ENTERPRISE ARCHITECTURE DOCUMENT

Template

Version 0.1 ● Date: 26/Jun/2024

**ENTERPRISE ARCHITECTURE DOCUMENT**

**Alpha ICT Solutions**

**Enterprise Architecture Development**

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| VERSION: 0.2 | REVISION DATE: 26/6/2024 |

Approval of the Enterprise Architecture indicates an understanding of the purpose and content described in this deliverable. By signing this deliverable, each individual agrees with the content contained in this deliverable.

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# Chapter 1 MANAGEMENT SUMMARY

Hello dear reader, before you lie the Enterprise Architecture of Alpha ICT Solutions An enterprise architecture is a conceptual blueprint of the organization. Meaning it is a set of views and visualizations of the current state and future state of the organization and the roadmap to get there.

This document is aimed at all managers, projects and project workers in the company. In fact, this document is aimed at everyone that is helping with the change and transformation in the organization.

There are five benefits this Enterprise Architecture will realize year by year:

1. IT Cost Reduction and Rationalization
2. Business Process Improvement
3. Standardization
4. Strategy Realization
5. Innovation Enablement

Based on the strategy and the business model of APLHA ICT SOLUTIONS the Enterprise Architecture can be summarized in number of Architecture Concepts and Architecture Principles. By helping to implement these concepts and their principles, you will help to realize the benefits of EA. And the better these concepts and principles are implemented, the sooner the organization will reach its future state and be more competitive (stronger), efficient (functional) and innovative (beautiful).

**Architecture Principle 1:** Business Alignment

**Architecture Concept 1:** The enterprise architecture must be closely aligned with the organization's strategic business objectives and priorities.

**Architecture Principle 2:** Information Management

**Architecture Concept 2:** Information assets must be managed as a strategic resource to support data-driven decision making and operational efficiency.

**Architecture Principle 3**: Application Rationalization Principle

**Architecture Concept 3:** The application portfolio must be regularly reviewed and optimized to eliminate redundancy, improve integration, and reduce maintenance costs.

**Architecture Principle 4:** Technology Standardization Principle

**Architecture Concept 4:** The technology landscape must be standardized to enhance interoperability, simplify maintenance, and enable scalability.

**Architecture Principle 5:** Data Management Principle:

**Architecture Concept 5:** Data must be treated as a valuable enterprise asset, with consistent data governance policies and practices implemented across the organization.

**Architecture Principle 6:** Infrastructure Optimization Principle

**Architecture Concept 6:** The IT infrastructure must be continuously optimized to improve performance, availability, and cost-efficiency.

**Architecture Principle 7:** Security and Risk Management Principle

**Architecture Concept 7:** Robust security controls and risk management practices must be implemented to protect the organization's information assets and ensure compliance with regulatory requirements.

**Architecture Principle 8:** Governance and Compliance Principle

**Architecture Concept 8:** Effective governance mechanisms must be established to ensure the enterprise architecture is properly managed, maintained, and aligned with organizational policies and external regulations.

**Architecture Principle 9:** Organizational Change Management Principle

**Architecture Principle 9:** Proactive change management strategies must be employed to facilitate the adoption of the enterprise architecture and enable successful organizational transformation.

**Architecture Principle 10:** Continuous Improvement Principle

**Architecture Principle 10:** The enterprise architecture must be regularly reviewed and updated to adapt to changing business requirements, technology advancements, and industry best practices.

# Chapter 2 Introduction

*This chapter introduces the Enterprise Architecture Document. It says why this document was*

## 1.1 Document Scope

***Document Scope*** *describes the context and the goals of this document in a narrative.*

*Example:*

**Enterprise Architecture and Business Requirements**

This document describes the Enterprise Architecture of the Alpha ICT Solutions This Enterprise Architecture (EA) satisfies the business requirements from the stakeholders as documented in the Business Requirements Document.

The goal of this Enterprise Architecture document is to define the products, processes, information flows, applications, data, technologies, technical products, and techniques necessary to develop and support the future state organization/company, and to ensure that the organization elements/components are compatible and comply with the enterprise-wide standards and direction defined by the Owner/Client and Architecture Board.

This document will also:

Identify and explain the risks inherent in this Enterprise Architecture;

Define baseline sizing, archiving and performance requirements;

Identify the hardware and software specifications for the Development, Testing, QA and Production environments;

Define procedures for both data and code migration among the environments.

The Document Scope narrative also provides an overview of the efforts conducted to understand the existing technical environment and IT strategic direction and to determine how the system’s proposed technical architecture fits into them.

Where does all the data comes from and how is it managed and provided?

**Architecture Repository**

All the data, models, views and visualizations used in this document are stored in the companies Architecture Repository. This Architecture repository can be found on location https://github.com/alphaictsolutions/alphaict\_doc

**Architecture Center**

The company’s intranet hosts an Architecture Center for all stakeholders and projects. This online hub provides access to architecture visualizations and documents essential for decision-making and guiding innovation projects.

This document will be updated annually, and both current and previous versions are available on the Architecture Center. Note: This document may contain classified information and must not be shared outside the company.

# Chapter 3 Strategy

*This chapter describes and visualizes the current and future strategy organization.*

## 3.1 Strategy

The organization has a current state and future state strategy. The strategy of the organization is set yearly by the board of directors. New technologies, trends, shifts in interest of market and client, demographics and sociologic changes all have impact on and influence the new strategy.

For the coming 5 years the organization has the following strategy:

Organic growth, leveraging our expertise in software development and ICT services to expand our market presence. We aim to diversify our offerings, explore strategic partnerships, and invest in research and development to stay at the forefront of technological advancements.

## 3.2 Business Model

Our business model is centered around a centralized approach, with a physical office serving as our operational hub. This allows for effective coordination, collaboration, and resource management, ensuring the successful delivery of projects and services.

# Chapter 4 OVERALL ENTERPRISE ARCHITECTURE

EA One pager

## 4.1 Enterprise Architecture Context Diagram

The **Enterprise Architecture Context Diagram** provides the “big picture” view of the enterprise’s architecture, and puts it in context with the rest collaborating organizations, illustrating how the organizations elements & components fit into the existing environment.

## 4.2 Enterprise Architecture Model

The **Enterprise Architecture Model** represents the various architecture concepts, principles, building blocks, patterns, elements, components, rules and standards that comprise the organization, and shows their interrelationships.

### 4.2.1 Overall Architectural Considerations

*The* ***Overall Architectural Considerations*** *section defines how additional technical requirements have been addressed by the architecture. Representative items in this section may include:*

## Enterprise Architecture Concepts Overview and Definitions



## 4.4 Enterprise Architecture Principles Overview and Definitions

# Chapter 5 ARCHITECTURES

*Here follows a description and visualization of the architectures that are part of the architecture framework*

## 5.1 Business Architecture

**Vision**

Our vision is to become a leading provider of cutting-edge ICT solutions in Afghanistan and the region.

**Mission**

* Our mission is to deliver exceptional ICT services that meet the unique needs of our clients.
* We are committed to providing reliable, secure, and scalable solutions that enhance productivity, streamline operations, and enable our clients to achieve their business objectives.
* We strive to empower businesses and organizations through technology, driving growth, efficiency, and innovation.

**Values**

At Alpha ICT Solutions, we uphold the values of:

* Integrity.
* Professionalism.
* Innovation
* and customer-centricity.

These values guide our actions and decision-making, ensuring that we consistently deliver superior services and build long-term partnerships with our clients.

**Goals & objectives**

Our primary goals are:

* Delivering high-quality ICT solutions that exceed client expectations.
* Expanding our client base and establishing strong relationships with key stakeholders.
* Continuously innovating and adapting to emerging technologies and industry trends.

and objectives include:

* Enhancing employee skills and fostering a culture of collaboration and growth.
* Driving sustainable business growth and profitability.

## 5.2 Information Architecture

#### **Overview**

The Information Architecture at Alpha ICT Solutions is designed to ensure efficient and secure management of data to support decision-making, streamline operations, and enhance productivity. This architecture includes robust data management, storage, processing, security, and integration mechanisms that align with the company's vision and objectives.

### ****5.2.1 Accessing Information****

#### **Employees**

* **Role-Based Access**: Employees access data relevant to their roles through secured systems. For example, sales staff access customer data, while the finance team accesses financial records.
* **Intranet and Portals**: Internal portals provide easy access to data repositories, reports, and analytics tools.
* **Secure Authentication**: Multi-factor authentication ensures secure access to sensitive data.

#### **Stakeholders**

* **External Portals**: Stakeholders such as clients and partners access information through secure external portals.
* **APIs for Partners**: APIs allow partners to integrate their systems with Alpha ICT Solutions, facilitating seamless data exchange.
* **Compliance and Reporting**: Stakeholders receive regular reports and updates, ensuring transparency and compliance with regulatory requirements.

## 5.2.2. Data Management

#### 2.1 Data Governance

* **Policies and Standards:** Establish clear data management policies and standards to ensure data consistency and accuracy.
* **Roles and Responsibilities**: Assign data stewardship roles to ensure accountability for data quality and compliance.
* **Data Cataloging**: Maintain an up-to-date data catalog to facilitate easy data discovery and understanding.

#### 2.2 Data Quality

* **Data Validation**: Implement automated data validation rules to ensure data accuracy at the point of entry.
* **Data Cleansing**: Regularly clean and standardize data to remove errors and inconsistencies.
* **Data Audits**: Conduct periodic data quality audits to identify and address data issues.

#### 2.3 Data Lifecycle Management

* **Data Classification**: Classify data based on its sensitivity and importance.
* **Data Retention**: Define retention policies for different types of data, ensuring data is stored only as long as necessary.
* **Data Archiving**: Archive inactive data to optimize storage and maintain performance.
* **Data Disposal**: Securely dispose of data that is no longer needed according to regulatory and compliance requirements.

## ****5.2.3. Data Storage****

#### 3.1 Databases

* **Relational Databases**: Use relational databases like MySQL or PostgreSQL for structured data such as customer information and transaction records.
* **NoSQL Databases**: Implement NoSQL databases like MongoDB or Cassandra for unstructured data such as social media content and log files.

#### 3.2 Data Warehousing

* **Central Repository**: Establish a data warehouse to consolidate data from various sources, enabling comprehensive reporting and analysis.
* **ETL Processes**: Implement ETL (Extract, Transform, Load) processes to ensure data is accurately and efficiently moved into the data warehouse.

### ****5.2.4. Data Processing and Analytics****

#### 4.1 Data Processing

* **ETL Tools**: Use ETL tools like Talend or Apache Nifi to automate data extraction, transformation, and loading processes.
* **Big Data Processing**: Utilize big data frameworks such as Hadoop and Spark for processing large volumes of data.

#### 4.2 Data Analytics

* **Reporting Tools**: Implement reporting tools like Power BI or Tableau to create interactive dashboards and reports.
* **Predictive Analytics**: Use predictive analytics tools and techniques to forecast trends and support decision-making.
* **Data Visualization**: Employ data visualization techniques to present data insights in a clear and actionable manner.

## ****5.2.5. Data Security****

#### 5.1 Data Encryption

* **At Rest**: Encrypt sensitive data stored in databases and file systems using strong encryption algorithms.
* **In Transit**: Ensure data is encrypted when transmitted over networks using SSL/TLS protocols.

#### 5.2 Access Control

* **Authentication**: Implement robust authentication mechanisms such as multi-factor authentication (MFA) to verify user identities.
* **Authorization**: Use role-based access control (RBAC) to ensure users have access only to the data they need for their roles.
* **Audit Trails**: Maintain audit logs to track data access and modifications for security and compliance purposes.

## ****5.2.6. Data Integration****

#### 6.1 APIs (Application Programming Interfaces)

* **RESTful APIs**: Develop RESTful APIs to enable seamless data integration between different applications and systems.
* **API Management**: Use API management platforms like Apigee or Kong to monitor and control API usage.

#### 6.2 Middleware

* **Integration Platforms**: Implement middleware solutions like MuleSoft or WSO2 to facilitate data integration and workflow automation between disparate systems.

## ****5.2.7. Compliance****

#### 7.1 Regulatory Requirements

* **Data Privacy Laws**: Ensure compliance with data privacy laws such as GDPR, HIPAA, and other relevant regulations.
* **Data Protection Policies**: Develop and enforce data protection policies to safeguard personal and sensitive information.

#### 7.2 Internal Policies

* **Information Security Policies**: Establish comprehensive information security policies covering data handling, access control, and incident response.
* **Employee Training**: Conduct regular **training** sessions for employees on data protection and **compliance** requirements.

## ****5.2.8. Implementation Steps****

* **Assess Current State**

Conduct a thorough review of existing data management practices and identify areas for improvement.

* **Define Data Governance Policies**

Develop and document clear data governance policies and assign roles and responsibilities.

* **Choose Appropriate Technologies**

Select and implement suitable databases, data warehousing solutions, and data processing tools.

* **Implement Security Measures**

Encrypt data at rest and in transit, and set up robust access controls and audit trails.

* **Integrate Systems**

Use APIs and middleware to ensure seamless data integration across different applications.

* **Monitor and Improve**

Regularly review data management practices, update policies, and adopt new technologies as needed.

## 5.3 Application Architecture

The application architecture focuses on the design and deployment of software applications that support the business processes and operations of Alpha ICT Solutions. Key components of the application architecture include:

5.3.1 Application Portfolio

* Alpha ICT Solutions maintains a comprehensive portfolio of software applications used to support various business functions, including:
  + Project management tools (e.g., Jira, Microsoft Project) for planning, tracking, and managing projects
  + Customer Relationship Management (CRM) systems (e.g., Salesforce, Microsoft Dynamics) for managing customer interactions and data
  + Enterprise Resource Planning (ERP) systems (e.g., SAP, Oracle EBS) for integrating and managing business processes such as accounting, procurement, and human resources
  + Communication and collaboration platforms (e.g., Microsoft 365, Google Workspace) for enabling effective teamwork and information sharing

5.3.2 Application Development

* Alpha ICT Solutions leverages modern development frameworks and methodologies to build scalable and maintainable applications, including:
  + Development Frameworks: Spring for Java-based applications, .NET for Microsoft-based applications, and Angular for building web applications
  + DevOps Practices: Continuous Integration and Continuous Deployment (CI/CD) pipelines to automate the build, test, and deployment processes, ensuring faster and more reliable application releases

5.3.3 Application Integration

* To ensure seamless data exchange and communication between different applications, Alpha ICT Solutions has implemented:
  + API Management: API gateways and management platforms (e.g., Apigee, Kong) to secure, monitor, and control API usage, enabling efficient integration between applications and systems
  + Middleware: Integration platforms (e.g., MuleSoft, WSO2) to facilitate data integration and workflow automation, bridging the gap between disparate systems and enabling end-to-end business processes

5.3.4 Microservices Architecture

* Alpha ICT Solutions has adopted a Service-Oriented Architecture (SOA) approach, leveraging microservices to build modular and independently deployable applications.
* Containerization technologies, such as Docker and Kubernetes, are used to deploy and manage these containerized applications, ensuring scalability, portability, and efficient resource utilization

5.3.5 Application Security

* Secure development practices, including regular security code reviews, are implemented to ensure the security of Alpha ICT Solutions' applications.
* Vulnerability management tools (e.g., Nessus, Qualys) are used to identify and address security vulnerabilities in the application portfolio, helping to protect against potential threats and ensure compliance with security standards

By implementing a robust application architecture, Alpha ICT Solutions aims to deliver high-quality, secure, and scalable software solutions that support the organization's strategic objectives and meet the evolving needs of its clients. The application architecture is designed to be flexible, adaptable, and aligned with the overall enterprise architecture, enabling the organization to respond quickly to market changes and capitalize on new opportunities.

## 5.4 Technology Architecture

**5.4.1. Introduction**

Alpha ICT Ltd. is committed to delivering top-tier IT solutions, encompassing software development, IT consulting, and managed services. To achieve this, the company requires a robust and scalable technology architecture. This document outlines the core components of a comprehensive technology architecture tailored to the needs of Alpha ICT Ltd.

**5.4.2. Core Components**

**5.4.2.1. Enterprise Architecture**

The enterprise architecture of Alpha ICT Ltd. provides a holistic view of the company’s IT landscape. It encompasses several layers:

**5.4.2.1.1. Business Layer**

* **Business Processes**: This layer defines the primary activities, workflows, and processes that drive the company’s operations. Key processes include project management, client onboarding, service delivery, and support.
* **Business Services**: A catalog of services offered to clients, such as custom software development, IT infrastructure management, cloud solutions, and cybersecurity services.
* **Organizational Structure**: Details the hierarchical structure of the company, including departments, teams, and roles, ensuring clear communication and efficient workflow.

**5.4.2.1.2. Application Layer**

* **Application Portfolio**: A comprehensive list of software applications used to support business processes, including project management tools, CRM systems, ERP systems, and communication platforms.
* **Integration Services**: Middleware and APIs that facilitate communication and data exchange between different applications, ensuring seamless integration and interoperability.
* **Application Development**: Frameworks, methodologies (Agile, DevOps), and tools (IDEs, version control systems) used for developing and maintaining software applications.

**5.4.2.1.3. Data Layer**

* **Data Management**: Policies and practices for data governance, data quality, and data lifecycle management. This includes data modeling, metadata management, and master data management.
* **Databases**: Relational and NoSQL databases used to store and manage structured and unstructured data. Examples include SQL Server, MySQL, MongoDB, and Cassandra.
* **Data Analytics**: Tools and platforms for data analysis, business intelligence, and reporting, such as Power BI, Tableau, and Hadoop.

**5.4.2.1.4. Technology Layer**

* **Infrastructure**: Hardware, networks, and facilities required to run and support IT services. This includes servers, storage systems, network devices, and data centers.
* **Cloud Services**: Use of public, private, and hybrid cloud solutions to provide scalable and flexible infrastructure. Key providers include AWS, Azure, and Google Cloud Platform.
* **Security**: Comprehensive security measures, including firewalls, intrusion detection systems, encryption, and access control mechanisms, to protect data and systems.

**5.4.2.1.5. Governance Layer**

* **IT Governance Framework**: Policies, procedures, and standards that ensure IT resources are used effectively and align with business goals. This includes ITIL, COBIT, and ISO/IEC 27001.
* **Compliance and Risk Management**: Processes to ensure compliance with regulatory requirements and industry standards, as well as risk management practices to identify and mitigate IT risks.

**5.4.3. Detailed Architecture**

**5.4.3.1. Infrastructure Architecture**

The infrastructure architecture provides the foundation for all IT services and includes the following components:

**5.4.3.1.1. Data Centers**

* **On-Premises Data Centers**: Physical facilities that house servers, storage devices, and network equipment. These are designed for high availability, redundancy, and disaster recovery.
* **Cloud Data Centers**: Virtual infrastructure provided by cloud service providers. This offers scalability, flexibility, and cost efficiency.

**5.4.3.1.2. Network Architecture**

* **LAN/WAN**: Local Area Networks (LAN) and Wide Area Networks (WAN) that connect various sites and enable communication between devices.
* **SDN**: Software-Defined Networking (SDN) for centralized management and control of network resources.
* **VPN**: Virtual Private Networks (VPN) to provide secure remote access to the company’s network.

**5.4.3.1.3. Compute and Storage**

* **Servers**: Physical and virtual servers that host applications and services. This includes web servers, application servers, and database servers.
* **Storage Solutions**: SAN, NAS, and cloud storage options to meet different data storage needs, ensuring data availability and redundancy.

**5.4.3.2. Application Architecture**

The application architecture focuses on the design and deployment of software applications. Key components include:

**5.4.3.2.1. Application Development**

* **Development Frameworks**: Use of modern development frameworks such as Spring, .NET, and Angular to build scalable and maintainable applications.
* **DevOps Practices**: Integration of development and operations to ensure continuous delivery and continuous integration (CI/CD) pipelines.

**5.4.3.2.2. Application Integration**

* **API Management**: Use of API gateways and management platforms to secure, monitor, and manage APIs.
* **Middleware**: Integration platforms that facilitate communication between different applications and systems.

**5.4.3.2.3. Microservices Architecture**

* **Service-Oriented Architecture (SOA)**: Use of microservices to build modular and independently deployable services.
* **Containerization**: Use of Docker and Kubernetes to deploy and manage containerized applications.

**5.4.3.3. Data Architecture**

The data architecture ensures effective data management and utilization. Key components include:

**5.4.3.3.1. Data Storage and Management**

* **Databases**: Use of both relational databases (e.g., MySQL, PostgreSQL) and NoSQL databases (e.g., MongoDB, Cassandra) to store structured and unstructured data.
* **Data Warehousing**: Implementation of data warehouses and data lakes for centralized data storage and analysis.

**5.4.3.3.2. Data Processing and Analytics**

* **ETL Processes**: Extract, Transform, Load (ETL) processes to move and transform data from various sources into a unified data repository.
* **Big Data Technologies**: Use of Hadoop, Spark, and other big data technologies for large-scale data processing and analysis.

**5.4.3.3.3. Data Security and Compliance**

* **Data Encryption**: Use of encryption techniques to protect data at rest and in transit.
* **Compliance**: Ensuring compliance with data protection regulations such as GDPR, HIPAA, and CCPA.

**5.4.4. Security Architecture**

Security is a critical aspect of the technology architecture. Key components include:

**5.4.4.1. Identity and Access Management (IAM)**

* **User Authentication and Authorization**: Use of Single Sign-On (SSO), Multi-Factor Authentication (MFA), and Role-Based Access Control (RBAC) to manage user access.
* **IAM Tools**: Implementation of IAM tools such as Okta, Microsoft Azure AD, and AWS IAM.

**5.4.4.2. Network Security**

* **Firewalls and IDS/IPS**: Deployment of firewalls and Intrusion Detection/Prevention Systems (IDS/IPS) to protect the network perimeter.
* **VPNs and Secure Access**: Use of VPNs for secure remote access and secure access service edge (SASE) solutions.

**5.4.4.3. Application Security**

* **Secure Development Practices**: Adoption of secure coding practices and regular security code reviews.
* **Vulnerability Management**: Use of tools for vulnerability scanning and management, such as Nessus and Qualys.

**5.4.4.4. Data Security**

* **Data Loss Prevention (DLP)**: Implementation of DLP solutions to prevent unauthorized data access and leakage.
* **Encryption**: Use of encryption technologies to protect data both at rest and in transit.

**5.4.4.5. Incident Response**

* **Incident Management Plan**: Development of an incident management plan to respond to security incidents and breaches.
* **Security Operations Center (SOC)**: Establishment of a SOC for continuous monitoring and response to security threats.

**5.4.5. Conclusion**

The technology architecture for Alpha ICT Ltd. is designed to be robust, scalable, and secure, supporting the company’s diverse IT services. By leveraging modern technologies and best practices across enterprise architecture, infrastructure, applications, data, and security, Alpha ICT Ltd. can effectively meet the needs of its clients and adapt to the ever-changing technological landscape.