1. About NCA

2. Works on Enterprise Architecture


4. Comparison with TOGAF

5. Future Work
Established in 1987 by the Law of Information Technology and Service Promotion

Mission

- IT Standardization
- Information System’s Audit
- IT Consulting Services for the Public Sector
- Construction of e-Government in Korea
- Supporting project for construction and services for Information system

Joined The Open Group in July, 2001
- Silver : Forum buy-out member
Works on IT Architecture

- IT Architecture Project for 5 years (1999-2001)
  - 1999
    - Survey on IT Architecture
    - Research on IT Standard Profile
  - 2000
    - Development of IT Technical Reference Model
  - 2001
    - Research on measurement of Interoperability levels for Information Systems
    - Promotion plan for IT Architecture
    - Development of Standard Profile Provider
  - 2002
    - Technical Standard on interoperability for public IT project
    - Case studies on e-Government interoperability policy
    - Study on reformation of Government CIO policy
  - 2003
    - Government-wide Enterprise Architecture Framework
Terminology

? Architecture

- Architecture is the structure of components, their interrelationship, and the principles and guidelines governing their design and evolution over time [Webster Dictionary]

? Framework


? Government-wide Enterprise Architecture Framework

- A logical structure for arranging and classifying components and their interrelationship to develop governmentwide-level Enterprise Architecture
Factors considered for developing GEAF

- Characteristics of IT projects for public sector
- Support for entire SDLC?
- Single or Multi-Organization?

Integration & Interoperability Among Public IT projects
Overview of GEAF

**EA Direction**
- Legislation & Guidance
- Enterprise Requirement
- Architecture Principle
- EA Strategy

**EA Activity**
- Architecture Model
- Life Cycle
- Plan
- Control & Oversee
- Develop
- Use
- Maintain

**EA Product**
- Architecture Product
- Supporting Product

**Supporting Product**
- BRM
- LISI
- CPIC
- DRM
- Maturity Model

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### EA Direction (1/2)

<table>
<thead>
<tr>
<th>Legislation &amp; Guidance</th>
<th>A statement governing the development, implementation, and maintenance of the enterprise architecture with the government-wide level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise Requirement</td>
<td>Enterprise-wide (government-wide) requirement to fulfill EA Strategy</td>
</tr>
<tr>
<td>Architecture Principle</td>
<td>A statement of preferred directions or practice. Principles constitute the rules, constraints, and behaviors that a bureau will abide by in its daily activities over a long period of time</td>
</tr>
<tr>
<td>EA Strategy</td>
<td>Enterprise Transition Strategy – Approaches for transitioning an enterprise from its current business processes to the target business processes using IT support</td>
</tr>
</tbody>
</table>
## GEAF of NCA (5/12)

### EA Direction (2/2)

<table>
<thead>
<tr>
<th>PGFEA</th>
<th>TEAF</th>
<th>C4ISR/AF</th>
<th>GEAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA Policies and Guidelines</td>
<td>Direction for EA</td>
<td>N.A.</td>
<td>Legislation &amp; Guidance</td>
</tr>
<tr>
<td></td>
<td>Direction for TEAF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Vision, Requirement and</td>
<td>Vision &amp; Mission Statement</td>
<td>Guidance (Architecture Use)</td>
<td>EA Strategy</td>
</tr>
<tr>
<td>Practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic Plan</td>
<td>Strategic Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- EA</td>
<td>Enterprise Responsibility</td>
<td>Guidance (Determination of EA</td>
<td>Architecture Principle</td>
</tr>
<tr>
<td>- Enterprise</td>
<td></td>
<td>Scope)</td>
<td></td>
</tr>
<tr>
<td>Business Need</td>
<td>Enterprise Requirement</td>
<td>N.A.</td>
<td>Enterprise Requirement</td>
</tr>
</tbody>
</table>
GEAF of NCA (6/12)

Architecture Model (1/3)

<table>
<thead>
<tr>
<th>Role</th>
<th>Data</th>
<th>Function</th>
<th>Organization</th>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planner</td>
<td></td>
<td>Defines the type of information needed to perform integrated business process</td>
<td>Defines how enterprise-wide business process is performed</td>
<td>Defines on vision, mission statement, business activities, operating principles</td>
</tr>
<tr>
<td>Owner</td>
<td></td>
<td>Defines on infra-systems to build integrated system and each technical component</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td></td>
<td>Defines interoperability among entity and process in architecture built with owner's view</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designer</td>
<td></td>
<td>Arranges Developer view's working products which determine data types and functions with designer view's working products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developer</td>
<td></td>
<td>Defines working products which specify information technologies, applications and programming languages according to constraints of Developers' working products such as database and applications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Architecture View]  [Architecture Perspective]
GEAF of NCA (7/12)

**Architecture Model (2/3)**
- Comparison with other frameworks

<table>
<thead>
<tr>
<th>Zachman Framework</th>
<th>C4ISR/AF (SBA)</th>
<th>FEAF</th>
<th>TEAF</th>
<th>GEAF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data</strong></td>
<td>Business</td>
<td></td>
<td></td>
<td>Business</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Business</td>
<td>Function</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>Data</td>
<td>Information</td>
<td>Data</td>
<td></td>
</tr>
<tr>
<td><strong>People</strong></td>
<td>Application</td>
<td>Organization</td>
<td>Application</td>
<td></td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>Technical</td>
<td>Infrastructure</td>
<td>Infrastructure</td>
<td></td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Architecture Model (3/3)

- Comparison with other frameworks

<table>
<thead>
<tr>
<th>Zachman</th>
<th>C4ISR/AF</th>
<th>FEAF</th>
<th>TEAF</th>
<th>GEAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planner</td>
<td>Planner</td>
<td>Planner</td>
<td>Planner</td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td>Owner</td>
<td>Owner</td>
<td>Owner</td>
<td></td>
</tr>
<tr>
<td>Designer</td>
<td>Designer</td>
<td>Designer</td>
<td>Designer</td>
<td></td>
</tr>
<tr>
<td>Builder</td>
<td>Builder</td>
<td>Builder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-Contractor</td>
<td>Sub-Contractor</td>
<td>Builder</td>
<td>Builder</td>
<td></td>
</tr>
<tr>
<td>(Functioning System)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- N.A. indicates not applicable.
GEAF Life Cycle (1/3)

• Plan
• Control & Oversee
• Develop
• Use
• Maintain

GEAF of NCA (9/12)
GEAF of NCA (10/12)

GEAF Life Cycle (2/3)
- GEAF Governance Structure

CEO

Business Line Organization
- Domain Owner
- Subject Matter Expert

EA executive Steering Committee
- Capital Investment Council
- Technical Review Committee

IT Organization
- CIO
  - EA Program Management Office
    - Chief Architect
    - Architect Core Team
# GEAF Life Cycle (3/3)
- Comparison with other frameworks

<table>
<thead>
<tr>
<th>PGFEA (FEAF)</th>
<th>TEAF</th>
<th>TOGAF(SBA)</th>
<th>EAP</th>
<th>GEAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain Executive Buy-in and Support</td>
<td>Strategic Planning</td>
<td>Architecture Vision</td>
<td>Architecture Planning</td>
<td>Plan</td>
</tr>
<tr>
<td>Establish Management Structure and Control</td>
<td>Enterprise Engineering</td>
<td>Business Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Define an Architecture Process and Approach</td>
<td>Information System Architecture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building the Baseline &amp; Target Architecture</td>
<td>Enterprise Planning</td>
<td>Technology Architecture Opportunities &amp; Solutions</td>
<td>Business Modeling</td>
<td>Develop</td>
</tr>
<tr>
<td>Sequencing Plan</td>
<td></td>
<td>Migration planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approve, Publish, and Disseminate the EA Products</td>
<td>Project Execution</td>
<td>Architecture Management Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use the IT Architecture</td>
<td>Enterprise Integration</td>
<td></td>
<td></td>
<td>Use</td>
</tr>
<tr>
<td>Maintain the IT Architecture</td>
<td>Operations</td>
<td></td>
<td></td>
<td>Maintain</td>
</tr>
<tr>
<td>Continuously Control and Oversee the Enterprise Architecture Program</td>
<td>Management Oversight</td>
<td></td>
<td></td>
<td>Control &amp; Oversee</td>
</tr>
<tr>
<td></td>
<td>Technical Oversight</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
? Architecture vs. Supporting Work Products

- Architecture products

Essential work products are required to be produced for an enterprise. These generally present the broadest perspective of the enterprise.

- Supporting products

Supporting work products generally provide more depth or more specialized perspectives of the enterprise.
Comparison with TOGAF (1/9)

Architectural Development Method

- **TRM** (services taxonomy)
- **SIB** (standards)
- **BBIB** (arch. building blocks)

Resource Base

**Target Architectures**

**TOGAF**

**GEAF**

Legislation & Guidance

Enterprise Requirement

Architecture Principle

EA Strategy

Architecture Model

Life Cycle

- Plan
- Use
- Develop
- Control & Operate

Architecture Product

Supporting Product

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Comparison with TOGAF (2/9)

Target Architectures

Architecture Development Method

Resource Base

TOGAF

TRM (services taxonomy)

SIB (standards)

BBIB (arch. building blocks)

Target Architectures (EA Products)

Architecture Development Method to be Improved

Resource Base

GEAF

TRM of NCA (services taxonomy)

KSPP (standards)

BBIB to be Specified

Develop

Plan

C & O

Use

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Comparison with TOGAF(3/9)

TRM of GEAF(1/2)

- Technical Reference Model
  - Identifies and describes the information services
  - used throughout organizations

- References for GEAF’s TRM
  - TRM of The Open Group
  - ITSG (Information Technology Standards Guidance) of DoD
  - OSE(Open System Environment) Reference Model of IEEE
Comparison with TOGAF(4/9)

TRM of GEAF(2/2)

Application
- Integration Application
- Individual Application

- Communication Infrastructure
- Communication Protocol
- Application Environment
- Data Management
- Data Exchange
- Platform

Security Management
- Software Management
- Hardware Management
- Etc.
- Security Architecture
- System Security Management
- Authentication
- Access Control
- Confidentiality
- Non-repudiation
- Transparency
- System Availability
- Security Labeling
- Etc.

- Database
  - Data Classification
  - Searching
  - Etc.
- Data Definition
  - Data Format
  - Data Flow
  - Etc.

- Hardware Platform
  - Software Platform
  - Distributed Environment
  - Etc.
Comparison with TOGAF(5/9)

Standard Profile of GEAF

Search Result

- ID
- Title
- TRM Category
- Organization
- Search Frequency
Comparison with TOGAF(6/9)

EA Direction
## Comparison with TOGAF(7/9)

### Architecture Model

<table>
<thead>
<tr>
<th>GEAF</th>
<th>TOGAF Ver 8.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planner</td>
<td>User, Planner, Business Manager</td>
</tr>
<tr>
<td>Owner</td>
<td>Planner, Business Manager</td>
</tr>
<tr>
<td>Designer</td>
<td>DataBase Designers and Administrators, System Engineer</td>
</tr>
<tr>
<td>Developer</td>
<td>System/Software Engineers</td>
</tr>
<tr>
<td></td>
<td>Acquirers, Operators, Administrators &amp; Managers</td>
</tr>
</tbody>
</table>
## Comparison with TOGAF(8/9)

### Life Cycle

<table>
<thead>
<tr>
<th>TOGAF Ver 8.0</th>
<th>GEAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture Vision</td>
<td>Plan</td>
</tr>
<tr>
<td>Business Architecture</td>
<td></td>
</tr>
<tr>
<td>Information System Architecture</td>
<td></td>
</tr>
<tr>
<td>Technology Architecture</td>
<td></td>
</tr>
<tr>
<td>Opportunities &amp; Solutions</td>
<td>Develop</td>
</tr>
<tr>
<td>Migration planning</td>
<td></td>
</tr>
<tr>
<td>Implementation Governance</td>
<td></td>
</tr>
<tr>
<td>Architecture Change Management</td>
<td>Maintain</td>
</tr>
<tr>
<td></td>
<td>Control &amp; Oversee</td>
</tr>
</tbody>
</table>
Comparison with TOGAF(9/9)

**Working Products & Building Blocks**

**TOGAF :**
- has detailed and specified working products according to developing processes in ADM
- shows changes & updates of working products as process flows
- shows various kind of Building Block such as ADML...

**GEAF :**
- only giving definition statement of Building Blocks and Working Products.
- not clearly demonstrating naming of detailed Building Blocks and Working Products.

**Characteristics of Public Sector's IT project in Korea**
- BB and Working Products are not clearly defined
- IT Outsourcing Industries' demand
Future Work

? “TOGAF” as TTA Standard for private IT Sectors
   * TTA : Telecommunications Technology Association

? “GEAF” as TTA Standard for public IT Sectors

? Development of ADM & BBIB for GEAF
   ❑ Methodology is more important
   ❑ TOGAF as reference for GEAF
   ❑ Utilization of TOGAF results and following-up of TOGAF