

Application Architecture

Application Architecture identifies criteria and techniques associated with the design of applications for the Government of Bangladesh's distributed ICT environment that can be easily modified to respond quickly to the changing business needs, as well as to the rapidly evolving information technologies available to support those needs.

Whole of Government: The ICT for Government of Bangladesh

To realize the business strategy as defined, and in the long term realize the Vision for Digital Bangladesh by 2021 – one of the key drivers for ICT is Application domain. The application architecture needs to be defined in a manner that addresses all the challenges of the Government and makes it flexible to adopt in a rapidly changing business environment

Application Architecture Principles

The principles listed below are key guidelines for the design or purchase of applications and application components supporting distributed, client/server computing across the Government of Bangladesh.

These principles are listed to achieve the following objectives:

- **Enable architecture review:** Any new system development would require architecture review, application architecture principles would provide the necessary review parameters as far as application design is concerned
- **Provide a guidance mechanism:** to application design team, on what are the criteria that defines the best the application design
- **Enable ease of strategy and plan for ICT:** Application architecture depicts the strategic need with more clarity and ease

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Name	AP1: Compliance to UI Standards
Description	All Web Portals and Mobile App – User Interface are compliant to Bangladesh National Guidelines for Website and Portals UI Please follow Appendix for detailed explanation
Scope	<ul style="list-style-type: none">• Government hosted Web Portals• Government hosted Mobile Apps
Implementation Steps	<ol style="list-style-type: none">1. Draft and approve national Web & Mobile UI Standards from different relevant stakeholders2. Conduct workshops for UI standards socialization3. Publish UI Standards4. Maintain compliance record and enforce adoption
Benefit	<ul style="list-style-type: none">• To facilitate citizen centric service delivery, the UI standards would enable citizens of Bangladesh to avail services from portals and apps with minimal variability as far as user interface is concerned• The standards would enhance inclusivity – making the portals friendly for physically handicapped or with special needs• Improve usability and adoption of e-Governance• Streamline portal development

Name	AP2: Single Sign On
Description	All Web Portals and Mobile App would require secured access through sign in. The user profile would be maintained in the user session and would be used by all other applications
Scope	<ul style="list-style-type: none"> • Government hosted Web Portals • Government hosted IT Systems • Government hosted Mobile Apps
Implementation Steps	<ol style="list-style-type: none"> 1. Develop Single Sign On (SSO) Architecture 2. Develop and agree User Profile Management Architecture – Single Citizen, Employee, Business Repository 3. Re-architect key portals and systems for pilot implementation 4. Implement SSO for all applications 5. Update Architecture compliance requirement for SSO 6. Manage SSO for all new applications
Benefit	<ul style="list-style-type: none"> • Increased ease of use of ICT system by avoiding multiple sign in and multiple user profile management from end user perspective • Secured application access – Single Sign On security feature would ensure enhanced security of access of data through modern security feature adoption • Lower cost of ICT – centralized user profile management would lower cost due to reduced duplicity in Production profile and access management • Reduced security vulnerability through centralized password policy, session management and other IT security policy management

Name	AP3: Omni-Channel Architecture Compatibility
Description	All Web Portals and Mobile App to be made compatible to defined service delivery channels
Scope	<ul style="list-style-type: none"> • Government hosted Web Portals • Government hosted IT Systems • Government hosted Mobile Apps
Implementation Steps	<ol style="list-style-type: none"> 1. Develop Omni-Channel Architecture 2. Implement Omni-Channel Architecture Components 3. Re-architect applications to be compatible to Omni-Channel Architecture components 4. Integrate Omni-channel components with existing systems and apps
Benefit	<ul style="list-style-type: none"> • Service Delivery – Anytime and anywhere • Better adoption and usage of e-Governance systems • Lower cost of IT development owing to availability of portals/systems across delivery channels

Name	AP4: Loosely Coupled Application Architecture
Description	All IT Systems should be developed such that the features and functionality are made available as loosely coupled, self-contained, standards based and configurable services
Scope	Government hosted IT Systems
Implementation Steps	Re-architect Application following coarse grained service design feature Develop domain driven design for application designing Develop bounded context rationale for scope definition of systems
Benefit	<ul style="list-style-type: none"> • Ease of integration across multiple technology platform • Ease of service discovery and effective integration • Technology and platform agnostic integration • Flexibility to deployment of web services • Scalability of individual services based on business need

Name	AP5: Common Applications For Common/Shared Business Services
Description	One single application for cross cutting supporting business services
Scope	G2G used IT Systems
Implementation Steps	<ol style="list-style-type: none"> 1. Construct and agree on common business supporting services 2. Develop IT Systems to support those services or enhance existing IT Systems to support the services 3. Decommission redundant IT systems post rationalization 4. Ensure adoption and adherence to principle through new system development architecture review
Benefit	<ul style="list-style-type: none"> • Lower cost to the Government – shared system would mean reduced duplicity and hence impact cost of ownership • Standardization of support services

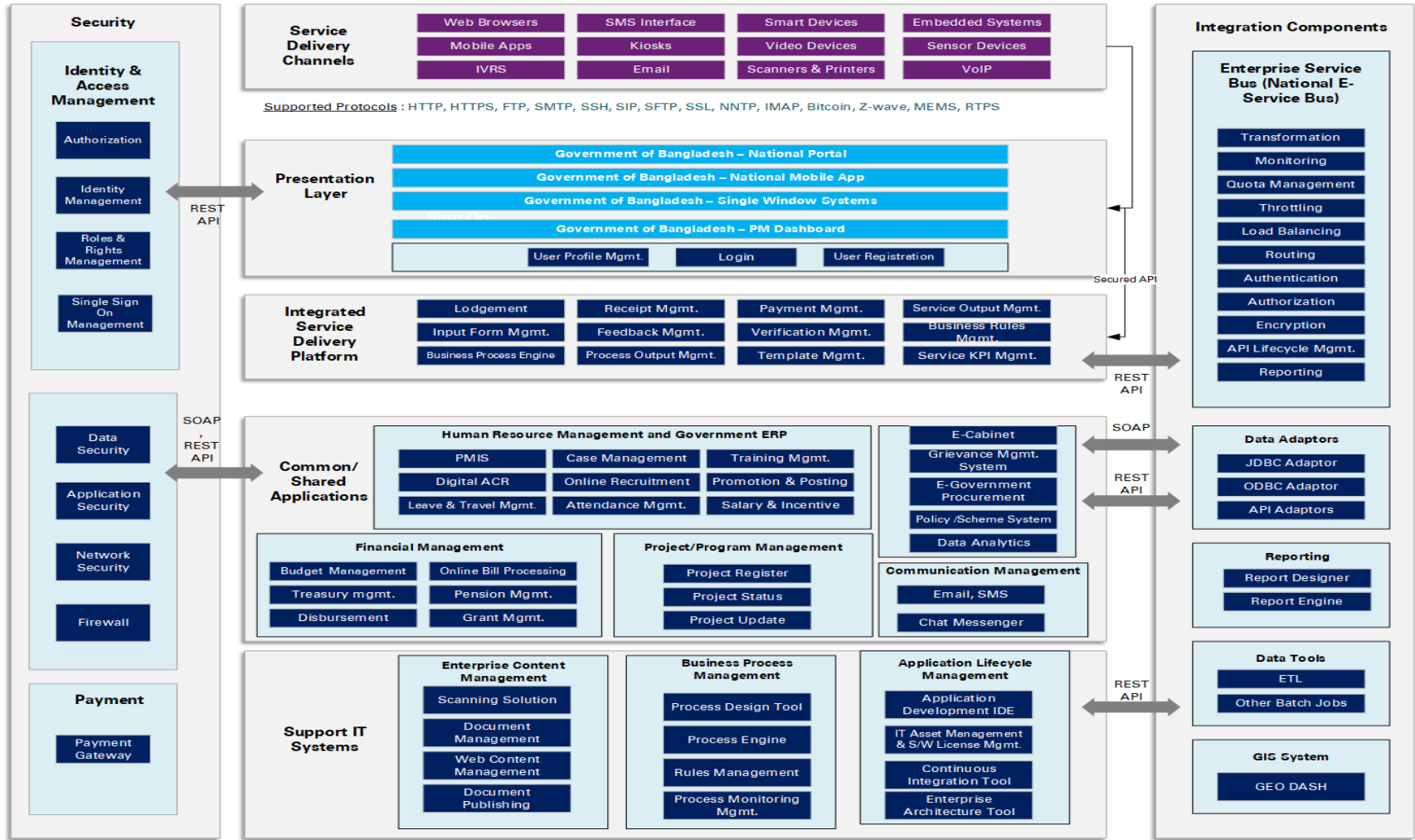
Future State Application Architecture

Considering the above principles and the overall vision of realization of integrated digital Government, the future state Application Architecture has been designed

Key Features of Future State Application Architecture are:

- ✓ **Low Code/No Coding Service Platform** - A low-code/No Code development platform provides an environment to create services through graphical user interfaces and configuration instead of traditional computer programming
- ✓ **Loosely Coupled and Bounded Context Design** – The Application functional dispositions are designed aligned to the loosely coupled architecture principle with business service supported by ministry specific applications connected to the integration platform. The common shared or supporting services would follow the common application principle
- ✓ **Support IT System** – Core enterprise systems forms the backbone of the application architecture, supporting all associated systems, portals and mobile apps through integration channel
- ✓ **Common/Shared Applications** – Built in a SOA pattern, the common/shared applications would support the common/shared business functions, reducing redundancy and lowering cost
- ✓ **Integrated Service Delivery Platform** – An integrated service delivery platform, that forms the basic building blocks of government services would be built and re-used across the Government to provide all services

GoB ICT Users



Business Solution
 Portal
 Solution Capability
 Service Delivery Channel

