities and attributes.
- Many attributes or entities are not an exact match to higher level IRs but, may have a partial applicability. If a person were to take 3 entities / attributes, the overall consolidation of attributes could cover the overall IR requirement but, individually might not.

Example:



- Some IR Items are similar or the same.

Example: IR 5.2.1 is the same as 1.2.2, but with an emphasis on Host Nation Assets / Capabilities.

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- From one database to another, there are many different names to describe the same piece of information. This fact makes it more difficult to link the information from each of the databases to one another. GCSS CINC 129 describes many requirements with US terminology, which are not compatible with Multinational terminology. This made efforts to link MIP and NATO entities and attributes far more difficult to link together while constructing the IR Database.

Examples: The following words represented the same meaning but, were different in each of the databases: Port, Harbor, Harbour, Seaport, and SPOD. Also, the Class of Supply numbering system varied between countries.

- There were descriptions that meant 2 different things, even within the same database.

Example: Unit (Unit of Measure, Force Units)

Step 5: Determination of Source Information Types to Populate the IR Database:

The Multinational Logistics Working Group decided on which IRs would be sourced through National Systems, CTF Sources, Host Nation Sources, and Open World Wide Web Sources. During this step, each of the individual IRs was consolidated into a single composite database to facilitate sorting and searching for source information. Integrity of each of the individual IRs was preserved and could be extracted or filtered from the composite very easily. Once the source type was determined, each of the multinational members was assigned the task of locating the National Systems from each of their countries. Also, US team members researched CTF, Host Nation, and Open World Wide Web sources. New source information fields were placed in the IR Database and filled with information as it was received. Many IR Database line items contained more than one source type. The source information was required to populate the COP with links to data for reporting and fusion with other related information to build a Knowledge Base (KB). It's worth noting that during the process of locating source information, close attention was paid to the area of operation and the scenario to obtain applicable information to support the event.

In this step, the IR Database utilized additional fields:

- Source Type: The type of information source (CTF, Host Nation, National, Open)
- Source / Systems to Populate IR: The name of the Authoritative Data Source
Example: Global Transportation Network (GTN)
- Link to Source / Systems: The connecting link to the source / system where the required data is available.
- Owner / Custodian(s) of the System: The agency who owns the Source / System.
Example: Defense Information Systems Agency (DISA)

Example:

IR No.	Level 1 (NATO IR)	Level 2 (Task Item Description)	Level 3 (Task Item Detail)	Level 4 (Entity)	Level 5 (Attribute)	Attribute Definition	Source Type	Source / Systems to Populate IR	Link to Source / Systems	Owner / Custodian(s) of the System
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): Military Pax	MILITARY-ORGANIZATION	DEPLOYED UNIT PERSONNEL QTY	THE QUANTITY OF PERSONNEL WITHIN ALL THE DEPLOYED UNITS OF A PARTICULAR MILITARY-ORGANIZATION.	National	JOP(UK-Hamber)	JOP-UK.doc	2. In-theatre J1
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): Military Pax	MILITARY-ORGANIZATION	DEPLOYED UNIT PERSONNEL QTY	THE QUANTITY OF PERSONNEL WITHIN ALL THE DEPLOYED UNITS OF A PARTICULAR MILITARY-ORGANIZATION.	National	JPA (UK-Hamber)	JPA - UK.doc	2. In-theatre J1
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): Military Pax	MILITARY-ORGANIZATION	DEPLOYED UNIT PERSONNEL QTY	THE QUANTITY OF PERSONNEL WITHIN ALL THE DEPLOYED UNITS OF A PARTICULAR MILITARY-ORGANIZATION.	National	Local System, likely EXCEL spreadsheet (CAN - Fuller)	Local Excel Spreadsheet - Canada.xls	2. In-theatre J1
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): Military Pax	MILITARY-ORGANIZATION	DEPLOYED UNIT PERSONNEL QTY	THE QUANTITY OF PERSONNEL WITHIN ALL THE DEPLOYED UNITS OF A PARTICULAR MILITARY-ORGANIZATION.	National	Excel Spreadsheet (SW)	Local Excel Spreadsheet - Sweden.xls	2. In-theatre J1
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): Military Pax	MILITARY-ORGANIZATION	DEPLOYED UNIT PERSONNEL QTY	THE QUANTITY OF PERSONNEL WITHIN ALL THE DEPLOYED UNITS OF A PARTICULAR MILITARY-ORGANIZATION.	National	Excel Spreadsheet (SW)	Local Excel Spreadsheet - Sweden.xls	2. In-theatre J1
6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): Military Pax	MILITARY-ORGANIZATION	DEPLOYED UNIT PERSONNEL QTY	THE QUANTITY OF PERSONNEL WITHIN ALL THE DEPLOYED UNITS OF A PARTICULAR MILITARY-ORGANIZATION.	National	GTN	GTN.doc	2. In-theatre J1

Other fields included in the IR Database that were not used for the 14-18 April 2008 LOE (Sweden) but, could be required for a fully functioning Multination Log COP in the future are as follows:

- Information Exchange Agreements (IEAs): This is the existing IEA, the name, and the location (page number) of the Document. Provide as much reference information as possible in order to provide those searching for the document the best chance possible to locate it. Additionally, if there is a document that could be modified to support exchanging this information list it and describe what modifications are proposed. Also describe which nations and organizations (NATO, UN) that each IEA, ACSA etc. they support.
- Method of Incoming Information Transfer: Description of the method that the Owner / Custodian(s) intends to deliver this information to a coalition IT environment. (Will it be removable media such as a thumb drive, CD, or etc, will you have to print it out and reenter the information manually, email, or a direct link from the authoritative data source to the coalition system.)

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- **Format of Information (Software):** Description of the format that the Owner / Custodian(s) intends to share the information. (If transferring the information electronically is it in an MS Office document, DOS, or some format in between?)
- **Legalities of Info and Log Support/ Proprietary:** Description of any legal obstacles that the User and the Owner/Custodian(s) must resolve prior to the use of information.
- **Security Classification:** The classification of the information being exchanged.
- **Required (new) IEAs Necessary:** Does there need to be an IEA initiated between the User and Owner/Custodian(s) of the information system.
- **Releaseability / Accessibility of Information:** Description of the releasability of the information as it pertains to classification, necessary steps to download it from a classified system and can be pulled from a classified system.
- **Can information be released to SHIFT Environment:** Can the information be released to a SHIFT environment where NGOs or other PVOs may have access.
- **Update Rate (Green):** Information refresh rate when being reported.
- **Reliability Source / High, Med, Low:** This field displays how reliable and detailed the source information is perceived to be by the MN team members.
- **Remarks:** This space is used to describe any caveats, issues, questions or notes concerning the addition of an attribute.

Step 6: Incorporation of the IR Database into the Logistics Common Operational Picture (Log COP):

NATO personnel were invited to the November 2007 MNE5 Logistics Workshop to demonstrate BRITE. It is a futuristic experimentation portal with framework that allows for the rapid implementation of new ideas and capabilities. It was apparent that BRITE had the capability to serve as the platform for the Log COP as it would be able to logically input and retrieve the decomposed NATO IRs in a networked environment. During the fall of 2007, the Log COP Tiger Team periodically met with NATO and determined the best method to display the decomposed IRs. During 17-18 December 2007 NATO provided two complete days of hands-on training for the Log COP Tiger Team and by 30 January 2008 NATO made a BRITE account available for MNE5 Logistics. Loading of IRs into BRITE was completed by the Log COP Tiger team during February through March of 2008, prior to the Logistics Proof of Concept LOE, 14-18 April 2008 in Enköping, Sweden.

The IR Database was used as the accounting tool for the Log COP Tiger Team to work from in determining exactly what data was new to the IR Database and which data had already been input into BRITE. Individuals paid close attention as to who had control of the latest IR Database version. If not, there would be risk of creating multiple IR Database versions that would cause the loss of data and control. Due to time constraints coupled with the large amount of line items, only Levels 1 through 3 along with links to documents were input into BRITE. Also, none of the sources located provided immediate Level 4 or 5 data to join to the IR Database.

Example:

Green = Folder created / Source data available and loaded into BRITE

Yellow = Source data available, not loaded into BRITE

White = Folder not created / Source not located

IR No.	Level 1 (NATO IR)	Level 2 (Task Item Description)	Level 3 (Task Item Detail)	Level 4 (Entity)	Level 5 (Attribute)	Attribute Definition	Source Type	Source / Systems to Populate IR	Link to Source / Systems
6.3.1	Road Transport and Movement	Road Transport Manage	Interheater (Operational): Commercial Cargo	COMMERCIAL-FREIGHT-LADING-BILL	ID	THE IDENTIFIER THAT REPRESENTS THE COMMERCIAL BILL OF LADING FROM WHICH THE FREIGHT-LADING-BILL WAS	National, CTF	GTN	GTN.doc

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6.3.1	Road Transport and Movement	Road Transport Manage	Intertheater (Operational): Force Protection	CONTROL-FEATURE-STATUS	control-feature-status-security-status-code	The specific value that represents the protection status of the site encompassed by a specific CONTROL-FEATURE.	National, CTF	Excel Spreadsheet (SW)	Local Excel Spreadsheet - Sweden.xls
6.3.1	Road Transport and Movement	Road Transport Plan	Intertheater (Operational): Commercial Cargo	COMMERCIAL-FREIGHT-LADING-BILL	ID	THE IDENTIFIER THAT REPRESENTS THE COMMERCIAL BILL OF LADING FROM WHICH THE FREIGHT-LADING-BILL WAS CONVERTED	National, CTF	GTN	GTN.doc
6.3.1	Road Transport and Movement	Road Transport Plan	Intertheater (Operational): Commercial Pax	MILITARY-ORGANIZATION	DEPLOYED UNIT PERSONNEL QTY	THE QUANTITY OF PERSONNEL WITHIN ALL THE DEPLOYED UNITS OF A PARTICULAR MILITARY-ORGANIZATION.	National		
6.3.1	Road Transport and Movement	Road Transport Plan	Intertheater (Operational): Military Pax	HANDLING-CAPABILITY	handling-capability-action-code	The specific value that represents the type of a specific HANDLING-CAPABILITY.	National, CTF	GTN	GTN.doc
6.3.1	Road Transport and Movement	Road Transport Plan	Intertheater (Operational): MSR / Tunnel	ENGINEERING	TUNNEL BYPASS CONDITION CD	THE CODE THAT REPRESENTS THE CONVENIENCE OF USING AN ALTERNATE ROUTE WHEN AVOIDING A TUNNEL.	CTF	CTF Log Related Reports	movement situation report.doc
6.3.1	Road Transport and Movement	Road Transport Plan	Intertheater (Operational): MSR / Tunnel	ENGINEERING	TUNNEL LENGTH DIMENSION	THE CENTER LINE LENGTH OF A TUNNEL	HN, Open	CTF Log Related Reports	movement situation report.doc
6.3.1	Road Transport and Movement	Road Transport Plan	Intertheater (Operational): MSR / Tunnel	ENGINEERING	TUNNEL NAME	THE NAME OF A TUNNEL.	HN, Open		

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Each Version of the IR database used a naming convention for tracking and was archived in a historical file.

Example:

Name	Size	Type	Date Modified
080408 MNE5 IR (6) Database 8-Apr-08 @ 0820	3,449 KB	Microsoft Excel Worksheet	4/7/2008 4:23 PM
080325 MNE5 IR (6) Database 25-Mar-08 @ 1306	3,432 KB	Microsoft Excel Worksheet	3/27/2008 1:12 PM
080324 MNE5 IR (6) Database 24-Mar-08 @ 1330	3,266 KB	Microsoft Excel Worksheet	3/25/2008 1:01 PM
080321 MNE5 IR (6) Database 21-Mar-08 @ 1200	3,234 KB	Microsoft Excel Worksheet	3/24/2008 12:54 PM
080321 MNE5 IR (6) Database 21-Mar-08 @ 1000	3,234 KB	Microsoft Excel Worksheet	3/24/2008 12:53 PM
080318 MNE5 IR (6) Database 18-Mar-08 @ 1600	3,229 KB	Microsoft Excel Worksheet	3/20/2008 2:41 PM
080312 MNE5 IR (6) Database 12-Mar-08 @ 0830	3,069 KB	Microsoft Excel Worksheet	3/17/2008 12:02 PM
080208 MNE5 IR (6) Database 8-Feb-08 @ 1500	2,224 KB	Microsoft Excel Worksheet	2/11/2008 2:56 PM
080204 MNE5 IR (6) Database 4-Feb-08 @ 0821	1,850 KB	Microsoft Excel Worksheet	2/5/2008 11:03 AM
080130 MNE5 IR (6) Database 30-Jan-08 @ 1417	1,763 KB	Microsoft Excel Worksheet	1/31/2008 10:46 AM
071214 MNE5 IR (6) Database 14-Dec-07 @ 1415	1,734 KB	Microsoft Excel Worksheet	12/14/2007 3:12 PM
071205 MNE5 IR (6) Database 6-Dec-07 @ 1130	1,672 KB	Microsoft Excel Worksheet	12/6/2007 12:35 PM
071205 MNE5 IR (6) Database 5-Dec-07 @ 1310	1,668 KB	Microsoft Excel Worksheet	12/5/2007 2:11 PM
071203 MNE5 IR (6) Database 3-Dec-07 @ 1337	1,618 KB	Microsoft Excel Worksheet	12/4/2007 9:43 AM
071130 MNE5 IR (6) Database 30-Nov-07 @ 0855	1,098 KB	Microsoft Excel Worksheet	11/30/2007 9:54 AM
071128 MNE5 IR (6) Database 28-Nov-07 @ 1444	1,136 KB	Microsoft Excel Worksheet	12/3/2007 2:36 PM
071127 MNE5 IR (6) Database 27-Nov-07 @ 1436	1,088 KB	Microsoft Excel Worksheet	11/28/2007 2:47 PM
071120 MNE5 IR (6) Database 20-Nov-07 @ 0947	1,084 KB	Microsoft Excel Worksheet	11/20/2007 10:45 AM
071119 MNE5 IR (6) Database 19-Nov-07 @ 0900	1,038 KB	Microsoft Excel Worksheet	11/19/2007 3:30 PM
070803 MNE5 IR (6) Database 3-Aug-07 @ 1331	1,307 KB	Microsoft Excel Worksheet	8/3/2007 10:42 AM
070710 MNE5 IR (6) Database 10-Jul-07 @ 1230	1,264 KB	Microsoft Excel Worksheet	11/16/2007 4:03 PM
070706 MNE5 IR (6) Database 6-Jul-07 @ 0930	1,265 KB	Microsoft Excel Worksheet	7/6/2007 3:30 PM
070706 MNE5 IR (6) Database 6-Jul-07 @ 0835	1,265 KB	Microsoft Excel Worksheet	7/6/2007 3:30 PM

Step 7: Key and Essential Elements of Information (K&EEI) Matrix Construction:

The Key and Essential Elements of Information (K&EEI) Matrix joins Inject, K&EEI and Source information in a common excel file. The MN Logistics Team agreed on a definition for K&EEI: “Information necessary to gain a level of Situational Awareness (SA) and Situational Understanding (SU) to enable development of a COA.” When the team met at the April 2008 LOE in Sweden, the K&EEI Matrix was the focal point that fused the K&EEIs with the decomposed IRs / sources in order to fulfill requirements from scenario driven injects. Any K&EEIs that could not be fulfilled by source information contained in BRITE were considered “Gaps”. Depending on the gap, the ability to gain SA / SU and prepare a COA could be hindered.

The method to construct and utilize the K&EEI Matrix was as follows:

1. The inject is received and is carefully analyzed for SA / SU in relation to the scenario. An example of an inject would be:

MNE 5 Log Inject # 1

- Fuel Contamination
 - Fuel at the Lungi Airport was found to be contaminated and cannot be used.
 - Contaminants are unknown and will require testing to determine the contaminant and possible cause of the contamination
 - POL
 - Contract with local companies will not proceed at this stage
 - Commercial dealings with unapproved companies will be restricted to non-critical supplies
 - Action:
 - Determine information needed to identify contaminant and provide the CTF Commander an alternative COA to fill POL requirements
2. Subject Matter Experts (SMEs) determined the K&EEIs that were required to conduct COA development and recorded them in the K&EEI Matrix.
 3. The decomposed IRs contained in BRITE were searched for source information that satisfied the requirements of the K&EEI. When source information was located in BRITE, the link was cut and pasted into the K&EEI Matrix to show that the K&EEI requirement was fulfilled.
 4. When no source information could be identified in BRITE, “Gaps” of information in the K&EEI were recorded and examined.
 5. Determination of if a COA recommendation could be formed.

UNCLASSIFIED

The Members utilized the following instructions to build the K&EEI Matrix:

Inject / Day 1 Inject 1:

- Fuel at the Lungi Airport was found to be contaminated and cannot be used. –
- Contaminants are unknown and will require testing to determine the contaminant and possible because of the contamination.

POL:

- Contract with local companies will not proceed at this stage.
- Commercial dealings with unapproved companies will be restricted to non-critical supplies.

Action:

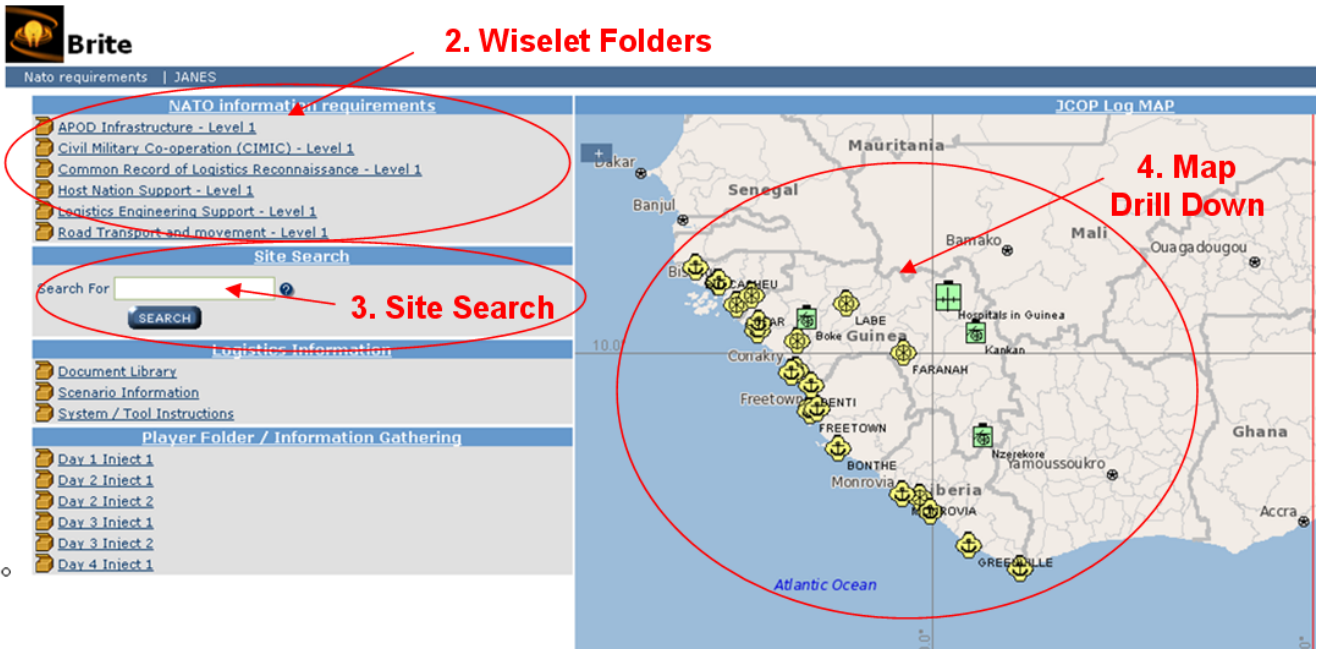
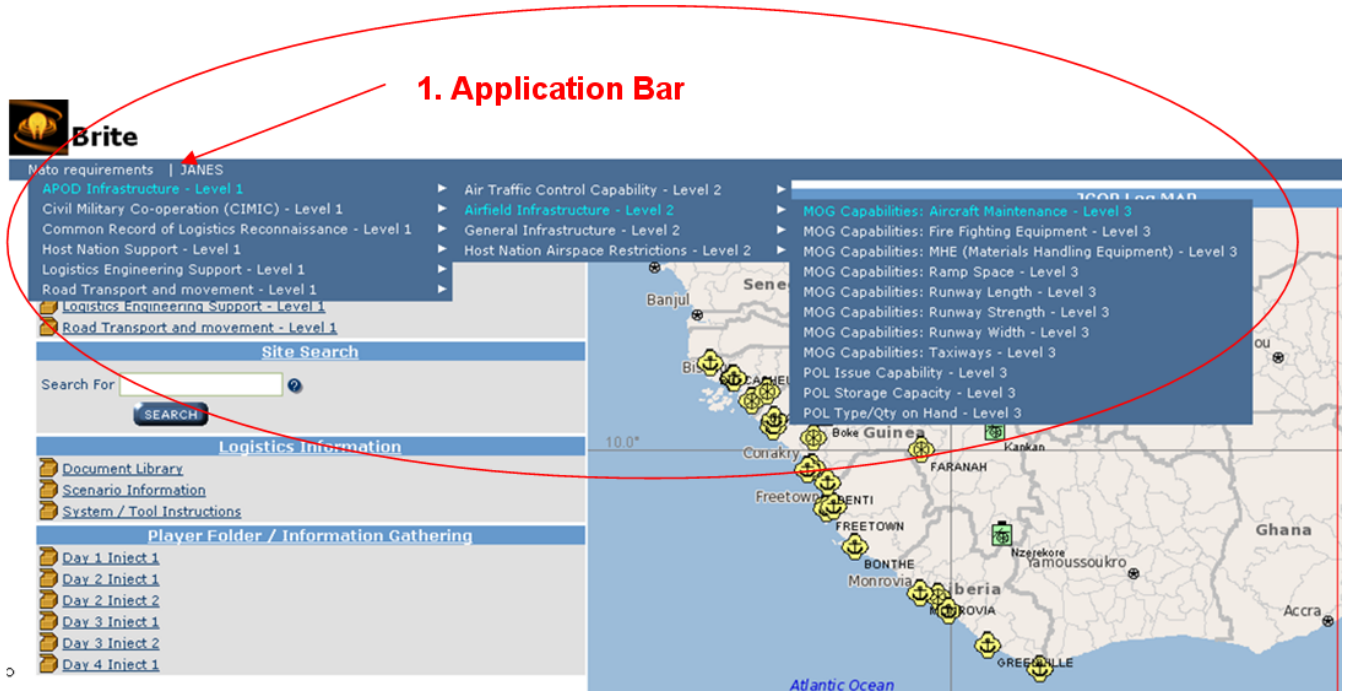
- Determine information needed to identify contaminant and provide CTF Commander alternative COA to fill POL requirements. **1**

KEEI No. (Inject/KEEI: 01-01) 2	Key and Essential Element Information 3	Source Type (CTF, HN, Nat, Open) 4	Source Description (Name of Data) 5	Satisfaction Level (Full, Part, None) 6
01-01	Alternate aircraft refueling location?	2-Open, 1-HN	World Aero Data - Freetown Lungi, The Airport Guide - Guinea, Sierra Leone Airport Authority	Full: Found three sources that satisfy KEEI requirements.
01-02	Alternate APODs and what is their capability in near by countries? What are points of contact?	(Source Type)	(Name of Source)	Part
01-03	Alternate fuel source? From location and how soon? Point of contact information?	(Source Type)	(Name of Source)	None (Gap)
01-04	Approved sources of fuel?	(Source Type)	(Name of Source)	Full
01-05	Capability to decontaminate the fuel? (GOSL, Coalition, Civil)	(Source Type)	(Name of Source)	Part
01-06	Host Nation points of contact?	(Source Type)	(Name of Source)	None (Gap)

- **1 Add Inject information into top block for quick reference**
- **2 Add KEEI Number (Inject - KEEI)**
- **3 Add Key and Essential Element Information Requirements**
- **4 Add Name of Source(s) Type**
- **5 Add Source(s) Description**
- **6 Add Satisfaction Level with Note**

Note: Save file name as Day 1 Inject 1 or naming convention that is easily identified

Five methods were utilized to locate source information contained in BRITE:





NATO information requirements

Detailed View | Brief View | **Tree View** | Reports

put a nice description of what this container does...

- [-] APOD Infrastructure - Level 1
 - [-] Air Traffic Control Capability - Level 2
 - [-] Communications - Level 3
 - [-] Navigation Aids - Level 3
 - [-] Other Airfield Data - Level 3
 - [-] Weather Information - Level 3
 - [-] Airfield Infrastructure - Level 2
 - [-] MOG Capabilities: Aircraft Maintenance - Level 3
 - [-] MOG Capabilities: Fire Fighting Equipment - Level 3
 - [-] MOG Capabilities: MHE (Materials Handling Equipment) - Level 3
 - [-] MOG Capabilities: Ramp Space - Level 3
 - [-] MOG Capabilities: Runway Length - Level 3
 - [-] MOG Capabilities: Runway Strength - Level 3
 - [-] MOG Capabilities: Runway Width - Level 3
 - [-] MOG Capabilities: Taxiways - Level 3
 - [-] POL Issue Capability - Level 3
 - [-] POL Storage Capacity - Level 3
 - [-] POL Type/Qty on Hand - Level 3
 - [-] General Infrastructure - Level 2
 - [-] Accomodation - Level 3
 - [-] Beddown Capacity
 - [-] Customs - Level 3
 - [-] Dining Capacity - Level 3
 - [-] Freight Storage Capacity - Level 3
 - [-] Medical Capacity (Level of Care) - Level 3
 - [-] Pax Terminal Capacity - Level 3
 - [-] Power Supply - Level 3
 - [-] Security - Level 3
 - [-] Transit - Level 3
 - [-] VIP - Level 3
 - [-] Vehicle Parking - Level 3
 - [-] Water Supply - Level 3

5. Tree View

Step 8: Analyze Information for Course of Action (COA) Recommendation:

Multinational Subject Matter Experts (SMEs) tested the IR Database / Log COP (BRITE) and developed K&EEIs. The SMEs documented their results in the K&EEI Matrix and gaps were identified. SMEs then analyzed the available information and determined if a Logistics COA was feasible and if a recommendation could be formed by CTF Logisticians. Finally, the teams completed a narrative to further document how and why the sources of information were able to fulfill the K&EEI requirements and to what extent SA / SU could be achieved.

Coalition Information Sharing Way Ahead:

As the Multinational Logistics Team progressed through workshops and LOEs, important knowledge was gained with many lessons learned and new processes developed in the area of coalition information sharing. During the April 2008 LOE in Sweden, it became obvious that the method used for IR expansion and the logic tested, was both sound and intuitive. This methodology will serve as an excellent foundation to build from for future undertakings. The understanding of the next step, to develop mechanisms (processes enabled by technologies) that adequately provides and supports SA / SU and timely decision making, is now better recognized.

Several key areas that coalition information sharing could be enhanced and new processes developed are as follows:

- Integrate and Automate the Process of Developing SA / SU / Knowledge Development (KD):
 - ✓ Loading the Log COP platform (BRITE) with the decomposed IRs was very time consuming. It took two people two months to input 6 decomposed IRs into BRITE. With all 58 IRs, it would be much longer to input and far more difficult to account for what revision in the IR Database was currently loaded. In a limited test with a relational database, the complete IR Database was loaded in less than a half an hour. Using a relational database would create a modularized environment and save weeks of data entry. This method would be much more responsive during an actual crisis.
 - ✓ During the April 2008 LOE in Sweden, each phase of the process that lead to locating source information for SA / SU / KD determination was disjointed. Critical databases resided on individual hard drives, creating bottle necks of data entry and numerous copy / pastes.

Examples:

 - The K&EEI Matrix was a stand alone excel spreadsheet that had source information entered and pasted into it from other portals / databases but, it was not part of the Log COP.
 - The IR Database was the engine that drove the configuration and accounted for the information in the Log COP. Yet, this was another database that stood alone.

All of these data sets could be integrated in one easy to use automated system.

- Collaborative / Distributive Environment:

A real life crisis would most likely demand a distributive environment, as not all members would be able to be in the same location. Coalition members would need to simultaneously collaborate to build SA / SU / KD of the crisis.

Technology to develop an environment such as this could be easily modeled and tested. The K&EEI Matrix and IR Database development would be difficult to build and control in a non web based distributive / collaborative environment. Coalition members could in parallel make inputs to the K&EEI Matrix and IR Database.

- Test all 58 NATO IRs:

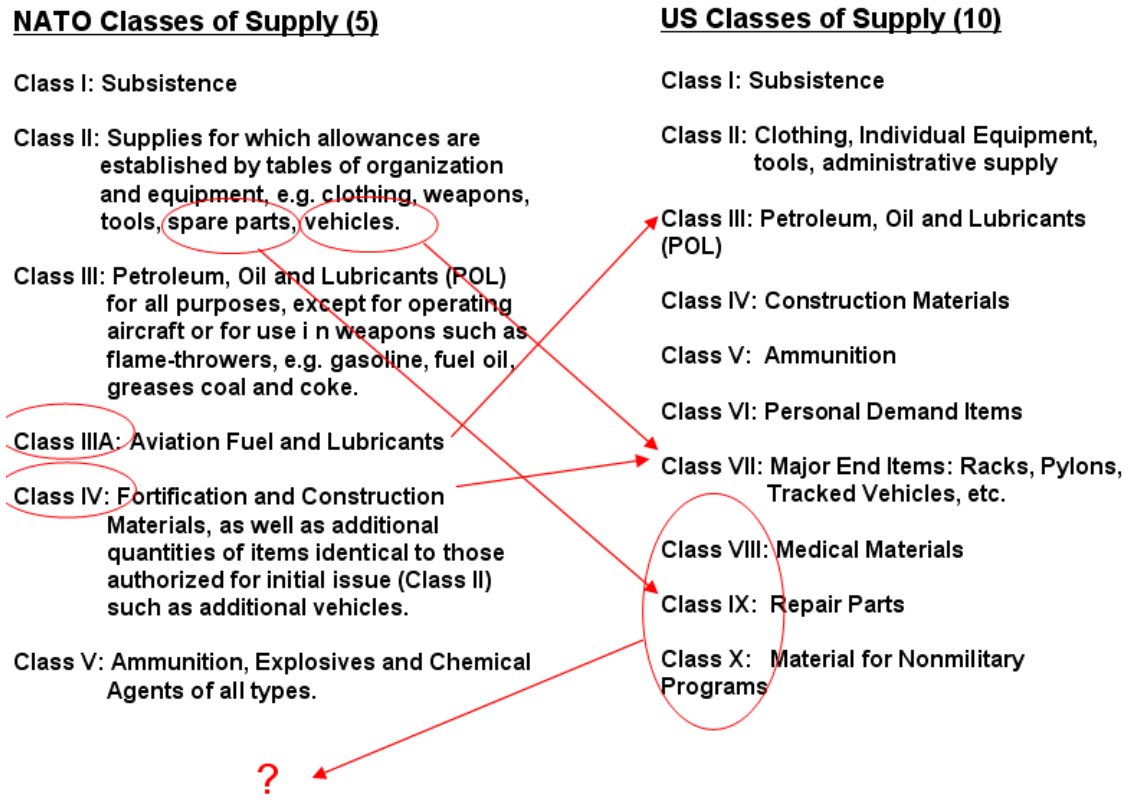
A limitation during the April 2008 LOE in Sweden was the use of only six IRs for KD instead of the complete set of 58 NATO IRs on file. The use of 6 IRs was a conscious decision to provide some scope to the amount of information prepared for the LOE however, with the full set of IRs decomposed, one would be able to identify a true gap in the IRs and not a gap because all of the IRs weren't used.

- Locating Data:

Although the method to decompose the IRs proved to be logical and the best practice, locating data once input is a separate issue. The two methods to locate information in the Log COP were: Going from top to bottom of the decomposed IR. This didn't always lead a person to the information they desired even if it was in the database and it could be time consuming locating the information. There was also a site search in the Log COP but, trying to find a piece of information in a large database can be difficult. If there had been more time, using BRITE's metadata abilities might have worked well and would be worth investigating, however, using a relational database might prove to be the easiest and quickest way to locate information.

- Solving Language Barriers:

As discussed earlier, even though the language used in each of the databases is in English, there are still many differences in the way each word is used between multinational partners. It would be worth investigating how assembling a cross referencing table in a relational database would improve the ability to locate information. For example, when a person is looking for information regarding SPOD, information contained in the databases from the US, NATO, MIP, etc. the table would direct the person to also search under seaport, port, harbor, or harbour. Also, as shown below, there are even differences between NATO and US Classes of supply that could be cross referenced:



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