IMIS – An Initiation in Sanitation Data Governance

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ABSTRACT

A good data and information are essential to facilitate dialogue between stakeholders and informed decision making. Sanitation data, if present in any Municipalities is in disparate sources and formats, scattered amongst different departments, lacks standard guidelines for data collection and storage, and finally democratization of access is a challenge. Integrated Municipal Information System (IMIS) is a powerful web-GIS based information system particularly designed for local governments to manage the municipal services. The system enables authorities to conduct 3 main functions i) Reporting for accountability, with a customizable dashboard showcasing indicators and information; ii) Managing municipal services, linked with a mobile app for service providers to record application, service delivery and customer's feedback; iii) Planning and long-term investments, through spatial-based analysis for better informed decision-making.

Keywords: IMIS, Municipal Information System, Sanitation Planning, Data Governance

INTRODUCTION

Most of urbanisation is unplanned and currently, nearly one in three people in urban areas lives in "slum" households[1]. Local authorities (LAs) and utilities are facing enormous pressure to ensure safe sanitation services to meet SDG 6.2. National and Sub-National Governments have introduced various initiatives aimed at ensuring CWIS approach throughout the city to ensure everyone has access to safely managed sanitation, and human waste is safely managed along the whole sanitation service chain ensuring protection of the environment and human health[2]. CWIS approach is focusing on service provision and its enabling environment, rather than on building infrastructure[3]. Therefore, the reliable data is the key success factor of CWIS. Sanitation issues are inextricably linked with other complimentary urban system and services such as roads, sewerage, solid waste management, storm water drainage, building infrastructure, land use, data about service deliveries and revenue collection etc. for efficient planning and management and monitoring of the sanitation system and services. Conventional approach of creating data cannot address the CWIS data requirements. There is a need of robust data governance, that includes policies, procedures, and a standard framework for capturing and managing data.

INTEGRATED MUNICIPAL INFORMATION SYSTEM (IMIS)

IMIS is a convergence of cost-effective digital innovations in Information Technology (IT) and Geographic Information System (GIS) that provides a holistic solution to manage the complete information of a city.

IMIS establish good data governance which help LA to capture and manage data in every stage of sanitation service chain in real-time. Furthermore, data governance approach in IMIS also help in maintaining other urban data in the process of executing city's regular business process. It manages data in central cloud that can be leveraged across various departments of LA and the stakeholders. IMIS provides system to aggregate multiple types of spatial and non-spatial urban data in web-GIS environment to provide interactive access to geo-spatial data, visualization, querying, real-time data integration, and platform-independent spatial analysis tools. System Architecture of IMIS was inherited from the GIS-based Municipal Information System (GMIS) which was developed by ISPL for ADB funded Strengthening Municipality's Urban Service Delivery Project, 2011.
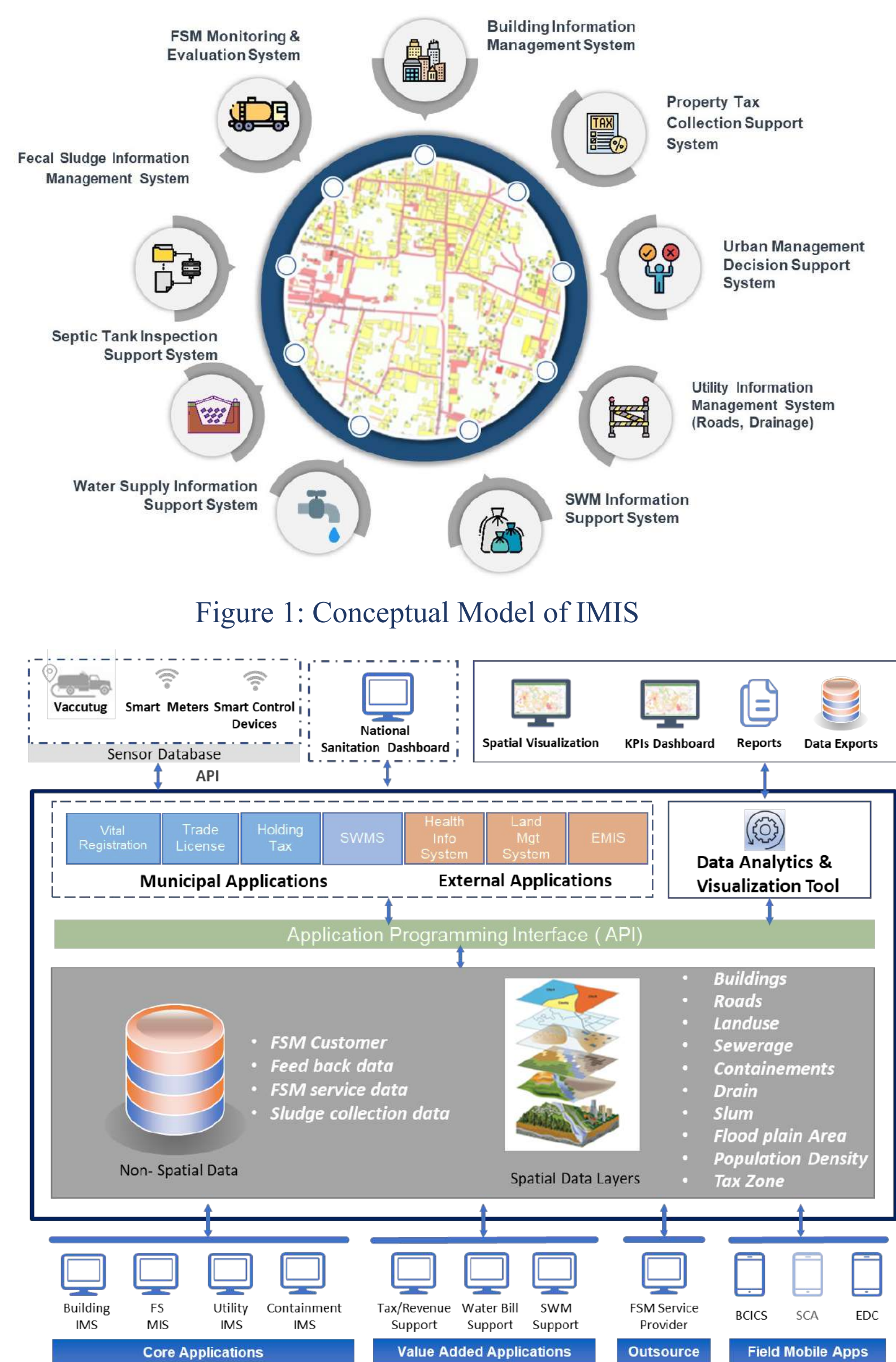

Figure 1: Conceptual Model of IMIS

Figure 2: IMIS System Architecture

IMIS EVOLUTION

- SNV recognized the necessity to create a sanitation data management system, leading to the development of a customer database system for project towns in Bangladesh[4].

- Under CWIS project funded by BMGF, SNV developed GIS-based database (with support of Khulna University) of containments along with many other urban features for Khulna and Jhenaidah with technical support of ISPL.

- SNV with the technical support of ISPL conceptualized IMIS and implemented in Khulna and Jhenaidah. With the technical support of local company Stream Tech, SNV maintained and further customized IMIS, and replicated in additional four cities in Bangladesh. IMIS in these towns mainly focused on the management of sanitation service chain and monitoring of KPIs. SNV is in the process of replicating IMIS in 17 more cities, partnering with Water Aid, NGO Forum Bangladesh and other agencies.

- ISPL has been enhancing IMIS to catalyse CWIS. The system has been enhanced, specifically to support in planning, management and monitoring & evaluation of sanitation systems and services aligning with CWIS approach. Environment and Public Health Organization (ENPHO) implemented IMIS with the technical support of ISPL with such features in Mahalaxmi, Nepal as a part of adoption process of ISO 24521.

- IMIS demand is growing rapidly, the Technical Assistant Hub, Bangladesh with the support of ISPL has performed readiness assessment of IMIS for implementation in 21 project towns across Bangladesh, India and Nepal for various projects funded by ADB, WB, AIIB and ISDB. TA Hub has also prepared spatial analysis based CWIS plan in various towns mainstreaming IMIS data framework. IMIS with integration of CWIS plan provides tools for LAs, IFIs and Project Management Unit (PMU) for efficient implementation and monitoring of the devised CWIS plan.

- Global Water and Sanitation Centre (GWSC), at Asian Institute of Technology (AIT) has taken initiatives to further standardize and scaling up IMIS for other applications and LAs in the region along with partners including ISPL, SNV, etc. GWSC has initiated IMIS implementation in Birendranagar, Nepal and Laksmipur, Bangladesh.

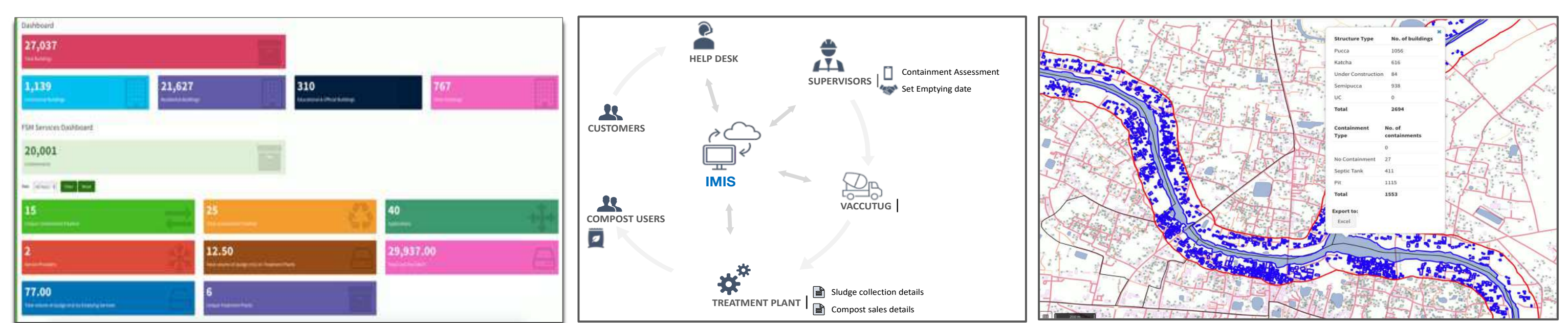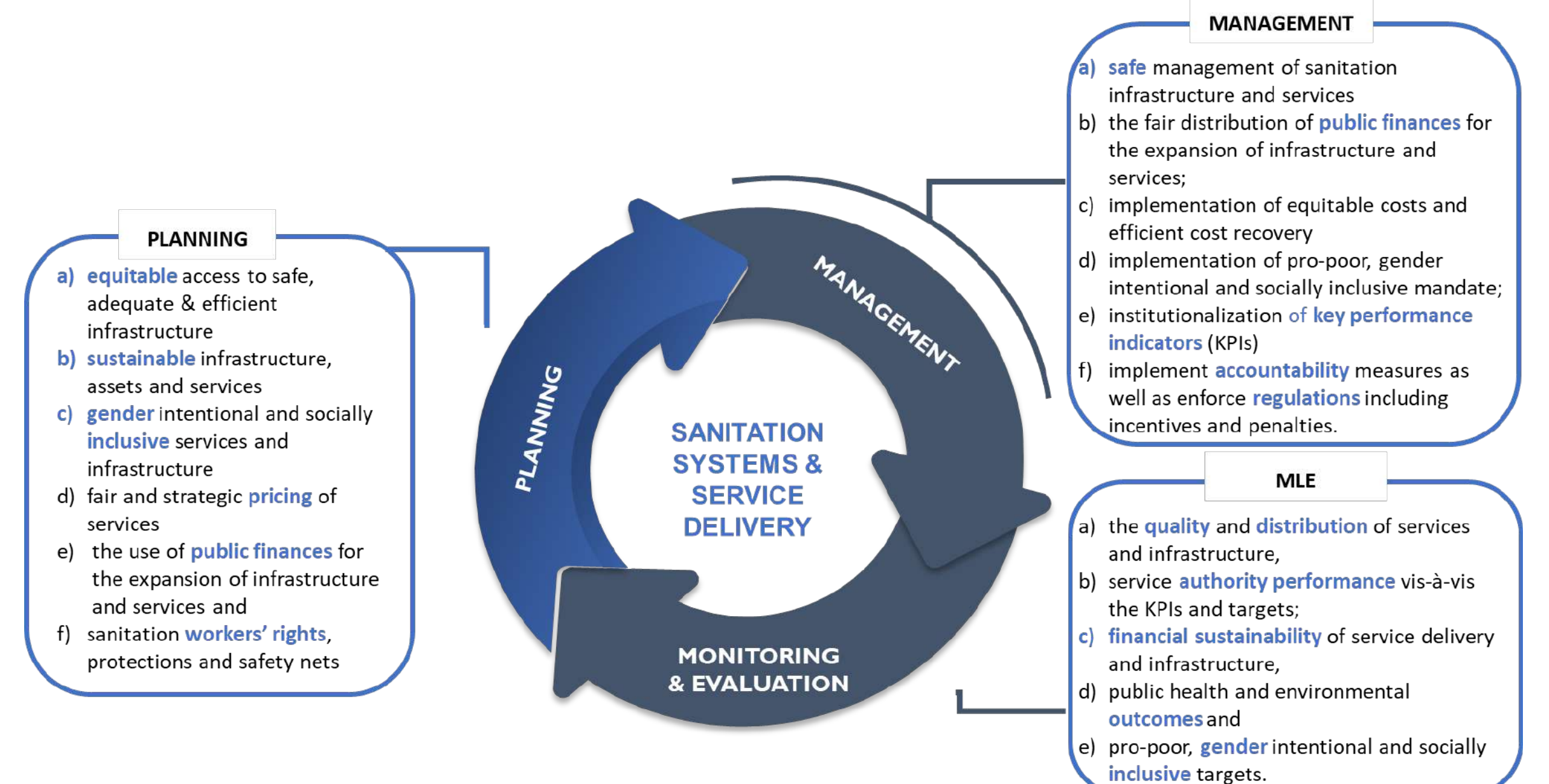## IMIS FACILITATES PLANNING, MANAGEMENT AND M&E

Customizable dashboard for reporting

IMIS-driven sanitation service delivery model

An example of planning tool for investment planning and informed decision making

Figure 3: IMIS Facilitating in CWIS Implementation

PHOTO GALLERY: IMIS IMPLEMENTATION

Collecting building and containment data in Benapole

Application uploading in IMIS in Khulna

Containment inspection using mobile app before emptying service, Jhenaidah

Fecal sludge emptying service in Jashore

Development of monitoring mechanism for construction of standard septic tank to be implemented in IMIS, Mahalaxmi

Capacity building of municipal engineers for inspecting septic tank standard compliance, Mahalaxmi

Field inspection of septic tank standard compliance using Mobile Application in Mahalaxmi

CONCLUSIONS

A robust public data system is needed to accelerate mainstreaming CWIS principles in urban sanitation projects that helps to monitors the desired outcomes of sanitation interventions as well as measure the progressive improvements made at city-level through a CWIS aligned indicators. Therefore, urban sanitation intervention projects need to prioritize and finance the establishment of such data systems during the early stages of the project implementation to ensure optimal use of scarce financial resources.

IMIS provides a comprehensive framework for efficient management of sanitation service delivery and enables the aggregation of data and information centrally to support holistic understanding of contextual demands through comprehensive data of containment, urban and sanitation infrastructures, and real-time data tracked along the service chain. Extensive detailed information stored in IMIS allows formulation of evidence-based strategic and tactical changes to optimize performance of service delivery and as well as to expand into unserved area for 'Connecting the Unconnected'.

Since IMIS offers an integrated solution for LA to manage to complete GIS-based information of the city urban infrastructures (e.g. buildings, roads, drainage) along with necessary sanitation data, various IFIs and LAs have shown immense interest in implementing IMIS to improve LA's efficiency, responsiveness and accountability for delivering various municipal services.

Despite all these features of IMIS, there are two key challenges in implementing IMIS:

a) Establishing GIS-based database with complete sanitation data - the cost involved in preparing GIS-based data of the town with census survey of the sanitation system in the city, which are the basic data for establishing customer database. There is a need for continuous research for more efficient and cost-effective data capturing process.

b) Institutionalization of IMIS in the local governance - there are several modules in IMIS to be used by different departments and units of the local authority including sanitation service providers. For example, building information management module need to be used by building permit unit in the process of issuing building permit, so the new building and containment constructed in the city will be updated in IMIS in real time. Modules related to sanitation section are in use while delivering sanitation service, but other units are generally reluctant to use the modules corresponding to them. Policy framework and institutional set up required for data governance need to be analysed and enforced to strengthen the data governance of LA.

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