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National Counterdrug Center (NCC) Simulation System Operational Requirements Document (ORD) Version 2

G. M. Holter

January 2001

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Pacific Northwest National Laboratory
Richland, Washington 99352

Summary

This Operational Requirements Document (ORD) describes the capabilities that need to be incorporated in the National Counterdrug Center (NCC) interactive simulation system being developed under the auspices of the NCC development program. The ORD addresses the necessary capabilities (i.e., what the system needs to be able to do). The NCC system development contractor will determine the details of how the system will provide the required capabilities and will develop more detailed specifications for implementation of the system. The NCC operations and maintenance contractor will determine the details of how the system will be deployed, used, and supported. An overview of the NCC Program is available in a separate document.[1]

The ORD addresses the hardware and software Exercise Delivery System that will be developed, together with the deployment and use of this system. Requirements for other elements of the NCC Program are outside of the scope of the ORD.

The NCC Program has adopted a development approach that provides incremental capability through the fielding of a phased series of progressively more capable versions of the system.

The original Version 1 ORD[2] was developed through a process of researching similar development efforts[a] and conducting a user-based survey of existing requirements.[3] While the initial requirements surveys for Version 1 took place in Cochise County, Arizona, subsequent survey efforts have extended this further east along the Southwest border and into the Pacific Northwest (and future extensions will be made in other areas of the U.S). Version 2 of the ORD has been developed to incorporate differences observed in extending the survey area[4] as well as other new findings resulting from development of the Module 1 system. In addition to the published survey reports, which summarize the survey findings, some requirements are drawn directly from the more detailed NCC survey team notes.

Version 2 of the ORD supersedes Version 1. Future updates of this ORD are anticipated to be issued as needed to guide the development of later versions of the NCC system.

As a definition of the necessary capabilities of the NCC system, the ORD is not intended to provide the full area-specific data detail required for deployment of systems tailored to conditions in a particular area. Rather, the ORD defines the envelope of situations and circumstances that the NCC system must be able to represent and operate within. The full range of capabilities identified in the ORD will not be necessary or appropriate for many of the exercises to be conducted with the NCC system, but the range is included because each capability identified is necessary and appropriate for at least some exercises.

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[a] The compiler of this ORD has adapted requirements from various sources, which are identified.

Version 1 of the ORD has been implemented in the Module 1 system. Thus, Version 2 represents a refinement of Version 1 as shown in Figure 1. All requirements included in the Version 1 ORD have been reviewed for continued applicability to the NCC system and, where necessary, revised or refocused. Some new requirements have also been identified and incorporated into the Version 2 ORD.
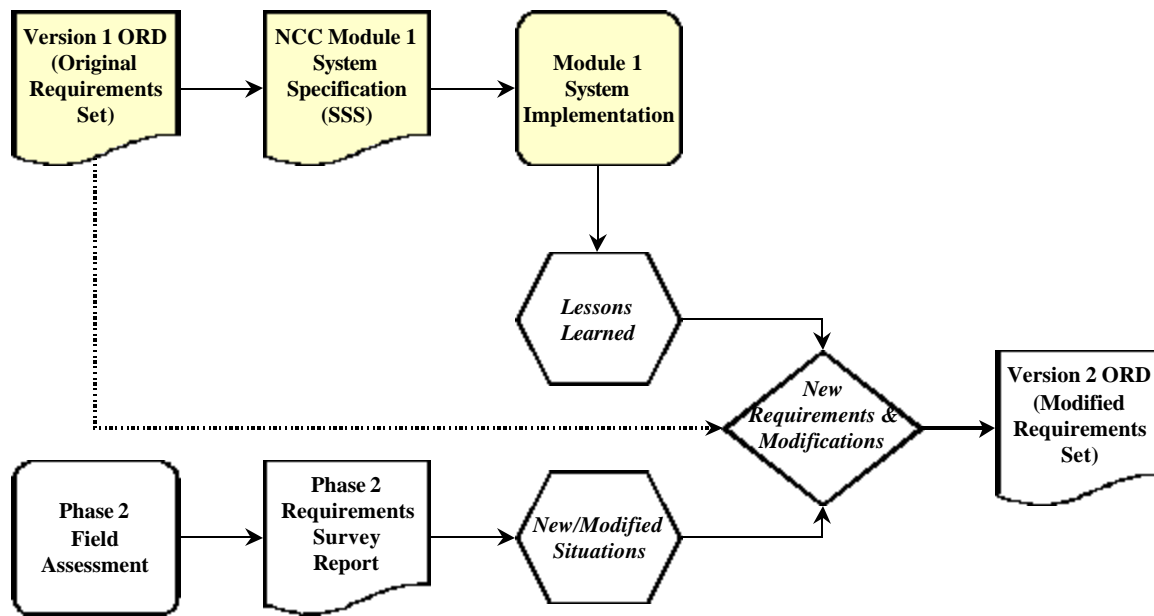

Figure 1. Development of Version 2 ORD

This Version 2 ORD has been developed based on the same organizational structure as the original Version 1 ORD. Requirements in the Version 2 ORD have been identified with unique numbers to improve identification and traceability of individual requirements during the subsequent development of detailed system specifications.

Individual requirements that are substantially unchanged from the Version 1 ORD are shown in italics. Sections of the report that have been substantially reorganized from Version 1 are identified as such.

Lists of capabilities identified using the words "include" or "including" may not be inclusive of all possible capabilities that will be needed in that category but are representative of the range of those capabilities.

This ORD addresses the overall NCC life cycle and the ultimate capabilities of the NCC System. The general requirements included in the ORD apply to the eventual completion of the NCC system, while specific requirements address the Key Performance Parameters required in Version 2 of the system. Additional Key Performance Parameters for Version 2 may also be identified as part of the detailed design development process based on this ORD, as described below in Section 1.5.

Inclusion of requirements in the ORD is an indication of their need to support Program objectives but does not automatically mean that all such requirements will be included in approved Program scopes or budgets. Actual taskings require explicit approval by authorized NCC Program management.

Acknowledgments

Abbreviations

AAR	After Action Review
CDR	Critical Design Review
CGF	Computer Generated Forces
CI	Confidential Informant
COTS	Commercial Off-The-Shelf
DMSO	Defense Modeling and Simulation Office
DOE	Department of Energy
GIS	Geographic Information System
GOTS	Government Off-The-Shelf
HFE	Human Factors Engineering
HIDTA	High Intensity Drug Trafficking Area
IEEE	Institute of Electrical and Electronics Engineers
KPP	Key Performance Parameter
LAN	Local Area Network
LEA	Law Enforcement Agent or Agency
MANPRINT	Manpower and Personnel Integration
MEL	Master Events List
M&S	Modeling and Simulation
NCC	National Counterdrug Center
ORD	Operational Requirements Document
PDR	Preliminary Design Review
PMP	Program Management Plan
P3I	Pre-Planned Product Improvement
POE	Port of Entry
RAM	Reliability, Availability, and Maintainability
RCMP	Royal Canadian Mounted Police
SSS	System Specification (document)
TBD	To Be Determined
THP	Take Home Package

WAN   Wide Area Network

2D   2-Dimensional
3D   3-Dimentional

Glossary

After Action Review – For the purposes of this ORD, After Action Review refers to a review and discussion of the exercise that has been completed, supplemented as necessary by a replay of all or portions of the exercise.

Availability – Measure of the degree to which a system or component is operational and accessible when required for use; often expressed as a probability. [IEEE Std 610.12-1990]

Confidential Informant – A person who supplies information to LEAs without having his or her identity disclosed.

Controlled Delivery – The technique of allowing actual or suspect drug shipments to pass out of, through or into the territory of one or more countries, with the knowledge and under the supervision of their competent authorities, to facilitate identification and apprehension of additional persons or organizations involved in the drug trafficking. There are several variations on controlled deliveries, some involving shadowing an unwitting driver and others involving either turning or replacing a driver. The technique of controlled delivery can be of great value in pursuing particular criminal investigations.

Exercise – For the purposes of this ORD, an exercise is an event that is collaboratively conducted among a set of participants and controlled by an exercise controller, based on a baseline scenario.

Human Factors Engineering – The systematic application to system design and engineering of relevant factors concerning human characteristics. These factors include skill capabilities; performance; anthropometric data; biomedical factors; and training implications to system development, design, acquisition strategy, and staffing.

Integrated Logistics Support Plan – A plan providing a composite of all support considerations necessary to assure the effective and economical support of a system for its life cycle and serving as the source document for summary and consolidated information required in other program management documentation.

Interdiction – For the purposes of this ORD, interdiction is taken to mean the intervention in any activity between the growth or manufacture of a drug and its "retail sale" to the user, to prevent the use of that drug.

Interoperability – The ability of systems, units, or forces to provide services to, and accept services from, other systems, units, or forces and to use these services to enable them to operate effectively together.

Key Performance Parameter – A system capability or characteristic so significant, that failure to meet the threshold can be cause for the concept or system selection to be reevaluated or the program to be reassessed or terminated

Maintainability – Ability of the system to be retained in or restored to specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair.

Master Events List – A chronological list of major events in the scenario and the estimated time they are to take place, based on elapsed execution time of the scenario.

NCC Central – The centralized organization located in Richland, Washington, and responsible for operation of the NCC system.

Pre-Planned Product Improvement – A policy and/or strategy of considering the ways and means to enhance the system beyond the scope of the current phase or module; planned future evolutionary development of incremental improvements to system capability

Reliability – The ability of a system or component to perform its required functions under stated conditions for a specified period of time. [IEEE Std 610.12-1990]

Scenario – For the purposes of this ORD, a scenario is a reusable asset that establishes the foundation for planning and executing an exercise, and includes scenario description and initialization data, the Master Events List (q.v.), and starting positions and behaviors for baseline entities included in the scenario.

Usability – The ease with which a user can learn to operate, prepare inputs for, and interpret outputs of a system or component. [IEEE Std 610.12-1990]

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1.0 General Description of Operational Capability

Describes the overall mission area, the type of system proposed, and anticipated operational and support concepts (how system will be employed and supported), and outlines typical mission operations.[b]

1.1 General Requirements Relating to Operational Capability

1.1.1 *The NCC Program will result, among other things, in the development of an exercise system based on distributed simulation, hereafter referred to as the NCC system, to enhance the interoperability of Law Enforcement Agencies (LEAs) involved in drug interdiction.*

1.1.2 *The NCC system will be developed in a series of phases, as modules with increasing levels of capability, over a period of several years.*

1.1.3 This ORD is focused on the NCC simulation system and its deployment and use; the ORD does not provide requirements for other products that may be created or developed as a result of the NCC Program.

1.1.4 If other NCC Program products are created or developed that result in impacts on the NCC simulation system and its use, requirements relating to these impacts will be included in a future version of the ORD.

1.2 Overall Mission Area

1.2.1 *Per congressional funding language, the NCC system will be a simulation-based counterdrug interoperability-exercise module.[c]*

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[b] Guidance paragraphs for each section of this ORD are summarized primarily from ORD guidance and procedures prepared for CASCOM, http://www.cascom.army.mil/multi/Combat_Developer_Toolkit/2-Combat_Developer_HandBook/4-Operational_Requirements_Document.htm. Other sources were also consulted.

[c] "The Committee believes that distance learning and technology can be employed to allow for realistic training experiences without diverting operational resources from field service. For this reason, the Committee has provided (funding) for the purpose of creating a simulation-based counterdrug interoperability training module at Volpentest HAMMER Training and Education Center." Senate Report Number 105-200, DOD Appropriations, p. 146 (Accompanying S2132).

1.2.2   *In response to congressional direction, the NCC[d] will establish a national capability to:*
      1.2.2.a exercise federal, state, and local drug interdiction forces in coordinated and integrated interagency operations
      1.2.2.b improve the flow of information among and within law enforcement agencies
      1.2.2.c record and promulgate lessons learned.

1.2.3   As a nationally deployed simulation-based exercise system, the NCC system will be designed to enhance the interoperability of the federal, regional, state, local, and cooperating international and foreign agencies (e.g., the Royal Canadian Mounted Police [RCMP]) that engage directly in, or support, operations focused on the interdiction of drugs.

1.2.4   *The NCC System will be used as appropriate to extend and enhance current capabilities, in conjunction with existing systems, and is not intended to replace existing systems.*

1.2.5   An investigation of existing capabilities and systems relevant to the NCC system objectives will be conducted to maximize opportunities to leverage current capabilities as appropriate.

1.2.6   The NCC System will be developed based on information gathered in selected US border survey areas.

1.2.7   Information gathering activities in selected US border survey areas will be conducted sequentially, progressively including a greater proportion of the entire US border, as needed to support phases of NCC system development.

1.2.8   The NCC System will be developed to be broadly applicable to LEAs involved in drug interdiction activities in all areas, including areas not selected as survey areas, although specific aspects of some areas may not be fully represented within the system.

1.2.9   *The NCC System will be capable of being deployed wherever needed to provide interoperability exercise capability for U.S. law enforcement agencies, including areas other than those surveyed.*

1.2.10 The relevant agencies to be represented in a specific simulation exercise using the NCC system depend on the particular area and situation, so the system must be capable of representing the full range of federal, regional, state, local, and cooperating international and foreign agencies (e.g., RCMP) in simulated exercises.

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[d] *The National Counter-Narcotics Training Center (Drug Interdiction Interoperability Training Simulation Center) Program*, NCC Program Briefing, developed by U.S. Department of Energy Volpentest HAMMER Training and Education Center, with Pacific Northwest National Laboratory and Motorola ADS Systems, 1999.

1.2.11   *Since the various agencies involved use somewhat different definitions for drug interdiction, this effort will adopt a broad, all-encompassing definition in which interdiction will be taken to mean the intervention in any activity between the growth or manufacture of a drug and its "retail sale" to the user, to prevent the use of that drug.*[e]

1.2.12   *The primary participants for NCC system exercises will be at the supervisory level of the relevant agencies involved in drug interdiction activities, including first line supervisors and up.*[5]

1.2.13   The primary focus of the NCC system will be on interoperability exercises relating to the detection of drug trafficking and seizure of drugs.

1.2.14   As development of the NCC system proceeds, detection and seizure of other items associated with drug smuggling (e.g., money involved in drug transactions or weapons) will be considered for inclusion in exercises using the system, depending on the establishment of need for this inclusion on the part of the agencies involved.

1.2.15   *The NCC System will enable realistic exercises for joint operations of drug interdiction forces, complementing and extending existing capabilities for developing improved interoperability. (Relevant shortcomings of existing systems are addressed in a later section of this ORD.)*

1.2.16   *The demands of responding to an ever-changing threat require the NCC system to provide a flexible environment that can respond and adapt quickly to change.*

1.2.17   *The NCC system will be user friendly, providing an effective exercise capability for people with a range of backgrounds and requiring only minimal computer skills on the part of the participants.*

1.2.18   *The NCC system will provide the capability for holding centralized exercises with participants at a single location.*

1.2.19   *The NCC system will provide the capability to link in exercise participants from multiple distributed sites for holding exercises at distributed locations.*

1.2.20   *The distributed exercise mode will enable personnel from various agencies and/or at disparate geographic locations to be able to operate together in synthetic environments, without the need for extensive travel to centralized exercise locations (adapted from Defense Modeling and Simulation Office Position Paper*[6]*).*

1.2.21   *The NCC system modeling and simulation (M&S) capabilities will provide the capability for the creation of realistic test and evaluation exercises without the expense and danger of live exercises (adapted from Defense Modeling and Simulation Office Position Paper*[6]*).*

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[e] Suggested by Cochise County Sheriff's Office.

1.2.22 The NCC system will eventually be capable of use for dry runs of live operations to minimize the risks to people and equipment (adapted from Defense Modeling and Simulation Office Position Paper[6]). [This is not a Key Performance Parameter for Module 2.]

1.2.23 Use of the NCC system for all purposes will require the identification and incorporation of appropriate security measures. (See Section 4.3.5 for a further discussion of security requirements.)

1.3   Type of System Proposed

Lists technology and system components (if known).

1.3.1   *The NCC System will be based on the concept of a distributed system.[f]*
      1.3.1.a *In a distributed system, a centralized site can house a number of distributed components linked by a local area network (LAN).*
      1.3.1.b *Alternatively, a distributed system can have a centralized site that links to a number of geographically distributed components.*
      1.3.1.c *The system architecture to be developed for the NCC system will be compatible with both definitions of a distributed system and neither definition will be precluded, to provide for flexibility in the implementation and use of the NCC system.*

1.3.2   The NCC System will be based on commercial off-the-shelf (COTS) and/or government off-the-shelf (GOTS) items to the extent that this is cost-effective and technically responsive to system requirements.

1.3.3   The NCC System will take advantage of capabilities developed for other uses (e.g., military war-game simulations) to the extent that this is cost-effective and technically responsive to system requirements.

1.3.4   *The control center for the NCC system will be established at a centralized location (e.g., NCC Central).*

1.3.5   Exercise coordination will normally be conducted from the centralized control center, with optional capability to coordinate exercises from the remote location should that be necessary.

1.3.6   *Each exercise participant will have a workstation or other appropriate interface for participation in an exercise.*

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[f] *The National Counter-Narcotics Training Center (Drug Interdiction Interoperability Training Simulation Center) Program*, NCC Program Briefing, developed by U.S. Department of Energy Volpentest HAMMER Training and Education Center, with Pacific Northwest National Laboratory and Motorola ADS Systems, 1999.

1.3.7   NCC system workstations will be configurable to perform the necessary functions for conducting exercises, as identified by the NCC system development contractor.

1.3.8   *The functionality of the NCC system workstations will be the same whether they are located at the centralized or a distributed location.*

1.3.9   *NCC system workstations will be linked to show and simulate sharing of information in real time.*

1.3.10   *The control center for the NCC system will have the ability to link to workstations located either at a single location or at various geographically distributed locations into a single coordinated exercise.*

1.3.11   *The NCC System will be capable of supporting additional workstations for observation only, to provide the ability for decision-makers and others to observe an exercise from an alternate location such as agency headquarters or legislative bodies (adapted from NCC Survey Team notes).*

1.3.12   *The NCC system will incorporate a number of simulation capabilities including, but not limited to, the following:*

    1.3.12.a   *Representation of active player elements (personnel from various agencies)*

    1.3.12.b   *Representation of active "red-team" drug traffickers (threat elements)*

    1.3.12.c   *Inclusion of Computer Generated Forces (CGF) to represent friendly forces, drug traffickers (threat elements), and neutral participants (indigenous personnel/innocent by-standers and pedestrians) not portrayed by active exercise participants*

    1.3.12.d   *Visual display of simulation information as appropriate to support exercise needs (2D and 3D)*

    1.3.12.e   *Representation of resources and their availability to the player elements and the drug traffickers (e.g., vehicles, weapons, surveillance tools, communications equipment)*

    1.3.12.f   *Representation of facilities (e.g., Ports of Entry)*

    1.3.12.g   *Representation of terrain and buildings*

    1.3.12.h   *Representation of roads and road conditions*

    1.3.12.i   *Representation of environment, ground cover, and weather*

    1.3.12.j   Representation of different types, quantities, and packaging of drug loads

    1.3.12.k   *Representation of time of day (including light or dark)*

    1.3.12.l   *Representation of communications processes and procedures*

    1.3.12.m   Representation of the use of technological surveillance and monitoring systems (e.g., sensors)

    1.3.12.n   *Representation of relevant processes and procedures (e.g., processing of suspects)*

    1.3.12.o   *Representation of receipt and dissemination of law enforcement information and intelligence*

1.3.12.p	*Representation of tactics/rules of engagement for simulated operations*
1.3.12.q	*Incorporation of performance metrics to be applied to evaluating player and exercise performance.*

1.3.13 *The NCC system will also incorporate:*[5]

1.3.13.a	*The ability for an exercise to unfold in a manner that deviates from the information provided by a Confidential Informant (CI).*
1.3.13.b	*The ability to include additional "load" vehicles that exhibit coordinated evasive behavior to discourage or elude surveillance or pursuit.*

1.3.14 *The NCC system will include, among others, the following functions*[g]:

1.3.14.a	*The system will use CGF to simulate vehicles, personnel, and equipment organic to the individual LEAs, as well as other exercise forces not portrayed by active exercise participants.*
1.3.14.b	*The system will provide interfaces for live personnel to observe, direct, and interact with the CGF in an integrated virtual environment.*
1.3.14.c	*The system will perform near real-time data processing to monitor and control NCC exercises.*
1.3.14.d	*The system will monitor, transmit, and receive voice, video, and network communications between the simulation components on local area networks and wide area networks.*
1.3.14.e	*The system will support evaluation of exercise participants' strengths and weaknesses in interagency communication, coordination, and command and control.*
1.3.14.f	*The system will provide performance feedback information, using After Action Reviews (AARs) and Take Home Packages (THP).*[h]
1.3.14.g	*The system will archive exercise data and exercise performance feedback to support off-line review and evaluation via CD-ROM or Internet delivery using commercial office products and/or Internet browser software.*

1.3.15 *The NCC system will include the capability to allow, if determined to be necessary, later addition and integration of representations of new or evolving technologies such as the following examples identified in the Scenario Description for the NCC Demo:*[5]

- *Satellite imagery for target visualization*
- *Electronic disablement of vehicles*
- *Satellite communications*
- *Signal jamming*
- *Triangulation of communications sources*
- *3D infrared imaging*
- *Ion sniffers*
- *Eye-safe laser designation to sense target location.*

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[g] Information provided by Motorola Advanced Distributed Simulation Systems.
[h] A THP may contain an exercise summary, snapshots of screen displays, instructor notes, predefined statistical charts, and/or other information of use in describing and reviewing an exercise.

1.3.16 Development of simulation capabilities will be prioritized, as part of the detailed design development activities, to ensure that the most useful simulated features are included prior to the inclusion of lower priority items.

1.3.17 *NCC system will support exercises using cases extracted from real-world operations, including past experiences, to build operational skill.*

1.3.18 *The proposed system will be capable of presenting and simulating realistic scenarios to illustrate situations that have been found to be confusing or difficult.*

1.3.19 *Additionally, the system will allow new cases to be added to communicate newly encountered problems or new approaches to operations.*

1.3.20 The system will support the simulation of the entire range of drug interdiction operations, from reactive operations responsive to an immediate situation to preplanned operations involving considerable intelligence gathering and analysis prior to launching the actual operation.

1.3.21 The system will support the simulation of controlled delivery activities (see Glossary) as well as direct interdiction of drug loads.

1.3.22 *Each exercise will be based on a scenario that provides a description of the exercise and sets forth the initial set of conditions for the exercise.*

1.3.23 *Each scenario will represent the specific agencies, relationships, equipment, weather and road conditions, and other key factors defining the starting conditions for the exercise and any key events and conditions during the execution of the exercise.*

1.3.24 *Each scenario will be capable of being copied and modified to provide for new scenarios, and will also provide for modification on the fly during exercises.*

1.3.25 *Recording of exercises will provide for later review, feedback, and replay to test alternate responses.*

1.3.26 *The system should allow the incorporation of simulated mistakes in actions taken by CGFs, such as getting lost, following the wrong vehicle, or incorrectly following instructions.*

1.3.27 *The system should allow the incorporation of simulated mistakes in actions reported by CGFs (when simulated forces make a report that conflicts with the ground truth or the facts of the scenario) such as providing an erroneous location for a vehicle or event, including a mechanism to provide the correct information if challenged for confirmation.*

1.3.28   *The exercise controller should have the ability to cause simulated forces to make specific mistakes during the exercise and to adjust the severity and frequency of such mistakes, with data on ground truth and mistakes to be recorded for use in review following the exercise (adapted from WARSIM 2000 ORD[7]).*

1.3.29   *The system must incorporate the ability to demonstrate how crimes with higher priority for some participating agencies can remove some participants from further involvement in an exercise, changing the composition of the joint force and their available equipment.*

1.3.30   *The NCC system must comply with all applicable security requirements.*

1.3.31   *Any sensitive information used by the NCC system, whether included as part of scenarios and exercises or communicated through the system for other purposes, must be protected by control systems and measures consistent with the security requirements of all of the agencies involved (adapted from Customs AIS Security Policy[8]).*

1.3.32   *Information about exercise content or conduct that could be used by drug traffickers to develop countering methods and tactics will be protected as sensitive information.*

1.3.33   Any information used by the NCC system that reveals the configuration or capabilities of equipment or assets used by the law enforcement agencies for drug interdiction purposes (e.g., configuration of radio communications networks) will be appropriately protected.

1.3.34   *As an exercise system, the NCC system will not be used in real time for command and control against any real threat in actual operations (adapted from IEWTPT ORD[9]).*

1.3.35   *Any information used by the NCC system in exercises to plan, rehearse, and review actual operations must be appropriately protected.*

1.3.36   The NCC system will be in compliance with all relevant Defense Modeling and Simulation Office (DMSO) requirements.

1.4   Anticipated Operational and Support Concepts

Describes planned and/or projected logistical support.

1.4.1   Once development is completed on each phase or module of the NCC system, system operation, and maintenance will be supported primarily by the NCC operations and maintenance contractor.

1.4.2   Additional information on the support for the NCC system is to be developed as part of the Life Cycle and Sustainment Planning identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

1.5 Requirement Definition

Outlines the process for developing operational requirements and satisfying the mission need.

1.5.1 Information to support requirements development for the NCC exercise system is based extensively from a series of State of the Practice Surveys[i] that are being conducted to identify and define the characteristics of the interdiction environments in selected areas of the U.S.[10]

1.5.2 Material for this Version 2 ORD is drawn from NCC Program documentation, from the Version 1 ORD,[2] from the NCC Version 1 and Version 2 Survey Reports, [3,4] and from lessons learned in the development effort for the NCC Module 1 System.

1.5.3 *Information specific to the NCC Program is supplemented by material adapted from other ORDs published for systems with relevant characteristics.*[a]

1.5.4 The NCC system development contractor will conduct and report tradeoff studies and other activities as necessary to refine and translate the requirements in this ORD to develop detailed system specifications.

1.5.5 The NCC system development contractor will document the specifications developed from the requirements in this ORD in a System Specification (SSS) document and other related documents as determined to be necessary.

1.5.6 As part of the specifications-development process, the NCC system development contractor will develop a process for acceptance and qualification testing of NCC system modules as they are completed.

1.5.7 At the completion of each NCC system module, a lessons-learned, after action review session will be conducted among NCC program organizations to identify important items for consideration in subsequent modules. [This is a Key Performance Parameter.]

1.6 Metrics

Describes how the performance of the system is to be measured.

This section on Metrics has been substantially reorganized from that in the Version 1 ORD.[2]

1.6.1 General Approach to Performance Metrics

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[i] The State of the Practice Surveys provide broad informational support to a number of NCC Program activities, in addition to supporting the development of NCC system requirements, and should be consulted for additional area-specific detail supporting NCC Program activities.

1.6.1.1 Performance metrics for the NCC system will be divided into several categories, including but not limited to the following:
- Exercise performance metrics
- Hardware/software system performance metrics
- Overall program performance metrics.

1.6.1.2 The performance metrics used for the NCC system will include consideration of the performance measures defined in 1980 by GAO for assessment of an organization's performance, based on the Civil Service Reform Act of 1978, which include:[11]
- Productivity
- Effectiveness
- Quality
- Timeliness.

1.6.1.3 Development of a systematic set of performance metrics for the NCC system and the NCC Program is a Key Performance Parameter for Module 2.

1.6.2   Exercise Performance Metrics

1.6.2.1 Exercise performance metrics shall include consideration of:
- Overall performance of the exercises provided using the system and
- Performance of individual exercises.

1.6.2.2 Overall performance metrics for exercises using the NCC system will be developed as part of the development of performance metrics for the NCC Program, as identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

1.6.2.3 Performance metrics for the effectiveness of individual exercises will be developed as part of the development of an Exercise Implementation Plan, as identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

1.6.2.4 To supplement the foregoing performance measures to be developed by the NCC Program, opinions and observations regarding exercise performance will be sought from exercise participants and observers.

1.6.2.5 Exercise performance measures will be refined as necessary for successive versions of the system and to account for specific locations/situations in which exercises are conducted.

1.6.3   Hardware/Software System Performance Metrics

1.6.3.1 Measures of NCC hardware/software system performance shall include consideration of:

    1.6.3.1.a   Measures of operability or system function (e.g., availability, reliability, and usability);[j]

    1.6.3.1.b   Measures of cost-effectiveness of exercises using the NCC system as compared to other mechanisms for conducting the same exercises, particularly taking into account reduced time for completing similar exercises using other means and reduced travel expenses and time away from the job resulting from the distributed exercise capabilities.

1.6.3.2 Specific performance measures will be defined for the NCC system as part of the detailed specifications-development process, and baselines will be established for implementation of these performance measures.

1.6.3.3 To supplement the foregoing specific measures, opinions and observations regarding the performance of the NCC hardware/software system will be sought from exercise controllers, participants, and observers.

1.6.3.4 System performance measures for the NCC hardware/software system will be refined as necessary for successive versions of the system.

1.6.4   Overall Program Performance Metrics

1.6.4.1 Performance metrics that define and measure overall NCC Program performance will be developed as part of the Program Management Plan (PMP) execution/review mechanisms identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

1.6.4.2 Performance metrics that define and measure overall NCC Program performance will include consideration of changes in the performance of the LEAs involved as participants in exercises using the NCC system.

1.6.4.3 A "probability of effectiveness" methodology will be developed for evaluating operational and resource application proposals, as identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

1.6.4.4 Overall NCC Program performance metrics will be refined and updated as necessary as the program progresses.

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[j] See Glossary for definitions of these terms.

2.0 Threat

Summarizes threat to be countered and projected threat environment.

Threat information is summarized below, insofar as it impacts on development and operation of the NCC system; additional information regarding the threat is included in the NCC Survey Reports.[3,4]

This section has been substantially reorganized from that in the Version 1 ORD.[2]

2.1 General Requirements Relating to Threat

2.1.1   The drug threat to the United States is neither homogeneous nor monolithic, so the NCC system must be capable of modeling and portraying a complex threat situation (adapted from NCC Survey Team notes).

2.1.2   To fully represent the threat, the NCC system must be capable of representing many different methods and modes of operation.

2.1.3   The system must be able to model many different groups of people involved in drug trafficking in the US border areas, many of which are well organized and coordinated and maintain effective communications among their members during operations, often with capabilities superior to those used by the law enforcement agencies. (Adapted from NCC Survey Team notes)

2.1.4   To respond to the ever-changing nature of the threat, the NCC system shall provide a flexible environment that can quickly respond and adapt to change in order to remain current and relevant.

2.1.5   Interagency operations are necessary due to resource limitations on individual agencies, but suboptimal due to coordination difficulties; so at least some of the exercises using the NCC system should address resource sharing and coordination among agencies (adapted from NCC Survey Team notes).

2.1.6   The various agencies involved in drug interdiction receive different training, so there is a lack of commonality in the training that should be addressed in at least some of the exercises conducted using the NCC system (adapted from NCC Survey Team notes).

2.1.7   The various agencies involved in drug interdiction do not share a common lexicon, either generally or operationally,[k] and the NCC system must be able to accurately represent these issues (adapted from NCC Survey Team notes).

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[k] For example, terms are interpreted differently among the various agencies, and they do not routinely share the same communications channels or codes while out on patrol.

2.1.8   Agencies do not always understand the capabilities of other agencies' equipment and they are not always familiar with other agencies' procedures, so these difficulties should be addressed in at least some of the exercises using the NCC system (adapted from NCC Survey Team notes).

2.1.9   Some agency procedures prohibit certain responses that are open/available to personnel from other agencies (e.g., agency pursuit policies differ), and the system should allow these limitations to be included within exercises (adapted from NCC Survey Team notes).

2.1.10 Law enforcement officers involved in drug interdiction are concerned about the potential for corruption within the agencies, information leaks, and other such breakdowns that compromise their ability to effectively combat drug trafficking, and the system needs to be able to model such situations.

2.1.11 Because of the NCC system's computer- and communications-driven operations and simulations, degradation or ineffectiveness through accidental or intentional efforts of computer hackers or through covert actions by unfriendly forces is possible and needs to be protected against (adapted from IEWTPT ORD[9]).

2.1.12 Possible eavesdropping by any means[1] to learn the content of exercises and the approach to drug interdiction operations needs to be guarded against by the system and by policies and procedures governing the deployment and use of the system.

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[1] This includes electronic eavesdropping.

3.0　Shortcomings of Existing Systems

Describes why existing systems cannot meet current or projected requirements and how the proposed system will address current shortcomings.

3.1　General Requirements Based on Existing Shortcomings

3.1.1　As previously identified in various NCC Program documents, the NCC system will be designed and developed to meet a set of needs the majority of which are not addressed by any single exercise system currently in existence.

3.1.2　*While technology exists to assemble the NCC system, considerable adaptation and integration will be required to provide a unified system to perform the mission (adapted from NTC-IS ORD[12]).*

3.1.3　*The National Drug Control Strategy[13], as part of the Goals and Objectives, lists the following objective that will be addressed the NCC system:*
　　　*"Improve the **coordination** and effectiveness of U.S. drug law enforcement programs..."*

3.1.4　The NCC system will provide expanded opportunities for interagency exercises to improve coordination and capabilities for joint interdiction operations across the drug interdiction community within the U.S.

3.1.5　Because of the diverse structure and background of the drug interdiction community in the U.S., the NCC system will be designed and developed to consistently and rapidly exercise a group with diverse geography, jurisdictions, organizations, and educations, and experience bases (adapted from Allen [1999][14]).

3.1.6　Because the ability of individuals within most of the drug interdiction agencies to participate in or to travel for exercises is severely limited by time and budget constraints, NCC exercise mechanisms will be both time- and cost-effective.

3.1.7　Because current training is primarily focused on basic training for new agency recruits, the NCC system will provide for development of significant exercise-based training to augment capabilities as staff are promoted or assigned to new duties relating to interoperability for drug interdiction (adapted from NCC Survey Team notes).

3.1.8　Some interviewees noted that effectiveness could be increased by improved creativity in the drug interdiction approaches adopted by the various agencies, so the NCC exercise system should allow the development and testing of creative approaches (adapted from NCC Survey Team notes).

3.1.9　*As an exercise system based on distributed simulation, the NCC system shall significantly contribute to correcting the preceding deficiencies and shortcomings.*

4.0   Capabilities Required

Identifies operational performance parameters (capabilities and characteristics) required. Articulates requirements in terms of operational output, in measurable terms, and specifies each performance parameter in terms of a minimum acceptable value required to meet mission need, insofar as possible.

4.1   System Performance

Describes mission scenarios in terms of mission profiles, employment tactics, and environmental conditions. Identifies system performance parameters and recommends which parameters should be considered key performance parameters.

4.1.1   General System Performance Requirements

4.1.1.1 *The NCC system will support joint exercises of staff from multiple agencies at distributed locations, controlled by an exercise coordinator at a central location, i.e., NCC Central.*

4.1.1.2 *The NCC system will also support exercises using multiple workstations at a centralized location (e.g., NCC Central) if that is desired.*

4.1.1.3 *The NCC system will use an interactive simulation environment to support interoperability exercises and operations rehearsals (adapted from IEWTPT ORD[9]).*

4.1.1.4 *The NCC system must accurately display threat data/information for the agency staff involved in the simulation exercises (adapted from NTC-IS[12]).*

4.1.1.5 The NCC system must include the capability to represent smuggling activities using any single type or combination of the following types of routes:
    4.1.1.5.a   land-based routes
    4.1.1.5.b   water routes (both maritime and freshwater)
    4.1.1.5.c   air routes.

4.1.1.6 The NCC system must have the capability to represent the range of possible vehicles, vessels, and craft that can be used for smuggling or interdiction based on the foregoing types of routes.

4.1.1.7 The NCC system must have the capability to represent interface points among the different types of smuggling routes (i.e., as defined above in Section 4.1.1.5).

4.1.1.8 *The NCC system must be able to represent the suitability of specific resources (e.g., vehicles, communications systems, and weapons) to operate in certain types of situations and/or environments, such that the selection and use of unsuitable resources by exercise participants will compromise their ability to achieve the goals of the exercise.*

4.1.1.9 The NCC system must include the capability to portray a range of locations typical of drug smuggling and delivery locations, on or near the borders and also away from the borders within the U.S.

4.1.1.10 The NCC system will provide the capability to represent man-made and natural features of the locations being modeled in sufficient detail to support the objectives of the exercises being conducted.

4.1.1.11 The NCC system will include a set of generic communities of different sizes ("Anytown, USA"), with features representative of those that influence law enforcement activities and procedures, for use in exercises that do not require actual location-specific detail. [This is a Key Performance Parameter for Module 2.]

4.1.1.12 The number of generic communities to be included in the system will be determined based on a trade study led by the NCC system development contractor and performed in conjunction with the other NCC Program partner organizations.

4.1.1.13 Features to be considered for inclusion in the generic communities will include, but not be limited to, the following:
- Landmarks (e.g., monuments, neighborhoods, prominent commercial buildings, churches)
- Natural features (e.g., rivers, hills, valleys)
- Major highways and thoroughfares, including traffic control features
- Features that appear at night (e.g., tower lights, major lighted areas).

4.1.1.14 Generic maritime environments will include, but not be limited to, the following elements:
- Both pleasure craft and commercial traffic, including a range of sizes up to and including large ocean-going freighters
- Areas with numerous small islands
- Harbors and marinas
- Isolated coastline areas
- Representation of the impacts of various weather conditions (e.g., fog and rough weather) on the ability of various craft to operate effectively.

4.1.1.15 Generic air transport environments will include, but not be limited to, the following elements:
- [TBD – not a Key Performance Parameter for Module 2]

4.1.1.16 The NCC system must include the capability to use location-specific detail for exercises that require such detail (e.g., mission rehearsals).

4.1.1.17 The NCC system must include the capability to represent the use of the full range of existing surveillance and monitoring technologies as employed by law enforcement agencies, including various types of scopes and sensors.

4.1.1.18 Appropriate mechanisms will be provided to efficiently update data included in the NCC system to define locations, resources, law enforcement agency characteristics, and other data required by the system to efficiently define and execute exercises.

4.1.1.19 *The NCC system must support exercise planning and scenario development activities (adapted from NTC-IS ORD[12]).*

4.1.1.20 The NCC system must also collect, manage, and provide exercise performance data to support exercise control and preparation and presentation of exercise performance feedback and to support analysis of exercises (adapted from NTC-IS[12]).

4.1.1.21 The NCC system will provide for growth and evolution of its capability through a phased development approach and through exercise scenarios and databases that are modifiable and extendible.

4.1.2 Exercise Planning

4.1.2.1 *The NCC system must support scenario development activities, including exercise design, development of a Master Events List (MEL), and production of necessary exercise support materials (adapted from NTC-IS ORD[12]).*

4.1.2.2 *The NCC system must facilitate the creation and communication of the operational plans and scenario information required for each exercise (adapted from NTC-IS ORD[12]).*

4.1.2.3 *Each exercise scenario will be uniquely identifiable (e.g., by a version number and date).*

4.1.2.4 *Each scenario will include a content descriptor (text) that generally describes the content of the scenario, in addition to the necessary scenario definition information.*

4.1.2.5 *Exercise coordinators will be able to copy scenarios and modify these copies to create different scenarios.*

4.1.2.6 *The NCC system will enable the distinction between a scenario and an exercise involving that scenario; that is, a number of different exercises may be run based on a single initiating scenario (see Glossary for further clarification on scenarios and exercises).*

4.1.2.7 *The NCC system will enable the ability to incorporate randomness within the scenarios, either as variables that are determined automatically by the system during an exercise or by the introduction of random elements by the exercise controller.*

4.1.3   Exercise Participation Management

4.1.3.1 *The NCC system will incorporate exercise participation management features to organize the membership or enrollment in an exercise and customize what type of information and activities are available to the members of the group.*

4.1.3.2 *The NCC system will enable centralized control of access to exercises.*

4.1.3.3 *The NCC system will enable authorization and authentication for individuals and for group access to exercises.*

4.1.3.4 *The NCC system will enable posting and controlling access to information, by both the exercise controllers and the exercise participants, allowing the owner of information to determine who has access to that information and what can be done with that information by whom.*

4.1.3.5 *The NCC system will provide the exercise controller, on demand, with both static (e.g., scenario summary information) and real-time (currently authorized participants and participants logged on) information about the exercise.*

4.1.3.6 The NCC system will incorporate scheduling features that will take into account the different time zones of the various participants and exercise controllers for a particular exercise.

4.1.4   Personal Information Management

4.1.4.1 *Personal information on exercise participants will be managed for access and tracking purposes.*

4.1.4.2 *Exercise participants will be uniquely identified within the NCC system.*

4.1.4.3 *The NCC system will protect personal information about the exercise participants (users).*

4.1.4.4 *Transmission and storage of personally identifiable information and credentials within the NCC system must be done in accordance with all applicable security requirements.*

4.1.5   System Preparation

4.1.5.1 *System preparation capabilities must support communications, system initialization, and system readiness verification activities to prepare the NCC system to support the exercise (adapted from NTC-IS ORD[12]).*

4.1.5.2 *Communications activities must establish and verify the links between the distributed components of the NCC system that will participate in the exercise.*

4.1.5.3 *System initialization capabilities must support activities to bring the NCC system to a ready condition to support the exercise; the NCC system must (adapted from NTC-IS ORD[12]).*

> 4.1.5.3.a   *Initialize all or selected parts of the system on command.*
>
> 4.1.5.3.b   *Set system components and software to scenario-specific conditions to establish the configuration required to support the exercise.*
>
> 4.1.5.3.c   *Enter scenario-specific initialization data to support the exercise.*

4.1.5.4 *System readiness verification capabilities must support activities to verify the readiness of the NCC system to support the exercise; the system must allow (adapted from NTC-IS ORD[12]).*

> 4.1.5.4.a   *Performance of pre-exercise checks/tests that report the ready status of system components and the integrated system.*
>
> 4.1.5.4.b   *Generation of listings of initialization data and results of pre-exercise checks/tests in hard copy and/or video display formats for review by the exercise controller to verify system readiness.*

4.1.5.5 Variable exercise parameters will be configurable during the preparation phase of an exercise.

4.1.6   Exercise Management

4.1.6.1 *Exercise management capabilities must support activities to collect, manage, and analyze exercise performance data; control the exercise through role-playing and communications with components at other locations; and monitor mission capable status of the NCC system (adapted from NTC-IS ORD[12]).*

4.1.6.2 *Among other exercise data collection capabilities, the NCC system must (adapted from NTC-IS ORD[12]).*

> 4.1.6.2.a   *Time-tag all recorded exercise performance data with date/time of occurrence.*
>
> 4.1.6.2.b   *Verify transmission, receipt, and transfer of all exercise performance data to, from, and within the central or remote facilities.*
>
> 4.1.6.2.c   *Incorporate methods for recovery from power loss or communication failure.*

4.1.6.3 *Among other data management capabilities, the NCC system must (adapted from NTC-IS ORD[12]).*

> 4.1.6.3.a   *Retrieve and process selected exercise performance data to display events of simulations in near real-time to support exercise control and performance feedback.*

4.1.6.3.b   *Retrieve and process exercise performance data to compute exercise reports and summaries to support exercise control, analysis, assessment, and feedback of exercise performance.*

4.1.6.3.c   *Enter, record, retrieve, edit, and display textual and graphical data at workstations at distributed exercise locations.*

4.1.6.3.d   *Selectively distribute exercise performance data to exercise controllers and analysts in the central or distributed facilities.*

4.1.6.3.e   *Retrieve and process exercise performance data to replay exercise history to support exercise performance analysis and feedback.*

4.1.6.4 *The system must provide a time compression capability that will allow the exercise controller to "fast forward" the exercise to accommodate reasonable handling of a situation that requires significant periods of time to get to the important time period. (Adapted from WARSIM 2000 ORD[7].)*

4.1.6.5 *All linked workstations will remain synchronized during any time compression or "fast forward" events.*

4.1.6.6 *Among other exercise control capabilities, the NCC system must (adapted from NTC-IS ORD[12]).*

4.1.6.6.a   *Provide simultaneous two-way non-tactical voice and digital communications among exercise controllers, analysts, and exercise participants in a number of distributed locations.*

4.1.6.6.b   *Provide two-way tactical voice and digital communications among exercise controllers, and exercise participants to assist in role playing and controlling the exercise.*

4.1.6.6.c   *Provide 2D or 3D display, as appropriate, of the ongoing exercise simulation.*

4.1.6.6.d   *Transmit control commands during the exercise.*

4.1.6.6.e   *Record control commands for later replay and review.*

4.1.6.6.f   *Generate and display exercise reports and summaries of exercise performance data to exercise controllers and analysts in video display and/or hard copy formats to monitor and control the conduct of the exercise.*

4.1.6.6.g   *Generate and display information required to perform near real-time assessments of exercise success measures to exercise controllers and analysts.*

4.1.6.6.h   *Generate and display alerts when significant events occur that exceed controller-defined parameters.*

4.1.6.6.i   *Monitor system capable status, and generate and display alarms when operating limits are not maintained.*

4.1.6.6.j   *Store and forward inter-workstation messages for communications among exercise controllers and analysts in the central or remote analysis facilities.*

4.1.6.6.k   *Monitor, record, replay, and analyze communications signals among exercise participants to support later review and analysis.*

4.1.6.7 *The NCC system will enable system marks, allowing the exercise controllers to mark a location within the exercise that they wish to return to later, to facilitate returning to areas where particular questions or observations will be reviewed later.*

4.1.6.8 *The NCC system will enable system marks, allowing exercise participants to mark locations within the exercise that they wish to return to later, to facilitate returning to areas where particular questions or observations will be reviewed later.*

4.1.6.9 The NCC system will enable the exercise controller to temporarily freeze a given exercise and then resume the exercise on command from that point (adapted from IEEE Std 1278.3-1966[15]).

4.1.6.10 *Among other data analysis capabilities, the NCC system must (adapted from NTC-IS ORD[12]):*
    4.1.6.10.a   *Replay exercise history for review and analysis.*
    4.1.6.10.b   *Play back voice and workstation exercise performance data for review and analysis.*
    4.1.6.10.c   *Generate and display exercise reports and summaries of exercise performance data detailing the results of exercise simulations in video display and/or hard copy formats for review and analysis.*

4.1.6.11 *The NCC system will incorporate appropriate error-handling capability, including a capability to display error messages when errors cannot be handled automatically.*

4.1.7   Exercise Performance Feedback

4.1.7.1 *Exercise performance feedback capabilities must support activities to prepare and present exercise performance feedback and archive exercise performance information for post-exercise use (adapted from NTC-IS ORD[12]).*

4.1.7.2 *Among other information preparation capabilities, the NCC system must (adapted from NTC-IS ORD[12]):*
    4.1.7.2.a   *Retrieve, edit, and replay recorded exercise performance data to convert it into information to support exercise feedback.*
    4.1.7.2.b   *Replay the exercise history to support exercise feedback.*
    4.1.7.2.c   *Generate and display exercise reports and summaries detailing results of exercise simulations in video display and/or hard copy formats to support exercise feedback.*
    4.1.7.2.d   *Store exercise performance information used to conduct exercise feedback for later retrieval, editing, and presentation.*

4.1.7.3 *Among other information presentation capabilities, the NCC system must (adapted from NTC-IS ORD[12]):*
    4.1.7.3.a   *Replay prepared exercise performance information on command.*

4.1.7.3.b   *Replay exercise history on command.*
4.1.7.3.c   *Present prepared exercise performance feedback at controller-specified multiple distributed locations.*

4.1.7.4 *Among other information archive capabilities, the NCC system must (adapted from NTC-IS ORD[12]):*
4.1.7.4.a   *Transfer recorded exercise performance data to removable archive media for other uses.*
4.1.7.4.b   *Transfer exercise history to removable media for other uses.*
4.1.7.4.c   *Provide for review, manipulation, and replay of voice, video, and digital exercise performance data on a workstation functionally compatible with the NCC system.*

4.1.8   System Support

4.1.8.1 *System support capabilities must support equipment recovery, system reset, and system availability verification activities to establish pre-exercise base configuration for the next exercise (adapted from NTC-IS ORD[12]).*

4.1.8.2 *Among other equipment recovery capabilities, the NCC system must be capable of (adapted from NTC-IS ORD[12]):*
4.1.8.2.a   *Connection or disconnection of individual workstations at remote locations without negatively impacting the operation of the overall system.*
4.1.8.2.b   *Diagnostic checkout concurrent with removal and recovery of individual workstations.*

4.1.8.3 *Among other system-reset capabilities, the NCC system must (adapted from NTC-IS ORD[12]):*
4.1.8.3.a   *Reset all or selected parts of the system on command.*
4.1.8.3.b   *Reset system components and software from exercise-specific conditions to pre-exercise base configuration.*
4.1.8.3.c   *Remove/delete exercise-specific data not required for subsequent exercises on command.*

4.1.8.4 *Among other system availability verification capabilities, the NCC system must perform post-exercise checks/tests that report available status of system components and the integrated system (adapted from NTC-IS ORD[12]).*

4.1.8.5 *The NCC system will maintain a mechanism for tracking software errors.*

4.2 Logistics and Readiness

Includes requirements for mission capable rate, operational availability, frequency and duration of maintenance actions, etc.

4.2.1 *The NCC system must be available to support exercises as scheduled, including on shift if desirable, to allow for flexible scheduling and conduct of exercises (adapted from NTC-IS ORD[12]).*

4.2.2 The NCC system must be easy to maintain and operate, incorporating the principles of modularity and commonality (adapted from JTR ORD[16]).

4.2.3 *The NCC system will incorporate ease of maintenance and servicing by minimizing use of special personnel, parts, supplies, tools, and equipment (adapted from IEWTPT ORD[9]).*

4.2.4 *The NCC system will require only a limited number of special tools, support equipment, and spare assemblies to facilitate ease of maintenance and reduce inventory requirements.*

4.2.5 An Integrated Logistics Support Plan will be developed as part of the Life Cycle and Sustainment Planning identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10] [This is a Key Performance Parameter for Module 2.]

4.3 Other Systems Characteristics

Addresses characteristics that tend to be design, cost and risk drivers such as natural environmental factors or unplanned stimuli. Identifies characteristics (confidentiality, integrity, accuracy, timeliness, and availability) to defend against and survive information attack. Defines expected mission capability (e.g., full, percent degraded, etc.) in the various environments. Identifies communications, information, and physical and operational security needs.

4.3.1 Noninterference

4.3.1.1 *The NCC system will not compromise the integrity and security of actual drug interdiction operations.*

4.3.1.2 *The NCC system will in no way impede the normal operation of the drug interdiction agencies involved when it is not in use (adapted from IEWTPT ORD[9]).*

4.3.2 Natural Environmental Factors

4.3.2.1 *The NCC system must be capable of operation in normal office environments encountered throughout the U.S. (adapted from NTC-IS ORD[12]).*

4.3.2.2 *Additional physical, electrical, temperature, and humidity controls over and above those normally associated with standard office facilities in the U.S. will be specified as needed by the NCC system development contractor to ensure reliable and secure NCC system operations (adapted from Customs AIS Security Policy[8]).*

4.3.3 Electromagnetic Compatibility

4.3.3.1 *The NCC system must have full electromagnetic compatibility with all communications, electrical and electronic equipment with which it will be designed to interface (adapted from NTC-IS ORD[12]).*

4.3.4 Mission Capability

4.3.4.1 The NCC system must be capable of operating reliably and without significant degradation in all centralized and distributed facilities meeting minimum requirements identified by the NCC system development contractor and approved as part of the facility planning process identified in Appendix A of the NCC Strategic Plan[10] (adapted from NTC-IS ORD[12]).

4.3.5 Security

4.3.5.1 *The NCC system will comply with all relevant security requirements (e.g., including directly applicable DOE and DOD requirements).*

4.3.5.2 *Any sensitive information used by the NCC system, whether included as part of scenarios and exercises or communicated through the system for other purposes, must be protected by control systems and measures consistent with the security requirements of all of the agencies involved (adapted from Customs AIS Security Policy[8]).*

4.3.5.3 *Information about exercise content or conduct that could be used by drug traffickers to develop countering methods and tactics will be protected as sensitive information (adapted from NCC Survey Team notes).*

4.3.5.4 *Safeguards must be included to detect and minimize inadvertent or malicious modification or destruction, or attempts to do so, of NCC system application software or critical data files (adapted from Customs AIS Security Policy[8]).*

4.3.5.5 *Safeguards will also be included to minimize eavesdropping on simulation exercises.*

4.3.5.6 NCC system exercise controllers and others with access to information being included in the NCC system will be subject to security requirements consistent with the required security levels of the information being included.

4.3.5.7 A System Security Plan will be developed as identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10] [This is a Key Performance Parameter for Module 2.]

4.3.6 Safety & Health

4.3.6.1 *The NCC system will comply with applicable safety and health design requirements (adapted from IEWTPT ORD[9]).*

4.3.6.2 *The NCC system will not present any uncontrolled safety and health hazards to personnel throughout the life cycle of the system (adapted from IEWTPT ORD[9]).*

4.4 Pre-Planned Product Improvement (P3I)

4.4.1 *The NCC system will be developed in accordance with the principles of P3I.*

4.4.2 *The NCC system will be developed through a series of modules, primarily to provide for progressive implementation of capabilities and also to broaden the exercise capability to cover a greater range of drug interdiction agencies within the U.S. (adapted from IEWTPT ORD[9]).*

4.4.3 *The program approach for the NCC system contains the following elements relating to P3I:*
   4.4.3.a *Begin with a bite-size piece of the problem, and address greater levels of complexity in subsequent modules.*
   4.4.3.b *Focus on user-defined requirements, based on empirical information and objective data collection methods.*
   4.4.3.c *Develop the system in discrete modules, with an upgraded capability available at the end of each module.*

4.4.4 *As each module of the NCC system is developed, information on the performance of the current version of the NCC system will be used to provide input into the development of the subsequent version.*

4.4.5 Feedback mechanisms such as conferences and customer input processes will be developed and implemented as identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

5.0   Program Support

Establishes support objectives for initial and full operational capability. Discusses interfacing systems. Identifies any related ORDs.

5.1   Operations and Maintenance Planning

Identifies maintenance tasks and time phasing for all levels of maintenance.

5.1.1   Operation and maintenance of the NCC system following development will be the responsibility of the NCC operations and maintenance contractor.

5.1.2   *Documentation required to operate and to conduct routine maintenance for the NCC system workstations will be provided by the NCC system development contractor (adapted from NTC-IS ORD[12]).*

5.1.3   *There will be sufficient NCC system workstations available to support maintenance needs and provide operational continuity in accordance with reliability, availability, and maintainability (RAM) requirements (adapted from IEWTPT ORD[9]).*

5.2   Support Equipment

Defines the standard support equipment to be used by the system.

5.2.1   The NCC system will be developed to minimize the needs for field support of system components, whether installed at a centralized facility, a regional facility, or a satellite facility.

5.2.2   Mechanisms for providing any necessary field support will be developed by the NCC operations and maintenance contractor.

5.3   Human Systems Integration/MANPRINT

Establishes broad manpower constraints for operators, maintainers, and support personnel.

5.3.1   Manpower and Personnel

5.3.1.1 NCC system operations will be designed to minimize manpower requirements.

5.3.1.2 *The manpower necessary to operate the NCC system and conduct exercises must be within projected approved personnel authorizations (adapted from NTC-IS ORD[12]).*

5.3.1.3 *Personnel entrusted with the management, operation, maintenance, or use of the NCC system and any associated sensitive information require appropriate authorizations (adapted from Customs AIS Security Policy[8]).*

5.3.2   Training

(Describes training needed to set up and deploy system and to train system operators and maintainers)

5.3.2.1 The NCC system development contractor will provide System Administration Manuals and System User's Manuals at the time of delivery of the system, and upon delivery of any system modules or upgrades that significantly affect operations and maintenance of the system.

5.3.2.2 The NCC system development contractor will provide initial training for system operators and exercise controllers at the centralized NCC system installation.

5.3.2.3 Training materials provided by the NCC system development contractor will be usable for follow-on internal NCC training requirements.

5.3.3   Human Factors Engineering

5.3.3.1 *The NCC system must meet all applicable industry and government Human Factors Engineering (HFE) requirements (adapted from NTC-IS ORD[12]).*

5.3.3.2 *The NCC software should provide a common man-machine interactive display and control interface for all software functions in order to maximize the efficiency of the operators' use of all software modules (adapted from NTC-IS ORD[12]).*

5.3.3.3 The NCC system will be user friendly and will allow people with a range of backgrounds and only minimal computer skills to participate in exercises with only minimal training (2 hours or less) on the operation of the system.

5.4   Computer Resources

Identifies computer resource interface constraints.

5.4.1   *The NCC system will not require any tie-in to existing computer systems within law enforcement agencies to conduct exercises.*

5.4.2   *The NCC system will be capable of interfacing with existing computer systems, if and when required, through common interface protocols and connections.*

5.5   Other Logistics Considerations

Describes the provisioning strategy for the system. Specifies any unique requirements, special packaging and handling, and unique data requirements.

5.5.1   A Satellite Location Plan will be developed to identify and prioritize appropriate site expansion locations, as identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10] [This is a Key Performance Parameter for Module 2.]

5.5.2   Specifications for appropriate regional facilities or satellite facilities for installation of distributed NCC system workstations will be developed to ensure that minimum acceptable conditions of these facilities are achieved.

5.5.3   Upgrades of regional or satellite facilities may be required in some instances in electrical and/or communications and data services (e.g., to provide increased bandwidth) in order to ensure full functionality of the NCC system in those locations.

5.5.4   An Integrated Logistics Support Plan will be developed as part of the Life Cycle and Sustainment Planning identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10] [This is a Key Performance Parameter for Module 2.]

5.6   Command, Control, Communications, Computers, and Intelligence

Using the operational architecture approach, describes how the system will be integrated into the command, control, communications, computers and intelligence architecture that will exist when the system is fielded. Includes data requirements, frequency of data, computer network support, and anti-jam requirements. Identifies unique intelligence information requirements pertaining to target and mission planning activities, threat data, etc.

5.6.1   *The NCC system will not directly interface with actual command, control, and communications systems, other than the communication system used to link the NCC system workstations, but will simulate several such systems.*

5.6.2   *The NCC system requires safeguards to prevent intercept of data transmissions in exercises where sensitive information or approaches are employed (adapted from NTC-IS ORD[12]).*

5.7   Transportation and Basing

Describes the basing requirements and associated facilities.

5.7.1   *The centralized portion of the NCC system will be considered a fixed-site system.*

5.7.2   *Once installed at the centralized location, NCC system components are not anticipated to be moved frequently, so ease of transportability is not a key requirement for the centralized portion of the NCC system (adapted from NTC-IS ORD[12]).*

5.7.3   *Individual components of the NCC system must be transportable by air, ground, and rail to facilitate spares replenishment and return of failed system components for repair (adapted from NTC-IS ORD[12]).*

5.7.4   *Enhanced transportability of the NCC system to support the deployment of mobile exercise installations may be considered as a future requirement.*

5.7.5   Actual NCC system locations and delivery will be in accordance with the priorities established as part of the Program Management Plan (PMP) included in Appendix A of the NCC Strategic Plan.[10]

5.8   Standardization, Interoperability, and Commonality

Describes considerations for joint use; identifies procedural and technical interfaces and communications protocols and standards.

5.8.1   *The NCC system will be developed consistent with existing industry and formal standards to the extent that they are cost effective and appropriate for the intended use, and provided that they are not in conflict with specific NCC system requirements (adapted from Customs AIS Security Policy[8]).*

5.8.2   Any requirements for interoperability of the NCC system with other systems being used by law enforcement agencies, other agencies, or distance learning providers will be defined based on needs identified as the system is fielded to specific regional or satellite locations.

5.8.3   *Any interoperability with external systems must consider support of applicable and appropriate data security measures as they relate to interagency communications or interoperability (adapted from Customs AIS Security Policy[8]).*

5.8.4   *Use of copyrighted software will comply with copyright laws and license agreements (adapted from Customs AIS Security Policy[8]).*

5.9   Mapping, Charting, and Geodesy Support

Identifies cartographic materials, digital topographic data, and geodetic data need for system employment.

5.9.1   *The NCC system will use standard Geographic Information System (GIS) data and software to import and create, where necessary, 2D and 3D terrain databases as needed for the exercise environment (adapted from Scenario Description for NCC demo[5]).*

5.9.2   *Standard, commercially available data and software will be used to develop the required terrain representation capabilities, to the maximum extent possible consistent with achieving the objectives of the NCC system (adapted from Scenario Description for NCC demo[5]).*

5.9.3   *When standard products are unavailable, insufficient, or cost prohibitive, commercial 2D and 3D modeling tools will be used to generate or enhance the terrain to provide the required representation of key areas such as building, roads, obstacles, and vegetation (adapted from Scenario Description for NCC demo[5]).*

5.9.4   *Levels of terrain fidelity in the virtual environment will vary based on the exercise objectives (adapted from Scenario Description for NCC demo[5]).*

5.9.5   Any needs for incorporation of special GIS data (e.g., to represent sensor locations) will be determined based on specific exercise requirements or input from the participating LEAs.

5.10   Environmental Support

Identifies any requirements for weather support.

5.10.1   *Simulated weather conditions, controllable by the exercise controller, will be incorporated as appropriate into the exercises using the NCC system.*

5.10.2   *Real-time weather information is not anticipated to be required for NCC system exercises.*

5.10.3   Provision should be included for obtaining appropriate weather forecast information for a specific location and incorporating it into mission rehearsal scenarios. [This is not a Key Performance Parameter for Module 2.]

6.0   Force Structure

Estimates the number of systems or subsystems needed, including spares. Identifies units that will employ the systems being developed to satisfy this ORD.

6.1   General Force Structure Requirements

6.1.1   The NCC system will be installed in a centralized location as well as an undetermined number of regional and satellite locations.

6.1.2   Facility locations for the NCC System will be identified and prioritized as part of the Satellite Location Plan to be developed as identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

6.1.3   Specific configuration of workstations for each type of installation will be determined as part of the detailed specification process to be conducted by the system development contractor, in conjunction with the Life Cycle and Sustainment planning activity identified in Appendix A of the NCC Strategic Plan.[10]

6.1.4   The NCC system development contractor will maintain a developmental installation at their facility to allow them to test and evaluate system configuration issues and to provide assistance when necessary with resolution of operation and maintenance issues that may arise with field installations of the NCC system.

7.0   Schedule Considerations

Defines what actions, when complete, will constitute attainment of Initial and Full Operational Capability. If availability in a specific time frame is important, specifies an objective for initial operational capability.

7.1   General Schedule Requirements

7.1.1   *The NCC Program has adopted a development approach that provides incremental capability through the fielding of a phased series of progressively more capable versions of the system.*

7.1.2   Once development is completed on each phase or module of the NCC system, that version of the system will be turned over to the NCC for deployment and use.

7.1.3   This ORD will be updated for each succeeding version of the NCC system.

7.1.4   The schedule for development and deployment of the NCC system is to be developed as part of the planning and management activities identified in the strategic goals, objectives, and action directives included in Appendix A of the NCC Strategic Plan.[10]

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