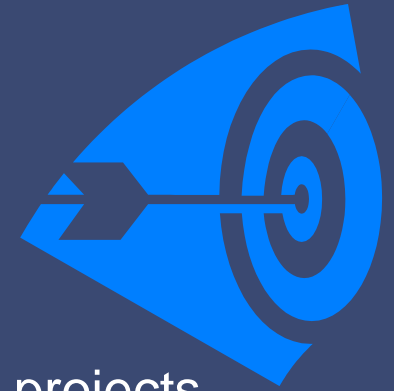


Course: Business models and Public Private Partnership (PPP) for e-Governance Project

Day 2

Session 1: Business Model Development for e-Governance Application Development Projects

Agenda



- Scope and characteristics of application software related projects
- Strategic considerations for selection of a business model for application software related projects
- Business model options and evaluation of options for application software related projects

Understanding e-Governance Applications

Computer Software (SW), consisting of programs, enables a computer to perform specific tasks, as opposed to its physical components (hardware or HW) which can only do the tasks they are mechanically designed for.

There are three major categories of computer software:

- ▶ **System Software** helps run the computer hardware and computer system (e.g. operating systems, device drivers, diagnostic tools, servers, windowing systems, and utilities).
- ▶ **Programming Software** provides tools to assist a programmer in writing computer programs (codes) using different programming languages in a more convenient way (e.g. code editors, compilers, interpreters, linkers, debuggers).
- ▶ **Application Software** allows end users to perform/accomplish one or more specific business operations/tasks.

Understanding e-Governance Applications

Categories of Application Software (ASW):

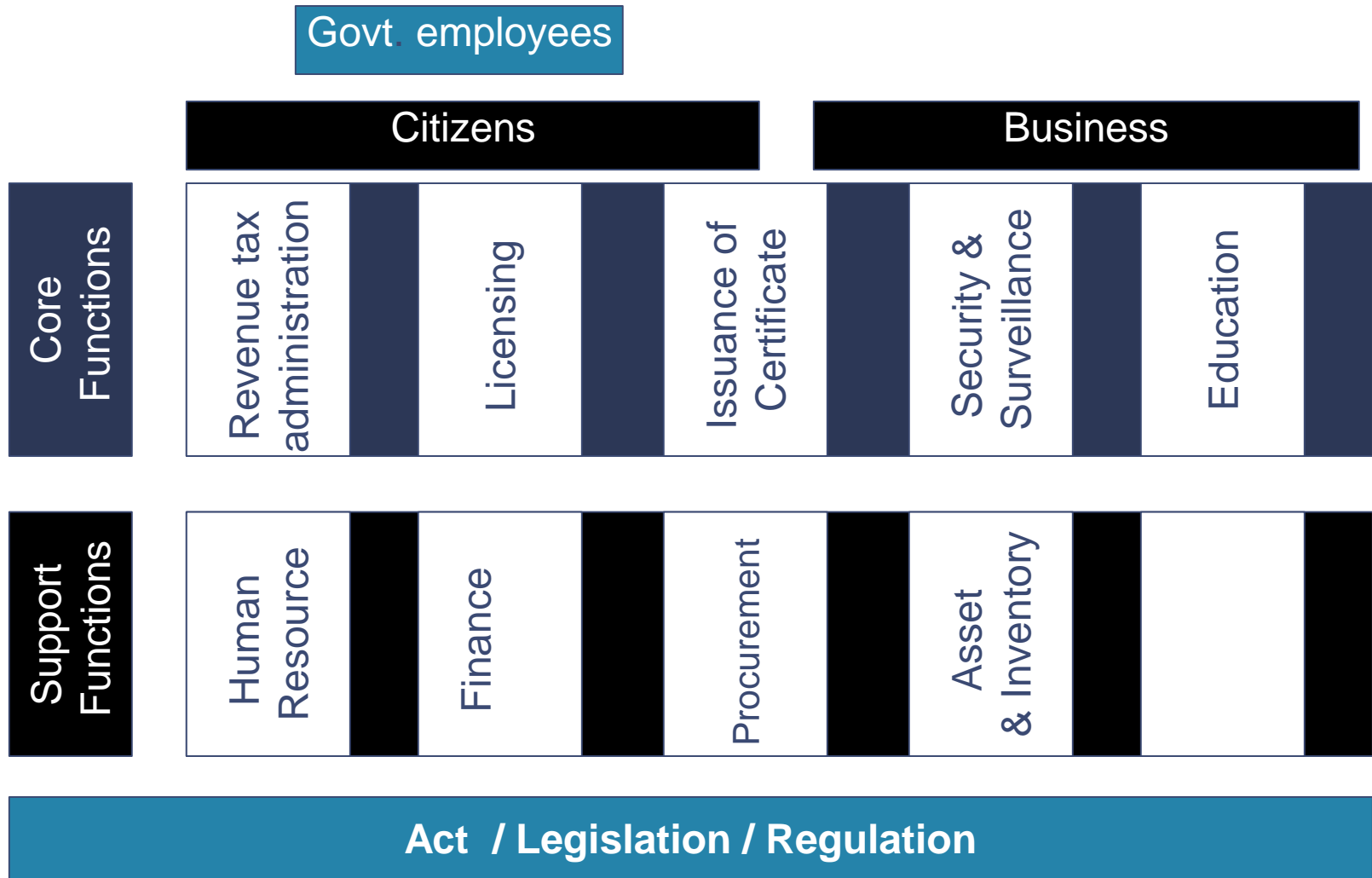
▶ **Commercial-off-the-Shelf (COTS) Software**

- ▶ is a term for ready-made application software, available for sale, lease, or license to end users.
- ▶ COTS software is available for most of the support functions of the government and for some of the core functions of the government (e.g. HR, Finance, Supply chain, Tax and Revenue management..)

▶ **Custom Developed Software (CDSW) I**

- ▶ “in-house developed” (or “bespoke” or “tailored”) software designed to meet the specific needs of end users/organizations.
- ▶ Most of the government entities in India are currently adopting custom developed software approach..

Understanding e-Governance Applications



E-Government Applications Coverage (Illustrative)

G2C

- Revenue Administration Systems
- Taxes (municipalities, commercial taxes, excise, department..)
- Fees and duties (Registration department, land records..)
- Agriculture
- Public Distribution Systems
- Healthcare and Social Welfare (Healthcare, social welfare department..)
- Education (elementary, secondary, higher..)
- Security (police..)

G2B

- Registration of business
- Licenses and permits
- Filing of documents/returns
- Payment of taxes
- Procurement

E-Government Applications Coverage (Illustrative)

G2E

- HRMS
 - Recruitment
 - Career progression, Postings and transfers
 - Leaves...
 - Benefits..
- Payroll
- Pensions
- Insurance and Healthcare

G2G

- Financial Management
 - Planning and Budgeting
 - Expenditure and revenue mgmt
- Programme management and reporting
- Implementation of schemes

Understanding e-Governance Applications

National e-Governance Plan (NeGP)

Central MMPs

1. Income Tax
2. Central Excise
3. Passports/Visa
4. Immigration
5. MCA 21
6. National ID / UID
7. Pensions
8. e-Office
9. Banking
10. Insurance

State MMPs

1. Agriculture
2. Property Registration
3. Land Records - NLRMP
4. Municipalities
5. Treasuries
6. Gram Panchayats
7. Police
8. Municipalities
9. Police
10. Employment Exchange
11. e-District

Integrated Projects

1. e-Biz
2. India Portal
3. India Portal
4. CSC
5. NSDG
6. e-Courts
7. e-Procurement

All the Central, State and Integrated Projects have the application software development as a key component....

NeGP COMPONENTS

1. Policies, Standards and Guidelines
2. Infrastructure (SWAN, CSCs , SDC)
3. Support Infrastructure

1. Capacity Building and Training
2. Awareness & Assessment
3. Technical Assistance

E-Governance applications development during E-Governance Project Lifecycle

E-Governance Projects are identified here..

1. E-Governance Strategy Development

2. Current State Assessment

3. Future State Definition

4. Implementation approach and sourcing

5. Develop and implement IT system

6. Operate and sustain

Functional and Technical Requirements for the application software required for the upgrade department are defined here...

Deployment and implementation of software

Software maintenance and upgradations are performed during this phase..

The cost estimates for required application software are identified and a suitable business model definition and procurement is performed here...

E-Governance Software Projects and Scope

Consultancy Services

Software Design,
Development and
Maintenance

IT Infrastructure
creation and
maintenance

Citizen Service
Delivery

Turnkey Project

Software Design, Development and Maintenance

1. Definition of detailed functional and technical requirements
2. System design and development
3. Procurement and supply of software (system software, ERP..)
4. Software Testing
5. Data Digitization
6. Training and capacity building
7. Project documentation
8. Software Operations and Maintenance
9. System Software AMC

Software Project Categories:

1. COTS/ERP Implementations
2. Bespoke/Custom Application Software Development

Costs in Software Design, Development and Maintenance...

One time costs..

COTS Software:

1. System Software for Application Server, Database Server, Integration Server
2. Application Software for ERPs solutions
3. Workflow automation, Documentation Management Systems..

Services Cost:

1. Requirements study and finalization
2. Software Design and Development
3. ERP Customisation and configuration
4. Project Documentation
5. Data digitization and migration

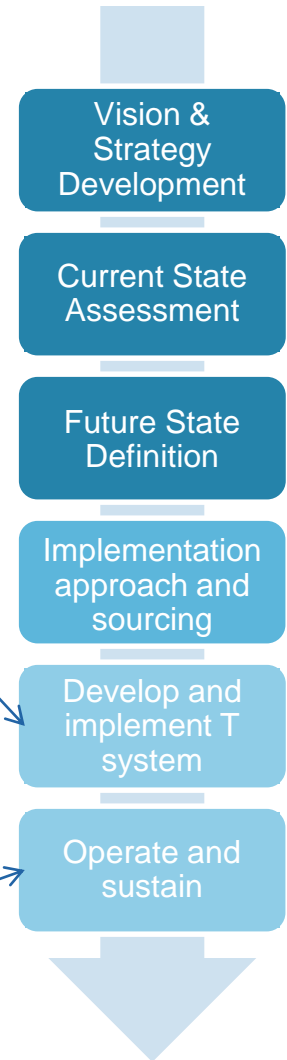
Recurring Costs:

COTS Software cost:

1. AMC for software licenses

Services Cost (recurring):

1. Training and Capacity Building
2. Software maintenance and support, Software change management, Project documentation..



Project Phases

Implementation of e-Governance applications/software will require suitable IT Infrastructure...the IT infrastructure requirements and related services already discussed during previous session...

Business Models for E-Governance Applications

E-Governance Applications

Key Characteristics:

- Most of the application softwares today are on three or n-tier architecture and are web based applications
- Provides significant scope for reduction in administration burden and improving convenience to citizens and businesses – if planned and designed appropriately
- Provides significant scope for converting government services into self services, which can be performed by users by themselves without government involvement
- Custom software development and COTS/ERP applications options are available – though custom software development route is adopted predominantly
- Requires complex skills and capabilities for designing, implementation and management of high-performing applications/systems
- Functionality, user friendliness, security, performance, availability and scalability are key focus areas for design, development/deployment of systems....

Investments needed in E-Governance Applications

- Investments needed in e-Governance applications depend on the model for application selection:
 - Custom development or
 - ERP/COTS model
- Each model has unique advantages and challenges associated, if not managed can seriously impact the project success
- Each model unique cost elements – important to understand cost elements in deciding the business model...

Understanding Custom Development Vs COTS Models

Custom Development:

- Application software is developed by the software developers based on the business needs of the customer
- Can involve development of a completely new software from grounds up or reusing the software components/code for requirements of similar customers (depends on IPR and source code rights)
- Can be a long drawn process as entire software is developed grounds-up
- Cost of the software development depends on the functionality of the system, technology adopted for development and the entity selected for software development – proportional to the quality

COTS/ERPs

- COTS/ERPs exists for both support and core functions of government – predominantly used in support functions currently in government
- Low level of awareness on the COTS products existing in core functions of departments (e.g. tax collections)
- Industry specific solutions (tailored for government requirements) exists
- Built on global best practices and learnings
- Inbuilt features for addressing functionality, security, performance, scalability requirements
- Cost of application software depends on the product, vendor and number of users..

Costs in Custom Development Projects

Design and Development Phase:

- Services cost
 - Requirements study
 - Design, Development and implementation
 - Training
- System software cost
 - Cost of application server, database server, web server..
 - Open source tools/systems exists for system software requirement..

Operations Phase:

- Services cost
 - Software operations and maintenance
 - Software change management and upgrades
 - Training
 - Helpdesk..
- System Software Cost
 - AMC for system software (application, web, database servers)
 - AMC costs exist for open source systems –if support is needed for tools – can be relatively low for open source systems

Costs in Custom Development Projects

Cost Element	Per Unit Price (Rs.)	No. of Units	Cost per Item (Rs.)			
Products and Tools						
Application Server software						
Web or Portal Server software						
Database Server software						
.....						
Services						
Software Design and Development						
Training						
Total Capital Expenditure..						
Recurring Cost		Y1	Y2	Y3	Y4	Y5
Products and Tools						
1	AMC for Web or Portal Server software					
2	AMC Database Server software					
3					
Services						
1	Application software support					
2	Software Change Management					
3	Training, Help desk...					
6	Total Operational Expenditure (Opex)	INR 0	INR 0	INR 0	INR 0	INR 0

Costs in COTS Products

Design and Development Phase:

- Services cost
 - Requirements study
 - Configuration and customisation of the product for business needs
 - Training
- Application & System software cost
 - License cost for the application software
 - License cost for the system software (e.g. database server, application server, web server)

Operations Phase:

- Services cost
 - Software operations and maintenance
 - Software change management
 - Training
 - Helpdesk..
- System Software Cost
 - AMC for application software (application, web, database servers)
 - AMC for system software (application, web, database servers)

Costs in COTS Products

Cost Element		Per Unit Price (Rs.)	No. of Units	Cost per Item (Rs.)			
Products and Tools							
Application Server software							
Web or Portal Server software							
Database Server software							
Application Software/module							
Services							
Software Customisation and Configuration							
Training							
Total Capital Expenditure..							
Recurring Cost			Y1	Y2	Y3	Y4	Y5
Products and Tools							
1	AMC for Web or Portal Server software						
2	AMC Database Server software						
3	AMC for Application Software/module						
Services							
1	Application software support						
2	Software Change Management						
3	Training, Help desk...						
6	Total Operational Expenditure (Opex)		INR 0	INR 0	INR 0	INR 0	INR 0

Understanding Licensing Models for Application and System Software

Licensing models for System Software (COTS/ERPs)

- Capital cost for purchase of software
- Licensing is based on the number of users
- For organizations with very large number of users – enterprise licensing policies exist
 - Not all vendors provide enterprise licensing policy
- Recurring cost for AMC of application software – to be paid on annual or quarterly basis
- AMC cost depends on the cost capital cot (generally between 15-22% of capital cost per year)
- AMC provides support for errors/bugs and upgrades for application software...

Licensing models for Application Software (COTS/ERPs)

- Capital cost for purchase of software
- Licensing is based on the number of servers, processors in the server or number of users
- Typically, web and application software licensing is based on the number of servers
- Database server software licensing policy is based on number of users or a number of processors in a server
- Processor based licensing is preferred in case of large number of users
- User based licensing is preferred in case of small number of users
- Recurring cost for AMC of system software – to be paid on annual or quarterly basis
- AMC cost depends on the cost capital cot (generally between 15-22% of capital cost per year)
- AMC provides support for errors/bugs and upgrades for system software

Other Costs in E-Governance Applications

- Consultancy services cost during requirements gathering, process reengineering..
- Software Quality Assurance during design, development, implementation and operations
- Third party acceptance testing and certification of:
 - Software functionality
 - Performance, scalability and availability
 - Security
 - Documentation....
- Project management services.....

Understanding Source Code Ownership and IPR

Source code

- Source code refers to the software programme/code written/developed for achieving functional requirements of software
- Source code is needed for making any changes to the software functionality/design
- It is important and critical for the government to have the source code and its usage and modification rights to ensure continuity in software usage and operations – even when there is a change in the vendor
- It is critical to ensure that source code existing with the government is current and updated based on changes in application software
- The contract/agreement should have provisions to ensure usage/modification rights on the source code by the govt.

IPR

- Intellectual Property Rights (IPR) refers to ownership of the source code in software programmes
- As per Copyright act, the copy right to the source automatically rests with the developer/private partner
- In the contract, government need to get the needed rights assigned to the government (i.e. right to make changes or right to sell or extend services to other entities...)
- If government has rights on source code modification and changes, it does not mean that it has IPR
- Entity having IPR can sell or resell its software/product to multiple clients
- In COTS/ERP products, IPR is not given to the government – only usage rights are provided

Revenue Generation Options in E-Governance Applications

- E-Governance applications, apart from cost investment, also provides revenue generation opportunities for government or implementation partner
- Direct or indirect revenue generation potential exists:
 - In conversion of services into self services
 - In provision of value added services

Self Services

- Citizens and businesses are willing to pay if service is delivered in time, at promised cost and at convenience of citizen or business
- Online registration of businesses, filing of returns and payment of taxes
- Direct revenue is through transaction fees/ service charge levied on online transactions
- Indirect revenue or cost reduction is through redeployment of employees who earlier was delivery manual services

Value added services

- Well designed e-governance applications have potential for value added services
- Majority of citizens and businesses rely on government data for their day to day operations
- Digitized data made available through e-government applications in the form of online services has significant demand and customers
- E.g. Data of registration and land records department is needed for citizens (during purchase), by banks/lending agencies..

Illustrative Revenue Sources for e-Governance Projects

- Portal registration/subscription charges (e.g. e-procurement)
- Transaction fees for the online services
- Advertising revenue from the portal
- Advertising revenues from service center
- Fees for delivery of B2C and B2G services through common service centers
- Convenience fees – enhancement in the current fees/charges
- Value added services (e.g. alerts/sms on government procurement opportunities, information on land records/property ownership and transaction history..)

Business Models for e-Governance applications

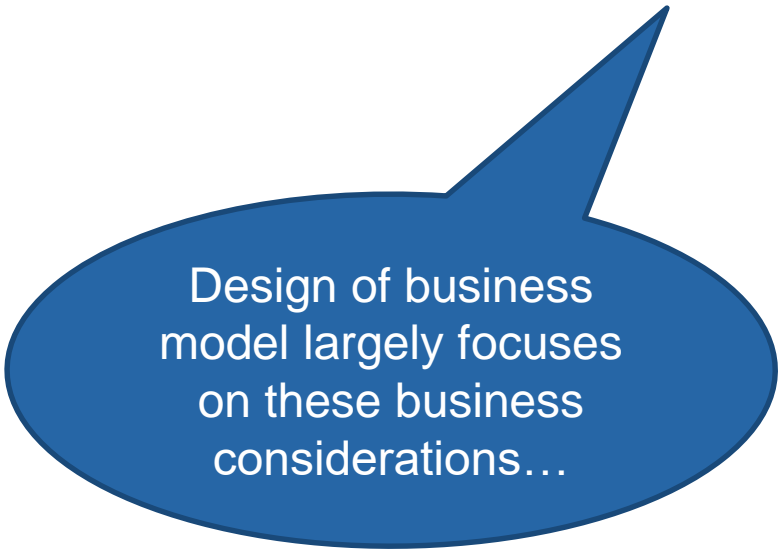
Strategic Considerations in an e-Governance application

Technical Considerations:

- Functionality
- User interface
- Performance
- Scalability
- Availability
- Security
- Documentation...

Business Considerations:

- Cost of software development and maintenance
- Source code and IPR
- Software Manageability
- Data Ownership and security
- Business continuity...



Design of business model largely focuses on these business considerations...

Business Models for e-Governance applications

Option1: Government Owned Applications

- State Government or Individual Department will own the application software designed and developed for its business needs
- Entire investment in software design, development, implementation and maintenance is incurred by the government. Services are provided through a service provider.
- Service providers are hired to develop and maintain the application software.

Most of the E-Government Applications Development today is performed in this model for both core and support functions of the government departments...

Departments with strong leadership, commitment and sustained efforts have benefitted from investments and others have achieved minimum or marginal benefits from these projects and investments...

Pros

- Government owned applications are investments are
- Can have rights for usage and changes to the software lifetime
- Government can share or provide software services at cost to other government entities in similar business (e.g. e-procurement) – for project cost recovery and sustenance
- Needs significant technical capabilities to ensure that department is getting right product or need to depend on third parties for QA
- Risk of software adoption and success is completely with the government
- Needs strong management capabilities in managing the delivery and services of vendor

Business Models for e-Governance applications

Option 2: Public Private Partnership (PPP)

- Private Partner invests in the application software design, development, implementation and operations
- Private Partner revenue realization shall be through the extent of utilization of application software by the government or its customers and is paid through service charges or transaction cost
- Application software is owned by the private partner with an option to transfer the usage rights at the end of contract period at a cost...

Pros

- No or minimal cost investment by the government
- Can lead to significant improvement in services and service delivery through leveraging system capabilities and quality of private sector services
- Risk of project success largely transferred to the private partner – however government to ensure volume/demand for usage of system

Cons

- Lack of ownership or control on the application software – till the transfer of asset is performed and related costs are paid
- Data ownership – data resides in private partner facility and needs stringent monitoring controls to ensure security
- Significant dependence on private sector entity for running government business
- Poor contracts can lead to significant loss or profits to private partners
- Discontinuity of vendor services or vendor's business can impact the government business...

Option 2: Public Private Partnership (PPP) - References

E-Procurement Applications implemented by Andhra Pradesh and Karnataka

Role of PPP Partner

- Completely responsible for project investments
- Design, Development, implementation, operations and maintenance of e-Procurement application software and supporting IT Infrastructure
- Capacity building and training of department employees and the suppliers in system adoption
- Helpdesk for government users and suppliers....

Role of Government

- Leadership and commitment
- Design business model and selection of PPP Partner
- Ensure business volumes/conduct procurement through the e-Procurement system
- Audit of systems and transactions to ensure transaction integrity and trust
- Awareness building in government and supplier community

Option 2: Public Private Partnership (PPP) - References

E-Procurement Applications implemented by Andhra Pradesh and Karnataka

Revenue Realisation (Illustrative)

- Per transaction payment is made by the supplier to the PPP partner
 - For each bid submitted in the system
- User registration fees
- Value Added Services (alerts on bidding opportunities..)
- Advertising opportunities in the portal

Benefits (Illustrative)..

Suppliers:

- Anywhere and anytime submission of bids
- Reduction in time and cost in bidding (travel, printing, participation...)
- Increased participation and transparency

Government

- Reduced time in evaluation and selection
- Reduced cost of procurement
- Increased transparency...

Option 2: Public Private Partnership (PPP) - References

E-Procurement Applications implemented by Andhra Pradesh and Karnataka

GoAP is in the process of acquiring the application software from PPP partner post contract period and is working towards sharing its e-Procurement system for procurement requirements of:

- funding agencies,
- governments from other countries and
- other government entities in India...



Sharing of its system with other entities will provide additional revenues to the project, which can ensure project sustainability, operations and enhancements...

Option 2: Public Private Partnership (PPP)

Risks to the Private Partner and Government Responsibility

Risks to Private Partner

- Poor adoption or uptake of the system by government and its customers post application development and deployment
- Low or no transactions in the system
- Coexistence of manual and IT processes – many prefer manual processes..
- Delays in receipt of payments from government – in case revenues/ transaction fees is directly collected by the government from its customers

What Government Should Do?

- Ensure system adoption through necessary government orders or legal changes brought about in the department
- Eliminate coexistence of manual and IT processes
- Timely payments to the private partner – they invested in entire capex and opex and delays in receipts/revenues can make the project unsustainable...

Business Models for e-Governance applications

Option 2: Public Private Partnership (PPP)

Risks to the Government and Mitigation Measures

Risks to Government

- Data and systems in the control of private party
- Discontinuity of vendor's business or support to the system can lead to severe impact on government business
- Using the e-government portal or system for non related advertisements or private sector services
- Delivering significantly high profits or returns to the private partner – can attract huge criticism on government...

What Government Should Do?

- Appropriate terms and conditions in the contract on security requirements and responsibilities on application and data
- Frequent audits and supervision
- Maintaining latest version of source code or application software programmes/executable in the escrow account during contract period
- In-depth feasibility assessment including IRR calculations and plan for cap on the revenues and returns based on market trends or provision for revenue sharing..
- Contractual provisions to ensure that only authorised content and services are delivered through portal or system

Business Models for e-Governance applications

Option 2: Public Private Partnership (PPP) – Applicability...

PPP model may not be applicable for all departments/sectors

High –probable functions/departments for PPP in e-Governance applications

- Revenue Administration Systems
- Tax collection systems (municipalities, commercial taxes, excise department..)
- Fees and duties (Registration department, land records..)
- Registration of business
- Licenses and permits
- Filing of documents/returns
- Public Procurement

No or low probable functions/departments for PPP in e-Governance applications

- Agriculture
- Public Distribution Systems
- Healthcare and Social Welfare (Healthcare, social welfare department..)
- Education (elementary, secondary, higher..)



Departments can explore annuity based payments for both capital and operational expenditure to private partner to minimise high capital investments in early stages....

Business Models for e-Governance applications

Option 3: Pay Per Use Service/Software As Services (SAS)

- Government utilizes the applications and software services created by the private partners
- Private Partner revenue realization shall be through the extent of utilization of application software by the government or its customers and is paid through service charges or transaction cost
- Variation from Option 2: Private partner may or may not develop or implement the system only for a particular department or sector – same application may be used by private partner to deliver services for multiple government agencies and both private and government sectors....

Pros

- Least cost model to the government – infrastructure and facilities are shared by multiple clients (public and private)
- Performance, scalability and availability ensured and readily available
- Pay per use – no or minimal capital investment needed
- Low or no operations overheads are low due to shared infrastructure and resources..

Cons

- Data and applications are hosted in third party facilities with complete private control
- Requires stringent monitoring controls for ensuring data safety and security
- May create vendor dependence...

Business Models for e-Governance applications

Option 3: Pay Per Use Service/Software As Services (SAS)

- Many case studies exist world wide in support functions such as HR, Finance, Payroll, procurement etc
- Minimal or low uptake in shared applications or systems in core functions – exists in areas such as tax collections and administration, but created exclusively for public sector
- Least or not explored in areas such as agriculture, healthcare, education sectors...
- New models emerging in sectors such as healthcare for establishing shared IT systems (e.g. Apollo Health Highway for providing healthcare IT systems as service to healthcare organizations...)

Business Models for e-Governance applications

Option 4: Joint Venture (JV)

- Private Partner and Government invests in the application software design, development, implementation and operations
- Private Partner and government revenue realization and sharing is based on the percentage of investments or commitment of business by the government
- Revenue generated through the extent of utilization of application software by the government or its customers and is paid through service charges or transaction cost
- Application software is owned by the private partner or the company/JV created between government and private partner

But, Government is not in the business of software development.....

End of Session