Enterprise Architecture Development

Methodology Overview

Prepared For:

Our Valued Clients
Introduction
Engagement Objectives

- Perform an assessment of the current Enterprise Architecture against
  - the short and long term IT and Business Strategic Plans
  - Prevailing industry best practices and market direction
  - Enterprise Architecture efforts at the State and Federal level

- Develop a strategic Target Enterprise Architecture,

- Identify key success metrics and performance indicators to monitor the realization of benefits of the target Enterprise Architecture

- Develop a high level roadmap of evolving the current Architecture towards the desired target Architecture.
Enterprise Architecture Planning Lifecycle View

Strategize
- Business strategic planning
- IT strategic planning
- Build the business context

Architect
- Document current state
- Develop future state
- Develop gap analysis and road map

Lead
- Evangelize, encourage and motivate
- Evolve architecture process
- Develop human capital

Govern
- Establish decision processes
- Establish oversight
- Link to related disciplines
- Evaluate performance and adapt

Communicate
- Craft communications
- Deliver communications
- Analyze feedback
1. Improved alignment between IT investments and strategic business requirements (*what should we architect?*)
   - The Enterprise Architecture process provides a tightly focused ‘stream of logic’, which links the business drivers and strategic requirements directly to an IT investment portfolio designed to support those strategies and respond to threats and opportunities.

2. More efficient, cost effective and flexible engineering solutions (*how we should develop adaptive systems?*)
   - The EA discipline highlights the value of creating adaptive, modular, loosely coupled, business-event driven distributed systems based on reusable components, which emphasize the use of well-defined component interfaces. The ability to re-engineer older systems in response to new business requirements is the strongest allure of an adaptive Enterprise Architecture.
Our Architecture planning methodology and process is based on a workshop / consensus approach, as shown in this diagram to maximize adoption:

**Engagement Approach**

**Inputs**
- Business Drivers and Needs
- Current Technology Position
- Technology Best Practices & IT Industry Direction

**Workshops**
- Architecture Specification Process
  - Client Management/Staff
  - NAI Facilitation

**Deliverable Components**
- Business & IT Strategy and Drivers
- Architecture Principles
- Enterprise App & Technical Architecture Specification
- Architecture Governance Process
- Architecture Migration Roadmap
Enterprise Architecture Framework

Conceptual Models and Domains
Definitions

- **Architecture**: A design of components and their defined interfaces in a system.

- **Architectural Model**: A graphical (two- or three-dimensional) representation of an architecture.

- **Domains**: Topics or subject areas of architecture (such as governance, application, data, infrastructure and security).

- **Enterprise Architecture (EA)**: An IT architecture that focuses upon only those computing requirements that are critical to the mission of the enterprise.

- **Technical Architecture (TA)**: An IT architecture that focuses upon the common technologies of an organization.
# Enterprise IT Architecture

<table>
<thead>
<tr>
<th>Definition</th>
<th>Objectives</th>
<th>Utility</th>
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<tbody>
<tr>
<td>An enterprise IT architecture defines:</td>
<td>The objectives of an Enterprise IT Architecture is to promote:</td>
<td>An Enterprise IT Architecture is used by the enterprise to enable its strategies:</td>
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<tr>
<td>- How systems are structured</td>
<td>- Interoperability between dissimilar systems</td>
<td>- Agility</td>
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<td>- How various components/layers interact</td>
<td>- Application, data and infrastructure connectivity among and between new and legacy systems</td>
<td>- Integration</td>
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<td>- Which protocols and interfaces are used for communications between applications, infrastructure and data.</td>
<td>- The ability to manage change</td>
<td>- Optimization</td>
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| | - Re-use and avoid duplicative expense | |}

**Utility**

- Standardization
- Simplification
- Acquisition
- Development
- Deployment
- Operation
- Retirement
Gartner’s 2006 Definition of Enterprise Architecture

Enterprise architecture is
- the process
- of translating business vision and strategy
- into effective enterprise change
- by creating, communicating and improving the key principles and models that describe the enterprise's future state and enable its evolution.

The scope of the enterprise architecture includes
- the people, processes, information and technology of the enterprise,
- and their relationships to one another and to the external environment.

Enterprise architects compose
- holistic solutions
- that address the business challenges of the enterprise,
- and support the governance needed to implement them.

Enterprise architecture means … architecting the enterprise to enable change.
Application Architecture Domains

Application Architecture Framework

<table>
<thead>
<tr>
<th>Layers</th>
<th>Sub-Layers</th>
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<tbody>
<tr>
<td>Logical Architecture</td>
<td>Business drivers</td>
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<td>Application requirements</td>
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<td>Fundamental Design Principles</td>
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<td>Physical Architecture</td>
<td>High level architecture</td>
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<td>Enterprise Services</td>
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<td>Function Deployment Strategy</td>
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<td>Platform Allocation of Modules</td>
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<td>Middleware</td>
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<td>Hardware and Operating Systems</td>
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</table>

Integrated Services Environment and Repository

Logical Layer
- Business drivers identified
- Methods/ tools for gathering and storing application requirements
- A description of both existing and planned applications

Physical Layer
- HL physical models documented for databases and integration
- Definition of shared business services
- A set of guidelines for Service partitioning (platform allocation)

Enabling Layer
- A classification of enabling software (Portal, ESB, DBMS linkages, etc.) by application type and target audience
- AD Infrastructure
- Hardware and Software platforms for each tier.
Enterprise Architecture Principles Defined

Definition:
- Established rules that guide technology decision-making. Principles provide the foundation upon which architectural designs are built and to which appeal can be made in the event of differing views on particulars.

Criteria for Architectural Principles
- Understandable
  » To people throughout the Enterprise
  » Clear interpretation of concept and intent
- Complete and Consistent
  » No major omissions
  » No duplication, overlap, or contractions
- Long lasting
  » Interpretation will change with the times, but not the words
  » Independent of technology, who, where, when, policies & procedures

Types of Architectural Principles
- Management Architecture Principles
- Application Architecture Principles
- Data Architecture Principles
- Technical Architecture Principles
- Security Architecture Principles
Management Architecture Principles Examples

- **Simplification and Standardization**
  - Application Portfolio
  - Technical Infrastructure

- **Agility and Flexibility**
  - Responsive to changes in business requirements
  - Incremental enhancements
  - User directed and executed (where possible) business process and rule changes

- **Warranty of Quality of Service**
  - Define and negotiate service level expectations
  - Establish and document Service Level Agreements
  - Deploy end-to-end IT Service monitoring capability
  - Monitor, measure, report and review performance with business customer

- **Optimize Total Cost of Ownership**
  - Establish IT Financial Management process and capability (Budgeting, Accounting and Charging)
  - Measure and report performance against targets
  - Leverage existing and emerging technology to optimize IT resource usage
Successful modern IT architectures leverage the appropriate use of the following fundamental design principles:

**Modularity**: Systems are made up of replaceable units that can be added together to make the system larger or modify its capabilities as required by changing business needs.

**Encapsulation**: Data and operations of business services are “hidden” within the environment, but access to the service is provided through each service interface.

**Reuse**: Application components and functions are cataloged and made available so that they may be incorporated into other applications.

**Partitioning**: Applications are broken into three logical parts—presentation, logic, and data—to facilitate execution of each logical piece on a different machine in order to maximize scalability and ease system maintenance.

**Server-Centric Processing**: Application processing in centralized to minimize software distribution problems and to maximize code reuse.

**Incremental Adoption**: Changes to application design styles or middleware are made incrementally, rather than massive “big bang” adoption of new technology or styles.
The general process that was used in the workshops is diagrammed below. This process was followed for each element and strategic issue in the Architecture Framework as appropriate.
The Technical and Application Architecture definition will be based on the framework of architecture domains as shown below.

- **Computing Infrastructure**
  - Application Development Tools
  - Middleware
  - Platform/Operating Systems
  - Database Technologies

- **Network Infrastructure**
  - Infrastructure Services
  - Enterprise Network
  - Infrastructure Management
  - Security Technologies

- **Enterprise Applications**
  - Ent. Content Management
  - E-mail/Messaging
  - Collaboration Technologies
  - External Services

Each set of elements in each domain will be documented using a standard specification framework.
The Architecture Specifications are defined and are periodically re-visited, emerging technologies may be defined “mainstream” and become part of the current environment. Others may be re-defined as “retirement targets” and will exit the environment over time.
Enterprise Architecture
Sample Deliverables
XYZ Target Architecture Model (High-Level View)

- **Citizens**
- **Employees**
- **Other Agencies**

**Tier 1:**
- **XYZ Portal**
  - (Channel & User Experience Management)

**Tier 2:**
- **Vertical Portal**
  - Service Integration & BPM (ESB or IB)

**Tier 3:**
- **Service Providers**
  - (e.g. State, FED, 3rd Party)

**New Online Services**
- Internet Banking
- Vertical Portal

- **Customer Record and Modernized and Web Enabled legacy systems**
- ESB = Enterprise Service Bus, IB = Integration Broker, BPM = Business Process Management

- **External Service Providers**

- **Service Interfaces**
Application Portfolio Analysis Summary

Replacement target
Containment target
Mainstream platform

Note: Size of oval is reflective of the application footprint.

Replace or Upgrade
Alco
Pizen
AutoRate
Branch Auto

Eliminate
TradeNet
ADT

Continue to Support
Collections
FinnOne
TeleMoney
TAPS
OPICS
Exim
Pension
Base24
CMS
Oracle GL

Replace or Upgrade
UBP
BankMaster

Functional Quality & Business Support
Technical Quality & Support Capability
### Computing Infrastructure

<table>
<thead>
<tr>
<th>REF#</th>
<th>Category</th>
<th>Domain</th>
<th>Element</th>
<th>Strategic Direction</th>
<th>Mainstream Standards</th>
<th>Containment Targets</th>
<th>Retirement Targets</th>
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<tbody>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>Web Server</td>
<td>IBM WebSphere, Apache</td>
<td>Apache, MS IIS</td>
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<td>10</td>
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<td></td>
<td>Application Server</td>
<td>Top Tier Infrastructure Vendor (J2EE)</td>
<td>IBM WebSphere App Server</td>
<td>Oracle Fusion, Microsoft App Platform, Tomcat</td>
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<td>11</td>
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<td></td>
<td>Enterprise Service Bus / Integration Broker</td>
<td>IBM WebSphere ESB</td>
<td>IBM WebSphere ESB</td>
<td>Microsoft BizTalk, BEA, Tuxedo</td>
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<tr>
<td>12</td>
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<td>Enterprise Portal</td>
<td>Top Tier Infrastructure Vendor (J2EE)</td>
<td>Evaluate IBM WebSphere Portal</td>
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### Platforms / Operating Systems

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<th>Category</th>
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<th>Element</th>
<th>Strategic Direction</th>
<th>Mainstream Standards</th>
<th>Containment Targets</th>
<th>Retirement Targets</th>
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<td>13</td>
<td></td>
<td></td>
<td>Web Server OS</td>
<td>HP/UX, Windows, Linux</td>
<td>HP/UX 11i, Windows 2003</td>
<td>IBM AIX</td>
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<td>Application Server OS</td>
<td>HP/UX</td>
<td>HP/UX 11i, Windows 2003</td>
<td>IBM AIX, HP Non-Stop Guardian</td>
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<td>Database Server OS</td>
<td>HP/UX</td>
<td>HP/UX 11i, Windows 2003</td>
<td>IBM AIX, HP Non-Stop Guardian</td>
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<td>Client OS (Laptop/Desktop)</td>
<td>MS Windows</td>
<td>MS Windows XP, Vista</td>
<td>MS Windows 2000</td>
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<td>App/DB Server Hardware</td>
<td>HP</td>
<td>HP Superdome</td>
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### Architecture Migration Roadmap

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<th>Quarter</th>
<th>1Q09</th>
<th>2Q09</th>
<th>3Q09</th>
<th>4Q09</th>
<th>1Q10</th>
<th>2Q10</th>
<th>3Q10</th>
<th>4Q10</th>
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<td><strong>1. Arch. Governance</strong></td>
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<td><strong>2. Arch. Office</strong></td>
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<td><strong>3. SOA Development Environment</strong></td>
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<td><strong>4. SOA Production Infrastructure</strong></td>
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<td><strong>5. CRM Infrastructure</strong></td>
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<td><strong>6. Portfolio Rationalization</strong></td>
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<td><strong>7. Integration Infrastructure</strong></td>
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<td><strong>8. Infrastructure Stabilization</strong></td>
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<td><strong>9. ITSM Office</strong></td>
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<td><strong>10. Staff Training</strong></td>
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<td><strong>11. Revamped Service Desk</strong></td>
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<td><strong>12. Independent Pre-Production Testing</strong></td>
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<td><strong>13. Data Warehouse</strong></td>
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<td><strong>14. Data Quality</strong></td>
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<td><strong>15. Identification &amp; Authentication</strong></td>
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<td><strong>16. IT Performance Dashboard</strong></td>
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#### Notes:
- **4Q08 Start**: Projects starting in the first quarter of 2008.
- **1Q09 Start**: Projects starting in the first quarter of 2009.

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About NAI

Founded in 2001, NAI is a specialist provider of Consulting, Training and On-Demand solutions in the area of IT management and control best practices using globally accepted best practices standards and frameworks such as ISO 20000, ITIL, CMMI, PMBOK, TOGAF and COBIT.

We focus in four key practice areas:

1) IT Strategic Planning and Governance
2) Enterprise Architecture Planning
3) Business and IT Service Management (BSM and ITSM)
4) Strategic Sourcing

Within our Service Management practice, we help our clients:
- Define and manage their Service Management Program and goals
- Train and certify the internal team to become self-sufficient
- Define and optimize processes and operations
- Measure and benchmark business and IT improvements
- Close automation gaps in their Service Management portfolio with affordable On-Demand solutions (monthly, based on actual use).
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