

CONFERENCE OF NATIONAL ARMAMENTS DIRECTORS

NATO CALS ORGANISATION

STRATEGIC PLAN to 2002

1. This document presents a new Strategic Plan for CALS in NATO for the period to 2002. It is presented to CNAD to define the future direction of the NATO CALS effort in the context of a final extension of the NATO CALS MoU for up to 3 more years, to allow transition of the work to a permanent NATO body.
2. This plan is consistent with the NATO CALS Policy¹ approved by CNAD in 1994. It provides a high level framework and tasking statement from which detailed annual Business Plans for NATO CALS will be developed by NCMB.

MISSION

3. The NATO CALS Mission, agreed by CNAD in 1994 is:
 - to increase interoperability, decrease Defence System life-cycle costs, ensure the readiness of NATO forces and decrease acquisition lead times.
 - by facilitating continuous improvement of business processes,
 - through the use of international standards and practices, application of advanced tools and technologies, and increased co-operation with industry,
 - thereby creating an opportunity for NATO industry to enhance its global competitiveness.
4. During the past 3 years effort has focussed on defining a through life approach to the management of information on Defence System programs, with particular emphasis on the boundary with industry. The achievements and lessons learned from this activity are presented at Annex A.
5. In the period beyond 2000 priority will be given to:
 - promoting a faster transition to digital working, based on the work to date,
 - supporting co-operation in NATO on logistics, with a focus on meeting war-fighter requirements for operational -interoperability.

¹ Document AC/259-D/1609, NCMB(POL)-D(94)01 : NATO CALS Policy, Nov 94

REVISED OBJECTIVES

6. To ensure improved service to our coalition forces, over the period of this Plan, the NATO CALS Organisation will seek to identify further opportunities for improvement in acquisition and logistic processes, information standards and interchange specifications, based on the following operational and business objectives:
- Faster, more assured delivery of Defence System spares demanded by Armed Force users by improving the consistency of information in the supply chain.
 - Higher operational availability of Defence Systems through reduced downtime and faster repairs. This will be achieved through improved access to accurate product data, including digital product definition data to enable rapid manufacturing and enhanced maintenance diagnostics.
 - Reduced product support costs through migration to commercial information standards and systems, and increased reliance on industry to provide information as a service.
 - Improved capability for co-operation in logistics, through standardisation of information and of shared processes. This will be achieved by working closely with the SNLC and the SNLC Ad Hoc Working Group on Co-operative Logistics.
7. The objectives are consistent with, and respond to the Ministerial Guidance on logistics². Activities will be directed at improving the interoperability of NATO forces and enabling increased agility through optimisation of the logistics footprint. Without interoperability, International Co-operative Logistics for in-theatre support of NATO forces will be difficult to attain. Without in-theatre support, higher logistics footprints will burden the mobility and agility of the operational force.

STRATEGIC PLAN TO 2002

8. The revised objectives will be met by further developing the vision, policy, implementation guidance, tools, techniques and standards for managing Defence System product data over the life cycle, to support co-operation in acquisition and logistics in the new context of the NATO Alliance.
9. The NATO Alliance is facing a huge agenda for change. Changes in membership, role, resources and technology are transforming the environment for acquisition and logistics activities. From a Defence System perspective Acquisition and Logistic Support are becoming one single

² Ac/305 (LSM-INV)-D-(99)5 NATO Confidential dated 8 January 99

integrated process, sharing a pool of life cycle data. Further detail on these changes can be found in Annex B, and in the Through Life Business Model³.

10. Improvements in business practice can only be *delivered* by the organisations that buy Defence Systems or provide their in-service support. With few exceptions most such organisations are operated and controlled by Nations, not by NATO. The NATO CALS Organisation will therefore deliver its mission by helping Nations to implement change in a way that improves NATO's ability to co-operate on acquisition and logistic activities.

11. A simple model of the change process (Fig. 1.) illustrates the NATO CALS role.

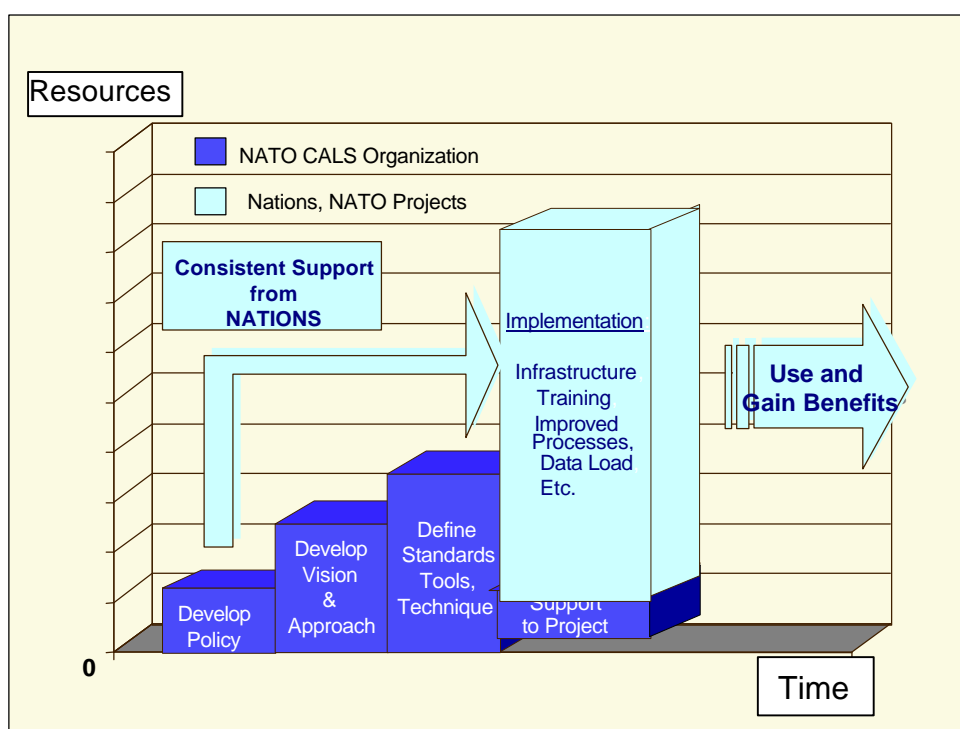


Figure 1: NATO CALS role in the change process

12. During the period of this plan the NATO CALS Organisation will deploy its resources across five areas of work:

- Supporting ongoing information exchange/sharing between Nations and NATO Bodies;
- Promoting and supporting the implementation of Through Life Information Management in selected programs;

³ NATO CALS Through Life business Model, Version 6.0 Nov 98

- Supporting the development of processes, information standards and interchange specifications that contribute to interoperability across NATO;
- Developing common guides and handbooks for nations;
- Planning the transition of CALS activities into existing NATO bodies, in co-ordination with the CNAD Armament Review.

13. The specific work areas to be addressed are presented in Annex C, showing short, medium and long term tasks. Details of the work program, and the use of resources, will be provided in the NCO Business Plan, approved annually by NCMB.

CALS TRANSITION TO NATO BODIES

14. The work of the last 3 years has re-confirmed the requirement for the early implementation of full digital working for acquisition and logistics across the whole Alliance. Progress on this is uneven. Change is particularly difficult for multi-national acquisition and logistics co-operation programs, where inconsistent standards, different attitudes to industry and the lack of shared concepts, processes, incentives and metrics all act as barriers to progress. However, IT expenditure, industrial involvement in support and the need to co-operate all continue to grow.

15. In these circumstances there is an ongoing requirement for:

- Support to multi-national acquisition programs who need consistent, detailed and practical guidance on how to purchase, and exploit, open, digital data for life cycle support, based on internationally recognised standards and interchange specifications.
- Information and process standards to support the NATO logistics community in developing a more coherent approach to co-operation in logistics, across national and organisational boundaries, and the industrial interface.

16. The NATO CALS products and forward work plan address these needs by promoting the use of open, digital data, which can be exchanged freely throughout the supply chain without gateways or technical fixes. Work to provide this “operational enabler” crosses many organisational boundaries.

17. Following the request from CNAD in April 98 action was taken to explore options for transitioning this work into the permanent NATO structure. Informal discussions were held with the International Staff (Defence Support and Logistic divisions), NAMSA and NC3A. At that time, none of these organisations had responsibility for whole life cycle issues. There was also an

understandable reluctance to address the subject in detail, pending progress on the Armament Review.

18. Following publication of the Design Group Report⁴, and the subsequent IS Report⁵, action is in hand to develop a plan, and set of options, for transition of the ongoing tasks to a more permanent home, at the earliest practical date.
19. Such a transition will require changes in responsibilities, the transfer of resources and the movement of staff. Co-ordination is also needed with several related activities including:
 - The ongoing Armament Review
 - The SNLC review of their Terms of Reference
 - The SNLC Ad Hoc Working Group on Co-operative Logistics
 - A request from NC3 to NAMSA to act as "Functional Data Administrator" for logistics.
20. To avoid loss of momentum the NCMB has concluded that the NATO CALS MoU should be extended, for a maximum of 3 years, to give time for a proper assessment of options for an orderly transition of work, at the earliest possible date, to a more permanent home in NATO.

RESOURCES

21. In comparison with program budgets, or with current expenditure on IT, the resources needed to continue NATO CALS are small.
22. The MoU extension would continue at the current resource level, with each participating nation contributing one full time staff member, or the financial equivalent, plus up to 1M BeF per annum (~\$25K) for travel and operating costs.
23. To date, additional funding for industrial participation in NATO CALS has been provided through NIAG. NIAG funding was of significant value in the early years of NATO CALS but has become progressively less useful, as contractors have proved reluctant to work at subsidy rates. Some residual NICG funds may be available for use on existing tasks up to end 2000 but subsequent industrial involvement would need to be funded by industry themselves, by nations, or by a successful re-submission to NIAG. The loss

⁴ AC/259(INV)-D(98)14 dated 21 October 1998

⁵ Working Paper AC/259(INV)WO(98)1 dated 15 Dec 98

of the NIAG subsidy will reduce the industrial input to NATO CALS work but should not prevent completion of the tasks proposed by this plan.

EXPECTED BENEFITS

24. The ability of Information Technology, sensibly applied, to deliver dramatic improvements in all phases of the life cycle is not in question. NATO CALS has identified successful examples from across the Alliance in all of the areas identified by the Mission Statement.
25. The benefits expected from the activities proposed by this plan are as follows:
- Harmonisation and acceleration of national activities to evolve to a digital environment, through continued co-operation in NATO.
 - An improved return on investment in the selected projects that accept NATO CALS assistance, through the adoption by those projects of best international practices.
 - Effective influence on the development by nations and by industry of new international standards and interchange specifications for product life cycle support data. These standards are expected to:
 - ◆ Improve the quality, accessibility of Product Support Information throughout the supply chain;
 - ◆ Reduce the cost of acquiring, maintaining and delivering Product Support Information;
 - ◆ Improved operational availability;
 - ◆ Improve capability to communicate consistently across COTS software;
 - ◆ Make product change easier to manage;
 - ◆ Protect investment in product data.
 - The ability to influence, through these standards, the development of commercial IT tools to meet NATO requirements.
 - Guidance on the consistent use of the standards in NATO and national programs, providing a basis for improved co-operation in acquisition.
 - The development, with SNLC and with industry, of a cornerstone for co-operation in logistics, which can reduce logistics costs to enable weapons system modernisation and help to reduce the in-theatre logistics footprint to enable agility.

- Improved service to the war-fighter in the faster delivery of spares and support information with better accuracy, reliability, and consistency.

RECOMMENDATIONS

26. The CNAD is invited to support the continuation of CALS activities in NATO by:

- Noting the Revised Objectives (paragraph 6) and Proposed Work Areas (Annex C) in this Strategic Plan.
- Noting the NCMB intention to transition the work defined in the Strategic Plan to a permanent NATO body as soon as practical, with a preferred option selected by April 2000 and a first opportunity for implementation in January 2001, subject to agreement of other affected parties.
- Approving in principle a final extension of the NATO CALS MoU, for a maximum of 3 years. (The revised MoU will need signature at or before the November 1999 CNAD meeting).

27. CNAD is also requested to:

- Confirm its support for an early transition to a digital environment for NATO's acquisition and logistic business processes as soon as practical.
- Invite member nations to encourage multi-national acquisition programs, in which they participate, to develop plans for managing their defence system information on a through life basis. (The NATO CALS products are available to support this work).

Mark Shaeffer,
Chair, NCMB

Glossary for NATO CALS Strategic Plan:

AJP	Allied Joint Publication
ALIS	Acquisition Logistics Information System (based on NCDM)
CALS	Continuous Acquisition and Life cycle Support
CNAD	NATO Conference of National Armament Directors
DGA	Director General d'Armaments (French MoD Acquisition Organisation)
EDIFACT	Electronic Data Interchange for Administration, Commerce and Trade
EAPC	European Atlantic Partnership Council (successor to PfP)
IETMs	Interactive Electronic Technical Manuals
ISO	International Standards Organisation
MoU	Memorandum of Understanding
NCDM	NATO CALS Data Model
NCMB	NATO CALS Management Board
NCO	NATO CALS Office
NIAG	NATO Industrial Advisory Group
NICG	NATO Industrial CALS Group
NMCs	NATO Military Commanders (e.g. SACEUR)
PfP	Partnership for Peace
PLCS	Product Life Cycle Support (an ISO/STEP Initiative)
TLIM	Through Life Information Management
SNLC	Senior NATO Logisticians Conference
STANAG	(NATO) STANdardisation AGreement
STEP	Standard for the Exchange of Product Data (ISO 10303)

ANNEX A: To NATO CALS STRATEGIC PLAN to 2002

Achievements 1997-99

1. Over the last 3 years the NATO CALS organisation, through its government and industry arms, has continued to work with acquisition and logistic programs across the Alliance to promote the best use of digital technology
2. These activities have taught important lessons:
 - ◆ NATO Defence System data is “going digital”. The US is committed to moving away from paper based processes. They plan to be using full digital working for acquisition and logistics by 2002. Other NATO nations will need to follow this lead.
 - ◆ The technology already exists to deliver dramatic improvement in business processes within individual Defence System programs. There are many successful examples from which to learn.
 - ◆ Despite these examples, too few Defence Programs are taking full advantage of what already exists.
 - ◆ Further investment in standards and implementation guides is required to deliver the inter-operability needed for effective multi-national co-operation.
3. In these circumstances the NATO CALS Organisation has focussed its effort on helping Defence System programs across NATO to develop and bring into use a new approach to product and transaction data management, which can deliver information which is:
 - ◆ Digitally based,
 - ◆ Responsive to continuous change over the life cycle,
 - ◆ Easy to share and exchange beyond the boundary of the IT system in which it was first created or captured,
 - ◆ Based on open commercial standards (e.g. ISO/STEP for product data, EDIFACT for EDI etc.).
4. The key achievement during the period has been the development of the concept of Through Life Information Management (TLIM). This is defined and supported by a series of NATO CALS products, for use by program teams.
5. Work has also been undertaken, through numerous liaisons, to encourage other NATO bodies to start, or to accelerate, a transition to a digital environment, based on open commercial standards for defence System data.

6. The TLIM concept and the NC supporting products are presented below. Further information of the liaisons with other bodies, and of NCO work with multi-national programs is provided by the NCO progress reports for each NCMB.

NATO CALS PRODUCTS

1. THROUGH LIFE INFORMATION MANAGEMENT

- 1.1 NATO is seeking to improve Nations' ability to provide efficient, effective and lethal fighting forces to the battlefield in the least amount of time. This can be achieved by increasing the use of combined Joint forces, sharing a unified support system. Such an approach reduces the amount of supplies and support equipment (reduced footprint) improves flexibility, speed and manoeuvrability and reduces costs.
- 1.2 A key "operational enabler" is the ability to share digital data for weapons system maintenance and logistics support. For this to happen, information must be viewed as an asset captured throughout the acquisition process and maintained for the life of the system, in a secure and accessible format. This concept is known as Through Life Information Management (TLIM).
- 1.3 This annex presents the current status (Mar 99) of the products developed by NATO CALS, in close co-operation with industry, to help NATO Nations improve their through life acquisition and support processes by using TLIM.

2 THROUGH LIFE BUSINESS MODEL (TLBM)

- 2.1 The TLBM is a tool to help Defence System programs manage change. It presents a vision of how NATO can improve its acquisition and logistic processes for multi-national programs by making best use of information technology over the life cycle of a Defence System. A Program Office, Contractor or Logistic Agency can use the TLBM in several ways to explore opportunities for allocating responsibility, improving communications and reducing costs. The TLBM can be used as:
- A Baseline Description of the Life Cycle;
 - A Benchmarking tool;
 - A tool for exploring boundaries, for contracts or organisations;
 - A start point for Implementing Change.
- 2.2 Programs embarking on change can use the TLBM, in conjunction with NCOPS (see below), as a start point for modelling their own future

processes and as a tool for developing their information requirements.

- 2.3 The TLBM is available in printed form, as a Adobe Acrobat .pdf file, and as a BPWin IDEF model.

3 NATO CALS CONCEPT OF OPERATIONS (NCOPS)

- 3.1 NCOPS is a guide to help a Defence System program implement a TLIM approach. It was developed to help staff in government and industry, engaged in the acquisition or logistic support of Defence Systems, exploit the full potential of modern information technology, and transition to a digital environment. NCOPS helps programs meet their objectives in this complex environment by encouraging:

- ◆ a life cycle management perspective,
- ◆ the use of appropriate techniques and standards to manage information as an asset.

- 3.2 NCOPS helps program management implement TLIM through four consecutive stages:

- Stage 1: Develop a Program Strategy for TLIM.
- Stage 2: Develop an Information Management Plan.
- Stage 3: Implementation.
- Stage 4: Managing the Information

- 3.3 Modern IT offers enormous potential for improving Defence System businesses by improving the quality and availability of information. The use of NCOPS, as an integral component of the broader program management activity, will maximise the prospects for turning this potential into reality.

- 3.4 The NCOPS is available in print or electronic format (Word or pdf). It is currently being incorporated into the NATO CALS Handbook (see below), and the NC Web Site – www.cals.nato.be.

4 THE NATO CALS DATA MODEL (NCDM)

- 4.1 The NATO CALS Data Model (NCDM) is a consistent, integrated model of the common information contained in three major Acquisition Logistics standards used by multi-national programs– Mil Spec 1388, AECMA 1000D and AECMA 2000M. It was developed jointly with industry in the context of NH90 by NATO CALS Pilot Project #1.

- 4.2 NCMD defines a common set of data definitions that can be used to achieve consistency at the information level without requiring standardisation of hardware or software. It is based on the leading international standard for product data (STEP) and using the EXPRESS data modeling language.
- 4.3 The NCDM can support the creation of a single integrated data source for all of the data traditionally requested by an Armed Force for maintenance (including product structure, product description, failure modes and task descriptions) for provisioning (including parts list, and part properties) and for technical documentation. It has the potential to provide a common source database from most of the design and LSA data, needed to support a Defence System can be easily published.
- 4.4 The NCDM has the potential to sharply reduce costs and improve quality for Acquisition Logistics in a multi-national context.
- 4.5 The NCDM has been successfully tested by an industrial "Rig Test" (See below). Action is in hand, through DGA France, to develop commercial software to support a pilot implementation of NCDM on the NH 90 program.
- 4.6 The NCMD is available in Printed, Word 6 or PDF formats, and in EXPRESS. Several related databases have also been developed in MS Access.

5 NCDM RIG TEST REPORT:

- 5.1 This report documents a Rig Test, led by industry, to prove the integrity of the NATO CALS Data Model in a database implementation. The tests provided insight into how the NCDM can be implemented, and feedback into the evolution of the NCDM and other NATO CALS products.
- 5.2 The Rig Tests were successfully completed and confirmed that the NCDM was capable of holding a full range of acquisition logistic data and of adding substantial value to the acquisition logistic process.

6 DATA ARCHITECTURE AND INTERCHANGE SPECIFICATION REPORT

- 6.1 During 1997 the TLBM was used to establish requirements for a Data Architecture and set of Interchange Specification to support the information changes between Government & Industry during a Defence Program life cycle. The NCDM and the techniques of STEP were use to support this work.

6.2 This report confirmed that TLIM, in a digital environment, requires a much greater level of sophistication in the information exchanges between government & industry than is currently available. Such interfaces may occur at any point in the supply chain, will vary from program to program and can take different forms including:

- Bulk Data Transfer'
- Data Lists,
- Database Tables,
- Database Reports in response to Queries,
- Direct Access to databases,
- Dynamic Links between databases.

6.3 The report provided a methodology for defining Interchange Specification and provided a worked example, based on the NCDM.

6.4 The DA-IS report is available in Word. The worked example is available as a ISO 10303 (STEP) Part 21 file.

7 PLCS STATEMENT OF TECHNICAL REQUIREMENT (STR):

7.1 Through Life Information Management needs new kinds of standards. The NATO CALS Office, in conjunction with several industrial partners and national MoDs, have developed an initial Statement of Requirements (STR) to define the information needed to support a major asset, such as a Defence System, over its full life cycle.

7.2 The STR is being used to launch a new international standardisation initiative, lead by industry, to address Product Life Cycle Support (PLCS) requirements as part of ISO 10303 (STEP).

7.3 The PLCS Initiative seeks to reduce life cycle costs, and improve product availability by improving the quality and accessibility of the technical information needed to support a complex product in operational use.

8 NATO CALS HANDBOOK (NCH):

8.1 The NCH is a Web based product designed to provide NATO project managers, their support personnel, and IT staff with access to NCO products and easy links to relevant web sites in the participating nations. It contains detailed guidance, examples, case studies and an overview of related standards to assist implementation programs at a variety of levels. This handbook provides a structured approach to implementing CALS requirements, data interchange standards and data format specifications.

8.2 This current version of the NCH is in the development stage, scheduled for

completion by December 1999. New material is being added as work is completed. The NCH provides a living document to provide single point access to the latest information available.

ANNEX B: To NATO CALS STRATEGIC PLAN to 2002

CHANGES IN THE ACQUISITION AND LOGISTICS ENVIRONMENT

The acquisition and logistic environment across NATO is subject to continuous and rapid change. Key features of this change include:

- The focus for logistics improvement is shifting from national wholesale operations to war-fighter-driven operational requirements:
 - Projected threats are becoming more diverse and unpredictable;
 - Logistics systems must provide assured, agile sustainment;
 - Demand-driven “supply” system driven by the war-fighter; not mass push.;
 - Improve logistics response time “factory to foxhole”;
 - Optimise in-theatre footprint to enable agility;
 - Improve reliability and maintainability of systems.
- Defence Systems are changing more frequently throughout their entire life cycle due to:
 - Evolutionary Acquisition Practices,
 - Component Obsolescence,
 - Technology Insertion,
 - Life Extensions,
 - Capability Updates,
 - New Operational Requirements.
- Industrial involvement in equipment support is increasing:
 - Extended Warrantees,
 - Performance Demonstration periods,
 - Contractor Logistic Support,
 - Contracting out of repair work,
 - "Pay for use" and equipment rental contracts.
- NATO Armed Forces and Industries have an increasing requirement to exchange and to share digital product data:
 - Industrial Partnerships, Joint Ventures, Mergers and acquisitions ;
 - Industry/MoD Integrated Projects teams;
 - Support by, or with industry;
 - Combined and Joint Operations plus Co-operative Logistics;
 - Move to ISO and other commercial standards.

ANNEX C: To NATO CALS STRATEGIC PLAN to 2002

NATO CALS Tasks to 2002

To deliver the Revised Objectives the NATO CALS organisation, in co-operation with nations, industry and other NATO bodies, will undertake the following main tasks in the period to 2002:

Ongoing Tasks

- Continue to support the information exchange between nations, NATO Bodies, and industry, on life cycle and information management issues, through the NCMB and NICG.
- Provide support to the early implementation of Through Life Information Management in selected multi-national programs, using current commercial software and the existing NATO CALS products. (Individual task statements will be developed and agreed with program directors).
- Improve awareness activities to promote a climate for change in multi-national acquisition and logistic programs.
- Provide a centre of excellence for NATO on IT developments of relevance to acquisition and logistic support, providing advice and assistance when asked (e.g. EDIFACT, IETMs, SGML/XML, STEP, Object Technology etc.)

Short Term Completion (1999/2000)

- Identify and document complete examples of "quick wins" from digital working, including a business case, which can be used to encourage early action in nations just starting the transition.
- Complete the testing and evaluation of the NATO CALS Data Model on NH90, documenting the improved and harmonised processes for Acquisition Logistics (Pilot Project #1).
- Develop an outline/template National CALS policy document based on best practice, showing the topics to be addressed and the line taken by nations to date.
- Publish a road map for nations who are implementing a transition to digital data in Defence System acquisition and logistic support businesses.
- Complete publication of NATO CALS Handbook as a web based service.
- Develop and win agreement to a plan for the transition of CALS work to a permanent NATO body.

Medium Term Completion (2001)

- Assist the SNLC Ad Hoc Working Group on co-operation in NATO on logistics, by leading the development of new business models, identifying

the required process improvements and the selection or development of standards to support simplified logistic transactions, based on commercial standards.

- Continue to support the NATO Asset Tracking Working Group.
- Produce a guide on how to implement life cycle data models in a Defence Program.
- Improve awareness of Life Cycle Costing activities in nations and assess the need for NATO action in this area. This will address both forecasting and measurement aspects.

Longer Term Completion (2002)

- Support the development by industry of new international standards for Product Life Cycle Data.
- Develop, with SNLC and others, a new vision of how NATO, AF and Industrial IT infrastructures can inter-relate in a digital age. Identify and finds means to address the requirement for information standards to support related logistic transactions (based on EDIFACT)
- Implement the transition of CALS to a permanent NATO body.
