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Master Plan Initiative of Electronic-Based Government System (SPBE) in Metro City, Indonesia

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***Abstract*—**The central government expects the development of information technology and bureaucratic reform in the regions to be more focused and integrated. The problem that exists in the Metro City government is that there are still many government service information systems that have not been integrated or are still partial. The Metro City government's Electronic-Based Government System Index (SPBE) in 2021 is 2.17 with the predicate "Enough", even though the desired condition in 2026 is "Good" so the SPBE index value must be achieved is at least 2.6.

The purpose of this research is to prepare the SPBE Master Plan within the scope of the vision and mission, architecture, policy direction, and roadmap for the next 5 years. The SPBE master plan document was created to provide an overview and direction for the management of Information Systems and Information Technology resources for the Metro City government.

The methods used in this research are qualitative and quantitative. Primary data were collected through questionnaire forms, interviews, and Focus Group Discussions. The steps taken are to analyze the Metro City SPBE index as a result of the 2020 evaluation and SWOT analysis which will produce the factors of weakness, opportunities, and threats in the SPBE implementation to further formulate strategies in the SPBE domain. The result of this research is a Metro City government SPBE master plan document for 2022-2026 with policy directions and strategies for developing SPBE governance, developing SPBE services, developing human resources, and developing SPBE information and communication technology.

Keywords*—*master plan, e-government, SPBE

I. INTRODUCTION

Metro City Government, Lampung Province, Indonesia must be adaptive to the demands of good governance, where the bureaucracy is carried out more quickly, simply, and openly. Legislation and the need for bureaucratic reform in the administration of government also require the Metro City Government to apply information and communication technology in an integrated manner [1].

The central government expects the development of information technology and bureaucratic reform in the regions to be more focused and integrated. Therefore, the Metro City Government prepares an Electronic-Based Government System (SPBE) master plan that aims to implement e-government development policies in a systematic and integrated manner [2].

The SPBE master plan document was created to provide an overview and direction for Information System (IS) and Information Technology (IT) resource management in government to support SPBE implementation [3]. The current condition of IS and IT resources needs to be reviewed and then compared with the results of future needs analysis. The resulting gap needs to be filled in stages by the budget and the specified timeframe. The existence of the SPBE master plan document will reduce the risk of project failure [4]. The policies that have been issued by the Metro City Government related to the implementation of SPBE are as follows:

(1) Metro City Regional Regulation Number 8 of 2019 concerning Electronic-Based Government Systems [5]
(2) Metro Mayor Decree Number 58/KPTS/D-13/2021 concerning the Establishment of the Metro City SPBE Development Team of 2021 to the achievement of undirected targets, providing control over the development of information systems [6].

One of the general problems in the government information systems is developed as partial solutions, unconnected information systems so that it occurs data duplication and data inaccuracy [7]. To face the challenges, IS and IT investment can be planned more carefully in accordance with the priority scale that has been determined in the SPBE master plan document [8]. In addition, this document is also a guide for determining priorities for developing information systems in the future.

II. RESEARCH METHODOLOGY

The preparation of the Metro City SPBE master plan for 2022-2026 uses qualitative and quantitative methods. The data collected includes primary data and secondary data. Primary data were collected through questionnaire form, interviews, and Focus Group Discussions (FGD) [9].

This research also studies the results of the 2020 SPBE index of Metro City and SWOT analysis which will reveal the strengths, weaknesses, opportunities, and threats in the implementation of the SPBE to further formulate strategies in SPBE domains.

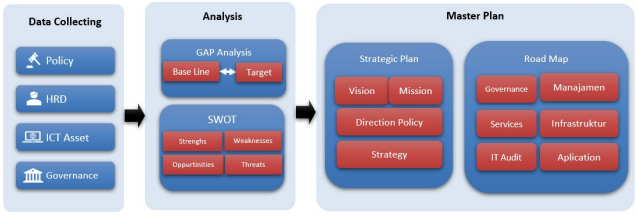

Fig. 1 Methodology of Metro City SPBE Master Plan

II. ANALYSIS

A. SWOT Analysis

SWOT analysis is an analytical technique used to evaluate strengths, weaknesses, opportunities, and threats [10]. SWOT as a technique to analyze the company's external and internal business environment used to achieve a systematic approach and support in decision-making [11]. SWOT matrix is a tool used to compile strategic factors. This matrix can illustrate clearly how the opportunities and external threats faced by the institutiom adjusted to the strengths and weaknesses it has [12].

1. Strength

The things that become strengths for Metro City in supporting SPBE are as follows:

(1) There is a commitment from the Metro City Government to the implementation of SPBE.
(2) There is already a strategic policy that supports Good Governance in a document of Regional Medium Term Development Plan (RPJMD) Mission 5 [13].
(3) There is an alignment of SPBE development with the Regional Government Transaction Electronification (ETP) policy.
(4) Some institutions can support SPBE implementation such as the Department of Communication and Informatics (Diskominfo), Regional Planning and Development Agency (BAPPEDA), Regional Work Unit (OPD), Regional Financial, and Asset Management Agency (BPKAD), and SPBE Supervisors.
(5) All OPD have internet access.
(6) Most of the SPBE services are already available (11 Services)

2. Weakness

The things that are weaknesses for Metro City that can become obstacles in SPBE are as follows:

(1) ICT documentation has not been organized.
(2) The Metro City Computer Security Incident Response Team (CSIRT) has not yet been formed.
(3) Implementation of ICT Governance has not been optimal.
(4) Most of the SPBE services still depend on the central application and some of the services have not been integrated with the Metro City Government.
(5) Internet access speed in several agencies is still intermittent (38% disconnected) due to bandwidth limitations.
(6) There are still ICT assignments that are managed by human resources who do not have an ICT education background.
(7) ICT development budget is still not a priority

3. Opportunity

Things that are opportunities from external parties for Metro City that can support SPBE are as follows:

(1) Policies from the central and provincial governments have supported the development of SPBE [14] [15] .
(2) It is easier to obtain ICT infrastructure services from non-government parties.
(3) The activities of online courses and the capacity of ICT human resources has a great opportunity to be improved.
(4) Community potential to develop towards a digital ecosystem where is ranking 2 of human development index in Lampung Province (77.17), and above the national average (71.94) in 2020 [16].
(5) The number of third parties who have competence in supporting the development of SPBE [17].
(6) Many innovations made by other regions can become best practices for implementing SPBE [18].

4. Threat

The things that are threats for Metro City that can become obstacles in SPBE are as follows:

(1) The level of cyber attacks in Indonesia increased 40% in 2017 and placed Indonesia as one of the countries with a high level of threat of cyber attacks after China [19].
(2) Increasingly sophisticated hardware and software technology making existing technology tends to become obsolete quickly, so it needs to be adjusted of hardware, software, and brainware.

B. Gap Analysis

The Metro City Government SPBE Index in 2021 is 2.17, which means Enough Predicate [20]. The desired condition in 2026 is a Good Predicate. Thus, the SPBE index value that must be achieved is at least 2.6 with a good predicate.

Aspect 1 - Governance Internal Policy

- **Current Index:** 2.12
- **Current conditions:** Already have Metro City Regional Regulation Number 8 of 2019 concerning SPBE. The Coordinator Team for SPBE Development Number 58 of 2021 has been formed on January 25, 2021
- **Ideal Condition:** There is an SPBE governance policy with 10 policy aspects that run optimally.
- **Expected conditions:** An SPBE governance policy is formulated which includes 10 policy aspects.

Aspect 2 - SPBE Strategic Planning

- **Current Index:** 1.57 *)
- **Current conditions** Already have regional innovations, but without planning and implementation from time to time.
- **Ideal Condition:** SPBE Architecture for Local Government Agencies and SPBE Plan Map for Local Government Agencies; There is an integration between the SPBE Plan and Budget; Already have careful planning related to SPBE Business Process Innovation
- **Expected conditions:** Have SPBE Architectural documents and SPBE Plan Map (including business process innovation planning) in the form of regulation of Mayor and budget as stated in the regional work plan.

Aspect 3 - Information and Communication Technology

- **Current Index** : 1.5
- **Current condition:** 100% internet access, City government intranet available; Network infrastructure is still leased, network speed conditions are still disconnected (38%); There are 72 applications used by OPD/sub-district/ward.
- **Ideal Conditions**: SPBE Application Development; Having Data Center Services; Having network services within local government agencies; Already using a Service Bus for local government agencies that support organizational performance.
- **Expected conditions**: Applications available for all types of services; Having Data Center Services; Increasing the speed of intra network access by increasing bandwidth and implementing fiber optic technology

Aspect 4 - SPBE Operator

- **Current Index**: 1.57
- **Current conditions**: There is already collaboration between agencies in the implementation of SPBE; Collaboration between Diskominfo and other OPD; Department of Education with Department of Population and Civil Registration (Dukcapil); Hospital with Community Health Center (Puskesmas);
- **Ideal Conditions**: The implementation of the SPBE coordination team of Regional Government Agencies runs according to its function and collaborates in the implementation of SPBE.
- **Expected conditions:** An SPBE coordination team is formed in the form of a Mayor's Decree; Conditioning collaboration in the application of SPBE between OPDs with similarity in business processes.

Aspect 5 - Implementation of SPBE Management

- **Current Index**: Not yet evaluated on the 2018 version of the guide
- **Current conditions:** ICT management has been carried out, but it is not optimal and is intermittent
- **Ideal Conditions:** for the Implementation of SPBE Risk Management, Information Security Management, Data Management, ICT Asset Management, Human Resource Competency Management, Knowledge Management, Change Management that is defined, measured, reviewed, and evaluated.
- **Expected conditions:** Formation of a computer security incident response team; Performed single data management; Mapping and improving the competence of ICT HR periodically

Aspect 6 - Implementation of ICT Audit

- **Current Index:** Not yet evaluated on the 2018 version of the guide
- **Current condition:** Not yet conducted an ICT audit
- **Ideal Conditions:** to Conduct SPBE Infrastructure Audits, SPBE Application Audits, SPBE Security Audits
- **Expected conditions:** Carry out strategic and leveraged Application Audits in terms of public service performance.

Aspect 7 - Electronic-Based Government Administration Services

- **Current Index:** 2.48
- **Current condition**: Available Planning Services, Budgeting Services, Financial Services, Goods and Services Procurement Services, Personnel Services, Dynamic Archive Services, State/Regional Property Management Services; There is no Internal Monitoring Service yet
- **Ideal Conditions:** Availability of Planning Services, Budgeting Services, Financial Services, Goods and Services Procurement Services, Personnel Services, Dynamic Archive Services, State/Regional Property Management Services, Government Internal Monitoring Services; That utilizes shared resources and collaborates between business processes.
- **Expected conditions:** Integration of Planning Services that is integrated with budgeting and finance; Integration of Goods and Services Procurement services with e-Vendors; Improvement of Personnel services for all types of personnel, both Technical Functional and General Functional.

Aspect 8 Electronic-Based Public Services

- **Current Index**: 2.48
- **Current conditions:** Available Public Service Complaints Service (Lapor Yai); Legal Documentation and Information Network (JDIH); Available Health Sector Public Services (Online Queue, SIMRS); Available Education Sector Public Services (PPDB online); Available Economic Sector Public Service (e-SEKAM)
- **Ideal conditions:** Availability of Public Service Complaints Service, Open Data Service, Legal Documentation and Information Network (JDIH), Health Public Service, Education Sector Public Service, Economic Sector Public Service which is well managed.
- **Expected Conditions:** Availability of Public Service Complaints Service, JDIH, Health Public Service, Education Sector Public Service, Tourism Sector Public Service which is integrated between OPD and with the central government.

IV. RESULT AND DISCUSSION

A. SPBE Vision & Mision

1. Vision

The realization of an integrated and comprehensive electronic-based government system to achieve high-performing, honorable, and dignified bureaucracy and public services. This vision becomes a reference in realizing the implementation of an integrated SPBE in the Metro City Government to produce a government bureaucracy that is integrative, dynamic, transparent, and innovative, as well as improving the quality of public services that are integrated, effective, responsive, and adaptive.

2. Mission

(1) Organizing and strengthening the organization and governance of an integrated electronic-based government system;
(2) Develop electronic-based public services that are integrated, comprehensive, and reach the wider community;
(3) Building a foundation of integrated, secure, and reliable information and communication technology; and
(4) Building competent and innovative human resources based on information and communication technology.

B. Policy Direction and Strategy

1. Governance Domain

The policy directions in the governance domain are as follows:
(1) Strengthening management capacity and coordination system. The strategies to achieve strengthening of management capacity and implementation coordination system to build an integrated SPBE between agencies are: (a) Establish and strengthen the Regional Government SPBE coordination team; (b) Prepare a map of the Metro City Government business process; and (c) Evaluate SPBE governance including planning, expenditure/investment management, and system maintenance.
(2) Comprehensive and integrated SPBE policy strengthening. The comprehensive SPBE policy is directed to involve all stakeholders in the formulation and implementation of SPBE policies in the Metro City Government. The strategies to achieve a comprehensive and integrated SPBE policy strengthening are: (a) Improve coordination between regional apparatus and the community in the formulation and implementation of SPBE policies; and (b) Evaluate the implementation of the SPBE policy.

3. Services Domain

The policy directions in the services domain are as follows:
(1) SPBE service development that is oriented to SPBE users and opens up space for community participation. The strategies to achieve SPBE service development that is oriented towards SPBE users and open up space for community participation are: (a) Ensuring that the needs of SPBE users for SPBE services are met, and (b) Build Public Service Portal and One Data Portal.
(2) Continuous improvement of SPBE service quality
SPBE service quality improvement is carried out systematically and continuously to improve the efficiency of SPBE service management and provide satisfaction to SPBE users. The strategies to achieve continuous improvement of SPBE service quality are: (a) To integrate services within and between regional apparatuses; and (b) Implement effective and targeted SPBE service management and technology.

4. ICT Domain

The policy directions in the ICT domain are as follows:
(1) Implementation of SPBE infrastructure independently, integrated, and standardized. SPBE infrastructure implementation includes Data Center and Intra-government Networks. The strategies to achieve the implementation of SPBE Infrastructure independently, integrated, and standardized are: (a) Provision and utilization of SPBE infrastructure including Data Center (b) Provision of Intra-government Network by utilizing the broadband network for SPBE Infrastructure accessibility.
(2) Optimizing the use of the integrated and shared SPBE application is carried out to increase the efficiency of ICT implementation. The strategy to achieve optimization of the use of the SPBE public application which is integrated and shared is by (a) Adopt the general application if the application from other regional government and central government. (b) Integration of general applications with a specific application that has been implemented in the Metro City Government.

(3) The provision of integrated and quality data and information is carried out to meet the needs of the government, business actors, and the community in decision making, policy formulation, and preparation of activity programs. The strategies to achieve the provision of integrated and quality data and information are: (a) Implementing integrated data management; (b) Implementing integrated information security management

C. Road Map

The stages of ICT development are outlined that focused planning in 5 (five) years, such as the figure below:

Fig. 3 Focus on Planning for the Next 5 Years

In the implementation of SPBE, Quick Wins are needed to gain positive initial momentum as well as the confidence to carry out major programs consistently and sustainably [9]. A quick win is also expected to provide a positive image for the implementation of the Metro City Government SPBE.

Fig. 4 Quick Wins

The application roadmap by service can be seen in the following table:

Table. 1 The application roadmap by service

Services	Quick Win	2022	2023	2024	2025	2026	Sum
Organizational Performance Accountability Services			1				1
Dynamic Archive Service		1					1
Personnel Service		1					1
Financial Services		1		1			2
Employee Performance Service		1	1				2
Goods and Services Procurement Services			1	1			2
Government Internal Oversight Service					1		1
Electronic-Based Public Service	4	11	8	14	12	8	45
Economic Sector Public Service	1	2	3	1	1		7
Health Sector Public Service		2					2
Education Sector Public Service		1					1
Other					1		1
Total	**5**	**20**	**14**	**17**	**15**	**8**	**66**

D. Recomendation

Some suggestions and specific recommendations that are expected to be implemented as part of the implementation of the Metro City Government SPBE, namely:

1. The work program to be implemented is the development of Information and Communication Technology infrastructure for the community. The activities that need to be done in this case are (1) Provision of wifi access in public spaces by the Metro City Government. (2) Provision of subscription internet access in residential areas by involving private parties. It is necessary to map out residential areas that have not been reached by internet subscriptions, as a basis for recommendations for the private sector to build towers in these areas.
2. Intra Network is a network that connects between network nodes in the Metro City Government environment. The use of intranetwork aims to maintain security in sending data and information between network nodes within Government Agencies. Intra-network operations require a physical network infrastructure, hardware, and other software for the connection system to run optimally. In addition, human resources play an important role in the operational implementation of intra-network utilization. The provision of physical networks can be built by the government itself or built by service providers. The network in the building is expected to be a device provided by the Government itself. Meanwhile, equipment outside the building can use equipment from service providers.
3. One Data is a government policy in which the regional head acts as the Data Representative. For this reason, it is necessary to build a system that allows the management of one data to be more optimal by building a single data application. The source of data comes from work units, in the form of aggregate data that's reported quarterly. In the next stage, the application can take advantage of web service technology to interchange data from an existing system that is maturely ready to be integrated. The main content of this single data application is data on the achievement of the RPJMD, Key Performance Indicators, and SDGs data.
4. A data center is an absolute necessity in the implementation of SPBE. Currently, the Central Government has prepared a National Data Center so that it can answer the need for data and information storage services. In its implementation, there is still a need for a data center that can be utilized by the Metro City Government in situations where there are services that cannot be fulfilled by the National Data Center. To facilitate operations, the provision of a data center can be done by cooperation with a third party.
5. Most of the SPBE development plans in Metro City are the preparation and maintenance of applications as instruments for realizing electronic-based services to the public. The implementation of this service requires the following: (1) Application help desk service to ensure the

proper functioning of application services. (2) Application Technical Support, in the form of troubleshooting services if there are application features that do not work. (3) Technical documentation of the application which needs to be updated every period time. (4) Technical documentation needs to be provided with metadata, data, and application information.

6. A number of Human Resources (HR) and competencies have to be improved in the organization that has the responsibility of managing and developing SPBE at the Metro City Government.
7. Developing quick wins program applications consist of JamaPai (Community Network of Care Children and Mothers), Kartu Metro Ceria (Identification and Transaction Service Cards) and e-Sekam (Digital-Based Metro Creative Center).

V. CONCLUSION

The study in this study reveals that there are still many Metro City government service information systems that have not been integrated or are still partial so that the Metro City government's Electronic-Based Government System Index (SPBE) in 2021 is 2.17 with the title "Enough". The Metro City SPBE Index with a “Good” predicate of at least 2.6 can be achieved in 2026 by compiling and implementing the Metro City government SPBE master plan document for 2022-2026 with policy directions and strategies for developing SPBE governance, developing SPBE services, and SPBE information and communication technology development.

The following are suggestions for developing SPBE for Metro City: 1) development of Information and Communication Technology infrastructure for the community, 2) use of intra-network that connects network nodes within the Metro City Government, 3) build a system that allows the management of one data to be more optimal by building a single data application, 4) providing a data center that can be utilized by the Metro City Government in situations where there are services that cannot be fulfilled by the National Data Center, 5) application preparation and maintenance as an instrument to realize electronic-based services to the public, 6) improvement competence of human resources who will be responsible for managing and developing SPBE, and 7) developing quick wins program applications consist of JamaPai (Community Network of Care Children and Mothers), Kartu Metro Ceria (Identification and Transaction Service Cards) and e-Sekam (Digital-Based Metro Creative Center).

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