Lebanon Digital Transformation
التحول الرقمي في لبنان

National Strategy
May 2022 Update

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2020 - 2030

Minister of State for Administrative Reform Foreword

Ambassador Najla Riachi Assaker

Whilst Lebanon faces today, as a nation and people, several challenges imposed by the accumulation of complex and unprecedented crises that are draining the country's public and private resources, the Lebanese government is committed to working relentlessly to establish a basket of reforms as a gateway to recovery and the restoration of lost confidence. Administrative reform is at the forefront of this journey, in addition to combating corruption by enhancing transparency, adopting good governance methods, and modernizing management to improve the quality of public services, as this would promote innovation, revive the economy, and meet the needs of individuals, companies, and non-governmental organizations.

In this context, the "Lebanon Digital Transformation Strategy 2020-2030" launches a new dynamic aimed at achieving the set reform goals and mimicking the trends and mechanisms of the digital age. As such, while the Office of the Minister of State for Administrative Reform (OMSAR) is striving to reform the public sector and implement an anti-corruption strategy, it is also working meticulously to implement the digital transformation initiative, which would contribute to reviving the public sector and meeting the aspirations of citizens, upon its implementation and sustainability.

Before the strategy was issued, its preparation required a comprehensive participatory approach stemming from previous experiences and expertise and in-depth consultations with all stakeholders, including officials from the public sector, trade unions, professional associations, in addition to experts from the private sector and civil society, and international partners. It also required cumulative work and coordinated efforts by several ministers who represented OMSAR, producing an initial draft of this strategy. In 2022, OMSAR revised and updated the draft, and developed some of its aspects to simulate the Lebanese reality, leading to the approval of a final version of the strategy. It is worth noting that the main pillars of the strategy revolve around citizens' needs. The strategy also adopts a scientific methodological approach, embraces a vision of governance in response to the challenges afflicting our country, and includes empowering factors that could enhance the digital economy in Lebanon.

With the formation of a ministerial committee and a technical committee by the Council of Ministers to follow up on the implementation of digital transformation (Decision No. 32 dated 2/2/2022), the utmost care shall be taken to ensure cooperation with the various stakeholders to develop this sector, achieve good governance and reform, enhance transparency and accountability, improve resource distribution and management, and restore people's trust in the state.

Digital transformation imposes itself today as an urgent necessity for Lebanon, given its central role in the recovery plan and public service reform. In fact, the adoption of technology as a vital catalyst could foster innovation, support the digital economy, achieve governance, reform and develop public administrations, and curb corruption therein. Digital transformation is not only limited to digitizing work mechanisms, government paper services and information. It uses technology to transform the prevailing administrative culture and develop work methods to provide citizens, private sector companies and civil society organizations with appropriate, high-quality, and lower-cost services.

With the launch of the Digital Transformation Strategy, the first step in the journey of recovery begins. This step should be translated in a practical and tangible way, whereby its launch is followed by the prioritization of projects, the development of an implementation plan, and the provision of whatever is needed for its continuity and sustainability, in service of Lebanon and its future generations, starting with equipping young entrepreneurs with the basic digital capacities and skills needed to remain in Lebanon and work towards building the modern state that we all dream of and strive for.

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Acknowledgements

A significant number of individuals and groups have contributed to the development of the Lebanon Digital Transformation Strategy, which is the fruit of efforts exerted by the former Ministers of State for Administrative Reform and their advisors. I would especially like to thank H.E. Minister Dr. Inaya Ezzeddine who defined the path of digital transformation in 2018 and drafted the digital transformation strategy, and H.E. Minister Dr. May Chidiac who worked in 2019 on documenting the three parts of the Lebanon Digital Transformation Strategy 2020-2030 and its implementation plan, based on the draft that was developed in 2018, with additional emphasis on measures to be taken and priority projects to be implemented. These documents were the fruit of joint cooperation between all the advisors of OMSAR, as well as assistance provided by internal and external consultations and coordination with stakeholders in the private sector and civil society.

In addition, the contributions made by the members of the Digital Transformation Committee within OMSAR and the various team leaders, as well as previous digital economy and digital transformation committees, both ministerial and technical, were valuable and significant. Officials from the public sector, trade unions, and professional associates, in addition to citizens and entrepreneurs, made remarkable contributions that were a key factor in ensuring the development of an accurate strategy and an implementation plan that are based on facts, for approval by stakeholders.

We must not forget the support provided by international partners, including the World Bank Group, the Organization for Economic Cooperation and Development, and last but not least the United Nations Development Program, which we would like to thank for its continuous support for OMSAR, in addition to the support provided by the governments of the United Kingdom, Estonia, Czechia, and the United Arab Emirates through the lessons learned from their experiences during the development process.

Finally, the participation of all the above-mentioned parties is more than necessary and essential to pave the way for the adoption of the strategy and to ensure its success, at a time when Lebanon is embarking on a difficult journey to achieve its goal of establishing a digital economy.

Beirut,

May 2022

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Acronyms and Abbreviations

Abbreviation	Description	Abbreviation	Description
ACSAP	Anti-Corruption Strategy and Action Plan	CIB	Central Inspection Board
AFDE	Arab Federation for Digital Economy	CIO	Chief Information Officer
		CML	Computer Misuse Law
AI	Artificial Intelligence	CMS	Content Management System
API	Application Programming Interface	CoA	Court of Accounts
AWS	Amazon Web Services	COBRA	Cost-Opportunity and Benefit-Risk Analysis
BC	Business Centricity	COBRAS	Cost-Opportunity and Benefit-Risk Satisfaction Analysis
BCM	Business Continuity Management	COM	Council of Ministers
BCMS	Business Continuity Management System	COOP	Continuity Of Operations Plan
BCP	Business Continuity Planning	CPI	Corruption Perception Index
BDL	Banque du Liban	CPT	Current Procedural Terminology
BE	Business Environment	CSB	Civil Service Board
BI	Business Intelligence	CSC	Citizens Service Center
BIA	Business Intelligence and Analytics	CSOC	Cyber Security Operations Center
BMT	Build, Manage, and Transfer	DAF	Digital Assurance Framework
BOQ	Bill of Quantity	DAG	Digital Assurance Group
BOT	Build, Operate, and Transfer	DCL	Digital Communications Law
CA	Certificate Authority	DEA	Data Envelope Analysis
CABF	Certificate Authority Board Forum	DG	Digital Government
		DG	Director General
CAEU	Council of Arab Economic Unity	NDTC	National Digital Transformation Commission
CAGR	Compounded Annual Growth Rate	CDO	National Chief Digital Officer
CAS	Central Administration of Statistics	CDOs Council	Chief Digital Officers Council
CC	Citizens Centricity	DGA	Directorate of Geographic Affairs
C-CDA	Consolidated-Clinical Document Architecture	DGSA	Digital Government Solutions and Applications
CCMS	Call Center Management System	DI	Digital Infrastructure
ccTLD	Country Code Top-Level Domain	DI	Digital Infrastructure
CCTV	Closed Circuit Television	DICOM	Digital Imaging and Communications in Medicine
CDR	Council for Development and Reconstruction	DMS	Document Management System
		DPO	Data Protection Officer
CEDRE	Conférence Économique pour le Développement, par Les Réformes et avec les Entreprises	DRL	Data Retention Law
		DRM	Disaster Risk Management
		DRP	Disaster Recovery Planning
CERT	Cybersecurity Emergency Response Team	DSENS	Digital Society Ethics, Norms, and Standards
CIA	Confidentiality, Integrity, and Availability	DSPE	Digital Society Policies and Excellence

Abbreviation	Description	Abbreviation	Description
DT	Digital Transformation	HCI	Human Capital Index
DTI	Digital Transformation Initiative	HCM	Human Capital Management
DTO	Digital Transformation Officer	HDC	Higher Disciplinary Council
DTU	Digital Transformation Unit	HIPAA	Health Insurance Portability and Accountability Act of 1996
DTRU	Digital Transformation Reform Unit	HL7	Health Level Seven
DXL	Data Exchange Layer	HRMS	Human Resources Management System
EBML	Establishment of the Water of Beirut and Mount Lebanon	ICT	Information Communication Technologies
EDL	Électricité du Liban	IDAL	Investment Development Authority of Lebanon
EGDI	E-Government Development Index	IEL	Illicit Enrichment Law
EHR	Electronic Health Records	IHE	Integrating the Healthcare Enterprise
EIB	European Investment Bank	I-MEET	Integrated Model for Evaluating E-government Transformation
eID	Electronic Identity		
ENA	École nationale d'administration	INSEAD	Institut Européen d'Administration des Affaires
EPI	E-Participation Index		
ESCWA	United Nations Economic and Social Commission for Western Asia	IO	Immediate Objective
		IoT	Internet of Things
ETL	Extraction/Transformation/Load	IPL	Investigatory Powers Law
EU	European Union	IRB	Institutional Review Board
FAQ	Frequently Asked Questions	ISACA	Information Systems Audit and Control Association
FDI	Foreign Direct Investment		
FHIR	Fast Healthcare Interoperability Resources	ISF	Internal Security Forces
		ISMS	Information Security Management System
FTE	Full-Time Equivalent		
G2B	Government-to-Business	ISO	International Standards Organization
G2C	Government-to-Citizen		
G2G	Government-to-Government	ISP	Internet Service Provider
GaaP	Government as a Platform	ISRM	Information Security Risk Management
GBA	Greater Beirut Area		
GCC	Gulf Cooperation Council	IT	Information Technology
GCFF	Global Concessional Financing Facility	ITS	Intelligent Transport Systems
		ITS	Issue Tracking System
G-Cloud	Government Cloud	ITU	International Telecommunication Union
GDCS	General Directorate of Civil Status		
		KPA	Key Performance Area
GDLRC	General Directorate of Land Registry and Cadastre	KPI	Key Performance Indicator
		KSA	Kingdom of Saudi Arabia
GDP	Gross Domestic Product	LB-CERT	Lebanon Cybersecurity Emergency Response Team
GDS	Government Digital Services		
GIS	Geographic Information System	LBMI	Lebanon Basemap Imagery
GoL	Government of Lebanon	LDE	Lebanon Digital Economy
GovNet	Government Network	LDT	Lebanon Digital Transformation
GPS	Global Positioning System		
GWP	Gross Written Premium		

Abbreviation	Description	Abbreviation	Description
LEO	Lebanese Economic Organization	NCSR	National Council for Scientific Research
LGIF	Lebanese Government Interoperability Framework	NDA	National Digital Academy
LGIRA	Lebanese Government Interoperability Reference Architecture	NDC	National Data Center
		NGO	Non-Government Organization
		NICTU	National ICT Unit
M&E	Monitoring and Evaluation	NNA	National News Association
MBO	Management By Objectives	NOC	Network Operations Center
Mbps	Megabits per second	NRI	Networked Readiness Index
MC4DT	Ministerial Committee for Digital Transformation	NRSC	National Road Safety Council
MC4DT	Ministerial Committee for Digital Transformation	NSDI	National Spatial Data Infrastructure
MEA	Middle East Airlines	NSSF	National Social Security Fund
MEA	Middle East Airlines	OEA	Order of Engineers and Architects
MEHE	Ministry of Education	OECD	Organization for Economic Co-operation and Development
MENA	Middle East and North Africa		
MICTC	Ministerial Information and Communication Technology Committee	OG	Open Government
		OGC	Open Geospatial Consortium
		OGD	Open Government Data
MITC	Ministerial Information Technology Committee	OGIX	Open Government Information Exchange
MoA	Ministry of Agriculture	OGP	Open Government Partnership
MoD	Ministry of Defense	OMSAR	Office of the Minister of State for Administrative Reform
MoEWR	Ministry of Energy and Water Resources		
MoF	Ministry of Finance	OSI	Online Services Index
MoIM	Ministry of Interior and Municipalities	OSI	Open Systems Interconnection
		P/P	Private/Public
MoIT	Ministry of State for Investment and Technology	PAD	Project Appraisal Document
		PCM	Presidency of Council of Ministers
MoL	Ministry of Labor	PCO	Public Communication Officers
MOOC	Massive Open Online Courses	PCU	Public Communication Units
MoPH	Ministry of Public Health	PII	Personally Identifiable Information
MoPW	Ministry of Public Works		
MoSA	Ministry of Social Affairs	PIU	Project Implementation Unit
MoT	Ministry of Telecommunications	PKI	Public Key Infrastructure
MOU	Memorandum of Understanding	PMDU	Performance Management & Delivery Unit
MP	Member of Parliament		
N/W	Network	PMO	Project Management Office
NAAC	National Authority on Anti-Corruption	PPAB	Public and Private Advisory Board
NCEI	National Council for Entrepreneurship and Innovation	PPG	Policy, Planning, and Governance
NCISA	National Cyber Security and Information Systems Agency	PPMA	Public Procurement Management Administration
NCR	National Civil Register	PPP	Public-Private Partnerships

Abbreviation	Description	Abbreviation	Description
QDRA	Quality Reporting Document Architecture	TII	Telecommunication Infrastructure Index
R&D	Research and Development	TTA	Tripoli Transport Authority
RA	Registration Authority	UAE or U.A.E.	United Arab Emirates
RACI	Responsible, Accountable, Consulted, and Informed	UINL	Unified Identification Number Law
RAIL	Right to Access to Information Law	UK or U.K.	United Kingdom
RIA	Regulatory Impact Assessment	UK-GDS	United Kingdom Government Digital Services
RL	Republic of Lebanon	UN	United Nations
RLTT	Régie Libanaise Des Tabacs & Tombacs	UNCAC	United Nations Convention Against Corruption
ROI	Return On Investment	UNCTAD	United Nations Conference on Trade and Development
RPTA	Railway and Public Transport Authority	UNDESA	United Nations Department of Economic and Social Affairs
RSVP	Retired and Senior Volunteer Program	UNDIN	Unified National Digital Identification Number
S&T	Science & Technology	UNDP	United Nations Development Programme
SC4DT	Steering Committee for Digital Transformation	UNESCO	United Nations Educational, Scientific and Cultural Organization
SDG	Sustainable Development Goals	UNICEF	United Nations Children's Fund
SDMX	Statistical Data and Metadata eXchange	UNODC	United Nations Office on Drugs and Crime
SLA	Service Level Agreement	UPS	Uninterruptible Power Supply
SMART	Specific, Measurable, Achievable, Realistic, and Timely	USA or U.S.	United States of America
SME	Small and Medium Enterprises	USAID	U.S. Agency for International Development
SMS	Short Message Service	USB	Universal Serial Bus
SNOMED	Systematized Nomenclature of Medicine	WB	World Bank
SOA	Service-Oriented Architecture	WBG	World Bank Group
SOC	Security Operations Center	WBS	Work Breakdown Structure
SOG	Strategic Objective/Goal	WCAG	Web Content Accessibility Guidelines
SOPMIP	Sectoral and Organizational Performance Management and Inspection Program	WMS	Workflow Management System
Sub-KPA	Key Performance Sub-Area	WPSR	World Public Sector Report
SUPTIP	Sustainable Urban Public Transport Investment Program		
TBNS	Tripoli Bus Network System		

Chapter 1. DIGITAL TRANSFORMATION UNLEASHED

1-1. INTRODUCTION

For years, most countries of the world have chosen the digital path to drive the rapid digital transformation of their economic activities, industrial sectors and trade relations. Like many emerging and industrialized countries in the world, Lebanon is suffering from a number of crises, the most important of which are the COVID-19 pandemic, economic stagnation and financial collapse, whereby the Lebanese people are currently facing several challenges to their quality of life, success and longevity. Although Lebanon has not yet experienced the Fourth Industrial Revolution because the new technologies transcend our old ones, we must depend on our human capital, which is the main resource that enables our institutions to achieve the efficiency and flexibility that citizens long for. As such, the government has to make a qualitative leap in the services it provides to all citizens so that they could contribute, in turn, to improving the conditions of their country in light of economic incentives, transparent governance, and an open government. These services could be provided while taking into consideration digital democracy and equality for all.

Digital transformation is fundamental for the reform of public services and the prevention of corruptions tools. It is considered at the core of public service reform through ease of use, ease of planning, interconnection of services, and sustainable digital capacities. The most important desired objectives are fundamental institutional reforms. As such, digital transformation presents a unique opportunity to help address these challenges and achieve growth in the digital economy, as many countries of the world are witnessing. Good governance is considered an essential element for achieving sustainable development, community progress and economic prosperity. The transformation process requires significant sacrifices given that digitization cannot succeed without it. However, this is a difficult task that is based on re-engineering the pathways and how citizens receive services from both government and private bodies. In order to ensure that emerging technologies improve Lebanese citizens' conditions, a governance model should be adopted that takes into consideration the effects of the Fourth Industrial Revolution which resulted in the technological innovations, while institutionalizing a culture of openness, honesty, transparency, and accountability. Finally, when the Lebanese government succeeds in improving the performance of employees and the quality of public services to facilitate citizens' affairs, it will enable them to develop, produce, and innovate. As such, a new and different type of economic growth will lighten Lebanon's future.

1-2. BACKGROUND

The Office of the Minister of State for Administrative Reform (OMSAR) started from initiating the preparation of the national strategy for digital transformation during the era of His Excellency the President of the Lebanese Republic General Michel Aoun. In order to make the digital transformation initiative a success one, which constitutes the cornerstone of the change process, the Lebanese government placed it at the top of its priorities in its Ministerial Statement issued in September 2021. The Ministerial Digital Transformation Committee, chaired by Prime Minister Najib Mikati (Decision No 32 dated 22/2/2022), and the Technical Committee for Digital Transformation, chaired by the Minister of State for Administrative Reform (same decision), were formed, in order to empower government departments and

support them in making the necessary changes in policies, processes, procedures and the organizational culture for the success of digital transformation. It is necessary to take advantage of the work of OMSAR to facilitate certain procedures, in addition to completing and updating it, while ensuring administrative reform of mechanisms, measures, updated powers and new modern texts before proceeding with the programming and digitization of services to avoid the complications of implementation. It is also necessary to secure funding to implement these projects and ensure their sustainability because funding is essential for the implementation of the strategy.

The digital transformation process in Lebanon constitutes several key elements that enable the establishment of a solid base to ride the wave of change that will take Lebanon into the digital age. This document includes the following sections:

- Launching digital transformation: This section discusses the background, history, purpose, vision, strategic goal and immediate objectives of the Digital Transformation Strategy.
- Situation analysis: Includes an in-depth look into the data related to Lebanon and an analysis of the situation of all major economic sectors in Lebanon, as well as the lessons learned and the critical factors for the success of the Digital Transformation Strategy.
- The foundations and pillars of digital transformation in Lebanon, and review of relevant current and future laws and regulations.

Previous efforts have led to the development of these elements that are indispensable for the strategy (OMSAR, 2019b) and (OMSAR, 2019c), and that will be continuously and sustainably updated and built upon.

- Priority programs and solutions and those that are preconditions.
- The ten-year roadmap and implementation plan that define the important projects that are at the core of the digital transformation process, and to be reviewed according to the situation analysis by assessing the digital maturity and electronic readiness to be updated and adopted later on.
- Key performance areas and indicators to monitor and evaluate the digital transformation process.
- Stakeholder participation and external verification.
- Budget, annexes and references.
- Budget, documents, and bibliographic references.

1-3.   HISTORY

The Office of the Minister of State for Administrative Reform (OMSAR) was established after the amendment of the Lebanese Constitution in accordance with the Taif Agreement. Its objective was to modernize the administration, transform it into an e-government and then achieve digital transformation. The administration tried to keep pace with the departments through modernization projects that matched those that were being implemented by the departments themselves. It is worth noting that e-government is not a new concept. In May 1997, the Lebanese government formed the Ministerial Information and Communication Technology Committee (MICTC) under Decision No 33/97 issued by the Prime Minister and under Decree No 9500 issued on 7 November 1996.

In 1998, OMSAR produced the *LEBANON in the Information Age, Towards a National*

Information Technology Strategy to establish the groundwork for the Ministerial Information Technology Committee (MITC) and to enable it to launch its activities.

In 2001, OMSAR published the *National ICT Policy and Strategy for Lebanon* aiming to outline the vision for use of ICT nationally, to identify the opportunities for Lebanon, and to seek input, commitment, and support to realize the national goals. This was the first government's proposed national Information Communication Technologies (ICT) *blueprint* to achieve economic benefits and improve the quality of life for Lebanese citizens. The objectives of this document were to:

1. Paint a vision of the emerging information age and raise awareness on the substantial economic and social benefits for Lebanon in taking advantage of an information-based economy;

2. Identify opportunities for the different sectors of the economy in Lebanon and provide a focus for stimulating discussion on the issues, specific objectives, and priorities for the application of ICT nationally;

3. Seek input and commitment from industry, government, and citizens to develop an implementation strategy;

4. Launch several priority projects and set up specific working groups to specify sectoral requirements, e.g. Health, Education, Tourism, and others.

During the same year, a new Ministerial ICT Committee (MICTC) was established, and the *National ICT Policy and Strategy for Lebanon* document paved the way for discussion amongst the members of this committee to set priority initiatives.

In 2002, OMSAR presented the *E-Government Strategy for Lebanon* after it was reviewed, enhanced, and validated by several local and international domain experts and was endorsed by the MICTC. In addition, this strategy was integrated into the OMSAR *Strategy for Administrative Reform* that was approved by the Council of Ministers in September 2001. The strategy included three main modules:

1. Module 1 covered a comprehensive situation analysis of E-Government enabling achievements to date in Lebanon;

2. Module 2 described the required E-Government framework (legal, technical, services, capacity building, promotion, and operations) that needed to be fulfilled;

3. Module 3 described the necessary planning steps for a phased implementation.

During this year, OMSAR organized an *E-Government Applications and their Benefits to the Citizens* conference that gathered national and international domain experts to raise awareness and to share experiences from other countries.

In 2003, OMSAR conducted a *Readiness Assessment* and produced a National eStrategy document for Lebanon. The vision of the National eStrategy was to move the economy and society of Lebanon towards a knowledge-based society in the shortest time possible while concurrently addressing related challenges and opportunities that Lebanon was facing. This strategy was accompanied by a roadmap with priority programs and projects for all sectors in Lebanon to be implemented by private and public sector stakeholders and entities.
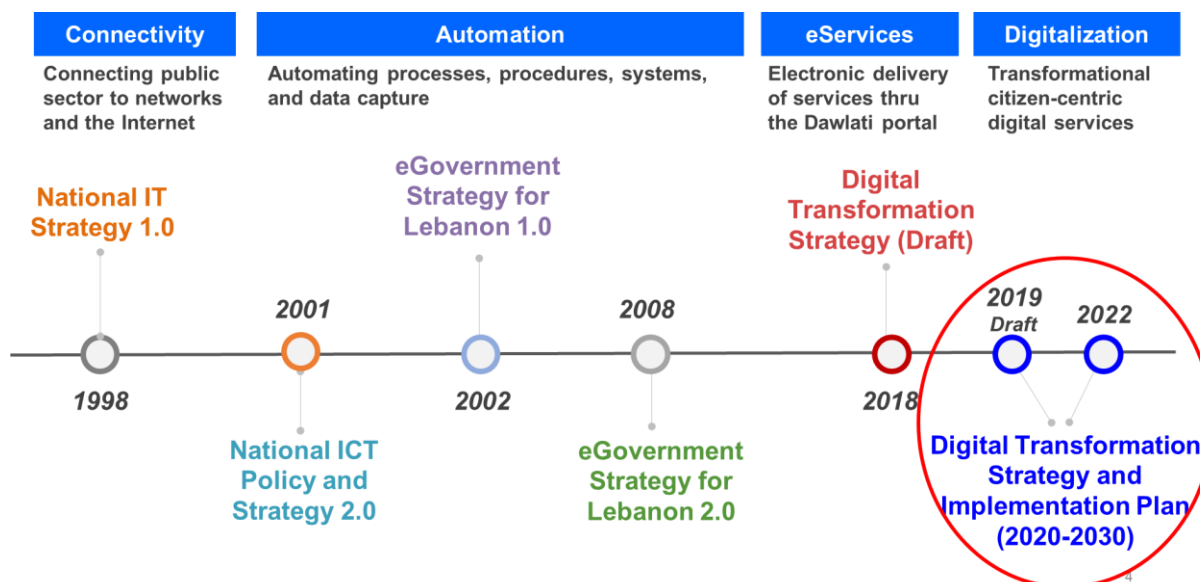
Figure 1. ICT / eGovernment / Digital Transformation Timeline

In 2008, the Ministerial ICT Committee requested OMSAR to update the 2002 e-Government strategy for Lebanon to focus more on the citizens. From this vantage point, the strategy aimed to go beyond data and systems by moving toward the goal of changing how the government operates. The intention was to use the strategy as a jumping board into the development of a novel, innovative, and creative plan that can convert the traditionally old-fashioned government operations of Lebanon into a modern, realistic, and applicable model of e-Government. Several priority projects were proposed for implementation over a three-year timeframe, and these were discussed with key stakeholders. A high-level action plan was also developed.

In May 2017, OMSAR organized the first digital conference at the Grand Serail, with the participation of the Prime Minister of Lebanon, which brought together digital leaders from across the Lebanese government including the private sector and academia.

In March 2018, OMSAR published the first draft version of a high-level Digital Transformation Strategy in a wide national conference under the patronage of His Excellency the President of the Lebanese Republic.

In October 2019, the Digital Transformation Strategy and Implementation Plan (2020-2030), was built on the 2018 version by adding several important elements, such as a situational analysis, a sectoral analysis, an implementation plan, and stakeholder participation consisting of more than 300 interactions with various Lebanese and international individuals and expert organizations in civil society as well as the private and public sectors.

In May 2022, a review and tuning of the Digital Transformation Strategy (2020-2030) took place to bring it up to speed with what has taken place between 2019 -2022. The proposed Implementation Plan (2020-2030) developed in 2019 will be revisited and priority projects will be finalized with both Ministerial and Steering committees for Digital Transformation of 2022.

1-4.   Purpose and Vision

The purpose of digital transformation is not only to mainstream technology and its systems, but also to **simplify** and **transform** governmental procedures into digital services by leveraging existing and emerging technology to serve the needs of Lebanon's citizens, residents, and visitors effectively. This document expands upon the Lebanon Digital Transformation Strategy of 2018 and 2019 and has extensive support from stakeholders in the public and private sectors, as well as from citizens in Lebanon. The document will guide the digital transformation of the public services sector in Lebanon into an inclusive digital society where all individuals, businesses, and government institutions can improve their way of life with digital technologies. The strategy endorses the new open government approach that will significantly improve government digital services, thus enabling Lebanon to join the club of digitally developed economies.

> " Our vision is to improve the standard of living of our people and the economic and legal environment for companies operating on our lands by transforming Lebanon into an advanced country in the field of digital services, providing an open and transparent government and providing digital services with the main focus on the citizen, to enable public sector employees to serve citizens, residents, foreign visitors, entrepreneurs and society in its entirety, by 2030. "

Digital transformation should be grounded in a whole-of-government and whole-of-society approach, with the aim of expanding the opportunities of digital inclusion through holistic and inclusive co-designing and co-creation of digital public policies. Engaging a broad range of stakeholders in digital innovation, from local governments such as municipalities and unions of municipalities, to private sector, academia and civil society organizations, supports inclusive design that bridges the digital divide, addresses the needs of vulnerable populations and empowers them to access digital services, helps to mitigate risks from digital platforms, and establishes accountability. This strategy is linked to the recovery and development plan and its effect on the different sectors, services and capacities, especially in light of the priorities set by the government in the implementation plan.

Our vision by 2030 is to improve the quality of life of our people and businesses by transforming Lebanon into one of the most advanced digital countries in the Arab world, ensuring a transparent open government, and implementing citizen-centric digital services to enable public civil servants to better serve citizens, residents, foreign visitors, entrepreneurs, and the wider society.

1-5.   Strategic Objective/Goal (Impact Level)

The Government of Lebanon aims to transform the public sector into a truly high-quality, efficient, and effective provider of services making secure interactions with citizens, civil society organizations, and businesses simple, timely, honest, and transparent by providing citizen-centric services from a common digital platform to enable innovation and to invigorate the entire digital economy of in Lebanon.

1-6.   Immediate Objectives (Outcome Level)

To implement the Lebanon digital transformation strategy, the Government of Lebanon must implement a Management By Objectives (MBO) performance management methodology based on SMART objectives. The concept of setting Specific, Measurable, Achievable, Realistic, and Timely (SMART) objectives was pioneered by Peter Drucker in 1954. Once goals are clear then it is much easier to determine whether or not they were attained (Drucker, 1954). Specific objectives mean explicit and clearly defined objectives that include details of the entity involved in achieving each objective, the intended achievement, and the place and time of achieving the objectives. Measurable goals refer to the ability to measure progress towards and achievement of the goal using quantitative and objective means. Attainable goals mean that the goals must be motivating and difficult, but not impossible, given that other actors have achieved such goals elsewhere.

> " Our goal is to improve the public services we provide to citizens, the private sector and society as a whole through flexible, secure and effective digital services to raise their productivity and achieve their success in order to lift Lebanon out of its economic and financial crisis and achieve the goals of recovery plans. "

What is meant by realistic goals is that the goals are reachable and not difficult to achieve within the time available and in light of the constraints related to human and financial resources, while the time-bound goals mean that the period during which each goal must be accomplished is clearly defined.

The Government of Lebanon is focused on achieving three immediate objectives and outcomes within the first five years:

1. ***Improve citizens' transactions and their experience with government services*** by providing comprehensive and effective services and transforming the relationship between citizens and the government, whereby the government places the quality of services and their convenience to citizens as a top priority, starting with the unified digital identity, to better respond to their needs.

2. ***Enable Lebanon's digital economy and private sector to prosper*** by participating in the development of the emerging national and regional digital economies and to progressively form a substantial part of the government's own digital supply chain. By simplifying procurement processes that are based on giving priority to national digital goods and services, we aim to make it easier for local entrepreneurs, small and medium enterprises (SME), innovators, and startups, to compete fairly and win government projects and to ensure the continuous development of software and mechanisms.

3. ***Transform public sector operations*** through a paradigm shift by embracing digital technology, striving for paperless processes, enabling *digital by design* operations based on international standards, and building a framework that delivers transformation across the entire government.

The abovementioned goals and priorities cannot be separated from living needs, which will be given priority in public spending such as medicine, food and education. Priority in vital sectors is also given to citizens in the field of digital services. Priority-setting remains the prerogative

of the government with all its components and institutions, after ensuring that the institutions concerned are able to adhere to the principles and pillars of the strategy.

1-7. MONITORING AND EVALUATION

The framework of the Lebanon digital transformation strategy uses an evidence-based approach to ensure the success of the strategy and its implementation plan. The key inputs to the strategy are (a) *Strategic Goals*, (b) *Situational Analysis*, (c) *Data Insights*, (d) *Lessons Learned*, (e) *Best Practices*, and (f) *Stakeholders Engagement*. The outputs of the strategy are (a) *Recommendations*, (b) *Actions*, and (c) *Outcomes*.

Consequently, actions and outcomes must be monitored and evaluated on a continual basis to ensure success. The analysis will be focused on six priority Key Performance Areas (KPAs):

1. Citizens Centricity (CC)
2. Business Centricity (BC)
3. Digital Government Solutions and Applications (DGSA)
4. Digital Infrastructure (DI)
5. Digital Transformation Policies and Legal Framework (DTPLF)
6. Digital Transformation Ethics, Norms, and Standards (DTENS)
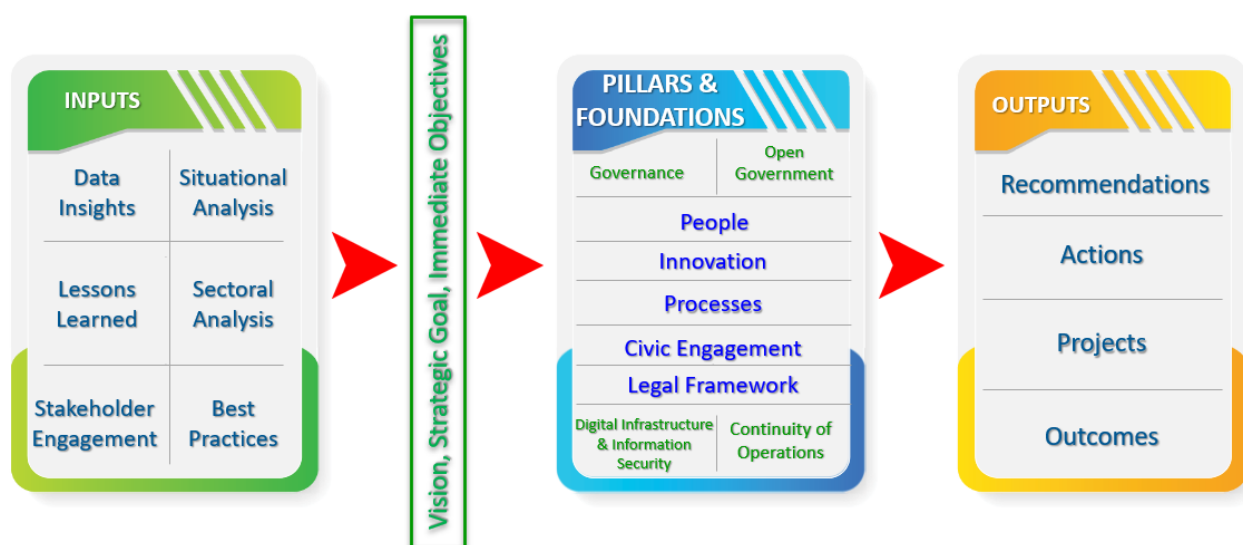
Figure 2. Digital Transformation Strategy Framework

The Key Performance Areas (KPAs) and their respective Sub-KPAs are defined in the strategy. Additionally, several Key Performance Indicators (KPIs) used to measure the progress and success of the strategic goals and immediate objectives at their respective levels, are also defined. Those KPIs shall be reviewed and updated after the strategy is approved by the Council of Ministers. The implementation plan developed in 2019 (OMSAR, 2019b) will also be reviewed and updated by OMSAR, in coordination with the Central Digital Transformation

Unit (CDTU) (after its establishment), and approved by the concerned authorities after scheduling priorities according to the existing situation in Lebanon.

Chapter 2. Situational Analysis

Prior to determining solutions and actions, it is important first to examine the current situation and to estimate progress toward a digital economy in Lebanon. This chapter summarizes the progress made based on indices and main recommendations to overcome the challenges, mitigate the risks, and leverage opportunities offered by the digital transformation. The situational analysis is focused on data insights from prior research and lessons learned from previously implemented ICT and procedure simplification projects in the public administration (OMSAR, 2019c).

2-1. Current Situation

Several departments have key platforms that serve as a base point for digital transformation following a serious assessment of the current situation. In the public sector, these platforms include but are not limited to:

• The platform for public finance, real estate departments and others.

• The Ministry of Interior and Municipalities has a developed platform for passports, a platform for identity cards that was updated in 2014 which is the main pillar platform for automating Civil Status, a platform for data of electoral lists and voters' lists, and platforms for criminal records - identity verification and others within the Internal Security Forces.

• The platform of the Presidency of the Council of Ministers for transactions through the electronic workflow, which was established within the Presidency of the Council of Ministers.

• The platforms of the Ministry of Public Health - Visa Billing System for inquiries Meditrack/GIS Hospital Platform / Mapping for health facilities/ e-Services Platform. A field survey to monitor the status of these platforms is required.

There are a number of studies that are ready to be applied in several ministries. These studies are necessary to enable the government to start with what is currently available in the departments which are capable of determining how to proceed in the current situation within this strategy, as a result of the sectoral expertise of each department.

2-2. Lebanon and International Indices

Since many years, Lebanon lags all GCC countries and some Arab countries on the e-Government Development Index (EGDI), the Online Services Index (OSI), and the E-Participation Index (EPI) and in terms of adoption of digital technologies for the Networked Readiness Index (NRI) as summarized in the tables below (McKinsey, 2018).

Index	McKinsey						UNDESA
	2008	2010	2012	2014	2016	2018	2020
EGDI	74/190	93/190	87/190	89/193	73/193	99/193	127/193
OSI	0.3913	0.2667	0.4711	0.3543	0.5145	0.4722	0.4176
EPI	28/190	45/190	48/190	110/193	91/193	122/193	148/193

Table 1. Summary EGDI Statistics on Lebanon's Rank through the years

Index	McKinsey			Portulans Institute		
	2014	2015	2016	2019	2020	2021
NRI	97/148	99/143	88/139	86/121	90/134	93/130
Government Online Service	74/148	88/143	89/139	103/121	114/134	112/130

Table 2. Networked Readiness and Government Online Service Rank

It is not possible to solely rely on what was in place a few years ago. This is because the figures have changed, and there are unattainable basic issues that are among the obstacles to setting clearly defined public sector budgets. Therefore, the analysis must be based on the actual situation in Lebanon, especially as the country is facing an unprecedented financial and economic crisis. Today, we are witnessing the start of the collapse of some infrastructure and the shrinking of technology capabilities, such as software, equipment and systems that have not been updated and are no longer provided with the necessary maintenance according to the rules in many departments during the years 2020-2022. It is clear that the McKinsey, Portulans Institute, ITU, and UNDESA indicators and other indicators that preceded the successive crises that have afflicted Lebanon since late 2019, are indicators that can be used as historical baselines. Therefore, it is necessary to get use of updated statistics and indicators about the digital sector and reconfigure them, as it is certain that all economic indicators have deteriorated during the past three years and must be re-measured in real time in order to become the realistic starting point for launching executive projects for digital transformation when each project is in the feasibility and design stage, while taking into account the financial, economic, human and investment difficulties and the deterioration of infrastructure.

The main conclusions and recommendations contained within the public administration reform studies in Lebanon by the United Nations Conference on Trade and Development (UNCTAD), the United Nations Development Fund (UNDP), McKinsey, the World Bank and the Organization for Economic Cooperation and Development (OECD) can be summarized in Table 3 below:

Table 3 below summarizes the main findings and recommendations:

Key Elements	Main Recommendations
Governance	• Set up multi-level governance structure to lead the digitalization efforts, unify platforms, and reduce capital and operating expenses
Digital Strategy	• Detail and activate the digital government strategy with prioritization of most critical processes Like the national digital identity

Key Elements	Main Recommendations
	• Set ambitious but measurable objectives and adopt a unified management approach
Legal and Regulatory Requirements	• Issue executive decrees for current laws and enact new laws • Develop design principles for digital transformation
Digital Talent	• Promote digital skills by developing and overseeing a Human Capital Development Plan
Evaluation and Monitoring	• Design and implement a digital performance measurement framework and a maturity model platform • Monitor and evaluate for accountability • Improve and communicate continuously
Digital Infrastructure	• Roll out a secured unified access to the government digital platform
Public Communications and Engagement with Stakeholders	• Prioritize involving all sectors of government, different levels of government, academia, private sector, NGOs, and civil society • Collect inputs, provide awareness, and develop co-design sessions
Simplified Processes	• Initiate the development of simplification of procedures and automation for main sectors, e.g. work permits, NSSF, justice courts, tax filing and reporting, and more
GovTech and Public Digital Platforms	• Develop a Whole-of-Government Architecture, shared services, and data exchange standards • Implement the government interoperability platform to exchange secure data among the various public sector systems • Develop guiding implementation framework for publishing information through portals to apply the Right of Access to Information Law (RAIL)

Table 3. Recommendations by International Organizations

2-3. CHALLENGES, RISKS, OPPORTUNITIES, AND CRITICAL SUCCESS FACTORS

In the following section, we summarize the main challenges, risks, opportunities, and critical success factors for developing and implementing digital transformation in Lebanon. The challenges, risks, opportunities, and critical success factors must be accompanied by a governance mechanism for a successful transformation that must adapt to the fast-moving requirements (OMSAR, 2019c). The impact of the current economic crisis on the strategy should also be monitored to determine the extent of the damage and any potential delay (Risk Analysis and Impact Study). It is worth noting that the Lebanese government faced several challenges in implementing the identified strategies. This is because the strategies were being amended with every change in government and updated according to the developments over

time. Despite all these challenges, the Office of the Minister of State for Administrative Reform has accompanied a number of departments as part of projects funded by loans or grants and as part of specific programs with funding agencies. It should also be noted that ministries do not have any executive authority over each other except through institutionalization at the level of the Presidency of the Council Ministers where the work is at the core of institutions.

Challenges	Risks	Opportunities	Success Factors
• Lack of budget • Lack of national vision and clear mandates • Resistance to change • Legacy organizational structure • Weak governance • Lack of digital skills • Outdated laws and regulations • Slow enactment and amendment of laws • No proper coordination to minimize duplication of projects	• Hiring freeze • Political disputes • Over-analyzing programs and projects • Failure to enact effective laws in a timely manner • Inability to attract qualified experts • Misconceptions about digital transformation	• Data analytics • Cybersecurity and cloud computing • New technologies (Blockchain, IoT, Artificial Intelligence) • Digital authentication	• Build on data • Retire legacy systems and introduce common platforms • Set and adopt ICT standards • Build skills and develop talents • Establish a digital center of excellence • Make legislative changes • Set organized investment approaches

Table 4. Challenges, Risks, Opportunities, and Success Factors

The difficulties and risks have increased, grown and become more complex. As such, they need to be prioritized according to the need to address them, while adding the new risks that emerged after the economic, financial and health crisis that afflicted Lebanon nearly three years ago.

2-4. MAIN ELEMENTS

Part of the assumed success factors have become certain difficulties, such as investment, the presence of technical skills capable of keeping pace with the digital transformation, the legislative amendments in light of the continuing living crisis and economic collapse during 2022, which will take longer due to the shifting of priorities and the primary concern with livelihood, social and health affairs, the loss of digital capabilities and the modernization of databases in public administrations.

Key Elements	Key Recommendations	Situation in 2022
Governance	Set up a governance structure, standardize platforms, and reduce digital expenditures	The inability to secure the expenses of digital platforms and the minimum components of maintenance and modernization
Digital Strategy	Activate the digital government strategy and give priority to the most important operations with ambitious goals	Rescheduling goals according to the new situation and re-examining priorities in light of new government services and remaining services within the public sector departments, the private sector or agencies as a result of public-private cooperation
Legal and Regulatory Requirements	Decrees of issued laws, promulgation of new laws, and principles of designing digital transformation	Re-arranging priorities and ensuring the implementation of the issued laws and decrees before embarking on legislative inflation.
Digital Skills	Take steps to develop human capital	After the financial collapse, the country is witnessing an alarming migration of skills abroad, including skills from the public and private sectors, as well as the collapse of human capital.
Evaluation and Monitoring	Lay the foundations for performance measurement and accountability to ensure continuous improvement	The collapse disrupts all indicators. Priorities must be rearranged realistically and beyond theoretical ambition, while addressing the constants in the infrastructure and preserving the human element, and then following up to measure performance.
Digital Infrastructure	Unified and secure access to the digital government platform	During the planning and implementation of projects, priorities must be arranged because similar capabilities are not present equally in all departments and ministries to form unified and homogeneous platforms in operation, investment, maintenance and in the level of digitization of information, financial and human resources
Public Communications and Stakeholder Engagement	Involve government, academia, the private sector, NGOs and civil society	During the planning and implementation of projects, priorities must be rearranged according to the material and human capabilities, taking into account the great

Key Elements	Key Recommendations	Situation in 2022
		disparity between the administrations of the public sector, the private sector, the private and public academic and non-governmental sectors, as equality is not possible after the collapse of all levels of partnership
Simplified Operations	Simplify procedures and automate key sectors such as labor, insurance, courts, tax permits, etc.	An administrative, legal, and legislative workshop must be launched to simplify the procedures in a particular administration before starting to automate the current complicated procedures, which are most often outdated and far from being modern. It is also imperative to set priorities according to real capabilities, including financial, human, past and current digital penetration, and the ability to continue to secure investment, maintenance, modernization and sustainable infrastructure in a manner commensurate with reality.
Government Technology Services and Public Digital Platforms	Carry out a comprehensive engineering for the government and all the public sector, launch common services and exchange data securely between the various public sector departments, provided that an implementation framework is established for the dissemination of information and the right of access to it is confirmed.	There are many difficulties in implementing such objectives under the current Lebanese budget structure. The digital transformation project cannot succeed and will not be homogeneous and parallel unless it occurs within a centralized law program (Centralized Law Program or Loi Program Centralisé) in the Office of the Minister of State for Administrative Reform with sub-components in all ministries, but with a single supreme reference capable of establishing a centralized leadership, organizing progress and securing credits from the unified program in parallel for several years, while securing investments, maintenance, and attracting skills for all. Otherwise, it will be impossible to establish secure unified platforms with digital integration and exchange with all systems and software within the digital economy in Lebanon. Any other effort will be in vain if the management of the transformation project is adopted in a decentralized manner and with scattered funds in the budgets of each ministry without a sustainable vision to secure the capabilities for several years.

Table 5. Key elements and main recommendations

2-5. ECONOMIC SECTORS ANALYSIS

Anticipating economic growth and planning its enhancement requires an in-depth analysis of the various economic sectors in Lebanon identified by the Ministry of Economy and Trade according to Figure 3. In the context of preparing this strategy, we did not seek to waste efforts in vain and repeat what other parties have already done, such as McKinsey, the World Bank, and others. In 2019, we reviewed the sources for all relevant research and conducted a detailed analysis of the challenges and opportunities in each economic sector (OMSAR, 2019c). It is necessary to re-analyze the sectors and to clarify the imbalance that was recorded in each of them after the financial and economic collapse and its link to digital transformation, emerging difficulties and prioritization, taking into account the immediate reality of things in terms of infrastructure, readiness and real ability to keep pace with digital transformation.

Figure 3. Lebanon's Economic Sectors

Chapter 3. FOUNDATIONS AND PILLARS

Building strong infrastructural foundations are important anchors for an effective digital transformation. Central to this is (a) developing internal digital capabilities; (b) setting up modern institutions that help us face the opportunities and challenges of the information age; (c) ensuring modern, secure, high availability, affordable communication infrastructures; (d) implementing government operations continuity plans; (e) adopting supportive legal and governance frameworks; (f) improving digital literacy and fostering an open culture of cross-discipline innovations; and (g) developing the right skills, culture, and learning environment focused on outcomes and results for citizens. Lebanon's digital transformation strategy has four important foundations (a) Governance, (b) Open government, (c) Digital Infrastructure and Information Security, and (d) Continuity of Government Operations. On these foundations, five main pillars are anchored (a) People, (b) Innovation, (c) Processes, (d) Civic Engagement, and (e) Legal Framework.
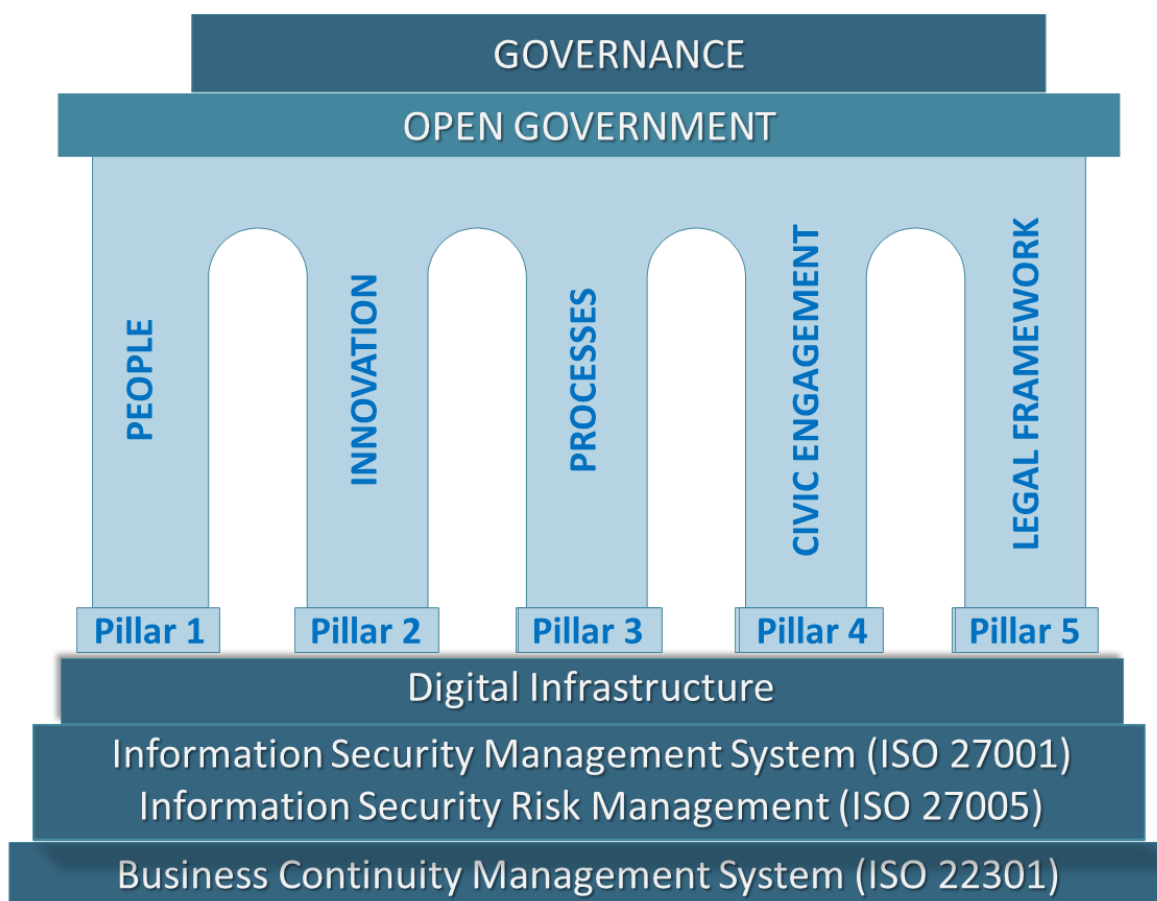
Figure 4. Digital Transformation Pillars

FOUNDATION 1. GOVERNANCE

Digital transformation is considered one of the primary responsibilities of public administrations despite the importance of the role of the private sector and civil society, which constitutes an integral part of Lebanese citizens and beneficiaries of digital services. Moreover, activating oversight bodies with modern mechanisms is necessary to monitor the authorities

responsible for non-implementation. Technological development leads to the cancellation of some procedures and imposes amendments to others that cannot be adopted. For those reasons, work on all digital transformation projects is often not completed because any amendment in the structure of some procedures requires an amendment in the legal texts. In addition, the service mechanism should be compatible with technological developments updated, and improved when needed promptly for the benefit of citizens. Meanwhile, it is necessary for any national strategy to be compatible with the country's situation and to be based on updated indicators, as well as for the government to have the ability to implement it and adhere to its pillars. It is also essential that departments are able to perform in a stable condition.

Overcoming the challenges faced by the government requires the establishment of a clear governance framework that provides a high level political commitment, leadership, management, and coordination, by digitally transforming its interactions with citizens and businesses to meet their expectations. Failing to implement sound governance processes can lead to risks that require two mitigating factors: (a) an effective leadership that possesses a clear vision of the desired outcomes, and (b) implementing sound economic governance and microeconomic values that can improve the performance of public administrations and increase economic governance (Chidiac El Hajj, 2018). A special public sector institutional structure, that links fragmented processes and promotes partnership, must be established. This structure should lead the digital transformation and ensure coordination between ministries. Moreover, it must be empowered to steer and coordinate all activities within the approved digital transformation projects and ensures teams accountability in case of default in the delivery of all set actions within the implementation plan that will be adopted.

The Lebanon Digital Transformation Agenda 2020 set the vision for the "role of digital technologies in the transformation of the public sector into a high-quality, efficient, and effective provider of services," in line with the public administration reform agenda. It aims to make interactions between citizens, civil society organizations and businesses, simple, timely, honest, and transparent. This includes establishing a common digital platform for an open government that places citizens at the center of its interests and provides a single-window or one-stop shop for all government services provided to citizens, public and private sectors, and all other parties, including administrations at the local level, as proposed by the National Anti-Corruption Strategy 2020-2025. This platform providing citizen-centric services will also enable innovation and invigorate the digital economy in Lebanon.

According to the OECD, this public sector command organization needs to be located within the government structure, in a place that has a clear political and operational mandate, with sufficient human and financial resources. Its institutional form can be diverse: in some countries, it sits at the center of the government (e.g., Chile, France, and the United Kingdom); in others, the digital government policy is coordinated by an existing ministry such as the finance ministry or the public administration ministry (e.g., Denmark, Italy, Portugal, and Sweden) or through a specialized ministry (e.g., Estonia, Greece, and Luxembourg). The leading public institution can also adopt a public sector body or agency approach (e.g., Denmark and the United Kingdom); take the form of a unit, office, or directorate (e.g., Colombia and Korea) or a political ranking authority such as a minister or secretary of state (e.g., Brazil, Estonia, and Greece).

3-1. GOVERNANCE MODEL

The governance model will facilitate appropriate joint decision-making in a timely manner, thus helping to anticipate and avoid problems before they have a significant impact on the roadmap set by the stakeholders. In addition, the governance model will ensure priorities are set and no duplication of effort is taking place. The proposed model addresses three levels of governance, which are determined by the existing organization of the Government of Lebanon (GoL) and technological and organizational maturity of the institutions that will be included in the digital transformation implementation roadmap.
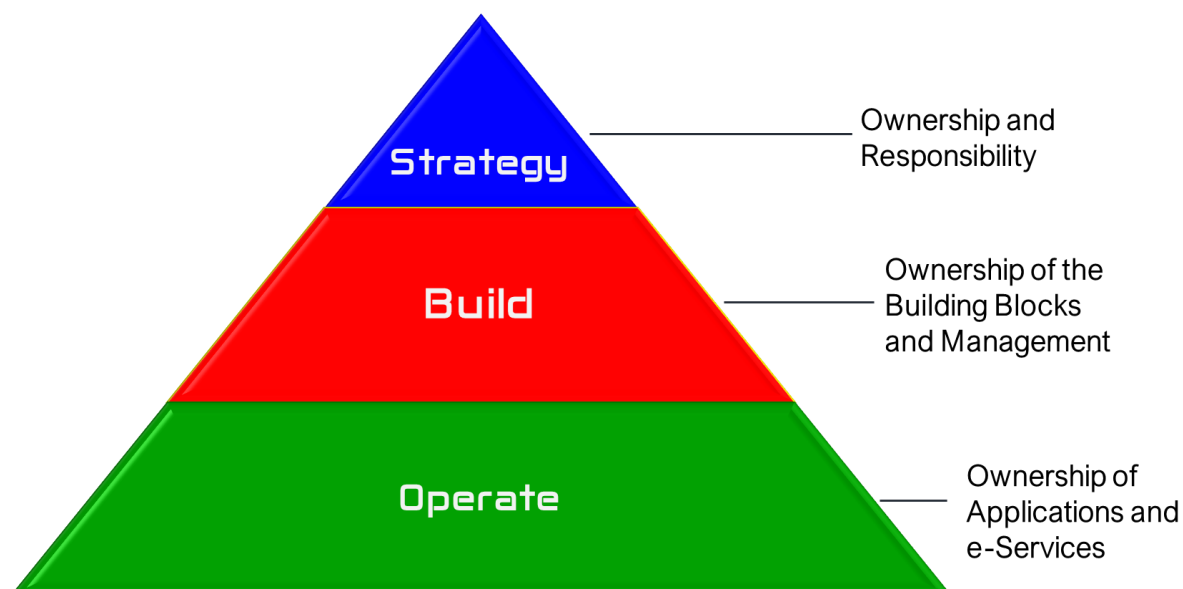
Figure 5. Governance Model

The three levels of the governance cover:

1. **Strategy Level of Governance**, which covers the ownership of the Lebanon Digital Transformation strategy within the GoL. The organization that will have this governance level will be responsible for the lifecycle of all digital transformation initiatives, their continuous improvement, and change management.

2. **Build Level**, which covers the ownership of the Lebanon Digital Transformation solution building blocks. The institutions that have this level of governance are responsible for designing the building blocks of the digital transformation systems, as well as operations management.

3. **Operate Level,** which covers the integration, administration, and operations management. This governance level shall be assigned to the Institutions that are responsible for the services and databases.

3-2. GOVERNANCE COMPOSITION ROLES AND RESPONSIBILITIES

The below sections describe the model, roles and responsibilities, processes, structures, and reporting requirements that will enable parties participating in the digital transformational

initiative to maintain an ongoing close, effective, and constructive relationship. Relationship-based partnerships with a clear delegation of responsibility are key ingredients of success in every project. Such a governance model ensures high levels of service as well as on-going improvement and a strong, flexible, and a mutually beneficial relationship between provider and recipient of service (ISACA, 2019).

The following six principles characterize the governance model and relationship among the parties:

Design Principle	Description
Proactive	The governance model ensures decisions are made efficiently throughout the implementation of the digital transformation projects by mitigating risks and anticipating problems before they occur.
Comprehensive	All activities within and surrounding the performance of the delivered solution whether technological, administrative, or legal will fall within the scope of this governance model.
Open	The governance model shall facilitate an open dialogue amongst the stakeholders at all levels of the relationship.
Shared	The governance model requires 'buy-in' from all parties and shall align the goals set in the digital strategy and implementation plan.
Flexible	Over time, stakeholders can review and modify the governance model as appropriate in response to changing requirements, e.g. new scope.
Collaborative	The governance model will provide a framework for close collaboration that will build trust and respect amongst the stakeholders.

Table 6. Governance Model Principles

3-3. GOVERNANCE STRUCTURE

The Lebanon Digital Strategy reveals the need for institutional organization to make that vision a reality. In fact, at the upper level of the strategic governance structure, an institutional framework shall be established to enhance the implementation of digital transformation and underpin the public administration modernization and reform program and other development programs in Lebanon. It shall also enable governance through strong political and legal support and provide the necessary resources to help materialize this vision.

At the operational and coordination level, a clear and independent organizational structure shall be established with an official operational mandate to digitally transform the public sector, ensure strong oversight and accountability of decisions, and assume responsibilities for both strategy design and implementation, rather than focusing on strategy design and coordination of implementation with all ministries, authorities and public institutions. Research shows that countries proving their success in the area of digital transformation have appointed a Chief Information Officer (CIO) or a National Chief Digital Officer (CDO) within their public

administration. Additionally, there is a need to define a governance framework and formal operation coordination mechanisms to ensure government-wide implementation of the strategy; for example, through senior digital officers from different ministries or IT leaders representing local governments and experts from the private and academic sectors.

The Office of the Minister of State for Administrative Reform is working under two mandates; first, coordinating on public administration development affairs; its responsibilities primarily include ensuring transparency, integrity and rationalization of spending in the public sector, reducing administrative burdens, modernizing public procurement, and introducing e-procurement, as well as improving recruitment and Human Resources processes and standards. Second, the Office of the Minister of State for Administrative Reform currently leads the Digital Transformation. The creation and provision of support for the execution of the digital transformation strategy will provide a big chance for the success of the digital agenda when linked to the public reform and modernization agenda. Thus, there should be a link between the new digital strategy and the modernization and reform of the public sector to lead the bottom-up reform efforts and to provide advice and guidance on the necessary reforms for digital transformation. These include measures that will increase accountability, transparency and performance.

In order to achieve these goals, and based on the laws and mechanisms in force, the establishment of the digital transformation command in Lebanon under the digital transformation unit within OMSAR and with close support and coordination within the executive authority represented by the Presidency of the Council of Ministers to ensure the adherence of departments to the binding decisions that allow for the success of the digital transformation process, is a necessary and essential step towards adopting a coordinated and effective approach to the management of the digital transformation projects portfolio, in addition to tracking the growth, diversification and evolution of technology over time. Placing the authority for digital transformation directly with OMSAR and making it an integral part is undoubtedly a determining step that demonstrates the seriousness and determination of the Lebanese state to respond to the current and future major challenges in the field of digital economy. OMSAR should perform its tasks in close coordination with all ministries, public institutions and bodies authorized with implementing the law, while avoiding conflict over competencies. Thus, Lebanon will be able to centralize the decision-making process related to digital transformation and make it fast and effective, as well as to facilitate the coordination of these decisions at the level of various departments, official institutions and government services. This is considered essential in order to enhance the ability and efficiency of the government in facing the challenges related to the changes required to achieve the digital transformation goals.

The Digital Transformation Unit within OMSAR is headed by the CDO, who is assisted by full-time members appointed directly from the Ministerial Committee for Digital Transformation (MC4DT). The head of the unit and its members must have deep knowledge and extensive experience in the field of digital transformation and should not have any direct or indirect personal interest with any team or individual providing digital transformation services inside or outside Lebanon that may conflict with the transparency, independence and impartiality of their work. The Digital Transformation Unit within OMSAR will be delegated to lead the design and implementation of the digital transformation journey. OMSAR will work with the Presidency of the Council of Ministers, and in coordination with a committee in the Lebanese Parliament, to develop the necessary laws required to organize the digital transformation framework.

OMSAR takes interim measures to enhance the required governance in order to follow up on the implementation of the strategy.

The following matrix gives an overview of the structure and composition of each of the concerned entities within the governance structure and their respective roles and responsibilities:

Entity	Roles and Responsibilities
Ministerial Committee for Digital Transformation (MC4DT)	The Ministerial Committee for Digital Transformation (MC4DT) is responsible for driving Digital Transformation and Public Sector Modernization in Lebanon and is accountable for its success. The MC4DT's responsibilities are: • Political and high-level commitment to the digital transformation vision and goals • High-level decision making in alignment with the digital transformation strategy and action plan • Providing support to the Prime Minister on the long-term strategic vision for the modernization of the public sector • Supporting and overseeing the digital transformation plan including (a) Portfolio of Programs and Projects, (b) Priorities, (c) Budget, (d) Time Frame, (e) Resources, and (f) Key Performance Indicators (KPIs) • Coordinating funding for the action plan and its implementation • Conducting periodic reviews of the overall status of programs and projects delivered by the Steering Committee for Digital Transformation (SC4DT) emanating from the various authorities concerned and monitoring their progress and alignment with strategic objectives • Coordinating actions and issues with the Council of Ministers and the Lebanese Parliament to ensure a safe implementation in collaboration between various government ministries • Reviewing periodically the overall project status delivered by the SC4DT • Consulting with the private sector and representatives of the specialized digital community as needed • Supporting the modernization of administrative and organizational structures and the development of work processes to ensure the readiness of the requirements of digital transformation • Permanently coordinating with parliamentary committees to hold government agencies accountable for the tasks entrusted to them within the framework of the national strategy for digital transformation and its inclusions

Entity	Roles and Responsibilities

	• Following up on the progress of project implementation
	• Working to spread awareness of the strategy and its implementation work plan
	• Meeting every three months or when needed
	• Ensuring the availability of mechanisms for conducting periodic audit tasks:
	  1. Project audit: timeline, deliverables, resources, risks and issues
	  2. Financial audit: to ensure compliance of projects with approved budgets
	  3. Legal Audit: to ensure compliance with applicable rules, regulations and laws

Steering Committee for Digital Transformation (SC4DT)	The Steering Committee for Digital Transformation[1] (SC4DT) is chaired by the Minister of State for Administrative Reform. The Lebanon Digital Transformation consists of a portfolio of programs, with each program consisting of one or more projects owned by various ministries and/or public sector entities. The SC4DT has two main functions: 1. **Executive Sponsorship** **Support**: Provide executive support for all digital transformation programs to increase the chances of success and reduce resistance to change among the multitude of departments and stakeholders. Support the preparedness of the public administration and formulate public administration modernization policies. **Funding**: Ensure adequate funding is allocated for the various programs. **Risk Mitigation**: Identify risks, issues, and dependencies, and find solutions to achieve the overall objectives and keep the programs on track. **Coordination**: Cooperate with the **National Chief Digital Officer (CDO)** to ensure the right support and standards are being implemented across all programs and projects. Coordinate the

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[1] The SC4DT was formed by the decision of the Prime Minister (decision no. 32/2022). The Steering Committee members are the representatives of: the Minister of Administrative Reform, Minister of Justice, Minister of Finance, Minister of Telecommunications, Minister of Interior and Municipalities, Minister of Economy and Trade, Presidency of the Republic, Presidency of the Council of Ministers and the Central Bank.

Entity	Roles and Responsibilities
	development projects and draw up the necessary public sector modernization policy guidelines. **Conflict Resolution**: Resolve conflicts referred by the Digital Transformation Unit within OMSAR or any other concerned authority. **Oversight**: Conduct monthly meetings with the **National Chief Digital Officer (CDO)** to review project plans, statuses, and discuss escalations requiring intervention. **Follow-up**: Responsibility for managing the program portfolio to ensure its alignment with the overall strategy, supervising program implementation processes, and supervising the synchronization of the reform and modernization policy in the design of services to ensure the successful achievement of the desired goals and outputs. 2. **Portfolio Management** **Strategy:** Ensure all programs across the public sector are executed in unison to achieve the strategy set by the MC4DT. **Prioritization**: Focus mainly on *doing the right work* for the entire portfolio of digital transformation programs and projects according to priorities. Prioritization also includes approving projects and submitting them to the Ministerial Committee for approval. **Monitoring**: Measure the impact of the projects as they produce deliverables to provide feedback and ensure continuous improvement.
Office of the Minister of State for Administrative Reform (Central Digital Transformation Unit)	The Office of the Minister of State for Administrative Reform will lead the National Program for Digital Transformation in Lebanon, and will be considered the responsible and coordinating body among all official bodies in this field. The Minister of State for Administrative Reform will establish a central unit for digital transformation within OMSAR, which constitutes a governance framework and a formal work and coordination mechanism to ensure the implementation of the strategy at the entire government level; The unit is headed by the CDO, who is assisted by full-time members appointed directly from the Ministerial Committee for Digital Transformation (MC4DT). The tasks of this unit are:

Entity	Roles and Responsibilities
	• Engineering the digital strategy and its implementation, drawing plans and arranging priorities in proportion to the economic situation
	• Developing plans, identifying projects and providing support to ensure their proper implementation
	• Coordinating with relevant ministries and departments
	• Coordinating with the National Cyber and Information Security Agency (NCISA) regarding personal data protection issues and ensuring the safety and security of critical and vital infrastructure for digital transformation.
	• Periodic updating of digitization and reform policies, legal frameworks and technical specifications
	• Digital update and reform
	• Successively selecting digital services
	• Ensuring the integrity of data management in coordination with data centers and the departments that own them
	• Ensuring the coordination of work between the various ministries in the field of digital transformation to prevent the implementation of isolated works or projects and repetitive projects in government institutions in order to avoid wasting financial and human resources
	• Coordinating in defining the priorities of the work plan and projects with representatives of the economic and social departments and sectors through the principle of inclusion (Whole of Society Approach).
	• Conducting a feasibility study and project assessments
	• Surveying the opinions of all stakeholders and collecting requirements related to digital transformation projects
	• Coordinating and monitoring the progress of programs and projects and ensuring their alignment with the strategic objectives of digital transformation
	• Establishing guidelines, standards and best practices that help digital transformation units in public entities in the life cycle of all projects
	• Overseeing program implementation processes to ensure the successful achievement of the intended goals and results

Entity	Roles and Responsibilities
	• Supporting the development of a data engineering and exchange system • Providing advisory services, advice and guidance to various official bodies on their path towards digital transformation • Managing change and necessary steps to facilitate procedures and re-engineer processes • Supporting, developing and presenting KPIs that are aligned with the strategic objectives • Reporting to the Technical Committee for Digital Transformation (SC4DT) • Facilitating appropriate change management processes to support reform and re-engineering initiatives by implementing change management processes and using structured methodologies to increase their adoption, ownership and use for capacity building and public sector transformation.
Digital and Economic Experience	Consultants from the public and private sectors, the academic and professional body, general managers, specialized experts and the digital community specialized in various fields, as they provide specialized knowledge and skills that contribute to multiplying the knowledge and skills of the Ministerial Committee with the aim of effectively guiding the digital transformation process and facilitating and promoting dialogue and participation by the vital system of the digital government. The tasks include: • Playing an important role in civil society engagement and public relations • Offering a new perspective on digital issues Its main responsibilities include: • Supporting technical teams in an advisory capacity • Providing advice and guidance on action plans • No formal authority to rule, i.e. they act as an advisory group that cannot issue directives or decrees; Their work is limited to providing advice, recommendations, information and basic suggestions.
Public Sector Development	The Office of the Minister of State for Administrative Reform, since its establishment, plays a major role in the development of the public sector. The processes of transforming services in the public sector into digital services will require great efforts to simplify transactions, modernize organizational structures, design and develop software, and train employees on updated systems and software, which

Entity	Roles and Responsibilities
	require full commitment from the departments concerned with all the requirements of digital transformation.
Senior Digital Officers	Through digital coordinating officers and IT leaders in different official and local concerned bodies according to each project. Senior Digital Officers provide policy, executive and operational advice and recommendations and strategic recommendations to the National Chief Digital Officer and SC4DT regarding the digital transformation program and operations, standards, engineering, management, digital reform, IT investment, etc... Senior digital officers are led by the National Chief Digital Officer (CDO).
Digital Transformation Units (DTU)	Ministries and government institutions will seek the assistance of employees within the ministry or institution with appropriate expertise (such as informatics units or others) until the digital transformation unit for the concerned ministry is established. These units consist of a group of specialists from each public sector institution, and each public administration has a coordinator. A central Digital Transformation Unit (DTU) will be established within OMSAR to supervise digital projects in coordination with the Informatics Unit at the Presidency of the Council of Ministers, established in 1992 on 6/2/1992 after its reactivation to ensure the work of other digital transformation units in the sector in line with the objectives of the digital transformation strategy. The responsibilities of the digital transformation units include: – Implementing the digital transformation strategy and its action plan in the entities it represents – Ensuring the unification of digital mutual electronic services in the design and participatory platforms – Improving economies of scale and accelerating the delivery of services from its affiliate and all other parties with the help of the Central Digital Transformation Unit – Coordinating and cooperating between all projects of the digital transformation units established in ministries and other public sector bodies and all other entities – Technical, legal and procedural supervision of the various tasks and activities of digital transformation in the entities to which it belongs – Raising any major issues or risks to OMSAR The digital transformation units in each public entity provide advisory services to their government departments on re-engineering the procedures related to the various digital transformation services that the government will provide according to its digital transformation plan. In addition, the units will provide advice and guidance to various internal departments on how to

Entity	Roles and Responsibilities
	manage the necessary and fundamental changes following digital transformation.
	Digital transformation units must play a major role in managing change and in creating awareness and appreciation at the management level about the need to adopt a change management methodology and adopt mechanisms for special programs aimed at managing change for a smooth digital transformation.
	The units will coordinate work with OMSAR.

Table 7. Roles and Responsibilities of Governance Bodies

3-4. Responsible, Accountable, Consulted, and Informed (RACI)

With responsibility comes accountability; therefore, with each role and activity within the governance model, there will be stakeholders who will be responsible, accountable, consulted, or informed (RACI) for specific decisions and activities. The RACI helps in identifying roles and assigning cross-functional responsibilities to deliver the strategic goals of the Lebanon Digital Transformation Strategy (OMSAR, 2019c).

The following are the definitions of the four RACI components:

Responsible: The role who performs the work to complete a task or decide. There shall be at least one role responsible, although others can be delegated to assist in the required work or decision. Responsibility can be shared among multiple roles.

Accountable: The role who is ultimately answerable for the adequate and successful completion of the deliverable or task. This role ensures the prerequisites of the task are met and delegates the work to the responsible role(s). In other words, an accountable role must approve the work that responsible role performs. Unlike responsibility, accountability cannot be shared; thus, there must be at least one, and only one, role specified as Accountable for each task or decision.

Consulted: The Consulted role is comprised of stakeholders whose opinions are sought – typically subject matter experts and entities affected by the tasks performed and decisions made – and with whom there is a two-way communication.

Informed: This role consists of the entities who must be are kept up to date on the progress, often only on the completion of the task or deliverable; and with whom there is just a one-way communication.

The RACI table needs to be reviewed, updated, and adopted with the implementation plan.

3-5. Total Quality Management (TQM)

As the Government of Lebanon embarks on its digital transformation journey, major changes and continual improvements must be implemented across the entire public sector. Fear of change often leads to a halt in sharing ideas and a loss of improvement opportunities. Operational excellence along with the cultural transformation that must accompany it constitute important foundational elements for a successful digital transformation that delivers value to citizens and other stakeholders.

3-5.1 Digital Assurance

There are serious concerns that the current approach to provisioning ICT assurance is fragmented resulting is unnecessary duplication of efforts, waste of investment, inefficiency, delay, non-interoperability, security breaches, lack of proper governance, and in some cases failure. For instance, there is no systematic assessment of the current risk status of digital projects and systems within each government agency (LITS, 2019). No agency has responsibility for intervening, when and where necessary, to help stakeholders take corrective actions. Information, experience, and good practices from current ICT assurance processes are not shared widely. There is a need to establish coordinated cross-government assurance processes to better inform accountable ministers about relevant concerns and options for possible courses of actions and to raise public trust and confidence in digital government.

FOUNDATION 2. OPEN GOVERNMENT

Open government is the simple but powerful idea that governments and institutions work better for citizens when they are transparent, engaging, and accountable. Open government is the major building block for a more democratic, equal, and sustainable society. According to Transparency International (2019), the 2018 Corruption Perception Index showed that the top ten world leading governments in efforts to tackle corruption, are almost identical to the top ten most digitally advanced governments, according to the United Nations e-Government Survey conducted and published in the same year (United Nations, 2018). The digital revolution is fundamentally changing how we share information, the speed and scale of human connections, and ultimately how power is distributed. These changes do not just make unprecedented transparency and engagement possible; they demand it.

3-6. Open Data and Transparency

Transparency in government is about openness and an overriding commitment to release trustworthy information of public interest. The implication of transparency is that all the government's actions should be visible enough to sustain public scrutiny. Therefore, transparency is the bedrock underpinning future agendas for government's reform. Transparency is enabled through three foundation elements. Firstly, *Open Information* focusing on materials particularly relevant to citizens, businesses, and society. Secondly, *Open Process* focusing on the publication of how to get things done in government including how decisions are made. Thirdly and most importantly, Open Data, the raw material of the 21st century. Open data include all kinds of data relevant to any aspect of society and fiscal data to hold government employees accountable. Open Government requires the adaptation of the necessary laws and decrees to assure a solid legal infrastructure.
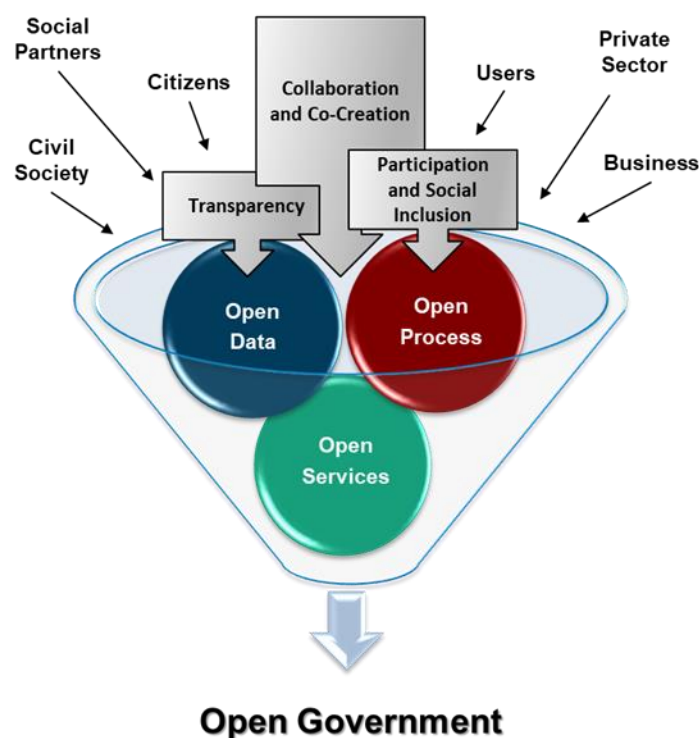
Figure 6. Open Government

The platform data.gov.lb will be developed to provide open data whilst lebanon.gov.lb will be devoted to open information, open processes, and open services. Open data drive efficiency, accountability, and good governance in government. By increasing visibility and permitting deeper scrutiny based on hard evidence, bad practices will be exposed. Hence, because of fears of being exposed, open data become a major deterrent in the fight against corruption. The measure for transparency success will be reflected by the amount, quality, usefulness, and usage of the published data sets.

OMSAR shall implement the infrastructure required to support the Statistical Data and Metadata eXchange (SDMX) standards to exchange and disseminate metadata and data. The Central Administration of Statistics (CAS) shall be responsible for governing and defining standardized metadata and data as well as determining the statistical concepts and code lists. SDMX enables the reuse of the IT infrastructure and the statistical and technical standards resulting in cost reduction and data quality improvement.

3-7. OPEN SERVICES, COLLABORATION, AND CO-CREATION

Releasing data that would have previously been left under-analyzed and under-used, to a new generation of innovative data entrepreneurs, will drive economic growth and motivate continuous improvement of public services. Providing digital-by-default and digital-by-design open services enables the disclosure of relevant data and responsiveness to citizen feedback. This means that the citizen is an essential partner in the collaborative design of digital services. Citizen's participation is needed, online participation is required. Disclosing various types of information should be available electronically. Transparent administrative services must be developed to gain public understanding and support.

3-8. Participation, Social Inclusion, and Open Process

The combination of opening how to get things done (Open Process) together with providing the means to execute the process steps online (Open Services) offers convenience, leads to increased participation, enhances social inclusion, and strengthens civil society.

3-9. Open Data Platform @ DATA.GOV.LB

Establish the open data platform and help agencies publish high-quality open datasets to promote transparency in government and enable entrepreneurs to innovate in the co-creation of public services. The open data platform shall adhere to the *Protection of Personally Identifiable Information (PII) in Public Clouds (ISO 27018)* Standard. The Open Data portal data.gov.lb is currently under development at OMSAR and it shall be administered and managed by the Central Administration of Statistics (CAS).

3-10. Performance Management

Rooted in the desire to improve government transparency and efficiency, OMSAR was tasked to drive a modern performance management approach across government. This comprehensive performance management program requires the public administration to both measure performance for improvement and use those measurements as a basis for performance budgeting and strategic planning. The lack of vital operational information and financial data are the major challenges faced because these are often inaccessible in silos, scattered, or inconsistent.

A future connected digital government exhibiting seamless secure access to shared data with supportive horizontal cooperation and an embedded culture of transparency will dramatically improve the situation. As we implement digital transformation programs, we will standardize performance data, increase transparency and accountability, produce data-driven insights, evaluate goals, and continuously strive to improve performance over time. These game-changing developments, stimulated by digital transformation, will make true performance management more feasible than ever.

Foundation 3. Modern, Secure, Universally Accessible, and Affordable Digital Infrastructure and Information Security Management and Risk Management System

Lebanon ranked 95 out of 141 countries regarding ICT Adoption on the latest Global Competitiveness Index (2019), due in part to multiple infrastructural challenges including:

- poor electricity supply quality

- low internet speeds (average of 7.94 Mbps compared to a global average of 74.32 Mbps),

- relatively low fixed broadband subscription rate (6 per 100 people compared to a global average of 16)

- lack of a fiber optic network infrastructure.

Below is a snapshot of key digital indicators for Lebanon:

Key Digital Indicators	
National Digital Strategy	√
National Portal	√
ITU Global Cyber security Index (GCI) 2021 (Highest 100, Lowest 0)	**30.44**
UN E-Government Development Index (EGDI) Rank 2020	**127**
UN Online Services Index (OSI) 2020 (Highest 1, Lowest 0)	**0.4176**
World Bank Human Capital Index (HCI) 2020 (Highest 1, Lowest 0)	**0.6567**
UN Telecommunication Infrastructure Index (TII) 2020 (Highest 1, Lowest 0)	**0.4123**
UN E-Government Development Index (EGDI) 2020 (Highest 1, Lowest 0)	**0.4955**
Transparency RTI Right to access information 2020 (Highest 150, Lowest 0)	**70**
Transparency - World Wide Web Foundations Open Data Barometer 2019 (Highest 100 Lowest 0)	**6**
WGI Accountability Index 2020 (Highest 2.5, Lowest -2.5)	**-0.494**
DESA E-Participation Index 2020 (Highest 1, Lowest 0)	**0.496**
WGI Effectiveness Index 2020 (Highest 2.5, Lowest -2.5)	**-0.833**
WIPO Global Innovation Index 2020 (GII) (Highest 100, Lowest 0)	**26.02**

Note: shade cells indicate that Lebanon is in the bottom half compared to other countries globally.

Table 8. Key Digital Indicators

Digital inequality is evident between communities living in urban areas and those living in rural settlements; between socioeconomic groups; between less economically developed areas and more economically developed ones; between the educated and uneducated population; between middle/high-income and low-income communities/citizens. Gender also figures in the relationship regarding the use of technology and age is clearly a barrier towards technological change and development for many of the older generation. Individuals living with physical disabilities are often disadvantaged when it comes to accessing the Internet.

All information held and processed by an organization is subject to vulnerabilities inherent in its use and subject to threats of attack, error, and acts of God, e.g., flood or fire. Information is generally considered an asset, which has a value requiring appropriate protection against the loss of availability, confidentiality, and integrity. Enabling the availability of accurate and complete information, in a timely manner, to those with an authorized need is a catalyst for government efficiency (LITS, 2019).

Security must be embedded into all applications as the first line of defense. To achieve such level of security, the Government of Lebanon must adopt the Security-by-Default approach, whereby the security controls embedded in an application are, by default, set at the highest levels of protection. This is one of the hallmarks of being more proactive in securing data: Protection is the default posture. In other words, all Information Security Management Systems (ISMS) should be Secure-by-Design (LITS, 2019).

By using such standards, organizations can develop and implement a framework for managing the security of their information assets, including financial information, intellectual property, employee details, and information entrusted to them by customers or third parties. As per the ISO Standard 27001, any organization must establish, implement, maintain, and continually improve an Information Security Management System (ISMS), in accordance with the requirements of this international standard. The ISMS uses a framework of resources to achieve an organization's objectives. The management system includes organizational structure, policies, planning activities, responsibilities, practices, procedures, processes, and resources.

Information security includes three main dimensions: Confidentiality, Integrity, and Availability, the CIA Triad. Information security involves the application and management of appropriate security measures to consider a wide range of threats, with the aim of ensuring sustained business success and continuity while minimizing the impact of information security incidents.

Information security is achieved through the implementation of an applicable set of controls, selected through the chosen risk management process and managed using an ISMS, including policies, processes, procedures, organizational structures, software, and hardware to protect the identified information assets. The ISO Standard 27005 for Information Security Risk Management (ISRM) shall be used for assessing, mitigating, and managing risks. These controls must be specified, implemented, monitored, reviewed, and improved, where necessary, to ensure that the specific information security and business objectives of the organization are met. Relevant information security controls are expected to be seamlessly integrated with the governmental processes.

3-11. INCLUSIVE DIGITAL INFRASTRUCTURE

In a digital world, leaving no one behind increasingly means leaving no one offline. In that regard, barriers to digital inclusion can be categorized into four critical dimensions: access (lack of efficient and affordable ICT infrastructure), affordability (prohibitive costs), skills (digital illiteracy) and awareness (lack of awareness of the benefits of the Internet and ICTs)[2]. Thus,

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[2] UN DESA Policy Brief no. 92. "Leveraging digital technologies for social inclusion." https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2021/02/PB_92-1.pdf

closing the digital divide starts with increasing physical access through ICT infrastructure, and governments have an important role to play in promoting universal access in a whole-of-society approach. Examples include Botswana, which plans to connect 203 villages to high-speed broadband Internet in 2021 and 2022 and ultimately provide Wi-Fi hotspots in public places across the country.[3]

The framework aims to build inclusive digital ecosystems revolves around people, the government, infrastructure, regulation, and business. A modern, secure, highly accessible and affordable digital infrastructure is part of a solid foundation for an inclusive national digital ecosystem.

Setting requirements for speed, technology, and coverage to drive forward favorable business environment and connect those who are marginalized and underserved, including low-income communities, rural, remote, or isolated populations. The aim is to incrementally deploy top-notch technology (e.g., innovative business model, data centers and clouds, satellite technology, connections to renewable electricity source, 5G systems, etc.) that will drive scalable and sustainable solutions to all, consistently with the digital maturity achieved by the country. It will be critical to establish Innovative financial and business models to finance these for LDC and crisis countries, sometimes costly but indispensable local technological infrastructures.

Providing the existing legal, regulatory and governance frameworks that incentivize investment in high-speed broadband networks will be key for Lebanon's digital transformation. Lowering entry barriers and easing both fixed and mobile network deployment is essential to increase the access and use of high-speed broadband services at competitive prices.

The Government's digital strategy implementation roadmap will include plans to:

- foster investment, increase competition by eliminating entry barriers for new operators and better regulation,
- develop a comprehensive plan on investment in communication infrastructure and providing communication services for the most vulnerable.

3-12. CYBERSECURITY

Cybersecurity addresses substantial risks that could potentially affect state sovereignty, while at the same time, acting as a key enabler for delivering immensely improved public services. Confidence in the government's cybersecurity measures and transparency in the use of personal information are vital for gaining citizens' trust and for attracting more people to do business online. Cybersecurity is a key challenge for Arab countries, not only because of the low levels of online services use in government, commerce and social services, and the resulting low levels of disclosure of critical personal data, e.g. bank accounts details, health information, characterize use patterns in Arab countries (ESCWA, 2017).

Good practices in privacy, protective security, and resilience underpin the government's ability to safely and appropriately use, reuse, and share information to transform citizen-centered

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[3] OECD 2021. "Development Cooperation Report 2021: Shaping a Just Digital Transformation". https://www.oecd-ilibrary.org/sites/aee58e91-en/index.html?itemId=/content/component/aee58e91-en

services. This also means that government security practices must keep pace with a constantly evolving threat environment. Responsibilities for data security, protection, and privacy must be defined so that citizens and stakeholders are assured of the effectiveness of the security of their information (Oueidat, 2018).

Digital transformation in an open government must be secured through:

- Building capabilities to prevent, detect, and respond to cyber-attacks, manage incidents, and secure services.

- Pursuing a systematic, collaborative, and comprehensive cybersecurity approach that embraces international best practices, including continuous security enhancements to the network, products, systems, and application security as well as operating within a strong governance framework.

- Guarding citizens' privacy, providing transparency in the use of personal information, and ensuring that security is applied in digital services.

- Raising awareness, increasing knowledge, promoting expertise, and strengthening international cooperation.

- Improving the technical, legal, and cultural means of preventing and combating cybercrimes.

In line with international best practices, the capabilities of the Government of Lebanon must include a:

- National Cybersecurity Emergency Response Team (CERT-LB), to provide benchmark advice and assistance focusing on cyber incident prevention, handling, and reporting. CERT-LB will collect and share cyber-threat intelligence within Lebanon and with national CERTs in partner states.

- Government Cybersecurity Operations Center (CSOC) to monitor real-time digital operations, identify cyber risks, and execute mitigating actionable plans in response.

- Cybersecurity assurance entity that provides comprehensive confidential security testing services for digital government programs including hardware devices, networks, products, software code, and digital services.

- Lightweight scheme, i.e., Cyber Essentials, to encourage the adoption of basic cybersecurity hygiene, in both public and private sectors.

- Cybersecurity education campaign for citizens and civic servants as well as teaching the cybersecurity subject in schools and university curricula to address the shortage of skills.

On August 29, 2019, the Council of Ministers adopted the Lebanon National Cybersecurity Strategy, taking into consideration the need to establish the National Cyber and Information Security Agency (NCISA) and place it directly with the Presidency of the Government and make it part of the Supreme Defense Council. In the era of a digital economy, the focus must shift from securing network perimeters to safeguarding data spread across systems, devices, and the cloud. The automation of virtually all government processes and the increasing digital connectivity of the entire value chain create agility, but they also significantly raise cybersecurity risks and threat levels.

The key to addressing those risks and threats is building security into applications, as well as into interconnected devices, right from the start. Running ICT systems in the cloud supports

organizational flexibility. To that end, government entities are encouraged to move both data and business functions, e.g., human resources and procurement, between the cloud and on-premise legacy systems. All activities related to cybersecurity shall be aligned with the National Cyber Security Strategy, in which the roles of all stakeholders are well clarified and addressed as cybersecurity and Cybercrime are part of the national defense strategy.

3-13. DATA PROTECTION AND PRIVACY

Since the ethical use of data is an increasingly important topic of discussion among OECD member countries, the Lebanese government should establish a specific data ethics framework that regulates the purposes for which the data is used and identifies the tools and techniques that enable citizens to control their data (Van Ooijen, Ubaldi, & Welby, 2019; Vasconcelos, 2019). Data protection is equally important for the government's ability to deliver new digital services. The system for protecting public and private data for citizens must take into account the laws, decrees, rules of conduct and decisions approved and issued by the relevant Lebanese authorities, including the government, the Parliament, the National Agency for Cyber Security when it is formed, and other relevant authorities that currently exist or may be established in the future and that have the responsibility to protect existing data within the public sector in the Lebanese Republic.

Data privacy is not achievable without data protection, and one cannot have data protection without information security. Digital transformation projects create new risks as technology implementers must deal with personal data, data classification, data protection, and data security. The implementing agencies of this strategy must protect any information related to a known or identifiable natural person.

Please refer to the **E-Transactions and Personal Data Law** section below for further details.

FOUNDATION 4. BUSINESS CONTINUITY MANAGEMENT SYSTEM

Business Continuity Planning (BCP) focuses on maintaining business operations with reduced or restricted infrastructure capabilities or resources. If the continuity of the organization's ability to perform its mission-critical work tasks is maintained, BCP can be used to manage and restore the environment. If the continuity is broken, then business processes would stop, and the organization would enter disaster mode (LITS, 2019).

The goal of Business Continuity Management (BCM) is to provide the organization with the ability to respond effectively to threats, such as natural disasters or data breaches and to protect the organization's interests (ISACA, 2019). BCM includes disaster recovery, business recovery, crisis management, incident management, emergency management, and contingency planning. According to the ISO 22301 Standard, a Business Continuity Management System (BCMS) emphasizes the importance of:

- Understanding continuity and preparedness needs, as well as the necessity for establishing business continuity management policy and objectives.

- Implementing and operating controls and measures for managing an organization's overall continuity risks.

- Monitoring and reviewing the performance and effectiveness of the business continuity management system.

- Continual improvement based on objective measurements.

3-14. GOVERNMENT CONTINUITY OF OPERATIONS

Organizations and agencies must create fault tolerant systems and redundant data storage so that sensitive data is maintained through an emergency. These entities must also invest in redundant hardware systems so that an office can still function if a local site is compromised. Continuity of operations planning involves the development of individual processes and applications to continue directly after a crisis. The Continuity Of Operations Plan (COOP) establishes policy and guidance to ensure that critical functions continue, and that personnel and resources are relocated to an alternate facility in case of emergencies (ISACA, 2019). The government continuity of operations plan must take into consideration the budget required to maintain the availability of any service provided to citizens including the required cost of operations for all data systems and information security systems, which keep those systems operational.

Figure 7. Government Continuity of Operations

3-15 RESILIENCE AND DISASTER RECOVERY

Disaster recovery planning (DRP) steps in where Business continuity planning (BCP) leaves off. When a disaster strikes and a business continuity plan fails to prevent interruption of government activities, the disaster recovery plan kicks in and guides the actions of emergency-response personnel until the end goal is reached, which is to see the government restored to full operating capacity in its primary operations facilities. The disaster recovery plan must be set up so that it can almost run on autopilot. The DRP is designed to reduce decision-making activities during a disaster as much as possible. Essential personnel shall be well trained in their duties and responsibilities in the wake of a disaster and must know the steps they need to take to get the government up and running as soon as possible. To recover governmental operations with the greatest possible efficiency, public sector organizations must engineer their disaster recovery plan so that those functions and services with the highest priority are recovered first (LITS, 2019). Therefore, critical government functions must be identified and prioritized to determine which functions to restore after a disaster or failure and in what order (Oueidat, 2018).

Resilience and disaster recovery in digital transformation are generally seen as an operating cost rather than drivers of value. Although the government puts a lot of investment into system

availability, new digital technologies are considered as the drivers of value while resilience and disaster recovery are viewed as an expense rather than an investment. However, meeting business KPIs and preventing technology disruptions are very closely linked. When undergoing a digital transformation, it is important to consider how other areas, such as resilience must be transformed as well. Poor resilience means that all the benefits of new technology could be undone because of the high costs of recovery, damage to reputation, loss of revenue, and loss of citizen data (ISACA, 2019). The government needs the best technology to differentiate itself, but also must be resilient enough to ensure these benefits.

Pillar 1. People

Largely, the Lebanese people are well educated and entrepreneurial by nature. They are talented, multicultural, multilingual, ambitious, and technology-literate, which are qualities that allow them to be flexible and adaptable to changes, quickly. Such qualities are essential prerequisites for communities seeking to leverage opportunities arising from the digital transformation era. Consequently, it is imperative for the Government of Lebanon to develop a strategy and adopt a set of actions to take advantage of the potential prospects driven by the latest technological advancements.

The vital and unswerving goal of this strategy is to unleash the potential of the Lebanese people. The Lebanese citizen deserves a better quality of life with more choices, improved expectations, and better services. The interaction between citizens and the government departments must be seamless, easy, and built on transparency, trust, accountability, and efficient procedures. The Lebanese citizen be it an executive, an entrepreneur, a student, an expatriate, or just a regular citizen is at the heart of this strategy; thus, we believe that the aim is the people and not the technology.

Even though we envision all basic services to be delivered through unified, seamless, and standardized procedures, we also anticipate growing needs for tailored services when it comes to transactions that are more complex. Citizens worldwide are becoming more demanding, and they expect more tailor-made services. Hence, this strategy accommodates for agile digital tools and proposes technical platforms that provide efficient tailor-made and personalized services.

The Lebanese citizens deserve better quality services driven by advanced digital platforms that boost business opportunities and bring better quality of life by reducing bureaucracy and eradicating bureaucratic red tape. Benefits of such platforms will be extended to serve residents, investors, and visitors of Lebanon to reinstate Lebanon as a regional hub for entrepreneurship, investment, and tourism. The proper use of technology tools creates vast opportunities to the optimal utilization of Lebanese talents.

During the preparation of this Digital Transformation Strategy and the Implementation Plan of 2019, the OMSAR Digital Transformation committee held more than 290 consultations and meetings with major stakeholders and people whose daily lives will be affected by the transition toward a digital economy. Citizens and interest groups shall continue to be consulted in the design and rollout of critical technical platforms, such as identity management, electronic health records, and interoperability systems. We will engage in consultations for the adoption of new services like cloud, Blockchain, Internet of Things (IoT), and Artificial Intelligence (AI). Citizens and residents must be assured that their personal data are governed by transparent rules and procedures as per a declared mutual agreement. Technological advancement does not only provide tools for better services and enhanced public service delivery; such tools can

also be leveraged to enhance the social structure and to boost the cultural qualities of the Lebanese community.

Lebanon has a long history of democracy and civic engagement and had an active role in the universal declaration of human rights in 1948. Modern technological tools can build on this culture of openness and democracy to establish new channels for communication and engagement between the government and the citizens. Such tools will open the door for effective public consultation and real engagement of the various interest groups in public policy development. The technological platforms for public consultation and citizen engagement, to be developed under the digital transformation program, shall leverage modern management tools and advanced legal frameworks, such as Open Government, Regulatory Impact Assessment, Access to Information, and more.

During the implementation of this strategy, the government shall capitalize on the skills and competencies available in Lebanon, at the level of the individuals, businesses, industries, and civil society whose talents and achievements are valuable resources in the digital transformation implementation process. Once a sense of partnership is established, the various constituents of the Lebanese society and economy will inevitably contribute to the success of implementation and to the sustained advancement of the targeted transformation.

Figure 8. Pillar 1 – People

3-16   CITIZEN CENTRIC SERVICES

The *citizen-oriented* vision of e-government is not a new concept. It is like the concept of *customer orientation* used as a theoretical pillar of *market orientation* tied to company performance (Gotteland, Haon, & Gauthier, 2007). The concept of market orientation implies both a *responsive* market orientation, which addresses the expressed needs of customers, and a *proactive* market orientation, which addresses the latent needs of customers (Gotteland et al., 2007). A *Citizen-Oriented* digital transformation vision ultimately theorizes how to achieve the ambitious objective to make the citizen the heart of the action and the transformation of government with the knowledge of the methodology and procedures for citizen participation in the process. In fact, technology and digital government can facilitate

interactions between governments and citizens, improve public services, ensure openness, and prevent corruption (UNDESA, 2016).

As per the World Bank assessment done in 2018, from the very first e-Government strategy developed in 2002, citizen-centricity, or user-centricity, was always the basis, with user covering the following categories: citizens, businesses, government employees, and government entities. Over the last 15 years, the Government of Lebanon has conducted many workshops, forums, conferences, and working groups for the various user categories, with the aim of exchanging views on digital transformation, in general, and those of e-services of relevance to each user category. However, the lack of guidelines for government entities to facilitate and maintain citizen participation is still an issue for leveraging the whole approach to citizen centric services.

The digital government strategy announced in 2018 took the focus of citizens to the next level by structuring user services in time-based categories, allowing for direct and intuitive access to the digital services on the government portal. As such, the government should set the path to build a strong partnership between the public sector and the citizen.

The main objectives are to strengthen the capacities of citizens and increase their involvement in the policy dialogue with the Lebanese government. E-services shall be categorized into specific categories, such as life events, business services, legal services, healthcare service, and employment services to facilitate features personalization, life event alignment, transparent reporting, and data accessibility.

3-17 CIVIL SERVANTS

Digitization changes the mindset and practices of employees who are involved in the public service delivery process. Moreover, digitization leads to the creation of new public sector positions that require new proficiencies. Jobholders must acquire and demonstrate these competences. Digitization will enrich the existing jobs; or will transform them into different jobs to meet the challenges of the digital era.

Civil servants must stay up to date to acquire new aptitudes and refine existing skills. All employees are concerned with digital transformation. Some of them have a major contribution to the innovation of digital solutions in collaboration with digital transformation units and ICT firms; while others are more concerned with applying the solutions in the workplace. The jobs and competences vary, accordingly; thus, the organizational structures of ministries and public agencies must be redesigned, existing job structures re-examined, simplification and revisiting of procedures in ministries, and new job descriptions developed to be aligned with the digitalization to accommodate the digital government developments.

Digital transformation will not happen on its own. Qualified people are crucial to a successful outcome. The GoL is lacking digitally skilled employees and must hire competent individuals who can shepherd digital transformation projects. Based on Article 21 of Law No. 46/2017 in place, it is forbidden to hire and contract anyone in public administration at all levels and in all specialties, after August 21, 2017, except by a decision by the Council of Ministers based on an investigation by the Research and Guidance Department of the Civil Service Board (CSB). Consequently, a special task force must be set up to work with the Program Management Office, the Steering Committee for Digital Transformation (SC4DT), and the Ministerial Committee for Digital Transformation (MC4DT) to seek approval by making specific

recommendations to the Council of Ministers about critically needed positions to be filled in the public administration.

3-18   CITIZEN AWARENESS CAMPAIGN

The implementation of a transparent process and a clear roadmap for a digital transformation must be combined with an effective citizen awareness plan to educate the citizens on the value and benefits of utilizing government digital services (ISACA, 2019). The objectives of this plan are to build citizen trust in government in general, and e-services specifically, to ensure transparency and clarity in the e-services offered, and to encourage a citizen-centric approach.

The following are the suggested tools and activities:

- One national campaign that reinforces the trust of citizens in the government as a modern, beneficiary-centric public authority that provides high quality e-services to its citizens professionally and efficiently;

- Public service announcements, e.g. educational awareness videos, posters, and billboards;

- Annual surveys to measure citizen satisfaction with the services that government entities offer;

- Social Media engagement to reach out to the youth and next generation of citizens;

- Interactive, modern, updated, and mobile-responsive unified portal;

- Media and press engagement;

- Awareness sessions in schools, universities, professional organizations, syndicates, and NGOs;

- Online mechanisms, such as Issue Tracking Systems (ITS), provided for citizens feedback and exchange.

3-19   E-PARTICIPATION

It is essential to engage stakeholders; i.e. citizens, civil society, public and private sectors and others, to maximize learning and benefits of digital transformation. New strategies in e-government, such as citizen-centric government digital services revolve around citizen engagement and participation (United Nations, 2005).

Promoting engagement of the citizens is the cornerstone of socially inclusive governance. The aim of e-participation initiatives is to promote access to information and to serve as a catalyst for citizen engagement by turning them from passive agents to active agents. The more the citizens are involved in the process of consultation and decision making, the more benefits they derive from them by adapting them to their own needs and expectations. E-participation is also an opportunity to leave no one behind by extending public services to those who need the most.

E-participation is "the process of engaging citizens through ICTs in policy, decision-making, and service design and delivery so as to make it participatory, inclusive, and deliberative" (United Nations, 2018, p. 112). It measures e-participation through the E-Participation Index (EPI) based on: (i) e-information – availability of online information; (ii) e-consultation – online

public consultations, and (iii) e-decision-making – directly involving citizens in decision processes (United Nations, 2018). EPI is part of an index that UNDESA uses to rank countries on e-government. The index ranks Lebanon 148th over 193 countries in the world for the year 2020. Below are suggested initiatives for e-participation:

1. Establish a platform for e-participation.

2. Launch an information campaign, advertising in several media, social media, newspapers, education on several issues, e.g., Digital services and how to use them, benefits of digital transformation, security, and more. Social media campaigns include Like/Dislike or quick surveys.

3. Establish a digital transformation website and social media to inform the Public about issues related to digital transformation.

4. Create incentives for using e-services and encourage feedback by having prizes, competitions, and special features.

Between August and October of 2019, two public polls were posted on the OMSAR website and promoted on the ministry's social media channels. The first poll asked respondents to rate the importance for their ability to transact with the public and private sectors using a digital ID on their mobile device. There were 705 responses distributed as Very High (57%), High (30%), Neutral (4%), Low (2%), and Very Low (7%). The same poll was posted on Facebook and taken by 67 respondents who chose High (91%) and Low (9%).

In the second poll taken by 663 respondents, citizens ranked Civil Extract (52%), Judicial Record (35%), and Proof of Residence (13%) as top priority items to be eliminated through government digital services. The same poll was taken by 188 respondents on Facebook, and they preferred Civil Extract (82%) over Proof of Residence (18%).

3-20   Public Engagement

Digitization is one of the tools for democratization. The deterioration of public trust in public administrations worldwide is one of the serious deficiencies of the contemporary public sector. With the rise in literacy rates and social media, citizens became more aware of their rights and more expressive of their demands. Digital transformation does not only provide better opportunities for communicating public information and for delivering services, but it also enhances the channels through which citizens and civil society organizations articulate their interests and convey their expectations.

Through ICT tools, the policy-making process can be opened to wider segments of the population to provide their input and communicate their concerns to the government over issues that affect their daily life and business. Public engagement that utilizes technology will enhance the quality of laws and regulations, which in turn will increase the chances for the better implementation and acceptance of government decisions.

3-21   Capacity Building

Digitalization is changing the way government functions and delivers services as well as the ways through which citizens and businesses deal and interact with governmental service providers. As the digital transformation journey begins, it is important that no one lacking digital

skills and knowledge is left behind. Capacity building is one of the important action areas intended to close the digital divide, connectivity, and access to technology within and between countries (ESCWA, 2017).

3-21.1   Digital Skills

Digital transformation is pioneered by creative minds but requires employees and service users who have the right mix of skills to make the transformation happen. Thus, technology is not the only element. The smooth and incremental transformation requires the right talents to champion and execute the transformation.

To facilitate the digital transformation process, the Government of Lebanon must identify the digitally skilled in-house talents who are competent to lead and likely scattered across different public entities (ISACA, 2019; LITS, 2019). However, in a fast-changing environment, shortages of these talents in the public sector must be addressed by recruiting resources from outside or by outsourcing certain functions provided that such activity is more cost-efficient and does not diminish core competencies.

Although some jobs might become obsolete because of digitalization, new jobs will be created and performing the same job using new methods and tools will be needed. Such evolution will require the upgrading of skills or reskilling for better management of human resources. Providing the appropriate level of digital skills to the different segments of the targeted audience requires the development of different training programs that are diversified in breadth and depth. The training population will be segmented to include policy makers, program and project managers, heads of units, administrators, IT specialists, employees, businesses, and citizens.

3-21.2   National Digital Academy

The Office of the Minister of State for Administrative Reform (OMSAR) has established an e-Learning portal, which is being transformed into a hub for a national digital academy portal. This digital academy is for orientation and training, accessible by different segments of the targeted users, the civil servants, and the population at large. Through this portal, government staff will be provided with e-courses to make them receptive and facilitators of the digital transformation process with its change aspects.

The courses will be offered at various levels to meet the development needs of IT and non-IT specialists (the latter need to be introduced to the concept with its opportunities for the administration), and of employees of different managerial grades in the hierarchy of the administration. New recruits will be offered introductory courses for better onboarding and engagement in the digital transformation endeavor. Workshops that require the attendance of trainees will take place and will be complemented with e-courses according to a comprehensive blended learning approach.

In partnership with the top higher education institutions in Lebanon and professional associations, the Digital Academy will be expanded into a virtual digital academy, whereby courses, with unified curriculum, will be offered and served by universities on dozens of campuses in across all Lebanon. All the universities who are supporting the national digital academy initiative have committed to provide their services at no charge to the Government of Lebanon.

The Digital Academy will also target civil society organizations, citizens, and businesses with

special emphasis on Small and Medium Enterprises (SMEs) for a more enhanced electronic interaction with the government departments. This initiative will contribute to the efforts of building and strengthening trust between the private and the public sector. Through this e-learning initiative, the various parties that deal with the government administration will understand better the government policies and procedures and will improve their competences to meet the new digital requirements. This type of involvement will promote transparency and public engagement, two of the main characteristics of good governance. The Lebanese National University will be mandated to play the coordination and oversight role of the National Digital Academy.

3-21.3   Apprenticeships

The Government of Lebanon shall institute a new national apprenticeship program to enable undergraduate and graduate students, in public administrations across Lebanon, within a variety of disciplines to gain insights into how government works and appreciate the nature and scale of the real problems faced by digital government. Apprentices use their knowledge in new technologies to contribute to innovative solutions as they gain exposure into possible public sector employment opportunities and prospects for professional growth (LITS, 2019).

The Government of Lebanon apprenticeship program will benefit from the educational background and dynamism of university students who come from different disciplines to contribute to the digital transformation process from the technical, administrative, and communication perspectives. The fresh bold ideas that these interns generate will support the innovation of new digital solutions. In return, the apprentices will familiarize themselves with the public administration and become more appreciative of the essential role of the public sector in society.

3-21.4   Retired and Senior Volunteer Program

OMSAR is instituting a new national Retired and Senior Volunteer Program (RSVP) to provide grants to qualified public sector entities to engage persons 55 years and older in volunteer service to meet critical knowledge and skills needs and to provide a high-quality experience that will enrich the lives of volunteers across Lebanon.

3-21.5   eLearning and Distance Learning

Digital transformation does not only change the channels of service provision and communication, but it also offers new tools for learning and training delivery. Distance learning, through Web-based applications, widens the opportunities for well-designed career growth, as well as for self-development of government employees. Electronic and blended courses along with relevant material create a conducive environment for digital transformation and human development. Such technologies will help civil servants to use technology anytime, anywhere, through various devices as one of the available means for the fulfillment of organizational objectives and personal development plans aiming at better performance.

Through accessibility to libraries of off-the-shelf, as well as of customized e-courses and work-related documents, the culture of learning will be widespread across the public sector to become part of the daily activities of staff who will in turn become life-long learners. OMSAR has launched the Human Resources Development Program, a pilot e-learning initiative that targeted 1,500 public sector employees in several public entities simultaneously. The scope of the project will be expanded, and more resources will be mobilized to keep the momentum

of this first initiative that implemented a wide scope across many organizations in the Lebanese public sector.

3-21.6   Digital Assistance

The digital assistance program targets citizens, in specific groups, who need help to perform more online activities. The Government of Lebanon will support coordinated activities from civic society, universities, vocational training centers, non-governmental organizations (NGOs), and private companies to entice more people to go online and to transact with the government's digital services. Moreover, it will also offer training and capacity building to public servants and staff to gain digital skills that enable them to serve the citizens, electronically.

3-21.7   Digital Accessibility

Accessibility, a concept previously applicable solely to physical space, is now applicable to the digital world, namely the Internet, digital media, Web applications, and mobile applications. As the audience gets wider audience, it is imperative for the Government of Lebanon to incorporate digital accessibility elements in digital transformation solutions (El-Gemayel, Hurayki, & Harmanani, 2019). By implementing the requirements Web Content Accessibility Guidelines (WCAG) 2.0 will make the Web solutions easily accessible to users with auditory, cognitive, neurological, physical, speech, and visual disabilities.

Pillar 2.   Innovation

The future of work will be determined by the battle between automation and innovation. In response to automation, employment in old sectors declines and in response to innovation, new sectors or tasks emerge (World Bank, 2019).

- We will publish open data by default and use data analytics to support future evidence-based government policies and performance metrics.

- We will develop comprehensive standards, guidelines, governance, and supporting tools to deal with the full lifecycle of the modernized data.

- We will provide a catalog of meta-data to enable their discovery and accelerate their use.

- We will create a cross government framework for data governance.

- We will establish unified digital platforms to simplify citizens' access to government services.

- We will modernize inter-governmental services for staff and managers.

- We will invigorate the Lebanese entrepreneurial spirit and Lebanon's digital economy.

3-22   INVIGORATING LEBANON'S DIGITAL ECONOMY

Current procurement processes inhibit local digital SMEs from being significant players in the government's supply chain; not only is this an obstacle to bringing innovations to government quickly but unhelpful to a budding digital sector with potential for exponential economic growth. Tapping into a well-educated, multi-lingual, creative, and technology-savvy new

generation, Lebanon is well positioned to become an international digital hub that accelerates the prosperity of the regional digital economy.

Tens of thousands of new jobs could be created every year. Policies supporting Lebanon's digital economy to thrive will not only contribute to the success of the technology industry but will also tremendously help to digitally transform our businesses and institutions making them more innovative, efficient, and competitive in a global marketplace.

- **Sustainable Development Goals**

    Governments, together with the private sector and civil society, are playing a central role in the implementation of the Sustainable Development Goals (SDG) – toward the achievement of the principles and goals of the 2030 Agenda throughout public institutions at local, national, regional, and international levels – to ensure that *Leaving No One Behind*, a key principle of the 2030 Agenda, guides all institutions, policies, and public service delivery (United Nations, 2016). Lebanon is an active participant in the 2030 Agenda and has been working diligently on achieving its SDG goals as set during the Sharm El-Sheikh Conference of 2015. Digital transformation is a key enabler for achieving, measuring, and monitoring progress toward the SDGs.
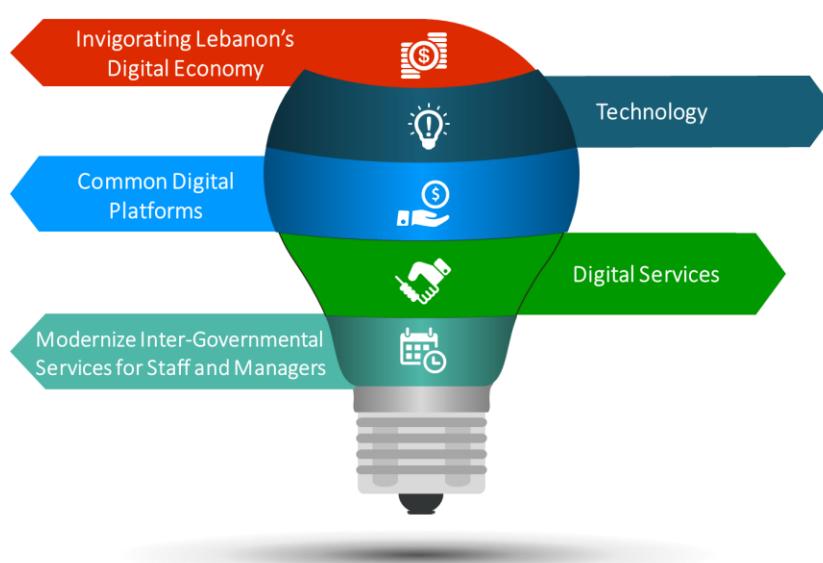
Figure 9. Pillar 2 – Innovation

- **Design Major ICT Projects as a Combination of Mini-Projects Suitable for SMEs**

    Our strategy is to assemble complex services out of smaller components, which can be developed in-house or procured independently from SMEs. Hence, the size, length, and value of the projects will change significantly to attract more proposals from SMEs. The digital strategy will result in a larger number of outcome-driven short-term contracts at relatively modest values.

- **Digital Marketplace Platform**

    We will create a Digital Marketplace Platform to help match supplies to demands; thus, we will increase the number and value of contracts won by SMEs. Pre-vetting companies,

publishing their ratings and feedbacks given by real users will help increase confidence and speed up automated agreements.

- **Data Accessibility through APIs to Accelerate Digital Industry's Innovations**

  Developing APIs will significantly fuel the digital economy among SMEs. First, APIs will stimulate a whole new digital eco-system of established companies and newly formed startups to create applications, present content, and offer transactions on behalf of the government. Second, there will be very large number of legacy database systems requiring transformation into canonical registers and interfaced to the open world through APIs.

- **Supporting More Businesses to Become Digital**

  We will promote collaborative projects funded by government and donors to support local municipalities, institutions, and businesses to adopt and use digital technologies effectively.

3-23   TECHNOLOGY

Information and Communication Technology (ICT) provisions are at the heart of public digital services. Until recently, most government agencies operated alone, designed, built, and operated their own technology solutions. Moreover, those agencies stored their own data in isolated silos.

3-23.1   Cloud-First Policy

New advances in technology have brought enormous innovations rapidly accelerating digital disruption. Game-changing cloud computing technologies have driven profound transformation to ICT provisions. The implementation of cloud-based solutions increases the agility, flexibility, scalability, robustness, and speed of delivery of digital services.   This implementation will make the government's technical capabilities agile, economically sustainable, cost-effective, and dynamically responsive to changing demands (LITS, 2019).

Adopting a cloud-first strategy results in cost-savings, scalability, reduction of human errors, rapid recovery ability, and a higher return on investment by unifying data centers, their devices, operational and application programs, while taking into account their security and the continuity of their work and operation (OMSAR, 2019c).

3-23.2   Cloud Risks

In cloud computing, there are significant security risks; consequently, it is important to understand and mitigate those risks to enable agencies make the right decisions. There is a shortage of knowledge and experience in assessing the risks, devising the right service level agreements, and implementing appropriate controls to monitor them. There is also resistance to change outdated operating models. So, the priority is to work collectively with government agencies, key stakeholders, and private cloud computing providers to devise a comprehensive government strategy to develop and sustain its ICT infrastructure and capability.

The cloud strategy will give agencies a clearer understanding of how government can harness the opportunity of cloud to increase agility, reduce duplication, improve efficiency, and deliver better services. The cloud strategy will provide the frameworks and platforms for agencies to ensure they have the confidence and capabilities to securely shift some of their services to the cloud. The GoL must conduct a national risk assessment for cloud systems to determine their

feasibility and the most adequate cybersecurity and personal data protection measures to implement (Oueidat, 2018).

3-23.3   Digital Transformation Unit

Ministries and government institutions will get use of employees within the ministry or institution with appropriate expertise (such as informatics units or others) until the ministry's digital transformation unit is established. Work will be underway to establish digital transformation units (DTU) in all ministries and in the Presidency of the Council of Ministers, which will be a national critical mass of digital experts and a fusion of specialists from technology, management, assurance, legal, and communication backgrounds. The DTU will be the catalyst for digital transformation and for co-creating smart ways for doing things across the government. The DTU will assume ultimate responsibility for user experience and will advocate modern approaches to the delivery of citizen-centered services.

The DTU will have specialist Internet-era knowledge hubs that operate horizontally across the government. Strategic focus areas include technology, data, digital services, cybersecurity, and digital skills. In addition to the DTU specialists, the knowledge hubs bring together expertise in strategic areas from various ministries and harness their talents to enable synergy in solutions to shared problems across the entire government.

The DTU will adopt an agile approach that harnesses the power of data, technology, and digital competence to accelerate the co-creation of innovative government-wide solutions. The DTU will promote collective coherent policies to make data accessible, to those who need it, and to support the deployment of new powerful mechanisms that enable secure access to information.

Figure 10. Digital Transformation Unit Hub and Spoke Model

The Digital Transformation Unit is an integral part of the overall governance structure of the digital transformation action plan. See the **Governance** section for more details. The DTU will:

- Champion citizens' needs and ensure that a comprehensive user-centric culture is enshrined in all government digital activities; particularly, in relation to citizen-faced information and transactional services.

- Create a digital transformation center of excellence with the involvement of universities, government agencies, businesses, and professional organizations.

- Conduct joint research in cooperation with the stakeholders.

- Establish a Web portal for sharing experiences and resources.

- Establish and maintain communities of relevant thematic areas, e.g. Cybersecurity, Open Government, Access to Information, and Anti-Corruption.

- Annual Awards for the best digital transformation project and innovative idea.

- Help the government operate effectively as ONE coherent healthy digital body.

- Introduce much-needed horizontal structures specifically designed to enable speedy integration of information and to support seamless assembly of joined up transactional services.

- Set standards for data and digital services across government to ensure quality, consistency, and compliance with international norms where applicable.

- Provide a program of support, guidance, and tools to help service teams meet the standards throughout lifecycle of each service.

- Oversee the development of shared solutions, common platforms, and tools for cross government usage.

- Use agile methods to deliver and continuously improve services for users.

- Support government departments and relevant agencies in the transformation, delivery, and continuous improvements of their transactional service projects making them user-centric, interoperable, secure, and adaptable to newly emerging requirements.

- Assist agencies to work across boundaries to enhance technology-enabled service delivery.

- Ensure alignment of ICT projects in each ministry with the overall government digital transformation strategy and agree on digital transformation priorities with each department.

- Help grow digital skills capabilities across government by effectively sharing technical knowledge and assisting with recruitment, training, and career development of digital specialists.

- Assist departments to share what they learn from exemplar digital transformation projects.

- Provide greater transparency to government on digital projects, assurance, costs, risks, and opportunities.

- Improve the way government uses technology, runs projects, and procures systems.

- The DTU shall utilize agile methods to simplify procedures and transform them into efficient government digital services.

3-23.4   Technology Building Blocks

Digital transformation depends greatly on solid technology building blocks, which must be robust, reliable, and scalable. These building blocks are essential to build a strong platform for digital services, focused mainly on digital-by-design and a citizen-centric user experience. Interoperability among the building blocks and other existing applications (OMSAR, 2019c).
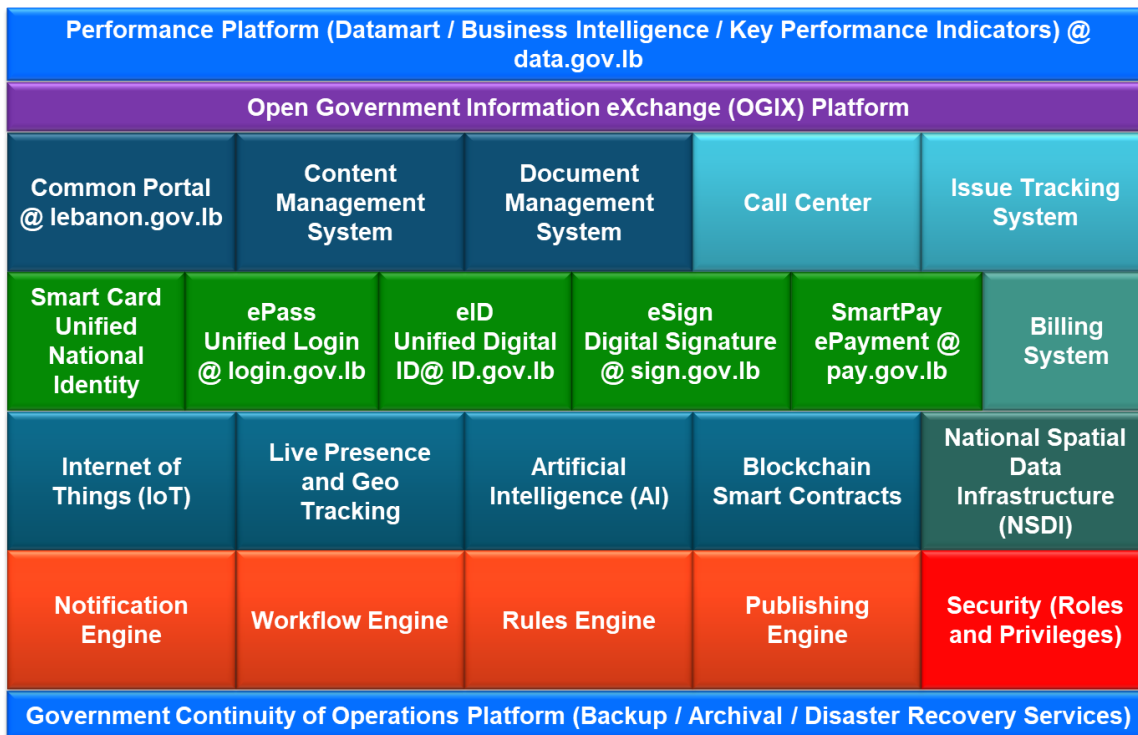
Figure 11. Digital Transformation Building Blocks

3-24   Common Digital Platforms

Some capabilities such as identity verification and payment are common to all valuable transactional services. Because each service is currently commissioned separately for each government agency, taxpayers have paid several times for repeated implementations of these systems. Each implementation is typically hard-wired into a service by a specific vendor; so, the implementation cannot be reused. Alarmingly, because each implementation has a different interface, the user must learn how to use each service from scratch, making the user experience much harder and less convenient.

The obvious approach is to implement each of these systems once as a building block and then reuse it (LITS, 2019). One should not reinvent the wheel and repay for the reinvention every time. With an Internet-era mind-set comes the realization that these building blocks are likely to be integrated in hundreds of new services. So, it is important to design these digital services right and, equally important, to make their integration into new services seamlessly easy. Hence, these services will be offered gradually as ready to reuse platforms.

With economies of scale, the common platforms form the central part of the digital government infrastructure and become enablers for seamlessly joining up multiple services across government departments. Such architecture enables end-to-end integrated transactions

involving several ministries. Common platforms will help make services interoperable and ensure swift and consistent enforcement of government policies (LITS, 2019).

The range of common components includes platforms for (1) identity verification, (2) payment, (3) notification, (4) service performance and (5) publication. This approach, of factoring common important functionalities and providing them as modular platforms for massive easy reuse, is being increasingly known as *Government as a Platform*. That is, the government will offer tools to help civil servants, stakeholders, businesses, communities, and society to interact, innovate, and do things together that were unimaginable before. In addition to the enormous financial savings, common platforms are key enablers for a much faster design of digital services and for a much happier user experience.

For instance, once the user makes payment in one digital service, and learns how to use it, it will be much easier to make a payment in a completely different digital service the next time. There are major long-term benefits to adopting common platforms. The system will continue to evolve with feedback from citizens and teams across government; thus, when new needs emerge, they can be incorporated quickly in the platform. Moreover, as the platform improves, hundreds of services that are built on it will benefit automatically from these improvements.

3-24.1   Data Catalogues

Data catalogues are management tools for metadata to aid the government, organizations, and users in finding and managing big amounts of data, providing a single source of truth, and gaining the most value from their data. However, protection of these data is crucial, and accessibility must abide by security measures, such as role-based access control security features, auditing, and encryption features.

Data Catalogues are within the scope of the first draft of the Lebanese Government Interoperability Framework (LGIF) and the Lebanese Government Interoperability Reference Architecture (LGIRA) which were approved by the Council of Ministers Executive Decision 76/2016. Consequently, the first version of the data catalogues was produced. However, the data catalogues are evolving and will be expanded along every step of the digital transformation action plan.

3-24.2   Data Dictionary

Because of the ever-growing volumes of data in the public sector and the growing needs for data sharing, it has become cumbersome for government agencies and information systems residing in those agencies to communicate and share information. This is because of the lack of standards put in for definitions of data formats and data stewards.

The Data Dictionary is within the scope of the first draft of the Lebanese Government Interoperability Framework (LGIF) and the Lebanese Government Interoperability Reference Architecture (LGIRA) which were approved by the Council of Ministers Executive Decision 76/2016. The first version of the data catalogues has been produced and will continue to evolve along with the upcoming digital transformation projects.

3-24.3   Data Platforms

Digital services are the engines, but data is the fuel powering the new digital eco-system. The most valued transactional services, by citizens, employees and businesses alike, usually involve access to one or more specific databases hosting various systems. Such data sources

include: Birth Records, Unique Identification Card Records, Tax Records, Health Records, Insurance Records, Academic Records, Criminal Records, Electoral Registry, Land Registry, Company Registry, Vehicle Registry, Driving License Registry, Visa Records, and Work Permit Records.

Data platforms are the pillars upon which the new Lebanese digital nation is founded. Each data platform is the single source of truth and system of record about some entity, such as an individual, a car, or a company. Data platforms are canonical and authoritative; and they can be checked for integrity and are made available to services after gaining the consent of the data owner (LITS, 2019). Governance, control, and risks shall remain within the remit of the legal owner of the data.

3-24.4 Data Security, Privacy, and Governance

Making the transition from working within a closed environment to an open government is a major challenge. However, technical issues can be overcome, and risks can be mitigated. Outdated technologies can be upgraded; legacy systems can be wrapped up with appropriate APIs to make them available outside their silos; and further customizable security wrappers can be added to grant access only to authorized entities.

Data will be encrypted at source instead of only relying on boundary firewalls to protect them. This opens new ways to store data on the clouds and mitigate insider cyber threats. Digital by Design will abide by the principle of having minimal access to personally identifiable information from the data platform.

3-24.5 Application Programming Interfaces (API)

Application Programming Interfaces (API) are snippets of software code that provide the required set of technical specifications to efficiently interact with and integrate with the various applications and systems. Software developers use APIs and Web Services as means to interface heterogeneous back-end systems to the open world. APIs and Web Services make the data platforms technology independent; thus, developers needing access to the data are neither restricted to a specific technology nor locked into a specific vendor.

APIs make machine-to-machine interactions possible and allow data discovery and use by other developer to design, develop, and deliver new innovative digital services. APIs and Web Services will ensure the integrity and security of government information as well as the privacy of personal data and consent to use for the intended purpose.

3-25 DIGITAL SERVICES

Transforming transactional services to the digital channel offers the greatest opportunity to improve efficiency in government and to provide a better user experience. There are major existing digital services (OMSAR, 2019c). The actual cost of a Web transaction is estimated to be just 1.1% of a face-to-face transaction and 3.5% of a telephone transaction (Socitm, 2016). So, by appealing to more people to use online services, the potential for government savings is great. Establishing a standard for digital services is important for the successful implementation of digital transformation (Australian Government Digital Transformation Agency, 2017). The Government of Lebanon shall set and apply a digital services standard to set clear and simple criteria for designing and delivering services.

The fact that current services rely on digitizing pre-Internet paper-based business processes that are not best suited to the digital era is preventing more people from using digital transactions. Moreover, most services do not offer end-to-end transactions and each service was designed independently with its unique user interface and set of assumptions. These issues lead to inconsistency in the user experience of interacting with the government and to unnecessary confusion. Finally, the most valuable services involve multiple components from different government agencies, which is very difficult to achieve in the current environment.

- **Digital by Default**

  We aim to transform public services to be digital by default and to increase user interactions dramatically. To achieve this goal effectively, it is vital to have a whole-of-government user-centered approach to service design. The objective is to make transformed digital services so efficient that they will deservedly become the user's preferred choice for interacting with the government. We do not intend to give ourselves a license to impose digital services across the entire public sector just for the sake of it.

  Digital by default could disengage the public and may, in some cases, result in a worst experience than that prior to the digitalization process. There could be some instances whereby a digital service might not be a better solution than what is currently done and so a Digital by Default approach shall be avoided.

- **Digital by Design**

  Digital by design is about implementing digital services because they add value for the stakeholders. What is most important is that digital is seen as a benefit, has value, and simplifies complexity in the lives of the stakeholders. Driving digital transformation while empowering those implementing it to make their own choices enables public servants to provide a high-quality experience for the citizens. In fact, it is people who push change through, not the technology.

- **Consolidate Shared Digital Solutions**

  Consolidate and modernize shared digital solutions to common core services, such as human resource functions, financial reporting, and secure email. The adoption of standards reflecting convergence around streamlined processes and simplified data is key to success.

- **Transform Transactional Services**

  Proactively transform transactional services to be digital-by-default thriving to make service's convenience to users the top design priority and to be more responsive to their needs. Keeping in mind that digital transformation is not about digitizing existing paper-based processes, but it is about inventing the best new way to deliver the service (LITS, 2019).

- **Transform Vital Software Components into Common Digital Platforms**

  Transform vital software components with massive utilizations, such as identity verification and payment, into common digital platforms that any service can reuse easily, swiftly, and cheaply. Each platform shall be developed and deployed only once, securely, with a pleasant user experience, at a low cost.

- **Disentangle Persistent Data from Specific Hard-Wired Applications and Environments**

Disentangle persistent data from their hard-wired specific applications and environments in collaboration with data owners across the government. In doing so, we will simplify, enhance, and convert these data into reusable openly accessible secure data platforms to power innovative applications and services.

3-26   Inter-Governmental Services Modernization

Every government department must deal with essential services for its employees, such as human resource functions, financial reporting, performance management, payroll, document archiving, job vacancies, and procurement. In addition, there are very basic services, such as secure email, document editing, management reporting, and video conferencing. Currently, each department provides some of these services on closed legacy systems with different levels of effectiveness and convenience to its users.

- **Increasing the Scope of Shared Services**

  The identified services are not designed for sharing. They are usually tied up to different technologies preventing them from being upgraded easily or used outside their silos. Increasing the scope of sharing these services through common government-wide platforms will achieve efficiency and deliver better user experience for the employees while at the same time keep pace with technology, improve security, reduce capital and operating expenses, and enhance assurance for the government.

- **Enablers for Sharing Unified Sustainable Services**

  First, modernizing these services requires separating the application part from the technology part upon which they operate. This will lead to wider long-term value, drive efficiency, and provide flexibility to pursue modern options. Second, agreeing and mandating standards reflecting cross-government convergence around simplified processes and data for these services. This will enable inter-operability and facilitate horizontal collaboration. Third, involving the actual users, particularly finance and human resources in all ministries, in defining common roles, agreeing global practices, and coordinating governance. This will make it much easier to enforce the unified practices across all government departments and promote convenience for staff and managers.

  This approach of decoupling applications from technology and standardizing simplified processes and data for core services will not only result in greater consistency and satisfaction for the end users but it will enhance staff productivity, improve management reporting, drive new innovation insights, contribute to a more joined up open government, lead to stronger data governance, and boost the ability to keep pace with the best available technology.

- **Develop a Strategic Whole-of-Government Approach to ICT Provisions**

  Develop a strategic whole-of-government approach to ICT provisions embracing new innovations in cloud computing, data centers, and virtualizations. Provided relevant risks are adequately mitigated, this will facilitate secure sharing of resources, improve delivery of digital services, and enhance resilience. The current practices of having each public entity procure, deploy, and operate its own equipment and data centers are both unsustainable and highly costly. The provisioning of cost-effective shared services is a pre-requisite for a successful digital government.

Pillar 3.   Processes

In digitizing services, we must cater for the user's needs: citizens and businesses. We must seek for innovative ways to improve their experiences. To digitize a process effectively, we will streamline the inefficient processes and simplify their procedures before automating them.

3-27   GOVERNMENT ORGANIZATIONAL STRUCTURE

Most of the laws, decrees, and decisions that govern and regulate the work of the institutions of the public administration date back to the late 1950s and early 1960s, with minor amendments that were introduced at later stages. Article 12 of the Constitution of Lebanon states that every Lebanese has the right to hold public positions, and that access to such positions is always made based on merit and competence. The Legislative decree No. 112/59 (Public Sector Employees Regulations) and its amendments regulate conditions of employment of persons in the public sector.

3-27.1   Public Administration Employment

Central government employees in Lebanon fall into four categories (a) civil servants, (b) contractual employees, (c) temporary employees, and (d) daily paid workers. The following is an overview of the types of positions that constitute the government organizational structure:

- **Public Sector Civil Servants** are employees working as part of the public administrative workforce called *Cadre*. All issues related to their work are supervised by the oversight bodies, such as the Civil Service Board, Central Inspection Board, Court of Accounts (CoA), and the Higher Disciplinary Council (HDC). Civil servants are paid monthly salaries and they are subject to the provisions of Legislative Decree No. 112 of 12 June 1959.

- **Contractual Employees** receive a monthly salary and are subject to the provisions of Decree No. 10183 of 2 May 1997 related to contracting terms and conditions.

- **Temporary Employees** are persons who have been assigned to a position that was established for a specific period or for a specific job. They are subject to the provisions of Legislative Decree No. 112 of 12 June 1959.

- **Daily Workers** are the workers whose stipend is calculated daily and are subject to Decree No. 5883 of 3 November 1994.

Figure 12. Pillar 3 – Processes

3-27.2 Public Administration Laws

In the late 1950s, Lebanon's Public Administration suffered from corruption, feudal and confessional alliances, favoritism in nominations in the public services, primitive equipment as well as from the lack of competences and efficiencies. To address this situation, the Central Inspection Board (CIB) was created with the mission to monitor and control the government employees' work and improve the services provided to the citizens. On the same date of June 12, 1959, the Civil Service Board (CSB) was established to handle the nominations, replacements, and promotions of employees based on merit while imposing university qualifications, entry exams, and replacing the widely spread political favoritism with that of professional merit. The National Institute of Administration, also known as the École nationale d'administration (ENA), was established to provide training to government employees to enhance their knowledge, skills, and competencies.

Major laws, decrees, and secondary legislation related to human resource management in the public administration were created in the 1960s. The Lebanese legal system covers the fundamentals of the components of modern Human Capital Management (HCM) Systems:

- Recruitment is merit based

- Public administration is governed by laws and regulations

- Civil servants are organized in categories with a gradual bureaucratic advancement system

- Inspection and regulatory institutions exist to frame and assist public administrations to obey laws

Notwithstanding the avant-garde spirit of the abovementioned legal framework in the 1960s and 1970s, these laws are now considered to be outdated as the malpractices caused by numerous factors led to an administration characterized by the following:

- Outdated organizational structures

- Diversified nature of public employment:

- o   Civil servants
- o   Contractual employees
- o   Daily paid workers
- Lack of job descriptions at all levels of hierarchy
- Non-optimized distribution of employees across the institutions
- High rate of vacancies compared to the existing organizational structures
- Low motivation and absence of recognition and modern HRM systems
- Political interference and favoritism
- High average age of civil servant population
- Shortage of staff in critical managerial, executive, and professional jobs and surplus of staff in unskilled and semi-skilled positions
- Shortage of competencies pertaining to policy planning and modern management approaches
- Critical deficiency in staff with proper competency in information and communication technology (ICT) with weak or under-utilized ICT infrastructure in HR management
- Problems of succession planning and sustainability
- Lack of accountability

3-27.3   Way Forward

The strategy for public administration reform and development in Lebanon stressed on the needs of drawing new limits and roles for the public sector based on contemporary concepts, which call for reinventing, reengineering, and restructuring the government while adopting flexibility, innovation, and advanced means and techniques used in the private sector. The following are some of these key public administration reform guidelines:

- **Strategic Development:** Human resource development strategy and related policies are streamed from the organization global strategy.

- **Organizational Structure**: Role and responsibilities must be clearly defined in Job descriptions, workflow, and manual of procedures.

- **Recruitment**: Merit-based recruitment system responding to the needs in term of qualifications and skills.

- **Performance Appraisal**: Continuous evaluation of employee's efficiency and target achievement.

- **Training**: Major tool to enhance performance, upgrade qualifications acting as a catalyst for change and improvement.

- **Advancement and Promotion**: Design a motivating and open career path with clear and fair compensation and benefits system.

- **Human Capital Management Systems**: Implement a Human Capital Management (HCM) covering human resources management, recruitment, performance

management, career and succession planning, and the entire lifecycle of a public sector employee.

- **Employee Involvement**: regularly to measure employee's satisfaction and provide feedback.

Undoubtedly, the digital transformation initiatives and projects will give a great boost to the efforts to upgrade the organizational structures and human resources management system in the Lebanese public sector. The adoption of digital transformation tools will have significant impact on the organizational structures and processes. The digital transformation will motivate and inspire the public sector leadership and will require a huge endeavor for skilling and re-skilling of government staff so that they can meet their new job requirements.

Most important, digital transformation will stimulate a new culture and a new mindset, which will require new human resource management processes to embrace and drive a new culture based on effective use of digital tools.

3-28   Governmental Process Reform

Complex, non-transparent, time consuming, and incomprehensible governmental processes result in low quality public services and inefficiencies in the public administration. These inadequate processes cause citizens and businesses unnecessary administrative burdens that cost time and money, undermine the image of the public service, distract managers from the achievements of the results, and give rise to unofficial payments.

In the course of complying with the requirements of governmental processes, citizens and businesses face several administrative bottlenecks, multiple layers of approvals, and supporting documents that could take months, if not years, to obtain. In addition to the direct burden of carrying out the transaction, businesses and citizens incur indirect burdens, such as the waste of working hours and the indirect cost on productivity and the national economy in transportation, pollution, and traffic congestion.

Governmental process reform, through streamlining and re-engineering in the top economic sectors, will enable administrations to operate in a transparent, efficient, cost effective, and timely manner while reducing administrative burdens on citizens and businesses. Process reform stirs economic growth and job creation. Process reform will eventually (a) improve the responsiveness of the administration to the demands of the general public and business community; and (b) encompass changes to human resources roles and responsibilities, organizational structures, legal framework, information technology, administrative burden measurement, and regulatory processes.

The decision to reform governmental processes through streamlining and re-engineering demands the support of the highest level of governmental officials. The magnitude and the boundary of the intended reform must be set. Streamlining is about incremental change of reducing and eliminating elements of a process to reduce complexity and inefficiency. Streamlining involves limiting the potential of re-introducing cumbersome requirements and unnecessary steps. On the other hand, re-engineering is about radical transformation. Re-engineering in its drastic forms is about disregarding all existing structures and processes, inventing completely new ways to accomplish work process, and not just making some changes. The reform of processes also includes:

• Re-examining the existing job structure in the public sector.

• Simplifying procedures and work methods in ministries.

• New job description based on digitization.

The lack of enough support from relevant government institutions poses a major risk to governmental process reform. There could be potential resistance from public servants whose regular tasks will be relatively affected by the change that will take place. The risk of legal limitations, i.e., existing laws, decrees, and circulars that might hinder the suggested reform is also evident. Process reform risk mitigation plans must be developed in close coordination and collaboration with all concerned stakeholders.

In the recent past, OMSAR has implemented governmental process reform initiatives utilizing literature from reputable international organizations, such as the World Bank Group, the OECD, and SIGMA. International best practices are a major inspirational factor in the setting and scoping of reform project objectives. OMSAR has been benchmarking against relevant regional and global experiences to ensure the practicality of the produced recommendations and to enhance the chances of success. Finally, governmental process reform is a very delicate and highly sensitive venture, but it is inevitable and is a corner stone to the development and advancement of Lebanon. Building on current projects to automate existing procurement processes, we will carry out a program of improvements to streamline these processes ensuring increased openness, guaranteeing fair play, and providing Lebanese SMEs with as good a chance to be awarded a contract, as the company's proposal and reputation merit.

3-29 DIGITAL TRANSFORMATION PROGRAM

The typical purpose of a digital transformation program is to transform the delivery of identified services from paper-based manual procedures to digital and automated ones. The digital service could reside in a single department, or it might involve several government agencies. At any given time, there could be several different projects running at various stages of their digital transformation lifecycle within the program.

3-30 STANDARDS AND COMPLIANCE

Standards enable technical interoperability, reuse of digital components, sharing of data, and assurance of quality across government. Standards are the vital ingredient enabling a mature digital government. Set government standards for citizen-centered information content, digital services, and data classification help transformation teams across government to enforce these standards. Standardization will improve quality, secure integration, and coordination, ensure consistency of the user's digital experience, and guarantee compliance with international norms, where applicable.

Based on research into the experiences of other countries, the effective compliance and adoption across the public administration is more challenging to governments than the development of the standards. In this sense, policy levers such as budget thresholds for the evaluation of ICT expenses, business cases, co-funding approaches and others should be deeply connected with the verification of compliance across the administration; otherwise, there is a real possibility of the standards being available, but not being adopted by the

administration (Vasconcelos, 2019). There shall be ongoing analysis and evaluation of the compliance of the government digital services with those set standards.

Moreover, and in line with the example followed by many countries, such as Portugal, Estonia, and the United Kingdom, the adoption of open standards is required as it will bring additional transparency to the formats being adopted by the public administration and helps avoid high-risk and undesirable vendor lock-in situations. One of the benefits of a standards-based approach that recognizes the existing ecosystem is benefiting from suppliers who are already implementing and introducing digital services to central governmental entities and municipalities. Open Source Software shall be the preferred choice as it will encourage the use and reuse of source code within the public sector and promote the creation of value among civil society stakeholders.

Other standards, guidelines, and frameworks focusing on areas of high importance for synergy among government agencies, such as cybersecurity, cloud security, use of personal data, digital assurance, change management, and governance will be collectively developed and mandated for all government agencies.

3-30.1   Data Standards

In consultation with data owners in major ministries, we will develop a standard approach to structuring information effectively across government entities. Adopting a uniform data classification standard, which will build on the adequate data governance structure, shall enable data usage policies to be adequately and consistently enforced across government. Data standards provide a firm basis for a common approach that safeguards the privacy of individuals in transactional services that use personal data and protects government confidentiality in shared services that use sensitive information. Equally important, data classified as public will be systematically archived in appropriate Open Data repositories; thus, facilitating the implementation of the Right of Access to Information Law (RAIL) that was passed by the Lebanese Parliament in early 2017. Please refer to the **Open Government** section for more details.

3-30.2   Data Classification Standard

Digital transformation initiatives must take into consideration data security and compliance while making better data-handling decisions. Data security standards align more clearly and are easier for people to understand and follow when data are appropriately classified. Typical top data classification labels are:

- **Unclassified**: Data that are unrelated to any Government of Lebanon entity or individuals. Data are stored unencrypted.

- **Public**: Data related to Government of Lebanon entities or individuals, prepared, and approved for public consumption.

- **General**: Data related to Government of Lebanon entities or individuals that are not meant for public consumption; however, these data can be shared with public administration employees.

- **Confidential**: Data that are sensitive and strategic information that could be harmful if shared inappropriately. Personal information is included in this category. Data owners can track and revoke content. Recipients can delegate their rights to others.

- **Highly Confidential**: Data that are critical, very sensitive, and high-risk information that are regulated and personally identifiable information. Data owners can track and revoke content. Recipients cannot delegate their rights to others.

Within each of these classifications are several sub-classifications to ensure the types of access available to various data owners and consumers. The Government Digital Services (GDS) department of the U.K. Government is assisting OMSAR in developing a data classification framework to support the Lebanon digital transformation strategy and implementation plan.

3-30.3   Digital by Design Services Standard

A new Digital by Design Services Standard will be mandated on all citizen-faced and business-faced services. The standard provides a framework for assessing compliance and serves is a means to share best practices, ensure synergy, and facilitate integration. The Digital by Design Services Standard requires new services to be designed and built taking an agile and user-centered approach. This approach considers users as an essential partner at all the stages of the design and delivery process. The Digital by Design Services Standard sets out a four-stage service design and delivery to assist agencies in adopting an Agile development approach: Design, Develop, Validate, and Deliver. The Digital Transformation Unit (DTU) will be responsible for implementing the Digital by Design Services Standard.

The proposed digital service standard requires new services to be designed and built taking an agile and user-centered approach. A waterfall approach works well in scenarios where benefits are realized at the end of a project, such as in the construction of a building or bridge but does not effectively deliver incremental benefits throughout the life of a project. The digital service standard sets out a four-stage service design and delivery process to assist agencies in adopting an agile development approach.

3-30.4   Platform Standard

A platform provides a standard for operating the various building blocks powering up a digital economy. The lack of standards has been identified as one of the barriers to innovation. Open platforms foster communication and cooperation amongst developers and stakeholders to overcome the barriers of that hinder efficiency. Open platforms reduce costs and remove the need to start from scratch for every governmental entity making the re-use of previously developed components and the integration with solutions developed by others possible. The Open Data Platform must adhere to the *Protection of Personally Identifiable Information (PII) in Public Clouds (ISO 27018)* Standard at a minimum.

It is worth noting that several governments have taken different approaches to interoperability platforms , such as X-Road in Estonia, Interoperability Platform of the Public Administration in Portugal, and an API-based platform in Brazil (Vasconcelos, 2019). The use of the Lebanon Open Government Information eXchange (OGIX) platform shall be mandatory and linked with policy levers, such as business cases, budgets thresholds for ICT investments, and co-funding mechanisms. The failure to do so, as witnessed in several countries, the real challenge becomes the ineffective use of the platform by public sector organizations and the inability to reap the benefits of the interoperability platform (Vasconcelos, 2019). The platform standard is strongly interlinked with the "*Once Only Principle*".

DISCOVERY

Start mapping the broader service landscape researching real needs and problems faced by users and policy intent and technological constraint.

ALPHA

Test hypotheses by building prototypes in codes to explore multiple ways how you might be able to meet users' needs. Do user research to learn which approach works best and iterate your solution as you learn more.

BETA

Define a minimum viable product from the successful prototype in alpha. Build this as an accessible and secure service. Allow the public to trial the beta alongside the existing service. Use their feedback to improve the service.

LIVE

Put the team and process in place to continue operating and improving the service. Phasing out old services and consolidating existing non-digital channels.

DISCOVERY ASSESSMENT

Demonstrate a good understanding of the user and the service

ALPHA ASSESSMENT

Demonstrate the design approaches, prototypes and evaluations.

BETA ASSESSMENT

Demonstrate the product is ready to deploy in a live environment and be maintained.

Figure 13. Transforming Government Services using Agile Design Process

3-30.5   Interoperability Standard

To achieve the Government as a Platform vision, it is necessary to implement an interoperability platform whereby different software applications interact with each other to provide services and exchange data. Applications must be developed once only and re-used across all GoL entities. Based on the data classification standard, applications can interoperate and exchange information by executing add, modify, and delete operations through well-defined Web services and Application Programming Interfaces (APIs). Guidelines and documentation shall be prepared and published for the various APIs. It is important to survey all existing systems to determine how they can be incorporated and integrated with the various digital transformation projects (Oueidat, 2018).

3-30.6   Information Security Standard

Information security plans shall be implemented based on the ISO 27001 standard at a minimum. Information security risk management plans shall be implemented based on the ISO 27005 standard at a minimum. Refer to the **Foundation 3 Digital Infrastructure** section for more details.

3-30.7   Government Operations Continuity Standard

Government continuity of operations plans shall be implemented based on the ISO 22301 standard at a minimum. Refer to the **Foundation 4. Business Continuity Management System** section for more details.

Pillar 4.   Civic Engagement

Civic engagement is a key pillar of digital transformation because of the importance of identifying all issues and problems from reliable stakeholders unfiltered at the source. Moreover, through civic engagement all action and implementation plans must be validated to ensure their alignment with the strategic goal and immediate objectives of the digital transformation strategy.

Figure 14. Pillar 4 – Civic Engagement

The strategic plan aims at guaranteeing the citizen's right to digital participation in terms of implementing the principle of e-democracy, which is a building block for implementing good governance.

3-31   INTERNATIONAL COLLABORATION

The Office of the Minister of State for Administrative reform will strengthen our existing cooperation with international agencies working in the same field, specifically the World Bank, the United Nations Development Fund (UNDP), the OECD, and the United Nations Economic and Social Commission for Western Asia (ESCWA).   International cooperation shall be developed further to benefit from experiences from countries and agencies working on similar projects to encourage the cultural, scientific, technological, and knowledge exchange and ensure the appropriate implementation of this action plan.

Several countries have committed themselves to the digital transformation endeavor and are currently at different stages of this long journey. Notable countries include Estonia, France, Georgia, Italy, New Zealand, Norway, Portugal, South Korea, Switzerland, the United Kingdom, and the United States. In preparing the Lebanon Digital Transformation Strategies to Actions document, we benefited particularly from experiences in these countries but were inspired by the pioneering work of the United Kingdom, Estonia, Georgia, Italy, Portugal, and Switzerland teams.

On 10 July 2019, the Minister of State for Administrative Reform and the Director General at Government Digital Service in the United Kingdom signed a Memorandum of Understanding (MOU) to collaborate on digital transformation initiatives. Consequently, several discussions were held culminating in a set of recommendations received on 25 September 2019 and incorporated into the strategy. The recommendations focused on the digital transformation units and data classification laws and standards.

On 19 September 2019, the Minister of State for Administrative Reform, and the Undersecretary for Economic and Development Affairs in the Republic of Estonia signed, in Beirut, a Memorandum of Understanding (MOU) to collaborate on digital government best practices. The undersecretary was accompanied by a large delegation of government officials and private companies who played a major role in the digitalization of Estonia. In fact, several delegations from Lebanon – public administrations, parliament, and private sector – had visited

Estonia between the years 2017 and 2019 to learn more about best practices and lessons learned. Moreover, in 2021 the **Regional Training on Digital Transformation and e-Governance**, co-hosted by the UNDP Regional Bureau for Arab States and the Estonian e-Governance Academy took place.

The Office of the Minister of State for Administrative reform plans to continue our networking, cooperation, sharing experiences, exchanging insights, and evaluating practices with teams solving similar problems in these countries. Some suggested initiatives are:

1. Participate actively in international activities related to digital transformation pillars and building blocks.

2. Initiate bilateral and multilateral cooperation in the area of digital transformation themes.

3. Sign memoranda of understanding with key countries to investigate ways to collaborate with them and share experiences and lessons learned.

All negotiation processes, agreements, treaties, and memoranda of understanding must abide by all related articles of the Lebanese Constitution that supersede any other text in this strategy.

3-32   Collaboration with Other Arab States

On 17 December 2018, the League of Arab States and Council of Arab Economic Unity (CAEU) issued the first draft of the Joint Arab Strategic Vision for Digital Economy which covers the strategy's framework, its impact on economic growth, job creation, societal welfare, and achievement of the Sustainable Development Goals. This vision lays the corner stone amongst the Arab countries to promote the knowledge-based legislative and technology infrastructure and to support digital transformation in the Arab World (CAEU, 2018). Recommendations include:

1. Provide consultation in the field of digital transformation for systems and transactions through experts and specialists (AFDE, 2019).

2. Encourage drafting laws regulating the digital economy and policies for digital transformation to ensure the inclusion of all Arab countries.

3. Formulate related policies and legislation, governance, and digital skills, and facilitate the amended related laws.

4. Build common Arab information systems among all member states.

5. Launch awareness and training programs to enhance the capabilities of the Arab citizen to deal with advanced digital technologies. On 29 March 2019, the Council of Arab Economic Unity (CAEU) at the League of Arab States signed an agreement with Harvard University to provide technology-based skills analysis and recommendations to enhance Arab governments' digital preparedness and capacities (CAEU, 2019).

6. Establish and launch an Arab Digital Academy.

7. Create guidelines to enable Arab states to assess the digital capabilities of their employees.

8. Establish a joint Arab action to build a competitive digital economy.

The World Bank also organized the "Digital Mashreq Forum" which took place twice, on June 29-30, 2019 in Jordan, and virtually on February 24, 2022. In both forums, the World Bank

Group partnered with the Governments of Iraq, Jordan, and Lebanon. Governmental and private sector representatives of said governments actively participated in the forums, namely the respectively previous and acting OMSAR ministers.

All negotiation processes, agreements, treaties, and memoranda of understanding must abide by all related articles of the Lebanese Constitution that supersede any other text in this strategy.

3-33   Academic Collaboration

In 2019, the office of the Minister of State for Administrative Reform invited the presidents of the main universities in Lebanon where only 10 higher education institutions responded. The Minister of State for Administrative Reform established a temporary committee composed of 10 higher education institutions to act in an advisory capacity and a validator for our digital transformation strategy and action plans. The strategy aims to establish a similar committee in the future and expanding its membership to include academic institutions, i.e., higher education, formal education, vocational, and technical education, whereby the Lebanese University will have a coordinating and oversight role. This stronger relationship with academia and research institutions will result in closer cooperation on mutually beneficial issues. The government benefits greatly by gaining valuable insights into new ways of tackling ICT, administrative, and educational problems.

3-34   Local Government Participation

To ensure sustainability and inclusiveness, the digital transformation projects must be implemented with the widest participation of local governments. Private and public spaces across all Lebanon must host an ecosystem where innovation can take place by fostering participation and collaboration between local governments, its citizens, and businesses. Local skills and contributions will thrive in community centers, innovation hubs, and municipal venues.

3-35   Partnership with Private Sector

The private sector in Lebanon is presented with a great opportunity to partner with the government and bring the power of digital technologies and services to the citizens, businesses, and the public sector. Digital policymaking must be done by consulting with leaders from the business, civil society, and public sector. Such a collaborative approach will most likely improve accessibility to digital technology for all stakeholders. Digital services shall be co-designed and co-implemented with private sector contributors. By doing so, the GoL will be promoting investment, fostering innovation and entrepreneurship, and maximizing opportunities for success.

3-36   Digital Industry Partnerships

The Government of Lebanon must establish strategic partnerships with designated international suppliers to have off-the-shelf technology solutions while adding flexibility to our processes to nurture relationships with local small and medium enterprises. The Government of Lebanon will promote policies to build the Lebanese digital industry and make it a significant part of the government's supply chain. Moreover, these partnerships will accelerate the growth

of Lebanon's digital economy and stimulate the new knowledge economy.

Pillar 5.   Legal Framework

In any government digital transformation strategy, the legal framework is the key pillar without which no actions, policies, procedures, and decisions can be effective (Khoury, 2019). Laws and regulations in Lebanon are enacted by the legislative branch, Parliament. The executive branch, i.e., the Council of Ministers and individual ministers, issue decisions and decrees to implement and apply the laws and regulations.

The review of the local and international texts and principles gives a clear understanding of the Lebanese legislations related to the new technology issues and enables the definition of the required actions and their implementation mechanism (Khoury, 2019). The legal arsenal shall give Lebanon a step ahead in the digital domain by promoting a policy of open data and knowledge (Sehnaoui, 2019). The legal framework influencing the Digital Transformation in Lebanon consists mainly of Laws, Decrees, and Decisions. Until now, very few related Laws have been adopted.

3-37   CURRENT LAWS

The digital transformation of Lebanon will require changes to existing laws, enacting new laws, and issuing new decrees and decisions. First, one must examine the existing laws pertaining to or affecting digital transformation to define a baseline for the current legal framework. Once the current legal environment is evaluated, changes will be enumerated along with any newly required laws and regulations.

There are actual legal instruments that will help the Government of Lebanon achieve the digital transformation of the economy. Still, several legislations are required for the Lebanese economy to adapt to structural changes, to foster an enabling environment for enterprise initiative and development – especially SMEs, to foster business-to-business cooperation, and to support better exploitation of the industrial potential of innovation, research, and technological development policies, which will ultimately help achieve the 2030 Sustainable Development Goals (Sehnaoui, 2019).

According to Khoury (2019), the most important texts are the Lebanese Constitution (1990), the Obligations and Contracts Law (1932), the Commercial Law (1942 and its amendments), the Criminal Law (1943 and its amendments), the Criminal Procedure Law (2001 and its amendments), E-transactions and Personal Data Law (2018) and the Civil Procedure Law (1983 and its amendments). These laws are of a general application and do not regulate specifically the new technologies and the information society or the digital transformation but tangentially. There are some provisions in certain laws that, although not related directly to the new technology, may affect the introduction and/or implementation of the digital transformation.
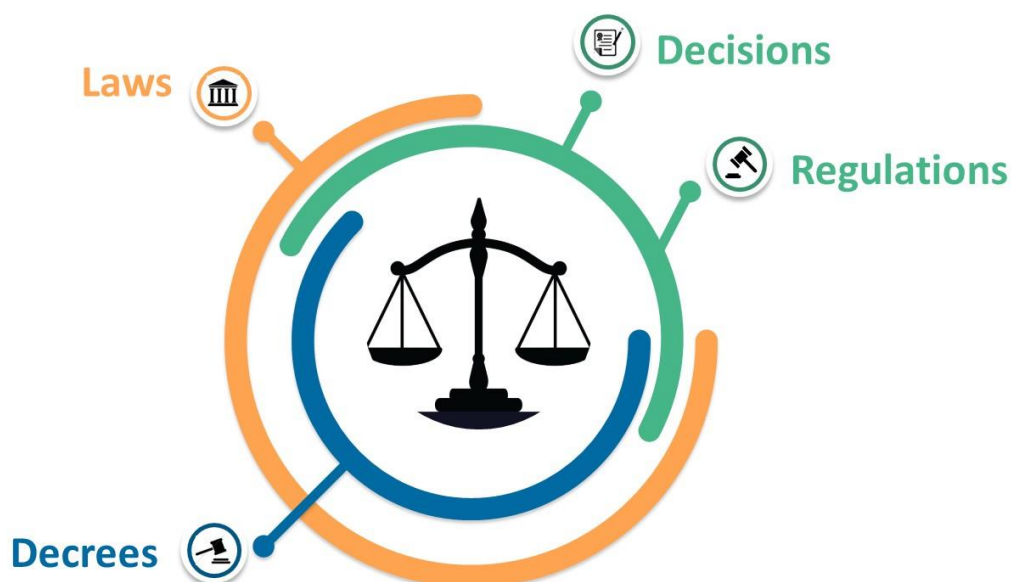
Figure 15. Pillar 5 – Legal Framework

The Lebanese Constitution states in its Preamble that "Lebanon is […] a founding and active member of the United Nations Organization and abides by its covenants and by the Universal Declaration of Human Rights. The state shall incorporate those principles in all domains with no exception". According to Khoury (2019), as stipulated in the international treaties, covenants, and conventions ratified by Lebanon, Article 2 of the Lebanese Civil Procedure Law affirms therefore that they are binding and applicable in Lebanon as part of the hierarchy of the law, thus taking precedence over domestic law. As a result, some international texts have direct impact on the digital transformation so do some other national statutes (Sehnaoui, 2019).

3-37.1   United Nations Convention Against Corruption (UNCAC)

The United Nations Convention Against Corruption (UNCAC) is the only legally binding universal anti-corruption instrument in response to a global problem. Most of the United Nations Member States are parties to the Convention. The UNCAC was adopted on October 31, 2003 via Resolution 58/4 and went into effect on December 14, 2005. To date, 186 countries have joined this convention including 20 Arab countries with Lebanon joining on April 22, 2009 (UNODC, 2019b). The Convention covers five main areas: (a) preventive measures, (b) criminalization and law enforcement, (c) international cooperation, (d) asset recovery, and (e) technical assistance and information exchange. The Convention covers many different forms of corruption, such as bribery, trading in influence, abuse of functions, and various acts of corruption in the private sector (UNODC, 2019a).
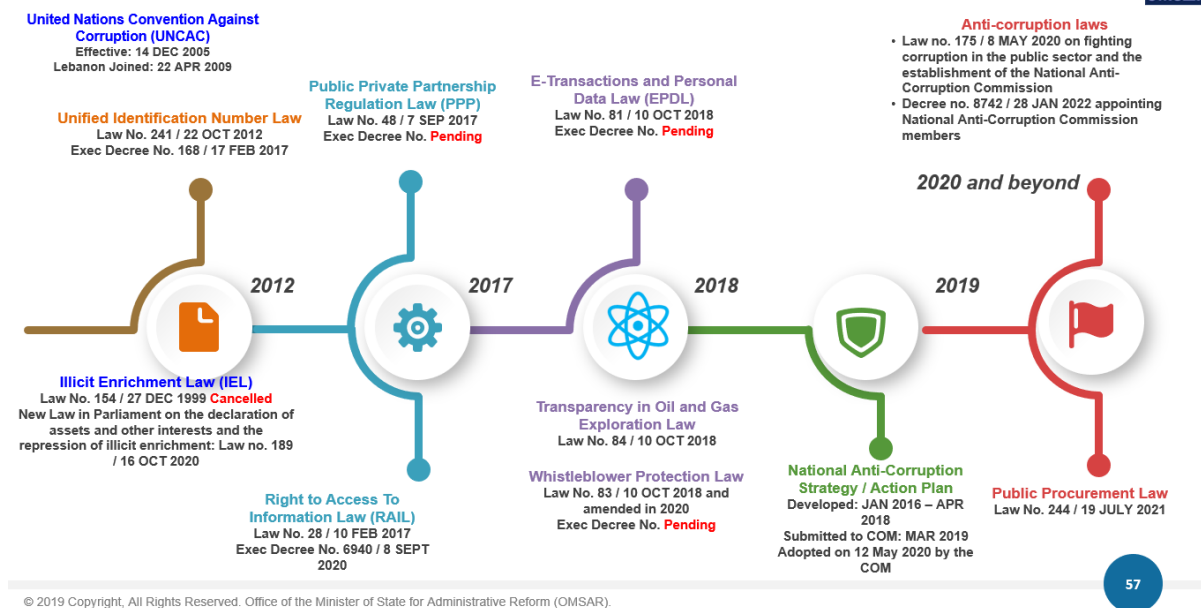
Lebanon's Laws and Regulations Timeline

United Nations Convention Against Corruption (UNCAC)
Effective: 14 DEC 2005
Lebanon Joined: 22 APR 2009

Unified Identification Number Law
Law No. 241 / 22 OCT 2012
Exec Decree No. 168 / 17 FEB 2017

Public Private Partnership Regulation Law (PPP)
Law No. 48 / 7 SEP 2017
Exec Decree No. Pending

E-Transactions and Personal Data Law (EPDL)
Law No. 81 / 10 OCT 2018
Exec Decree No. Pending

Anti-corruption laws
• Law no. 175 / 8 MAY 2020 on fighting corruption in the public sector and the establishment of the National Anti-Corruption Commission
• Decree no. 8742 / 28 JAN 2022 appointing National Anti-Corruption Commission members

2020 and beyond

2012   *2017*   *2018*   *2019*

Illicit Enrichment Law (IEL)
Law No. 154 / 27 DEC 1999 Cancelled
New Law in Parliament on the declaration of assets and other interests and the repression of illicit enrichment: Law no. 189 / 16 OCT 2020

Transparency in Oil and Gas Exploration Law
Law No. 84 / 10 OCT 2018

Whistleblower Protection Law
Law No. 83 / 10 OCT 2018 and amended in 2020
Exec Decree No. Pending

Right to Access To Information Law (RAIL)
Law No. 28 / 10 FEB 2017
Exec Decree No. 6940 / 8 SEPT 2020

National Anti-Corruption Strategy / Action Plan
Developed: JAN 2016 – APR 2018
Submitted to COM: MAR 2019
Adopted on 12 May 2020 by the COM

Public Procurement Law
Law No. 244 / 19 JULY 2021

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Figure 16. Laws and Regulations Timeline

3-37.2   Unified Identification Number Law (UINL)

3-37.2.1   Overview

The Unified Identification Number Law (No. 241 dated 22 October 2012) and its corresponding Executive Decree (No. 168 dated 17 February 2017) assigned the sole responsibility for issuing and managing the Unified Identification Number to the General Directorate of Civil Status at the Ministry of Interior and Municipalities. The law and decree require all public sector administrations, public institutions, and municipalities to accept the unified identification number.

3-37.2.2   Issues and Recommended Changes

There are no issues or recommended changes to this law. The implementation of this law and decree is considered one of the priorities of the necessary digital transformation projects.

3-37.3   Illicit Enrichment Law (IEL)

Since the passing of the current Illicit Enrichment Law (No. 154 dated 27 December 1999), the IEL was partly applicable and did not give the expected results. A new law was enacted relating to the declaration of assets and other interests and the repression of illicit enrichment (No. 189 dated 16 October 2020) which cancelled Law No. 154 and brought new changes. Among these changes, Law No. 189 broadened the categories of persons concerned by the Law and introduced more flexible prerequisite conditions for taking legal action on the basis of illicit enrichment.

3-37.4   Right of Access to Information Law (RAIL)

3-37.4.1   Overview

The Right of Access to Information Law (Law No. 28 dated 10 February 2017) allows individuals to gain access to official administrative documents from the Government of Lebanon. The law stipulates that any public administration must justify the denial of providing information and documents to the requesting party. In addition, RAIL requires the appointment of an Information Officer within each public institution responsible for receiving and fulfilling requests.

RAIL also defines the roles and responsibilities of the National Authority on Anti-Corruption (NAAC). In May 2019, the Ministry of Justice and OMSAR prepared a draft executive decree for the application of RAIL. The implementing decree was adopted by the Council of Ministers on 28 July 2020 and published in the Official Gazette under no. 6940/2020.

3-37.4.2   Issues and Recommended Changes

Since the implementation of this law requires a number of executive decrees, the Prime Minister formed an inter-ministerial committee to draft the required decrees.

3-37.5   Whistleblower Protection Law

3-37.5.1   Overview

The Whistleblower Protection Law (No. 83 dated 10 October 2018) provides a legal protection system to corruption whistleblowers and stipulates an additional mandate to the NAAC. Its executive decree is pending.

3-37.5.2   Issues and Recommended Changes

There are no issues or recommended changes to this law.

3-37.6   E-Transactions and Personal Data Law

3-37.6.1   Overview

The E-Transactions and Personal Data Law (No. 81 dated 10 October 2018) covers many legal aspects related to service provider certification, electronic commerce, bank cards, digital and electronic payments, network service providers, data hosting, data traffic, domain names, personal data processing, e-signature and proof of signature, crimes and penalties, and registration. This law also establishes the legal guidelines for digital identity and digital signature. The following are the main articles of this law:

1. Electronic Writing and Evidence

2. Electronic Commerce and Contracts, including Electronic Banking and Financial Services

3. Public Communication through Digital Means, i.e. Internet Service Provider liability

4. Country Code Top-Level Domain (ccTLD) for .LB

5. Personal Data Protection

6. Crimes Relating to IT Systems, Data, Bank Cards, and Amendments to the Criminal Law

7. Amendments to Consumer Protection Law No. 659 Dated 4 February 2005

3-37.6.2   Issues and Recommended Changes

Because this law requires several executive decrees for its implementation, the Prime Minister formed a joint inter-ministerial committee to draft the necessary decrees. In June 2019, OMSAR submitted a draft executive decree to the committee related to the creation of the national Authority for managing domain names and registry.

3-37.7   Personal Data Protection Law

Personal data protection is covered under the **E-Transactions and Personal Data Law** (Law No. 81/2018).

3-37.8   Transparency in Oil and Gas Exploration Law

The Transparency in Oil and Gas Exploration Law (No. 84 dated 10 October 2018) specifies the duties of all official and business stakeholders, in the oil and gas sector, from the exploration and production phases until operations are terminated. The scope of accountability in the law covers public sector personnel, whether officials or employees as these personnel are not allowed to invest directly or indirectly through family members in prequalified companies that are participating in licensing rounds while they are in office and up to three years after they leave office (Sehnaoui, 2019). The executive decree is pending.

3-37.9   Literary and Artistic Property Law

The Literary and Artistic Property Law (No. 75 dated 3 April 1999), also known as the copyright and neighboring rights law, is consistent with the major international treaties. This law protects original works and excludes some works from protection even when said works meet the originality criteria. Databases are also protected by this law (Sehnaoui, 2019). By virtue of Article 8, copyright of original content created by the officials and/or employees of a public administration is the property of the government. The copyright owner is vested with a bundle of both moral and material rights permitting the transmission of the protected work to the public by whatever means; hence, it is not permitted to dispose of the moral rights of the author nor is it permitted to confiscate them (Khoury, 2019).

Some uses of a protected work are allowed without the permission of the copyright owner: Limitations to exclusive rights are provided in Articles 23 to 34 and include copying for personal use (Articles 23 and 24); copying of a limited number of computer software by non-profit educational institutions, universities, and public libraries for the purpose of lending them to students (Article 25.1 and Decree No. 16/2002 and Decree 16-2 and Lebanon Copyright Implementation Decision No. 16); use for critical or educational purposes (Articles 25.2 and 26); use in judicial or administrative procedures (Article 29); use during official ceremonies or educational activities (Article 33); and use for specific purposes, such as archive, research, criticism, review, advertisement, and news reporting (Articles 27, 28, 30, 31, and 34). According to Khoury (2019), the aforementioned limitations apply also to neighboring rights of Article 47 and the compulsory licenses for copyrighted works are not allowed under the Lebanese Copyright Law.

3-37.10   Consumer Protection Law

The Consumer Protection Law (No. 659/2005 dated 4 February 2005) was amended by the **E-Transactions and Personal Data Law** (Law No. 81/2018). In its Article 2, the law defines a "Consumer" as: a natural or legal person who buys, rents, utilizes, or benefits from goods or services, for purposes other than his professional activity; and "Supplier" as: a natural or legal

person, from the private or the public sector, engaged in the distribution, sale, or rent of goods or in the provision of services, on his behalf, or in the interest of someone else. This implies that the Consumer Protection Law also regulates the digital government services to businesses or individual users (Sehnaoui, 2019).

Article 3: "The consumer shall have the following rights that shall be exercised in accordance with the provisions of this Law: […] The right to receive exact, clear, and sufficient information about goods or services […]".

Article 9: "[…] In general, Arabic must be used for any act aimed at displaying goods or services. The cases where it is permissible to use French or English as a substitute for Arabic shall be determined upon the decision of the Minister of Economy and Trade".

Article 11: "Should also be considered a misleading advertisement: The advertisement which includes the illegal use of a logo or a trademark, or the use of an imitated or simulated mark".

Article 51: "The provisions of this Chapter treats of distance or door-to-door practices performed by the supplier, in particular the practices that take place at the residence of the consumer, by telephone, through the Internet or by any other adopted means".

Article 58: "The supplier, with whom the consumer enters into a contract, must keep and conceal the information obtained, unless the consumer has given express approval. The supplier must also take all measures necessary to keep such information secret".

3-37.11   Anti-corruption legal framework

The National Anti-Corruption strategy was developed throughout January 2016 and April 2018. It was submitted to the Council of Ministers in March 2019 and adopted in May 2020.

On 8 May 2020, Law No. 175 on Fighting Corruption in the Public Sector and Establishment of the Anti-Corruption Commission was promulgated by Parliament. The NAAC remained inactive due to lack of member nomination, which impeded the full implementation of other laws, such as Law No. 83 on Whistleblower Protection. On 28 January 2022, the members of the NAAC were appointed by virtue of decree no. 8742.

3-37.12   Public Procurement Law

The Public Procurement Law No. 244 was issued on 19 July 2021, and is one of the laws demanded internationally, especially in the context of negotiations with the International Monetary Fund. The next step is to move forward to e-procurement, which will be discussed below.

3-37.13   Introduction of Programming, Robotics, and Artificial Intelligence curriculum

A law introducing a curriculum in schools regarding "Programming, Robotics and Artificial Intelligence" was passed in Parliament on 21 February 2022. This places Lebanon among the top 20 countries worldwide in terms of readiness to face the new challenges of the business world in light of new technological advances.

3-38 CURRENT AND DRAFT DECREES AND DECISIONS

The laws and regulations pertaining to digital transformation in Lebanon will require decrees and decisions to be issued by the Director Generals, Ministers, Council of Ministers, and the Prime Minister.

3-38.1 Lebanese Government Interoperability Framework (LGIF) and Lebanese Government Interoperability Reference Architecture (LGIRA)

The Lebanese Government Interoperability Framework (LGIF) and the Lebanese Government Interoperability Reference Architecture (LGIRA) were approved by the Council of Ministers Decision 76/2016. As a result, base data registries must be implemented by identifying the national base registers, their custodians and managers in the public sector, how these registers should be connected, and the rules for sharing their data (Vasconcelos, 2019).

3-38.2 Unique ID Decree

The Decree No. 168 issued on the 17th of February 2017 set the rules and modalities for the adoption of the Unique ID Number in the Public Sector.

3-38.3 Internet Domain Name Registry

A draft decree prepared by OMSAR, upon the request of the Minister of State for Investment and Technology, covers the implementation aspects of the National Authority for managing domain names and Registry created by the **E-Transactions and Personal Data Law (**Law No. 81/2018).

3-38.4 Standard Forms

Decision 16/2011 required all public sector entities to standardize forms for collecting information from citizens. OMSAR has already standardized more than 200 of these forms.

3-38.5 Establishing Ministerial Digital Transformation Units

A digital transformation unit (DTU) will be established in the Presidency of the Council of Ministers (based on Decree 2216 of February 6, 1992, which demands the formation of an informatics cadre in the General Directorate of the Presidency of the Council of Ministers. Each ministry must form its own digital transformation unit (DTU) to implement plans and participate in various transformation projects. According to Sehnaoui (2019), each ministry forms an internal unit to deal with the effects of new technologies, as several laws propose the establishment of such units, including the Law on the Right to Information (Law No. 28/2017), and the Electronic Transactions and Personal Data Protection Law (No. 81/2018), specific executive decrees should be enacted to achieve this purpose (Khoury, 2019).

3-39 AMENDMENTS TO EXISTING LAWS

The **E-Transactions and Personal Data Law** (Law No. 81/2018) originated in the ECOMLEB project back in 2005, and has undergone several amendments and changes throughout the 13 years until its enactment by Parliament. Most of the required amendments shall be to Law

81/2018, which unlike the ECOMLEB draft, it does not provide for the creation of an independent judicial body to monitor the compliance with the provisions related to personal data protection (Sehnaoui, 2019). Moreover, technology along with the legal texts at the European and international levels have evolved dramatically in the past 15 years. Consequently, urgent amendments are required to the sections related to Chapter 2 – Electronic Commerce and Contracts, Chapter 3 – Public Communication through Digital Means, Chapter 4 – ccTLD (.LB), and Chapter 5 – Personal Data Protection (Sehnaoui, 2019).

3-40 New Laws Required

To achieve the strategic goal and objectives of the digital transformation strategy, the Lebanese Parliament must enact several new laws. It is highly recommended to enact specific laws instead of lumping many laws together. This would make the revision of such laws easier and faster in the future. As a result of reviewing current laws, a gap analysis was performed to identify missing areas that lack laws and regulations. The following is a brief overview of such laws.

3-40.1 E-Procurement Law

A draft proposed law is being prepared by OMSAR to be presented to Members of the Information Technology Committee of the Lebanese Parliament for allowing e-procurement activities to take place for government tenders.

3-40.2 Digital Government Law

A draft proposal was prepared by several Members of the Lebanese Parliament for the establishment of a digital government. OMSAR has assessed it and found similarities with related articles mentioned in the **E-Transactions and Personal Data Law** (Law No. 81/2018). OMSAR prepared a comparison table between these two texts showing similarities, comments, and suggested measures to be adopted. It is important to avoid any overlaps with existing laws that might create some confusion among the ecosystem of stakeholders, e.g., public and private sector institutions, academia, and civil society (Vasconcelos, 2019).

3-40.3 Data Protection Law

Securing and protecting data against unauthorized access are covered under the **E-Transactions and Personal Data Law** (Law No. 81/2018), which shall be amended mainly in Chapter 5 – Personal Data Protection (Sehnaoui, 2019).

3-40.4 Data Classification Law

Data classification is a pre-requisite to data protection and data privacy. The Data Classification Law must be accompanied in practice by data classification standards to ensure the applicability and continued improvement of data classification efforts within the government and the private sector. Refer to the **Data Classification Standard** section for more information.

3-40.5 Data Privacy Law

Data privacy cannot be implemented without data security. The entities who can authorize and define data access and those who can access data are covered under the **E-Transactions and Personal Data Law** (Law No. 81/2018). According to Khoury (2019), a Data Privacy Law

seeks to protect all forms of information, be it private, personal, privileged, or sensitive, and it is meant to cover both natural and juridical persons involved in the processing of information. The requirements for data privacy shall be encompassed by amendments to the **E-Transactions and Personal Data Law** (Law No. 81/2018), mainly in Chapter 5 covering Personal Data Protection (Sehnaoui, 2019).

3-40.6   Data Retention Law

The Data Retention Law defines the policies of persistent data and records management for meeting legal and business data archival requirements; although sometimes interchangeable (Khoury, 2019).

Simply formulating data security, protection, and privacy laws is not enough to protect data; thus, instituting a Data Retention Law (DRL) is as important. Data retention is the process of retaining a person's or entity's data for a given time period. Several countries have enacted data retention laws, e.g., Switzerland, the European Union, Sweden, Norway, Hungary, Romania, Australia, Germany, and others. The DRL must specify:

- Period required for data to be maintained by ISPs, telecom service providers, and other parties who capture and store these data.

- Conditions under which these data must be made available to governmental agencies.

- Types of data to be retained, e.g., financial transactions, emails, text messages, phone call metadata, phone calls, geo-location, originating and recipient parties, and more.

According to Sehnaoui (2019), the different data retention policies weigh legal and privacy concerns against economics and need-to-know concerns to determine the retention time, archival rules, data formats, and the permissible means of storage, access, and encryption; therefore, data retention issues shall be encompassed by the amendments to the Telecommunication Interception Law (Law No. 144/1999).

3-40.7   Digital Communications Law

As the economy becomes more digitalized, digital communications become pervasive across society and economic sectors. The Digital Communications Law (DCL) addresses the issues of online abuse, hate, harassment, and cyberbullying. The DCL covers digital communication channels, such as texting, tweeting, social media, dissemination of commercial music and video, online advertising, consumer fraud, accessibility of public information, and more. According to Sehnaoui (2019), the issues related to digital communications shall be encompassed by the amendments to the Telecommunication Interception Law (Law No. 144/1999).

3-40.8   Digital Rights Law

The Digital Rights Law shall assure the rights of citizens and the public sector to interact digitally with the public sector based on the "Once Only Principle", transparency, open government, and data protection (Vasconcelos, 2019).

3-40.9   Computer Misuse Law

The Computer Misuse Law protects computer users against willful attacks and theft of information, such as hacking, unauthorized access to computer systems, and purposefully

spreading malicious and damaging software, e.g. malware, spyware, and viruses (Khoury, 2019).

The Computer Misuse Law (CML) is intended to secure computer data and systems against illegal unauthorized access or modification. The CML will protect computer users against willful pre-meditated attacks and theft of information including offenses like hacking, malware infestation, ransomware, and others. The CML must specify the different levels of criminal offenses:

- Attempt to gain unauthorized access to a computer even with no specific target. The action of conducting unauthorized scans of computer ports would be illegal.

- Gaining unauthorized access to a computer regardless of the reason or intent.

- Unauthorized actions with intent to impair the operation of a computer.

- Unauthorized actions that could cause, or create the risk of, serious damage.

- Unauthorized access with intent to commit or facilitate the commission of further offenses.

- Unauthorized modification or alteration of computer material, e.g., data, files, settings.

According to Sehnaoui (2019), the issues related to computer misuse are already covered in the **E-Transactions and Personal Data Law** (Law No. 81/2018), but will require amendments mainly in Chapter 6 covering crimes related to IT systems, to data, to bank cards, and amendments to the criminal law.

3-40.10 Electronic Commerce Law

According to Sehnaoui (2019), the issues related to electronic commerce shall be encompassed by the amendments to Chapter 2 – Electronic Commerce and Contracts of the **E-Transactions and Personal Data Law** (Law No. 81/2018).

3-40.11   Open Government Data Law

Several OECD countries have enacted laws and regulations specifically addressing Open Government Data (OGD) issues and implementation policies and procedures (Vasconcelos, 2019). This law must go hand in hand with the **Right of Access to Information Law (RAIL)**, the **E-Transactions and Personal Data Law**, and the Error! Reference source not found..

3-40.12 Investigatory Powers Law

The Investigatory Powers Law (IPL) is intended to provide independent oversight of the use of investigatory powers by intelligence and law enforcement agencies that target mass data surveillance with the purpose of detecting and preventing crimes. This law is typically applied along with data privacy, protection, and retention laws. This law must set the requirements and allowable actions for:

- Interception, confiscation, and use of electronic communications and stored data.

- Covert surveillance of individuals and entities including their digital footprint and activities.

According to Sehnaoui (2019), the issues related to digital communications shall be encompassed by the amendments to the Telecommunication Interception Law (Law No. 144/1999).

3-40.13 Anti-Corruption Law

In March 2019, the Minister of State for Administrative Reform submitted a national Anti-Corruption Strategy and Action Plan (ACSAP) to the Council of Ministers of Lebanon for adoption (OMSAR, 2019). Some of the ministers requested a review be conducted to revise some of the language in the ACSAP and a committee was formed to conduct this review and make a recommendation for appropriate changes. The ACSAP was presented to the Council of Ministers on 5 May 2020 and adopted on 12 May 2020.

Digital Transformation is an important enabler to the ACSAP because digitalization of the public sector greatly reduces informal in-person interactions between civil servants and citizens. It is imperative for the Lebanon Digital Transformation Strategy and consequently the Implementation Plan to be adopted so that the ACSAP is successful. These two important initiatives go hand in hand in improving the quality of life and economic prosperity for all Lebanese.

3-40.14 Development of ICT and Cyber Legislations

The Digital Assurance Group will coordinate with Lebanon's Parliamentary Committee on ICT and with the government agencies' chief information officers to improve current cyber legislations, address legal issues of national concerns, and keep pace with international developments. The DAG shall also act as a focal point for cross government legal advice on transforming existing paper-based business processes into innovative digital ones. Several countries who have achieved a successful digital transformation had enacted ICT Procurement Laws to define specific rules for the public investments in ICT and technology selection criteria (Vasconcelos, 2019).

EXHIBITS

All exhibits referenced in the present document, in addition to the ones present in the previous version of the document "Lebanon Digital Transformation (2020-2030)", of 2019 in its volumes 1 and 2 are detailed in the "Lebanon Digital Transformation (2020-2030) Exhibits, Volume 3".

Exhibit 1.   IMPLEMENTATION PLAN

A proposed implementation plan developed in 2019, "**Lebanon Digital Transformation: Implementation Plan (2020-2030)" (Volume 2)**, was prepared by OMSAR in collaboration with all stakeholders as a first version to be presented to the Steering Committee for Digital transformation for further review and prioritization (OMSAR, 2019b). This plan must be reviewed and updated before adoption at later stage on the basis of real situational analysis and digital maturity and e-readiness assessment. Moreover, the review of the implementation plan should follow the principle of partnership between the public and private sectors and the specialized digital community (PPCP Public Private Community Partnership).

Exhibit 2.   STRATEGY REVIEW AND UPDATE

As Digitalization is a continuously evolving field, this strategy is considered to be a living document, which should be reviewed and updated by the government on a yearly basis, or according to the progress and changing factors requirements. This subject is very important, especially during the period of putting into effect the plan of development in the event that a four-year program with the International Monetary Fund was adopted to restructure the banking and financial sector, achieve financial governance, prepare budgets, and restructure public administrations in terms of infrastructure.

Exhibit 3.   Basic principles of Lebanon's digital transformation strategy

1.   The strategy emphasizes the principle of "digital sovereignty" and that all servers and data centers in Lebanon to be under Lebanon's sovereignty and official institutions only.

2.   The strategy emphasizes that the Lebanese state is the sole owner of the Lebanese databases, programs and services, and its direct management only, and that information, information and data security, and data protection are considered among the foundations of national security. Neglecting any of them should be considered a crime that must be punished by law.

3.   The strategy emphasizes institutionalizing the National Unit for Digital Transformation to ensure the success of its implementation plan and the achievement of all its objectives.

4.   Commitment to the principle of control, transparency, and the right of access to information, and to reviewing the Electronic Transactions and Personal Data Law 81/2018 to allow for its implementation. To approve the electronic signature law, simplifying the procedures for transactions, digital government transactions, and ways and methods of

work. There is also an urgent need to implement and develop relevant laws in line with the digital transformation strategy.

5. The strategy confirms on the compliance with the Lebanese laws in force, especially the law of electronic transactions and data of a personal nature and the public procurement law and calls for the need to pass laws and issue decrees necessary to implement the strategy.

6. The strategy calls for accelerating the adoption of electronic signatures for citizens and employees within the terms of the Public Procurement Law.

7. The strategy, especially during the implementation phase, calls for supporting legislation and activating penal laws for breaching information security and protecting data related to governance and digital transformation, while reviewing agreements that violate this aspect and considering them null and void for violating this title.

8. The strategy stresses the adoption of rational digital governance by adopting the principle of participatory digital democracy between the citizen and the government as well as in everything related to government services.

9. The strategy calls for the adoption of the "green clause" mainly related to energy saving and resource rationalization. Like thin client in addition to the emerging technologies and architectures, containerization, and virtualization and microservices which contribute to reduce the carbon footprint during the application design.

10. The strategy ensures the comprehensiveness of digital transformation for all state works and public facilities, including municipalities.

11. The strategy will focus on linking and coordinating with all existing strategies in the country or which may arise later. Provided that any delay in implementing other strategies does not impede the digital transformation work related to this strategy.

12. The strategy emphasizes on giving priority to the local digital industry and giving priority to open sources in the design of applications, when they are appropriate, applicable, available, convenient and safe.

Glossary

The following are definitions of key terms used in this document:

Term	Definition	Source(s)
Authentication	Security measure for checking users' identities before they are allowed access to an online information system or application.	(OECD, 2007)
AWS Outposts	AWS Outposts bring native Amazon Web Services (AWS) services, infrastructure, and operating models to virtually any data center, co-location space, or on-premises facility.	
Azure Stack	Azure Stack is an extension of Microsoft Azure on-premise to consistently build and run hybrid applications across cloud boundaries.	
CLOUD Act of 2018	The Clarifying Lawful Overseas Use of Data Act or CLOUD Act (H.R. 4943) is a United States federal law enacted in 2018 by the passing of the Consolidated Appropriations Act, 2018, PL 115-141, section 105 executive agreements on access to data by foreign governments. Primarily the CLOUD Act amends the Stored Communications Act (SCA) of 1986 to allow federal law enforcement to compel U.S.-based technology companies via warrant or subpoena to provide requested data stored on servers regardless of whether the data are stored in the U.S. or on foreign soil.	
Cloud Computing	Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources, e.g., networks, servers, storage, applications, and services, which can be rapidly provisioned and released with minimal management effort or service provider interaction.	
Data Anonymization	Data anonymization is a type of information sanitization whose intent is privacy protection. It is the process of either encrypting or removing personally identifiable information from data sets, so that the people whom the data describe remain anonymous.	

Term	Definition	Source(s)
Data Degradation	Data degradation is the gradual corruption of computer data because of an accumulation of non-critical failures in a data storage device. The phenomenon is also known as data decay, data rot, or bit rot.	
Data Residency	Data Residency refers to the physical or geographic location of an organization's data or information. Like data sovereignty, data residency also refers to the legal or regulatory requirements imposed on data based on the country or region in which data reside.	
DICOM	Digital Imaging and Communications in Medicine (DICOM) is a common format for image storage. It allows for handling, storing, printing, and transmitting information in medical imaging.	(Hamadeh et al., 2019)
Digital Certificate	Digital Certificate is an electronic document which conforms to ITU Article X509 v3 specifications. It is a document which typically contains the signer's name and public key, the serial number of the certificate, and the name and Digital Signature of the Neutral Third-Party CA (Certificate Authority) which issued the certificate. In fact, the Digital Certificate binds together the owner's name and a pair of electronic keys (Public and Private) that can be used to encrypt and sign documents. Encrypting and Digitally signing documents using certificates issued by Neutral Third-Party CAs provides the following assurances about document transmission over the wild Internet. These assurances are: 1. It authenticates the sender to the recipient vide a Digital ID attached to the email. 2. It preserves the Integrity of the email – Meaning that the email received is exactly the very same the Sender had dispatched. 3. It creates Non-repudiation of the electronic communication. Meaning that neither the sender, nor the recipient can deny having not received the Digitally Signed email. Encryption – Which allows the sender to encrypt his/her email coupled with its attachments to the recipient and all copy readers. Meaning that even if the	(Barbar, 2019)

Term	Definition	Source(s)
	hacker stopped the email in question, he would not be able to decrypt it and read its content.	
Digital Signature	Digital Signature is to encode a message by using an asymmetric cryptosystem and a hash function such that a person having the initial message and the signer's Public Key can accurately determine whether the transformation was created using the Private Key that corresponds to the signer's Public Key and whether the initial message has been altered since the transformation was made. In other words, a Digital Signature means an electronic signature based upon cryptographic methods of Originator Authentication, computed by using a set of rules and a set of parameters such that the Identity of the sender (Signer) and the Integrity of the data can be verified and issued by a Neutral Third Party called the CA and a Member of the Certificate Authority Board Forum (CABF).	(Barbar, 2019)
EHR	Electronic Health Record (EHR), as defined in Defining Key Health Information Technology Terms (The National Alliance for Health Information Technology, April 28, 2008): An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.	(Hamadeh et al., 2019)
Electronic Signature	There are so many different electronic signatures amongst which are: 1. Electronic Signature issued by means of a self-sign method with No authentication of the sender. 2. Passwords in its various modes and without any exclusion. 3. Biometric Identification 4. Scanning your own handwritten signature 5. Disclaimers without any exclusion 6. And so many other formats which most of us mix up with the Digital Signature issued by a Neutral Third Party known as a CA – Certificate Authority and being a member of the CABF – Certificate Authority Board Forum which regulates and enforces its technical standards Worldwide.	(Barbar, 2019)

Term	Definition	Source(s)
FHIR	An HL7 standard that is short for Fast Healthcare Interoperability Resources and pronounced "Fire". The standard defines a set of "Resources" that represent granular clinical concepts. The resources provide flexibility for a range of healthcare interoperability problems, and they are based on simple XML with an HTTP-based RESTful protocol where each resource has a predictable URL.	(Hamadeh et al., 2019)
Government Digital Services	Services provided by, but not necessarily supplied by, the public administration to citizens, businesses and organizations (including other government entities) through digital information networks.	(OECD, 2007)
HL7	"Level Seven" refers to the seventh level of the International Organization for Standardization (ISO) seven-layer communications model for Open Systems Interconnection (OSI) - the application level. The application level interfaces directly to and performs common application services for the application processes. Although other protocols have largely superseded it, the OSI model remains valuable as a place to begin the study of network architecture. HL7 standards are used for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery, and evaluation of health services.	(HL7 International, 2019)
IHE	Integrating the Healthcare Enterprise (IHE) is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information.	(Hamadeh et al., 2019)
Impact Level	The desired impact that the Government of Lebanon hopes to achieve in support of a strategic goal. Desired impacts are reached by achieving a series of desired outcomes.	

Term	Definition	Source(s)
Information and Communication Technology (ICT)	Any equipment or interconnected system (or subsystem) of equipment that includes all forms of technology used to create, store, manipulate, manage, move, display, switch, interchange, transmit or receive information in its various forms. Such forms can include business data; voice conversations; still images; motion pictures; multimedia presentations and others not yet conceived. Communication refers to a system of shared symbols and meanings that binds people together into a group, a community, or a culture. The word communication was added to ICT to make a network of the usage of Information Technology. ICT refers to both computer and communication technology.	(OECD, 2007)
Interoperability	Organizations' ability to share information systems and/or data, generally based on using common standards.	(OECD, 2007)
Legal Entity Identifier (LEI)	It was the financial crisis of 2008 that laid bare the need for a universal system of identifying Legal Entities, and despite the subsequent development of the Global Legal Entity Identifier "LEI", the process continues to be notoriously complex for many businesses, especially in a Global Market Place. To investigate this issue, and to reveal the extent of that complexity, the Global Legal Entity Identifier Foundation (GLEIF) has worked with the London – Based Research Agency Loudhouse. In fact, the LEI System was developed by the G20/2011 in response to the inability of Financial Institutions to identify organizations uniquely, so that their financial transactions in different national jurisdiction can be fully tracked. The Technical specification for LEI is ISO 17442. The Global LEI Index is the only Global online source that provides open, standardize and high-quality Legal Entity Reference Data. Each LEI code contains information about an entity's ownership structure and thus answers the questions of (Who is Who & Who Owns Whom) among market participants. Therefore, it must be used by all entities of both the private and public Sectors with no exclusion.	(Barbar, 2019)

Term	Definition	Source(s)
Network Operations Center (NOC)	NOC is one or more locations from which network monitoring and control, or network management is exercised over a computer, telecommunication, or satellite network.	
Outcome Level	The desired outcomes that the Government of Lebanon aims to realize to contribute towards achieving the desired impact and its associated strategic goal.	
Public Key Infrastructure (PKI)	A method for authenticating a message sender or receiver and/or encrypting a message. PKI enables users of an insecure public network, such as the Internet, to securely and privately exchange data using a cryptographic key pair obtained and shared through a trusted authority. It provides for use of digital certificates that can identify an individual or an organization, and directory services that can store, verify and, when necessary, revoke the certificates.	(OECD, 2007)
Security Operations Center (SOC)	SOC is a facility that houses an information security team responsible for monitoring and analyzing an organization's security posture on an ongoing basis.	
SMART Objectives	**Specific** means clear, well defined, and detailed about who contributes to the achievement of each goal, what is the targeted accomplishment, as well as where and when the goal is to be achieved. **Measurable** means the ability to measure progress toward the goal and its ultimate achievement using objective quantitative methods. **Attainable** means that goals must be motivating and challenging yet possible to achieve because others elsewhere had already achieved such goals. **Realistic** means that goals are within reach and not impossible to reach within the time available and the constraints of human and financial resources. **Timely** means that there is clarity about when each goal is to be achieved.	(Drucker, 1954)
Tier 4 Data Center	Tier 4 data center is an enterprise class data center tier with redundant and dual-powered instances of servers, storage, network links, and power cooling equipment. It is the most advanced type of data center tier whereby redundancy is applied across the entire data center computing and non-computing infrastructure.	

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