Towards a “SMART” Dhaka City

How Can Dhaka City Apply Smart Technology to Solve Its Problems?

World Bank Group Korea Office BBL Series
Data Platforms for Smart Cities: Experiences and Lessons from Korea
Wednesday, Nov 21, 2018

Hyoung Gun Wang
Senior Economist, Lead of Smart Cities KSB
Initiation: Strategic Action Planning for Dhaka Smart City

Maximum visibility and benefits for the citizens

Quick-Win solutions for implementing Smart City

Stable and sustainable transformation for Smart City

Assessment & Analysis
- Prioritize Quick Wins by assessing the current status and readiness levels
- Establish the directions for improvement

Definition of Smart City Solutions and Architecture
- Vision and Strategy for Dhaka “Smart City”
- Recommendation of Appropriate Smart City Solutions
- Define Architecture in consideration of HW, SW, NW components

Action Planning
- Drafting of action plan based Road-Map
- Estimation of necessary Budget
- Renovation of Smart City Governance
Phase 1: Assessing and Evaluating the Situation

- Project preparation and implementation
- Stocktaking of current situation
- Formulating activities from overall vision
- Prioritization of different services
- Planning/sourcing of resources
- Formalizing results of project
## Phase 2: Preparation for Implementation

<table>
<thead>
<tr>
<th>Selection of Smart City Solutions and Components</th>
<th>Analyzing and mapping current processes $\rightarrow$ BPR</th>
<th>Designing and Contextualizing ICT Solutions</th>
<th>Developing the Implementation Plan</th>
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- Project preparation and implementation
- Analysis and mapping of current processes
- Identification of requirements and needs
- Planning/sourcing of resources
- Identification of funding source
- Drafting of technical and administrative documents
- Hiring of relevant staff/consultants for project management
### Specific Scope of Work: Tasks and Deliverables

<table>
<thead>
<tr>
<th>Target</th>
<th>Tasks/Activities</th>
<th>Deliverables</th>
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</table>
| Business Processes of DNCC & DSCC: | • Conduct BPR on the current business processes  
  - Organization (A1)  
  - Current Process Maps (A2)  
  - Re-Engineering (A3) | • As-Is Map of Current Processes |
| Modules for Dhaka City’s E-Gov. Services: | • Design the “To-Be” Process maps (B1,B2)  
  • Develop Tech. Architecture (B3)  
  • Common Modules (B4)  
  • Evaluate Latest Tech (B5)  
  • Develop Technical Specification (B6)  
  • Prepare Detailed Budget (B7)  
  • Determine Critical Requirements (B8) | • System Requirement Specifications for each of the modules  
  • Detailed Project Report  
  - System Integration Scope  
  - Budget Estimate  
  - Systems Architecture  
  - H/W, S/W, N/W Specifications  
  - BPR Results including To-Be Process Map DPR and SRS contents |
| DNCC & DSCC Project Plans | • Design Integrated Architecture (C1)  
  • Mid and long term planning (C2)  
  • Integration Plans for Control Room (C3)  
  • GIS Plan (C4)  
  • Draft Project Plan (D1)  
  • Clarify Project Scope (D2) | • SRS components  
  • Bidding Documents including RFP SRS and Bid Docs |

### Questions

**“What needs to be Improved?”**

**“How are we going to use ICTs for improvement?”**

**“How are we going to implement the ICT Solutions?”**
Selected Smart City Components

**Dhaka North City Corporation (DNCC)**
- ✓ Base-Map Implementation
- ✓ Taxation Integration
- ✓ Online Registration and Renewal
- ✓ E-Certificate
- ✓ Inventory Management
- ✓ Estate Management

**Dhaka South City Corporation (DSCC)**
- ✓ Base-Map Upgrade
- ✓ Road + Traffic Management
- ✓ Revenue enhancement (Holding Tax)
- ✓ One-Stop Center for Citizen
- ✓ Interface with internal system (Birth certificate, Trade license, inheritance, etc.)
- ✓ Road-cutting management
- ✓ Community center management
- ✓ Burial area management
# Draft Implementation Schedule (DSCC)

## One-stop Service Center

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4 months

## GIS (Base-map upgrade)

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11 months + 8 months for traffic management

## E-Governance module

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6 months
Smart City Model for Dhaka City Corporation (DSCC)

- **User**: Citizen, Company
- **Channel**: Internet, Smart Phone, Phone, FAX
- **Department**: Store & Purchase, Health, Revenue, Urban plan, Engineering, Transportation, Waste mgmt., Estate, Security

**CITY CORPORATION**

**E-GOVERNANCE**
- Road-cutting
- Birth registration
- Holding tax
- Burial reservation
- Inventory
- Inheritance
- Community center reservation
- Estate
- Trade license

**One-Stop Center Officer**

**Online service portal**
- Online registration and issuance
- Online Payment

**Integrated GIS**
- **GIS Basic Layers** (12 Layers)
- **Additional Layers**
  - Tax Layer
  - Building Layer
  - Utility Layer
  - Traffic Layer
  - Bus line Layer
  - Cadastre Layer
  - Etc.

**GIS Information Sharing**
GIS Basemap Development

• Update current GIS database

• Implement base-map with 12 layers (based on cost-effectiveness, and utility)

• Utilize base-map for other departments, urban planning, construction, water management, traffic monitoring, taxation, etc.

• Increase capability to manage GIS data
GIS Basemap: 12 Main Layers

**Urban Infra Data**
- Control Points (GPS)
- Main infra facilities (bridges, file brigade facilities, etc.)

**Base Data**
- Road/Rail
- Building
- Water and Stream
- Land Use
- Contour

**Administrative data**
- Parcel and Mouza
- Administrative Boundaries
- Zone and Planning

**DEM and Orthophoto**
- Digital Elevation Model
- High Resolution Orthophoto imagery

**GIS Basemap**
- GIS Basemap: 12 Main Layers
- Urban Infra Data
  - Control Points (GPS)
  - Main infra facilities (bridges, file brigade facilities, etc.)
- Base Data
  - Road/Rail
  - Building
  - Water and Stream
  - Land Use
  - Contour
- Administrative data
  - Parcel and Mouza
  - Administrative Boundaries
  - Zone and Planning
- DEM and Orthophoto
  - Digital Elevation Model
  - High Resolution Orthophoto imagery
## GIS Basemap: Five-year implementation schedule

<table>
<thead>
<tr>
<th>Components</th>
<th>YEAR 1</th>
<th>YEAR 2</th>
<th>YEAR 3</th>
<th>YEAR 4</th>
<th>YEAR 5</th>
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<tr>
<td><strong>Spatial database</strong></td>
<td>Building BASEMAP</td>
<td>Taxation, security, facilities,</td>
<td>Integrated database e.g. road and underground</td>
<td>Real time database from sensors</td>
<td>Data sharing for portal system</td>
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<tr>
<td><strong>Data management system</strong></td>
<td>Data management and upgrade system</td>
<td>Taxation system, disaster</td>
<td>Management system, traffic management system,</td>
<td>Data sharing for portal system</td>
<td>Data sharing for portal system</td>
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<tr>
<td><strong>Data center and equipment</strong></td>
<td>Data center</td>
<td>Management system, traffic</td>
<td>Management system, water pollution, etc.</td>
<td>Data sharing for portal system</td>
<td>Data sharing for portal system</td>
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<tr>
<td><strong>Capacity building and ISP</strong></td>
<td>Capacity building</td>
<td>Regional center</td>
<td>Maintenance and upgrade of infra system</td>
<td>Data sharing for portal system</td>
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<td>Information strategy plan</td>
<td>Mobile GIS</td>
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<td>Operational organization</td>
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Challenges in Smart City Planning and Implementation

Administrative Cycle (5 years)
- Rapidness (Speed) of project VS. Impact and/or Quality of Project
- Visibility (Front-end) VS. Functionality (Back-end)

Multiple Stakeholders
- Project Coverage Gaps VS. Project Coverage Duplication
- Specialized benefit for one department VS. Small but general benefits for all

Funding and Sustainability
- Internal Funding VS. External Funding
- Outsourcing VS. Internal Operations
Strategic Decisions on Smart City Projects

- **High strategic value**
- **Easy to implement**
- **Quick Wins**
- **High strategic value**
- **High effect**
- **You should be investing**
- **Easy to implement**
- **Effective for a short time**
- **Low Strategic Value**
- **Not urgent**
- **Difficult to implement**
- **If resources are limited, the project should be postponed/canceled**
What Can Go Wrong?

**PROCESS**
1. Delays in key decision making
2. Delay of approvals (from funding source due to lack of compliance, not enough administrative preparation etc.)

**PEOPLE**
1. Lack of capability to operate and maintain systems
2. Insufficient engagement for system implementation

**TECHNICAL**
1. High dependence on specific vendor
2. Insufficient standardization for integration
3. Technology acceptance risk (improper contextualization)
Risks of Cascading Delays

TIMEFRAME to start the project

End of April

Proposal for BMDF

BMDF Consultant Selection

Project plan

Agreement

End of May

Tender Update & Float

Evaluation

End of August

Bid Selection

Contract

September

Project Initiation

DNCC/DSCC Consultants Selection

Realistic Timeline

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<th>2017</th>
<th>2018</th>
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DSCC

- Base-map upgrade + GIS Mgmt. system + additional layers
- One-stop center
- Traffic management

DNCC

- Base-map upgrade + GIS Mgmt. system + additional layers
- E-governance module
- Revenue Enhancement
- Trade License
Issues Identified during Project Implementation

- Time is of the essence: 3 years left in Mayor’s term, and time is ticking
  → Acceleration of project needed

- Project planning/implementation delays, quality issues
  → Lack of local capacity

- New jobs/different combination of qualifications, lack of local experience
  → Difficulties and delays in procuring relevant experts

- Interoperability (GIS/traffic etc.) issues
  → Coordination between cities needed
Gaps to Overcome:

- City governance & leadership
- Collaboration among different levels of government
- Bridge administration silos
- Assess, adapt emerging technologies
- Plan, implement & management change
- Finance, PPP for investment, O&M
- Citizen engagement and consultation

Scarce use of smart (data-based) solutions as integral part of city development strategy or key components of urban projects

Absence of strategic and comprehensive assistance to cities via integrated and interconnected digital solutions that can cut across sectors and functions of a city
Global Smart City Partnership Program of the World Bank

- Korea-WB Smart City Partnership Program (P166893)
  - 2nd subtask (ASA) under Smart Cities PA (P160290)
  - Support activities agreed on the MOU Action Plan
    - Signed by GSURR Management and Korean Ministry of Land, Infrastructure and Transport (MOLIT) on Sep 6, 2017
  - Smart city partnership
    - Korea – Provide financial & technical contributions
    - WB – Convene global experts and connect clients
  - Completion FY2020

- Lead GP: GSURR
  - TTL: Hyoung Gun Wang, Senior Economist (GSU12)

- Contributing GPs:
  - Digital Development
  - Transport
  - Governance
  - Competitive & Innovation
**Objective:**
Enhance the capacity of planning and implementing Smart City projects, building on best practices and networks of global Smart City practitioners and experts

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<th><strong>Component 1:</strong></th>
<th><strong>Support for project preparation and implementation</strong></th>
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| Just-in-time Technical Assistance and operational support | - Provide just-in-time technical support to WB teams and clients  
- Create smart city components in Bank projects |

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<th><strong>Component 2:</strong></th>
<th><strong>Support for business development</strong></th>
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| Knowledge sharing and dissemination | - Provide an online hub for networking and learning  
- Offer cross-sectoral knowledge resources  
- Support strategic knowledge and learning activities  
- Promote peer-to-peer learning opportunities |
"We are just in the beginning stages of thinking about disruptive technologies for development and what we want is for everyone in the World Bank Group to be asking those questions and take an idea, a technology, and move it into practice."

- President Jim Yong Kim