DCIS Cube 2.0

Paving the Way for the Future NATO ICT....

Marc van Selm – NCI Agency / SSTRAT / Service Engineering and Architecture
NCI Agency’s role in DCIS

- Mission: serving the Alliance through unbiased application of scientific and full technical life-cycle support to communications infrastructure services that connect NATO static and deployed forces.

- NATO R&D and procurement agent for the DCIS Capability Package:
  - Command and Control capabilities to support the operational command level of NATO led operations
  - NCI Agency DCIS Service provider, with NATO CIS Group manning and deploying the capability
  - Federated Mission Networking (FMN) compliant
  - Design/procurement of emerging DCIS generations
Objective:
A DCIS capability that enables the enhanced NATO Reaction Force (eNRF) and VJTF commanders to:

• effectively execute the designated operations,
• operate in an highly dynamic environment,
• including NATO, Nations and coalition partners.

Challenge:
The current DCIS capabilities are:
• too heavy in weight
• too manpower intensive to support
• too complex and time intensive to configure
• not modular enough and
• too expensive to maintain and operate.

Approach:
At NITEC 2017 NCI Agency issued an open call to industry to participate and contribute to the DCIS Cube Initiative
• 12 Companies actively participated, 3 more provided indirect support
DCIS Cube 1.0, outcome

**Deliverable** - Architecture describing:
- software defined CIS
- automated & orchestrated IaaS
- virtualized across the OSI stack
- using converged and virtualized architectures
- using a hardware and software agnostic approach
- compatible with existing DCIS at service level

**Validation** - Prototype validation based on:
- 9 prototypes
- covering 20 criteria

**Publications:**
- Whitepaper (on dcis-cube.org)
- DCIS Cube Architecture Model in ArchiMate
- Architecture Definition Document available to NATO, Nations and Industry

**Implementation** - Small steps at a time:
- IFB-CO-14760-FIREFLY (NOI submitted 8 June 2018) seeks conformance with the design principles conveyed by the DCIS Cube Architecture Definition Document version 1.0
Partners in DCIS Cube 1.0 Architecting Initiative
Partners in DCIS Cube 2.0 Architecting Initiative
DCIS Cube 2.0 - Focus areas

DCIS Cube 2.0 addresses 5 Focus Areas not covered by DCIS Cube 1.0:

• Connecting the Cube
  • SATCOM and terrestrial wireless connecting deployable CIS
  • Connectivity and mobility

• The software factory as the collaboration space
  • Covering the full lifecycle, from development to service deployment,
  • Including services, service blueprints and image lib.
  • Including validation and verification

• End-to-end Service/Data centric view
  • Covering deployable and static CIS in support of NATO operations

• how NATO software and data connects through the transport, to the client?
• Backup and disaster recovery
• Archiving

• Smart and agile (user) terminals / end-user systems
  • User and administration requirements
  • How would a user access the CIS?
  • How would we administer this?
  • What is needed, what is feasible, what is the service model?
  • Mobility

• Security
  • Guide other focus areas considering what happens if…?
  • identify constraints
  • Address multilayer encryption, access controls (including for the terminals), Protection of data
DCIS Cube 2.0 Battle Rhythm and Outcome

• 4 Meetings so far:
  • 30 November 2018
  • 21 February 2019
  • 20 March 2019
  • 9 May 2019

• Outcome so far:
  • 23 active participating companies
  • Definition of the focus areas
  • Definition of the concerns to be addressed
  • Outlines of building blocks for further definition

Expected outcome by Q1 2020:
• The DCIS Cube 2.0 architecture as an enabler for agile end-to-end CIS when and where NATO deployment needs it
• Understanding how innovations in communications, DevOps and the Software Factory, data delivery and protection and end-user systems can support NATO DCIS
• Modelled in ArchiMate
• Architecture Definition Document published and available for NATO, NATO Nations and Industry
Connecting the Cube

• Building Blocks:
  • Path between deployable end systems
  • Transport building block
  • Interfaces
• Specializations for each type of transport
• Focus on the definition of:
  • Services
  • Functions
  • Interfaces
  • Constraints
  • Usage & Implementation patterns

Under development through DCIS Cube 2.0 architecting initiative
The software factory as the collaboration space

How can we use the Software Factory for Deployable Services DevOps?

• We are considering industry best practice
• Incorporating orchestration and automation to the maximum extent
• Including federated requirements capturing, architecting, V&V and deployment
• Considering the constraints of deployed operations, such as disadvantaged communications and limited expertise in theatre.

Under development through DCIS Cube 2.0 architecting initiative
End-to-end Service/Data centric view

- Services and functionality to ensure:
  - Availability of data where and when it is required
  - Data migration, copying, caching, storage and access optimization
  - Protection of data
  - Archiving
  - Efficient ingress and exploitation of data from a wide variety of data sources

Under development through DCIS Cube 2.0 architecting initiative
Smart and agile (user) terminals / end-user systems

• We envision:
  • User devices such as hardened handhelds / tablets
  • Different more efficient power sources
  • Universal access to the security domain where the information resides that is required for the job
  • Near zero maintenance

Under development through DCIS Cube 2.0 architecting initiative
Security

• Security by design
• Considering what if...?
  • Using realistic scenarios and using skills an adversary would employ (think as a hacker)
• Multi-tenancy
• Multi-level secure clients

Under development through DCIS Cube 2.0 architecting initiative
DCIS Cube 2.0

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