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AD-A260 876



# Standardization and Interoperability in Future Army Operations

AR207RD1

Carl H. Groth

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FEB 23 1993  
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93-03643



1708

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May 1992

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Carl H. Groth

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| Accession For       |                                           |
| NTIS                | CRA&I <input checked="" type="checkbox"/> |
| DTIC                | TAB <input type="checkbox"/>              |
| Unannounced         | <input type="checkbox"/>                  |
| Justification ..... |                                           |
| By .....            |                                           |
| Distribution /      |                                           |
| Availability Codes  |                                           |
| Dist                | Avail and/or Special                      |
| A-1                 |                                           |

Prepared pursuant to Department of Defense Contract MDA903-90-C-0006.  
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## **STANDARDIZATION AND INTEROPERABILITY IN FUTURE ARMY OPERATIONS**

Recent changes in U.S. national security strategy and resources, reinforced by experience in Operations Desert Shield/Desert Storm, mandate that the Army reallocate its reduced resources in conformity with the new, regional defense strategy. The implication for future Army operations appears to be the need to place greater emphasis on cooperative activities that contribute most directly to regional security and coalition warfare capabilities requiring standardization and interoperability (S&I) with allied and coalition forces. NATO plans for multinational forces in Europe as well as preparations for other potential contingencies outside of Europe add urgency to such standardization and interoperability in both doctrinal and materiel matters. Further, standardization and interoperability may have to be achieved at the expense of activities that either do not contribute or contribute less directly to regional security or coalition warfare capabilities. In this report, we examine these implications and any changes in Army policy or guidance that might be needed to redirect increasingly scarce resources to improve standardization and interoperability.

The term "interoperability" as used here means the ability of systems, units, or forces to provide services to, and accept services from, other systems, units, or forces and to use the exchanged services to enable them to operate together effectively. "Standardization" is the process of developing concepts, doctrines, procedures, and designs to achieve effective levels of interoperability, compatibility, and interchangeability. Compatibility means that items or components of equipment can function in the same system or environment without mutual interference. Interchangeability means that items are similar enough in performance that they can be exchanged for each other.<sup>1</sup>

### **A REGIONAL DEFENSE STRATEGY**

The Secretary of Defense has described the directions the Department of Defense (DoD) must take to implement a new defense strategy as announced by the

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<sup>1</sup>These definitions are taken from Allied Administrative Publication 6, *NATO Glossary* (AAP-6(R)), 1988.

President in Aspen, Colorado, on 2 August 1990. The new defense strategy rests on four elements, the first of which is traditional and the latter three of which are new and largely regional in orientation and emphasis:

- Strategic deterrence and defense — relying on a mix of offensive and defensive nuclear capabilities to protect the United States and its allies
- Forward presence — maintaining forward deployed or stationed forces to strengthen alliances, show our resolve, and dissuade regional challenges
- Crisis response — providing forces and mobility to respond to crises and to reinforce forward deployed forces
- Reconstitution — maintaining the capability to generate wholly new forces to deter or respond to a renewed global threat.

The elements of forward presence and crisis response bear the most critical S&I implications for the Army.

Forward presence will require the Army to show a commitment to alliances to deter aggression, enhance regional stability, promote U.S. influence and access, and, when necessary, provide an initial crisis response capability. In recent testimony to Congress, Secretary Cheney made the following point:

Forward presence is vital to the maintenance of the system of collective defense by which the United States has been able to work with our friends and allies to protect our security interests, while minimizing the burden of defense spending and of unnecessary arms competition.<sup>2</sup>

Secretary Cheney further indicated that the requirements of forward presence will entail an increasing number of cooperative agreements with friendly countries to provide for pre-positioning of materiel and other contingency arrangements. General Gordon R. Sullivan, the U.S. Army Chief of Staff, also recently testified that Army forces will contribute to forward presence through exercises, security assistance activities, military-to-military relationships, emergency aid, and other temporary deployments. General Sullivan emphasized the importance of increased sharing of roles, risks, and responsibilities by U.S. allies and host countries.<sup>3</sup>

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<sup>2</sup>Statement by Secretary of Defense Dick Cheney before the Foreign Affairs Committee, United States House of Representatives, Second Session, 102nd Congress, 4 March 1992, p. 23.

<sup>3</sup>Statement by GEN Gordon R. Sullivan, Chief of Staff, Army, on the FY 1993 Department of the Army budget, before the Committee on Armed Services, United States House of Representatives, Second Session, 102nd Congress, 26 February 1992, p. 10.

Crisis response requires the ability to operate effectively in diverse areas of the world and to cope with differences in climate, terrain, distance from the United States, varied levels of in-country logistical support and capabilities of potential adversaries. Noting the capabilities of potential adversaries, Secretary Cheney emphasized

The global diffusion of military and dual-use technologies will enable a growing number of countries to field highly capable weapons systems. As a result, our regional adversaries may be armed with capabilities that in the past were limited only to the superpowers.<sup>4</sup>

General Sullivan stated that Army forces will not be structured for combat in a specific theater but will train to more generic battle tasks and will be tailored "at the appropriate time to the requirements of the particular region in which they are employed."<sup>5</sup> He emphasized that regional commitments and tailoring to local requirements mean that the Army must be prepared to work with sometimes fragile ad hoc coalitions in addition to our more stable long-term alliances.

Reconstitution is intended "to deter any potential adversary from attempting to build forces capable of posing a global challenge to America, and, if deterrence fails, to provide a global warfighting capability."<sup>6</sup> Although in the new strategy, reconstitution deals with potential threats that would require considerable time to emerge, it builds on the four foundations of regional defense: technological superiority, robust alliances, quality personnel, and core competencies. The first two of these foundations are direct functions of cooperative activities with allies; U.S. technological superiority will increasingly depend on our ability to acquire technologies developed by other advanced economies and on our ability to participate in cooperative R&D activities with them.

## **SHAPING THE ARMY FOR A REGIONAL DEFENSE STRATEGY**

In the future, the Army is more likely to be employed as a member of a coalition force than as a unilateral force. Thus, it must ensure that its ability to operate in a coalition environment receives priority in planning, programming, budgeting, and preparing for future contingencies. Operating in a coalition environment will require greater attention to three broad areas of international cooperation: operational

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<sup>4</sup>Secretary Cheney, op. cit., p. 25.

<sup>5</sup>General Sullivan, op. cit., p. 13.

<sup>6</sup>Secretary Cheney, op. cit., p. 26.

compatibility with coalition partners, logistical support, and political-military relations. Operational compatibility includes combined doctrine and training, contingency planning, and materiel standardization and interoperability. Logistical support includes host- and third-country support activities and pre-positioning of equipment and supplies. Political-military relations include arrangements for cooperation and exchange of information.

Interviews with U.S. and allied commanders of forces in Operation Desert Storm (ODS) also indicate that the political-military aspects of future coalition operations will emphasize "equity" aspects of sharing roles and missions that may affect what would otherwise be considered the most "efficient" assignment of roles and missions.<sup>7</sup> For example, an "economy of force" mission may be politically unacceptable. These interviews also highlighted the importance of good personal relations among national commanders and the necessity of strong liaison parties in both directions to ensure clear communications among national commanders.

The commanders in chief (CINCs) and their U.S. Army component commanders are responsible for near-term operational compatibility and logistic support arrangements within the boundaries of their contingency operations. The Commanding Generals of the Training and Doctrine Command (TRADOC) and the Army Materiel Command (AMC) are responsible for providing their respective mission area support for CINC requirements, which include compatibility requirements. Army commanders of forces in the United States that are earmarked for regional contingencies are responsible for ensuring that appropriate CINC guidance on compatibility is implemented and that these forces can quickly be tailored to particular contingencies as they arise. Forces Command is responsible for supporting regional, strategy-driven compatibility and cooperative logistics requirements.

Army strategic planners and the research, development, and acquisition (RDA) community are responsible for long-term development of Army capabilities to deter regional conflicts or to control future battlefields if regional conflicts erupt. The uncertainty of requirements in this environment is sharply different from that in the earlier environment of a single Warsaw-Pact threat with its known elements. The

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<sup>7</sup>U.S. Army Training and Doctrine Command (TRADOC) Memorandum for Record, *Interviews with U.K. and GE [German] Generals (29-31 October 1991)*, dated 18 November 1991, p. 2.

Army has decided to plan for the new environment by trading off some current force readiness capabilities for future options with increased technological capability.

That increased technological capability will require greater coordination with key allies and long-term coalition partners to ensure operational compatibility. In addition, the Army will need to ensure that it takes advantage of technological developments that originate in allied countries. Technological developments of interest occur both in those scientific and technical innovations that mark materiel advances and in the warfighting processes and techniques that mark strategic and tactical superiority. Uncertainty about the future combined with the need to collaborate more closely with key allies on the development and application of new technologies means that greater risks must be taken in exposing some U.S. technologies to the possibility of undesirable transfers. The best insurance against that risk is to be sure that the pace and quality of technological advance keep the Army well in front of any potential protagonists.

#### **THE DESERT SHIELD/DESERT STORM EXPERIENCE**

Operations Desert Shield and Desert Storm provide recent experience in a regional conflict in which the coalition that was formed had some S&I capabilities from both NATO and security-assistance relationships. The recent, three-volume report of the Secretary of Defense to the Congress on ODS concluded that 100 hours of ground combat was too short a period to form comprehensive judgments about specific strengths or shortcomings and that much of the evidence remains anecdotal.<sup>8</sup> Nevertheless, the report states that the ODS victory unquestionably benefitted from a number of international activities that DoD has pursued over the years with allies and key coalition members. Standardization and interoperability rank high among those activities and point out the need for increased attention to them in the future.

Lieutenant General Yeosock, the ARCENT (Army component of U.S. Central Command) Commander in the Gulf War and now Deputy Commanding General of the U.S. Army Forces Command, recently commented on the importance of S&I activities in the Gulf War. He indicated that some anecdotes demonstrated materiel S&I successes and others, their shortcomings, and that future Army S&I efforts in the materiel area should focus particularly on command, control, and

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<sup>8</sup>Office of the Secretary of Defense, *Final Report to the Congress on the Conduct of the Persian Gulf War*, April 1992.

communications and battlefield consumables. He also indicated that the Army needs to increase its efforts to achieve standardization and interoperability in the areas of combined doctrine and of coordinating and integrating coalition forces.<sup>9</sup>

Materiel S&I successes include the use of common fuels, the deployment of German 120mm tank ammunition for U.S. tanks, and the quickly engineered compatibility between U.S. mobile subscriber communications equipment and the French RITA communications equipment. Because of decades of security assistance activities with U.S. allies and a few Near Eastern countries, foreign stocks of some U.S. equipment and ammunition were available to satisfy U.S. Army requirements until the U.S. industrial base could respond. Some shortfalls occurred in other ammunition, such as 25mm ammunition, which had not yet been modified to meet NATO Standardization Agreement (STANAG) specifications, and with a variety of communications equipment. In some cases, imaginative people engineered "workarounds" to overcome those shortfalls, and, in other cases, workarounds were not needed because of the short duration of operations. If ODS had lasted longer, more materiel S&I shortfalls would probably have appeared. For example, differences in tracked vehicle components could have prevented the interchange of allied treads as operational attrition increased. The inability to interconnect artillery and mortar fuzes in the Gulf War has caused the NATO Military Agency for Standardization (MAS) to begin to develop criteria for safe interchangeability.

Materiel experience during ODS also included temporary use of equipment "borrowed" by one coalition partner from another when equipment was not available in time from domestic sources or stocks. Examples were Canadian chemical equipment and squad automatic weapons and Czechoslovakian heavy equipment transporters from Germany.<sup>10</sup> In planning for future contingencies, the Army should consider such options — particularly in planning for coalition operations in which the U.S. Army component would be very small. That contingency planning should also consider the ability to use host-country industrial capabilities for tailored production of consumables such as fuel.

"Soft," or nonmateriel, S&I successes include the extraordinary results of ARCENT's Coalition Coordination, Communications and Integration Center (C3IC),

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<sup>9</sup>Interview with LTG Yeosock on 15 April 1992.

<sup>10</sup>AMCICP-M Memorandum for AMC Operations Center, Subject: *Desert Storm After-Action Report*, 30 June 1991.

subsequently used by CINCCENT; extensive use of liaison teams; and the ability to coordinate quickly on the basis of decades of NATO and security assistance contacts and familiarization. Liaison teams often filled the S&I gap left when command, control, and communications (C3) materiel was not interoperable. Some initial obstacles were encountered in clearing foreign liaison personnel for access to U.S. facilities, and those obstacles delayed effective use of liaison parties. In future contingency planning, the Army should develop procedures for full clearance of liaison personnel to appropriate headquarters facilities of coalition partners.

The experiences of the 34th Engineer Battalion in Kuwait City at the end of ODS in operating with a mix of equipment from the United States and other countries such as Japan and Korea show the importance of developing generic maintenance skills that can be applied to a wide range of equipment. Equipment operator and maintenance training that focuses solely on unique military models can limit the ability of U.S. forces to operate with other countries' equipment.<sup>11</sup>

Despite the qualified S&I successes in ODS and to some extent because of them, Army managers are realizing that S&I activities must now become much more focused on those critical aspects of interoperability that require priority attention. Furthermore, the unique circumstances of ODS indicate that coalition S&I activities should be carried out in a truly cooperative atmosphere of interdependence among partners. As the Center for Strategic and International Studies (CSIS) stated in its interim report, "The Gulf War: Military Lessons Learned:"

This war demonstrated beyond reasonable doubt that the U.S. military is both politically and logistically dependent upon its friends and allies. The United States will be unable to perform any major contingency operation without a substantial degree of assistance from other nations. The option of "going it alone" simply does not exist except in minor operations, and all foreign and defense policy decisions must be made with this realization.<sup>12</sup>

Future Army operations will be conducted in one of two possible coalition environments – with NATO multinational forces and with ad hoc, non-NATO regional coalitions.

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<sup>11</sup>Conversation with MG Daniel Christman, Commanding General, Army Engineer School, 27 April 1992.

<sup>12</sup>*The Gulf War: Military Lessons Learned*, Interim Report of the CSIS Study Group on Lessons Learned from the Gulf War, CSIS, Washington D.C., July 1991, p. 5.

## **NATO MULTINATIONAL FORCES**

NATO multinational units constitute a major operational focus for future employment of U.S. Army forces and necessitate increased attention to standardization and interoperability. Although it is too early to know the exact force structure and contingencies in which U.S. Army forces will participate, in NATO those forces will undoubtedly require greater S&I capabilities than ever before. The proposed multinational corps relationships for NATO include a U.S.-led corps with a German division; a German-led corps with a U.S. division; a Belgian-led corps with U.S., German, and four Belgian brigades; a U.K.-led rapid reaction corps (ARRC) with a U.S. division and divisional or brigade-sized units from the U.K., Italy, Belgium, Germany, the Netherlands, Portugal, Greece, and Turkey; and an immediate-reaction brigade with a U.S. airborne task force and Canadian, Dutch, Norwegian, Spanish, U.K., Italian, Belgian, and German battalions. These extraordinarily heterogeneous forces will require revolutionary S&I developments if they are to function as effective fighting teams.

Numerous forums provide ample opportunities to plan, negotiate, and coordinate S&I activities for NATO multinational forces. MAS working groups, the Conference of National Armaments Directors (CNAD), bilateral staff talks, and other forums are available to coordinate S&I activities either bilaterally or multilaterally. Once NATO military commanders have agreed on a new conceptual military framework (CMF) and provide guidance on armaments procurement to the CNAD, S&I activities within the various forums can be focused on those minimum essential activities that best support the military guidance. MAS and staff talk activities that do not contribute to the new multinational force requirements or to other regional coalition contingencies should be discontinued. Agreements such as the NATO STANAGs should be reviewed to ensure that they support the new military requirements, and those that do not should be eliminated. The Army can contribute to an S&I streamlining process in NATO by identifying its own minimum essential set of S&I requirements that would best meet the operational needs of both NATO multinational forces and other regional coalitions.

The senior Army commander in NATO should determine the agenda and priorities for Army MAS and staff talk forums, within the broader guidance of the NATO senior military commanders' CMF and S&I guidance. TRADOC's development of goals and objectives for staff talks with each of the allies should be

aimed at implementing the senior Army commanders' priorities and supplementing them with other long-range S&I priorities identified by exchanging R&D plans among key allies. For example, one of the objectives of the materiel rationalization, standardization, interoperability (RSI) goal in the U.S.-German staff talks is to share each other's Technology Base Master Plan to identify opportunities for common technology development. Care should be taken not to detract from the field commanders' priorities by creating solely ad hoc S&I initiatives aimed at satisfying short-term political objectives.

### NON-NATO CONTINGENCIES

- The Army of today is focused on no-notice, forcible entry, crisis response to conventional regional conflict by means of tailored force packages – armored, light and special operations forces – from the continental United States.
- The Army of today is prepared to work with ad hoc, sometimes fragile coalitions to respond to threats in our national interests which fall outside the purposes of our traditional alliances.<sup>13</sup>

The implications for standardization and interoperability of the Army's focus on ad hoc, crisis-response coalitions emphasized in General Sullivan's remarks quoted above were foreshadowed by him in March 1990 when, as Deputy Chief of Staff for Operations, he said

RSI will play an increasingly important role in the Army's future as national defense budgets decline and our forward deployed forces are reduced. Combined interoperability with allied land, sea and air forces continues to be an essential precondition for successful coalition warfighting.<sup>14</sup>

Clearly, ad hoc coalitions, whose compositions and operations are unpredictable, pose difficulties for S&I planning. In circumstances in which the NATO multinational forces may be employed outside of NATO, they would likely become the core of the required coalition force and would drive S&I requirements for other coalition partners. These NATO forces therefore should identify in advance the appropriate minimal essential S&I criteria for operations with potential coalition partners under various regional contingencies.

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<sup>13</sup>General Sullivan, op. cit., pp. 13-14.

<sup>14</sup>Quoted in a 1990 briefing by CINC U.S. Army, Europe (CINCUSAREUR), *Interoperability: Beyond CFE*.

U.S. Army units in CONUS must also establish their own minimal essential S&I criteria for use with non-NATO coalition forces. CONUS forces that are tailored for particular regional contingencies will be able to focus their S&I activities more effectively, including concentrating on direct coordination with the most likely "core" coalition partners. The diversity of potential coalition compositions and operations for the Army as a whole, however, requires that priorities be carefully established for S&I activities to optimize the overall allocation of scarce resources.

#### **SHORTCOMINGS IN THE ARMY'S MANAGEMENT OF S&I ACTIVITIES**

Currently, S&I activities are still managed in a largely decentralized manner that was appropriate for an environment in which the threat was known and U.S. forces were to fight alongside other U.S. forces. That environment has changed, and S&I activities now require a more centralized and coordinated management system.

The Army's top-level planning documents do not provide guidance explicit enough to direct Army program resources to priority S&I activities. The Army Plan (TAP) clearly identifies the increasing importance of standardization and interoperability in supporting a regional security strategy, but it does not indicate the importance of standardization and interoperability relative to other competing programs, nor does it give sufficiently clear indications of regional coalition priorities that could serve as implicit priorities for S&I activities. The Army International Activities Plan (AIAP) is still being developed, but it appears to focus on offering Army commands guidance on how to develop country plans rather than on what priorities those commands should follow.

The Army's RDA community does not have strong S&I incentives to identify and consider international cooperative solutions to technology and materiel problems thoroughly. International cooperative solutions involve considerable uncertainties in terms of obtaining agreements from the parties involved and of resolving the greater number of issues that need to be addressed compared with U.S. domestic solutions. Despite repeated policy statements emphasizing the importance of considering foreign alternatives to meet Army requirements, reduce costs, and promote standardization and interoperability, the Army does not appear to be making a systematic and comprehensive attempt to do so. International cooperative RDA activities largely focus on marginal projects that serve to satisfy particular

funding availabilities or alliance initiatives. Of course, as procurement cuts occur, Congress and the business community will increase pressure for "buying American."

The Army currently uses simulation technologies to substitute for expensive exercises and field testing and to improve commanders' abilities to analyze combat options in real time. As Commander in Chief U.S. Army, Europe, General Blanchard pointed out in a briefing entitled, *Interoperability: Beyond CFE*, the Army's greater use of simulation technology will tend to aggravate the difficulty for improving standardization and interoperability as the Army withdraws from Europe by eliminating opportunities for combined exercises and similar activities. He was concerned that each nation would develop its own simulation systems, and they would not be compatible with those of the other nations, thus denying a common view of allied or coalition operations even in the gaming world.<sup>15</sup>

Liaison personnel in Europe are being reduced as Army forces are withdrawn despite an increasing Army need for coordination and communication with NATO allies in NATO multinational forces. Activities carried out by the Office of Defense Cooperation (ODC) in each allied country and in other friendly countries have traditionally focused on coordination of near-term activities such as arms sales or cooperative R&D projects. To carry out the new liaison activities required by a regional security strategy, ODCs will need more resources.

The Army's participation in security assistance activities is already taxing available organizational resources. Its security assistance community is being asked to find foreign customers to absorb excess equipment in Europe resulting from the Army's European drawdown. In the near future, that community will be expected to continue to find more foreign customers for the even larger stream of excess equipment from overall Army force reductions. Any resulting transfers need to be integrated into the Army's overall regional security strategy. However, reductions in the AMC staff dedicated to international cooperative activities mean that AMC will be less able to manage the materiel implications of massive transfers effectively. The dearth of dedicated staffing at the Department of the Army level means that these materiel resources will not be integrated into the overall Army regional strategy as effectively as they should be nor will they be effectively coordinated to support combined doctrinal planning and training conducted by TRADOC.

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<sup>15</sup>Ibid.

## **PRIORITIES**

The foregoing discussion of the implications of coalition warfare for standardization and interoperability indicates that while standardization and interoperability will become more important in a future regional security strategy, they will also become more complex than they were in the former NATO environment of a single Warsaw-Pact threat. Fewer Army resources mean that the value of S&I activities must be compared with the value of other Army activities that contribute to allied and coalition warfare capabilities.

Army planning documents need to direct resources to cooperative activities. The Army Plan should provide explicit guidance and priorities to bolster S&I activities with allies and potential coalition partners. The portion of TAP that addresses strategy and planning guidance should indicate that programs promoting cost-effective standardization and interoperability should receive priority attention for Army funds and that the techniques for ranking Army program elements should include explicit recognition of the importance of these S&I factors. The AIAP should project TAP's guidance to identify and rank activities that support each of the AIAP's strategic pillars and goals. The AIAP should provide priorities to the Army commands in terms of where coalition S&I resources should be focused geographically and functionally.

The Assistant Secretary of the Army for Research, Development and Acquisition should ensure that appropriate S&I activities receive greater attention in both short-term acquisition and long-term R&D of Army systems. In particular, the Army's Long Range Development and Acquisition Plan needs to reflect S&I priorities as assigned by TAP and the AIAP. The Army should place greater reliance on commercial specifications and standards when they can replace more restricted and costly military-unique specifications and standards. The Army's Technology Base Master Plan also needs to increase its focus on S&I activities to conserve scarce resources and rapidly insert technologies into the weapons acquisition process when appropriate. The new national security environment demands that the Army take greater risks to ensure that it remains at the cutting edge of critical technology development.

Lessons from the Persian Gulf War, decreased R&D resources, and a new acquisition strategy that emphasizes limited procurements and selective, iterative

prototyping to ensure integration of new technology all point toward selection of those few materiel areas for S&I concentration that offer the most pervasive and compelling benefits. Two such areas are C<sup>3</sup> and battlefield consumables (particularly, ammunition and fuel). General William G. T. Tuttle, recently retired Commanding General of the Army Materiel Command, suggested that decisions not to cooperate in international R&D projects with respect to these two areas should be permitted only at the four-star level. That is, the Army should assume that R&D activities in these two areas will normally involve international cooperation. An alternative to cooperative activities with our more industrially advanced allies is to procure stockpiles of critical communications equipment and ammunition, for example, to be provided to unknown coalition partners in future contingencies.

Liaison teams will play a much more significant role in regional security strategy activities.<sup>16</sup> In addition to greater reliance on temporary liaison teams between coalition partners in an operational environment, permanent liaison teams will be needed to coordinate and communicate peacetime preparations for coalition operations. These peacetime liaison teams will fill part of the "U.S. presence" gap, which is being created by the removal of U.S. forces from overseas, and will become the principal voice of U.S. coalition efforts to many potential coalition partners. The CINCs will need to supervise liaison activity related to coalition contingency planning and operations and participate in liaison activity that is focused on long-term technological and political-military cooperation. The Secretary of the Army and the Army Chief of Staff will require greater control of Army liaison activities to ensure that overall Army priorities are clearly reflected in worldwide cooperative activities.

In summary, the Army needs to focus its S&I resources in the near term in support of CINC-led contingency operational requirements and in the long term in support of largely unknown operational requirements that are developed in cooperation with key allies and potential coalition partners. International planning and coordination in these uncertain environments must be carefully managed to ensure effective integration into the Army's overall regional security strategy.

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<sup>16</sup>LTG Yeosock, has emphasized the future role of these liaison teams. Cf. TRADOC Memorandum for Record, op. cit.

# REPORT DOCUMENTATION PAGE

Form Approved  
OPM No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources gathering, and maintaining the data needed, and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

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| <b>1. AGENCY USE ONLY (Leave Blank)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 | <b>2. REPORT DATE</b><br>May 1992                              | <b>3. REPORT TYPE AND DATES COVERED</b><br>Final                |
| <b>4. TITLE AND SUBTITLE</b><br>Standardization and Interoperability in Future Army Operations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                 |                                                                | <b>5. FUNDING NUMBERS</b><br>C MDA903-90-C-0006<br>PE 0902198D  |
| <b>6. AUTHOR(S)</b><br>Carl Groth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                 |                                                                |                                                                 |
| <b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b><br>Logistics Management Institute<br>6400 Goldsboro Road<br>Bethesda, MD 20817-5886                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                 |                                                                | <b>8. PERFORMING ORGANIZATION REPORT NUMBER</b><br>LMI-AR207RD1 |
| <b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b><br>Mr. Michael F. Fisette<br>Assistant Deputy for International Cooperative Programs<br>U.S. Army Materiel Command<br>5001 Eisenhower Avenue, Alexandria, VA 22333                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                 |                                                                | <b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>           |
| <b>11. SUPPLEMENTARY NOTES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                 |                                                                |                                                                 |
| <b>12a. DISTRIBUTION/AVAILABILITY STATEMENT</b><br>A: Approved for public release; distribution unlimited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |                                                                | <b>12b. DISTRIBUTION CODE</b>                                   |
| <b>13. ABSTRACT (Maximum 200 words)</b><br><p>This report analyzes the future role of standardization and interoperability (S &amp; I) in Army operations and presents recommendations for improving Army management of S &amp; I activities. Recent changes in U.S. national security strategy and resources, reinforced by experiences in Desert Shield/Desert Storm require the Army to improve its ability to operate effectively with our allies and potential members of future coalitions. In NATO, U.S. Army forces will require greater S &amp; I capabilities than ever before if they are to make a meaningful contribution to alliance military capability. In Operation Desert Storm, materiel and doctrinal standardization and interoperability contributed significantly to the allied victory; that experience suggests that interoperability with allied forces will be an essential precondition for success in future non-NATO contingencies.</p> <p>The Army needs to clarify policy guidance on and centralize management of S &amp; I activities. Army planning documents need to emphasize the importance of S &amp; I activities, in both the materiel area and in the doctrinal and tactical area. Management of standardization and interoperability should be strengthened, in part through the expanded use of peacetime liaison teams assigned to allied military forces. Overall planning and coordination of S &amp; I initiatives need to be managed carefully to ensure integration into the Army's regional security strategy.</p> |                                                                 |                                                                |                                                                 |
| <b>14. SUBJECT TERMS</b><br>Standardization and Interoperability, multinational forces; coalition warfare; regional strategy; combined doctrine, Desert Shield/Desert Storm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                 |                                                                | <b>15. NUMBER OF PAGES</b><br>15                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                 |                                                                | <b>16. PRICE CODE</b>                                           |
| <b>17. SECURITY CLASSIFICATION OF REPORT</b><br>Unclassified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>18. SECURITY CLASSIFICATION OF THIS PAGE</b><br>Unclassified | <b>19. SECURITY CLASSIFICATION OF ABSTRACT</b><br>Unclassified | <b>20. LIMITATION OF ABSTRACT</b><br>UL                         |