An Integrated Architectural Approach in the C3I domain

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Topics

- Why Integrated Architectural Approach
- Integrated Architecture Framework + Cap Gemini's AD methods and IEEE 1003.23
- C3I-Integrated Architectural Approach
- C3I-Information Systems Framework, concepts
Why Integrated Architectural Approach

For a thing to operate as one system, it must be designed as one system.

Architecture is a prerequisite of design.
Integrated Architecture Framework

Focus area | Elements addressed
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Conceptual | What is required
Logical | How can it be realised
Physical | With what will it be realised

Architecture Areas
- Conceptual (What)
- Logical (How)
- Physical (With What)

Governance
- Security

Major Architecture Areas
- Business Information
- Information Systems
- Technology Infrastructure

Focus area | Elements addressed
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Conceptual (What) | Description of the problem
Logical (How) | A stable design of the solution
Physical (With What) | The possible realisation at this moment

Architecture Principles Guide
- Business & Environment Architectures
- Architectural Design - Distributed Information Systems
- Architectural Design - Technology Infrastructure

AD-GOV
- Architectural Design - Governance
- Architectural Design - Security

AD-DSE
- Architectural Design - Distributed Secure Environments
- Architectural Design - Governance

AD5606
- Developing User Organization Open Systems Environment (OSE) Profiles

IEEE 1003.23
- Developing User Organization Open Systems Environment (OSE) Profiles
Joint architecture teams

Client: Knowledge of their Business

Architects: Architecture knowledge (B/I/IS/IT/SEC/GOV)

Experts: The required architecture Specific Knowledge

Iterate

Standards: Specification 1
Guidelines: Specification 1
Component x:
Specification 1
Specification 2
Specification 3

Security
Governance
Technology
Infrastructure
Information
Systems
Knowledge
Business
Royal Netherlands Army - C3I
Command, Control, Communication & Information Architecture

For an organisation to operate as one system, it must be designed as one system.
C3I Architectural Design - Conditions

- Defence Information Architecture
- Defence-ICT Security Architecture
- (Inter)national interoperability
- COTS
- Modularity
- “Train as you fight”
- Operational User

Toshiba Laptops  |  Microsoft Components  |  Windows-NT  |  Oracle RDBMS

Organisational Modularity  |  System Modularity  |  Infrastructural Modularity

Using the same systems and functionality in operations and standard activities
C3I Conceptual Architecture: LEGO Concept
Integration of business components, supplied by C3I project teams or 3’th parties.

=> based on rules, interface-specs and templates.

=> condition: without recompilation of applications.

Delivery of reusable components

=> to accelerate the development program.

=> to force rules and consistency.

=> also to be used by other projects (remark: make/buy).
Information Systems architecture
Example: Client Application framework

Client
Presentation

Domain Logic

Object Services
Notific. service

Map object
Zulu clock
Error/logging
Components in object model

Framework

Reusable components

Business Object component
made in project

Kernel application

Business Object component
made by 3' party

DB-Archive: Object/DB map

Messaging
ODBC interface

ODBC interface

Notific. service

Domain Logic

Object Services

Presentation

Client
Example Desktop integration: add-ins

- defines menu interface
- defines toolbox interface
- identification of overlay
- mouse actions are routed to add-in component
- Add-in components defines C2 functionality
Conclusion: Integrated Architectural Approach Results:

From: individual 'legacy' (Stovepipe) Systems

To: Providing Interoperable (COTS) Functions & Services

Anywhere, Anytime, Any Mission