JIGAWA
STATE GOVERNMENT

A NEW WORLD

E-GOVERNMENT MASTER PLAN

{The Jigawa State's Digital Transformation Plan)
Powered By: National Information Technology Development Agency (NITDA)

(JGS-EGMP)

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ABBREVATIONS

ABBREVIATION	FULL NAME
3G	Third Generation
4G	Fourth Generation
API	Application Programming Interface
B2G	Businesses to Government
BPR	Business Process Re-engineering
CAC	Corporate Affairs Commission
CBN	Central Bank of Nigeria
CDMA	Code Division Multiple Access
CIO	Chief Information Officer
CSF	Critical Success Factor
CTO	Chief Technology/Technical Officer
DB	DB Database
DMZ	Demilitarized Zone
DRM	Data Reference Model
EGDI	Electronic Government Development Index
Ne-GIF	Nigeria e-Government Interoperability Framework
e-Government	Electronic Government
EGMP	E-Government Masterplan
EPI	e-Participation Index
ERGP	Economic Recovery and Growth Plan
FAO	Food and Agriculture Organization of the United Nations
FAQ	Frequently Asked Questions
FMCDE	Federal Ministry of Communications and Digital Economy
FOSS	Free and Open Software
G2B	Government-to-Business
G2C	Government to Citizens
G2E	Government to Employees
G2G	Government-to-Government
G4C	Government for Consumer/Citizen
GB	Gigabyte
GBB	Galaxy Backbone
GDP	Gross Domestic Product
GIDC	Government Integrated Data Centre
GIFMIS	Government Integrated Financial Management Information Systems
GPRS	GPRS General Packet Radio Service
GPS	GPS Global Positioning System
HCI	Human Capital Index
HSPA	High Speed packet Access
HW	Hardware
ICT	Information and Communication Technology
IFMIS	Implementing Financial Management Information System
IM	Instant Message
IoT	Internet of Things
ISP	Internet Service provider
IT	Information Technology
JGIS	Jigawa State Geographic Information System

ABBREVATIONS

ABBREVIATION	FULL NAME
JGS-EGMP	Jigawa State E-Government Master Plan
KPI	Key Performance Indicator
LAN	Local Area Networks
LGA	Local Government Authority
LTE	Long-Term Evolution
MB	Megabyte
MHz	Megahertz
MRP	Machine-readable Passport
NCC	Nigerian Communications Commission
NGO	Non-Governmental Organization
NIGCOMSAT	Nigeria Communications Satellite Ltd
NITDA	Nigeria Information Technology Development Agency
NOC	Network Operating Centre
OSI	Online Service Index
PIN	Personal Identification Number
PKI	Public Key Infrastructure
PMO	Project/Program Management Office
PPP	Public Private Partnership
R&D	Research and development
ROI	Return on Investment
SIFMIS	State Integrated Financial Management Information Systems
SMS	Short Message Service
SWOT	Strength, Weakness, Opportunities, Threats
TII	Telecommunications Infrastructure Index
VSAT	Very Small Aperture Terminal
WAN	Wide Area Network

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1. Executive Summary

1.1 Background

Jigawa State from its creation from Kano State in 1991 had always sought to create a new future for the citizens and economy, hence the slogan: **'A New World' to reflect this vision**'. The Present administration led by His Excellency, Badaru Abubakar, is seeking to extend this vision by developing plans and strategies to prepare the Jigawa State for the Digital Economy and the global 4th Industrial Revolution (4IR). At digital economy age, creating a new world and future for Jigawa State requires the Government to position digital at the core of its developmental reforms, plans and strategies; provide enabling environment for itself to first digitally transform and get digital transformation to effectively take off. The Jigawa State as part of the Federating Unit is taking after the Federal Government of Nigeria in its digital transformation efforts. The State, with the support of the National Information Technology Development Agency (NITDA), is the first to adopt and adapt the Nigeria e-Government Master Plan.

The Nigeria e-Government Masterplan championed by the Federal Ministry of Communications and Digital Economy was officially launched in May of 2019, after a five-year project planning and development phase across different government cycles. The project started in 2013 and presented the best opportunities to achieve the right business environment for the digital economy. It was realigned in 2015 with the Economic and Recovery Growth (ERGP) plan through Strategies 16 *(Promote ICT Sector by supporting Technology Development)*, 49 *(Improve Transparency in the management of public resources)* 55 (*Leverage Technology to improve public service productivity)* and 56 (*develop the skills of public civil servants*). The aim of this strategy document was to create a Digitally Transformed government that would operate more efficiently, saving costs and lay the foundation for Digital Economy development in Nigeria.

The Baduru Abubakar-led administration has already started the digitization of the state government information management systems with the introduction of SFTAS, SIFMIS, WSSSRP, TRIMING and BESDA supported by the World Bank, European Union and other development partners. The State is the first in the country to establish an IP based broadband limited company in 2001 to provide range of communication services. The need to harmonise these information and communication systems provides justification for the development of the Jigawa e-Government Masterplan. The Plan provides strategic direction for effective digitalization of the Government's services, ensure there is proper coordination of all the digitization projects for effective alignment with programs and strategic initiatives of the Government's transformation plan.

According to the National Bureau of Statistics in 2006, the youth population of Jigawa (14-28 in 2020) was about 2,061,203 and 885,449 within the ages 10-19 and with a growth rate of about 3.5%. The population of active youth (14-45) was over 3.5 million. With no huge variance in the population demography in 2020, this presents a great opportunity for the Government to provide digital services that would enable business models, products, services, jobs and quality of lives for the huge digital native youth population.

The digital economy, also referred to as the 'new' economy or the 'online' economy, affords Jigawa State Government fresh opportunities for strategic economic development and demands fundamentally different approaches by the Government. The new opportunities to be tapped revolve around the development of tech and business ecosystems, online businesses across critical sectors that are easy to start and scale, can reach global customers with ease. This requires highly skilled and innovative leaders and individuals to drive and manage the State resources and systems.

The need to drive digitalization and tech-driven economy at the sub-national levels and grassroot led NITDA to extend digital transformation to State Governments. The readiness of Jigawa State Government provides opportunity for the Agency to extend e-Government Masterplan as Digital Transformation Plan to State. The aim is to drive the Digital Transformation of the State and deliver on the Jigawa Economic Strategy and Vision of making the State and citizen prosperous.

To deliver on this mandate, NITDA led by the Director General, Kashifu Inuwa Abdullahi, *CCIE* under the supervision of the Ministry of Communications and Digital Economy led by Honourable Minister of Communications Isa Ali Ibrahim Pantami, FNCS, FBCS, FIIM and in collaboration with relevant stakeholders led by the State Governor, His Excellency Badaru Abubakar produced the Jigawa State e-Government Master Plan as the State Government Digital Transformation Plan. This Plan is divided into 8 chapters for ease of organization and implementation.

The first chapter establishes overview of the Plan; sets the Vision, foundation principles, the Critical Success Factors (CSFs) and the Top 6 Recommendations for quick Action. In Chapters 2, a Background or Situation Analysis is carried out with a review of the Political, Economic, Social, Technological, Legal, and Environment (PESTLE) positions of the state. This analysis helps to establish a base line for the strategy. In chapter 3, a deeper dive into determining the challenges and opportunities vis a vis the established baseline is undertaken. This gives rise to establishing AS-IS across more granular processes, functions, services among others.

Chapter 4 focuses on benchmarking using the UN e-Government Development Indexes (EGDI)- Online Service Index, the Telecommunication & Infrastructure Index and the Human Capital Index while reviewing some cities in Africa and the World.

Chapter 5 lays out the core of the JGS-EGMP using STEPS to successfully identify gaps that accommodate policies for Employee, Technology, Infrastructure and Internal/External Management Readiness. Chapter 5 also codifies 22 Strategic Initiatives into a roadmap that must be delivered in a sequence with consideration for State Laws and Acts to ensure that the initiatives run their full course and are sustainable.

Chapter 6 identifies a Critical pillar or Success Factor of the JGS-EGMP which is Digital Awareness, Literacy, Skill-up and Mastery by creating strategies to see the over 6 Million Jigawa State Citizens become at least Digital Literate. Others like the Government Workers, Academia in Primary, Secondary and Tertiary Institutions will need to be skilled up to ensure digital mastery to be able to deliver on this Plan.

Chapter 7 provides a comprehensive Risk Analysis to determine the likely risks, vulnerabilities and threats that might impact implementation of the Plan. The Risks are clearly identified along with the Risk Mitigation Strategies to ensure the outcomes are always met. Chapter 8 discusses the Post Implementation Strategies to ensure continuous Evaluation and Monitoring, feedback from the citizen and businesses.

It is important to translate global best practice and systems into local context in a way that will enhance the development of local and state government technology eco-systems. There must be protection of local companies situated in Jigawa State, creation of opportunities for local industries to service local and international businesses by deliberate government policies and actions.

What the e-Government Masterplan for Jigawa State means to the State Citizens and businesses is affordable and ubiquitous broadband access, digital identity programmes that provides privileges and benefits, democratization of service delivery, a highly skilled and digital workforce living in smart environment and using smart systems among others. This picture is as real as it can be and it is what an e-Government Masterplan can deliver to drive the digital economy of Jigawa State.

1.3 Vision

The ten-year digital transformation for Jigawa State has the following vision:...

> **Jigawa e-Government Vision**
>
> ***To have an efficient and innovative public service and digitally empowered citizens and businesses that leverage on the State's comparative advantages and the global digital economy opportunities for social, economic and sustainable development.***

Fig. 1.1 Jigawa e-Government Vision

In line with global practice, the e-Government vision is clearly stated and shared so that **specific objectives** and **strategies** which can show the future in advance can be set up; it is a desirable blueprint which is feasible as well as imaginative enough to allow people to foresee a beautiful future, and a driving force which makes all stakeholders endeavor to accomplish the goals.

'Vision' Realization Framework

Development of e-Government largely consists of 3 phases: *Pre-implementation, Implementation and Post-implementation.*

Pre-implementation phase: It is the design and planning stage where consultants and political leaders drive e-Government initiative by creating the Project Launch Pad, charter and resource the project, perform research and analysis and carry out the Visioning and Strategy.The pre-implementation phase will produce the e-Government Masterplan (EGMP) as well as the Government Digital Transformation Roadmap (GDTR). This is typically done within a 3-to-9-month timeframe.

Implementation phase: In this phase, the vision and strategic goals of e-Government has been set based on the research and analysis done in the pre-implementation phase. Secondly, the roadmap and milestones corresponding to the strategic goals need to be set up. Thirdly, strategic priorities should be decided by reviewing the degree of funding, government capacity and innovation, aspects of demand and supply, bottom-up and top-down approach, to deliver the required Digitalization of Jigawa State. This is typically done within a 1–3-year timeframe and rolled over for another 3 years for items not completed within the first phase.

Post-implementation phase: In this phase, 3 tasks should be done; firstly, the performance of the project should be evaluated by monitoring whether it has been implemented according to the plan without risk. Secondly the operation and maintenance of the project should be considered along with management of information resources. Thirdly, the promotion of e-Government services to people and feedback for the project should be carried out to make the services fully utilized and to develop the second stage of e-Government, respectively.

Phases	Activities
Pre-Implementation	• Project Launchpad • Leadership & Awareness • Charter and Resourcing • Research & Analysis • Benchmarking • Visioning & Strategy
Implementation	• Policy Institutionalization • Funding and Resourcing • Projects, Programs and PMO Charter • Manage Critical Success Factors • System Development and Deployment • Training and Up skilling
Post Implementation	• PMO Operations • Evaluation • Operation • Feedback

Table 1.2 Activities of Development Phases

1.4 e-Government and Digital Transformation Objectives

The objectives for e-Government and digital transformation of the State include:

1. To build the civil servant and citizens' digital literacy capabilities
2. To innovate and improve the efficiency of Government-wide processes and operations for effective service delivery
3. To enhance collaboration between various organs of the State Government
4. To provide multi-channel digital service delivery channels for citizens, businesses and government employees.
5. To achieve transparency and accountability in the system of governance
6. To reduce the overall cost of governance and optimise government expenditure on enabling resources and infrastructure
7. To sustainably increase the State's Internally Generated Revenues (IGR)
8. To create a culture of recognizing citizens as customers of the Government and evolve strong customer relationship programs.
9. To create a platform for private sector partnerships in the service delivery model
10. To improve the State's digital economy capabilities and competitive advantage

1.5 Project Objectives

The overall purpose and rationale of the e-Government Masterplan Jigawa Project is to strengthen the strategic and operational efficiency of the State Government in order to deliver best of its kind services to citizens and business while creating digital-enabled economy that is sustainable for future generation

The project objectives are:

Jigawa e-Government Project Objectives
1. To carry out AS-IS and gap analysis in relevant policies and environment, Information Technology, human resources, institutional and governance framework among others for Jigawa State;
2. To identify strategic initiatives for covering identified gap in AS-IS analysis
3. To develop Jigawa State Digital Transformation Roadmap;
4. To develop Jigawa State e-Government Masterplan as Digital Transformation Plan; and
5. To provide advice on the implementation of the roadmap and the overall plan.

Table 1.1 Jigawa e-Government Project Objectives

1.6 Critical Success Factors

In order to successfully implement the e-Government in Jigawa State, the following seven critical success factors that underlie the notable achievement in e-Government of advanced countries are considered.

CSF-1. Adoption of the Jigawa e-Government Masterplan and a Whole-of-Government Policy and Act of Parliament.

- As a Whole-of-Government Policy the e-Government Masterplan will be able to deliver services to citizens and business transparently.

CSF-2. Dedicated Organization and Legal Structure for e-Government Implementation

It is critical to form a dedicated organization structure for e-Government implementation.

- A dedicated agency shall be established directly under the State Governor
- A state CIO shall be designated for central e-Governments, thus creating streamlined support structure.

CSF-3. Sustained Investment in e-Government

The sustained investment is required for Jigawa State Government Digital Transformation

- 10% of the State budget shall be invested into e-Government implementation every year (This can be created from the savings e-Government Projects will provide)
- Implement policies and laws to attract private sector and International Development funding and partnership (e.g. Zero RoW).

CSF-4. Business Process Re-engineering and Change Management

- Government Services and Processes should be documented and re-engineered to be delivered digitally.
- All Public Service officials should undergo Change Management Training and testing to ensure compliance with a Digitally Transformed Government.

CSF-5. Massive Awareness Campaign and Capacity Building Programs

Capacity development program can be used as a catalyst for government reform.

- A dedicated training organization for e-Government has to be established.
- Awareness and Promotion Campaigns in traditional and new media.

CSF-6. Creation of a secure and welcoming environment.

Jigawa needs local and international businesses to come and invest in the state. No investor will invest in an unfriendly business environment.

- Prioritize Digital Technologies to provide Security for the state.
- Promote investment in hospitality and tourism

CSF-7. Prioritize Digital Infrastructure Investments in Schools, Government Secretariat and LGAs.

Without the necessary critical infrastructure in the state, the e-Government Masterplan and subsequently Digital Economy cannot be achieved.

- Connect ALL Primary and Secondary Schools with Fiber
- Interconnect ALL Government offices
- Provide Point of Presence in ALL LGAs.

1.7 7 Principles for Jigawa e-Government Masterplan

Adherence to the following principles is highly recommended when implementing the e-Government project planning and development phase, as well as the implementation and post-implementation phases of the Government Digital Transformation..

Principle 1 - 'Digital by Default'
The primary goal of e-government strategy is to ensure that government services are digitized and so easy to access online that it becomes the natural place for citizens and businesses to visit. It should be the way of thinking for Jigawa. **Open, transparent, collaborative, iterative** and **human.**

Principle 2 - Shared Digital Vision among all Stakeholders.
For a Government Digital Transformation to have any chance of success, ALL stakeholders (Citizen, Business, Government and International Development Organizations) must share a common Digital Vision. Articulating a shared vision is the source of leadership stimulus to propel the e-Government projects and the energy for the positive climate creation.

Principle 3 - Whole-of-Government Approach.
The government should be able to deliver one-stop-shop services by reducing inter-agency bottlenecks. Service delivery should be integrable. Government service should be delivered as one across different ministries providing transparency to the citizen and businesses.

Principle 4 - Citizen as a Customer of Government.
The focus should be on the citizens, as the ultimate government customer. E-Government should be seen as a critical channel for value creation and delivery for most government services.

Principle 5 - Institutionalization and Adaptability of Policy
For e-Government to take root in Jigawa, Government must ensure that there exists enabling policy and laws that covers e-Governance in the state. It also has to be adaptable to new environmental changes.

Principle 6 - Open Data, Open Source and Open Government
Governments use Digital Transformation to deliver Open Data Sets to businesses and development organizations to great effect. Open Source Policy allows government to create a level playing field for local and international businesses to participate. It is instructive to note that Nigeria is a signatory to the Open Government Partnership that comprise of 78 Countries, 20 Local Members and Thousands of Civil Societies.

Principle 7 - Digital Literate & Up-Skilled

A critical pillar to the e-Government Masterplan is to ensure that there is wide spread capacity building in Digital Technologies across the Education system, Citizens, Businesses and Government. You have to train the workforce to prepare for the 4th Industrial Revolution.

1.8 JGS-EGMP Architecture

The Blueprint of the e-Government Vision is as depicted below.

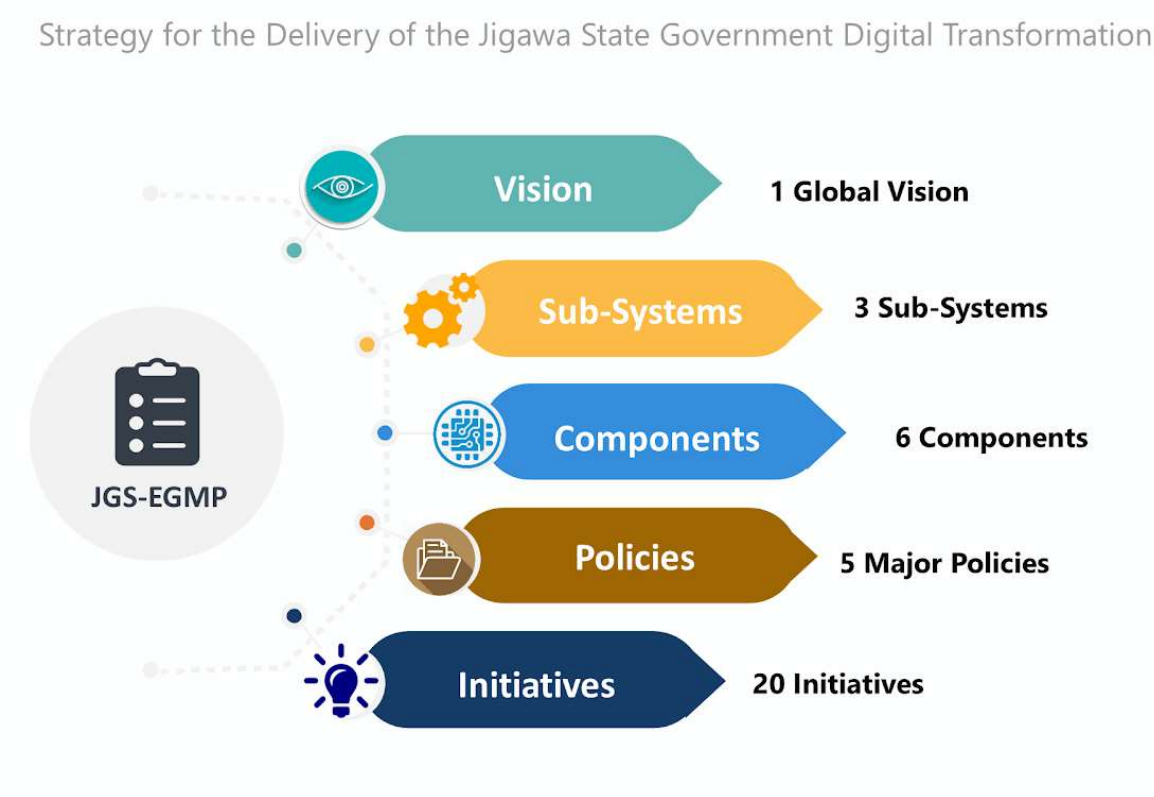

Fig. 1.2 Proposed State E-Government Architecture

The figure above depicts the conceptual view of the Jigawa's e-Government Vision that contains **Vision, Sub Systems, Components, Policies** and **Initiatives**.

1.9 Subsystems, Components and Initiatives

A total of 20 e-Government project initiatives were identified to achieve the strategies for arriving at the Jigawa State e-Government Transformation Roadmap. These e-Government Initiatives can be categorized into Governance, Infrastructure & Technology and Service Application Subsystems which are interwoven with each other. The 20 e-Government project initiatives can be mapped into the subsystems and the different components which need to be developed.

1.9.1 Subsystems, Components and Initiatives of the JGS-EGMP

Subsystems	Components (6)	Policies (5)	Initiatives (20)
Governance Subsystems	Institutional	Strong Leadership	1. Establish State Council on ICT/e-Government
		Digital Literacy Campaign For e-Society	2. Conduct Awareness and e-Government Capacity Building
			- Conduct publicity campaign for e-Government
			- Develop Information Access Centre
	Financial	Sizeable Budget for e-Government	3. Institute and utilize e-Government Funding Mechanisms
			- Funding through a variety of financing instruments
	Legal & Regulatory	Government Process Reengineering	4. Enact Laws necessary for e-Government
			- General laws for the information society
	Organizational		5. Build the dedicated organization structure or e-Government implementation
Infrastructure & Technology Subsystems	Technical	Global standard e-Government infrastructure and service	6. Integrate all existing ICT Projects
			7. Implement Government Integrated Data Centre (JSGIDC)
			8. Implement Government Digitization Program
			9. Establish Standard Software Framework for e-Government
			10. Implement e-Government Services Single Window Portal
Service Applications Subsystems			11. Operate and Sustain e-Finance Program (SIFMIS/SFTAS)
	Data		12. Implement e-Health Program
			13. Implement e-Education Program
			14. Implement e-Lands/JGIS Program
			15. Implement e-Agriculture Program
			16. Implement e-Procurement Program
			17. Implement e-Taxation Program
			18. Deploy Public Information Sharing System
			19. Develop Government Integrated Contact Center
			20. Implement State Cyber Security/Data Protection Program

Table 1.2 Sub-Systems Mapping into Policies, Strategies and Initiatives

1.10 Targeted Outcomes

The **strategic outcomes** from the proposed e-Government Masterplan is a High Performing Government with the following features;

i. **High Performance Culture:**
   1. Accountability for performance
   2. Citizen-centric government
   3. An integrated government

ii. **Right People:**
   1. Competent, committed, non-corruptible public officers
   2. Public Service as employer of choice

iii. **Responsible Financial Management**
   1. Fiscal Sustainability
   2. Effective and efficient use of financial resources

e-Government Master Plan Implementation Outcomes is mapped into improvement of the e-Government Development Index and the e-Participation Index. These are measurable impacts that will translate our e-Governancefrom the **emerging** to the **connected** stage of development.

EXPECTED OUTCOMES

Components	Classification		KPIs (expected)
e-Government Development Index	Online Service Index	Emerging	1) government documents (e.g. policy, legislation) 2) linkage with other agencies 3) providing news and information directory
		Enhanced	1) interactive online services available 2) downloadable civil application forms 3) video services 4) multi-language services 5) partial online applications (eg., online request, post service)
		Transactional	1) online applications 2) authentication services 3) e-voting 4) downloadable/up-loadable forms 5) issuance of various certificates and licenses
		Connected	1) Web2.0 available 2) facilitating communications with citizens 3) integrating multi-agencies services 4) tailored e-services for citizen's whole life and citizen's engagement
	Particular Issues	Environment	1) information and services available on environment issues 2) engaging citizens into environment issues
		Openness	1) open portal for public information 2) open data site and its related legislation and institutions 3) open data directory and index available
	Telecommunication Infrastructure Index		1) PC penetration 2) Internet users 3) telephone line 4) mobile subscription 5) fixed broadband 6) fixed internet subscription
	Human Capital Index		1) adult literacy 2) school gross enrollment rate
e-Participation Index	e-Information: policy available online		1) provide information to facilitate citizen's engagement 2) notice of online policy forum schedule 3) online policy information
	e-Consultation: online participation in policy		1) collect citizens opinion and provide feedback for citizen 2) online survey of public opinion 3) online chatting, instant message & blog
	e-Decision: online policy making		1) engaging citizens in policy making 2) online forum, online petition & online voting

Table 1.3 Targeted Outcomes for e-Government in Jigawa

2. Jigawa Development Strategy

2.1 An Introduction to Jigawa State

History

The name Jigawa is a Hausa word used to describe a vast loamy but non-marshy soil. The state was created on Tuesday August 27, 1991, when the Federal Military Government under the General Ibrahim Babangida announced the creation of nine additional states in the country bringing the total number of states then to thirty. The announcement was given a legal backing through the; State Creation and Transitional Provisions Decree No. 37 of 1991.

Excised from Kano State it covers a total land area of about 22,410sq Km. It is bordered on the West by Kano State, on the East by Bauchi and Yobe States and on the North by Katsina and Yobe States and the Republic of Niger.

Population

Jigawa is situated in the north-western part of the country with a population of 5,590,272 (Male: 51% Female 49%). 86% of the state's wards boast of functional primary healthcare facilities. Infant mortality stands at 83 per1000 live-births; unmet need for family planning is 98.7% and the use of contraceptives stands at 1.3% (MICS, 2016). The pattern of human settlement is nucleated, with defined population centers. Cross border migration between Jigawa State and neighboring states and between the State and Niger Republic is common. Migration of people into the state is highest during the dry season when cattle herders from neighboring Niger Republic migrates to the south in search of pasture and water for their animals.

Ethnic Composition

The state is mainly populated by the Hausa, Fulani and the Mangawa, Badawa and Ngizimawa which are dialects of the kanuri language. They constitute significant percentages in Birniwa, Guri and Kiri kasamma local government areas. There are other settled tribes both from within and outside Nigeria inhibiting in almost all the local Government areas of the state with the highest concentration in the state capital.

Administrative Structure

With a centrally controlled Government from the state capital Dutse, the state has twenty-seven (27) local government council's three senatorial Districts, eleven Federal constituencies and thirty (30) state assembly constituencies as enshrined in the 1999 constitution of the federal Republic of Nigeria.

The Executive arm of the Government is headed by the State Governor, **Alhaji Muhammad Badaru Abubakar** as the chief Executive elected under the All Progressive Congress (APC) and is principally in charge of day to day running of its affairs with his deputy Alhaji Umar Namadi and members of the state Executive council assisting. The Legislature which is responsible for law making is headed by the Speaker with other House leaders supporting him while the Judiciary charged with interpreting laws has the Chief Judge and the State Chief Judge and is equally the chairman of the state judicial service commission.

Traditional Structure

The state is divided into **five emirates** each administered by a traditional ruler called Emir (sarki) with District Heads, Village Heads and Ward Heads assisting them. The Emirs and District Heads, unlike other public functionaries, do not exercise political power but serve as custodians of culture and advisers to the Government on traditional and religious affairs. All the Emirs are first class title holders.

Topography

The topography of the state is generally flat with the northern, central, and eastern parts covered with undulating sand dunes running in the Southwest to Northeast direction. The area around the state capital Dutse is very rocky with some low hills. The southern and western parts of the state around Birnin Kudu and Kazaure have the highest elevations with hills as high as 600 millimeters above sea level. The state is bisected by the Hadejia River and traverses the state from the west to the east through Hadejia-Nguru wetlands and empties into Lake Chad.

Local Governments

By the 1999 constitution the state has twenty-seven Local Government area councils headed by elected chairmen and assisted by councilors elected on the platform of a political party. The implementation of programmes of each local government is the joint responsibility of councilors with various portfolios who constitute the council with the Executive chairman as supervisor and a vice assisting.

2.2 Jigawa Development Timeline

Though richly endowed, Jigawa State was created from the least developed part of Kano State. At the time of its creation, its economic base was weak while infrastructural facilities were grossly inadequate to support smooth take-off and sustained development. Coupled with a weak institutional capacity for planning, this undermined the laying of a solid foundation for its rapid development.

The advent of democracy in 1999 was supposed to be a turning point in the development process of the state as an elected government was ushered in supposedly with a vision for the development of the State. This raised the hopes for improvement in directing the affairs of the State to levels of reckoning at both national and international arena. The Government at that time, made a clear policy statement, which was to pursue programmes anchored on a coherent policy of economic empowerment through income and employment generation using the tripod of agriculture, industry and information technology. This policy was pursued alongside other social development and poverty alleviation programmes, such as education, health, water supply, cooperatives and entrepreneurship development. Some of the strategic changes ushered in by the new Government in 1999 included:

1. Decentralization of Government structure through the relocation of some agencies outside the State capital supposedly to broaden the presence of government by taking services of the relocated agencies directly to the grassroots and boosting economic activities there;
2. "Right sizing of the civil service" to tackle the perceived problem of an over-bloated civil service with a bottom-heavy structure which gave birth to the Millennium Village Commission;
3. Establishment of "development corridors" to enable concentration of development efforts along identified areas.

The Jigawa State Development Strategy (SDSD) published in 2005, was the first attempt at providing a comprehensive development blueprint for the State. Until then, the development process, more or less, relied more on short-term traditional ways particularly the annual budgets and rolling plans which were not informed by any long-term vision.

These policy prescriptions fell short of a comprehensive development framework and after eight years of experimentations they failed to produce the desired effect in developing the state economically and socially. Subsequently, the State Development Strategy Document was developed [popularly known as SEEDS] and from it several programmes were initiated with the sole aim of empowering the people. Such programmes included:

1. Cash crop production programme with emphasis on sugar cane, cotton, gum-Arabic, mangoes and sesame seeds;
2. Establishment of skill acquisition centers in different locations in the State for economic empowerment particularly among youths and women;
3. Establishment of the Maigatari Border Free-trade Zone to boost trade and provide employment opportunities;
4. Pursuit of information Technology and Communication drive to promote an Internet Access
5. Broadband Project.
6. Pursued reforms in Governance aimed at improving the efficiency and effectiveness of government operations.

2.3 Comprehensive Development Framework II

The CDF II takes as its core the transformation of society in the true spirit of human development. It is comprehensive enough to provide a roadmap for economic growth accompanied with a plan for sustained progress on human development such that, in the spirit of equity and justice, the benefits of growth are widely distributed among the population. Consequently, CDF II is designed to ensure progress in the people's per capita income is achieved. It provides a framework for supporting growth in the total outputs of the state's economy and progress in Human Development as measured by such indices as life expectancy, literacy level, mortality rates, and other poverty indices. In addition, the CDF II, would serve other economic and fiscal management purposes such as:

1. Providing a framework for effective coordination at various levels - between government agencies, between different levels of government, between public and private sector and between the government and development partners;
2. Consolidating the consensus among the various segments of the society on the broad vision of the state over its short- and medium-term development strategies and means of actualizing that vision;
3. Ensuring that the medium-term plans and budgets are realistic and evidence-based, informed by clearly defined sectoral policy objectives, "smart" targets, coherent strategies for the attainment of those targets, strategically prioritized programs and projects and pragmatic implementation plans;

The objective of the **CDF II Conceptual Framework** is to set out the context and logic of the development strategy - defining its various constituents together with their linkages. Accordingly, the State CDF's structure highlights both the superstructure and the main pillars of the development process. These take into account the state's comparative advantage, its priorities and the governance environment within which the forces of development interact to produce the desired outcome and impact. The three pillars of the State Development Strategy are built to "Generate Economic Growth and Empowerment", "Develop Human Capital" and "Ensure Sustainable Development". Within each pillar, there are "Lead Sectors" as reflected in the diagram. Agriculture, Commerce & Investment leads the Economic growth pillar; Education and Health leads the Human Development Pillar; Environment leads the Sustainable Development Pillar.

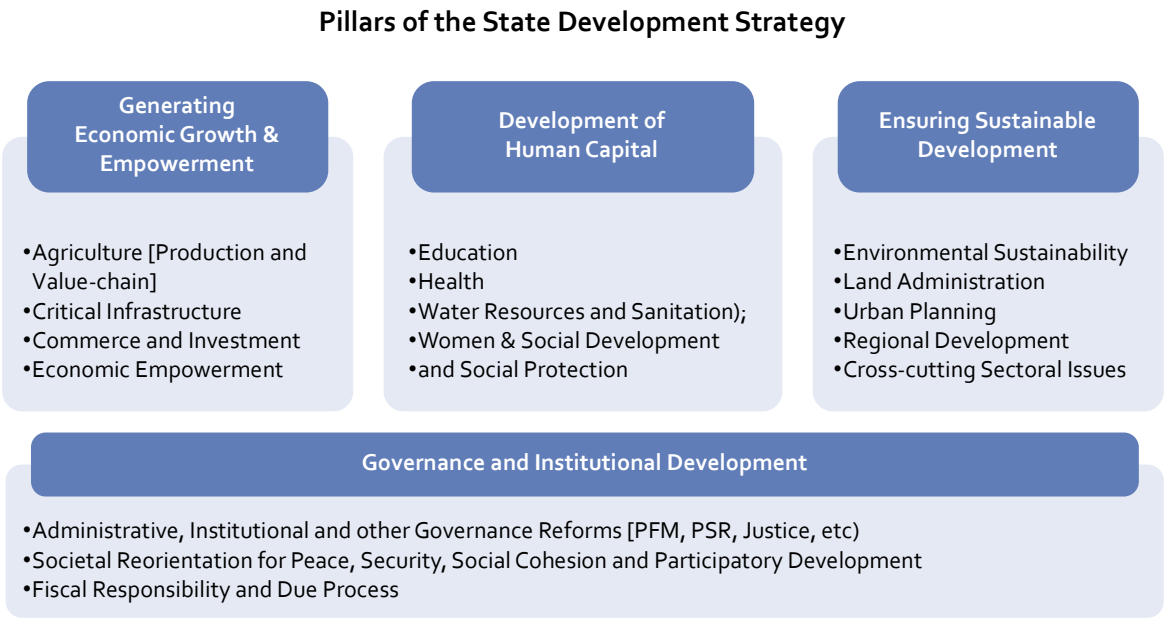

Fig. 2.1 Illustration of the Jigawa

2.3.1 Economic Growth and Empowerment Pillar

The generating economic growth and empowerment pillar comprise of Agriculture production and value chain, Critical Infrastructure (including ICT), Commerce and Investment and Economic Empowerment. This pillar places high premium on the private sector and its leading role as the engine of growth from which jobs and wealth would continuously be generated to improve standard of living of the people on a sustainable basis. Consequently, policy priorities would include active support to the private sector, the creation of an enabling environment to attract more private domestic and foreign direct investments, pursuit of appropriate public-private partnerships, and very importantly, provision of robust physical infrastructure. The critical components of this pillar are broken down below;

- **Agriculture and Food Security** – Agriculture is appropriately designated as the leading sector of the State's development strategy considering its central role in growing the state's economy. It plays a very crucial role in the fight against extreme poverty, attainment of food security and improved nutrition as targeted by the first 2 goals of the 17 SDGSs. Agriculture also provides forward and backward linkages with other sectors particularly MSMSEs which is crucial in accelerating inclusive economic growth. Sustained growth in the agricultural sector would therefore be necessary in achieving the overall objectives of the state development strategy.

- **Economic Empowerment** -Given the complex and multidimensional nature of poverty,actions are required on various fronts to empower the people and lift them out of extremepoverty. Such actions should also have built-in strategies deliberately designed to empowerthe people economically and socially particularly among youth and women. Major components of the economic empowerment strategy would continue to include the pursuit of youth and women empowerment programmes, access to credit, vocational skills acquisition and entrepreneurship development, provision of social safety nets for vulnerable segments of the population, and promotion of trade-based cooperatives groups.

- **Critical Infrastructure** - This component is required to ensure enabling investment climate and business environment. Government would therefore focus on infrastructure development to support the full mobilization of the private and other actors to facilitate and sustain economic growth and sustainability. The infrastructure required to actualize the objectives of the State are Roads (including Feeder Roads) & Transport Development and Information and Communication Technology. While these are critical in building conducive investment climate to trigger pro-poor economic growth, they also provide the necessary springboard for economic empowerment given their high employment, income generation and poverty reduction potentials. Despite the deregulation of the power sector, Government would also continue to support power generation and distribution in the State through rural electrification program which is a catalyst in transforming the social and economic life of rural communities.

- **Commerce and Investment** - Commerce & Investment has become another pillar of the Jigawa State Development Strategy. Hitherto, the policy stance was that "government has no business in businesses it became clear that Government has to play a leading role in unlocking the vast economic potentials of the State. This requires the facilitation of the emergence of a dynamic and competitive State economy in which MSMSE are key players. The private sector plays a leading role in generating economic growth through wealth and job creation. Consequently, policy priorities would include active support to the private sector, creating an enabling environment for increased private domestic and foreign direct investment and pursuit of appropriate public-private partnerships. For this reason, **InvestJigawa** – the one-stop shop for investment promotion, would be strengthened to coordinate investment promotion activities. In collaboration with all key stakeholders such as the Chamber of

Commerce, business support and development services would be provided 16 2002 World Development Report – to MSMSEs which are considered as spring-boards for jump-starting a robust commerce and manufacturing sector in the State.

2.3.2 Human Capital and Empowerment Pillar

Human Capital Development is still a strategic pillar in the Jigawa State Development Strategy, in particular, the two core human development services, namely education and health. This pillar is consistent with the CDF Vision of empowering people to be able to participate in decisions and processes that affect their lives. It seeks to promote socio-economic development through the development of human capital to improve inclusive and equitable access to qualitative public services particularly in these two sectors.

- **Education & Training** - Studies have shown that the principal factor for growth is not capital but a person (man or woman); that there is a correlation between literacy and per capita income and industrialization; and that people with a minimum of primary education produce more and are more open to innovation than others without, which makes the economic returns on education very high. Marshall, a renowned classical economist has observed that: "the most valuable of all capital is that invested in human beings." In the light of these considerations' education would continue to remain a strategic pillar in the State development strategy under CDF II.

- **Health Sector** - The health sector is also retained as the second leg of the core human development service because it affects other social and economic initiatives. To see appreciable progress on the HDI scale, requires significant public sector investments in the health sector. Indeed, a number of the MDGs yet to be attained are in the health sector now carried forward into the SDGs. Consequently, to sustain the momentum of progress towards the attainment of these goals as to significantly impact on the socio-economic well-being of the population, necessarily sustained focus on the health sector.

2.3.3 Sustainable Development Pillar

Sustainability is emphasized as cornerstone of the overall development strategy. All development initiatives must not only be feasible but sustainable in the long run. One critical aspect of ensuring sustainability is the way in which social, economic and environmental resources are deployed to achieve the development objectives of the state. Achieving Sustainable Development requires conscious and deliberate efforts and policies to institute a "process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations. CDF II therefore, recognizes the imperativeness of identifying priority areas and sectorial crosscutting issues that needs to be addressed to ensure that the development process is sustainable.

The approach to Sustainable Development in the Jigawa CDF II is from two perspectives: Environmental Management and Managing Crosscutting Issues across the economic growth and social development pillars. While the former would identify and promote priority issues in ensuring sustainable development such as environmental sustainability and urban development, the later will identify key crosscutting issues that are critical to ensuring sustainable development in the other two pillars of the CDF. These issues include enforcement of social, economic and environmental impact assessment for specialized economic development projects; and consideration for equity, gender and social inclusion issues. Some specific areas of focus in this regards would therefore include:

i. Environmental development and protection;
ii. Land Administration;
iii. Urban Planning & Regional Development (including Housing)

Crosscutting issues across sector is a key consideration here underscoring the need for effective coordination between government agencies at different levels, across and between the publicsector and other major stakeholders, such as the private sector, civil society organizations and international development partners/agencies.

With the e-Government Masterplan, the **Jigawa State Development Strategy** will be largely driven by the State **Digital Transformation** Process

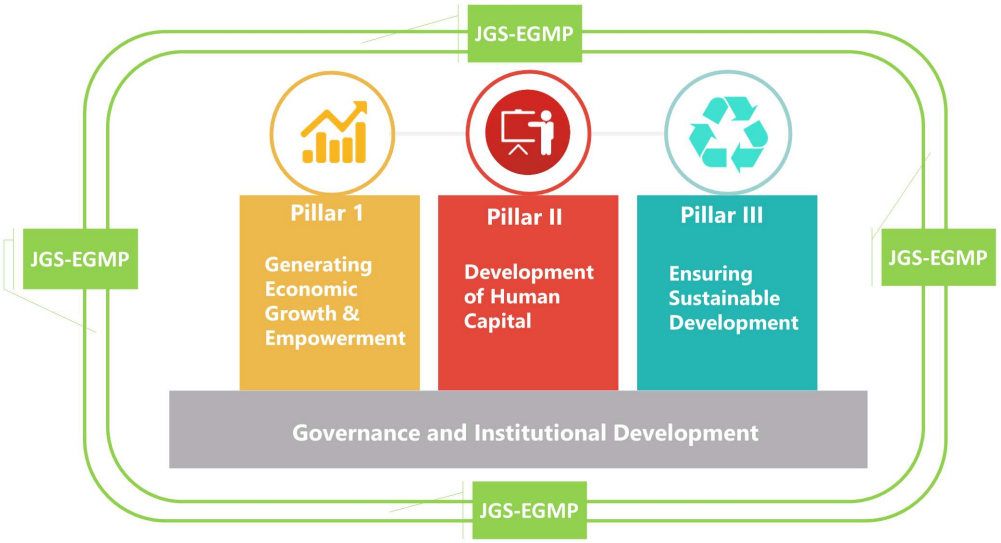

Figure 2.2 3 Development Pillars and the e-Governance Strategy

2.3.4 Governance and Institutional Development

"Good Governance is perhaps the single most important factor in eradicating poverty and promoting (economic) development" – ***Kofi Annan***.Reforms in Governance and Institutions define the "superstructure" of the CDF which determines the success of the State Development Strategy. Components of the superstructure are those that ensure the provision of the necessary institutional environment and effective process and procedures in government operations. They facilitate the interactions and workings of the main pillars, other sectors and transformation activities. More importantly, it is these components that would facilitate development in a sustainable manner through broad-based participation and empowerment. The components of the superstructure include good governance in all its ramifications, administrative and institutional reforms, social reorientation and mobilization, and ensuring peace, security and social cohesion within the society.

Social reorientation and mobilization are also very crucial. The significance of these is hinged on the desire for a strong public ownership of the development strategy as well as the desire for broad-based participation in the development process

2.4 Implementation Framework

The CDF II will be implemented through the annual budget with the various MTSSS and other sectorial medium-term plans serving as the bridge between the two. It is envisaged that the outcomes and impact of the output of the annual budget process will ultimately eventuate the desired vision of the State into fact.

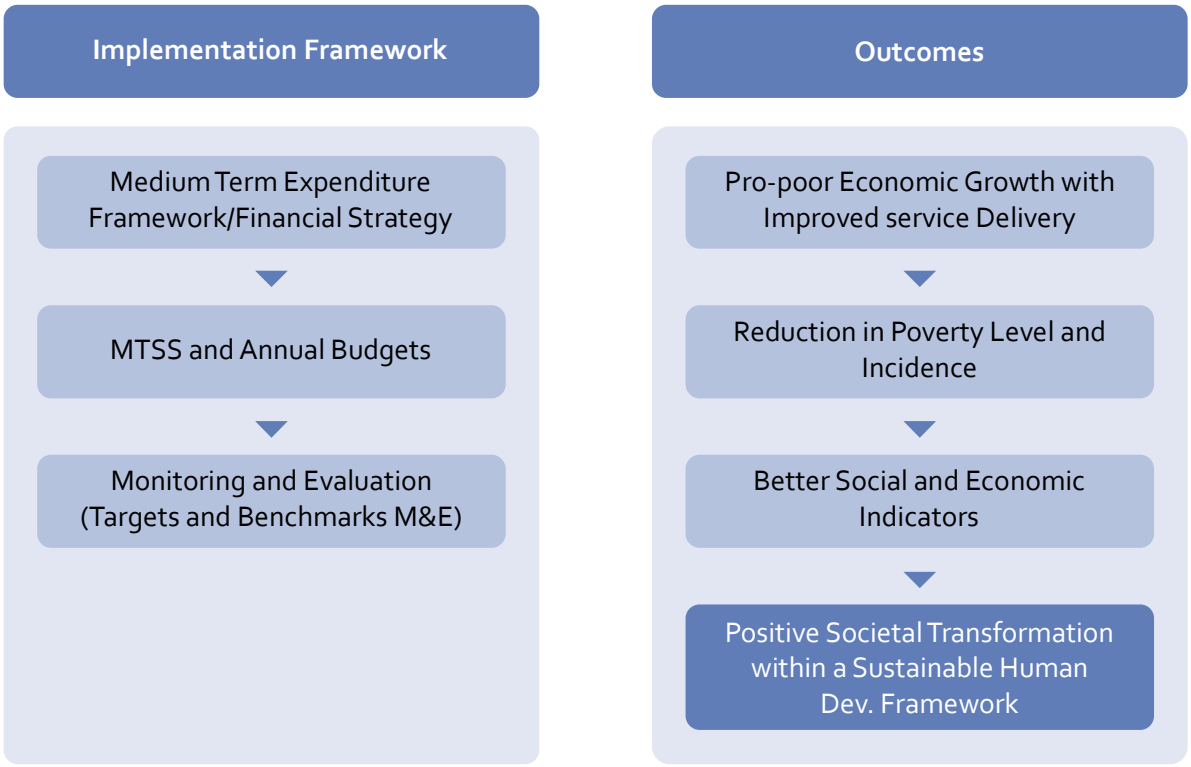

Fig. 2.3 Illustration of Proposed Implementation Framework

2.4.1 E-Governance as a Tool for Implementation

The success of the CDF II centers on the Digital Transformation of the Jigawa State Government and the implementation of an e-Government Strategy. The Governance and Institutional Development Superstructure can be successfully built upon the development of the e-Government Masterplan which will provide the following benefits to Jigawa State Government.

Enhancing Transparency and Accountability: e-Government helps to increase the transparency of decision-making processes by making information accessible – publishing government debates and minutes, budgets and expenditure statements, outcomes and rationales for key decisions, and in some cases, allowing the on-line tracking of applications on the web by the public and press.

Improving Public Administration: e-Government administrative components, such as a computerized treasury, integrated financial management information systems, and human resource management systems, lead to greater efficiency in public administration. Features include the integration of expenditure and receipt data, control of expenditure, human resources management, intelligent audit through data analysis and the publishing of financial data.

Reducing Costs: Putting services on-line substantially decreases the processing costs of many activities compared with the manual way of handling operations. Efficiency is also attained by streamlining internal processes and by enabling faster and more informed decision making.

Promoting Economic development: Technology enables governments to create positive business climates by simplifying relationships with businesses and reducing the administrative steps needed to comply with regulatory obligations. There is a direct impact on the economy, as in the case of e-procurement, which creates wider competition and more participants in the public sector marketplace.

Improving Service Delivery: government service delivery, in the traditional process, is time consuming, lacks transparency, and leads to citizen and business dissatisfaction. By putting government services online, e-Government reduces bureaucracy and enhances the quality of services in terms of time, content and accessibility.

Facilitating an e-Society: One of the main benefits of an e-Government initiative consists of the promotion of ICT use in other sectors. The technological and management capacities required for e-Government administration encourage, in turn, the development of new training courses and modules in schools and universities trying to supply the required skills and capabilities to the market.

2.5 Jigawa 2030 Long Term Development Outlook

As earlier highlighted, even though the implementation horizon of the CDF is always viewed in the medium-term, its vision has a long-term perspective - "to be a secure and just society full of opportunities, where the people are sufficiently empowered to participate in decisions and processes that affect their lives with an enabling environment for sustainable growth and development".

This long-term vision presupposes a situation where:

1. Universal access to quality public services in all sectors is comparable to international standards to the extent that the efficiency of such services are taken for granted by the citizens including the efficiency and quality of social and economic infrastructure;
2. Poverty is only perceived in relative terms with extreme poverty eradicated;
3. The Governance process provides satisfactory guarantees for social justice among the citizens in a transparent, accountable and responsive manner;
4. The citizens are so empowered economically and socially such that they are active actors in the socio-economic development process;
5. The state's economy is so vibrant that it provides a leading role in wealth generation and job creation, providing sustainable livelihoods for the vast majority of the people;

Overall, in the long-term, the Human Development Index of the people of Jigawa State should be above the national average. The HDI therefore provides is a "broadened prism for viewing human progress and the complex relationship between income and well-being". HDI measurement goes beyond income or economic outputs as measured by the GDP to encompass a broader view of social and economic well-being.

3. e-Government Research Analysis

3.1 e-Government Research Analysis

The research methodology for the development of the Jigawa State E-Government Masterplan follow a 4-Stage Development Approach where the output of one stage acts as a feedback into the next stage and so on. The main components of this approach follows;

1. Review different components and different methods for analyzing current situation in Jigawa State.
2. Desk Research looking at existing strategies and documents, as well as other general information available for Jigawa e.g. the CDF I &II.
3. On site engagement looks at the current situation of the government, the organizations and the environment (ecosystem)
4. A Gap Analysis is used to identify requirements as well as critical information requirements
5. Benchmarking compares examples from best practices of other states and countries to identify way forward.
6. This selection of States is based on applicability, and relevance.

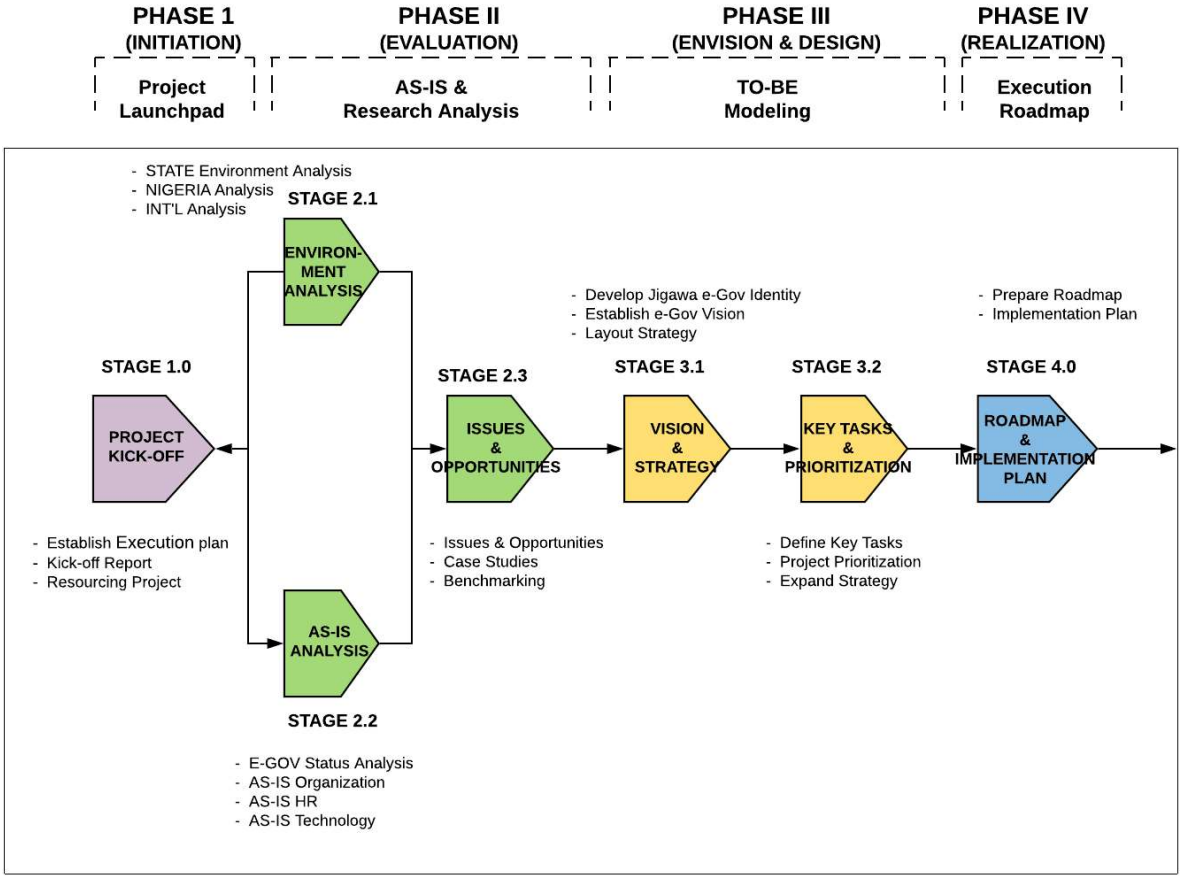

Fig. 3.1 Jigawa State e-Government Research Methodology

3.1.1 Desk Research

The UN e-Government Survey of online service index values assesses each country's national website, including the national central portal, e-services portal and e-participation portal, as well as the websites of the related ministries of education, labor, social services, health, finance, and environment as applicable. In addition to being assessed for content and features, the national sites were tested for a minimal level of web content accessibility as described in the Web Content Accessibility Guidelines of the World Wide Web Consortium.

There have been efforts by the Nigerian Government towards the standardization of National Websites through the Bureau of Public Service Reforms Federal Government scorecard for ranking websites of federal MDAs. This is a strategic service improvement tool and peer review mechanism to track and ensure;

1. That MDAs become more accessible to the public about its operations and overall mandates;
2. That MDAs' information are made readily available and disseminated widely to the public;
3. That MDAs websites are up to date and reviewed, as the need arises;
4. That MDAs are available within working hours to attend to public complaints/enquiries; and
5. That MDAs promote transparency and accountability in line with the provisions of Freedom of Information Act and or any other related extant provisions.

The scorecard was introduced to assess, score and rank government websites in order to provide feedback around internal processes and external outcomes so institutions/managers can continually improve on their service delivery. Implementing the scorecard will not only compel public institutions to adhere to laid-down standards for government websites, it will also help to measure what actually matters when it comes to websites performance.

3.1.2 Questionnaires

The Nigeria Information Technology Development Agency developed an e-Government Survey Portal to implement this stage of the e-Government Development Process on the Portal https://statesegov.nitda.gov.ng/ and developed questionnaire on the following major headings;

1. General Questions
2. Technology
3. Policy
4. Human Resources
5. Organization

Respondents from the following participated in different questions that will help get more information on the state of e-Government Readiness and present structure in Jigawa State.

1. Galaxy ITT
2. Deputy Governor's office
3. Jigawa State Polytechnic, Dutse
4. Government House, Jigawa State
5. Redemption Communication Limited
6. Gurai general enterprises
7. Budget and economic planning Directorate
8. Galaxy Information Technology & Telecommunications Limited

9. Sule Lamido University Kafin Hausa, Jigawa State
10. DIRECTORATE OF ECONOMIC EMPOWERMENT
11. Manpower Development Institute, Dutse Jigawa State
12. SULE LAMIDO UNIVERSITY KAFIN HAUSA
13. Ministry of Works and Transport
14. Galaxy information and telecommunications limited
15. Manpower Development Institute Dutse
16. MDT, Resource and Reform Centre, Office of the Head of Civil Service
17. Deputy Governor's office
18. Directorate of Economic Empowerment Jigawa State Government
19. Jigawa State Galaxy Information Technology and Telecommunication Limited
20. Jigawa State Polytechnic Dutse
21. Manpower Development Institute Dutse Jigawa state
22. SMOH
23. Dove Networks Limited
24. REB
25. JS Ministry of Finance

3.1.3 Interviews and WhatsApp Engagement

In order to further the engagement during the research and analysis process 2 project WhatsApp Groups were created; One was for the Internal Project Team made up of Technology Consultants and NITDA e-Government Experts, the Second Group was made up of the e-Government Consultants, NITDA and Jigawa State Government e-Government project group.

These groups were used to host engagement sessions, on-the-spot queries and meeting to further break down the information stream and analysis.

3.2 e-Government Readiness Assessment

Delivering an adequate e-Government service (e-service) is becoming more of a necessity in today's digital world. In order to improve e-services and increase the engagement of both users' and providers' side, studies on the performance evaluation of such provided e-services are taking places. However a clear identification of the key performance indicators from the e-Government providers' side is very important. The key performance indicators from the e-Government providers' side should be explored, for the conduct of a holistic evaluation of an e-service provision from the perspective of its stakeholders in order to improve e-services as well as to increase e-services take-ups.

3.2.1 S.T.E.P.S Model

To develop a new evaluation model that explains and predicts the success of an e-service, the collected factors from the focused groups and literature are analyzed and used to construct a new conceptual model called STEPS: **Service**, **Technology**, **Employees**, **Policy** and management and **Social** responsibilities analysis.

Five main themes represent the key performance indicators necessary for evaluating e-Government services from the perspective of providers. These are: e-Government Service; Employee Readiness; Policy and Management; Technology; and Internal and External Impact. We will discuss the indicators and their categories as part of the description of each theme.

3.2.2 E-Government Services

e-Government Service is the first theme that refers to criteria that are directly relevant to the e-Government site. There are two indicators under this theme: Service Support and Efficiency.

1. **Service support** refers to the provision of up-to-date information to the users that is directly relevant to their needs. e-Government sites with good service support also redirect users to other e-Government sites they may need in order to complete their transactions. An additional feature that represents good service support is the provision of the opportunity for users to choose the most convenient method for receiving notifications about the status of their transaction, such as SMS, email etc.

2. **Efficiency** on the other hand assumes that for an e-Government website to provide a good service, it needs to be more efficient than traditional means in two ways. Firstly, the e-Government site has to be easy to use so that users can smoothly navigate the site, access historical transactions, and manage personal information. Secondly, the site also needs to provide usage efficiency by making it faster for users to find relevant information while alleviating the administrative burden and number of steps they need to go through for completing their service requests.

3.2.3 E-Government Employee Readiness

Employee Readiness is the second theme from the analysis. It refers to the internal process of the government organization. Specifically, this theme refers to the readiness of employees in moving from traditional modes of providing services to electronic means and in maintaining the provision of such services at high standards. Ability and Engagement of employees are the two indicators under this theme.

1. **Ability** refers to employees' capacity in providing electronic services. Possessing enhanced computer skills is necessary for learning specific computer software and operating programs to deal with specific challenges that may face them while delivering service requests. Since ability can be provided and developed, the organization also has some responsibility towards the employees in order to foster the needed capabilities within the organization.

2. **Engagement** on the other hand, is also necessary for employees to provide quality electronic services. Engaged employees are those who are motivated enough and willing to collaborate amongst each other in order to migrate from traditional means to e-services. Having the ability to do so is necessary but not enough for successfully implementing and providing e-services.

3.2.4 E-Government Policy and Management

This is the third theme from the analysis. Just like the previous theme, this one also refers to internal organizational matters namely, legal and contextual environment, change management, budget, and revenue.

1. **Legal and contextual environment** refers to the existence of a legislative framework that allows smooth decisions around moving or providing e-services. It also refers to the support provided by government policy makers as well as management within a particular government organization in order to successfully implement the e-service.

2. **Change management** was also found to be an important aspect of management that is necessary for a successful e-service implementation. This refers to the complexity of transforming and re-engineering processes from a traditional fulfillment mode to an electronic mode, as well as the speed of access to the internal information needed in order to execute such transformations. Change management also depends on the thoroughness of the planning phase and the clarity of the policies developed to support the process transformation in the future.

1. **Budget** is another aspect that was found to be important particularly for the development, customization, and maintenance of the e-service. When the cost of development, customization and maintenance of an e-service exceed the allocated budget, problems may arise and may impact the success of the e-service in the future. Continuous investment in developing and maintaining an e-service can only be achieved when clear policies and managerial decision are in place and tailored specifically for the purpose of delivering the e-service.

2. **Revenue** should be substantial enough for the stakeholders involved in e-services fulfilment to remain productive. This can be done by creating clear policies, contractual agreements to share cost, risk and benefit and opportunity among different engaging parties. Here technology can play a big role in improving the revenue to providers, while keeping the e-service cost to citizens either the same or possibility lower than traditional means.

3.2.5 E-Government Technology

This is the fourth theme from the analysis. It refers to the pre-existence of technological capabilities in the country that may contribute to the success of e-Government services. Infrastructure, security, and alignment are the three indicators that illustrate this theme.

1. **Infrastructure** refers to the availability of prerequisites such as e-signatures or e-payments. The lack of such prerequisites may hinder the utilization of e-Government services. Other capabilities, such as internet availability and speed across the different regions in a country, may also be problematic especially when they are not sufficient enough to support fast transactions. These can have strong impact on user adoption of the e-Government service. (**NNBP 2020-2025, NGEA**)

2. **Security** is another related technology element. It depends on attitudes of people using e-services. On one hand, employees working on the fulfilment of e-services may have an attitude towards risk that hinder them from using external resources when needed out of fear of losing control over sensitive information. On the other hand, users in the country may have perceptions of high levels of threat to the privacy of their information, which may slow down users' adoption of e-services. Hence governments should use the appropriate means to relieve the fear on users and employees towards security issues. For instance, users fear can be removed by having security sign on the e-service website. (**Ne-GMP**)

3. **Alignment** refers to the interoperability between various government electronic systems. Incompatibility in data formats may be problematic for the successful development and implementation of e-Government services especially when the services are interdependent. This indicator measures the collaboration levels between the different government departments to deliver coherent and interoperable e-services. (**NeGIF**)

3.2.6 E-Government Social Responsibility Analysis

This is the fifth and final theme that emerged from the research analysis. Respondents perceived that organizational, social, environmental, and economic outcomes are also important indicators of the success of e-Government services.

1. **Organizational Outcome** is an aspect that refers to desirable end-results at the level of an organization. First, a successful e-service should lead to reduced costs when compared to traditional means. An efficient e-Government provider should also increase the efficiency of providers by increasing the productivity of government staff.

2. **Social Outcomes** represent the impact that e-Government services may have on the society as a whole in terms of transparency, participation, satisfaction and outreach. Successful e-services should decrease levels of corruption and increase levels of governmental transparency and accountability. They should also increase interaction with users in a way that improves relationships between the government and community; consequently increasing the engagement of stakeholders in government policy making.

3. **Political Outcomes** mainly relate to the management of the interests of the principal office holder and the political party. For example it is foreseen that e-services will contribute towards the generation of new income for government or help the government save money.

3.3 AS-IS Analysis

As-Is analysis or current state analysis is an e-Government Project development strategy that identifies and evaluates the Jigawa government's current state across Technology, Organization and the Environment.

As-Is helps to document the Current State of the Jigawa where different components and different methods for analyzing current situation is required to capture a baseline. We have also leveraged desk research looking at the existing strategies and documents for example the Comprehensive Development Framework II.

On site research looks at the current situation of the government, the organization and the environment (ecosystem). The key goals or motivation for implementing current state analysis, including:

1. Creating a baseline across the Technology, Organization and Environment in Jigawa.
2. Identifying gaps within these domains
3. Creating a reference point for the To-Be or future state.
4. Complying with proposed regulatory standards
5. Adapting existing processes to meet the future state.

3.3.1 AS-IS Strategy

The reference point for the overall development strategy is the Jigawa state Comprehensive Development Framework (CDF II). This strategic development framework has three pillars and 1 Foundational Component;

Pillar 1 - Generating Economic Growth and Empowerment
This is going to focus on Agriculture and Food Security, Economic Empowerment through entrepreneurship capacity building, development of critical infrastructure such as roads, ICT and power, commerce and investment by providing an enabling environment for trade, investment and public-private partnerships.

Pillar 2 - Development of Human Capital
There cannot be true economic growth without the assured socio-economic welfare of citizens. This pillar is going to focus on increased investments in the health sector to improve the well-being of the citizens

Pillar 3 - Ensuring Sustainable Development
This pillar focuses on ensuring that the projects that emanate from the strategic development framework, do not impact the environment and the availability of future resources negatively. This will include environmental development and protection, land administration, urban planning & regional development (including Housing)

3.3.1.1 Foundation I: Governance and Institutional Development

These pillars are to rest on a foundation of Governance and Institutional Development to ensure successful deployment. The Governance and Institutional Development will involve Public Financial Management Systems such as SIFMIS, Public Sector Reforms (PSRs), Justice System reforms, Societal Reorientation for Peace, Security, Social Cohesion, Citizen Participatory Development, Fiscal Responsibility and Due Process. More particularly the development of the ICT backbone of the state, Galaxy Institute of Information Technology, Jigawa State Institute of Information Technology and the Manpower Development Institute would be very pivotal in achieving a successful e-government.

Citizen Participatory Development

One of the focus areas under Governance and Institutional Development within the CDF, is Citizen Participatory Development. Some progress has been made as regards to this, the budget planning for the 2018 and 2019 budget, involved getting direct inputs for citizens in 30 constituencies in the state. The inputs collated were analyzed and were factored in the budget preparation. Currently the main mode of sensitization for the exercise is via radio broadcast, while the input from citizens is gathered manually using agents in the different constituencies.

3.3.1.2 Financing Framework

The Medium-Term Expenditure Framework (MTEF), the Medium-Term Sector Strategies (MTSS) and the Annual Budget are the core processes that have been setup to finance the strategic development plan. The MTEF ensures that whenever the annual budget is being developed, the projects and programmes that are funded align with the MTSS. The MTEF further ensures proper financial management and fiscal responsibility in the budget preparation ensuring that the three pillars of the and the Governance and Institutional Development are adequately funded.

S/N	Category	2018-2020 (Proportion of Budget)
1	Generating Economic Growth and Empowerment	30%
2	Development of Human Capital	48%
3	Ensuring Sustainable Development	8%
4	Governance and Institutional Development	14%

Table 3.1 MTSS Resource Allocation Framework

S/N	Project/Institute	Category	2018 (N)	2019 (N)	2020 (N)
1	JSIIT	Governance and Institutional Development	170,000,000	166,000,000	165,000,000
2	Galaxy ITT	Governance and Institutional Development	10,000,000	20,000,000	36,000,000
3	SIFMIS	Governance and Institutional Development	1,215,500,000	959,000,000	760,000,000
4	JILMIS	Ensuring Sustainable Development	100,000,000	75,000,000	78,000,000
5	School Of Health Technology Jahun	Development of Human Capital	100,000,000	98,000,000	98,000,000
6	Health Management Information Database	Development of Human Capital	8,000,000	4,000,000	14,000,000
7	MDI	Governance and Institutional Development	150,000,000	40,000,000	40,000,000
8	Agricultural Planning and Information System Development	Generating Economic Growth and Empowerment	5,000,000	6,000,000	3,000,000
9	Investment Promotion / One Stop-Shop Support Services	Generating Economic Growth and Empowerment	12,000,000	40,000,000	40,000,000
10	Establishment of GIS Unit	Ensuring Sustainable Development	-	-	30,000,000

Table 3.2 Capital Expenditure Budget Allocation (2018-2020)

3.3.1.3 ICT Strategy

The scope of the State ICT Policy intervention will include ICT Infrastructure, linkage ICT Industry in terms of Hardware, Software, Service Providers; ICT Education and Human Capital Development to creating pool of ICT professionals through the formal educational system from primary to tertiary levels; enhancement of policy, legal and regulatory frameworks.

Jigawa State ICT strategy is primarily driven through **Galaxy ITT** and the **Jigawa State Institute of Informatics** while looking to imbibe the necessary plans to move towards an ICT- drivengovernment. Reviewing the CDF alongside the questionnaire administered by NITDA, strategies are highlighted that will move Jigawa state forward in terms of e-government. Some of which are:

1. The upgrading of the Network Operating Center (NOC) to have 50 MB internet access and 50 GB of hosting capacity by 2020
2. Installation of Wi-Fi internet access in 7 locations (towns) across the State by 2020.
3. Repositioning of **Galaxy ITT** based on its business plan focusing on equipment upgrade, improvement of human resources capacities to meet the present challenges in transforming the company into a commercially viable and profitable enterprise. Options would include private sector investment and partnerships [technically or financially) in the repositioning of the Company through a transparent and competitive process;

4. Adoption of a new improved **State ICT Policy**; Sustaining partnership with internationally renowned **IT Institutions such as the Informatics of** Singapore and establishing new ones;
5. Improvement and expansion of the Jigawa State Institute of Information Technology;
6. Improvement and expansion of computer training centers across the state Mandatory
7. Encouragement of private sector investment on roads, power, airport and ICT through Build, Operate and Transfer (BOT)

Policies have also been adopted within public service to increase the ICT capacity of civil servants. Some of these policies are;

1. All civil servants are to undergo training in ICT targeted at computer literacy.
2. In the process of recruiting new entrants into the service, priority would be given to applicants that are Computer Literate.

The government also has a desire to digitize the key aspects of public service, some MDAs are working towards implementing ICT while there are plans in the pipeline to deploy management information systems across the MDAs.

3.3.2 AS-IS Services (& Channels)

Jigawa state has 13 ministries according to the state website. Each of these ministries have a redirect link on the website with the exception of the Ministry of Agriculture and Natural Resources. On each of the corresponding pages for the ministries on the Jigawa state website, there is a comprehensive description of the vision, mission, goals and functions of the ministries.

Some of the ministries list out the respective agencies under them as well as achievements made by the ministries. The agencies do not have a redirect link and there is no detailed information on the achievements listed as well as inadequate information on on-going projects. There is also no comprehensive granular description of the services offered particularly to the average citizen or businesses. The Ministry of Finance and Economic Planning and the Jigawa State Budget & Economic Planning Directorate provided better insight on the services offered by the different ministries.

The services are categorized into three; Government to Citizen (G2C), Government to Business (G2B) and Government to Government (G2G). Below is a list of the ministries, the services offered and the channel through which they are offered.

S/N	MINISTRY
1.	Ministry of Health
2.	Ministry of Education, Science and Technology
3.	Ministry of Justice
4.	Ministry of Finance and Economic Planning
5.	Ministry of Commerce, Industries and Cooperatives
6.	Ministry of Environment
7.	Ministry of Water Resources
8.	Ministry of Women Affairs
9.	Ministry of Ministry of Lands, Housing, Urban & Regional Planning Development
10.	Ministry of Works and Transport
11.	Ministry of Information, Youths, Sports and Culture
12.	Ministry of Local Government, Chieftaincy and Community Development
13.	Ministry of Agriculture and Natural Resources

Table 3.3 List of Ministries

S/N	Category	2018-2020 (Proportion of Budget)
1	Health	Ÿ Heath Regulation Information Ÿ Management of Primary Health Care Centres Ÿ Licence Renewal of Private Hospitals/Clinics Ÿ Pharmaceutical Inspection Ÿ Health Education Ÿ Registration of Private Ÿ Medical Institutions Ÿ Procurement of drugs and medication
2	Education, Science and Technology	Ÿ Private School Licenses Ÿ Education Ÿ Private School Registration
3	Justice	Ÿ Legal services to less privileged in in the community Ÿ Management of criminal cases (lodging and processing) Ÿ Vetting of Contract Ÿ Agreement
4	Finance and Economic Planning	Ÿ Disbursement of funds to all MDAs Ÿ Effective expenditure control and reporting and Ÿ Supervision of the development of economic planning strategies Ÿ Revenue Mobilization Ÿ Civil servants loans
5	Commerce, Industries and Cooperatives	Ÿ Registration of Voluntary Organization Ÿ Trade Permit Licenses Ÿ Licensing of Hotels andRestaurants Ÿ Business/Trade Operating Fees Ÿ Export Free Zone charges
6	Environment	Ÿ Enforcement and Monitoring of Environmental Laws Ÿ Environmental charges Ÿ Information on on-going projects Ÿ Information about activities to enable better environment Ÿ Access to Public Parks and Gardens
7	Water Resources	Ÿ Policies to ensure safe water Ÿ Information on on-going projects Ÿ Partnership with relevant agencies and stakeholders to ensure access to safe water
8	Women Affairs	Ÿ Registration of Voluntary Organization Ÿ Women Co-Operative Ÿ Development Fees Ÿ Sales of Women CentreProduct and Hire of Equipment Ÿ Renting of Government hall for events Ÿ Information on on-going projects
9	Ministry of Lands, Housing, Urban & Regional Planning Development	Ÿ Database of available land Ÿ Records of Land Surveying Ÿ Survey / Planning / Ÿ Building Fees Ÿ Rent on Government land Ÿ Property development levy Ÿ Land use fees Ÿ Right Of Occupancy Ÿ Building Plan Approval Ÿ Title Transfer

		Ÿ Publication fees Ÿ Land application fees Ÿ Certificate of Occupancy Ÿ Farm Plots and Land Charges Ÿ Ground Rent and Penalties
10	Works and Transport	Ÿ Trade Testing Ÿ Laboratory Fees Ÿ Certificate of Road Ÿ Worthiness Ÿ High Ways Fees Ÿ Heavy Duty Permit Ÿ Vehicle Inspection Ÿ Motor Vehicles, Taxi and Motor Cycle Registration Ÿ Hire of Sump Lorry Ÿ Airport / Hajj Operation Facilitation
11	Information, Youths, Sports and Culture	Ÿ Registration of Voluntary Organization Ÿ Sales Of Journal & Ÿ Publications Ÿ Advertisement Ÿ Guest house rent Ÿ Hire of Information Equipment
12	Local Government, Chieftaincy and Community Development	Ÿ Registration of Voluntary Organization Ÿ Feasibility studies/report of Government Building Project Proposals. Ÿ Architectural works Ÿ Quantity surveying Ÿ Building production management Ÿ General maintenance of Public Buildings Ÿ Estate management Ÿ Office consultancy services to State Government Agencies and Local Governments Ÿ Training of Technicians and Craftsmen.
13	Agriculture and Natural Resources	Ÿ Fishing Permits Ÿ Hide and Skin Buyers License Ÿ Animal Import Permit Ÿ Hides & Skin Export Premises License Ÿ Inspection Fees Stores Ÿ Agricultural / Veterinary Ÿ Services Fees Ÿ Land Use Fees Ÿ Vaccination charges Ÿ Hide and Skin inspection Ÿ charges Ÿ Meat Inspection Fees Ÿ Slaughter Stock Fees Ÿ Sales Of Improved Agric Ÿ Inputs (Seeds, Pesticides, etc.) Ÿ Livestock Sales Ÿ Sales of Buffer Stored Grains Ÿ Sales of Fertilizer Ÿ Hire Of Plants & Equipment Ÿ Earning from Shows and Exhibitions Ÿ Irrigation Water Charges Ÿ Farm Plots and Land Charges

Table 3.4 Comprehensive List of Services Offered by Ministries

S/N	Service Category	Service Group	Typical Services	Channel
1	Government to Citizens Services (G2C)	Lands Registration	Database on Accessible Land, Property Registration, Registration of Building Plans, Title Deeds and Certificate of Ownership	Analog
		Government Procurement and Disposal	Information on Government Job Opportunities, Job Applications and Staff Training	Analog
		Citizens Data/ information	Birth, Marriage and Death Registration	Analog
		Health Information	Find a Hospital, Know Your Doctor, Contribute to Social Welfare Programs	Analog
		Vehicle and Insurance Registration	Register a vehicle, Driving Licenses, Vehicle Insurance and Application for Number Plates	Analog
2	Government to Business (G2B)	Agricultural Information	Information on Agro Initiatives	Analog
3	Government to Government (G2G)	Accounting and Budgeting	Financial Reports, Budgets, Internal Audit, Payment of Salaries, Disbursement of Funds and Loans for Civil Servants	Payment of salaries has been digitized. The SIFMIS project is currently in the pipeline. The channel is partially digital
		Government Records	Records of Government Data and Activities	Analog

Table 3.5 Services Groups Prioritized by the Government for Digitization

3.3.3 AS-IS Processes

The processes that exist for G2G interactions are **Procurement**, **Budgeting, Payroll**, **Leave** requests among many others. Currently the payroll system within the government has been fully computerized, while the SIFMIS project is digitizing processes with regard to budgeting and other financially related processes. The responses from the NITDA questionnaire shows that human resource management, payroll management, customer relationship management, project management, business process management, enterprise content management, accounts management and budgeting are some of the enterprise applications currently in use within the government. Some other responses from the questionnaire also indicate some process reforms within the Justice system.

One of the itemized goals under the foundation of Governance and Institutional Development, within the CDF is Due Process. The Due Process and Project Monitoring Bureau was established in order to ensure effective and efficient service delivery. Some of the functions of the bureau are listed below:

1. To regulate and set standards to enforce harmonized bidding and tendering process in the state;

2. To enforce general policies and guidelines on procurements of goods, services and construction works by all government agencies;
3. To monitor to ensure the efficient and effective implementation of all capital projects and procurements in the line with Due Process principles from point of contract award to the commissioning stage with proper documentations at all levels;

4. To vet and make recommendations on projects design, bills of quantities and other projects technical requirements and specifications prior to contracting and implementation;

5. To develop, update and maintain relevant database and technology for the state on all procurement by government agencies;

6. To provide relevant budget performance information in relation to progress on the execution of projects, procurements and service in the state to any interested persons and institutions within and outside government;

7. To uphold professional ethics and report erring procurement personnel, state government functionaries, departments and private sector companies and their personnel to relevant authorities for appropriate sanctions.

The bureau has a functional website that defines its mode of operation. Some of the information on the website include contract rules and tender procedures. It also has a clearly defined organizational structure.

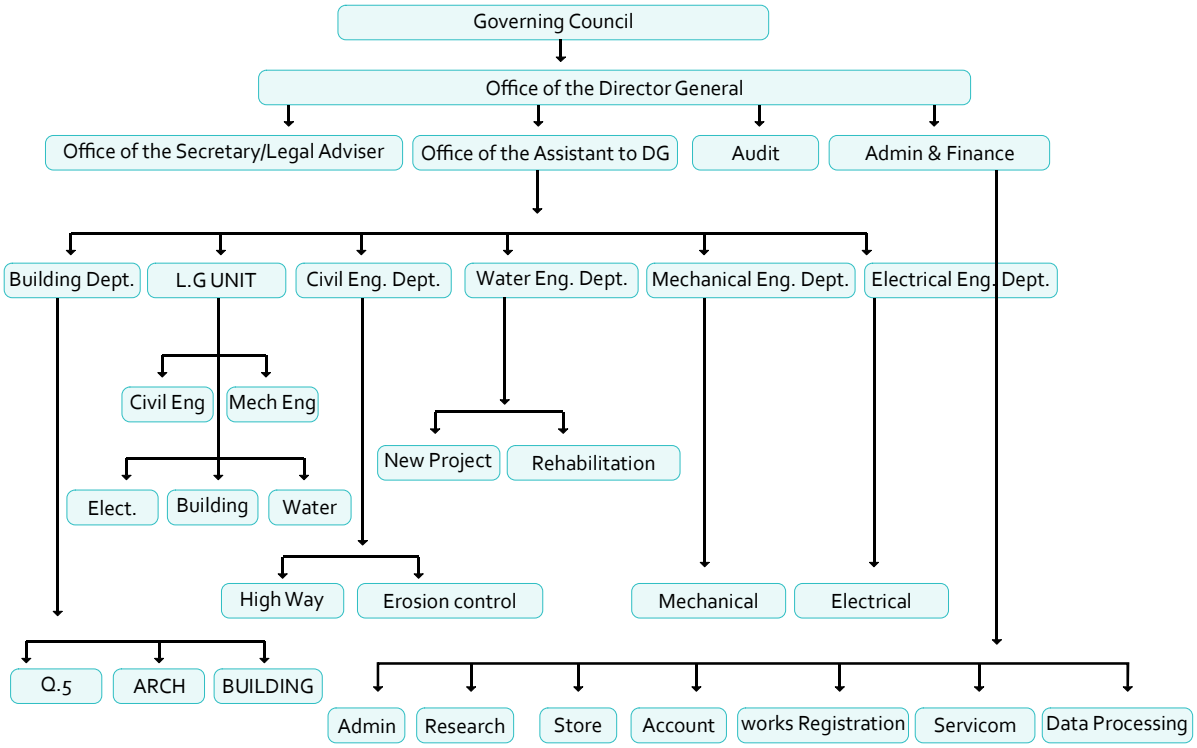

Fig. 3.2 Due Process and Project Monitoring Bureau Organizational Structure

S/N	PROCESS
•	Appointment and leaving the service
•	Condition of Service of Female Workers
•	Discipline
•	Emoluments
•	Annual Performance Evaluation Reports And Certificate Of Service
•	Examinations
•	Medical And Dental Procedures
•	Residence In Nigeria Of Wives And Children Of Expatriate Officers
•	Compensation, Insurance And Personal Effects
•	Petitions and Appeals
•	Occupation Of Government Quarters
•	Leave Request
•	Free Transport Facilities
•	Acting Appointments And Allowances
•	Transport

Table 3.6 Typical Processes for Internal Government Operations

3.3.4 AS-IS Infrastructure

Galaxy Information Technology and Telecommunications (Galaxy ITT), Dutse, Jigawa State Institute Of Information Technology (JIIT), Kazure and Manpower Development Institute (MDI), Dutse are the three main institutes that form the backbone of Jigawa state's technology infrastructure. The mandate for Galaxy ITT is to provide internet services to government agencies in the state and act as an advisory outfit on the implementation of IT services.

The **Galaxy ITT** was established in 2004 with a broadband capacity to provide over 300 MB of internet and services such as data management, hosting, software development, hardware integration and rural telephony. Around the same time, the State Government obtained a franchise from the Informatics Institute of Singapore which facilitated the establishment of Jigawa State Institute of Information Technology.

The government has already acquired 3 licenses to provide Internet services, V-SAT installations and GSM telephony. Even though Jigawa State has slightly slipped from this leading pioneering position, the policy stance is for the State to continue to be pro-active in ensuring that ICT infrastructure in the state continues to contribute effectively to the socio-economic development of the State.

The current state of infrastructure will be assessed under four categories; Hardware, Software, Network/Internet Access and Security.

Hardware

A brief snapshot of the Hardware available within the Jigawa State Government can be captured through institutions mentioned earlier.

S/N	Item	Quantity	Status
1	HP DESKTOP PC	90	Active
2	LAPTOP	4	Active
3	PRINTER	3	Active
4	SCANNER	1	Active
5	PEOJECTOR	4	Active
6	PHOTOCOPIER	1	Active
7	Microwave Radio and POE	1	Active
8	Server	2	Active

Table 3.7 Hardware Inventory at Manpower Development Institute (MDI)

S/N	Item	Quantity	Status
1	DINTEK 19 fiber optic rack mount Enclosure	1	Active
2	CISCO SF30024 24port 10/100 manage switch	2	Active
3	CISCO 2900 Series	2	Active
4	CISCO ASA 5570 Series Adaptive security applies	1	Active
5	FLIGHT AWARE	1	Active
6	CISCO 800 series	3	Active
7	DELL POWER edge 7300 server	1	Active
8	BELKIN omni view PRO3	1	Active
9	MIKROTIK CLOUD CORE ROUTER CCR 10- 15 12G	1	Active
10	CISCO CORE NETWORK SWITCH sG200-26 26-port Gigabit switch	2	Active
11	DELL POWER Edge server R320	2	Active
12	DELL POWER Edge server	4	Active
13	X3 Series satellite router	1	Active
14	FORTINET fort Gate 60D	1	Active
15	MIKROTIK CLOUD CORE ROUTER CCR 1009-8G-15	16	Active
16	MIKROTIK RB SXT LITES 5	1	Active
17	NET METAL S SERIES	1	Active
18	COMBIUM EPMP FORCE 190	1	Active
19	COMBIUM EPMP integrated 1000	1	Active
20	COMBIUM EPMP Sectorial Antenna	1	Active
21	Ubiquiti air MAX Power beam 5GHZ	1	Active
22	Ubiquiti air fiber SX30dbi	1	Active

Table 3.8 Hardware Inventory at Galaxy ITT

S/N	Item	Quantity	Status
1	DESKTOP PC	212	Active
2	PRINTER	25	Active
3	Cisco Catalyst 2960x	1	Active
4	MicroTik RB951UI	3	Active
5	Fiber Optic ETX203AX	1	Active
6	MicroTik Cloud Core CCR1036	1	Active
7	MicroTik Rb433	2	Active
8	MicroTik RB911G	2	Active
9	MicroTik Rb433	1	Active
10	Rack	1	Active
11	Smart Board	1	Active
12	Projector	1	Active
13	Projector	1	Active
14	Smart Board	1	Active
15	Network Mast	1	Active
16	VSAT (Not functioning)	1	Active
17	Fiber Optic Network	1	Active

Table 3.9 Hardware Inventory for Institute Of Information Technology (JIIT)

Software:

The typical software used within the Government of Jigawa are essentially stand-alone software applications which are Operating System, productivity and utility software.

S/N	Item
•	Operating System: Win 7 And Win 10 And Win Server 2008
•	Microsoft Office Package: Office 2007 And Office 2013
•	Corel Draw
•	Revit Card
•	Adobe Photoshop/Pagemaker
•	Mikrotik Proxy Server Solution
•	Encarter Dictionary
•	Smadav Anti- Virus

Table 3.10 Software Inventory for Manpower Development Institute (MDI)

S/N	Item
•	Mikrotik Router OS Level6 License
•	Microsoft Window 10
•	Microsoft Windows 8.1
•	Microsoft Windows 8
•	Eset Nod32 Antivirus
•	Kaspersky Antivirus
•	Cisco ISO
•	Microsoft Office 365

Table 3.11 Software Inventory for Galaxy ITT

S/N	Item
•	Institute Web Portal (Joomla CMS)
•	Application Portal
•	Student Portal
•	Student MIS
•	Accounting Software (Quick Books)
•	Asset Register

Table 3.12 Software Inventory for Institute Of Information Technology (JIIT)

Network and Security

The state secretariat has a robust point of presence, covering the government buildings. A number of educational both secondary and tertiary institutions were provided with IT centers and internet connectivity. There are on-going plans to create Wifi access points in 7 locations within Dutse, which will enable better accessibility for the citizens of Jigawa state.

Tools such as Information/information technology security policy, Antivirus, Data encryption software, Firewall, User and System Log, Intrusion Detection System (IDS) /Intrusion Protection System, Unified Threat Management (UTM), Access control and Physical security are currently being deployed to secure the software, hardware and network infrastructure.

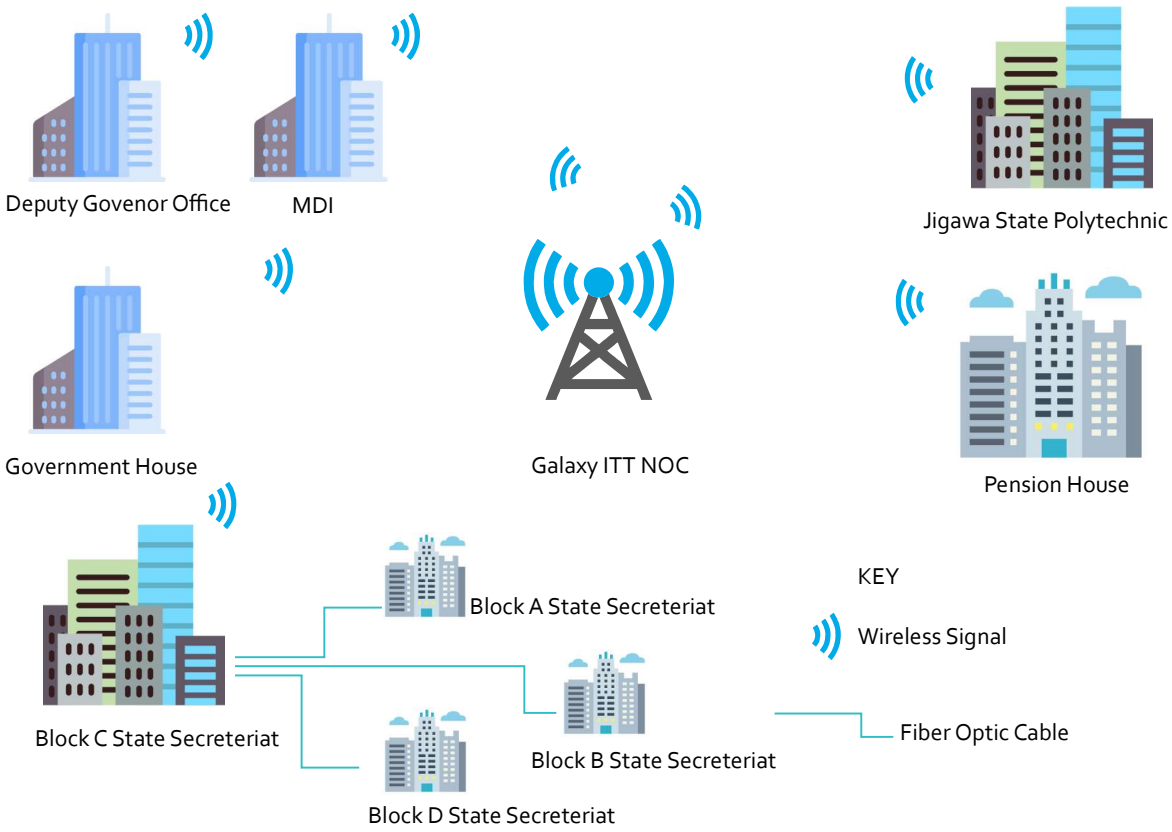

Fig. 3.3 Jigawa State Internet Point of Presence

ICT Related Achievements in Jigawa

1. Over 3000 software and hardware professionals graduated from JIIT
2. The payroll of the state and local government are fully computerized
3. A well-established Integrated Financial Management Information System [IFMIS] being used in Budget Preparation and Final Accounts;
4. An ICT policy in education has been developed and approved by the government
5. A human resource system has been developed in the state to serve as a central human resource database for the state civil service
6. Digitalized council chamber at the Governor's office

3.3.5 AS-IS Organization

A clearly defined organizational structure is critical to achieve a successful e-government. The Jigawa State Government runs by separating powers into **Executive, Legislative** and **Judiciary**. The only clearly defined organization by the Jigawa state government, is the Due Process and Project Monitoring Bureau. There is also no clearly defined structure for ICT within the state, in fact it is not very clear who represents the government on ICT related matters. The responses from the NITDA questionnaires further buttress the lack of the existence of a clearly defined structure for ICT as the respondents could not agree on who or what organization is responsible for ICT related issues.

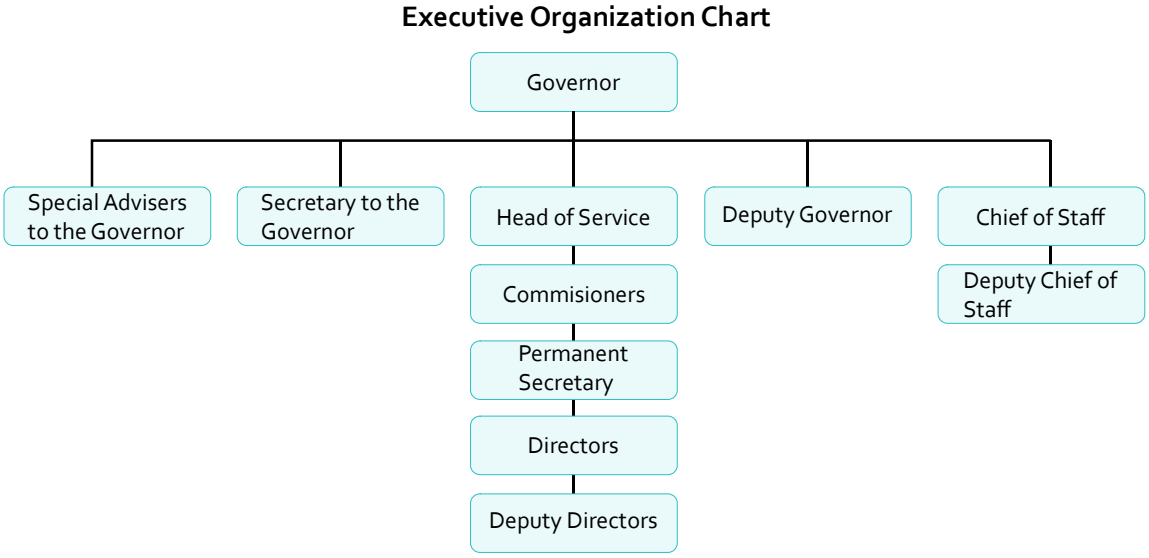

Fig. 3.4 Drafted Executive Organizational Structure

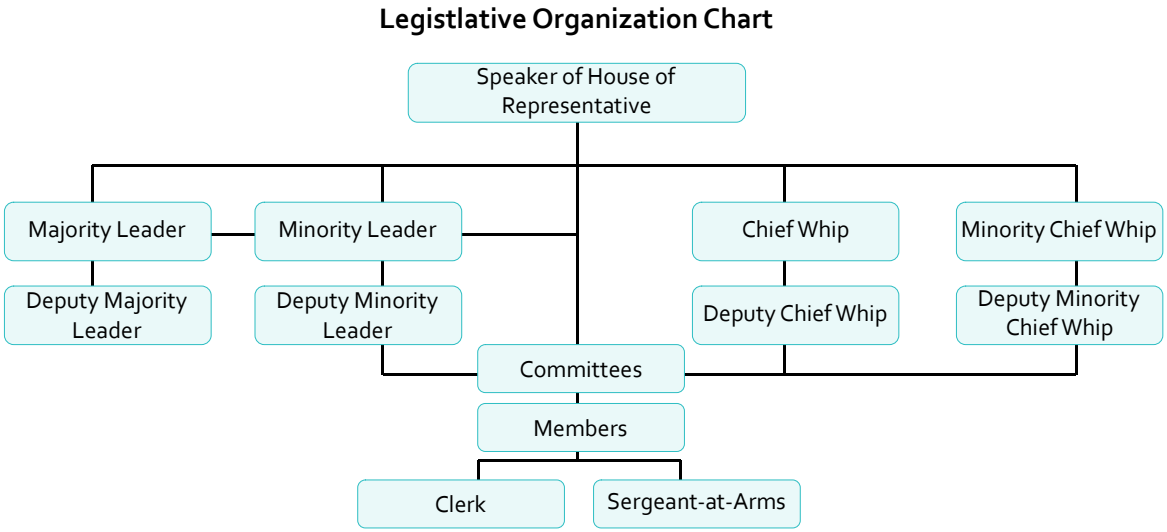

Fig. 3.5 Drafted Legislative Organizational Structure

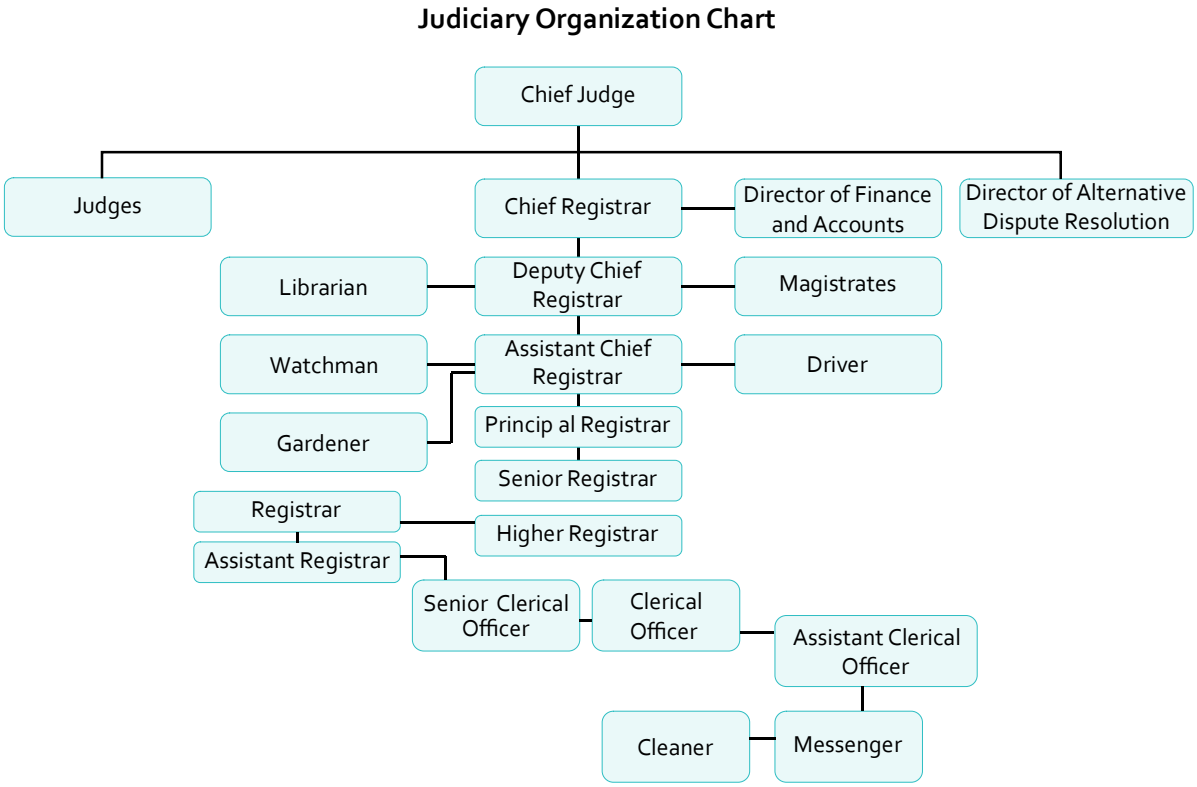

Fig. 3.6 Drafted Judiciary Organizational Structure

3.3.6 AS-IS Environment

The **CDF II** represents the primary strategy document the Jigawa State Government is using to drive development within the state. One the three pillars for the strategic development plan within the CDF is Economic Growth and Empowerment, under which commerce and investment is a focus. The environment in any state or location is dependent on the regulations and policies in place that either create an enabling environment or not.

In the **World Bank Ease of Doing Business for Nigerian States**2018, Jigawa ranked **3**rd for Dealing with Construction Permits,**3**rdfor Ease of Registering Properties,**3**rdfor Enforcing Contracts, and **9**th for Starting a Business. These indices give a fair indication that Jigawa state has made some strides in the Ease of Doing Business but a lot still has to be done in creating an investment-friendly climate for investors.

Starting a business

Starting a business across Nigerian states takes on average 10 procedures over 26 days and costs 29% of income per capita. This is similar to the average time for Sub-Saharan Africa, though 42% less costly. There is significant variation in the ease of starting a business across states. FCT Abuja remains the easiest place to start a business, taking seven procedures and 10 days, at a cost of 25.4% of income per capita. In contrast, in Ondo the same process requires 12 procedures over 37 days at a cost of 28.9% of income per capita. Variation in time is largely driven by differences in the uptake of new electronic services for business registration.

A major step towards this by the Jigawa state government is the creation of the Jigawa State Investment Promotion Agency, which also has a website with information for potential investors (http://www.investjigawa.gov.ng). Between 2018 and 2020, 92, 000, 000 Naira has been approved in the budget for investment promotion and provision of services to make doing business in Jigawa easy.

More importantly beyond investment promotion policies and targets have been put in place within the CDF to enable a better environment for business. Private Public Partnerships (PPP) and the Build Operate and Transfer (BOT) initiative have also been deployed to drive investment in ICT and other critical infrastructure towards creating an enabling environment.

JIGAWA, Dutse

Average distance to frontier score (0–100)	64.36		
✓ **Starting a business** (rank)	9	**Dealing with construction permits** (rank)	3
Distance to frontier score (0–100)	78.43	Distance to frontier score (0–100)	79.06
Procedures (number)	9	Procedures (number)	12
Time (days)	24	Time (days)	33
Cost (% of income per capita	31.2	Cost (% of warehouse value)	3.4
Minimum capital (% of income per capita)	0.0	Building quality control index (0–15)	9.5
Registering property (rank)	3	**Enforcing contracts** (rank)	3
Distance to frontier score (0–100)	36.79	Distance to frontier score (0–100)	63.14
Procedures (number)	12	Time (days)	261
Time (days)	24	Cost (% of claim value)	33.8
Cost (% of property value)	10.5	Quality of judicial processes index (0–18)	7
Quality of land administration index (0–30)	6		

✓ *Reform making it easier to do business* ✗ *Change making it more difficult to do business*

Table 3.13 Snapshot of Ease of Doing Business in Jigawa

3.3.7 AS-IS Human Resources

A core aspect of achieving a successful E-Government is the competency of the human resource within the government, especially ICT related competencies. The Governance and Institutional Development foundation within the CDF partly focused on human resource development through the ICT backbone institutions of the state; Galaxy ITT, JSITT and MDI. It is however important to note that there is no current special adviser to the governor on ICT related matters. Galaxy ITT has 7 core staff, JSITT has 41 core staff while MDI has 7 core ICT staff.

Galaxy ITT Competencies
• Interconnecting of Cisco Network Device CCNA
• Routing and Wireless Networking Using Router OS
• KA V-SAT Installation
• Fundamental of Digital Marketing
• Wireless Network Implementation and Design
• Routing and Wireless Networking using Mikrotik Router OS
• VSAT Earth Installation and Maintenance
• Data Processing and Computer Appreciation
• KA V-SAT Installation
• Fundamental of Digital Marketing
• Fundamentals of Digital Marketing
• Flutter programming
• Wireless networking
• Routing and Wireless Networking Using Mikrotik OS
• Fundamentals of Digital Marketing
• Based Wireless and V-SAT Installation
• Network Security
• Microsoft Professional
• Fundamental of Digital Marketing
• Diploma in Engineering
• Building Web & Apps with React JS
• Implementing a relational database
• Programming with JavaScript

Table3.14 Galaxy ITT Competencies

Table3.15 JSIIT Competencies

1. Computer Science
2. Computer Engineering
3. Innovation Technology
4. Management Information Systems

Table3.16 MDI Competencies

1. IT Business Solutions
2. Management Training
3. IT Service Delivery and Management
4. Computer/Windows OS
5. Computer maintenance/Ms Excel
6. Entrepreneurship in ICT

The Manpower Development Institute (MDI) has been mandated by the state government to train civil servants in ICT related skills. The government has also made it a point of call that being ICT literate is a core prerequisite for employment in the civil service. MDI has trained 512 civil servants between 2012 and 2018 on basic ICT related skills, particularly aimed at the ability to operate and manage a computer system.

Program	Course Outline	Target Groups	Duration
1.Computer Foundation	a) Introduction to computer b) Introduction to windows c) Microsoft Word d) Microsoft Excel e) Microsoft Power Point f) internet basics	All categories of staff	8 – weeks or as requested by the client
2. Mobile Training	a) Basic Computer Operations	All categories of staff	4 - days
3. ICT Entrepreneurship	a) Corel draw b) Adobe Photoshop c) AutoCAD d) RevitCAD e) Computer Maintenance	All categories of staff	2- weeks or as requested by the client
4. Internet of Things	a) Understanding of World Wide Web (WWW) b) e-mailing system c) Internet as a tool for sourcing information d) Virtual meetings	All categories of staff	3- days
5. Unlock Employability	a) Online opportunities	All categories of staff	2-days

Table3.16 MDI Courses

Programming	Course Outline	Target Groups	Duration
1. C++	a) Basic Training	All categories of staff	As requested by the client
2. Python	a) Basic Training	All categories of staff	As requested by the client
3.Html	a) HTML5 b) CSS	All categories of staff	As requested by the client
4. Java and Java script	a) Java Basics	All categories of staff	As requested by the client
DIPLOMA COURSES			
Program	**Course Outline**	**Target Groups**	**Duration**
1.Data Processing and Management	a) Internet/WWW b) File Management c) Data Processing d) Data Management e) Advanced Ms excel f) Inform. security & Audit	All categories of staff	8 – weeks or as requested by the client
2. Project Management	a) Basic Computer Operations b) Team Building c) Over view of project management d) Practical	All categories of staff	8 – weeks or as requested by the client
3. Graphics Design	a) Corel draw b) Adobe Photoshop c) AutoCAD d) RevitCAD e) Ms PowerPoint	All categories of staff	8 – weeks or as requested by the client
4. Web Development	a) Understanding of World Wide Web (WWW) b) e-mailing system c) Internet as a tool for sourcing information d) Building of web site	All categories of staff	4- weeks or as requested by the client

Table3.17 JIIT Training Courses

3.4 SWOT Analysis

The SWOT analysis is used here as a strategic planning tool that helps make sure that there is a clear objective explained for the Jigawa e-Government Masterplan, and all the issues linked to the analysis, both negative and positive, are recognized and addressed.

The association of strengths, weaknesses, opportunities, and threats is typically stated to as (SWOT) analysis with the aim of identifying the strategies to achieve external opportunities, withstand threats, develop and keep the state's strengths, while eliminating its weaknesses.

The SWOT analysis technique is also used here to assess the planned framework in alignment of best practice framework for delivering the optimal objectives.
It helps to get insights into the past and to come up with possible answers for current problems for both present state and future state.

Jigawa SWOT Analysis

STRENGTHS	WEAKNESSES
• Vibrant ICT Ecosystem in Galaxy ITT and JIIT • Institutionalized training of Jigawa Civil Service through MDI • Private sector-led digital hubs • Jigawa scores very high in the Ease of Doing Business Index • Digitization of Government Budgeting and Finance through SIFMIS • Sustained long term partnership with Informatics Institute Singapore. • Commitment of government to support the ICT and Digital Economy agenda	• There is no dedicated government MDA for driving ICT Agenda. • Lack of coordination within Government • Weak ecosystem outside the city • Inadequate policy or legislation for ICT function • Lack of adequate digital skills in government • Little or no digital awareness among citizens • Lack of Infrastructure (Power and Internet) across Jigawa. • Government lacks system to monitor quality of service
OPPORTUNITIES	**THREATS**
• Government championship of digital agenda • International investments in digital start-ups • Entrepreneurial culture and young labour force • Jigawa e-Government Masterplan (Under development) • E-government implementation represents huge growth opportunity for start-ups • Open Data Policy and Action Plan • United Nations Sustainable Development Goals 2030.	• Brain drain • Weak IP protection and cybercrimes • Low digitalization of traditional industries limiting the B2B markets • Privacy and Data Protection Act • Weak education systems in Jigawa • COVID-19 pandemic has exposed the education and ICT Ecosystems

Table3.18 Jigawa State SWOT Matrix

4. e-Government Benchmarking & Gap Analysis

Benchmarking Sources

Reviewing Past Experiences

The historical analysis on past experiences can help the successful implementation of the e-Government project. Problems have occurred repeatedly can be resolved by the same or similar solutions. Although social and institutional variables can be predicted by this analysis, the social framework may become a misfit for information technologies which are rapidly advancing.

Cross-sectional Analysis

Conducting cross-sectional analysis on foreign cases makes it easy to predict consequences of implementation, political forces, resources needed for execution. However, analysis and pre-performance evaluation should be carried out to assess whether the same outcome can be achieved by adopting e-Government cases implemented in different social context.

4.1 E-Government Development Index (EGDI)

In order to begin the process of creating a benchmark for the Jigawa State e-Government Masterplan, it is important to understand how the United Nations benchmarks e-Government across different countries.

The United Nations E-Government Survey is produced every two years by the UN Department of Economic and Social Affairs (UNDESA). It is a report that assesses the E-Government development status of the 193 United Nations Member States. It serves as a tool for decision makers in the Nigerian government to identify their areas of strength and challenges in e-Government and to guide E-Government policies and strategies.
The publication also highlights emerging E-Government trends, issues and innovative practices, as well as challenges and opportunities of e-Government development.

The United Nations e-Government development index (EGDI) is a **composite indicator** measuring the willingness and capacity of national administrations to use information and communication technology to deliver public services. It is based on a comprehensive survey of the online presence of all 193 Member States, which assesses the technical features of national websites as well as E-Government policies and strategies applied in general and by specific sectors for delivery of essential services.

The EGDI is a weighted average of three normalized scores on the most important dimensions of e-Government, namely: scope and quality of online services (**Online Service Index, OSI**), development status of telecommunication infrastructure (**Telecommunication Infrastructure Index, TII**), and inherent human capital (**Human Capital Index, HCI**). Each of these sets of indices is in itself a composite measure that can be targeted to improve our overall E-Government Development Index.

Year	Group	EGDI Ranking	Online Service Index: UN Survey				GNI Ranking
			Emerging (7%)	Interactive (24%)	Transactional (30%)	Networked (39%)	
2024	Very High	50th	100%	90%	80%	80%	20th
2022	High	75th	90%	80%	60%	70%	
2020	High	100th	80%	60%	30%	50%	
2018	Middle	143rd	56%	36%	14%	30%	-
2014	Middle	141st	56%	36%	14%	30%	25th
2012	Low	162nd	58%	12%	10%	25%	-

Table4.1 EGDI Ranking of Nigeria

4.1.1 Online Service Index (OSI)

In order to benchmark the **Jigawa** Online Service Index, we must assess the state's website portals, including the availability of a **central portal**, **e-services portal** and **e-participation portal**, as well as the websites of the related ministries of **education, labor, social services, health, finance, and environment** as applicable. In addition to being assessed for content and features, the state'swebsites shall be tested for a minimal level of web content accessibility as described in the **Web Content Accessibility Guidelines** of the **World Wide Web Consortium**.

The **first stage** of assessment includes questions relating to attributes that would be considered typical of an **Emerging Presence**, providing information that is limited and basic.

The **second** stage is **Enhanced Presence**, in which the government provides greater public policy and governance sources of current and archived information, such as policies, laws and regulation, reports, newsletters, and downloadable data. Jigawa can be said to be in this phase of Enhanced Presence.

The **third** stage attributes to a **Transactional Presence**, allowing two-way interaction between the Jigawa citizen and their government. It includes options for **paying taxes** and **applying for ID cards**, birth certificates/passports, license renewals and other similar C2G (of G2C) interactions by allowing citizens to submit these online.

The **fourth** and final stage is labelled **Connected Presence**, which represents the most sophisticated level in the online e-Government initiatives. It can be characterized by an integration of G2G, G2C and C2G (and reverse) interactions. This is the stage that the Jigawa State government after full implementation of the JG-EGMP targets to be at after 3 years.

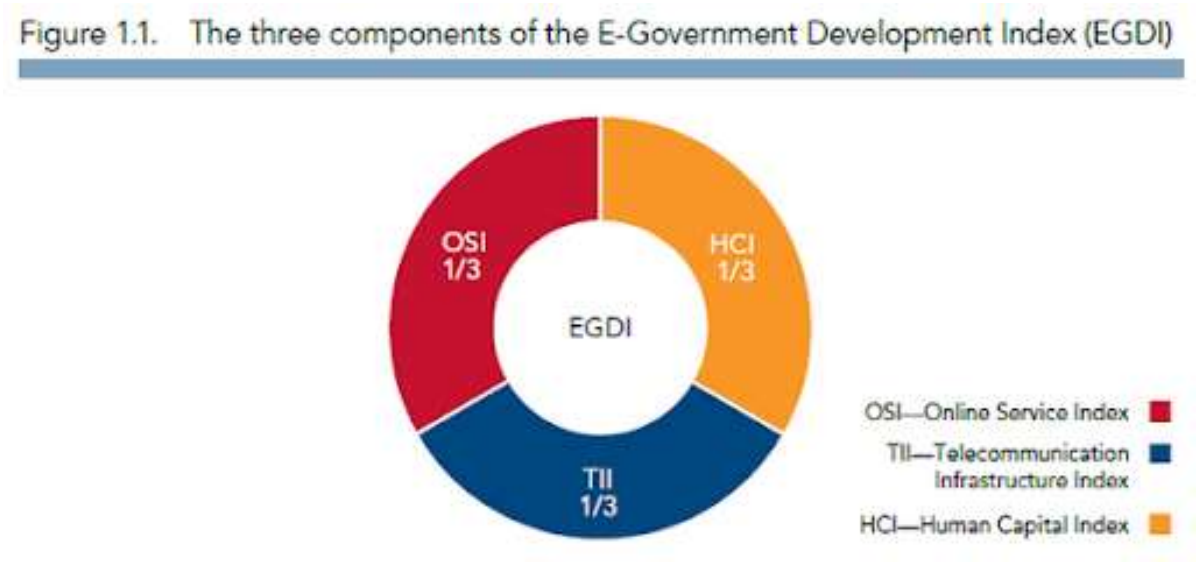

Fig. 4.1 Three Components of the UN E-Government Development Index

4.1.2 Telecommunications Infrastructure Index (TII)

The telecommunication infrastructure index is an arithmetic average composite of five indicators:

1. estimated internet users per 100 inhabitants;
2. number of main fixed telephone lines per 100 inhabitants;
3. number of mobile subscribers per 100 inhabitants;
4. number of wireless broadband subscriptions per 100 inhabitants;
5. number of fixed broadband subscriptions per 100 inhabitants.

The International Telecommunication Union (ITU) is the primary source of data in each case. Instead of fixed Internet subscriptions, wireless broadband subscription indicator was included in the computation of Telecommunication Infrastructure Index (TII) in the 2014 Survey.

It is important to note that this TII Benchmark provides an acceptable way to rate the Technology Infrastructure in Jigawa State. For our AS-IS Analysis in Infrastructure, we considered other components like the Network Infrastructure, Hardware and Software in use within the Government agencies and citizens.

4.1.3 Human Capital Index (HCI)

The Human Capital Index (HCI) consists of four components, namely: (i) adult literacy rate; (ii) the combined primary, secondary and tertiary gross enrolment ratio; (iii) expected years of schooling; and (iv) average years of schooling.

The definitions of the four indicators of HCI are:

1. **Adult literacy** is measured as the percentage of people aged 15 years and above who can, with understanding, both read and write a short simple statement on their everyday life.
2. **Gross Enrolment Ratio** is measured as the combined primary, secondary and tertiary gross enrolment ratio, of the total number of students enrolled at the primary, secondary and tertiary level, regardless of age, as a percentage of the

population of school age for that level.

3. **Expected Years of Schooling** is the total number of years of schooling that a child of a certain age can expect to receive in the future, assuming that the probability of his or her being in school at any particular age is equal to the current enrolment ratio age.
4. **Mean years of schooling (MYS)** provides the average number of years of education completed by a country's adult population (25 years and older), excluding the years spent repeating grades.

The first two components, i.e. adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio have been used for the past Surveys since 2002. Recognizing that education is the fundamental pillar in supporting human capital, the 2014 Survey introduced two new components to the human capital index (HCI), namely (i) expected years of schooling; and (ii) mean years of schooling.

4.2 E-Participation Index

The e-participation index (EPI) is derived as a supplementary index to the UN E-Government Survey. It extends the dimension of the Survey by focusing on the use of online services to facilitate provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation") and engagement in decision-making processes ("e-decision making").

The framework of e-Participation is as follows:

1. **E-Information:** Enabling participation by providing citizens with public information and access to information without or upon demand
2. **E-Consultation**: Engaging citizens in contributions to and deliberation on public policies and services
3. **E-Decision-making**: Empowering citizens through co-design of policy options and coproduction of service components and delivery modalities.

A State's EPI reflects on e-participation facilities that are deployed by a particular government as compared to all other states. The purpose of this measure is not to prescribe any particular practice, but rather to offer insight into how **stateslike Jigawa can use online tools to promote interaction between citizen and government, as well as among citizens**, for the benefit of all.

As the EPI is a qualitative assessment based on the availability and relevancy of participatory services available on government websites, this is for illustrative purposes and should serve only as indicative of the broad trends in promoting citizen engagement. As with the EGDI, the EPI is not intended as absolute measurement of e-participation, but rather, it attempts to capture the e-participation performance of statesrelative to one another at a particular point in time.

Nigeria e-participation index **ranked 97th among 193 countries in 2014**. (In 2012 ranked 25th among 32 country groups). **In 2016** Nigeria's e-Participation index score was **around 0.3559 with a ranking of 118** out of 193 countries surveyed. **In 2018**it improved this score to **0.4831 but ranking 117** out of 193 countries surveyed. To put this in context, **South Africa is ranked 39** with an e-Participation index score of 0.8483 while the **Republic of Korea is ranked number 1** with an **e-Participation score of 1** scoring a perfect 100% in all 3 stages of the survey!

Country/ Region	World e-Government Development Ranking				e-Government Development Index Scores			
	2012	2014	2016	2018	2012	2014	2016	2018
Nigeria	162	141	143	143	0.2676	0.2929	0.3291	0.3807
Rwanda	140	125	138	120	0.3291	0.3589	0.3390	0.4590
South Africa	101	93	76	68	0.4869	0.4869	0.5546	0.6618
Ghana	145	103	120	101	0.3195	0.3735	0.4181	0.5390
Republic of Korea	1	1	3	3	0.9283	0.9462	0.8915	0.9010
Africa					**0.2780**	**0.2661**	**0.2882**	**0.3423**
Europe					0.7188	0.6936	0.7241	0.7727
Americas					0.5403	0.5074	0.5245	0.5898
Asia					0.4992	0.4951	0.5132	0.5779
Oceania					0.4240	0.4086	0.4154	0.4611
World					0.4882	0.4712	0.4992	0.5500

Table 4.2 EDGI Rankings for Nigeria and Selected Countries

4.3 Reference Strategies, Models and Frameworks

The development of E-Government in Nigeria from 2014 when the Nigeria E-Government Masterplan was berthed in partnership with the Korean Cooperation Agency (KOICA) was a significant milestone in the development of E-Government in Nigeria. It was launched in May 2019 with a Digital Transformation Plan that was already underway in the likes of TSA, IPPIS, GIFMIS/SIFMIS, E-Immigration, etc. The Following are the reference Technology Strategies, Frameworks & Models;

1. Nigeria E-Government Masterplan (E-Government Strategy & Roadmap)
2. Nigeria Government Enterprise Architecture (Frameworks & Models)
3. Nigeria e-Government Interoperability Framework (Integration Framework)
4. Nigeria Digital Economy Policy and Strategy (Policy & Strategy)
5. Nigeria National Broadband Plan 2020-2025 (Strategy and Roadmap)
6. UN Sustainable Development Goals 2030 (Reference Models)
7. UN E-Government Development Index (Reference Models and Indices)

In the categorization and selection of the reference Strategies, Models & Frameworks the National and International benchmarks can be set for the Jigawa State Government to create the future state of e-Government in Jigawa. This essentially creates the TO-BE State that allows us to identify the gaps within the ICT Policy and Strategy of Jigawa State.

4.3.1 Application of Strategies, Models and Frameworks

The mentioned strategies, models and frameworks are by no means exhaustive in the development of the Jigawa State E-Government Masterplan but have been carefully considered to make sure the overall development of Jigawa State is aligned to the Global Development Strategy through the UN Sustainable Development Goals and the National context through the Nigeria E-Government Masterplan. Stated below are the application contexts and alignment with these plans.

I. **Nigeria E-Government Masterplan:** This document defines the National Government Digital Transformation Strategy and Roadmap. This document helps to setup the interconnection of the State Systems to the National Government Systems and platforms.

II. **Nigeria Government Enterprise Architecture:** This is a subsidiary document framework from the Nigeria E-Government Masterplan developed by the Nigeria Technology Development Agency (NITDA) to address the challenges brought about by different government systems and provide a clear road map as a framework for long-term IT strategy/plan for achieving Whole-of-Government services and Government Digital Transformation.

III. **Nigeria e-Government Interoperability Framework**: To achieve the needed integration, there is need for a framework that guarantees interoperability of IT infrastructure and applications.The Nigeria e-Government Interoperability Framework specifies concepts, principles, policies, recommendations, standards and practices for MDAs to work together, towards the joint delivery of cross-portfolio services.

IV. **Nigeria Digital Economy Policy and Strategy**: The National Digital Economy Policy and Strategy has been developed to reposition the Nigerian Economy in order to take advantage of the many opportunities that digital technologies provide. This will help Jigawa stake advantage of what has been planned at the National level to create a Digital Economy.

V. **Nigeria National Broadband Plan 2020-2025**: The new Broadband Plan is designed to deliver data download speeds across Nigeria of a minimum 25Mbps in urban areas, and 10Mbps in rural areas, with effective coverage available to at least 90% of the population by 2025 at a price not more than N390 per 1GB of data (i.e. 2% of median income or 1% of minimum wage).This SLA is important for the required legislation and PPP to create broadband deployment in Jigawa.

VI. **UN Sustainable Development Goals 2030**: The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. This sets the Global direction and benchmark for technology and business development that Jigawa aspires and plans for.

VII. **UN E-Government Development Index:** The United Nations e-Government development index (EGDI) is a composite indicator measuring the willingness and capacity of national and subnational administrations to use information and communication technology to deliver public services. This has already been featured as a benchmark for the Jigawa E-Government Masterplan.

4.4 Global Case Studies

The introduction of Global Case Studies into the Jigawa E-Government Masterplan is to set the regional and global benchmark for Jigawa. For Jigawa State to compare their baseline developed in the Research Analysis

4.4.1 Seoul

Seoul as the Capital of South Korea has pursued drastic improvements in E-Government administrative efficiency and quality through the incorporation of advanced information and communications technologies into its public services for citizens. Thus it has realized a world-class open government, enabling citizens to have fast and easy communication with it about a wide range of issues while accessing government services digitally.

Vision

Mobile Seoul: Communicating with Its Citizens and Creating a City Together

Goals:

Providing Citizens with Customized Public Services; Creating Jobs; Building New Engines of Growth

Strategy:

1. Open Administration Based on Transparency and Communication
2. Smart Administration Based on Sharing and Collaboration
3. Seoul: Sharing Digital Benefits with All
4. Seoul as an Optimal, ICT-supported Smart City

Notes:

1. The Seoul Metropolitan Government is leading the world in smart administration through its constant efforts to make use of rapid developments in smart technologies worldwide to realize the corresponding innovations in its public services under the new paradigm of a citizen-centric administration based on communication, transparency, sharing, and collaboration.
2. It has successfully established participatory governance with its citizens on the basis of the country's sophisticated IT service infrastructure. Citizens are not just recipients of various public services but also creators of diverse types of public information for fellow citizens utilizing an entirely new type of participatory administrative platform.
3. The Seoul Metropolitan Government appointed a Chief Information Officer (CIO) since 1999. The CIO has taken the lead in the city's efforts to establish sophisticated information systems and a network infrastructure.
4. Seoul ranked 1st in the Municipal e-Governance International Survey five consecutive times (10 years).
5. The Seoul Metropolitan Government has set up a total of 477 types of information systems covering the entire range of its public services including urban planning, culture, tourism, transportation, and housing for its 127 divisions.
6. Seoul set up e-Seoul Net connecting its 36 agencies via fiber-optic cables along Seoul's subway tunnels. **U-Seoul Net**, a high-speed telecom network that provides citizens with audio, video, and internet services so that they can access any of the city's smart public services anytime, anywhere.

7. Under the slogan "**Big data solves even the smallest grievances**" the Seoul Metropolitan Government integrates diverse data collected through its various e-government functions with those collected by the private sector to create new values and realize citizen-centric municipal administration.
8. The Seoul Metropolitan Government plans to gradually implement a total of 39 tasks in the entire range of its administrative services including welfare, health, safety, transportation, and environment.
9. The Seoul Metropolitan Government is striving to introduce the Seoul model of e-Governance to various overseas cities within the framework of WeGO. In 2011, it signed an MoU with the World Bank to join hands in developing the "City e-Government Diagnostic and Solution Framework."

Accomplishments:

1. Open Administration Based on Transparency and Communication Seoul Metropolitan Government website/Mobile Seoul/M-Voting/Information Open Plaza/Public data disclosure
2. Smart Administration Based on Sharing and Collaboration Big data administration/Administration portal/Seoul-type map tagging/3D indoor space services
3. Seoul: Sharing Digital Benefits with All Free Wi-Fi/Free mobile recharging service/Seoul App Center/Narrowing the information gap
4. Seoul, an Optimal, ICT-supported Smart City Seoul Data Center/Quality control for ICT businesses/Information security

Success Factors of Korea e-Government

1. **Environment:** The political Social and Technical Environment was right for e-Government to flourish. The IT development project was formed and implemented in mutual interaction of needs and seeds in the political & social as well as economic & industrial technical environment.
2. **Political Will and Leadership:** In Korea's political system, in which presidential political power is so strong, the most important factor for the success in pursuing e-Government project was the interest and will of the president.
3. **Vision & Goals and Project Priority:** The vision and goals of the e-Government presented by each administration are all the results of mutual interactions of political, social, economic and industrial, and technological environment factors.
4. **Implementation Organization & Resource Distribution:**Strong government will led to Capacity Development for Korean Government Officials. By enhancing the capacity of government officials through consistent and systematic education and training, the Korean government could cope with socio-economic development policy issues and tasks.
5. **Feedback and Learning:** The feedback and learning process are activities for reflecting project achievement assessment results towards improvement of future activities. Since e-Government project is not a one-time but an on-going project, improvement efforts through such feedback and learning process is important to enhance performance and outputs.

4.4.2 Nairobi

Overview of Kenya e-Government

Directorate of e-Government is a department in the ICT Authority under the Ministry of Information Communication Technology. It was established in 2003 with the mandate of overseeing and coordinating e-Government service delivery. The main functions of the department are to provide and implement e-Government strategy, develop and facilitate access to e-Government shared services, provide technological advice and policy framework, as well as development and enforcement e-Government standards.

Kenya e-Government Vision and Mission

The vision and strategy of Kenya e-Government is to strategically support Vision 2030. The vision and mission of e-Government can be summarized as follows.

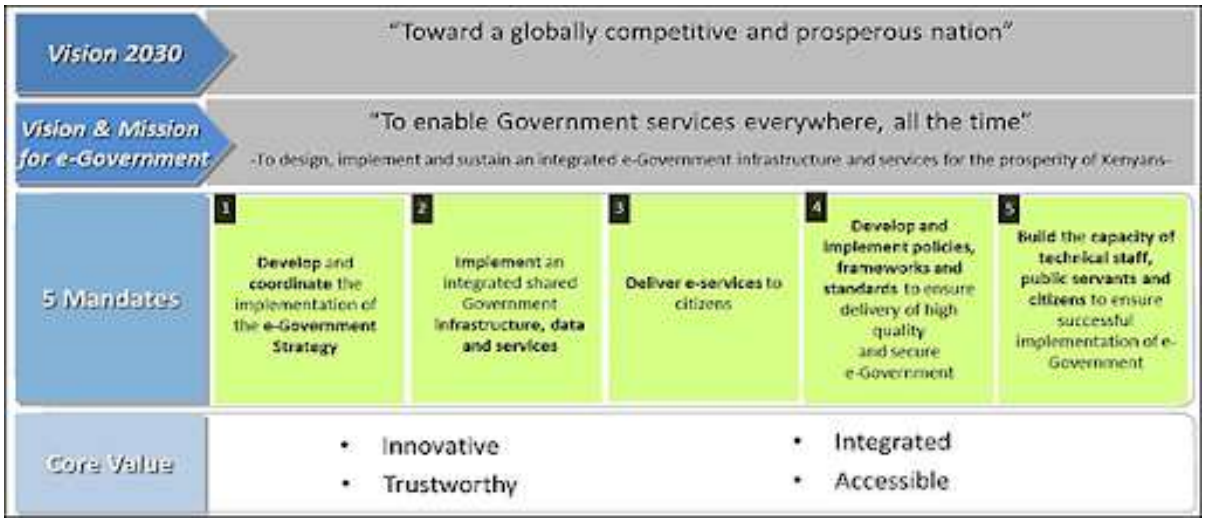

Fig.4.2 Kenya e-Government Vision and Mission

e-Government Development Process

To attain the objective of developing e-Government strategy, the process was largely divided into three periods as was done in Korea: initial phase (1980~1990s'), the phase to build base (1999~2004) and enforcement in full scale (2005~) - 3 phases.

Phase	Key Initiatives
Initial period of e-Government (1980s'~1990s')	• Imported the 1st mainframe computer to Kenya (1967) • Government Computer Services were established • Microcomputer Information Systems Department (MISD) • Established basic plan of computerizing administration • The first connection to Internet (1995)
Period to build the base of e-Government base (1999~2004)	• Enacted Kenya Information and Communications Act (1999) • Government Information Technology Services (GITS) (2000) • Decided to enforce NII (National Information Infrastructure) (2002) • Announced e-Government strategy (2003) • Constituted e-Government Directorate (2004) • Established National ICT Policy to enhance national competiveness (2004)
Period when e-Government was pushed forward in full scale (2005~)	• Announced Kenya Information & Communications Bill (2006) • 3 areas were computerized; converting the payment system of public charge; government bond is sold & bought by Internet; vehicle registration (2007) • Established National Science, Technology & Innovation Policy & Strategy (2008) • Built 4 lines of undersea Fibre Optic Cable (2009) • Representative home page of e-Government: opened (2010) • Selected 8 main tasks of e-Government and ICT Special Committee was operated • Amended Kenya Communication Act 2008 was effectuated (Jan.2009) • Announced basic plan to build high-speed IT base • Main administrative information, e.g., resident, property, car, economic statistics were digitized (2011) • Announced National ICT Master Plan (2013)

Table 4.3 Kenya e-Government Development

Lessons Learned:

1. As e-Government has been pushed forward mainly for 30 years, it is time to expand it to e-Government improvement project for public service.
2. As integration of administrative information and efficient administration was hindered by building system in each department, administration should be improved first by re-engineering Business Process
3. It is required to focus on pushing forward e-Government to commonly use public information and service for transparency and efficiency of administration.

e-Government systems should be built to enable people to easily connect e-Government and to get diverse administrative service.

4.5 Gap Analysis

To understand how the e-Government Masterplan and Government Digital Transformation Roadmap, we must implement a Gap Analysis in the various sectors of Jigawa state Government system. A gap analysis in this context, begins with an examination and assessment of the current state of performance for the different areas of the Jigawa State Government while determining the future state or the To-Be definitions; the difference between this current and future state lays bare the gaps. We will examine the gaps in Technology& Infrastructure, Organization, Business Environment, Human Capital and Funding and Resources.

4.5.1 Technology & Infrastructure Gap

To determine the Technology and Infrastructure gap the previous chapter examined the AS-IS or current state of Technology and Infrastructure in Jigawa State House, Galaxy ITT and the Jigawa Institute of Information Technology while reviewing the following indices; Network Infrastructure and Internet Bandwidth, Hardware, Software and Online Platforms, Security.

Gaps:

1. Disaggregated Internet Infrastructure across Jigawa
2. Government House, MDA and LGAs are not interconnected by proper Network Infrastructure
3. Hardware devices are limited to personal laptops and mobile phones for senior government officials.
4. Unavailability of integrated Security systems or firewalls. (No DMZ)
5. Limited or no dedicated Fiber optic network infrastructure for high speed internet.
6. No dedicated application for group collaboration or document sharing. (e-Document, e-Approvals, e-Groupware)
7. Unavailability of documented Government Process Management. (Business Process Management gaps)
8. There are no dedicated Single-Window Service portal for citizens and businesses
9. Lack of pervasive or dedicated Closed Circuit Television networks.
10. Lack of an Integrated Government Service Center (including Call Center, and offline access in addition to online services)
11. As of the time of developing this report there wasn't a Government Data Center available.
12. Unavailability of an Electronic Procurement System
13. Unavailability of a central government Intranet system
14. No central data policy (Data Protection, Privacy, etc.)
15. Limited Digital Skills capacity across board.

4.5.2 Organization Gap

The need for a proper organizational structure to deliver on the mandate for the state government digital transformation cannot be over-emphasized. The move to the 4th Industrial Revolution requires dedicated organization and job functions to translate the Government's overall policy and strategy into ICT functions that will unlock new opportunities.

Gaps:

- ICT Functions are not currently delivered by a Dedicated MDA.
- Galaxy ITT has not been fully positioned to deliver the state's ICT Mandate
- We couldn't locate a Ministry that drives the ICT Function
- There isn't a dedicated ICT Policy for the State.

4.5.3 Business Environment Gap

The business in Jigawa state is defined by the Policies, Laws, and Frameworks that govern the delivery of ICTs in the state. Other considerations are the ease of starting a business, registering properties and enforcing contracts.

Gaps:

- There isn't a dedicated ICT Policy for Jigawa State.
- No specific legislation for e-Government Development
- Policies to drive the institutionalization of Government Digital Transformation is lacking.

4.5.4 Human Capital Gap

To drive the Jigawa e-Government Masterplan and Government Digital Transformation a large pool of Digitally Skilled Manpower is required across the Government, Business and Citizenry. Jigawa State Government has already laid a solid foundation for the development of Human Resources through the setting up of the Jigawa State Institute for Information Technology (JIIT) as well as the Manpower Development Institute (MDI). While these initiatives are commendable there still exists gaps in the skills mapping to ensure the state has the right hands to manage the e-Government strategy.

Gaps:

- Turn-around time for training Government officials has limited the pervasiveness of the ICT Skills in government.
- The expertise required to drive the ICT Function of the State is still lacking.
- Standardization of Digital Literacy for government, citizens and businesses is required.
- Needs assessment for skills mapping is required for JIIT to churn out graduates that can drive the Start-up or Industry functions.
- State Executives will required dedicated Digital Skills training relating to new e-Government Technologies.
- 4th Industrial Revolution Digital Skills are required within the training programs like Artificial Intelligence, Internet of Things, Smart Cities, Programming, Blockchain, etc.

5. e-Government Master Plan Implementation

5.1 Overview

The visions and objectives for the e-Government Masterplan for Jigawa State rests of the successful implementation of the initiatives derived from the difference between the current state analysis and future state definitions while addressing the gaps within the Jigawa State Governance and Institutional reforms. An overall e-Government conceptual framework will reflect the main stakeholders, the interactions, the services, as well as the main infrastructure and resources that are needed to drive the transformation roadmap.

5.2 e-Government Implementation Structure

To drive the e-Government Masterplan for Jigawa State we have identified 6 Policies and 12 Strategies that will create the implementation structure for the plan. These strategies are further broken down into 20 Major Initiatives or Programs that will form the entire Implementation Roadmap for the Jigawa e-Government Masterplan. This table below provides details of the roadmap structure for Jigawa State e-Government implementation.

Policy	Strategy
Leadership& Organization	Establish the State Executive Council on ICT/e-Government
	Identify e-Government Leaders &Champions
Digital Literacy	Expand Capacity Building of e-Government
	Create Awareness For e-Government Initiatives
Funding	Create Special Budgeting on e-Government
	Implement Various Funding Models
Infrastructure & Platforms	Develop Adequate Infrastructure & Application
	Standardize Government Data and Software Framework
Process Reengineering	Establish Organizational Framework for e-Government
	Implement Government Digitization Program
Policy & Laws	Implement ICT Policy For Jigawa State
	Enact Laws For e-Government & Digital Transformation

Table 5.1 e-Government Roadmap Structure

5.3 Jigawa E-Government Initiatives

The e-Government Initiatives have been broken down into 3 Sub-Systems; Governance, Technology and Services subsystems covering all the initiatives for the full spectrum of the Government Digital Transformation. The Governance Subsystem covers all the initiatives for establishment of the Management Council for e-Government, establishment of the laws and institutional framework for e-Government, capacity building and funding. The Technology subsystem covers the implementation of the core infrastructure required for e-Government. The Third Subsystem is the Services subsystem covering the all the services Government will deliver to citizens and businesses.

Fig. 5.1 Governance Initiatives within the e-Government System

Fig. 5.2 Initiatives within the Infrastructure & Technology Subsystem

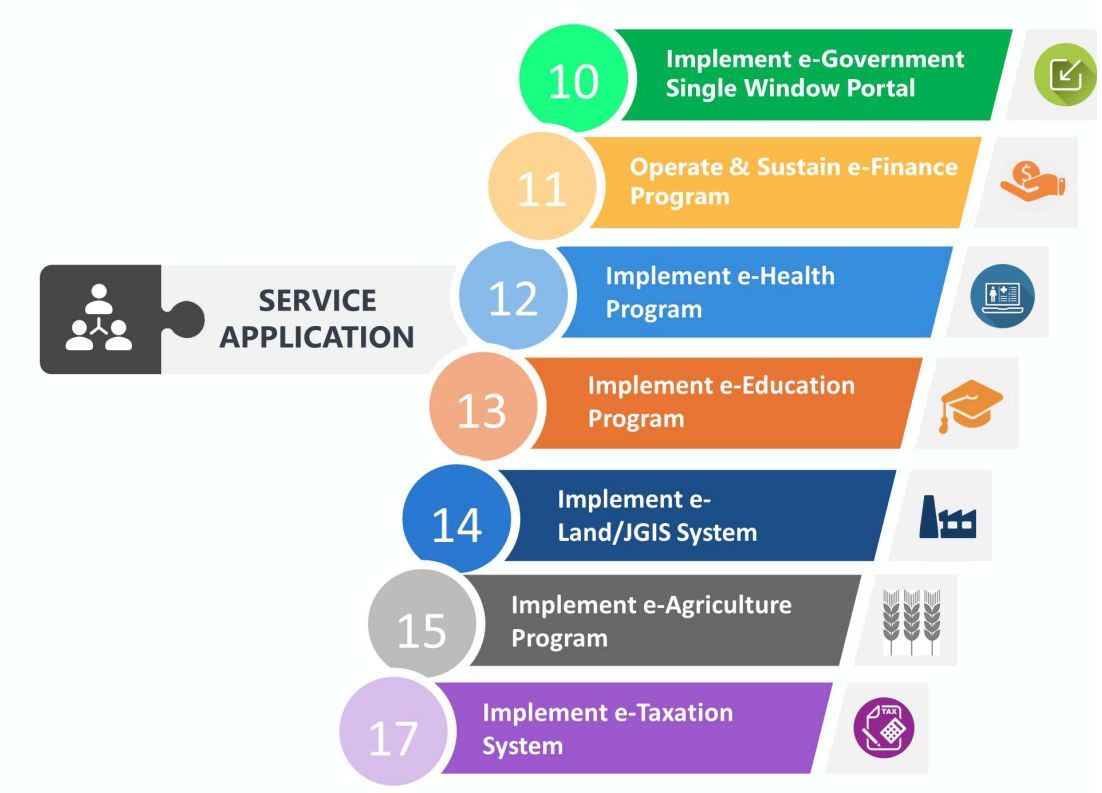

Fig. 5.3 Initiatives within the Service Application Subsystem

5.4 Action Plan for Each Project Initiative

This section provides summary of the **20 selected Initiatives or Programs** to be implemented under the e-Government Masterplan for Jigawa. The Selected Initiatives to achieve the 12 Strategies in the e-Government Masterplan are as below:

5.4.1 Initiative #1: Establish State Executive Council on e-Government

In order to drive the Jigawa e-Government Masterplan, a council needs to be chartered and empowered. The prospective **State Executive Council on ICT/e-Government** should consist of stakeholders from the government and private sectors-cutting across all MDA's, ministries and agencies. The ordinary citizen, legal experts, IT experts, and industry leaders are represented as well.

The committee will see to the following:

- Planning and implementation of the five-year e-Government Master Plan in Jigawa
- Establish a **legal and organizational framework** and policies to drive the implementation of e-Government projects in the state.
- Work with the legislative and executive arms of government to facilitate the passing of the **Jigawa State e-Government bill** into law as soon as possible.
- Facilitate the Mobilization of ALL MDAs achieve the objectives of the e-Government project.
- Allocate the funding resources efficiently across the projects and programs and increasing the productivity in line with State's e-Government Vision.
- Help in providing periodic reports on the progress of the Master Plan, and facilitate the coordination, collaboration and engagement of the various stakeholders during implementation.

The following figure depicts the relationship between the State Council on ICT/e-Government and key government organizations.

5.4.2 Initiative #2: Conduct Awareness and e-Government Capacity Building

For successful e-Government in Jigawa State, Digital Capabilities must be built at all levels from the top leadership to the citizens who are the users of e-Government services. It is equally important to foster an attitude and mindset that is receptive to ICT based administration and delivery of services. State public administration personnel must be divided into groups according to a specific taxonomy so as to schedule the most adequate training for the different cadres of the civil service.

Awareness:

E-Government should be promoted across radio, television and social media to ensure citizen participation in the process and knowledge of these services to help the e-Participation Index in the state. These programs must be delivered in the schools and social circles in the state and in the different languages

The Objectives of the Capacity Building Program are as follows:

- To develop standard e-Government Curriculum that captures the e-Government Masterplan and Digital Technologies and frameworks used within.
- To make public servants understand e-Government not only as a technology but also a tool for government innovation and efficient service delivery to the people.
- Expand ICT literacy in government by training ICT skilled manpower in the sector

- To foster an environment for smooth coordination in terms of reducing possible conflicts of interests among MDAs in the implementation process of e-Government system
- Infuse ICT education and curriculum in schools and colleges
- To minimize resistance from staff of MDAs to the adoption of e-Government systems.
- To develop ICT related capacity building program for citizens to understand citizen participation in governance and their rights.
- To build capacity in public private partnerships for e-Government implementation for commercially viable projects.

Strategies

For Civil Servants:

- Set priorities for the training programs for state executives, supervisors and other staff of MDAs covering the entire civil service.
- Develop special training programs for IT/e-Government experts who provide the policy makers and implementation teams with full time support.
- Upgrade existing training institutions for e-Government Curriculum like the MDI, JIIT, which should be able to work out a self-sustaining business and financial models.
- Maximize the utilization of existing training institutions by improving their programs/facilities.
- Recognize and reward skilled personnel by developing proper assessment and certification.

For Citizens:

- Target to train every single Jigawa State citizen.
- Mobilize all relevant tools for capacity building amongst citizens.
- Develop Public Private Partnership (PPP) models for ICT/e-Government training programs to scale training into institutions, schools and businesses.
- Leverage digital technologies and standards to ensure that relevant training is being provided.
- Infuse Digital Literacy into the School Education Curriculum to ensure that schools are graduating citizens that will be digital literate as part of their education.

Who Must Be Trained

For successful e-Government in Jigawa, capabilities must be built at all levels from the top leadership to the user of e-Government services. It is equally important to foster an attitude and mindset that is receptive to ICT based administration and delivery of services.

Public administration personnel must be divided into groups according to a specific taxonomy so as to schedule the most adequate training for the most suitable actors.

- Legislators
- Politicians.
- Top Management Civil Servants
- Staff-Level Civil Servants
- ICT-Related Civil Servants

The essence of human skills and capacity development in and for e-Government cannot be over-emphasized. It is a continuous learning.

E-Government skills & capacities needed to be built are:

- Design and development of e-Government solutions
- Evaluation, procurement and management of technology solutions
- Training and sensitization of the businesses
- Training citizens to leverage on e-Government solutions.

Directions & Strategies include:

1. Improve ICT awareness among top leader, traditional rulers and executives.
2. Develop Capacity Building Programs for ALL Civil servants:
    a. By conducting ICT training for public servant according to their level of ICT literacy; and
    b. By expanding the provision of e-learning
3. By developing and including ICT training Programs in the State Government Training Institutions.
4. Develop and train ICT professionals and champions within the Government:
    a. By assisting ICT professionals in the Government to obtain international ICT Certifications; and
    b. By establishing nodal agencies.
5. Facilitate promotion & proliferation of ICT industry:
    a. By introducing training programs to develop ICT experts; and
    b. By establishing ICT-related departments at universities and provide assistants.
6. Sensitize enough to the use of ICT in business operations.
7. Educate citizens to become ICT literate:
    a. By introducing programs that will carter to all classes of citizens irrespective of their occupations, literacy level, disabilities and age. and
    b. By expanding Community Communications Centre for improving ICT literacy

5.4.3 Initiative #3: Enact Policies and Laws for e-Government Implementation

In order to establish a proper legislative framework for the successful implementation of e-Government in Jigawa, some of the current laws related to information management and government services should be revised to be consistent with the legal bases as depicted below. It is suggested that the legal framework for the e-Government for Nigeria consists of three major parts: laws necessary for e-Government; general laws for the information society and; specific laws supporting e-Service in each MDA.

i. e-Government Act

The approach to building legal framework of e-Government in Jigawa State is to enact a single e-Government law separately from other component laws and/or; to make a cluster of component laws regarding e-Government such as laws on general administration, public information, electronic signature, and data protection, digital transformation, etc.

The following items should be included in the **e-Government Act of Jigawa State**:

- Establishment of an e-Government Fund and Variety of Funding Mechanisms
- Definition of e-Government objectives; principles; and structure;
- Online provision of government information and services
- Strengthens information security government-wide through the authorization of the dedicated e-Government Organization.
- A Whole-of-Government Approach to implementation

- Adoption of Enterprise Architecture, e-Government Interoperability Standards and Data Protection Standards.

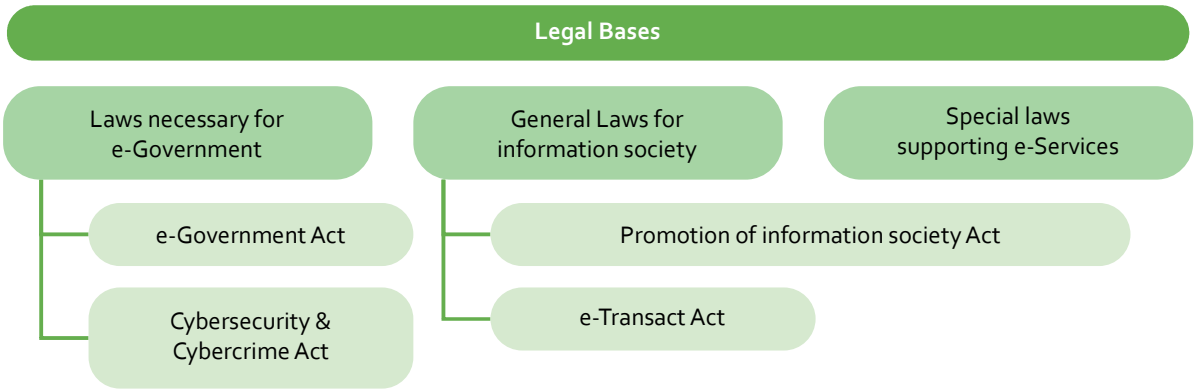

Fig 5.4 Legal Framework for e-Government in Jigawa State

ii. Cybersecurity and Data Protection Policy & Act

The e-Government Act typically place emphasis on 'State Cyber-Security strategy as an effective tool for assessing cyber-security vulnerabilities, policies and additional legal reforms which should be adopted. In drafting the State e-Government Act, consideration should be given to the 'Cybercrimes Prohibition and Prevention Act of 2015' as well as the NITDA 2019 Nigeria Data Protection Regulations (NDPR). The policy should be helpful in strengthening the organizational cooperation and governance structure on cyber-securities and cybercrimes as well as protection of the states' data sets. Similar to an e-Government Act that needs a whole-of-government approach, information security also poses leadership and organizational challenges that must be addressed.

Objectives and principles of **Cybersecurity and Cybercrime Act** (Subsidiary Legislation):

- Protection of critical subnational information infrastructure
- Offences and penalties (punishment)
- Duties of service providers
- Administration and enforcement
- Search, arrest and prosecution
- Jurisdiction and international cooperation

Principles of a **State Data Protection Policy** to ensure data is;

- used fairly and lawfully
- used for limited, specifically stated purposes
- used in a way that is adequate, relevant and not excessive
- not retained for longer than is necessary
- handled according to privacy and data protection rights
- accurate, retained securely, with the integrity intact
- not transferred outside Jigawa without adequate protection

iii. State ICT Policy & Promotion Act

Most of the challenges and issues in e-Government arise from the deficiency of comprehensive ICT policies and regulatory framework to facilitate effective deployment of networks, devices and services for the businesses as well as citizens. This act aims to promote

the building of ICT infrastructure such as network and devices, usage of the ICT services in diverse areas, and the growth of ICT industry.

The following items should be included in the ICT Policy & Promotion Act of Jigawa:

- Ÿ ICT4D Policy Thrusts
- Ÿ ICT/Digital Skills Manpower Supply
- Ÿ Organization Structure or ICT Development Agency
- Ÿ Urban Broadband Network Deployment
- Ÿ ICT for knowledge economy in key economic and social areas
- Ÿ Promotion of ICT industry
- Ÿ Digital divide and awareness raising

iv. e-Transaction Act

For legally valid e-transactions, not only authentication of electronic records is necessary, signatures of the parties to the online transactions are also required. Offering e-transaction services online can present important legal questions about the validity of electronic versus paper documents. The Model Law on Electronic Commerce developed in 1996 by the UN Commission on International Trade Law (UNCITRAL) should be a good reference together with its sister law on electronic signature (2001). The following legal items as follows should be contained in the state draft e-commerce act which can be combined with the State's e-Government Act:

Objectives

- Ÿ Electronic documents and records
- Ÿ Electronic signature
- Ÿ Personal data protection (private as well as public institutions)
- Ÿ Electronic contracts
- Ÿ Consumer protection
- Ÿ Service providers and vendors
- Ÿ Electronic evidence

5.4.4 Initiative #4: Institute e-Government Funding Mechanisms

E-Government requires a huge amount of financial input for each stage. As such Government can resolve to allocate more funds to e-Government related projects by developing fiscal policy that ensures a percentage of the state Governments and private sector income is contributed to e-Government development in the State. The objectives for creating and utilizing promotion funds for e-Government is to ensure that the projects and initiative are not starved of funds.

To-Be Model for Funding e-Government Implementation

- Ÿ State e-Government Budget Request: **Aspire to 10% of the State Budget** (currently under 1%) shall be invested into Digital Transformation and e-Government Projects.
- Ÿ A second strategy to secure a Budget is the **Creation of an ICT Promotion Fund** which would be created in order to invest in the research and development of ICT industry, equip civil servants and citizens with Digital Skills and promote its applications to society.
- Ÿ The budget for e-Government can be separated from the ICT Promotion Fund, and the **Dedicated Organization** should be designated as a major implementation agency

responsible for integrating and implementing the e-Government Program.

Directions and Strategies

- Direct Government Intervention:
  - Government should resolve to allocate more funds to e-Government and Digital Transformation related projects
  - Develop fiscal policy that ensures a percentage of Government and private sector income is contributed to e-Government development
  - Evaluate e-government endeavors under a cost-benefit lens in order to justify the fund that is allocated to such programs.
- Government shall treat e-Government projects as capital expenditures. Funding through long-term financing instruments, such as bonds or leasing arrangements that guarantee long-term funding and smooth expenditures for large investments by spreading expenses over several periods.
- **Issuing Bonds (domestic or international capital markets):** The Jigawa State Government can finance e-Government projects through issuance of bonds (national capital markets).
- **Public-Private Partnership:** The most successful version of public-private partnership is the Private Finance Initiative, where the project is exclusively funded by private capital. The private sector can also contribute technical know-how.
- **Other forms of funding for e-Government:**
  - **Outsourcing:** companies do also offer to install and pay for new systems and also make a monthly charge for their use
  - **Software Leasing:** Companies can choose to finance the use of software over an agreed period of time and then having the option of buying the software license (or licenses) at a predetermined price at the end of that period.
- **Long-run cost recovery of e-government projects:** Irrespective of the mix of public and private management of e-government projects, long-run cost recovery rests on three options, namely user charges, general budget, and co-funding through advertisements.

5.4.5 Initiative #5: Create Dedicated Organization for ICT/e-Government

One of the **Critical Success Factors** for effective implementation and sustainability of e-Government in Jigawa is establishment of a **dedicated organization structure.**
In the As-Is Analysis carried out in the Chapter 4 it was discovered that Jigawa didn't have a dedicated MDA for driving the ICT projects apart from the state-run ICT Company Galaxy ITT. There were gaps in this model due to a more central coordination required to drive e-Government Projects across ministries.

Digital revolution leads to the useful construction of e-Government. The structure of e-Government is horizontal with partnership and also information and technology based. All stakeholders involved in e-Government projects participate in the process of decision making which is collaborative. Through collective decision making, public problems can be solved by IT-based partnership. The following is thus proposed.

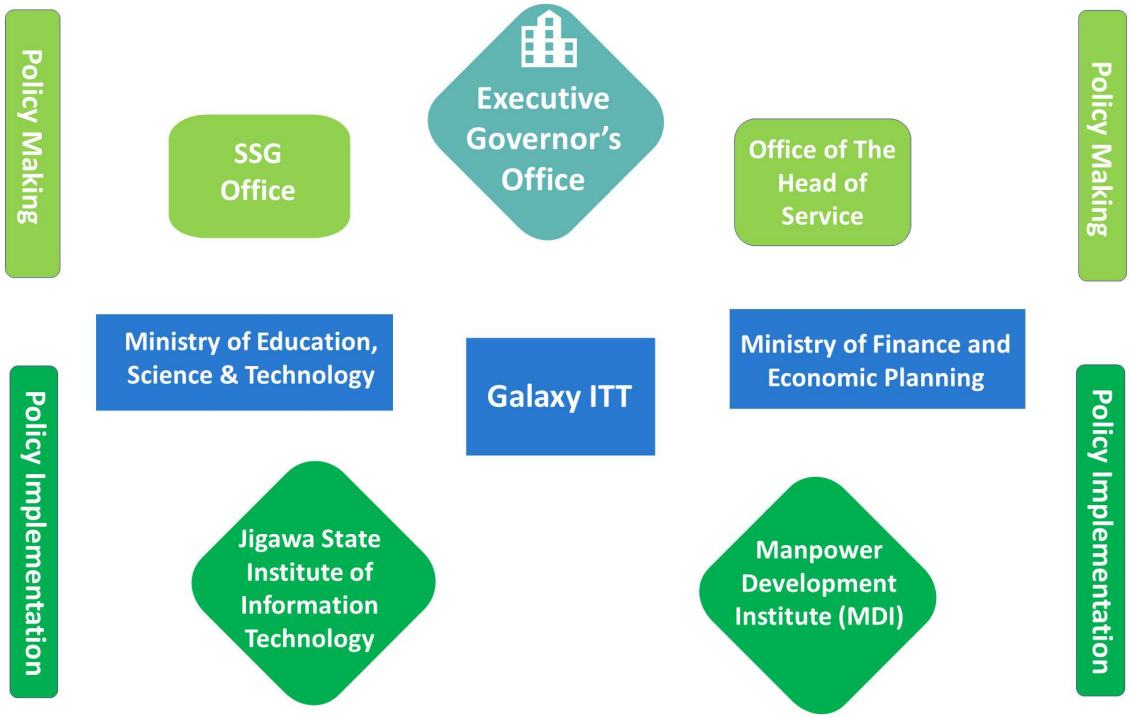

Fig. 5.5 Conceptual To-Be Model of Organizational Framework for e-Government

Strategies and Directions:

- Strengthening the collaborative structure of e-Government
- Composing a State e-Government Steering Committee
- Reactivating the stakeholder consensus building meetings (Townhall Meetings)
- Reinforcing communication channels between Dedicated Central Organization and other relevant MDAs
- Utilizing the Council of ICT Heads from all Government Structures (MDAs, Government House, MDI, JIIT, Galaxy ITT)
- Close connections between e-Government institutions and public sector reform agencies (MDI)
- E-Government Communication Infrastructure to be established.

5.4.6 Initiative #6: Integrate All Existing ICT/e-Government Projects

To deliver on the e-Government Masterplan for Jigawa State, a highly agile, citizen-centric, accountable, transparent, effective, and efficient government operations and services rank very high. For reaching these goals, the integration of government information resources and processes, and ultimately, the interoperation of independent e-Government information systems is critical. The Vision for having an Integrated Government is to ensure that citizens and businesses are able to interact with government as a single entity rather than as different public authorities.

Jigawa state through Galaxy ITT, Jigawa State Institute of Informatics and the Manpower Development Institute have implemented ICT projects and Capacity development that mean well for the citizens and civil service. The Government have also invested in the ongoing SIFMIS project to drive digitization of the state finance and budgeting process. In order for these projects to have the desired impact, all these projects must be Integrated and

Interoperable.

Objectives

- Integrate all ICT Projects in Jigawa state such that it fits the global objective
- Create a Single Government Dashboard for ALL ICT Projects within the state
- Ensure all ICT Projects within the State meet the set criteria under an Enterprise Architecture.
- Ensure all government ICT Projects are Interoperable and use a common Data Structure.
- Ensure that all applications deployed under the ICT or e-Government theme are able to share data across them.

Directions & Strategies include:

- Implement a networked organizational model, to transform a fragmented system of government agencies into a networked virtual organization that operates seamlessly toward a common mission that is to deliver more value to citizens and enterprises.
- Implement an e-Government Interoperability Framework referencing the e-Government Interoperability Framework (Ne-GIF) to standardize infrastructures and interoperability and allow for vertical and horizontal integration in government
- Jigawa State Government are to implement a Government Enterprise Architecture (in line with the Nigeria Government Enterprise Architecture) to provide inter-organizational integration with a well-defined reference model and a clear roadmap defining the stages and the modalities for the integration, as well as a strong governance of the process.
- Setup a Project Management Office for the e-Government Masterplan For Jigawa State. This PMO will drive the registry of ICT and e-Government projects in Jigawa.

5.4.7 Initiative #7: Implement State Government Integrated Data Centre (Se-GIDC)

An Integrated Data center is the core of the Jigawa e-government system. The performance and reliability of the e-government system depends upon the standardization of data center. A world-class data center makes for a great e-government system. These are the main features of data center.

The Nigerian Government Integrated data centre integrates all existing networks into a single IP- based national network and connects all major government buildings using fibre optic rings. With the fibre optic cables, Galaxy Backbone is able to provide a backbone nodal network that is tapped by state capitals in the country. Galaxy Backbone provides network and internet connectivity to locations in Abuja and VSAT connectivity to over 3,800 locations nationwide. The Jigawa Se-GIDC will interconnect with the National GIDC for effective data and internet exchange.

The objective of this initiative is to implement an integrated data centre which provides secure, efficient, credible and innovative services to all the MDAs and clients.

To-Be Model: Integrated Data Centre for e-Government

To ensure reliable, safe and efficient e-Government services 24/7 with quality infrastructure

and technical expertise, Government Integrated Data Centre (GIDC) is to be equipped with:

- Ÿ High Availability/Disaster Recovery (HADR) – the function that ensure network operations and business continuity.
- Ÿ Visibility— not only in network traffic and security events, but also into application traffic making the system easier to maintain and manage the resources.
- Ÿ Connectivity—ubiquitous connectivity to disparate sets of resources
- Ÿ Security — intelligent information security system and compliance
- Ÿ Policy and Control—centralized policy and control
- Ÿ Standardized Quality of Service (QoS) to assure the communication links
- Ÿ High Performance—applications, storage, servers and the network
- Ÿ User Level Access Authentication – giving permissions, ownership, and inheritance permission must be consider.
- Ÿ Intelligent systems for power supply, cooling and firefighting;
- Ÿ A group of world class security experts guarantees seamless system operation to prevent any type of cyber-attacks from illegally intruding the system.

The **Se-GIDC** is visually represented;

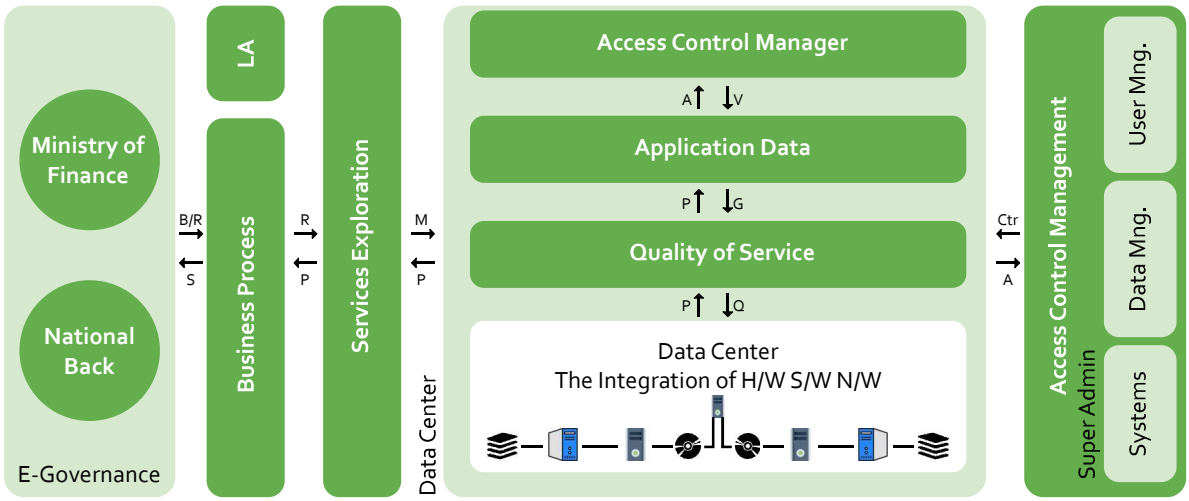

Fig. 5.6 To Be Data Center Model For Jigawa State

Standards for Data Center

The most widely adopted standard for data center design and data center infrastructure is ANSI/TIA-942. It includes standards for ANSI/TIA-942-ready certification, which ensures compliance with one of four categories of data center tiers rated for levels of redundancy and fault tolerance.

5.4.8 Initiative #8: Implement Government Digitization Program

By digitizing processes and making organizational changes, governments can **enhance services, save money**, and **improve citizens' quality of life**. The Digitization of the Jigawa State Government in the context of this e-Government Masterplan covers 3 domains; **Documents, Processes** and **Services.** This covers digitizing the core capabilities of the government to

According to McKinsey, digitizing the government requires attention to two major

considerations: the core capabilities for engaging citizens and businesses, and the organizational enablers that support those capabilities. These make up a framework for setting digital priorities

Objectives:

Ÿ To convert paper documents across all the MDAs into digital format
Ÿ Implement Business Process Re-engineering the migrate processes from analogue to digital
Ÿ Digitize Government-2-Government and Government-2-Employee services

To-Be Model

I. e-Documents:

Ÿ **Document Conversion and Archiving:** Ability to convert to specific versions of PDF, PDF/A, TIFF, etc. to have the right archiving format. Integration with all Document Management, Records Management and Information Management platforms. Ensuring the accessibility, authenticity and readability of all this paper and digital information in the future, is a must.
Ÿ **e-documentation** shall make knowledge and information available in electronic form for storage, access and retrieval throughout the Government. Procedures and Projects shall be developed for a systematic approach to e-documentation that can be generally applied to all forms of government documentation, including e-mail. The procedures will also address specific legal record-keeping requirements, support audit requirements, and provide mechanisms for the capture of business process information.

ii. Process Digitization

Ÿ Processes identified within the Jigawa Government Administration will cover the automation of existing manual and paper-based processes, enabled by the digitization of information; from an analog to a digital format.
Ÿ Use Business Process Reengineering to remodel existing Government Processes and build capacity within all government MDAs.
Ÿ Automate ALL Transaction processes.
Ÿ Build the capacity of All Civil Servants to use the new Digital Processes and create awareness among the citizens and businesses within the state.

iii. Services Digitization

Ÿ Ensure leading Citizen and Business touch points are Digitized
Ÿ Consolidate these services in a Government Single Window Portal
Ÿ Create Citizen and Business Portals for access of government data sets.
Ÿ Create Citizen engagement and messaging platforms
Ÿ Create government payment platforms to enhance digital payments for services

5.4.9 Initiative #9: Implement e-Government Software Framework

The objective of this initiative is to implement a standard software development platform for all Jigawa Government Service Applications. For efficient development and simple maintenance, a well-developed standard software framework, which is a special case of **software libraries** in that they are reusable abstractions of code wrapped in a **well-defined API**, can be one of the key success factors for e- Government service implementation in

terms of infrastructure and technology. The newly established e-Government/ICT Agency or Galaxy ITT shall lead MDAs for the implementation of this initiative in partnership with external consultants.

To avoid dependency on any single supplier (vendor lock-in) and to avoid the use of multiple frameworks for the development of applications in different parts of the administration the lead MDAs have to develop an open standardized software framework in compliance with the Jigawa Government Enterprise Architecture.

To-Be Model: Standard Software Platform for e-Government

Ÿ In developing the model, two steps were considered:

Ÿ Developing a framework as a Comprehensive Software Development Platform: It is strongly recommended to adopt a framework template-based programming to maximize the development productivity and;

Ÿ Developing a standard Software Framework for e-Government: a common standard framework is crucial for technical interoperability between different services and for the reduction of the development cost and time.

Ÿ Leverage Open Source Technologies to create the core of the Standard Software Framework and ensure there are APIs for access.

Following this, the recommended structure of the standard software framework for e-Government in Nigeria consists of four environments (runtime, operation, development and management) and common components to cover system development lifecycle (SDLC) as depicted below.

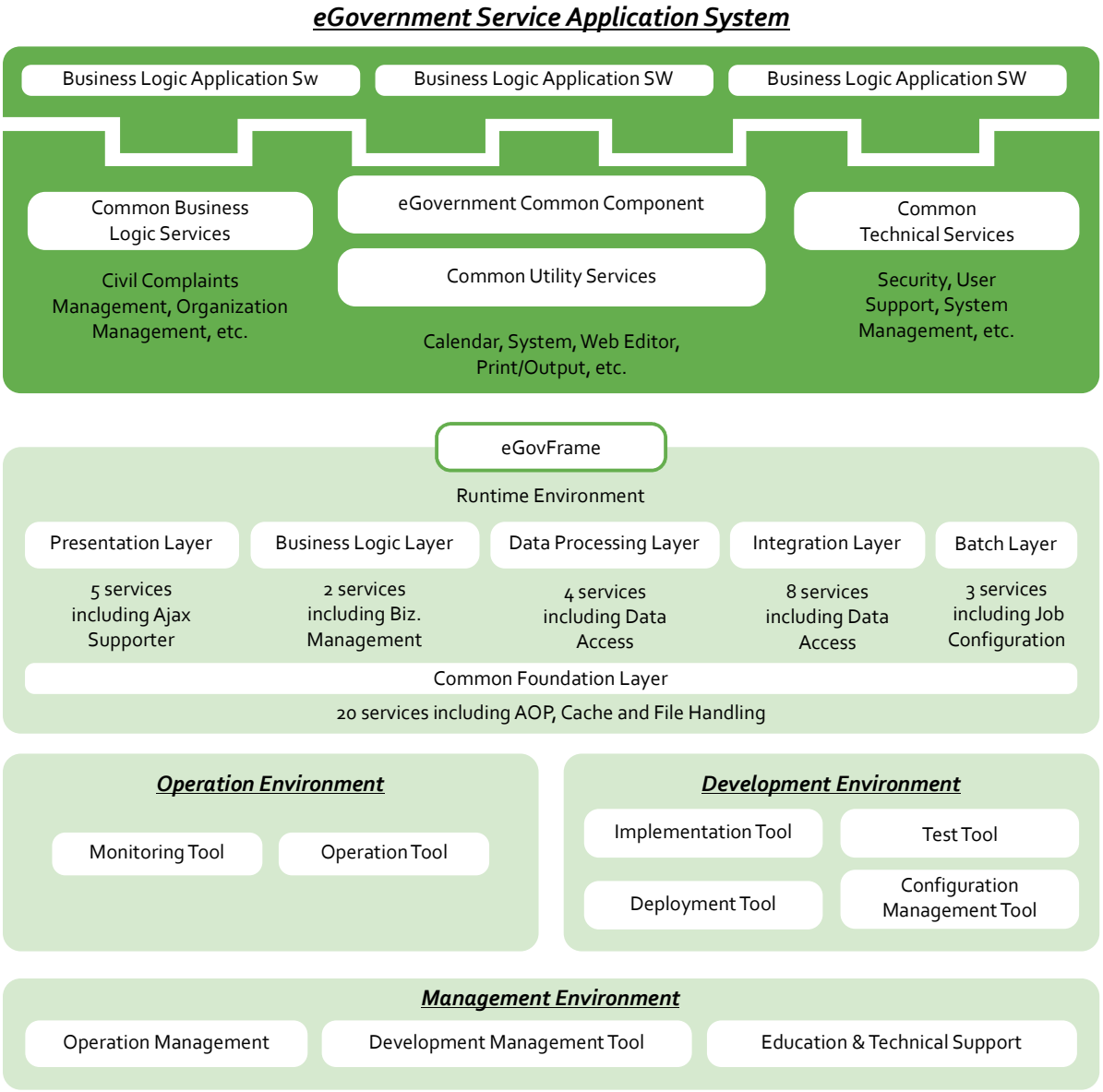

Fig. 5.7 Structure of the e-Government Standard Framework

Strategies for implementation will include:

Ÿ International Standards and best practice benchmarking.
Ÿ Lead MDAs to engage leading private sector software practitioners in a consultative forum.
Ÿ Use the standard software framework as a catalyst for creation of an industry-wide open-market for information system software.
Ÿ Design the operating model in detail.
Ÿ Use the standard software framework as the catalyst for local content development.
Ÿ Refine the framework periodically through continuous delivery & continuous improvement
Ÿ Ensure the JIIT academics are involved in the core development for continuity and support.

5.4.10 Initiative #10: Implement e-Government Services Single Window Portal

The Jigawa State Government has experienced various challenges and pressure levels, and has to find a way to manage through insufficient resources while keeping pace with citizen demands. A Whole-of-Government approach and Single Window Portal is a proven solution to overcome these challenges by creating more service-oriented governments while achieving significant operational efficiencies and savings.

A Single-Window Portal shall provide Jigawa Citizens with multiple channels for accessing integrated services on a one-stop-shop basis across the whole-of-government. This represents a transformational shift in how government operates. Silos are broken down, giving way to information enterprise architecture that allows for the consolidation of the government infrastructure, processes and services.

Objectives:

Ÿ Fully integrated front- and back-office processes
Ÿ Provision of electronic processing from end-to-end
Ÿ Provide services that span government agencies and jurisdictions
Ÿ Improved and more accessible government administration information and datasets
Ÿ Reduce cumbersomeness and bureaucracy that typically plagues government service delivery.

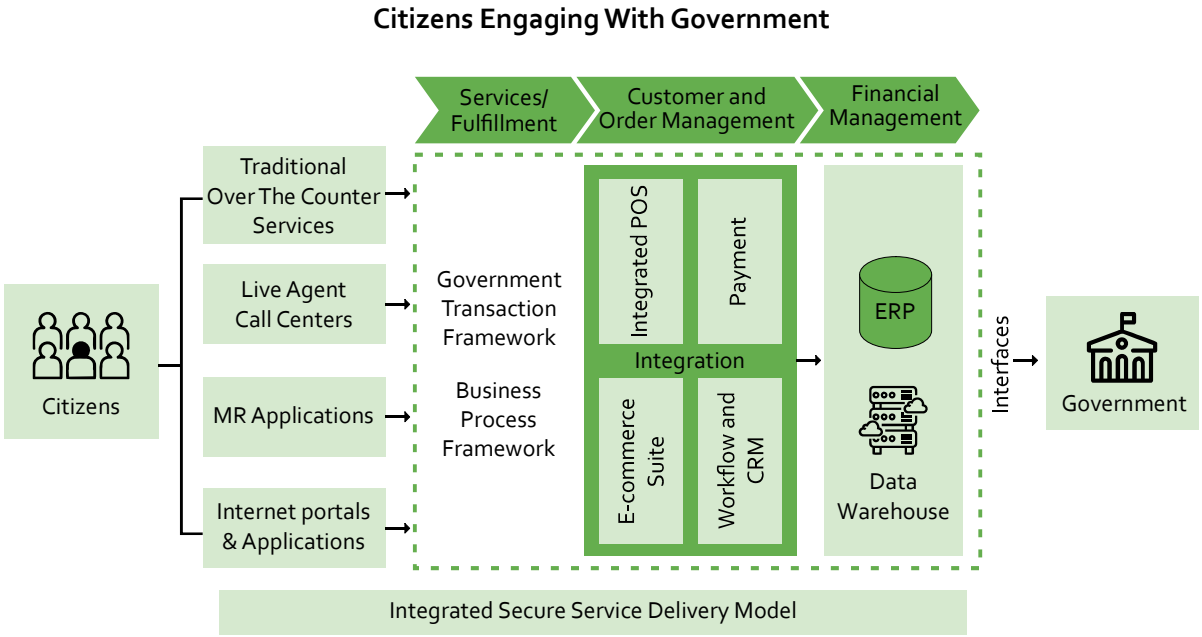

Fig. 5.8 Conceptual Framework For JG Single Window Portal

To Be Model For Jigawa Single Window Portal:

Ÿ Silos of MDA (and Services) should be broken down, giving way to government enterprise architecture that allows for the consolidation of the government services.
Ÿ The Government Transformation Process should be one of evolution not revolution. To generate valuable next-generation e-government initiatives, governments must address cultural and policy changes in addition to applying the appropriate technology tools and business process improvements.

- Ÿ For Jigawa State to deliver next-generation e-government services to citizens they must improve existing workflows, business rules and legacy systems, while leveraging and making use of current investments.
- Ÿ This Single Window Portal shall be built using repeatable (or open) frameworks or architectures to reduce risk and support low-cost, rapid deployment, leading to deeper process improvements and quicker efficiency gains across all contact points.
- Ÿ Create efficiencies by reforming the front- and back-office business processes of the state government's long-established service delivery channels. In this way, transformation will come from "joining up" services and pushing them across the whole-of-government.
- Ÿ Aggregate and categorize government services from State MDA-specific Digital Services, Common and Utility Digital Services as well as provide General Information and Customer (Citizen) Feedback
- Ÿ The Citizen should be at the center of the service delivery experience so that delivery excellence and customer satisfaction become the overriding concern of all government agencies. Service excellence, therefore, drives the public's uptake and use allowing governments to drive efficiencies and realize savings
- **Ÿ Strong Leadership** is key to successful implementation. Leadership which comes from the Governor balances the interest of the citizens with the interest of MDAs and fosters collaboration and creativity, and supports decision-making and dispute resolution.
- Ÿ Properly training and equipping Civil Servants is an important key success factor. Having people within the government structure with the requisite experience and knowledge, leads to productivity gains and service enhancements
- **Ÿ** To achieve a high level of citizen satisfaction, the Jigawa State Government must become **service-oriented as opposed to process-oriented**.

5.4.11 Initiative #11: Operate and Sustain e-Finance Program (SIFMIS/SFTAS)

It has been observed that information systems supporting various economic and financial management functions, especially those for budgeting, accounting, treasury operations and management are fragmented in the State, while data from various sources are often inconsistent and unreliable.

The objective of the SIFMIS sub-component is to support the implementation and effective utilization of a simple but robust off-the-shelf Integrated Financial Management Information System (IFMIS), using a turnkey approach which will support human resources management and payroll, planning and budgeting, accounting, auditing and reporting on the use of financial resources.

The sub-component aims to make available, a reliable and unified database, which will be shared by all users, and feed both the State and Federal Government with the information that they need respectively; and establish effective technical and functional skills necessary to operate and sustain the system.

The overall object of the project is to improve transparency, accountability and quality in public financial management in the participating states. Jigawa State is one of the beneficiaries of this grant and intends to apply part of the proceeds for the implementation

of a State Integrated Financial Management Information System (SIFMIS) which will involve deployment of both hardware and software

Objectives:

Ÿ Fully integrated front- and back-office processes as it pertains accounting, budgeting and financial management.
Ÿ Improved financial management controls
Ÿ Improved transaction efficiency
Ÿ Improved access to information
Ÿ Better quality information for management at all levels
Ÿ Enhanced Accountability and Transparency Provision of electronic processing from end-to-end

To-Be Model

The model (SIFMIS/SFTAS) adopted is a unified system which is in alignment with global best practice and financed by the World Bank. The figure below shows the conceptual map of to-be model of e-Finance system.

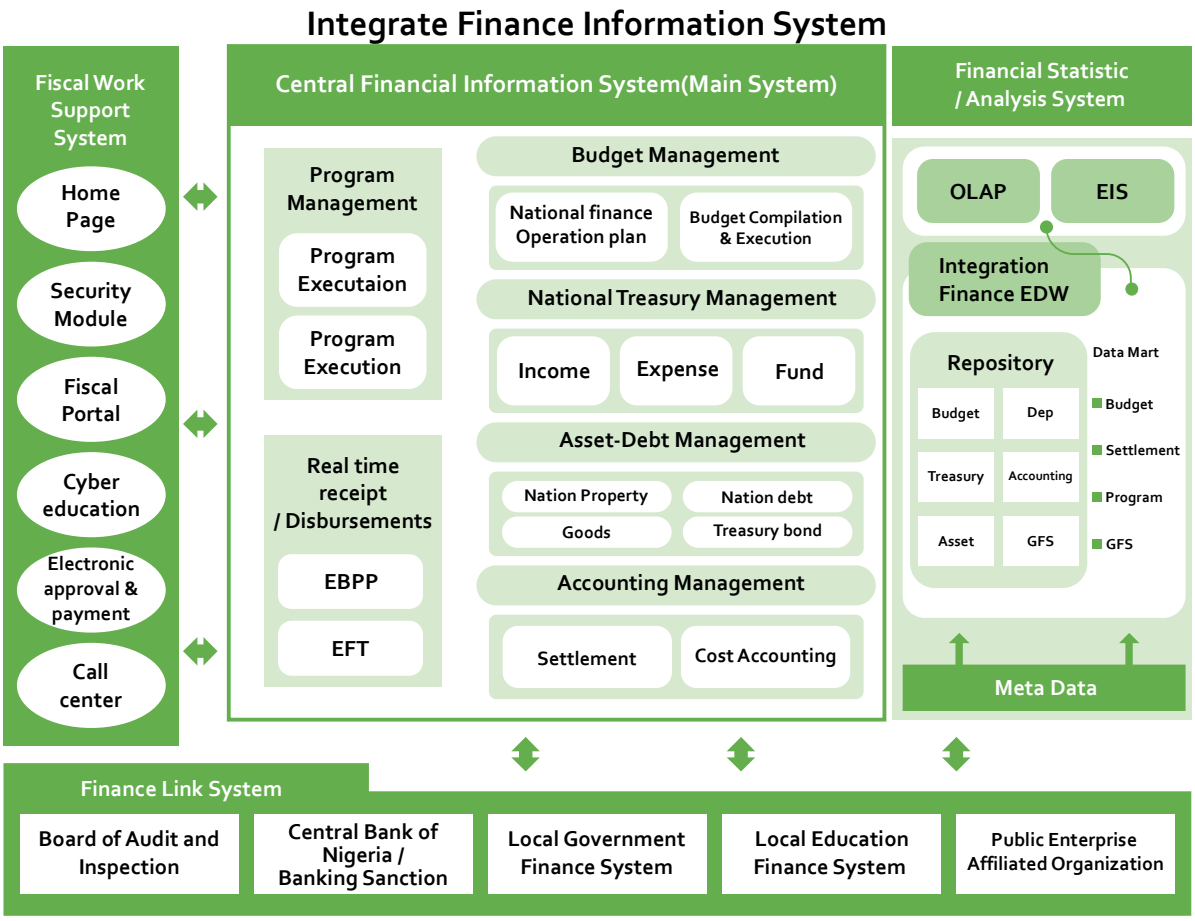

Fig. 5.9 Conceptual Map of State Integrated Finance Information System

Characteristics of the e-Finance (SIFMIS) system can be described as follows:

- Adoption of new finance management ideas
- Systematic Sharing of government finance management information
- Securing accountability, transparency, and real-time operability

- Efficient finance and national treasury management
- Clean system which reduces the possibility of corruption

To alleviate inefficiency generated from the isolated systems, the system should be a truly integrated financial information management system.

5.4.12 Initiative #12: Implement eHealth Program

The World Health Organization defines eHealth as the use of information and communication technologies (ICT) for health. In its broadest sense, eHealth is about improving the flow of information, through electronic means, to support the delivery of health services and the management of health systems

eHealth Vision for Jigawa

To deliver improved citizen wellbeing, health service efficiencies and economic opportunity through the use of ICT enabled solutions.

eHealth Strategic Enablers:

Ÿ Leadership, governance and multi-sector engagement.
Ÿ Strategy and investment.
Ÿ Legislation, policy and compliance.
Ÿ Medical and Digital Workforce.
Ÿ Standards and interoperability.
Ÿ Infrastructure.
Ÿ ICT Services and applications.

Objectives of the Jigawa eHealth Program:

Ÿ To improve accessibility for healthcare services in Jigawa
Ÿ To provide information and evidence-based medical practice
Ÿ To improve the quality of Medical Services
Ÿ To Provide better public health planning mechanisms
Ÿ To Provide better efficiency and productivity in health services
Ÿ To provide cost-effective medical services

To-Be Model

Ÿ Develop the Jigawa eHealth Policy that will drive ICT integration in healthcare systems
Ÿ Equip all hospitals and Primary Healthcare centers with networks and computers, and management Information System.
Ÿ Interconnect all Hospitals with the Jigawa Integrated Data Center with high speed networks.
Ÿ Develop an Integrated Security Architecture that will protect the network periphery and systems.
Ÿ Create Medical Information Systems and Content and subscription to evidence based medical literature
Ÿ Create a Public Health Portal: designed to provide convenient health and medical services to citizens. This is to provide a central repository for the MIS.
Ÿ Medical Records Information System for all Jigawa State Citizens and integrate with the Nigeria Identity Number or eID Database.
Ÿ Digitization of diagnosis and clinical support services, health businesses and

administrative works, and statistical business process.
Ÿ Development of Integrated e-Health architecture and standards
Ÿ Provide remote IT support to healthcare facilities through call center agents and support centers.
Ÿ Create an e-Health Center of Excellence

eHealth Information Systems:
Ÿ Local Government Area or Community Based Medical Information System
Ÿ Primary Care Centers Medical Information System
Ÿ Hospital Management Medical Information System
Ÿ Telemedicine and e-Learning Information System
Ÿ Micro-Mobile Health Insurance System
Ÿ Medical Human Resource Information System
Ÿ Medical Supply Chain Information System

5.4.13 Initiative #13: Implement e-Education Program

The objectives of utilizing ICT in education are to enhance the quality of school education, online and distance learning, academic research as well as provide opportunity for every citizen to develop capacity and to learn life-long digital skills, and to reduce the gap of knowledge and information.

To-Be Model: Structure Overview
State Education Information System (SEIS) consist of services for students, parents, and educational administrators. Building SEIS should be a state-wide government initiative to connect all educational institutions into one network. Primary, Secondary, and Tertiary as well as public and private schools should be mapped into the network as well.

Strategies include:
Ÿ Develop an Information System Planning (ISP) for State Education Information System
Ÿ Develop a Basic ICT educational Structure infusing Digital Skills into school curriculum
Ÿ Expand research and development with adequate funding for infrastructure, institutional capacity, simplified tax incentives and alignment with state development plans.
Ÿ Facilitate the creation of Research Joint Ventures through partnership with government, academia and the industry.
Ÿ Expand State Education Information System to incorporate all stakeholders and tiers of the education system especially vocational education.
Ÿ Reengineer the administrative processes in the educational sector
Ÿ Develop a framework for Online and Long Distance Learning
Ÿ Develop a knowledge society oriented e-Government. A Jigawa State where the creation, dissemination, and utilization of information and knowledge has become the most important factor of production.

5.4.14 Initiative #14: Implement e-Lands/JGIS Program

The Jigawa Land Information System (LIS) or **JGIS (Jigawa Geographic Information System)** is the authoritative platform for geographic information system for cadastral and land-use mapping that will be used by used by local governments. The JGIS shall consist of an accurate, current and reliable land record cadastre and its associated attribute and spatial data that represent the legal boundaries of land tenure and provides a vital base layer

capable of integration into the National Geographic System and as a standalone solution that allows data stewards to **retrieve, create, update, store, view, analyze and publish land information**.

Challenges with the current system of storing land data;
Ÿ Inaccurate design of land use districts on land registry and cadastre maps
Ÿ Difficulty of discovering non-granted lands
Ÿ The need to physically visit offices to obtain legal land regulation information
Ÿ Excessive bureaucracy in the allocation of lands C of O and other land-related factor of production.
Ÿ Lack of ready land related information.
Ÿ Hindrance to access of investments for the Industry.

The **objectives** are to:
Ÿ Improve the efficiency of the Lands and Geographic administration through development of a world-class JGIS.
Ÿ Enhance the transparency in the administration of lands
Ÿ Reduce the turnaround time for the award of C of O
Ÿ Create a complete mapping of the Jigawa Spatial or geographic area.
Ÿ Enhance investment into Jigawa State by providing transparency in the process.

To-Be Model: Structure Overview
Ÿ The integration of the Jigawa Geographic Information Systems (JGIS) with e-government creates opportunities, which can contribute solutions for land-related issues

Ÿ The Jigawa State Government should setup a Dedicated Department of Land Information and Archives to manage and supply land information easily. This is the central organization to manage all digital databases of the district land revenue and survey offices.

Ÿ The computerization of spatially related workflows in selected JGDA departments and agencies and the setting up of the JGIS Resource Centre.

Ÿ Implement a Digital Land Information System that will keep record of the;

- Size of the Land
- Location of the Land
- Types of houses to be built on the land
- Owners of the purchases land
- Soil composition data
- Geographic Mapping of the land
- Other relevant information.

Ÿ The strengthening and re-computation of the State Grid System and the systematic resurvey, for cadastral purposes, of the entire Jigawa State land structure. All modern equipment and techniques such as GPS, photogrammetry and EDM tacheometry are proposed, in an attempt to reach the most efficient and cost effective method.

i. The digitization of all land transactions, the improvement and acceleration of

valuation assessments, the reduction of duplication of land administration work among Government Agencies, and the increase of the ability of the Government to effectively manage state-lands, and expedite acquisition and requisition orders.

ii. The development of a Digital Cadastral Data Base (DCDB), a Survey Data Base (SDB), the Legal/Fiscal Database (LFD) and a Topographical Data Base (TDB), suitable to support an Integrated Land Information System. The Survey Database, the Digital Cadastral Database and the Topographical Database constitute the spatial component of the LIS, and the Legal/Fiscal database mainly constitutes the aspatial component.

iii. Thedevelopment of computer-assisted techniques into the Valuation processes, to achieve optimum performance, and to enable a semi-automated general revaluation program at frequent time intervals.

5.4.15 Initiative #15: Implement e-Agriculture Program

e-Agriculture is the designing, developing and application of information and communication technologies (ICTs) for sustainable agriculture and rural development. The mission of the Jigawa e-Agriculture Program is to facilitate the adoption and use of ICTs and digital innovations in agriculture, forestry, fisheries, natural resource management and rural development.

The objectives of this initiative are:

- Drive economic growth by leveraging ICT technologies in agriculture.
- Improve infrastructure which provides the farmers in rural areas with the access to digital services;
- Improve transparency of the State Government's support to the local farmers;
- Improve efficiency of agriculture production and value-chain development.
- Implement e-Commerce Portal that sells mainly local goods produced or supplied by local farmers
- Increase local food production, establish incentives and facilitate technology for export.

To-Be Model

As shown below, the unified and comprehensive e-Agriculture initiative should include:

- **Leadership and Governance;** This covers leadership and governance required to direct state and local e-Agriculture activities covering policy and regulatory oversight, programme management and stakeholder engagement, strategic architecture, monitoring and evaluation, etc.
- **Strategy and Investment;** this covers the e-agriculture strategy and investment components required to develop, operate and sustain the national e-agriculture environment covering strategy and planning, funding and investment management.
- **Services and Applications;** this covers the e-agriculture service and application components required to address the agricultural system goals and challenges. Services and applications are the means to address the needs of farmers, farmers' organizations, entrepreneurs, the private sector, development agencies and agribusinesses.
- **Infrastructure;** This covers the e-agriculture infrastructure components required to support the sharing of structured and meaningful agricultural information across geographical and sectorial boundaries, and to support new and improved ways of delivering services and information. Communications Infrastructure, High Speed Data Connectivity, Electrical Infrastructure, Computing Infrastructure, Agricultural Content, Datasets are the components here.
- **Standards and Interoperability;** this covers the e-agriculture standards and interoperability components required to enable the consistent and accurate collection and exchange of agricultural information across geographical and agriculture sector boundaries. NGEA, NeGIF should be contextualized for Jigawa.
- **Content, Knowledge Management and Sharing;** this covers identifies the elements required to effectively leverage e-agriculture as a vehicle through which knowledge is shared and acted upon. Knowledge management and sharing are critical to the success of e-agriculture.

Fig 5.11 Components of e-Agriculture by FAO

Strategies and Outcomes;

- Facilitate continuous improvement of farming practices and yields through more effective utilization of agronomic best practices, agricultural information and decision support tools;
- Improve the quality, safety and efficiency of agricultural production by facilitating access to accurate content and decision support tools;
- Support more informed policy, investment and research decisions through access to timely, accurate and comprehensive information from the agriculture sector;
- Enable agricultural service providers to operate more efficiently as a connected system, overcoming fragmentation and duplication of service delivery;
- Improve logistics and supply chain management (e.g. storage, transportation, farm inputs);
- Enable multidisciplinary teams to communicate and exchange information and provide better coordinated services across value chains;
- Enable financial transaction services to facilitate trade among states and exports while Improving access to markets;
- Introduce new and improve the efficiency of existing risk management services such as micro-insurance or government subsidies;
- Strengthen tracking and traceability framework nationwide to protect the bio-diversity;
- Increase the availability, accuracy and accessibility of actionable information for agriculture sector stakeholders;
- Improve linkage between agricultural extensions and researchers;
- Increase the efficiency of production and diversity of crops;
- Increase the transparency and awareness as well as bridge the gap in policies and regulations;
- Facilitate access to insurance and compensation mechanisms in case of disaster.

5.4.16 Initiative #16: Implement e-Procurement Program

A state **e-Procurement Platform (e-PP)** is central to the Jigawa e-Government Government2Business Strategy. Being an enabler to the implementation of strategic and

effective public procurement, the set-up of a comprehensive e-Procurement Strategy and Platform should be given the highest priority in terms of content and timing, given its impact in the overall public procurement system for Jigawa State.

The current Government Procurement environment in the Jigawa State, is characterized by a lack of clarity in terms of governance, legislation, processes and systems, which prevents a better and more efficient use of the available tools. The use of electronic procedures is limited to publishing and communications. The coverage of the end-to-end procurement lifecycle by the existing systems is also limited.

The objectives of this initiative are:

Ÿ To improve the efficiency of the procurement administration through development of a high-quality procurement system that support all procurement procedures;
Ÿ To upgrade the 4 dimensions of Government Procurement System; People and Technology, Procurements Processes, Technology and Legislation
Ÿ To enhance the transparency in the Government Procurement process
Ÿ To increase the accessibility and availability to the Government procurement system

To-Be Model

The unified and comprehensive e-procurement system should cover the following components;

- A set of modules forming the core functionality of the e-PP and covering end-to-end procurement lifecycle
- Preparation for a Call to Tenders. Consisting of a library of templates allowing MDAs to prepare their tender documents.
- e-Notices – supporting electronic notices through auto fill, copy, save and publishing functions
- e-Access – access to basic information, notification (activated after subscription), single sign-on (SSO) with eID, integrated into the National Identification Number (NIN)
- e-Submission – including integration with the Bank Verification Number, Registry of blacklisted contractors and e-Signature.
- e-Evaluation – including automatic checking of document completeness to different databases (PENCOM, ITF, CAC, FIRS, etc.), calculating total score enabling side-by-side comparison of offers, and publishing information about the result of the evaluation process and ranking of the contractors.
- e-Contract Award – automatic submission of documents and information to the contract administration module, publishing to the e-PP Single Window Portal and online signing of the contract.
- e-PO – information in the offer and the contract will be stored and used to produce e-PO, e-Invoice and to support e-Payment.
- e-Invoice – complying to the State Financial Regulations.
- e-Payment – three types of payments: payment for the services of public administration (e.g. fee for registration, fines, etc.), payment in form of a guarantee, payment for services agreed in the contract.
- Archiving – the archiving (read-only mode) of information and documents related to Project Award for the period required by the law.
- Project Performance Module – Upload details of the project Performance to show project dashboard and store information on Project Performance.

The State Inland Revenue Service (JIRS) is the major body in Jigawa responsible for tax administration in the state. A recent bill, 'A Bill for a Law to Provide Harmonization, Consolidation and Codification of all Jigawa State Internal Laws and also to Restructure the Board of the Revenue System in the State in terms of Assessment, Collection AND Remittance to Revenue Single Account for Effective Service Delivery in the State and for Related Matters' seeks to set the foundation for the implementation of an Electronic Tax Program for Jigawa.

A comprehensive tax system which enables taxpayers to handle tax affairs online at home or office without visiting tax offices has to be implemented as well as an effective collections and tax management system. This model will make a one stop tax service possible. Taxpayers can handle most tax related activities online without visiting offline tax offices and banks, as described below.

To-Be Model: Comprehensive Tax System
A comprehensive tax system which enables taxpayers to handle tax affairs online at home or office without visiting tax offices has to be implemented as depicted in the following Figure 40.

This model will make a one stop tax service possible as described below:
- Certificates of tax payment are issued online;
- Tax returns are filed via the Internet;
- Tax payments are made online; and
- Taxpayers who visit tax offices can go through the entire process of application services using electronic devices.

Major components of this comprehensive e-tax service will be:
- e-Filing;
- e-Payment;
- e-Notification;
- e-Civil Service
- e-Certificate Service; and
- Inquiry Service.

5.4.18 Initiative #18: Deploy Public Information Sharing System

Enormous amount of paper transaction instead of data transaction is still the main method of business communication within (or between) MDAs.

The objective of this initiative therefore is to increase productivity by:
- Providing one-stop administrative services;
- Maximizing the official work efficiency and convenience; and
- Providing all MDAs with infra-service for online collaboration.

To-Be Model

PISS is an initiative to introduce shared resource system to e-Government in Nigeria, to improve collaboration between MDAs. Figure below shows the to-be model of PISS.

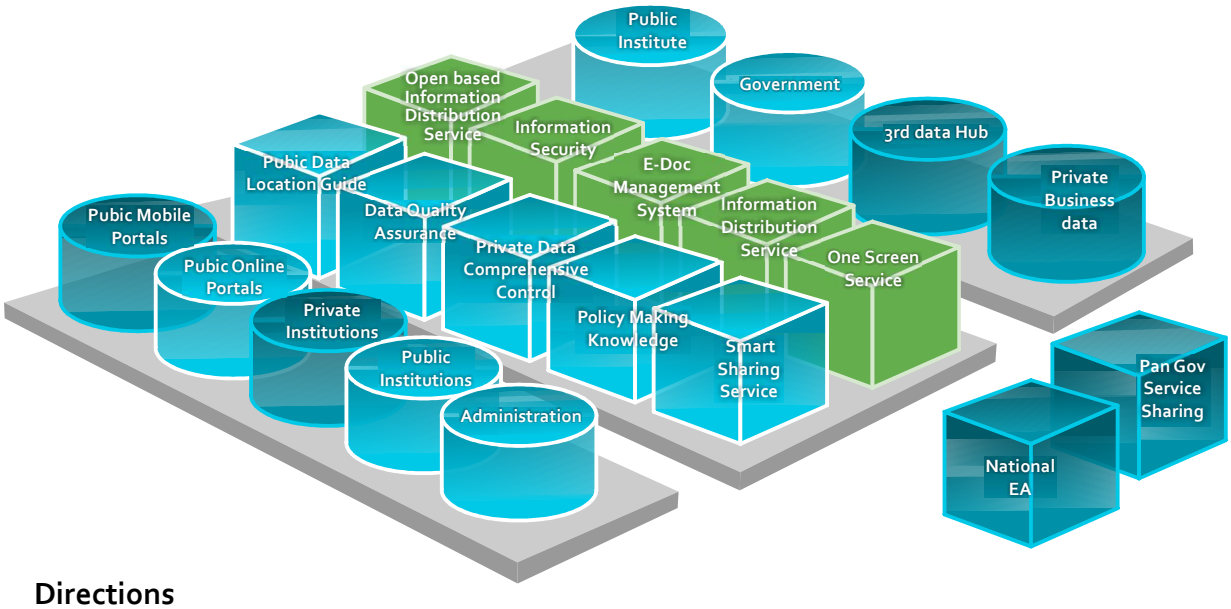

Fig 5.13 To-Be Model of Public Information Sharing System (PISS)

Directions

- Maximize the interoperability between different systems.
- Maximize the usage of the standard software framework.

6.4.19 Initiative #19: Implement Integrated Government Contact Center

The implementation of the e-Government Masterplan for Jigawa means that Government will seek to operate and drive a digitally transformed governance system. There will be digital processes and services offered to citizens and businesses meaning that there will be a huge requirement to provide support to citizens. This is where a Government Integrated Contact Center becomes an essential channel for providing support.

The Jigawa Integrated Contact Center shall be used an e-Governance tool to deliver government services support, improved public sector efficiency, accountability and responsiveness to citizen needs. It shall also provide a coordinated platform for e-Participation for citizens in governance.

Objectives

Ÿ To provide a government contact solution that meets citizen expectations

Ÿ Provide citizens and businesses in Jigawa a digital and multi-channel access to government.

Ÿ To create a citizen-centric Government
Ÿ Provide the primary platform to manage change brought about by e-Government
Ÿ To provide support for the deployed Government Digital Services
Ÿ To provide a platform to disseminate government information.
Ÿ To provide citizens with an emergency and hotline service.

To-Be Model

Ÿ Implement an Automatic Call Distribution System: The Automatic Call Distributor (ACD) shall be the computerized telephony system that analyzes incoming calls and distributes them based on specific instructions that define how the calls are to be handled. This system implemented in Hardware and Software.
Ÿ Implement an Email Response Management System: The email response management system shall be the computerized system that receives, acknowledges, analyzes, and organizes email inquiries submitted by customers and routes the emails to the appropriate resources for response.
Ÿ Implement Interactive Voice Response System and Intelligent Call Routing: Intelligent Call Routing routes the call based on specific instructions that define how the call is to be handled so that the call is routed to the right agent at the right time or to an application for further processing. This call routing function can be based on Rules, Time, Area, Skills or based on a menu.
Ÿ Implement Knowledge Management System: This shall be a online system designed to support the creation, storage, and dissemination of information related to service the Government Contact Center will provide. Such a system contains a central repository of information that is well structured and employs a variety of effective and easy to use search tools that users can use to find answers to questions quickly.
Ÿ Implement TTY/TDD Telecommunication Services: Text Telephones (TTY), also known as Telecommunications Device for the Deaf (TDD), are used by the deaf, hard-of-hearing, and individuals with speech impairments to communicate. Leave no one behind!
Ÿ Implement Toll Free Telecommunications Service: Toll-free service lets your customers call you free of charge. Your agency pays the phone bill for all incoming calls. Toll-free telephone networks can help the GCC manage customer calls more efficiently and effectively.
Ÿ Implement a Dimensioned Call Center Agent Network: The number of Call Center Agents in the GCC will depend on the number of services and estimated number of people calling into the call center to be able to deliver an SLA to the Jigawa Citizens
Ÿ Implement a World-Class Web Chat Service: Web chat is a real-time communications system between your users and contact center that uses a simple, Web interface. Users need browser access in order to use the service. It allows agents to handle multiple chat sessions at the same time.
Ÿ Implement a Ticketing and Escalation Solution: Not all calls into the GCC will be resolved by the call center agents in real time. For requests that require further treatment, a ticketing system is required and integrated into the Email and SMS Notification Systems.
Ÿ Implement Workforce Management System: A Workforce Management System for contact center applications is an online system that automates and simplifies the tasks of Workload forecasting and staffing requirements, Scheduling agents with the right skills for the right job at the right time, Tracking the agents' adherence to their assigned schedules and Providing management reports and analysis on agents performance.
Ÿ Implement a Solid Management Team: The center has a mature and flexible management team that adheres to best practices, encourages teamwork, and empowers team decision

making.

- Ÿ Implement Dedicated Network Infrastructure: Connect the Government Call Center with Fiber Optic, Satellite Connections and redundant network infrastructure to deliver the required access to call center resources.

- Ÿ Implement Integrated Messaging Systems: SMS, WhatsApp, Webchat are messaging tools that should be integrated to allow for multiple channels of communications to call center agents as well as from agents to citizens.
- Ÿ Implement Business Continuity Strategies: Disaster Recovery and Business Continuity plans are used to mitigate the effects that service disruptions will have on customers. These disruptions may be caused by natural disasters; power, equipment, or transportation systems failures; or by other unexpected events.

Directions and strategies

- Ÿ Clearly define the Vision, Goals and Strategy for the Government Call Center.
- Ÿ Develop standardized e-Services and Applications processes and knowledge base.
- Ÿ Recruit, train and build capacity of the Government Call Center Workforce.
- Ÿ Engage world class consultants to provide support services for the GCC.
- Ÿ Develop and implement sustainability framework.
- Ÿ Define unique customer experience relating to Services/e-Services/e-Government Shared Services and expectations.
- Ÿ Develop Call Center Operations and Management Manual to create consistent service quality, economics and sustainability of the GCC.
- Ÿ Implement a Quality and Function monitoring system to ensure all calls and messages are tracked, monitored and reviewed.

5.4.20 Initiative #20: Implement State Cyber Security/Data Protection Program

Cybersecurity is a Global Challenge. To give the Jigawa Citizens confidence in the use of the State's e-Government services and online platforms, a Cybersecurity and Data Protection Program will set the stage to protect the soft infrastructure of Jigawa State.

A number of new and major risks exist in cyberspace such as: organized crime in cyberspace, hacktivism, cyber-attacks, and unplanned disruptions to network integrity and security due to human errors or factors, cyber terrorism, abuse of personal data, child online pornography, loss of money or data due to activities in cyberspace, etc.

With the increase in sophistication of these cyber threats, risks, and cybercrime over the years, the necessity of developing a coherent approach to effectively detect, prevent and mitigate both current and future Cyber threats arises, hence the motivation to develop a Sub-National Cybersecurity Strategy and Program for Jigawa

Objectives

- Ÿ To improve online security by creating stakeholders awareness on relevant risks, preventive measures and effective responses.
- Ÿ To Implement a legal framework for Cybersecurity and personal data protection

- To protect the integrity of electronic commerce (e-Commerce).
- To mobilize public and private sector at the state, local and community levels, civil society, media for the promotion of data protection and Cybersecurity.
- To set forth security rules essential for establishing credible digital space, for electronic transactions, personal data protection and combating cybercrime.
- To address dangers and risks arising from the use of electronic data and individual records with a view to respecting privacy and freedom of use.
- To protect e-Government Information Systems from unauthorized use, access and attacks.
- To provide a framework for electronic signature and verification.
- To promote a safe environment for the exchange of personal data

To-Be Model

- Implement a Policy and Legal Framework Cybersecurity in partnership with the State Legislature.
- Establish a Data Protection and Freedom of Information Law.
- Establish a State Cybersecurity Operation Center (Cyber Security Center of Excellence), Digital Forensic Labs and Research Center.
- Establish a Jigawa Computer Incidence Response Team by acquiring the necessary technologies and resources.
- Protect Critical State Information Infrastructure through cyber security audits of e-Government Systems and Assess and mitigate Cyber Security risks and threats on CSII and develop minimum security standards.
- Implement a State Data Protection Strategy based in alignment to the National Data Protection Regulation (NDPR 2019)
- Develop State Cyber Contingency plans by performing cyber security risk assessments and evolving Standard Operating Procedures (SOPs).
- Continuously develop and improve state capacities and capabilities for forensic analysis while undertaking regular testing to detect errors and vulnerabilities in CSII.
- Build Cyber Security capacities by establishing certification and accreditation for Cyber security experts and promoting and encourage the relationship between the academia and the industry on Cybersecurity.
- Establish sub-national, national and international cooperation & collaboration on Cybersecurity awareness while protecting children & other vulnerable groups against cyber threats & risk.
- Enhance public private partnership to promote security and resilience in cyberspace infrastructure, networks, products and services.

Directions and Strategies

- Clearly define the Vision, Goals and Strategy for the Cybersecurity and Data Protection in Jigawa
- Create a governance structure, which will oversee the implementation of the State Cyber Security Strategy. It is recommended that a multi-stakeholder State Cybersecurity Advisory Council (SCAC), comprising representatives from the private sector and relevant Government institutions and agencies, should be established.
- Engage the State Security Service to be a part of the cyber security framework for the state.
- Create a State CIRT (Cybersecurity Incidence Response Team) to act as the trusted point of contact as well as provide central operational coordination for incident response at State

level. This entails ensuring partnership with National CIRTs.

Ÿ Create a funding mechanism to drive the initiatives of the Data Protection and Cybersecurity.

5.5 Change Management

Changes in technology affects policy, culture, mindset, organizational structure and processes, thus, change management is needed for a successful e-Government implementation because it addresses elements these issues.

Approaches to developing a change management plan:

Ÿ Identify issues existing operational procedures e.g. bureaucracy, silos, and cultures in the public sector; and reinvent these processes and functions.

Ÿ Address issues leading to employee's resistance to change e.g. lack of clarity of a vision, inadequately support of the top management, un-measurable benefits, disjointed systems and departments, fear of job loss, etc.

5.5.1 Change Management in e-Government Implementation

The table below summarizes the strategies for change implementation for the e-Government Masterplan.

Setting New Directions	
Policy of e-Government	Understanding the environment principles, policies, and foundations
Thinking Challenges	Applying systems thinking to complex e-Government
Planning	Planning and organizing strategically for e-Government
Change	Transforming organizations and cultures to sustain e-Government
Transforming Processes and Resource Use	
Collaboration	Collaborating across boundaries to achieve e-Government goals
Architecture and Systems	Understanding and applying effective architecture and enterprise integration for e-Government.
Human Capital	Using new models to extend human capital for e-Government
Financial Resources and Investment Management	Planning and managing funds resources strategically for e-Government
Performance management	Managing Performance based e-government programs and projects
Execution/Implementation	Moving from concept to reality
Using Information Strategically	
Information and Knowledge Resources	Providing the right information and knowledge at the right time within and across boundaries
Security and Privacy	Balancing security, privacy, access issues, and protection of information
Technologies	Understanding strategic uses of information through the use of technologies

Table 5.3 e-Government Leadership Competencies

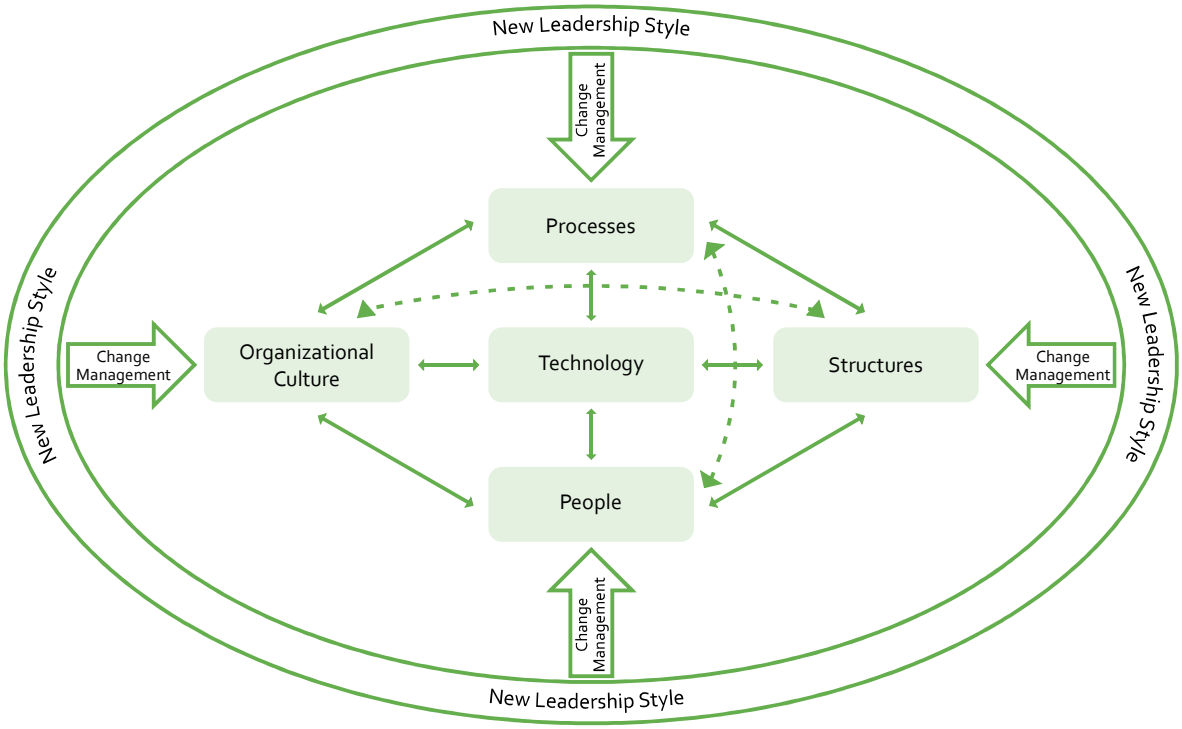

Fig 5.14 Change Management Model of e-Government Implementation

Source: *Norgrasek (2011), Business Systems Research, Vol.2, No.2, p. 20*

Elements	Areas Affected
Technology	Ÿ national information infrastructure Ÿ network infrastructure and network databases Ÿ architecture interoperability Ÿ compatible data standards (Extensible Markup Language – XML) Ÿ compatible technical standards Ÿ security models Ÿ implementation of discussion support, multimedia, automation, tracking and tracing and personal identification technologies
Processes	Ÿ changes to the entire process (consideration of business process change principles from the private sector) Ÿ significantly accelerated process execution (from a few minutes to a couple of seconds); process can be executed 24/7 Ÿ horizontal (integration among functions and departments) and vertical process executions (integration among organisations) Ÿ changes to the rules, which determine the process (trust,safety, maintenance and integrity must be dealt with therein)
People	Ÿ employees must gain a horizontal process view Ÿ new and complex skills (e.g. self-organisation, confrontation with unexpected tasks) and knowledge Ÿ staff training must be organised, collective learning must be encouraged Ÿ leaders must be able to combine their ICT knowledge and skills with their understanding of the process dimension Ÿ leaders must be able to develop a strategic vision and comprehensive human resource management, project management and user-orientation strategies
Organizational Culture	Ÿ transition to a service-oriented culture Ÿ employees must overcome departmentalization thinking Ÿ organizational loyalty must be strengthened Ÿ employees must be encouraged to perform more challenging tasks, be willing to take responsibility Ÿ inter-departmental and inter-organizational cooperation and trust must be strengthened Ÿ understanding of organizational learning must be strengthened Ÿ leaders' way of thinking must be radically changed
Structure	Ÿ it must be taken into account, that, on one hand, due to the horizontal and vertical integration (activities are being de-centralized, a great level of flexibility in task-performing is required), tasks are undergoing a de-specialization process, while on the other hand, a new task-structuring is required Ÿ data digitalization must be standardized, procedures being standardized for several departments or organizations simultaneously (e.g. the introduction of e-public procurement), common standards being applied (e.g. XML structures) as procedures are simplified and informative, the level of formalization is decreased, while, on the other hand, a new procedure execution method requires new record safety, trust, maintenance and integrity rules decisions on the introduction of e-Government is transferred to e-leaders, which appear both on the top (e-Leadership) and the middle level (e-Champions, CIO leaders), which leads to a decentralized decision-making process, nevertheless their coordination and control role is strengthened hierarchical structure is transformed into one network

Table 5.2 Change Management for e-Government Implementation