Federation Agreements
Observations, Considerations and Proposals out of the NATO MSG-052 Working Group

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Topics

• NATO RTO Organization Overview
• MSG-052 Federation Agreements Subgroup
• Federation Agreements Overview
• Information Model overlay to FEDEP
• Federation Agreements Structure
• Recommendations
NATO RTO Organization

Civil

North Atlantic Council (NAC)

NATO Civilian Organisation (CNAD)

- MAIN ARMAMENT GROUPS
- NIAG INDUSTRY
- Research & Technology Organisation

Military

MILITARY COMMITTEE

NATO Military Organisation
RTO Panels and Groups

- Applied Vehicle Technology (AVT)
- Human Factors & Medicine (HFM)
- Information Systems Technology (IST)
- System Analysis & Studies (SAS)
- Systems Concepts & Integration (SCI)
- Sensors & Electronics technology (SET)
- Modelling & Simulation Group (MSG)
The mission of the NMSG is to promote cooperation among Alliance bodies, NATO member nations and Partner nations to maximise the effective utilisation of M&S.

Primary mission areas include:

- **M&S standardisation**, education, and associated science and technology.
- The group will provide **M&S expertise** in support of the tasks and projects within the RTO and from other NATO bodies.
**MSG-052: Underlying Tenet**

**Problem:**
Knowledge of “good design” is gained through hands-on experience, trial-and-error and experimentation. This type of knowledge is, however, seldom reused and rarely shared in an effective manner.

**Approach:**
A "Community of Practice", consisting of federation development experts from NATO and NATO/PfP nations, to foster development of state-of-the-art federation architecture and design solutions, and provide a Knowledge Base for the M&S community as a whole.

Ref: 07F-SIW-024
MSG-052 Federation Agreements subgroup

- Subgroup tasked for Federation Agreements
  - Workshop prepared through CWE
  - 1st Workshop Feb 26th-28th 2007
  - Presentations by Germany, Netherlands, USA and France describing Federation Agreements viewpoints
  - Discussions and consensus building

- Results of the subgroup’s work are the subject of this presentation
Federation Agreements Overview

- Federation Agreements are an integral component of overall Federation Design and crucial to federation success (whether federation agreements are documented, implicit or ad-hoc).
- Federation Agreements serve to clarify expectations, constraints and responsibilities between members of a federation.
- Federation agreements exist throughout the federation lifecycle (particularly important for long-lived or re-used federations).
- Federation Design could be viewed from three perspectives: Logical, Functional, and Physical (discussed later).
Federation Design Perspectives

Three perspectives: Logical, Functional, and Physical*

- **Logical**: Includes Requirements, Objectives, Conceptual Model, Scenario, FOM. *Maps to steps 1, 2, 3, and 7*

- **Functional**: Maps the Logical activities in the scenario to the physical components (e.g. FOM Mapping to Federates). *Maps to steps 3, 4, 6 & 7*

- **Physical**: Description / Design of the physical aspects of a federation (e.g. Networks, Computers, Federates, RTI, tools, etc.) *Maps to steps 4 and 5*

![Diagram showing the steps of the process](image)

* Source: Jake Borah
Federation Agreement Roles

Logical:
- Operational Customer
  - Program manager
    - Federation customer, problem setter
  - Federation manager
    - Problem solver
- Federation user
  - Target audience
- Federation designer
- Federate designer
- Simulation designer
- Simulator operators
- SME operators
- Analyst / Evaluator <AAR>

Functional:
- S/W engineers
- Network engineer
- Network architect
Information Products

LOGICAL

Problem statements
Objectives
Requirements

FUNCTIONAL

FOM
Federate list
Scenario definition
Conceptual model
Scenarios to federate mapping
Middleware Services
Technology (HLA, DIS, TENA,...)
Coordinate system

PHYSICAL

TCP/IP
Firewall
Structured FAs allow stakeholders to:
- Understand/reuse FAs across federations
- Compare FAs across federations
- Use Automated tools to access FA repositories
- Check Completeness
Structured Federation Agreements

The “5 W’s design pattern” for FAs:

- What is agreed to (content)
- When is it applicable (moment in time)
- Who is affected by it (involved parties, federates)
- Where it applies (circumstances, conditions)
- Why this agreement was made (rationale)

EXAMPLE: Synced Local Time
- What: Federates will sync local clocks thru NTP
- When: Federate joins federation
- Who: All Federates
- Where: Always
- Why: local Logs should have synced timestamps

Are 5Ws sufficient?
Recommendations

MSG-052:
1. Gain consensus on FA Categories / Content
2. Gain consensus on compendium of information
   Information Model overlay to FEDEP (info products and stakeholders)
3. Exploit results through SISO and NMSG

SISO FEDEP PDG:
1. Establish Federation Agreement Guidelines
   i. Contents of Federation Agreements
   ii. Structure / Format of Federation Agreements
2. Identify clear delineation of reuse of FAs

Industry:
• Develop Federation Agreement management Tool
Questions / Discussion?
# MSG-052 Participants

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