

## MULTILATERAL INTEROPERABILITY PROGRAMME



## CONCEPT OF OPERATIONS

**12 December 2003, Greeding Germany**

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## **MIP CONCEPT OF OPERATIONS**

### **1 INTRODUCTION**

The application of military force in the early 21<sup>st</sup> century is demanding. It covers a wide spectrum of threats and deployment scenarios that range from conventional general war through limited operations, crises response operations, asymmetric conflict, and terrorism. Unilateral capability is important to nations but most planning is made on the assumption of alliance and coalition operations in scenarios that are difficult to predict and which often arise at short notice. Thus the nature and composition of a force structure to meet military requirements will be specific to requirement and based upon a general and flexible military capability.

To achieve this, an assured capability for interoperability of information is essential. The successful execution of fast moving operations needs an accelerated decision-action cycle, increased tempo of operations, and the ability to conduct operations within combined/multinational formations. Commanders require timely and accurate information. Also, supporting command and control (C2) systems need to pass information within and across national and language boundaries. Moreover, tactical C2 information must be provided to the operational and strategic levels of command including other governmental departments. Additionally, forces must interact with non-governmental organisations, including international aid organisations.

The Multilateral Interoperability Programme (MIP) aims to deliver an assured capability for interoperability of information to support land focused joint operations.

#### **1.1 Multilateral Interoperability Programme (MIP)**

The aim of the Multilateral Interoperability Programme (MIP) is to achieve international interoperability of Command and Control Information Systems (C2IS) at all levels from corps to battalion or the lowest appropriate level, in order to support combined and joint operations; and pursue the advancement of digitization in the international arena, including NATO.

The means to achieve this will be known as the MIP solution. This will take into account issues

regarding the establishment of communication and information systems connectivity, and the establishment of a C2IS interface that fulfils common information exchange requirements.

The Programme has gone through the stages of: operational analysis, concept, feasibility, definition, development and demonstration. The present focus is on implementation and the programme has adopted a controlled iterative cycle to support incremental development.

The information exchange requirements, upon which MIP is founded, encompass the spectrum of Joint and Combined Land Operations. Thus MIP meets the requirements of the Land Component Commander of Allied Joint and Combined Operations (including Article 5 and Crisis Response Operations). Systems may be wholly different from each other and need not necessarily conform to any hardware or software standard. Typically systems will be acquired through national or NATO acquisition programmes and their architecture will conform to the national or NATO policy prevailing at the time.

In a community of MIP-enabled C2 systems nations, command levels and organisations can share:

- Situational awareness (including, inter-alia, capabilities and status of friendly and enemy forces).
- Plans and Orders.
- NBC alerts and critical messages.

## **1.2 The MIP Concept**

The MIP specification consists of common interface and exchange mechanisms (two at present) to exchange information between co-operating but diverse C2 systems.

The common interface is the Land C2 Information Exchange Data Model, LC2IEDM. It is a product of the analysis of a wide spectrum of allied information exchange requirements. It models the information that allied land component commanders need to exchange (both vertically and horizontally). It serves as the common interface specification for the exchange of essential battle-space information. The function, implementation and the display of the host C2 application is not the concern of MIP.

System developers incorporate the MIP specification and include a single interface to it. The specification enables C2IS to C2IS information exchange and allows users to decide what information is exchanged, to whom it flows, when and over what communications medium. Thereafter no further interfaces are required to interoperate with any other MIP enabled system.

The Message Exchange Mechanism (MEM) consists of a suite of formatted messages derived from the LC2IEDM that conform to AdatP-3 Part 1, plus guidelines for their use.

The Data Exchange Mechanism (DEM) is an automatic data push mechanism that co-exists with the MEM. When a C2 application changes the state of information that it holds, and which is recognised by the DEM, this information is automatically replicated to all other co-operating systems that have agreed to exchange this information.

With both exchange mechanisms the meaning and context of the information is preserved and requires no additional processing on receipt to make it useful. The MIP specifications enable interoperability at Degree 4.a<sup>1</sup> (DEM) and 2.h<sup>2</sup> (MEM) and functions at NATO Level 5 of System Interconnection<sup>3</sup>.

The programme is tightly focused on delivering capability in an incremental manner based upon a rolling 2-year delivery cycle, while in parallel the previous baselines are sustained, new operational requirements are analysed, new capabilities are agreed, and emerging technologies are explored. Nations are encouraged to align their acquisition cycles. The MEM and the DEM will be in-service during the period 2003 – 2005 and followed thereafter with biennial capability enhancements.

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<sup>1</sup> *The NATO Policy for C3 Interoperability* [NC3B Sub-Committee AC/322 SC/2-WP/72 (Revised) Version 4.3]: “Seamless Sharing of Information: Common Information Exchange.”

<sup>2</sup> *The NATO Policy for C3 Interoperability* [NC3B Sub-Committee AC/322 SC/2-WP/72 (Revised) Version 4.3]: “Structured Data Exchange: Data Object Exchange”

<sup>3</sup> STANAG 5048 - *The Minimum Scale of Connectivity for Communications and Information Systems for NATO Land Forces* (Edition 5. Promulgated 16 February 2000 by NC3B Sub-Committee AC/322 SC/1). “Two systems which are open to each other, and which conform to minimum standards for information definition and transfer such that there are no fixed constraints on the extent of access by users of one system to the other, but dynamic constraints are applied to each system, in accordance with the current operational situation, such that only a user-defined subset of the total information base of one system is available to the other.”

### 1.3 History

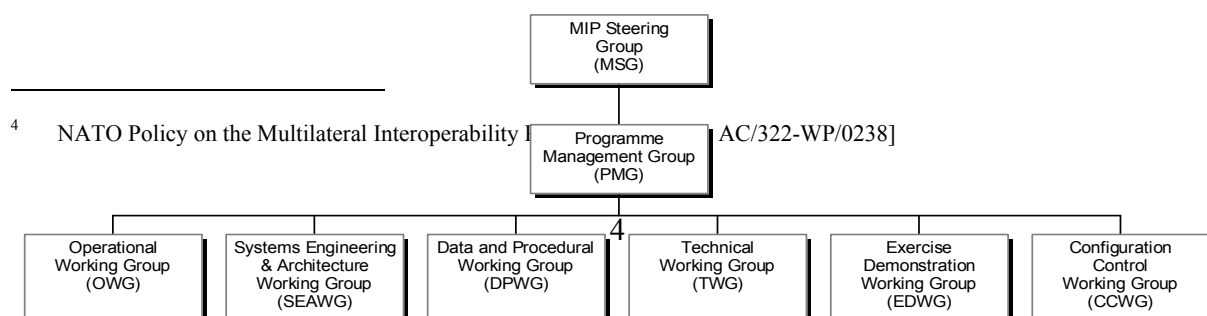
The Multilateral Interoperability Programme was established by the Project Managers of the Army Command and Control Information Systems (C2IS) of Canada, France, Germany, Italy, the United Kingdom and the United States of America in April 1998 in Calgary, Canada. MIP replaced and enhanced two previous programmes: BIP (Battlefield Interoperability Programme) and QIP (Quadrilateral Interoperability Programme). The aim of these programmes was similar to the present MIP but each was active at a different level of command.

In 2002 the Army Tactical Command and Control System (ATCCIS) programme merged with MIP. ATCCIS was founded in 1980 to see if interoperability could be obtained at reduced cost and developed according to technical standards agreed by Nations and prescribed by NATO. The programme sought to identify the minimum set of specifications, to be included within national C2 systems that would allow interoperability between them. With the publication of ATCCIS Baseline 2 the programme's mandate was complete. By 2002 the activities of ATCCIS and MIP were very close, expertise was shared, and specifications and technology was almost common. The merger of ATCCIS and MIP was a natural and positive step and this was recognised by the almost immediate publication of a NATO policy that endorses MIP<sup>4</sup>.

### 1.4 MIP Organisation

The MIP programme is not a formal NATO programme. Rather it is a voluntary and independent activity by the participating nations and organizations. The nations and HQs that are active in the MIP programme are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Turkey, United Kingdom, United States, Regional Headquarters Allied Forces North Europe (RHQ AFNORTH) and Supreme Headquarters Allied Powers Europe (SHAPE).

MIP is organised into 6 working groups with an executive management body and a high level



steering group for resources, policy and targets. Rigour is maintained by the adoption of recognised system engineering practices. In addition to the interface specification and the exchange mechanisms, MIP also produces supporting products covering programme management, security policy, test schedules, configuration management, representative data fills, and international liaison.

## **1.5 Implementation, Adoption and Stability**

The MIP is involved in the following activities and standards:

- The LC2IEDM is the core of the NATO Reference Model and is also a view model of NATO Corporate Data Model (STANAG 5523 / AdatP-32).
- Implementation of the MIP specification is a NATO Force Goal (FG2802).
- NATO Policy on MIP calls for close co-ordination and re-use of the MIP specification within NATO.
- Bi-SC Automated Information System will use the MIP solution in its Land Functional Services (LandFS) to interface to national CCIS, either in HRF/LRF, CJTF or other crisis response operation or exercise<sup>5</sup>.
- NATO Standardisation Agreement SO 01-11 calls for the implementation of MIP specifications.
- The MIP specification is well regarded in the NC3A. It is the core capability of the NC3A Integrated Data Environment prototype, a capability to integrate legacy systems.
- The MIP specification is included in the NATO C3 Technical Architecture.
- The NATO Military Criteria for High Readiness Forces (Land) Headquarters requires the use of an ATCCIS<sup>6</sup> compliant land information system.
- Many national C2 information systems implement MIP specifications.

## **1.6 Purpose**

The purpose of this document is to provide a harmonised concept of deployment for the fielding of the international interoperability capability developed within MIP, both nationally and within

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<sup>5</sup> Bi-SC transition Management Board Report to Bi-SC CIS Board, on 25<sup>th</sup> September, 2002

the MIP community. This will ensure that the proposed MIP technical implementation solutions are viewed within an agreed deployed operational framework.

### **1.7 General**

Central to the employment of a MIP Solution are the existing standards on responsibilities to provide communications and liaison within a multinational force. The employment of the MIP Solution is to be understood within the context of a commander's operational need to acquire and share information with another commander. Currently, a liaison officer (LO) is required to deploy with adequate communications to enable him to report and transfer information back to his parent HQ. The MIP Solution should be seen as an extension of this requirement. Current limitations on communications interoperability dictate that the only viable deployment of a MIP Solution is limited to have it co-located within a secure area. Frequently, this location is the element's HQ to which the LO may be assigned. The MIP Solution must not impede the unit's requirement for mobility, survivability, and operational readiness.

## **2 OPERATIONAL CONCEPT**

With few national exceptions, future operations will be combined and joint, conducted as part of an alliance or coalition force. Such operations require units and formations of participating nations to operate subordinated to or in co-operation with each other. Key to any operation will be effective command and control across national boundaries and between multinational formations or units.

The successful execution of fast moving operations will require either an accelerated decision-action cycle, increased tempo of operations, and an ability to conduct operations simultaneously within combined/multinational formations or a higher quality of decisions. The integration of information technology into command structures and procedures will have a profound effect on the execution of command and control. Commanders require pertinent information in order to enhance their decision-making and command capabilities.

Information technology will act as a force-multiplier to enhance operational effectiveness at

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<sup>6</sup> MIP is the custodian of the ATCCIS specifications.

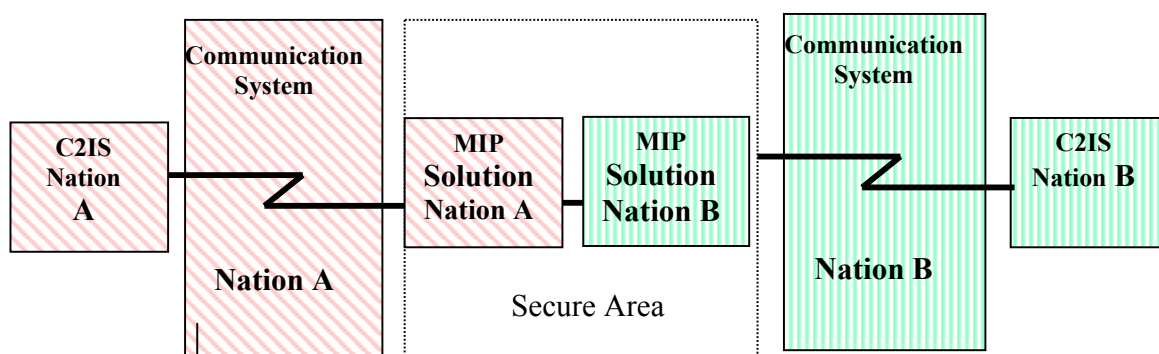
every level of command by enabling the sending, receiving, filtering, and processing of ever-increasing amounts of digital information. The future battlespace may require forces to be more dispersed over a larger area of intelligence interest, with longer lines of communications, and with the requirement to provide timely and secure information in accordance with the commander's priorities.

The role of MIP in this context is to produce an infrastructure service that will allow national land component C2IS to exchange predetermined information with C2IS of other nations. The means of achieving this will be known as the MIP Solution, which will take into account issues regarding the establishment of Communications and Information Systems (CIS) connectivity and the establishment of C2IS interfaces through common Information Exchange Requirements (IERS). As much as possible, the MIP Solution will be integrated into existing operational practices, with the goal of providing seamless interoperability within a multinational force. The MIP solution user requirement outlined in the MTIR is underpinned by the Operational User Rules outlined in Annex B.

Liaison teams will complement the future interoperability between C2IS. Circumstances will dictate when both are required or where one will suffice. The employment concept is consistent with the principles of establishing communications and liaison, as provided in STANAG 2101. Command posts at all levels will interoperate through mobile field communications networks, thus permitting horizontal and vertical information exchange. Coordination points on the battlefield may provide a secure area for the deployment of the MIP Solution. This capability will permit two or more national C2IS to be connected simultaneously and support the tactical information requirements from corps to BG if so equipped.

### 3 DESCRIPTION/EXAMPLES OF IMPLEMENTATION

The implementation in accordance with the employment concept is to be transparent to the user. As described above, current limitations dictate that MIP Solution is likely to be co-located within a secure area (e.g. Command Post) and to be linked by a LAN, in the course of which the number of MIP Solutions within a LAN is not limited. The communications between a nation's C2IS and the MIP Solution and its associated security is always a national responsibility. The employment architecture is depicted in Figure 1.



**Figure 1 – MIP Solution Employment Concept**

The MIP Solution employment architecture provides the necessary operational flexibility for the vertical and horizontal information exchange by allowing a variety of employment options. Examples are shown in Figures 2a, 2b, 2c, and 3.

In the employment option shown in Figure 2a, the MIP Solutions are co-located at brigade command post (CP). The communication between the BG's CP and the MIP Solution is the responsibility of nation B and nation C respectively<sup>7</sup>. The means of communication used depends on the level of the echelons: trunk networks are likely to be used at higher echelons and CNR will be used at lower echelons. In the employment option shown in figure 2b, the MIP Solutions are located at the BGs' CPs. Nation A is responsible for the communication between the C2IS at the Brigade CP and the MIP Solutions at the BGs' CPs. Figure 2c shows an example

<sup>7</sup> Note: This is counter to standard principle of establishing communications from higher to lower (Ratification Draft STANAG 5048)

of deploying the MIP Solution horizontally between two flanking Brigade units. Nation C is responsible for communications from its CP to the MIP Solution.

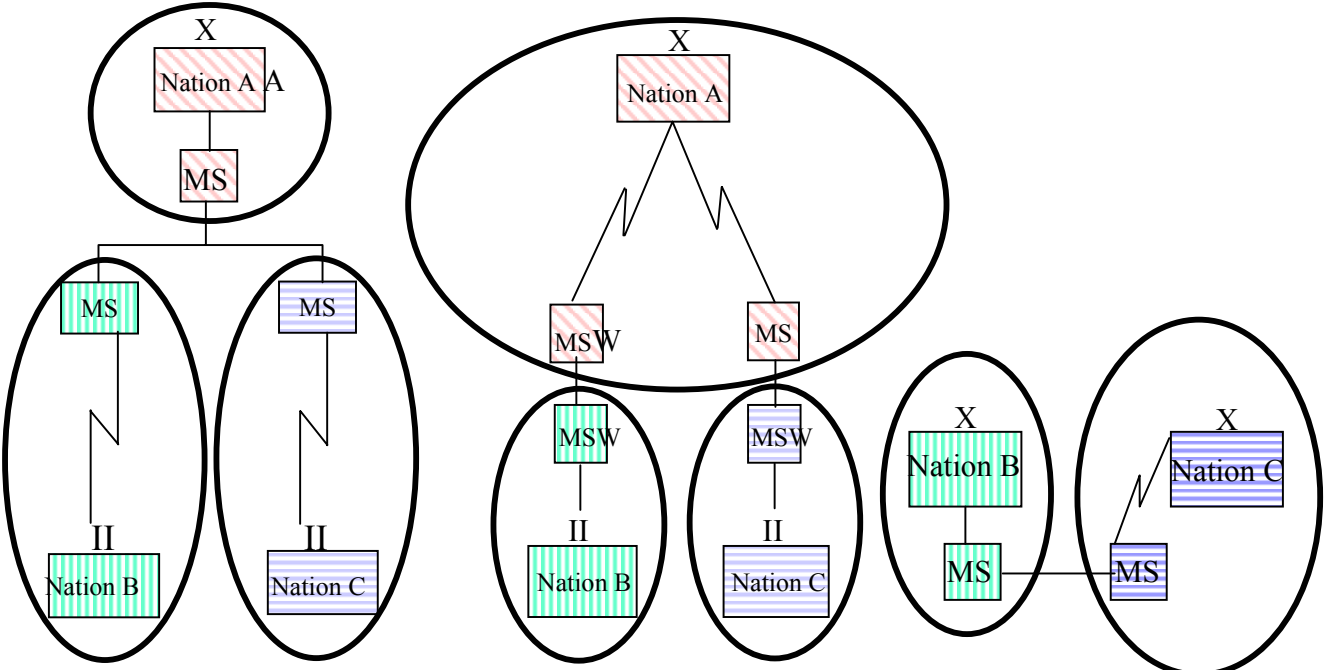
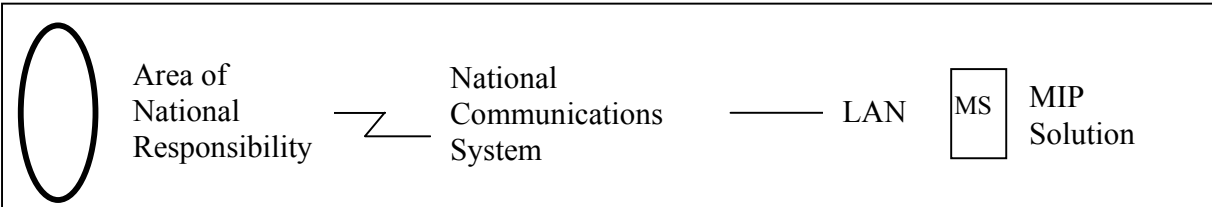


Figure 2 a

Figure 2 b

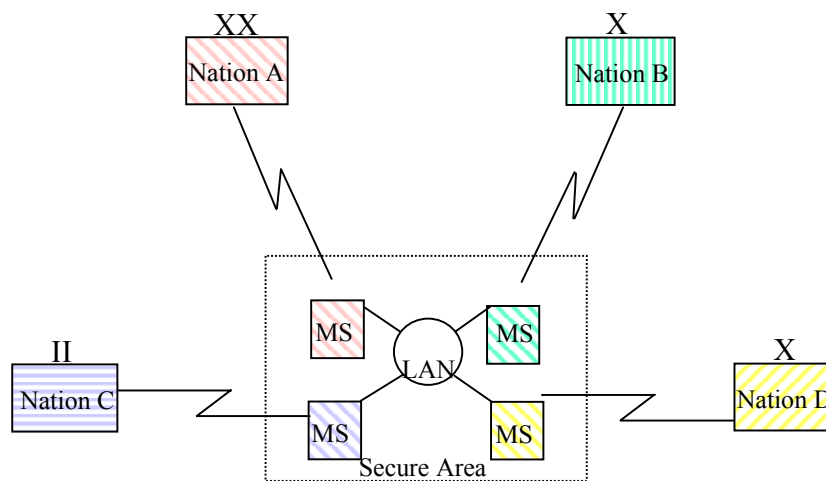
Figure 2c



**Figures 2a, 2b, and 2c – Possible Employment Options**

Figure 3 shows the situation of a non-linear environment in which a number of MIP Solutions are co-located in an existing secure location other than one of the HQs. This could be an established Coordination Point at a formation boundary or a location related to a specific mission, such as a bridge demolition. The MIP Solution location must be predetermined and already be secure; MIP Solution detachments will not be able to provide their own security.

Initialisation Procedures. At the start of an operation initial data must be synchronised between all the member nations of the operational grouping. The primary means of achieving this is to use the information exchange requirements from the Op Order identified in Annex E to the MTIR. Data on the Op Order heading information, task organisation, mission and tasks, battlefield geometry and reference data<sup>8</sup> are exchanged between nations and entered into national databases. This provides a common understanding of the start state for the operation.



**Figure 3. Example of MIP Solutions Co-located in a Secure Area**

#### 4 CANADA

The Canadian MIP international interoperability capability could either be based in a Headquarters, deployable within a liaison officer (LO) C2IS capability or as a stand-alone interface capability. The normal deployment will be either the Headquarters or the stand-alone capability. The LO detachment capability will normally be used in cases where interpretation of the commanders intent require a human presence to reduce ambiguity and increase mutual operational understanding. Canada will be using the IRIS secure wide area communications system<sup>9</sup> to equip the mobile capability with an Access Node (AN), which is available at a Brigade Group Headquarters and Signal Squadron and Battle Group Level. Wheeled (soft

<sup>8</sup> Reference data: The necessary encyclopedic and foundation data required to provide valid values to support exchange of operational information. (e.g. unit types, material types...)

skinned) ANs are widely available and would be used for protected or secured sites. An engineering effort is underway to provide a wheeled armoured protected version of the AN. The LO detachment will normally require the allocation of an AN. The possibility also exists for LOs to use VHF combat net radio, but this would only offer a narrow bandwidth data exchange capability, which may be insufficient to effectively operate the MIP capability. The requirement for future interoperability using High Capacity Data Radios has been identified, however it has yet to be formally defined.

Canada is intending to embed the MIP functionality as a service within the Land Force Command and Control, Information System Version 1 (LF C2IS V1)<sup>10</sup>. The ATHENE (LFCS) Segment of the LFC2IS will be deployed down to unit level across all battlefield functional area as a common user core. The Canadian common gateway capability<sup>11</sup> is built into the ATHENE Workstation, which is the primary militarised C2IS workstation being procured by the LFCS project.

Canada has the intention to implement a national Land Force Data Model (LC2IEDM<sup>12</sup>) database synchronised with the LFCS Database at the HQ level with a physically separated database to hold information releasable through the MIP gateway. The national Security solution will implement a guard firewall solution with human intervention primarily used to accomplish information release authority and for a limited extent to process mission critical international transactions.

## **5 FRANCE**

The French MIP international interoperability capability could either be based in a Headquarters, deployable within a liaison officer (LO) C2IS capability or as a stand-alone interface capability. The normal deployment will be either the Headquarters or the stand-alone capability. The LO detachment capability will normally be used in cases where interpretation of the commanders intent require a human presence to reduce ambiguity and increase mutual operational

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<sup>9</sup> Fielding is scheduled for 2001.

<sup>10</sup> The integration of the Joint Command, Control and Intelligence System (JC2IS), Land Force Command System (LFCS) Situational Awareness System (SAS) and Electronic Battle Box (EBB) as an Army Common User Core in 2001.

<sup>11</sup> Used to enable national and multinational interoperability solutions.

understanding. France will be using a RITA 2000 and PR4G based communications system, which is available at Brigade and above Headquarters and Battle Group Level. Wheeled (soft skinned) and light armoured wheeled vehicles will be available and would be used for protected or secured sites.

France is intending to embed the MIP functionality as a service within the Système d'Information pour le Commandement des Forces version 1 (SICF V1) and the Système d'Information Régimentaire version 3 (SIR V3). The SICF will be deployed down to Brigade level and the SIR at the Battle group level. The French gateway capability will be built into SICF and SIR Workstations.

France has the intention to implement the international LC2IEDM database. At the Brigade and above level, the Information Management Cell (IMC) will be in charge of disseminating the information within the Operation Centre. A physically separated database is set to hold information releasable through the MIP solution. As a security solution, FR will probably implement a guard firewall solution with human intervention primarily used to accomplish information release authority and for a limited extent to process mission critical international transactions.

At the battalion level, due to the mobility requirement, the MIP solution will be physically implemented in all the Command Post vehicles. The software solution bound for the users will be implemented on all the workstations.

Annex D represents examples of possible deployments for SICF and SIR.

Annex E represents possible French MIP solutions

## **6 GERMANY**

In the composite of the German Army's command and control means the part of the C2IS will be covered by HEROS-2/1 at the command level brigade and above, GeFüSys [-> BMS] at the

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<sup>12</sup> Land Command and Control Information Exchange Data Model.

command level battalion and independent units and the FüWES-Kern H<sup>13</sup> [→ CFCS] for the units and subunits each completed by functionalities for the different branches of service.

Within the Command Posts of manoeuvre elements information will be transmitted over the Local Area Network (LAN) BIGSTAF<sup>14</sup> which will ensure transmission in part broad-scale via fibre optic cable and in part wireless to improve mobility. In the future the internal communication on Command Posts of echelons below brigade will occur via LAN as well.

Communications between Command Posts of the echelon brigade and above occurs usually via the tactical trunk-network AUTOKO, via the strategic network of the German Federal Armed Forces CIS Organisation (FAFCISO) and / or via commercial networks. Single isles of the tactical trunk-network may be connected by satellite links. Below the command level brigade the Command Post-external communications normally will be executed wireless with HF- or VHF-Radios and partly with SATCOM-systems.

One of the major challenges for the information exchange with the other German services and the forces of other nations is the circumstance that GeFüSys and the command and fire control systems of the different branches of service are only released to process information up to NATO RESTRICTED. As long as GeFüSys will not be released to process information up to and including NATO SECRET a solution to exchange information in an international environment has to interact with HEROS-2/1. Therefore Germany intends to integrate the MIP-solution as a software in HEROS-2/1 or to realise a gateway as an auxiliary equipment for HEROS-2/1. However, the C2IS HEROS-2/1 must be regularly provided to command levels below brigade for the time being if any unit will be assigned to a brigade of another nation.

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<sup>13</sup> The core of the command and fire control systems with common Hard- and Software-Components

<sup>14</sup> Acronym for the broadband integrated command post communications' network

The MIP-solution has to facilitate information exchange within the national C2IS over the tactical trunk-network AUTOKO as well as via HF- and VHF-radio communication and SATCOM-systems.

According to the employment of the MIP-solution Germany will follow the principles as outlined in figure 7 of the MTIR. A mixture of these options is conceivable. Depending on the situation the MIP-solution may be employed by a Liaison-Officer.

## **7 ITALY**

The MIP interoperability capability, in the Italian concept, is intended as a possibility to deploy the MIP Solution at HQs level including the availability/visibility of the exchanged information to the Liaison Officer (LO). This capability can be considered an efficient mean for the LO activities in order to help him to follow the Situational Awareness. The LO detachment capability will always be used in order to avoid interpretation ambiguities of the commander intents; for example, different languages and doctrines. The human presence reduces ambiguity.

It is still not clear whether the combat net radios can support the bandwidth requested in different cases (i.e. Intense Combat, OOTW, Static Phases). IT considers to use, as priority, the SOTRIN radio relay system. The requirements for the future secure mobile system have been identified and it is planned to implement a prototype to verify the performances in a field environment.

The MIP Solution will be implemented on the same architecture of the IT C2IS system (SIACCON v.2 fieldable at the end of 2002) and the application will be available at each Command Post level (From Corps to Battalion or appropriate level). The MIP Solution will be placed inside shelters or suitable cases if used in tents or infrastructures.

Considering the security aspects, each Command Post will implement a firewall solution approved by the National Security Authority, and then the MIP Solutions' protection can be considered as part of the National C2IS security. SIACCON v.2 and consequently the MIP Solution will not be installed on armoured vehicle.

An engineering effort is underway to provide a wheeled armoured vehicle to adopt as Command Post. When this vehicle is available, the Comm systems, SIACCON v 2 and the MIP Solution

will be installed in that type of vehicle.

## **8 UNITED KINGDOM**

The MIP international interoperability capability could either be based in a Headquarters or deployable as a stand-alone capability in the same manner as a Liaison Officer (LO). Using current communications, the UK would need to equip the mobile capability with a full Ptarmigan Secondary Access Node (SAN), which is only available under armour at a Brigade Headquarters and Signal Squadron. Wheeled (soft skinned) SANs are more widely available, but would be of use only in a protected or secured site. The option to deploy a LO using Single Channel Radio Access (Terminal) (SCRA(T)) exists but this would only offer a dial-up data exchange capability. The operational need must be clearly established before this capability could be extended and enhanced further within the UK. Future interoperability using High Capacity Data Radios (HCDR) has yet to be determined.

The UK capability is to be initially based upon the ARRC CIS Concept<sup>15</sup>. The UK envisages that the MIP functionality will be embodied as a service within the emerging Formation Battle Management System. This service is known as the Land Common Interoperability Service (LCIS).

The deployment concept will balance the level of vertical and horizontal connections. One connection for each nation would imply simple data management but no system redundancy. Multiple connections per nation would suggest complex data management issues but increased system redundancy. It is unclear at the lowest level, if flanking BGs would require their own mobile armoured MIP detachments or whether they could rely on data updates, possibly supplemented by a LO, passed within their national systems to a gateway established at a higher level (Bde, Div or Corps) to satisfy their IERs. The LCIS functionality will be fielded with communications and mobility appropriate to the vertical level of interoperability required, the tactical situation and availability of assets.

The capability will permit the onward replication of data destined for a third party. The way that this data is treated will remain a national concern though both the initiating nation and receiving

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<sup>15</sup> 1400.4/ARCBE/97 dated Oct 97

nation are now dependent on the invisible internal mechanisms and precedence allocation of the 'transit' nation. The capability will therefore be expected to perform to an agreed level of service in this instance, and MIP-based traffic will be allocated a certain level of precedence against purely national traffic.

## **9 UNITED STATES**

The US Army Tactical Command and Control System (ATCCS) Program Manager (PM) will baseline the MIP Solution in the Manoeuvre Control System (MCS) software. The MIP Solution will therefore be available to liaison officers (LO) and/or team to complement liaison responsibilities whenever required. The US MIP international interoperability capability would, therefore, either be based in a Headquarters, deployable within a liaison cell or as a stand-alone interface capability under a communications watch. The normal deployment will be either the Headquarters or the stand-alone capability. The LO team capability will normally be used in command, support, and proximity requirements where the interpretation of the commanders intent require a human presence to reduce ambiguity and increase mutual operational understanding. The US would extend its communications (e.g., Mobile Subscriber Equipment (MSE)) to support liaison in alignment with doctrinal employment, as touched on above. MSE is available at the Corps through BN level. MSE has been configured such as not to impede mobility, survivability and operational readiness. The LO team using the MIP Solution embedded in MCS, will normally, therefore, require the allocation of communications assets.

## **10 POSSIBLE MIP DEPLOYMENT EXAMPLES**

The diagrams at Annex C are examples of possible interconnections using ORBATs which will be used in the MIP Exercise and Demonstration. The first, classical interconnection represents one where the mobility and survivability requirements of warfighting dictates a dispersion of MIP solutions. The second is a centralised interconnection, which could be experienced in MOOTW, in which the MIP solutions are deployed on a single LAN and each nation provides the communication links into it.

**ANNEX – A**  
**GLOSSARY**

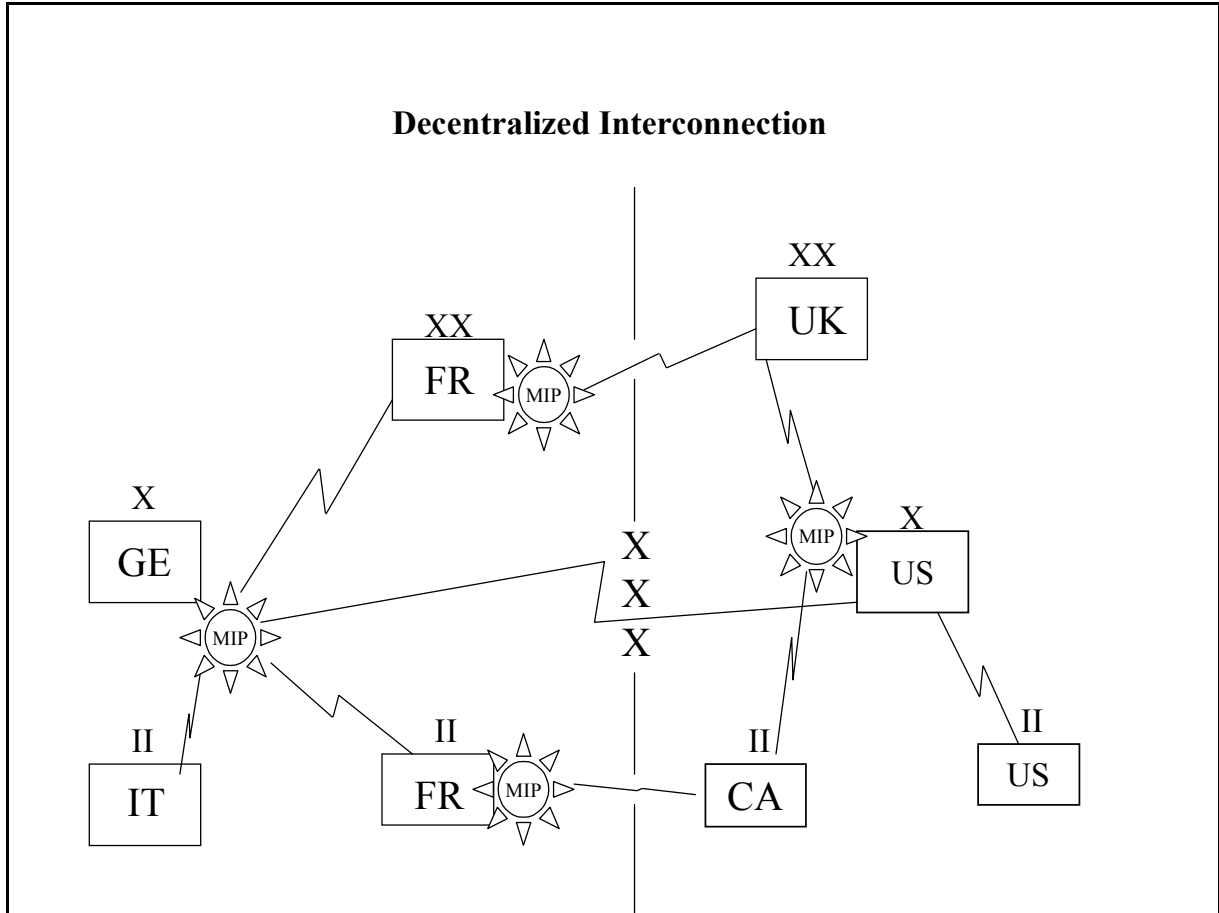
ARRC	ACE Rapid Reaction Corps
AN	Access Node
ATCCS	Army Tactical Command and Control System (US)
AUTOKO	<u>A</u> utomatisiertes <u>K</u> ommunikationsnetz
BIGSTAF	<u>B</u> reitbandiges <u>I</u> ntegriertes <u>G</u> efechts <u>s</u> tand <u>f</u> ern <u>m</u> eldenetz
BG	Battle Group (Equivalent to a US Battalion)
BMS	<u>B</u> attlefield <u>M</u> anagement <u>S</u> ystem
BN	Battalion
CCIS/C2IS	<u>C</u> ommand, <u>C</u> ontrol and <u>I</u> nformation <u>S</u> ystem
CFCS	<u>C</u> ommand and <u>F</u> ire <u>C</u> ontrol <u>S</u> ystem
CIS	<u>C</u> ommunication <u>I</u> nformation <u>S</u> ystems
CNR	<u>C</u> ombat <u>N</u> et <u>R</u> adio
CP	Command Post
FAFCISO	<u>F</u> ederal <u>A</u> rmed <u>F</u> orces <u>C</u> IS <u>O</u> rganization
GeFüSys	<u>G</u> efechts <u>f</u> eld <u>f</u> ührung <u>s</u> ystem
GIE	Global Information Environment
HCDR	High Capacity Data Radio
HEROS	<u>H</u> eeres <u>f</u> ührung <u>i</u> nformation <u>s</u> ystem für <u>r</u> echnergestützte <u>O</u> perations <u>f</u> ührung in <u>S</u> täben
HF	High Frequency
HQ	Headquarters
IAW	In Accordance With
I.E.	Id Est-Such As
IER	<u>I</u> nformation <u>E</u> xchange <u>R</u> equirement
IMC	<u>I</u> nformation <u>M</u> anagement <u>C</u> ell
LAN	<u>L</u> ocal <u>A</u> rea <u>N</u> etwork
LCIS	<u>L</u> and <u>C</u> ommon <u>I</u> nteroperability <u>S</u> ystem
LC2IEDM	<u>L</u> and <u>C</u> ommand and <u>C</u> ontrol <u>I</u> nformation <u>E</u> xchange <u>D</u> ata <u>M</u> odel

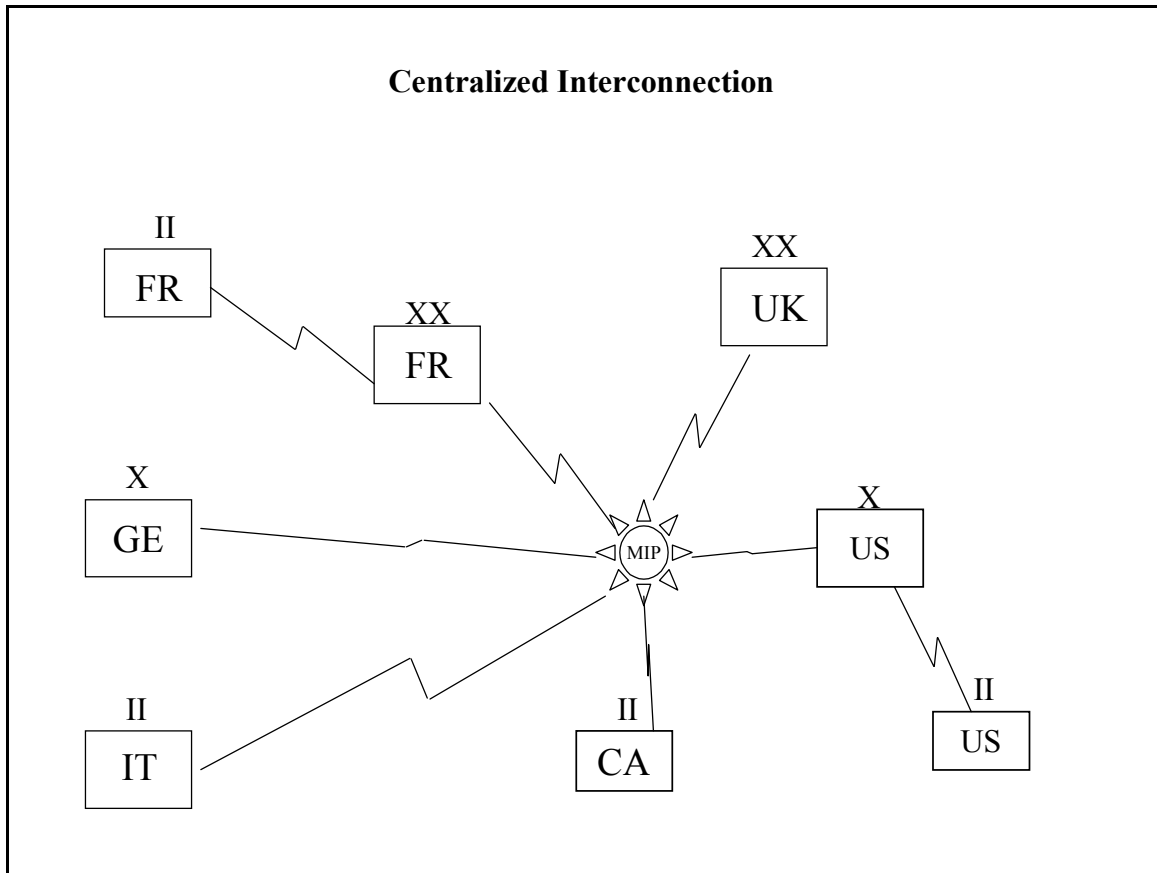
LFCS	<u>L</u> and <u>F</u> orces <u>C</u> ommand <u>S</u> ystem
LFC2IS	<u>L</u> and <u>F</u> orces <u>C</u> ommand and <u>C</u> ontrol <u>S</u> ystem
LO	Liaison Officer
MCS	<u>M</u> aneuver <u>C</u> ontrol <u>S</u> ystem
MOOTW	Military Operations Other Than War
MS	MIP Solution
MSE	<u>M</u> obile <u>S</u> ubscriber <u>E</u> quipment
MTIR	<u>M</u> IP <u>T</u> actical <u>C</u> 2IS <u>I</u> nformation <u>R</u> equirement
OOTW	<u>O</u> perations <u>O</u> ther <u>T</u> han <u>W</u> ar
OP ORDER	Operations Order
OWG	Operational Working Group
RITA	Réseau Intégré de Transmissions Automatiques
SA	Situational Awareness
SAN	<u>S</u> econdary <u>A</u> ccess <u>N</u> ode
SATCOM	<u>S</u> atellite <u>C</u> ommunications
SCRA(T)	<u>S</u> ingle <u>C</u> hannel <u>R</u> adio Access ( <u>T</u> erminal)
SIACCON	<u>S</u> istema <u>A</u> utomatizzato di <u>C</u> ommando e <u>C</u> ontrollo
SICF	<u>S</u> ystème d' <u>I</u> nformation pour le <u>C</u> ommandement des <u>F</u> orces
SIR	<u>S</u> ystème d' <u>I</u> nformation <u>R</u> égimentaire
SOTRIN	<u>S</u> ottosistema Di <u>T</u> ranmissione <u>I</u> ntegrale
STANAG	STANdardisation AGreement
VHF	<u>V</u> ery <u>H</u> igh <u>F</u> requency
WAN	<u>W</u> ide <u>A</u> rea <u>N</u> etwork

## **ANNEX B MIP OPERATIONAL RULES**

- Plans, Orders and other foundation data are used to initialise National C2IS for: order information (header), Order of Battle, task organisation, battlefield geometry. (MTIR Annex E)
- Information must be consistent across a commander's Military Information Environment (MTIR Art 2.4) and persistent in accordance with his information needs. (MTIR Art 4.1.1).
- A commander owns as a minimum information down two echelons. (MTIR Art 2.4)
- A commander may not automatically change, modify or update Information that he doesn't own. (MTIR Art 2.4)
- A common organisational address book will be used and updated whenever changes occur. (MTIR Art 4.11)
- The MIP solution must be able to handle information up to and including NATO SECRET (MTIR Art 4.10) and protect it as NATO SECRET (MSISP)
- If free text is used, it will be in NATO English. (MTIR Art 4.2)
- There are two forms of acknowledge: technical acknowledgement (automated notice of transmission failure through the MIP solution) and user acknowledgement (sender requests human acknowledgement from receiver). (MTIR Art 4.7)
- The MIP solution must not impede a unit's requirement for mobility, survivability and operational readiness. (MTIR Art 3.1)
- Situational awareness information is exchanged one echelon up, two echelons down, and to the flanks. (MTIR Art 2.6)
- Situational awareness information is exchanged in an incremental fashion after initialisation and resynchronisation. (MTIR Art 4.1)
- Liaison will be established in accordance with STANAG 2101. (MTIR Art 3.2)
- Priority will be according to precedence outlined in the MTIR. Within a classification of each precedence category, information will be sent "first in" – "first out". (MTIR Art 4.8)
- Units must be able to relay if possible when other units are not directly connected together. (MTIR Art 4.4)
- Certain IERs were identified as requiring human action upon receipt. (MTIR Annex F)

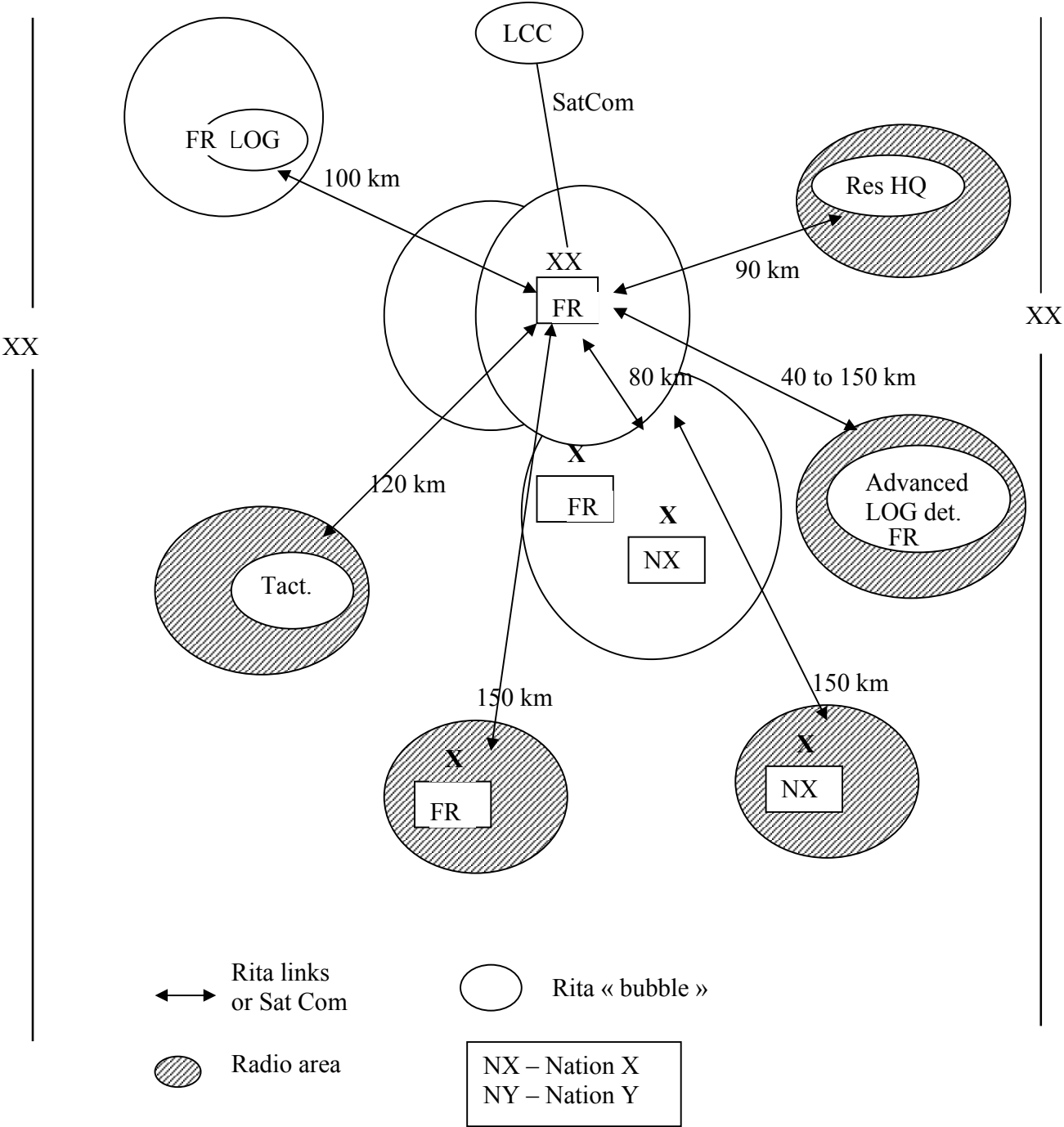
**ANNEX C**  
**OWG GENERIC SCENARIOS**



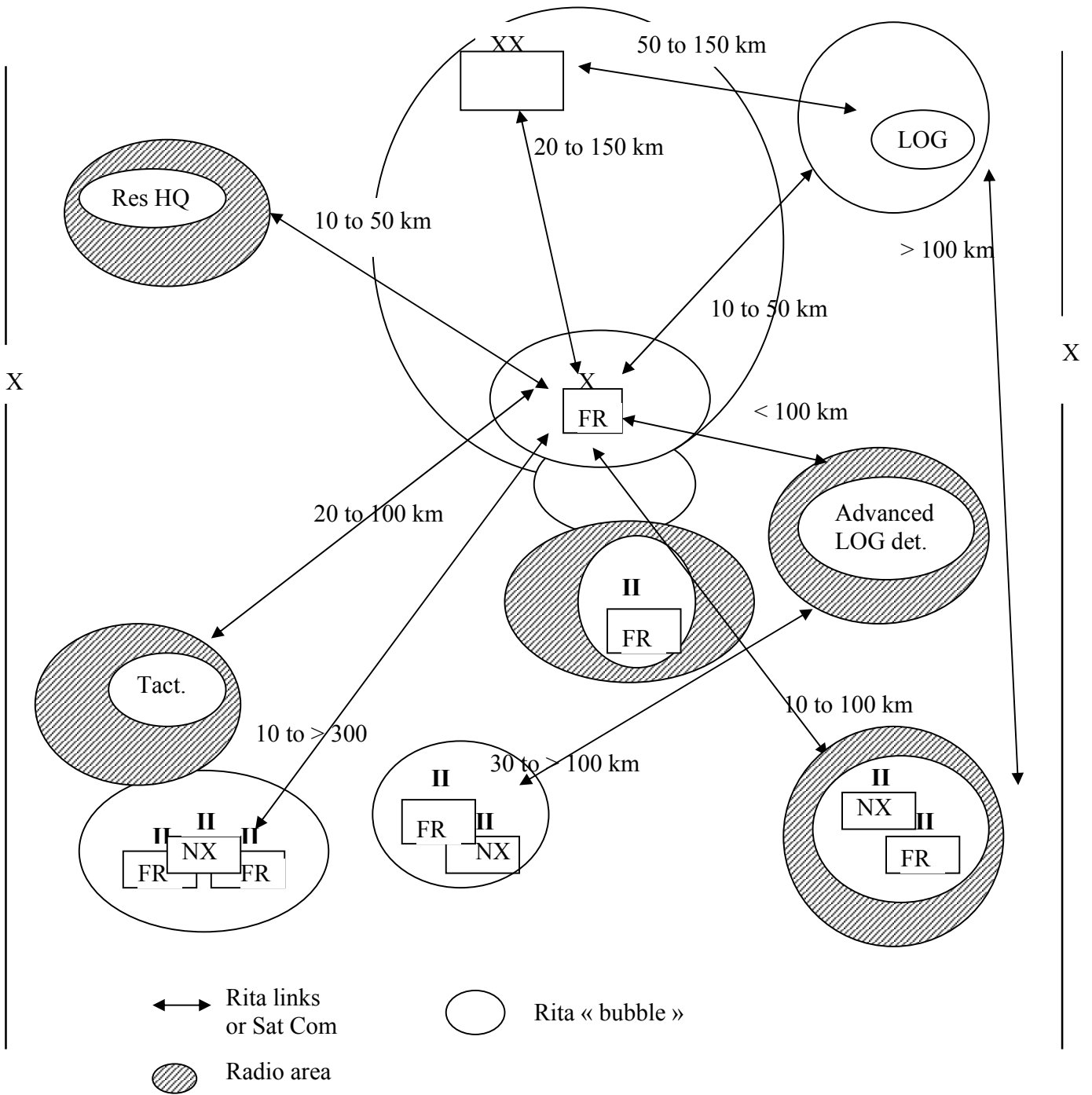


**ANNEX D**  
**POSSIBLE DEPLOYMENTS OF SICF AND SIR**

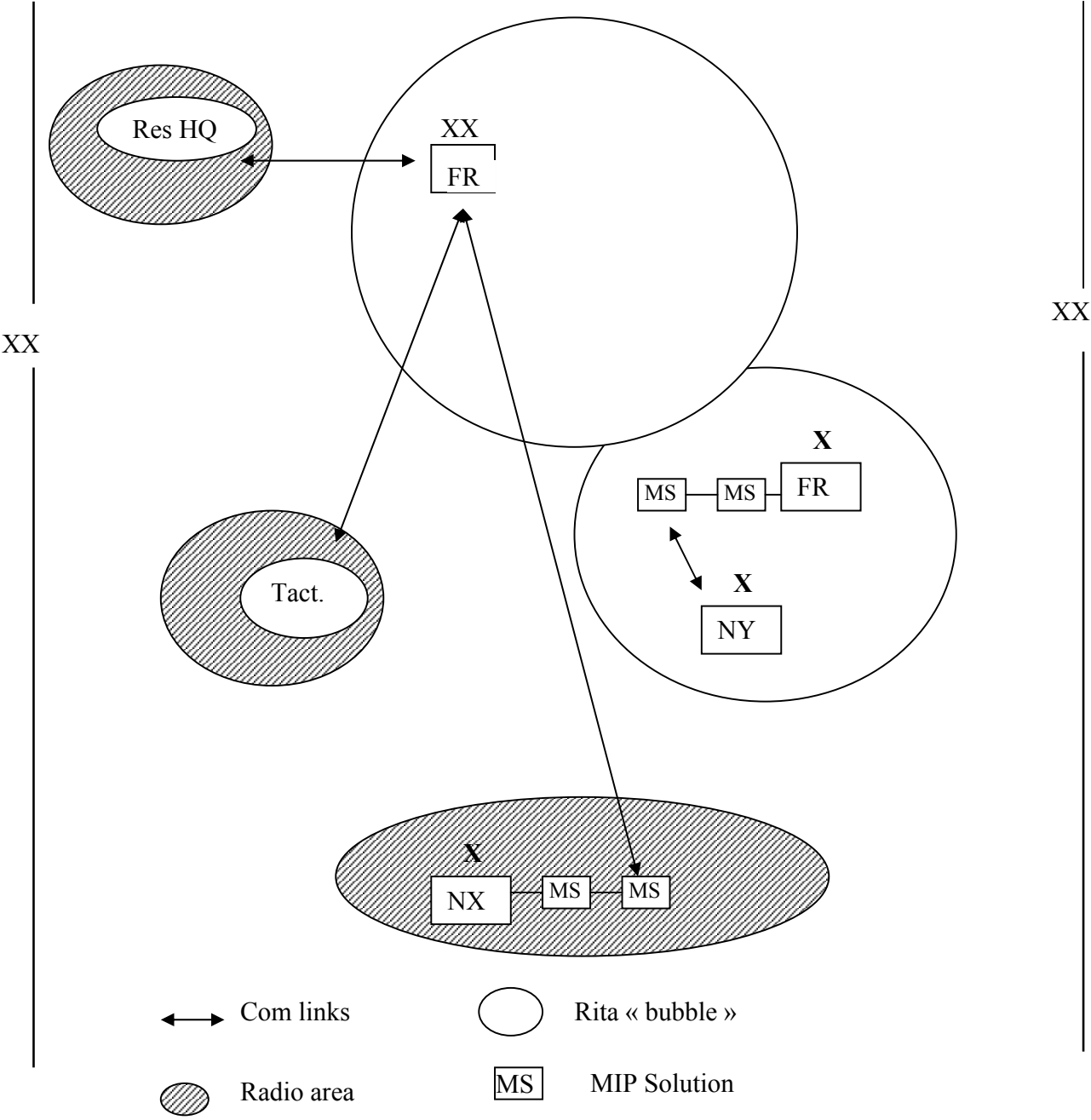
**DIVISION LEVEL**



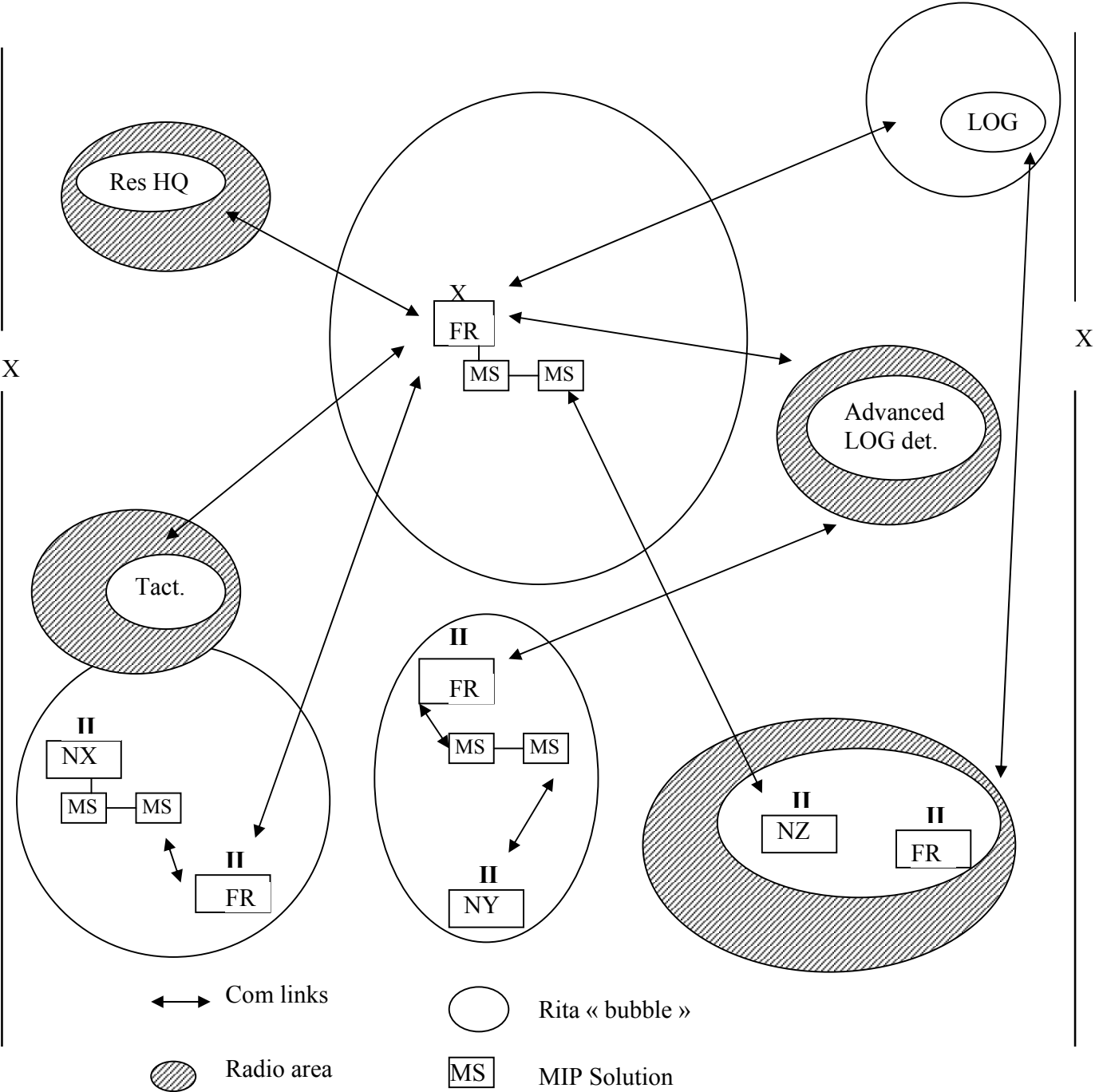
**BRIGADE LEVEL**



MIP Solution deployment: Division level

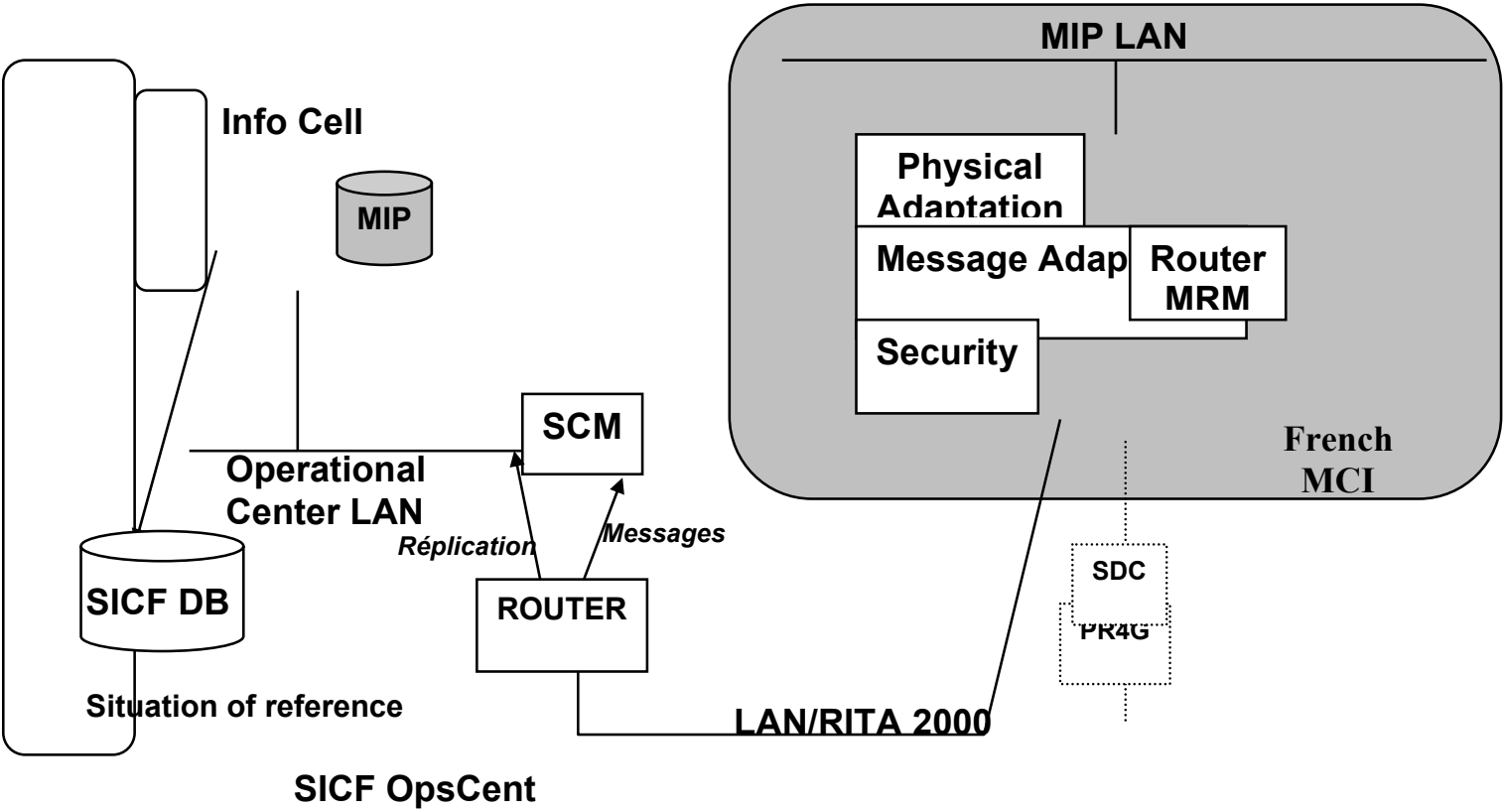


MIP Solution deployment: Brigade level

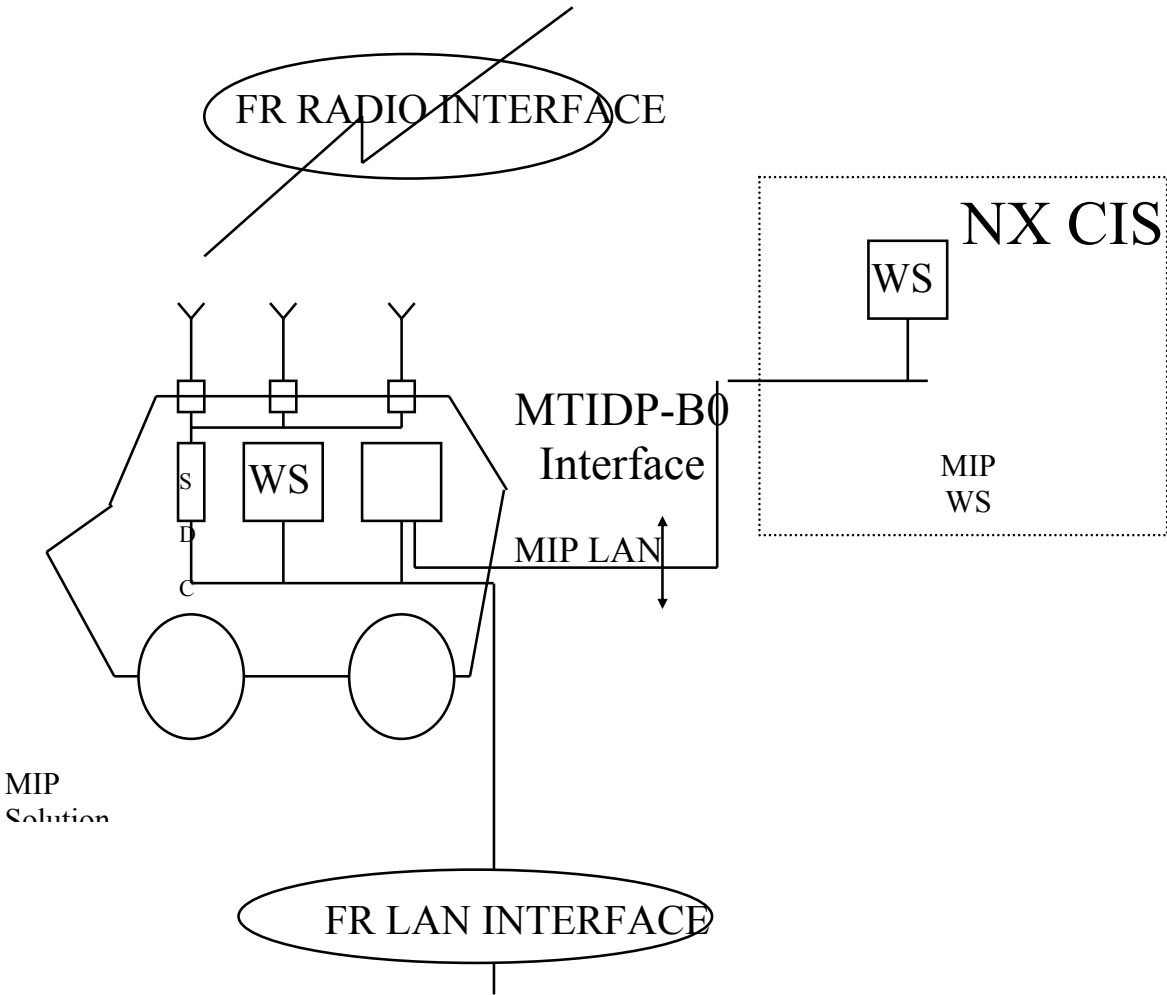


ANNEX E  
POSSIBLE FRENCH MIP SOLUTIONS

FR SICF generic solution



**FR SIR generic solution**



**ANNEX – F**  
**REFERENCES**

[R001] MIP TACTICAL C2IS INFORMATION EXCHANGE REQUIREMENT V A.0 dated 25<sup>th</sup> Oct 99

[R002] MIP CONFIGURATION MANAGEMENT PLAN V A.0 dated 26th Oct 98

[R003] STANAG 5048 MINIMUM SCALE OF CONNECTIVITY FOR CIS FOR NATO LAND FORCES (Edition 3) dated 28 Feb 91

[R004] STANAG 2101 ESTABLISHING LIAISON (Edition 9)