NATO
OTAN

NATO
Consultation, Command and Control Agency

Distributed Networked Battle Labs (DNBL)

Briefing to NDIA

Meeting on 25th Oct. 2010

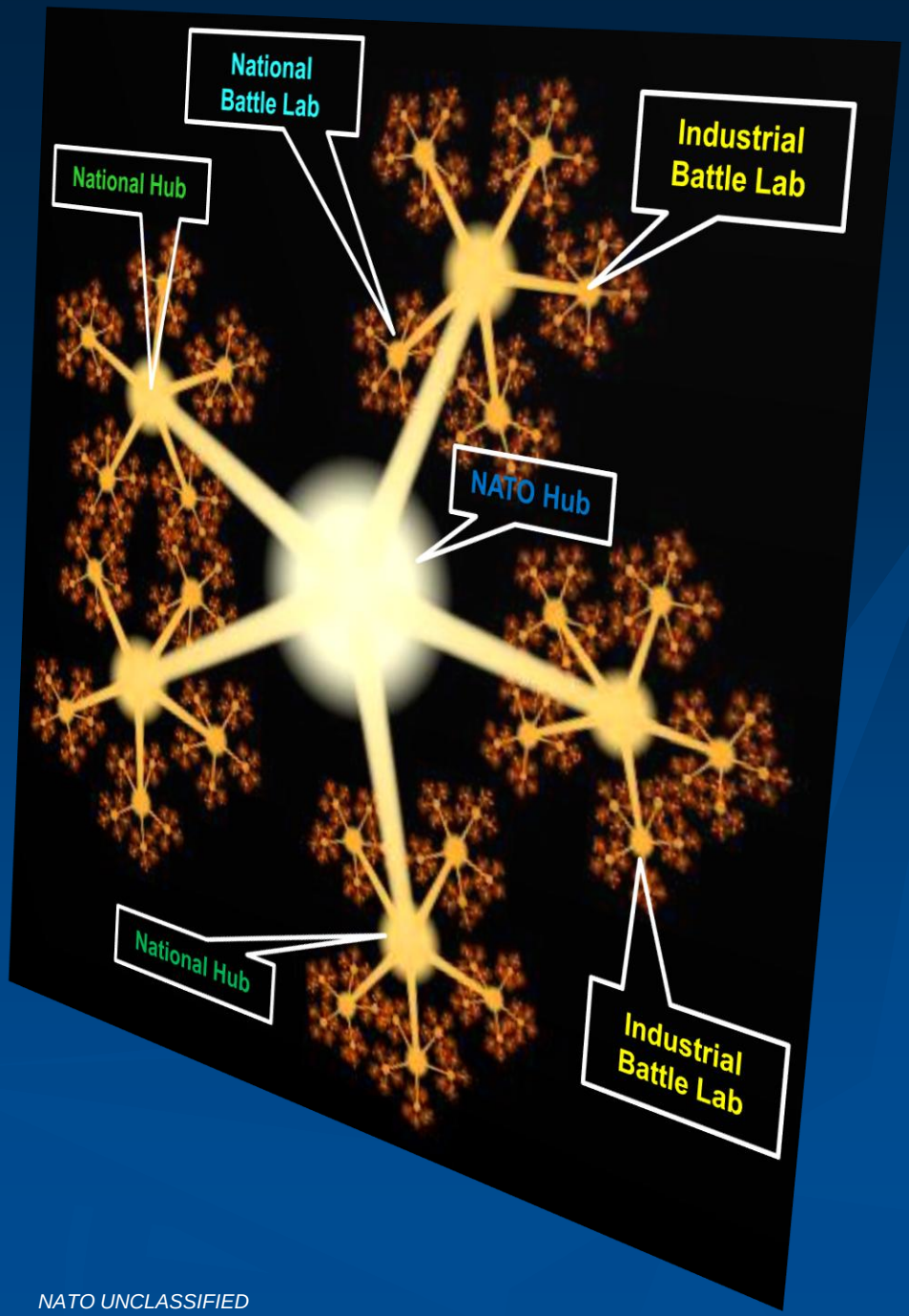
Michael Oberndorfner, Dr. Pascal Trouvé
NC3A / Battle Laboratory Services Team
pascal.trouve@nc3a.nato.int
Telephone: 31.70.374.3310

NATO C3 AGENCY

NATO
OTAN

Distributed Networked Battle Laboratories (DNBL)

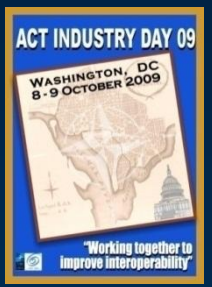
A Framework For Federation of Battle Labs



ALLIED COMMAND TRANSFORMATION

NATO C3 AGENCY

Overview



- **Initiative between ACT, NC3A, NIAG and Industry**
  - EADS, IABG, INDRA, SAIC, Selex, Thales
  - Nations involved in the Pilot Case (FRA, ITA, DEU,…)
  - Information to NC3Reps, NADReps
- **DNBL not a new lab/ reference facility**
  - Mechanism/framework for linking battle labs for NATO and nations' benefit
  - Integrates Industry into Concept Development and Experimentation process
  - Legal, procedural, security, and technical aspects
- **Leverages existing NATO, National and Industrial Battle Lab capabilities**

Motivation

- **For NATO:**
  - Compresses capability development cycle timescales
  - Improves effectiveness and interoperability of capabilities delivered to Operational Forces
  - Enables early adoption and implementation by Nations and Industries of NATO standards, and to benefit from best of the stream Industrial technologies and expertise
- **For Nations:**
  - Ensure coherency of their capabilities within NATO
  - Save cost, time, and risks management, in launching RFQs for implementation/compliance of/to NATO standards for their capabilities
- **For Industry:**
  - Access to real NATO data and systems, and gains knowledge of NATO standards / procedures
  - Increase technology reliability and to extend its applicability
  - Strengthen strategic positioning and anticipate competitive advantage in meeting military requirements

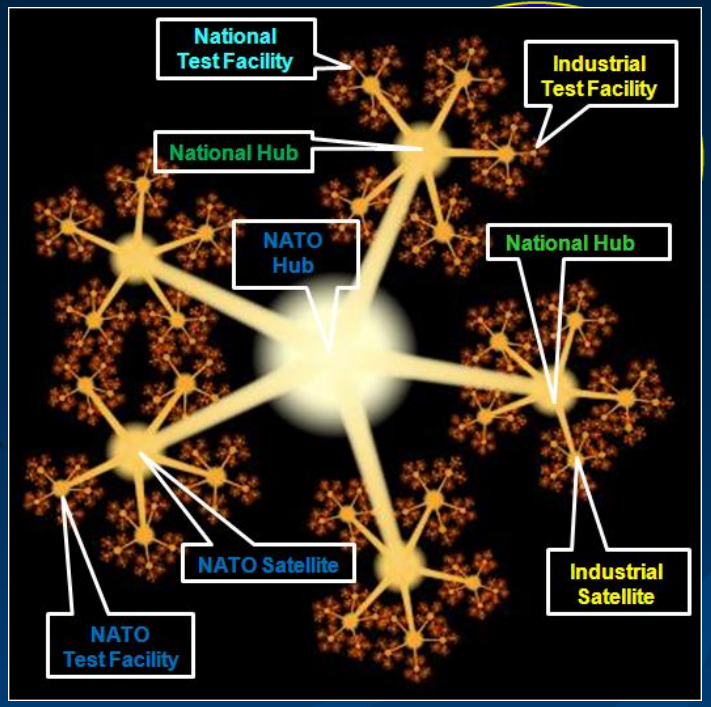
Expected benefits

1. **Improvement of the level of interoperability awareness and capability assurance by networking of NATO, National, Industrial or academic laboratories and experts**

2. **Speed up the introduction, experimentation, verification and validation of new CONOPs, TTPs, standards, architecture design, implementations, systems, technologies, and thus compress capability engineering cycles**

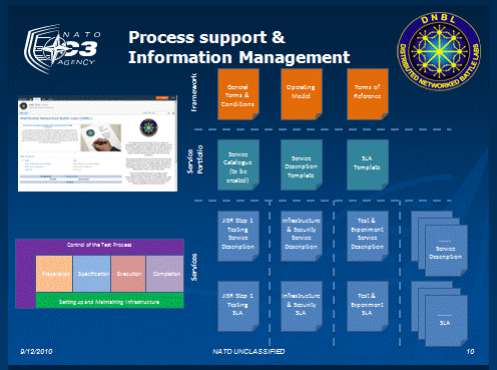
3. **Increase the NNEC level of adoption and coverage, or operational fidelity, by completing the Federation-of-System testing capability, by making better use of existing facilities and knowledge across NATO, Nations, and Partners**

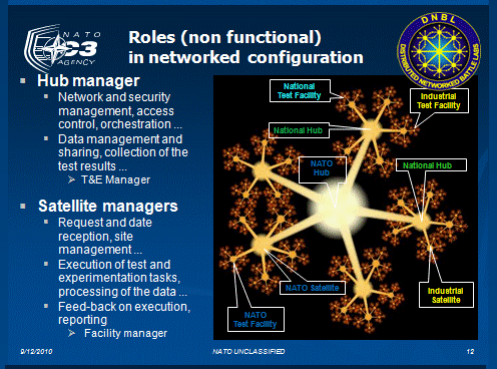
Framework views

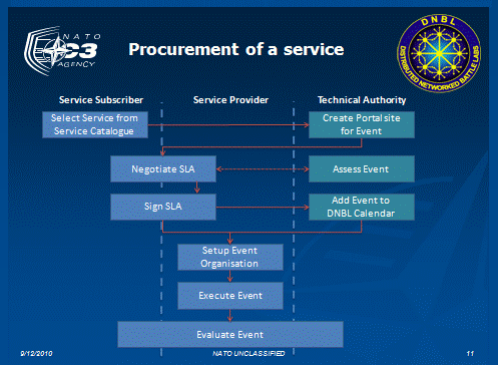


- **Management**
  - Executive board, Advisory Group,
  - DNBL Technical Authority
  - DNBL events: T&E Manager, Hub operator, Satellite cap.
- **Architecture**
  - Federation of Battle Labs Services
  - Clusters around NATO and National Hubs
- **User communities**
  - NATO, Nations, Industry, Academia
  - Support CD&E, Acquisition processes, NATO exercises, National exercises, multilateral events
- **Legal framework**
  - DNBL General Terms and Conditions
  - Service Level Agreement
- **Orchestration**
  - Common processes for distributed Experimentation, Testing, Verification and Validation
  - Minimum set of core services, each node services catalogue will develop over time
- **Network infrastructure , cross-domain security management**
  - Combined Federated Battle Laboratories Network (CFBLNet), VPN...
  - Public, Private, NATO Unclassified/Restricted/Secret...

Phase 1: business model and documentation baseline

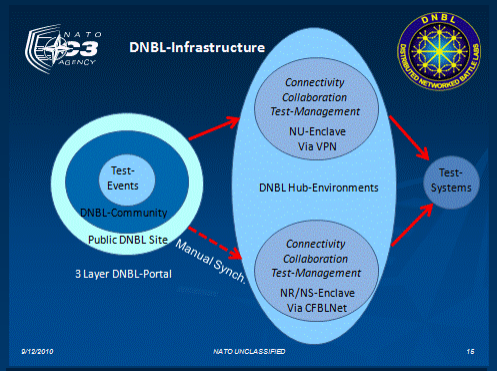


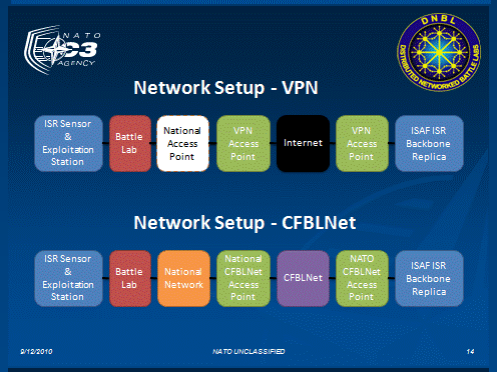


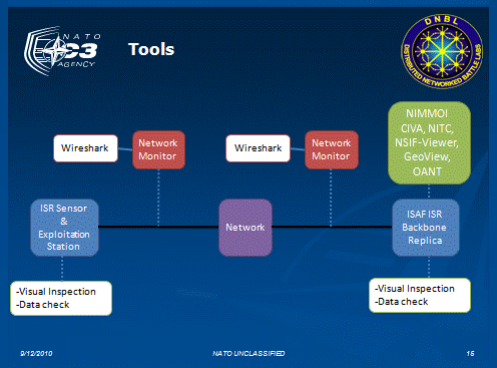


- **Testing as a Service**
  - Service description and SLA concepts
  - Event manager (any test sponsor, 1 of the 4 management authorities: TA, OA, SPA, IA)
  - Test & Experimentation manager
    - Test planning, tasks allocation, resource and risks management
    - Data preparation, configuration management
    - Execution monitoring of technical/system/operational scenarii
    - Results collation, assessment and reporting
  - Facility/Satellite managers
    - Service supplier, lab/site management ...
    - Execution of test and experimentation tasks
    - Processing of the data, feed-back on execution, reporting
  - Hub manager
    - Network and security management, access control, orchestration
    - Data management and sharing, collection of the test results ...
- **Process design**
  - Legal framework
  - Application as a DNBL member
  - Procurement of a service
  - Basic testing process

Phase 2: JISR experiments and infrastructure concepts







- **JISR/FMV step 1 testing**
  - Validation of Phase 1 concepts
  - Pre-deployment interoperability verification with national assets
  - Bi-lateral experiments run with FRA, ITA, DEU, soon with SWE, GBR
  - In parallel of SWE cooperation on networking battle labs and preparation of NFFI testing
  - And in parallel of CIAV WG Phase 1
  - Gained experience in setting test configuration within 2 days
  - Proved feasibility and effectiveness of DNBL approach, but not yet full efficiency of operating model
- **Network infrastructure**
  - CFBLNet enclaves or VPN
  - Single security domain (NU or NS)
  - Need to facilitate network discovery and monitoring during exercises
  - Need for more tools in support of the experimentation
- **Portal upgrade**
  - Increase information sharing
  - Need to manage communities around each event

Partial demonstration of initial DNBL concepts

Notional JISR Testing

National Assets
Live & Recorded Data

National
ISR System

NC3A Hub

Combined Federated Battle Laboratory Network
or
NU Virtual Private Network

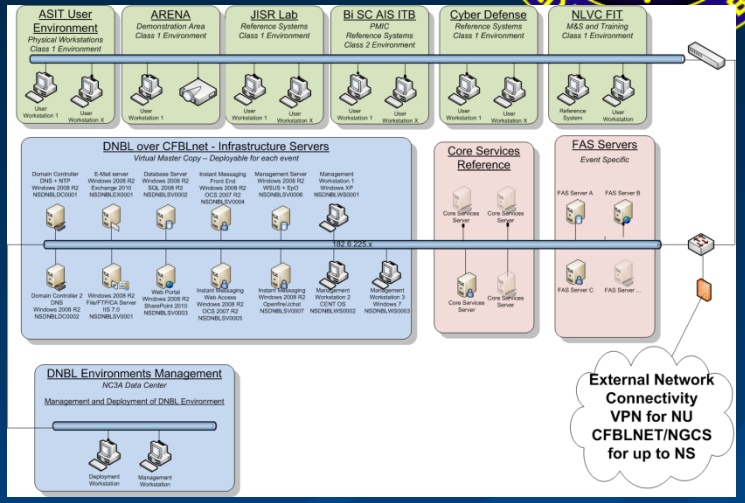
Supporting Documentation
Detailed Service Descriptions and SLAs

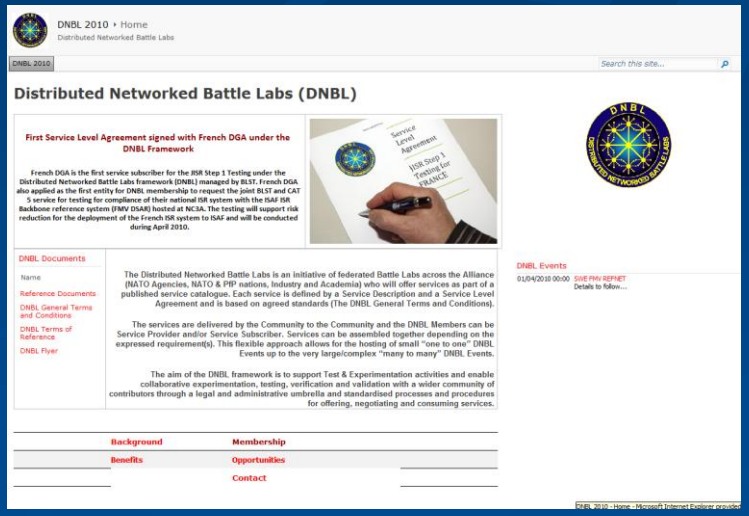
ISAF ISR Backbone Reference Facility
Compliance of Still Image, Full Motion Video, Ground Moving Target Standards and ISR Management Mechanisms

Distributed Networked Battle Lab

Phase 3: DNBL hub capability and support to exercises

- **A secured environment to run experimentations**
  - *Within NATO, Nations, Missions*
  - *With Industry and Academia*
  - *A means to collaborate and to raise trust between partners*
- **A virtual lab environment:**
  - *A means to capitalize*
    - *On test data, scenarii, results*
    - *On common processes*
    - *On sharing information and building knowledge*
  - *Over NU, NR and NS*
  - *Connected to the NC3A Labs and Data Centres*
  - *Scalable*
- **Managed collaborative space:**
  - Support desk
  - In configuration





DNBL Portal: https://dnbl.nc3a.nato.int


CWIX
NCSA
Industry
Combined Federated Battle Lab
CFBL
DNBL
DISTRIBUTED NETWORKED BATTLE LABS
Coalition Interoperability Assurance & Validation
CIAV
AFGHAN MISSION NETWORK
NATO C3 AGENCY
MAJIIC

Share to win

"The most essential force multiplier the Alliance can contribute is its ability to strengthen interoperability. ACT will continue to focus on advancing economical and technical solutions, like the 'network of battlelabs', that enhance the interoperability of the Alliance's forces across all functional domains."

Gen. S. Abrial, SACT
2 Dec. 2009

CONTACTING NC3A

NC3A Brussels

Visiting address:

Bâtiment Z
Avenue du Bourget 140
B-1110 Brussels
Telephone +32 (0)2 7074111
Fax +32 (0)2 7078770

Postal address:

NATO C3 Agency
Boulevard Leopold III
B-1110 Brussels - Belgium

NC3A The Hague

Visiting address:

Oude Waalsdorperweg 61
2597 AK The Hague

Telephone +31 (0)70 3743000
Fax +31 (0)70 3743239

Postal address:

NATO C3 Agency
P.O. Box 174
2501 CD The Hague
The Netherlands