Development of a Persistent Partner Simulation Network Capability

Ulf Jinnestrand,
Swedish Armed Forces
Stockholm, Sweden
ulf.jinnestrand@mil.se

ABSTRACT

This paper will present and cover what and why of a development possibly building a global reach and a cost-effective training capability for Forces transformation into Global Crises Response using a Persistent Partner Simulation Network.

The purpose of the new Persistent Partner Simulation Network (P2SN) would be to provide capabilities to P2SN partners in support of education and training. P2SN will also establish capability standards "In the spirit of U.S. Joint National Training Capability". Both these new concepts are based on the 1999 established Partnership for Peace (PfP) Simulation Network with all Lessons Identified and Learned in a number of related multinational events.

Using a building block approach, the end state of the developed P2SN Training and Simulation establishments in NATO/PfP will be represented in an event driven P2SN Capability including an established set of operational requirements and an established set of system specifications.

The existing PfP simulation network is a set of protocols, standards, and processes needed to create the infrastructure and technical elements required to support a distributed simulation exercise. The protocols and standards enable Partner nations to create the hardware and software suites needed to participate in or lead exercise events while the processes enable those Partners to quickly establish the required organization and communications network. The PfP simulation network continues to identify the nodes within Partner and NATO nations that have the requisite systems that enable their participation in a distributed simulation exercise. This information is then used as a fundamental building block of an exercise.

The primarily P2SN possible benefits identified are:
- Contributes to partners supporting real world coalitions.
- P2SN expose partners to the Joint National Training Capabilities and to the NATO Education Training Network standards.
- Improves the interoperability in the Education and Training arena needed to have a positive impact on forming coalitions for real world operations.
- Partnership sharing is within the framework of NATO/PfP.
- Building national capability.
- Enhancing military and interagency relationships.

A P2SN network architecture, as it develops, with identified "self supporting" Training & Simulation centres, can possibly be the centrepiece of the multinational arm of the Joint National Training Capability (JNTC) concept.

ABOUT THE AUTHOR

Ulf Jinnestrand is an acting Swedish Marine since 1980. He has served within the Amphibious Forces until 1996 when he established the Marines only Training and Simulation Center. 1997 he was assigned to the Swedish International Training Centre – SWEDINT and established the PSO Gaming Facility. In 1998 he designed together with the U.S. DoD, the build up of the NATO Partnership for Peace Simulation Network which proofed principles at the NATO Washington Summit together with the VIKING distributed computer assisted exercise in 1999 followed by a number of international exercises. In 2004 he was assigned to the Swedish Defence Wargaming Centre as the Head of concept development. Through his carrier, he has served during almost 4 years in various Crises Response Operations overseas in Middle East, Caucasus and the Balkans. He is today assigned to the Swedish Armed Forces headquarters and one of the developers of the new Persistent Partner Simulation Network Capacity.

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Swedish Armed Forces
Stockholm, Sweden
ulf.jinnestrand@mil.se

INRODUCTION

This paper will present and cover what and why of a development possibly building a global reach and a cost-effective training capability for Forces transformation in Crises response using a Persistent Partner Simulation Network.

This paper has no intent to be a program but will most certainly be used to support a future plan or program.

Background

In a June 1998 presentation to the Euro-Atlantic Partnership Council (EAPC), the United States (U.S.) Secretary of Defense advocated efforts to create a Partnership for Peace (PfP) cooperative security network that would enhance the conduct of PfP military exercises and cooperative defense education. During that timeframe the US Joint Forces Command and the Swedish Armed Forces were independently engaged in efforts to use distributed simulation and computer-assisted exercises (CAX) in support of PfP training. In the Spirit of Partnership for Peace, bi-lateral cooperation was developed to demonstrate a PfP Simulation Network. This effort was in the interest of both nations.

To that end, on 18 November 1998, the United States and the Government of the Kingdom of Sweden entered into a Memorandum of Understanding (MOU) for cooperation in the development and operation of a simulation network that would enhance PfP education and training and serve as a springboard for enhancing interoperability between NATO and the armed forces of the PfP nations.

The first major application of this MOU was a PfP Simulation Network demonstration conducted in conjunction with the North Atlantic Treaty Organization (NATO) Summit in Washington, D.C., in April 1999. During the Summit, Heads of State endorsed the PfP Training and Education Enhancement Program (TEEP). The TEEP is to provide a structured approach to optimize and improve training and education in the Partnership to meet current and future demands of an Enhanced and More Operational Partnership (EMOP), focusing specifically on the achievement of interoperability. The Allies have repeatedly endorsed the TEEP policy and there is a desire to assist the Partners in their training. It is widely understood that Partners will participate in NATO-led non-article 5 PfP operations, which might range from filling posts in headquarters which are in the direct chain of command up to and including a Combined Joint Task Force Headquarters (CJTF HQ).

The Partnership for Peace Simulation Network

There is a continuing need to assist Partners at all levels of training. The Partnership for Peace (PfP) Simulation Network referred to in the Washington Summit is a valid way to accomplish this. This network can focus on military command and staff training for NATO-led PfP operations and through computer assisted technologies and communications that link national or multinational staffs and remote site command posts. This will continue to enhance regional cooperation, partner interoperability, nation building and promote regional stability.

The PfP simulation network is a set of protocols, standards, and processes needed to create the infrastructure and technical elements required to support a distributed simulation exercise. The protocols and standards enable Partner nations to create the hardware and software suites needed to participate in or lead exercise events while the processes enable those Partners to quickly establish the required organization and communications network. The PfP simulation network continues to identify the nodes within Partner and NATO nations that have the requisite systems that enable their participation in a distributed simulation exercise. This information is then used as a fundamental building block of an exercise.

Since the demonstration at the Washington Summit 1999, the participants have executed and continue to plan a series of Viking exercises that will continue to "raise the bar" in complexity, scope, and level of participation in distributed simulation exercises. Other activities have included formation of a modeling and simulation working group within the PfP Consortium of Defense Academies and participation in the activities of the US Regional Security Cooperation Network Program in Europe.

The PSN capabilities architecture today consists of occasionally connected PfP training centers, operating procedures on how to plan and conduct PfP-type training in a distributed way, and experience of accomplishment, technical communication solutions, scenarios, experience of how to handle policy and security issues regarding international cooperation.

The VIKING Exercise Concept

The VIKING series of exercises are executed In the Spirit of Partnership for Peace (PfP), specifically aimed at enhancing the co-operation between international and fictitious domestic civilian organizations, police and military forces within Crisis Response Operations (CRO). VIKING series have been executed within the framework of a fictitious Peace Support Operations (PSO) in accordance with a UN-mandate "given" by the Security Council to the participants and as a Command Post Exercise (CPX) with support of a Computer Assisted Exercise (CAX) and distributed to different locations. All activities in the exercise are simulated through computers and/or role-played by the gaming personnel. All levels and participants can influence the ongoing process and game and therefore it's not a fully scripted game.

VIKING exercises concepts were developed when the first exercise was conducted in 1999. Concepts started out as a part of a Memorandum of Understanding (MOU) between the US and Sweden, with documents concerning co-operation in the development of the partnership simulation network. This MOU states, "The participants intend to conduct exercises to demonstrate how a simulation network can distribute training through both simulation and modeling." The concept has been further developed and with the completion of VIKING 08 the concept would have been conducted, enhanced and improved a total of five times.

In VIKING 05 the Swedish main site consisted of a nucleus CJTF HQ as part of the DISTAFF. One site comprised three different Component Commanders (Air, Land and Maritime). The brigade-level was also exercised as multinational units and in different sites throughout Europe. The exercise was orchestrated from Sweden with eleven sites in different levels and different locations within Sweden and Europe. Since the Operational Planning Procedures had to be fulfilled, the total time of the exercise cycle was two years.

Future CRO/PSO will require increasing co-operation and co-ordination among actors. The scope of Exercise VIKING 08 (VK 08) is to practice and exercise the procedures for operational/tactical planning and execution of doctrines related to the NATO Combined Joint Task Force (CJTF) Concept. The levels of Component Commands and Brigades (and equivalent levels of maritime Task Groups and Air Wings), will be the focus. The EU Battlegroup Concepts including its superior headquarters will be included in the scenario and exercised. An equally important part shall be the constructive co-operation and co-ordination between military units and civilian organizations and elements, with the UN in focus.

Exercise VK 08 shall mirror a UN mandated multinational Chapter VII CRO/PSO with an effect based approach in a complex environment, which shall require a joint military and civilian presence enabling NATO/PfP and EU participation. As well will one of, defined by NATO, the Contact Nations participate for the first time – Australia. The training platform will also enable Concept Development and Experimentation.

THE NEW PERSISTENT PSN

A Persistent Partner Simulation Network architecture, as it develops, with identified "self supporting" Partner training & simulation centres, can possibly be the centrepiece of the multinational arm of the Global Joint National Training Capability (JNTC) concept.

P2SN Purpose

The purpose of the new Persistent Partner Simulation Network (P2SN) would be to provide capabilities to P2SN partners in support of education and training. P2SN will also establish capability standards "In the spirit of Joint National Training Capability". The P2SN would contribute to partners supporting real world coalitions.

P2SN End State

Using a building block approach, the end state of the developed P2SN Training and Simulation establishments in NATO/PfP would be represented in an event driven P2SN Capability including an established set of operational requirements and an established set of system specifications. Partners share capabilities in support of Education and Training using JNTC standards.

P2SN Benefits

The main identified benefits for involved partners are:

1. Contributes to partners supporting real world coalitions.
2. P2SN expose partners to JNTC capabilities standards and to NATO Education Training Network standards.
3. Improves the interoperability in the Education and Training arena needed to have a positive impact on forming coalitions for real world operations.
4. Partnership sharing is within the framework of NATO/PfP and partner nations.
5. Building national capability.
6. Enhancing military and interagency relationships.

Responsibilities

Sweden and the United States
Sweden and the United States, in cooperation under the MOU, will provide program management and technical support for the P2SN. Joint Forces Commands in Sweden and the United States will coordinate with NATO and the U.S. unified combatant commands to leverage existing capabilities in support of P2SN standards.

Program Planning & Management
Sweden and the US will partner in the planning, design, coordination, procedure development, requirements analysis, conference chairing, system integration and other tasks associated with general P2SN program management.

Exercise and System Operations & Maintenance
The Swedish and US Joint Forces Commands will work towards partnering with other programs to establish low cost and available circuits that can support typical P2SN capability.

The Swedish and US Joint Forces Commands will provide technical assistance for exercise support. Included in this task are operations support, support in the establishment of communications and computer configurations, and modeling and simulation support.

The Swedish and US Joint Forces Commands will provide advice during planning and execution for supported P2SN exercises. Models, and Command, Control, Communications, Computers, and Information systems in supported exercises will be the responsibility of the lead nation. Sweden will provide the Technical Main Hub with systems supporting Exercise Control (EXCON) and Training audience (i.e., Command and Control, Simulation). It is the responsibility of the lead partner to provide resources not associated with the Technical Main Hub.

System Acquisition
It is necessary for Sweden and the US to invest an annual allotment in system development for the P2SN. Products may include modeling and simulation tailoring for PfP configurations, improved information systems in support of exercises, and information management systems such as digital libraries. These products will be used to support the expansion and modernization of the simulation network. Wherever possible, existing capabilities will be leveraged to reduce annual operating costs.

When necessary and on a case-by-case basis, the US and Sweden will host a partner becoming a P2SN member. This support will be in the form of seminars and workshops to build full partner capabilities linking to the P2SN.

Partners
The P2SN is designed to benefit partners with planning and execution of training events by providing resource library, lessons learned, Advanced Distance Learning (ADL), and a modeling and simulation standard.
Maintain the hardware and software capability to link to the P2SN.
Partners will provide national products or capabilities as value added to the P2SN.
Assume all Internet Service Provider (ISP) costs associated with linking to the P2SN on a daily basis.

Operations

P2SN consists of a number of services available to support Partner events when required and agreed. The main focus is to support and/or host Computer Assisted Exercises (CAX) In the Spirit of Partnership for Peace.

Sweden and U.S. invite partners to join P2SN using existing PSN standards and capabilities. The P2SN

operations are maintained and monitored by US JFCOM and Swedish Armed Forces, represented and supported by the Joint Warfighting Center and the Swedish Joint Training Centre.

In order to use the P2SN facilities and capabilities the following must be accomplished:

- Become a member of P2SN
- Sign Partner Technical Agreement (TA)

In order to use the P2SN facilities and capabilities for a specific event the following must be accomplished:

- Request by host and lead agent of a Partner Event including descriptions of P2SN support needed
- Planning Process involvement defining P2SN supporting parties
- Specific Partner Implementation Agreement signed to include share of costs, time and resources as well as Rules Of Engagement
- Execution and Evaluation of the Event including CAX lessons learned

P2SN Organization

The P2SN organization can be shown as follows:

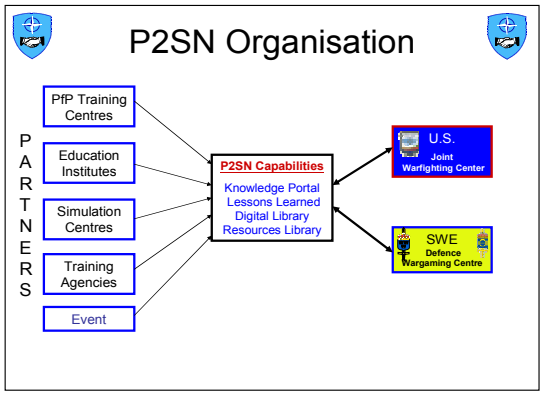

Figure 1, The possible organization of the Persistent Partner Simulation Network

Requirements to join P2SN

The key requirements to join or take part in P2SN as a partner site are:

- Become a member of P2SN
- The partner has signed the P2SN Technical Agreement (i.e. Annex B)

In order to join a case by case event site, the partner has to meet some minimum requirements:

- The partner must sign the Event Implementation Agreement
- The scenario has to contain a relation to Crises Management (for example CRO, Border Security, Humanitarian Assistance, Disaster Relief).
- Unclassified information sharing

Program elements

P2SN general elements are:

- An event driven capability to conduct a CAX
  - *standards*
  - *procedures*
  - *supportive tools (i.e. Common Operational, Picture, Information Management System)*
  - *simulation*
- A main knowledge portal
  - *Through the Multinational Joint Knowledge Development Distribution Capability (JKDDC)*
- Event driven exercise portals
- Available services of interest
  - *Scenario*
  - *Databases*
  - *ROE*
- Electronic Library
  - *References*
  - *Papers*
  - *Plans*
  - *Manuals*
- Lessons Learned database
  - *Exercises*
  - *Real world operations*
- Advanced Distributed Learning
  - *Available NATO/PfP Courses*
  - *Learning Management System*
  - *Electronic classrooms*

Figure 2, Overview of the P2SN possible elements

Resources

In the process of requesting a Partner Event, the lead agent and host should include a list of the perceived need of resources. During the process of establishing a Partner Implementation agreement, the participating Partners should agree upon a plan of who provides what part of the needed resources as well as under which circumstances these resources can be provided or not.
The share of costs is basically that each Partner is responsible for their own costs in regards to personnel and resources.

P2SN Framework architecture

The P2SN framework defines these three architectures:

Operational architecture
A description (often graphical) of the operational elements, assigned tasks, and information flows required to accomplish and support the warfighting function. It defines the type of information, the frequency of exchange, and what tasks are supported by these information exchanges.

Systems architecture
A description, including graphics, of the systems and interconnections providing for or supporting events. The systems architecture defines the physical connection, location, and identification of the key nodes, circuits, networks, event platforms, etc., and specifies system and component performance parameters. It is constructed to satisfy Operational Architecture requirements per standards defined in the Technical Architecture. The systems architecture shows how multiple systems within a subject area link and interoperates, and may describe the internal construction or operations of particular systems within the architecture.

Technical architecture
A minimal set of rules governing the arrangement, interaction, and interdependence of the parts or elements whose purpose is to ensure that a suite of systems satisfies a specified set of requirements. The technical architecture identifies the services, interfaces, standards, and their relationships. It provides the technical guidelines for implementation of systems upon which engineering specifications are based, common building blocks are built, and product lines are developed.

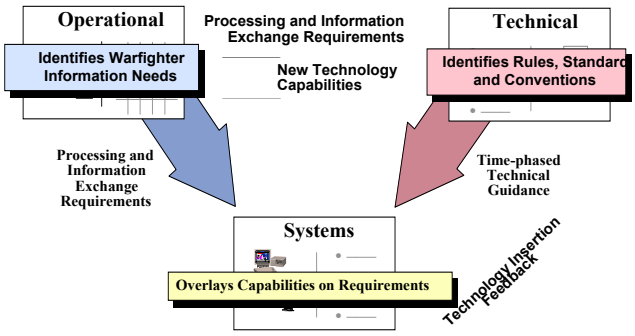

Figure 3, Relationship Among Operational, Technical, and Systems Architectures

WAY AHEAD

The P2SN Concept will be advertised and presented through VIKING 08 conferences and NATO/PfP forums or conferences. In addition, a P2SN Workshop should be executed before summer 2008 in order to get Partners' acceptance and the share of contribution to be identified. An approved Master Plan will initiate the implementation and VIKING 08 would be the first event to offer the new P2SN Capability.
The P2SN will possibly link to the Joint National Training Capability and will use the Joint Training Transformation Special Event at I/ITSEC and VIKING 08 (Nov 08) as proofs of principle supporting the JNTC IOC multinational, furthermore the 59th Anniversary of NATO will be used as a platform to demonstrate P2SN capabilities. The link will identify events as In the Spirit of Joint National Training Capability (ISOJ). Partners share capabilities in support of education and training using JNTC capabilities standards. The P2SN will contribute to partners supporting real world coalitions. The main implementation should be established with P2SN Core Sites/Partners before 2010.

SUMMARY AND CONCLUSIONS

The Persistent Partner Simulation Network (P2SN) should be defined in a Master Plan and will set forth the policies, programs, procedures, standards, training requirements and Plans of Actions and Milestones necessary to implement the Persistent Partner Simulation Network Capabilities. The concept should describe program resources including requirements, facilities, organization, architecture, technology, capabilities and available support. Within the process of establishing a Partner Implementation agreement, a plan for sharing costs that are directly related to the planned event should be developed and agreed upon.

The concept of the P2SN capacity would describe how to become a member, standards/capabilities and benefits to members. It translates the concept into specific actions and provides the framework for developing the operational and systems architectures for a demonstration at NATO Summit 2008 of a persistent concept for simulation and information technologies in support of Partner training and education. The demonstration will serve as a quick start activity providing lessons learned on leave-behind capabilities where possible. The first major event will be the exercise VIKING 08 in November 2008.

P2SN is comprised of nations/partners desiring to be part of the P2SN Capability. P2SN capability is designed for Multinational distributed Command Post Exercises/ Computer Assisted Exercises and designed to facilitate transformation, capabilities development and improve training and education within PfP. Sweden and U.S. will invite nations/partners to join the P2SN using existing P2SN standards/capabilities.

The 59th anniversary of the North Atlantic Treaty Organization (NATO) in Bucharest in April 2008 will be a fundamental driver for the development of the P2SN capacity. The occasion will affirm a new strategic concept and complete the accession of new members of the Alliance. A proposed initiative for the summit is to conduct, in collaboration with Partner nations, a demonstration of future combined joint training conducted on a distributed basis through electronic networks.

This development would enhance the building of a Global Security Operations and Training Capacity in order to transform Partner Forces taking part in Crises Response Operations world wide.

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