وزارة الاتـــــــــصـــــالات
وتقنيـــة المعلومـــات
MINISTRY OF COMMUNICATIONS
AND INFORMATION TECHNOLOGY

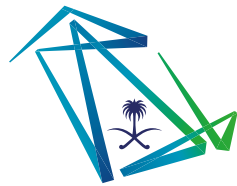**Annual
Report**

2019

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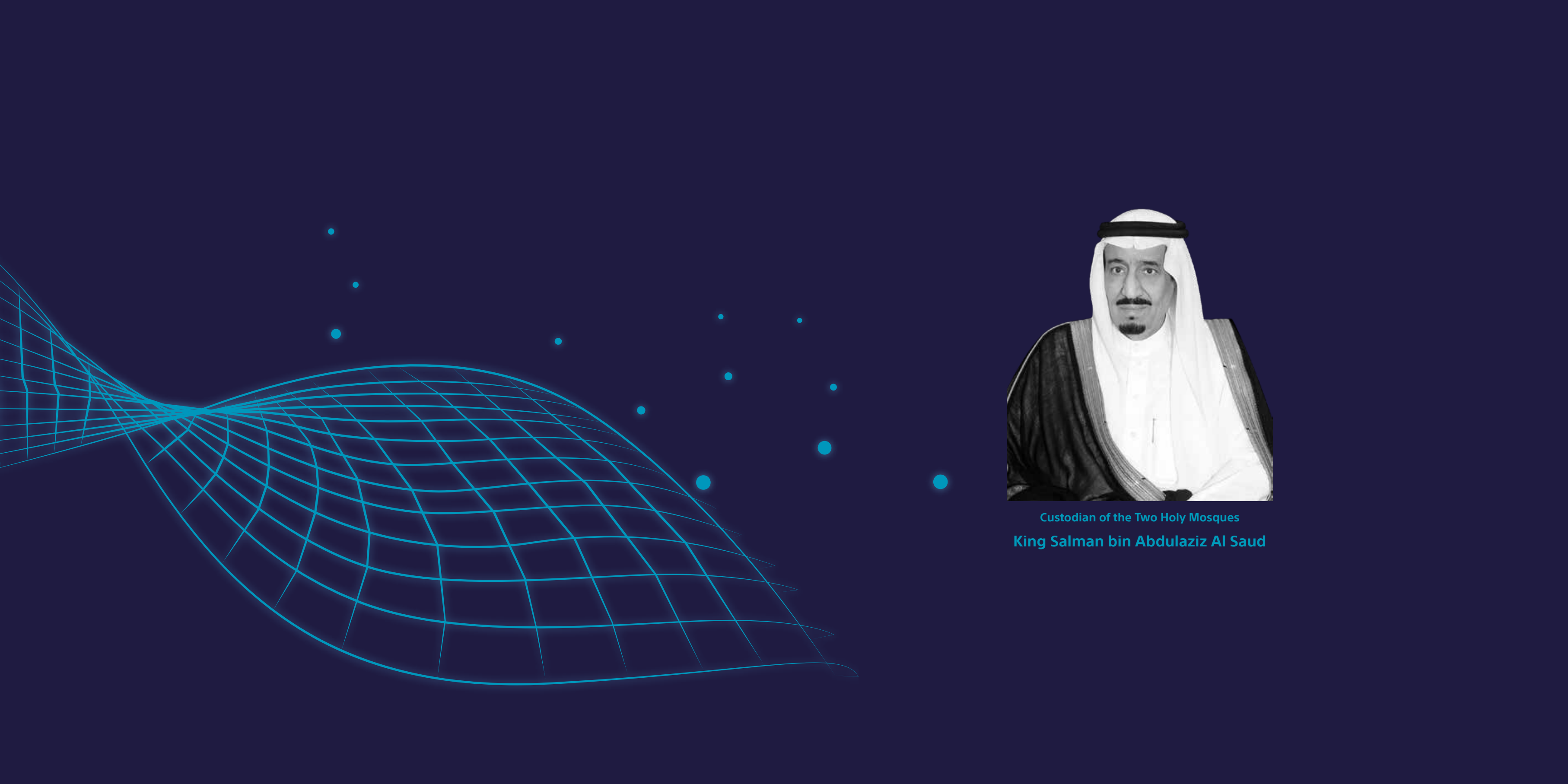
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VISION
2۞30
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

His Royal Highness

Prince Mohammad bin Salman bin Abdulaziz Al Saud
Crown Prince, Deputy Prime Minister & Defense Minister of Saudi Arabia

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Foreword

**Minister of
Communications and
Information Technology**

H.E. Eng. Abdullah Amer Al-Swaha

In the name of Allah, the Most Gracious, the Most Merciful

Praise be to Allah. Peace and blessings be upon his Prophet Mohammed.

Our beloved Kingdom moves forward in realizing more achievements and opening new horizons for the information and communication technology (ICT) sector, inspired by the vision of our wise leadership – may Allah support them – as well as their endless support to build a connected present and an innovative future.

In line with the support and enablement to expedite digital transformation, MCIT strived to increase its efforts in order to build a vibrant digital society, a prosperous digital economy, and an effective smart government.

In 2019, MCIT capitalized on its efforts by making significant leaps forward toward its aspirations in establishing a robust digital infrastructure, supporting entrepreneurship and innovation in digital fields and launching several initiatives, in addition to enabling individuals, companies and government entities, developing human capabilities and improving the IT industry, which had a positive impact on the experiences of individuals and businesses

and enhanced the Kingdom's international presence.

In this report detailing MCIT's actions and achievements in 1440/1441H (2019G), it is my honor to present to you the outcomes of the collaborative efforts by my colleagues at MCIT during this period, which was built upon a basis of generous support and limitless enablement by the leadership of this country –may Allah bless them.

On behalf of myself and my colleagues, I extend my thanks and gratitude to the Custodian of the Two Holy Mosques King Salman bin Abdulaziz and the Crown Prince His Royal Highness Prince Mohammed bin Salman bin Abdulaziz –may Allah bless them– for their generous support and wise directions, which were the main catalyst for the advancements and flourishment witnessed in the ICT sector.

Peace, mercy and blessings of Allah be upon you.

Vision of ICT Sector

"Establishment of digital strategic
pillars to enable an interconnected
present and innovative future."

Values

Honesty

Dedication

Work Enjoyment

One Team

Mastery

01 | Executive Summary
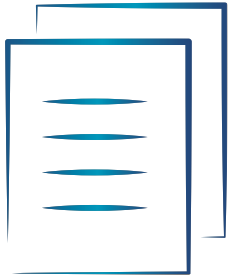
Executive Summary

The ICT sector is the key enabler and cornerstone of digital transformation in the Kingdom of Saudi Arabia (KSA), on which transformation process- es in the government sector and other economic sectors are based, as well as the society's digital transformation. In view of the rapid changes, de- velopments and dynamism of social, economic, educational, environmental and other vital life arenas, we find the clear impact of the ICT sector and its key and effective role in outlining these changes and developments directly and indirectly.

In its work for 2019, MCIT sought to establish the right regulatory environment to support the advancement of the ICT sector's development and promote digital transformation, which was achieved by developing strategies for the ICT sec- tor and MCIT and harmonizing these strategies with the objectives and programs of the KSA's Vi- sion 2030. Thereby, these strategies could become the foundation on n MCIT's works and achieve- ments are built.

MCIT achievements are focused on seven main themes:

Integration of digital ecosystem
01

E-government effectiveness
02

Transformation of telecomm- unications sector
03

Human capacity development
04

Localization of technology, innovation and expansion of the market
05

Regulation of the postal sector
06

Institutional excellence
07
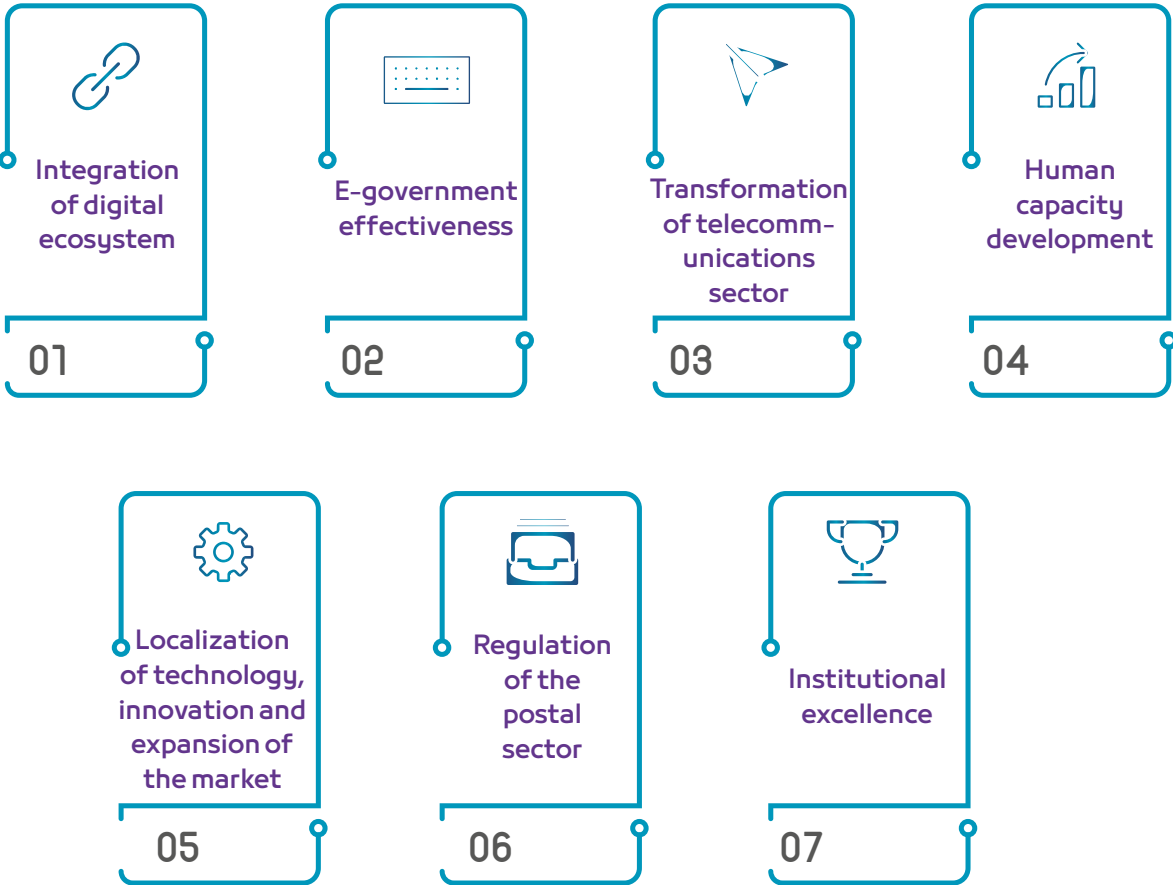
Integration of Digital Ecosystem

As part of MCIT's efforts to achieve the full integration of digital ecosystem, it sought to upgrade the national digital transformation strategy, develop plans and initiatives to support the KSA's digital transformation across 7 sectors and harmonize them throughout the national digital transformation strategy. It further contributed to developing applications for digital transformation in the health sector, with the aim of providing high-quality digital health services. Efforts in this area focused on the Tameny App, and Sarah SMS App. At the level of e-commerce, a report on retail in e-commerce was developed with the aim of unifying concepts, definitions and terms in the retail sector, which should facilitate studies and data gathering and contribute to developing plans and decision making based on clear understanding of the sector. Regarding smart cities, a guide for smart cities was prepared to support the development and implementation of smart city strategies and initiatives.

In an endeavor to achieve integration between government services, single sign-on (SSO) of electronic government services was deployed to increase reliability and enhance ease of use, reaching 101 government entities connected to SSO. Further, efforts were made towards the governance of transferring the Government Secure Network (GSN) and hosting the Government Service Bus (GSB) to the National Information Center. For the digital transformation of government entities and sectors, the first set of digital transformation reports was published, including five 5 case-study reports on the digital transformation plans for these entities and sectors.

7

Sectors aligned with the national strategy for digital transformation

5

Case-study reports published on the digital transformation plans for government entities and sectors

E-Government Effectiveness

At the level of e-government effectiveness, the efforts towards the digital transformation of government services resulted in achieving higher levels of digital maturity of government services, reaching a maturity level of 81%. The new Unified National Platform (MyGov.sa) was launched. MyGov.sa represents an ambitious initiative that seeks to build an integrated ecosystem that provides high-quality and efficient government services, by providing customized services to the user's needs. The platform also covers the government services required by all segments in the society. A new identity for the platform was designed to be consistent with the best experiences in the field, with the aim of providing a distinguished and seamless user experience. There are 3,300 services available on the platform, which were used by 890,000 visitors to the portal. MCIT reviewed Government IT projects and provided the necessary technical extension services, thus achieving total savings of SAR 800 million. At the level of training and developing personnel specialized in e-government fields, the Smart Government Development Center was established, with the aim of developing the government human capital in the ICT and business sectors in government entities. More government entities were connected to government platforms. The number of government services that were identified in the Government Services Observatory amounted to 5,059. On the Government Service Bus (GSB), data providers reached 75, and data consumers were 132. Entities connected to the e-Correspondence System (Morasalat) were 34 and those connected to the National Contact Center (Amer) were 37, providing 336 services through Amer.

800 Million SAR

Savings from IT projects in government entities

81 %

Maturity level of digitally-transformed government services

Transformation of
Telecommunications Sector

Regarding the transformation of the telecommunications sector, and within the endeavors to provide and improve efficient networks to develop a reliable and effective telecommunications infrastructure that accelerates digital transformation and keep abreast of the KSA's Vision 2030, MCIT continues its efforts to deploy high-speed fiber optic networks in urban areas. Homes covered with fiber optic networks amounted to more than 3 million, raising the penetration rate to 53%, while homes covered with wireless broadband networks reached 48%. Moreover, in cooperation with the Communications and Information Technology Commission (CITC) and operators, efforts were made towards the commercial launch of the fifth generation (5G) network and enabling its deployment. It is considered the largest 5G network in Europe, Africa and the Middle East with coverage of more than 30 cities and over 5,400 5G towers installed by the end of 2019.

Seeking to provide a digital infrastructure across all State's sectors including the industrial sector to enable digital transformation in factories and 4th Industrial Revolution (4IR), the '4IR Infrastructure Deployment Initiative' was launched this year as part of the National Industrial Development and Logistics Pro-

gram. In Phase I of the initiative, the communications infrastructure was provided for 5 industrial cities and 1,300 plants were connected to fiber optic networks.

These initiatives have significantly improved the average internet speed over mobile networks from 29.31 Mbps at the end of 2018 to 55.58 Mbps at the end of 2019, thus surpassing the global average of mobile internet speed (28.02 Mbps). The KSA ranked 13th globally for mobile internet speed jumping from the 51st place at the end of 2018, surpassing other developed countries like the United States, Japan, China, Spain, Hong Kong, the United Kingdom, Germany, Greece and Italy. The average internet speed over fixed telecommunications networks were further improved to 52.93 Mbps at the end of 2019 compared to 31.41 Mbps at the end of 2018.

3 Million

Homes covered with fiber optic networks in urban areas

374 K

Homes covered with high-speed wireless broadband networks in rural areas

52.93 Mbps

Average Internet speed over fixed telecommunications networks

55.58 Mbps

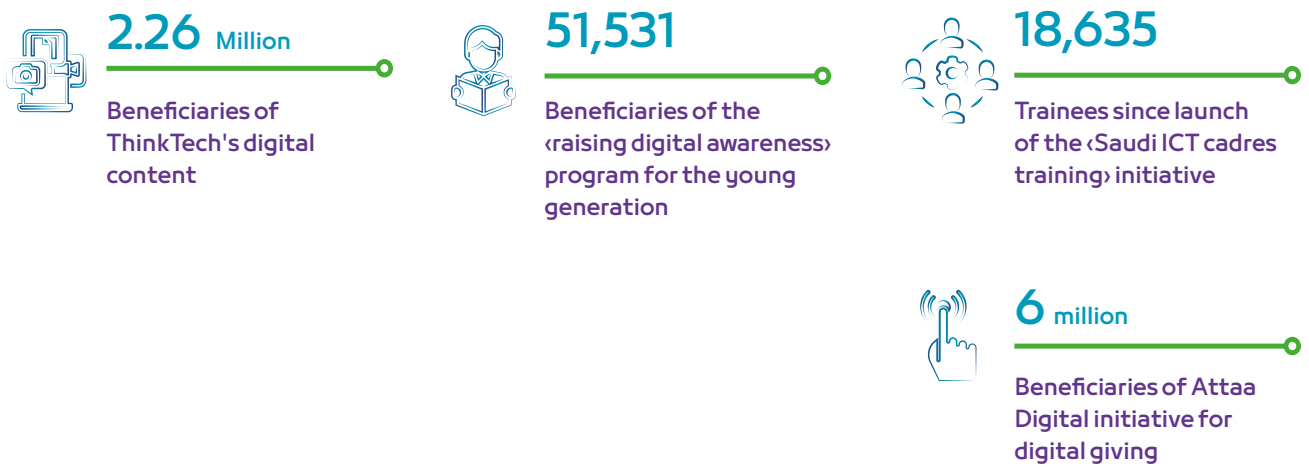Average Internet speed over mobile networks

Human Capacity Development

At the level of human capacity development, the ThinkTech initiative continued its efforts to develop digital capabilities and spread awareness across various technical fields in order to build a generation that contributes to promoting technology development in the KSA and driving digital transformation. The initiative succeeded in achieving widespread among target groups. The number of beneficiaries of digital content amounted to 2.26 million, while the number of beneficiaries of the initiative events amounted to 76,000.

MCIT was further keen on focusing on the young generation by developing a comprehensive program to raise their digital awareness. The beneficiaries of this program amounted to 51,531. Moreover, MCIT launched a local competition for participation in the World Robot Olympiad (WRO) to encourage the young generation to demonstrate their skills in this field and to prequalify those who will participate in the WRO's global final competition, where the Saudi team ranked 7th. The 'Future Trucks' initiative, seeking to provide educational vehicles equipped with the tools and equipment of the 4th industrial revolution (4IR) technology and advanced scientific materials in digital areas, contributed to spreading awareness and skills in these technologies. The number of male/female students visiting the Future Trucks amounted to 31,842. The Virtual Lab initiative was launched to provide individuals with the opportunity to put their theoretical ideas into real prototypes. The Digital Skills Framework based on the Skills Framework for the Information Age (SFIA 7) was released and distributed, with the aim of facilitating the digital skills development and employment by putting clear and detailed levels of classifications for digital skills. The digital giving initiative (Attaa Digital) continued its efforts to spread digital knowledge and awareness among Arabs around the world by launching training sessions and spreading knowledge content in the digital field. The beneficiaries of Attaa Digital amounted to 6 million.

The Saudi Digital Academy (SDA) was launched for developing national cadres for high-profile jobs in the field of the 4th Industrial Revolution as well as modern and advanced technologies. SDA launched the 'Data Science' and 'Telecom Cyber Pioneers' programs. Further efforts and coordination were made to introduce digital and coding skills in elementary school with the aim of developing digital skills at an early stage of education. A plan was launched to nationalize ICT jobs in collaboration with the relevant entities with a target of 15,000 jobs to be Saudized at the end of 2020. Saudization of jobs in the ICT sector increased from 43% in 2018 to 44.8% in 2019. National cadres were trained in the various technology fields along with major ICT companies, where 18,635 cadres were trained since the initiative was launched. To support women participation in the ICT sector, a comprehensive program was designed for enabling women in the ICT sector. The program includes spreading digital awareness, enhancing digital and leadership skills, supporting female entrepreneurs in the sector and developing business models for women's outsourcing centers. It is worth noting that women's participation in the labor market increased in 2019, where female workforce accounted for 14.48% of the ICT sector at the end of 2019, compared to 13.2% in 2018.

2.26 Million

Beneficiaries of ThinkTech's digital content

51,531

Beneficiaries of the ‹raising digital awareness› program for the young generation

18,635

Trainees since launch of the ‹Saudi ICT cadres training› initiative

6 million

Beneficiaries of Attaa Digital initiative for digital giving

Localization of Technology, Innovation and Expansion of Market

For localization of technology, innovation and expansion of the market, MCIT exerted efforts to support and enhance the local IT market, which led to the growth of the IT and emerging technologies market, reaching SAR 45.2 billion at the end of 2019.

Within its endeavors to achieve sustainable growth in this area, MCIT conducted a study for a national IT development program aimed at accelerating and promoting the economic ecosystem in the traditional and emerging IT sector in the KSA. MCIT further continued developing the Cloud-First Policy, which serves as a guide on new investments in IT from a perspective of adopting cloud computing technologies, with the aim of rationalizing government expenditure on IT, accelerating the pace by which government entities can transfer from traditional IT solutions to cloud computing solutions. There were attempts to attract a number of leading global firms in cloud services. To promote the adoption of open source solutions and encourage innovation in this field, MCIT launched an open-source program (Masdar) supported by 26 strategic initiatives, including 8 key enablers, 10 quick wins and 10 pivotal initiatives.

Several agreements were signed with a number of major firms in various technology fields to attract them to the KSA with the aim of leveraging their experiences and capacities to enhance the local IT market and localize technologies of such firms. To enhance the adoption of emerging technologies and their growth in the KSA, a portfolio for emerging technologies was launched with a total value of SAR 1 billion to support, finance and encourage entrepreneurship projects and emerging technology activities. The number of applicants requesting the portfolio support amounted to 700. To encourage entrepreneurship in the sector, the 'Tech Champions' program was launched to provide a package of technological, financing and guiding services in order to support entrepreneurs, including the organization of bootcamps specialized in entrepreneurship. There were 3,500 people registered in the Tech Champions program and 350 male/female trainees joined the bootcamps.

45.2 Billion SAR

Value of IT and emerging technologies market in the KSA

SAR 1 Billion

Value of the emerging technologies portfolio

Regulation of the Postal Sector

MCIT sought to separate the regulatory responsibilities from the operational responsibilities of the postal sector in order to raise the regulatory maturity of the sector, stimulate investments and protect the rights of investors and consumers.

Furthermore, MCIT prepared a new draft law with the aim of promoting investment in the postal sector, enhancing users' confidence in the postal services and developing business transactions so that the sector may become key supporter of the national economy. Joint meetings were also held with private sector entities specialized in postal services to discuss the challenges and the best rules and regulations that resolve those challenges. A project to launch a new strategy for the postal sector is being worked on with the aim of developing the sector and supporting postal services, in addition to raising the quality and reliability of those services.

Institutional Excellence

In pursuit of enhancing its performance to achieve its goals and sustain its achievements, MCIT was keen on achieving institutional excellence within the Ministry's departments. International quality and institutional excellence standards were followed by adopting the European Foundation for Quality Management (EFQM) excellence model. The maturity of work procedures within the Ministry was emphasized by studying the present situation of procedures and developing a detailed action plan to improve the level of maturity. These efforts culminated in raising the level of maturity of procedures within MCIT from 2.3/5 to 3.3/5. One of the most notable outcomes of the roadmap that helped enhance the maturity was the launch of the procedure portal to manage MCIT's work procedures electronically.

At the level of MCIT's responsibilities for international indicators, and in pursuit of achieving the best results to improve the KSA's rankings in international indicators, a unit was established to be in charge of conducting analysis on international indicators and providing recommendations and suggestions to improve the KSA's rankings in these indica-

tors. MCIT also sought to improve the spatial environment of its headquarters by increasing the capacity of the building by adding 256 desks, designing and executing 8 rooms for the Ministry's archives and holding 543 events inside the Ministry.

To achieve financial transparency, MCIT launched the financial dashboard that includes tools for the visual handling of data for the financial activity of all MCIT's sectors. MCIT further worked on increasing its readiness to implement the new government tender and procurement law.

To create a positive environment for its staff, MCIT launched a number of development and catalytic initiatives, including the 'supervision job training program' and 'employee loyalty initiative' (Because You're Worth It) that celebrates MCIT staff's special occasions through token gifts. Awareness and educational messages were spread and personal coaching workshops were launched, in addition to qualifying 40 personal mentors certified by the International Coaches Union. At the technology level, Phase II of 'Mawared' mobile app was released, which allows easy access for employees to their infor-

mation in order to apply for all MCIT's various services anywhere and anytime through their smart devices. MCIT's technical architecture was enhanced to keep abreast with the volume of work. The platinum level in completing connectivity on 'Eltizam' platform was attained, with a ratio of 96%.

From **2,3** to **3,3**

Increase in the maturity of MCIT's procedures

543

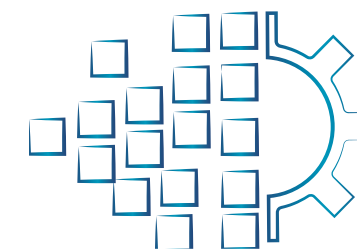Events held at MCIT's headquarters

256

Additional desks available across the various administrative levels

02 | ICT Ecosystem

ICT
Ecosystem

Many roles and responsibilities relating to digital transformation and the ICT sector rest with the ICT ecosystem. These roles and responsibilities are distributed among several entities within the ecosystem to meet the requirements of supporting digital transformation and regulating and developing the ICT sector.

The ICT ecosystem consists of the following:

The ICT ecosystem consists of the following:

MCIT

MINISTRY OF COMMUNICATIONS
AND INFORMATION TECHNOLOGY

National Digital Transformation Unit (NDU)

National Digital Transformation Unit

e-Government Program (Yesser)

e-GovernmentProgram

National Center for Digital Certification (NCDC)

National Center for Digital Certification

Communications and Information Technology Commission (CITC)

Communications and Information Technology Commission

Saudi Post

Saudi Post

MINISTRY OF COMMUNICATIONS
AND INFORMATION TECHNOLOGY

The Ministry of Communications and Information Technology (MCIT) is the authority supervising and responsible for the ICT sector in the KSA, pursuant to the Council of Ministers Resolution No. 133 dated 21/05/1424H (12/07/2003G) on reregulation of MCIT in accordance with the tasks entrusted thereto. The Resolution also included setting the objectives assigned to MCIT, namely, to lead the digital transformation and supervise the development of the ICT sector in the KSA. The terms of reference and tasks of MCIT in accordance with the changes, developments and tasks assigned thereto are as follows:

1. Develop strategic plans, policies, draft laws and regulations for the development of the ICT sector and digital transformation in the KSA.
2. Oversee the postal sector, draft policies and development plans, propose laws and modify them, align with related entities with regards to the postal services provided to government entities, and represent KSA in local and international organizations concerning the postal sector and follow up on KSA's commitments in that regard. And authorize on rules and regulations on universal service proposed by CITC.
3. Develop executive mechanisms and programs to accelerate the deployment of wired and wireless broadband services and ensure the very urgent implementation of the necessary infrastructure so as to ensure that all areas of the KSA are covered with broadband as much as possible, to encourage national and international companies to participate in broadband-related projects, and to manage a fund for stimulating wired and wireless broadband.
4. Develop executive mechanisms and programs to accelerate the development of digital capabilities in the KSA and raise digital awareness, including general and specialized digital capabilities, with a focus on emerging technologies in consistency with the various needs of the ICT sector.
5. Develop executive mechanisms and programs to build an IT sector at a competitive global level that develops local technical content and achieves economic sustainability, leadership and innovation at the regional and global levels.
6. Develop mechanisms to stimulate and encourage investment and innovation in the ICT sector and digital industries, attract foreign investments and leading international ICT companies to the KSA, support local technology startups and SMEs and help them build their capacities to reach international markets in coordination with the competent authorities.
7. Supervise the application of the provisions of Electronic Transactions Law and lay out the technical and contractual guidelines for government entities to benefit therefrom when contracting on implementation of projects relating to digital government.
8. Supervise and manage the tasks related to issuance of digital certificates.
9. Conduct studies in the ICT and digital transformation fields.
10. Coordinate with government entities, private sector and other stakeholders and form strategic partnerships with regard to ICT and digital transformation.
11. Represent the KSA before local, regional and international bodies of ICT and postal sector.

For further information, see Appendix D (MCIT's Organizational Chart).

The National Digital Transformation Unit (NDU) is a center of excellence established pursuant to the Royal Order No. 49584 dated 291438/10/H (232017/07/G). NDU aims to accelerate the digital transformation in the KSA in pursuit of the objectives of Saudi Vision 2030 through joint cooperation with the public and private sectors in order to elevate the KSA's standing to be among the digitally-developed countries, and to contribute to sustainable economic development based on promoting the values and concepts of innovation and investment in young talent.

NDU assumes the following tasks:

1. Prepare a draft national strategy for digital transformation.
2. Develop digital transformation policies through application of a comprehensive and integrated framework and implementation mechanism.
3. Take necessary actions to activate legislation required for digital transformation.
4. Activate digital governance and ensure its consistency with the national strategies and priorities.
5. Define the priorities required to activate digital transformation and identify the necessary support to ensure prompt achievement of intended goals.
6. Adopt initiatives relating to digital transformation and funding thereof.
7. Prepare periodic reports on digital transformation.
8. Review and optimize the programs relating to digital transformation currently in place to determine the possibility of benefiting from such programs within the unified framework.
9. Review and optimize all plans relating to digital transformation currently in place as well as the executive programs and other subplans relating to digital transformation.
10. Identify the challenges facing the transformation of the KSA into a digital economy and society and make the necessary proposals to overcome these challenges, benefiting from the best global practices relevant thereto.
11. Submit proposals for the development of legislative structure relating to digital transformation, in order to increase the efficiency and quality of digital transformation efforts.
12. Develop a mechanism to accelerate, develop and implement initiatives to expand broadband services and ensure implementation of necessary infrastructure in a manner that covers all regions of the KSA.
13. Work to make optimal use of assets and investments of the digital ecosystem and avoid duplication of projects.
14. Set technical and contractual guidelines for public entities to benefit therefrom.
15. Accelerate development of digital services through appropriate testing mechanism.
16. Develop a system that helps in the privatization of digital services.
17. 17. Propose a mechanism to accelerate development of digital capabilities in the KSA.
18. 18. Set out criteria and indicators required to measure digital transformation.

The e-Government Program (Yesser) was established in 1426H (2005G) pursuant to the Royal Order No. 7/B/33181 dated 101424/07/H (072003/09/G) assigning all matters relating to development of a plan to provide services and government transactions electronically and provision of necessary resources for implementation of such plan to MCIT. Yesser serves as an enabler and stimulator of the performance of e-government transactions and reduces centralization with regard to the application of e-government transactions as much as possible, with minimal coordination between government entities.

The main functions of Yesser are as follows:

1. Increase the productivity and efficiency of public sector.
2. Increase the investment revenues from government IT expenditure.
3. Provide better services to individuals and businesses more easily.
4. Provide required information accurately and timely.
5. Link government entities with each other through a number of systems and platforms that integrate the government transactions and joint data.
6. Develop common platforms to link and integrate services provided by the government entities.

The National Center for Digital Certification (NCDC) was established at King Abdulaziz City for Science and Technology pursuant to the Royal Order No. 7/B/9378 dated 171422/05/H 072001/08/G. The NCDC's terms of references and functions were determined pursuant to the Electronic Transactions Law promulgated in the Royal Decree No. M/18 dated 081428/03/ AH, pursuant to which the NCDC became a subordinate of MCIT.

NCDC's Vision:

A digital certification sector that:
1. Is a local leader
2. Is internationally-recognized
3. Achieves digital transformation objectives

NCDC's Mission:

To govern and develop the digital certification sector at the national level in order to support the digital transformation objectives in the KSA (Digital Government and Digital Economy) by ensuring that all types of electronic transactions are conducted with high reliability and legal authenticity.

هيئة الاتصالات وتقنية المعلومات
Communications and Information Technology Commission

The Communications and Information Technology Commission (CITC) is the entity responsible for regulating the ICT sector and the postal sector in the KSA. The Telecommunications Act issued under the Royal Decree No. M/12 dated 121422/03/H (042001/06/G) and the Telecom Act Bylaws issued by the Ministerial Decision No. 11 dated 171423/05/H (272002/06/G) specify the legal framework for regulating the ICT sector.

The Act includes several objectives, including provision of advanced, adequate and affordable telecommunications services, creation of favorable atmosphere to promote fair competition, effective use of frequencies, localization of telecommunications technology and keeping pace with its advancement, and achievement of clarity and transparency in procedures, as well as realization of equality and nondiscrimination principles and protection of public interest and interests of users and investors.

The regulation of CITC determines its functions and terms of reference as regulator of the ICT sector having its legal personality and financial and administrative independence. The main functions of CITC include the following:

1. Regulate the ICT and postal sectors.
2. Perform regulatory and supervisory tasks with regards to the postal sector.
3. Monitor, follow up and benefit from development of information and communication technologies and services.
4. Create an environment that stimulates investment in the ICT and postal sectors in the KSA.
5. Protect users' interests relating to public telecommunications and Internet services, monitor the performance of bodies licensed to provide such services and take such measures that oblige those bodies to abide by licensing conditions.
6. Encourage investment in ICT services and equipment, encourage provision of reliable services at affordable prices and good quality in all regions of the KSA, and take all such measures that guarantee the rights of investors in ICT and postal services.
7. Enforce policies and procedures that ensure the protection of competitiveness in the ICT and postal markets.

البريد السعودي
Saudi Post

Saudi Post has witnessed successive stages of development during its journey, starting with establishment of the first Directorate of Post, Telephone and Telegraph in Makkah in 1345H (1926G), which was transferred to the Ministry of Communications under the name of ‹Deputy Ministry for Wireless and Postal Affairs› in 1372H (1953G), and then transferred into a public corporation under the name of ‹Saudi Post› pursuant to the Council of Ministers Resolution No. 78/I dated 291433/03/H (212012/02/G) to transfer the postal facility into a public corporation.

To support the ICT ecosystem, Saudi Post adopted an ambitious plan based on building a system of multiple networks, establishing a unified national address system and rendering a package of nontraditional postal services in order to enable provision of logistics services, enabling e-government programs and e-commerce applications by maximizing partnerships with entities of the public and private sectors, developing e-government transactions and facilitating e-commerce transactions. Accordingly, Saudi Post launched many new services such as e-mall service and Makani platform for sale of sport games tickets as well as ‹Jamaee› and ‹Mureeh› services, in addition to development of traditional postal services such as letters, packages/parcels and express mail.

Saudi Post is striving to transform to modern digital activities, aiming to raise the quality of its work and increase its speed through advanced postal technologies and including its clients with interactive postal services, through which clients are able to track packages through Saudi Post's website, in addition to focusing on applying postal technologies, and applying connectivity projects throughout the KSA, and expanding automatic sorting operations in all its offices to raise the level of quality and speed when serving its clients.
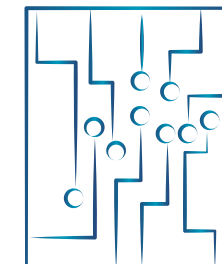
Digital Transformation

Digital transformation is a key enabler to achieving the KSA's Vision 2030. It is a key pillar in digital economy development and enhancement of efficiency and performance of the public and private sectors, and a primary driver of the development of digital economy, due to digital transformation's influence on increasing the speed and efficiency of operations and reaching the highest levels of dependency and accuracy.

Due to the various factors and wide scale of effect of digital transformation, reaching all economic sectors, in addition to the constant changes and rapid developments in digital transformation, maintaining digital transformation and ensuring its proper application poses serious challenges on an international scale. Therefore, it is necessary to have a centralized governance defining the objectives and directions as well as the sectorial priorities with regard to digital transformation, while involving stakeholders and related entities to determine the activities and processes required to achieve digital transformation and come up with innovative solutions that are trialed and tested to decide on its applicability and expected outcomes.

The following is a review of the digital transformation ecosystem in the KSA, its governance model and framework, in addition to the role of the ICT ecosystem in enabling and consolidating the foundations of digital transformation.

Digital Transformation Ecosystem

The digital transformation ecosystem is concerned with the transition of procedures, processes, and services in sectors from the traditional methods to digital technologies-based new business models, which raises their efficiency and accuracy. This requires concerted efforts among different actors and integration of systems and applications used. Therefore, the ecosystem consists of the stakeholders concerned with the transformation of different sectors into digital transactions, in addition to the enablers of digital transformation.

Digital Transformation Governance

In light of the need to accelerate digital transformation in the KSA and achieve its desired goals to serve the Vision 2030 objectives, the Royal Order No. 49584 dated 291438/10/H (232017/07/G) was issued on the formation of the National Committee for Digital Transformation in the Ministry of Communications and Information Technology (MCIT) to develop digital transformation policies and strategies, develop their implementing plans and programs required, and ensure coordination of related initiatives. The Royal Order No. 59028 dated 181439/11/H (312018/07/G) was issued on the formation of the National Committee for Digital Transformation under the chairmanship of Minister of Communications and Information Technology, with Minister of Health as Member and Vice-Chairman, and the membership of Minister of Commerce and Investment, Minister of Energy, Industry and Mineral Resources, Minister of Education, Minister of Finance, Minister of Economy and Planning, Supervisor-General of the Center for Studies and Information Affairs at the Royal Court, Vice Minister of Interior, Governor of National Cybersecurity Authority and Director of National Information Center (NIC), in addition to the CEO of NDU as a Member and Secretary of the Committee.

The NDU was established in accordance with Article 4 of the Royal Order No. 49584 dated 291438/10/H (232017/07/G), under the supervision of the Committee's Chairman who will appoint, with a decision to be issued by him, the CEO of the NDU. NDU's headquarters will be in MCIT.

The functions of the Committee are as follows:

Supervise the digital transformation program

Approve the annual work plan and operational plans of the digital transformation program

Approve the periodic reports on digital transformation prepared by the NDU

Propose and submit draft laws related to digital transformation according to the procedures followed

Approve a governance framework for digital transformation initiatives

Figure (1) illustrates the framework of the National Committee for Digital Transformation.

Royal Court

Defines the responsibilities of the National Committee for Digital Transformation and NDU

- Submit outputs and recommendations
- Submit periodic reports

National Committee for Digital Transformation

Minister of Communications and Information Technology (Chairman)	Minister of Health (Vice-Chairman)	Minister of Commerce	Minister of Finance	Minister of Economy & Planning	Minister of Education
Deputy Minister of Interior	Governor of National Cybersecurity Authority	Chairman of the Saudi Data and Artificial Intelligence Authority	Director of National Information Center (NIC)	CEO of NDU (Secretary)	

Secretariat of Committee

- Digital transformation
- Services

Figure (1): The Framework of the National Committee for Digital Transformation

Digital Transformation Framework

In order to guarantee the integration and synergy of all digital transformation components, it is necessary to adopt a framework that outlines a plan for digital transformation which describes the roles and responsibilities assigned to the entities concerned with digital transformation. This is illustrated by the digital transformation framework in Figure (2) which describes the most important steps of transformation.

2. Digitize government sector through supporting e-government and utilizing national data.

- **Policies and Regulations:**
  that establish the regulatory environment of the sector, and introduce the regulatory framework for operations and activities of entities related to the sector whether it be regulators, companies or clients, and build partnerships to support integration between entities.

- **Provide and adopt technology:**
  including technology hardware and software in various fields, and the level of usage of such hardware and software, which make it possible to adopt and use them on a wide scale.

- **ICT Infrastructure:**
  through which it renders ICT services, such as fiber optics, mobile communications, advanced wireless transmission technologies, data centers, and other essential hardware and software preparations for provision of services.

- **Human Capital:**
  representing knowledgeable and skilled ICT cadres and talents that contribute to the development of digital services and products.

- **Research, Development, Innovation and Entrepreneurship:**
  including all research efforts in ICT fields in order to support the development of digital products, services and innovations that consolidate digital transformation, in addition to entrepreneurial projects that aim to benefit from such research and development activities.

2. Digitize government sector through supporting e-government and utilizing national data.

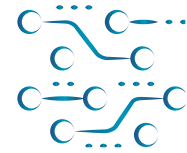- **E-government:**
  includes all government transactions that are processed digitally through electronic systems and platforms set-up by the government, and related operations relevant to the connectivity and integration of those systems and platforms.

- **National Data and Artificial Intelligence:**
  National data is considered to be a vital and central aspect of achieving government digital transformation. Therefore, it is necessary to exercise due diligence with regard to data, its policy development, its quality assurance, and to use state-of-the-art analysis and forecasting techniques to extract answers, solve operational and strategic problems, and identify directions. Artificial Intelligence also plays a key role in making use of data through analysis, forecasting, predictions and recommendations provided based on the data.

3. Accelerate adoption of digital transformation through the development of digital platforms for priority sectors, by building strategic partnerships between all related public and private entities. In addition to spreading the usage of these platforms through raising awareness of the benefits of using them instead of traditional processes. In order to achieve such a goal, high maturity is required in government services› digitization levels as well as national data quality and availability.

Seven priority sectors have been identified for the KSA to accelerate its digital transformation: e-health, e-learning, e-commerce, smart cities, industrial & mining & logistics services, Hajj & Umrah & culture, and security & safety.

Achieving digital transformation in these sectors requires a cooperative and participatory framework that brings together the stakeholders, coordinates the priorities among them, adjusts their attitudes and removes any obstacles or drawbacks that slow the process of transformation.

Digital transformation must also be accompanied by a high degree of reliability and dependability that builds confidence with the parties and ensures privacy. Here comes the role of cybersecurity to encompass all elements of the framework with the required security protection at all levels.

Figure (2): Digital Transformation Framework

* The National Cybersecurity Authority (NCA) is the competent authority responsible for cybersecurity in the KSA, under the Royal Order No. 6801 dated 11/02/1439H (31/10/2017G). NCA aims at strengthening the protection of the KSA›s vital interests and national security with regard to cybersecurity and protecting critical infrastructures as well as government services and activities. NCA also aims at enhancing the protection of networks and IT systems, their components (hardware and software), their services and data contained therein, from any penetration, disruption, modification, access, use or unauthorized exploitation.

National Cybersecurity Authority

Role of ICT Ecosystem in Digital Transformation

The ICT ecosystem and all its entities have a pivotal role in digital transformation, where each entity plays a central role in achieving digital transformation and the National Committee for Digital Transformation is the regulatory framework for digital transformation. Meanwhile, the ICT ecosystem has an active role in the Committee, in addition to the NDU's role in supporting and enabling digital transformation across all sectors, besides their continuous efforts to work and align with related entities in all sectors to accelerate transformation.

For the government entities, the e-Government Program (Yesser) has a role in organizing and supporting digital transformation, through the alignment, follow-up and provision of necessary guidance and support when it comes to digital transformation in government transactions and raising the maturity of e-Government transactions. In addition to Yesser's role in increasing the spending efficiency of government IT projects to achieve the most benefit from available resources. Yesser also works on enhancing the connectivity and integration between government entities and services/processes conducted by those entities, as well

as the integration with the unified national platforms.

The ICT ecosystem strives to provide a physical infrastructure as it is the primary enabler of digital transformation and the basis on which all digital transformation operations are built upon. The ICT ecosystem oversees and supports the expansion of high-speed broadband services through fixed and mobile communication networks, in addition to maintaining the regulatory environment that governs all the fields of the ICT sector, through policies and partnerships.

The ecosystem also has a role of encouragement and stimulation in the ICT and emerging technologies

markets, in addition to adoption of new and emerging technologies such as cloud computing, Artificial Intelligence, Internet of Things, robotics, smart cities and other emerging technologies, which achieves availability and usability of these technologies locally.

Maintaining the proper environment for the development of digital skills is also another role for the ICT ecosystem, apart from stimulating research, development and entrepreneurship, with the aim to contribute to the transformation into a digital economy and achieving the hopes and prospects in that regard.

illustrates the role of ICT ecosystem in digital transformation.
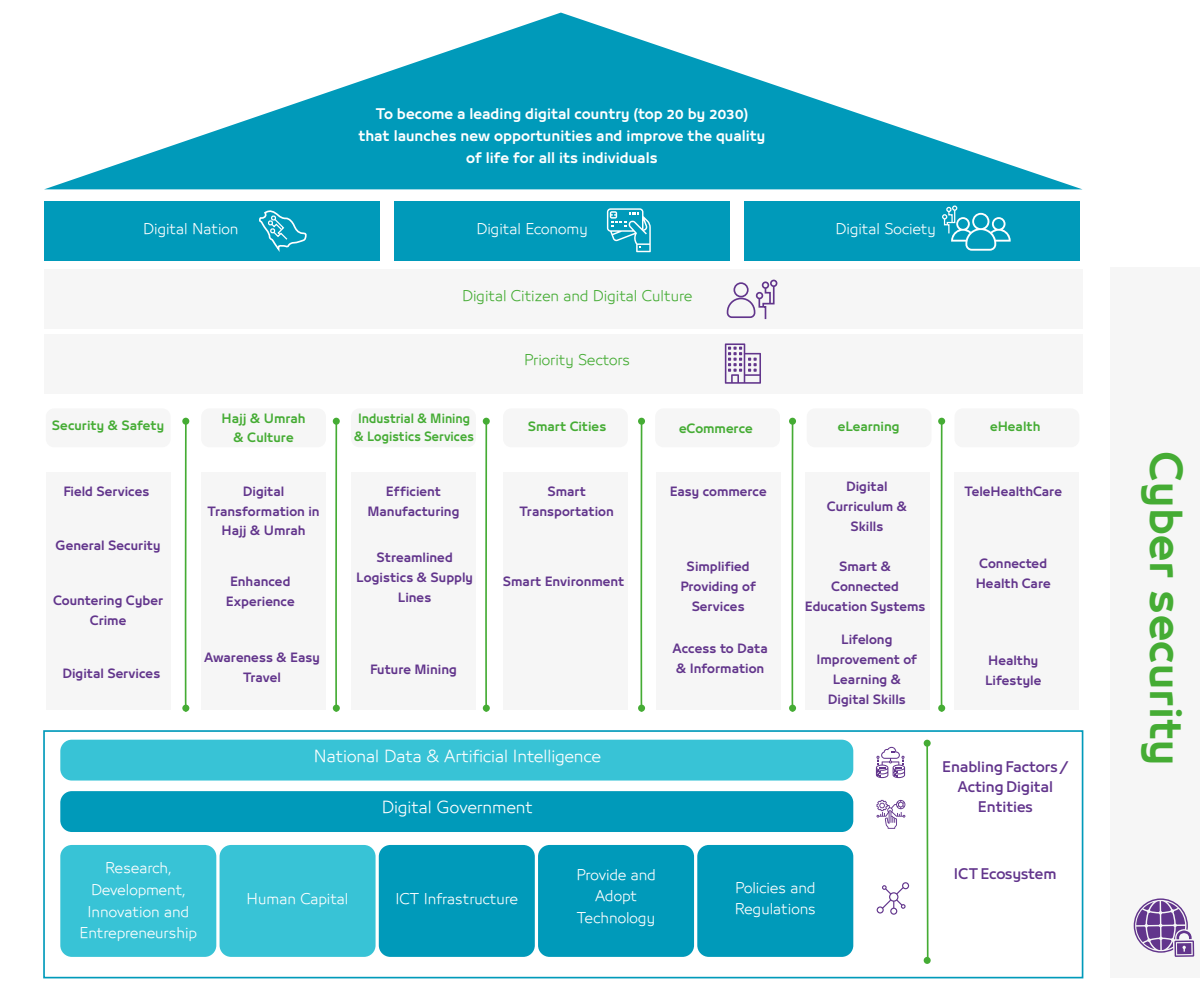
Role of MCIT and related entities: () Leadership () Enablement () Contribution () Out of scope
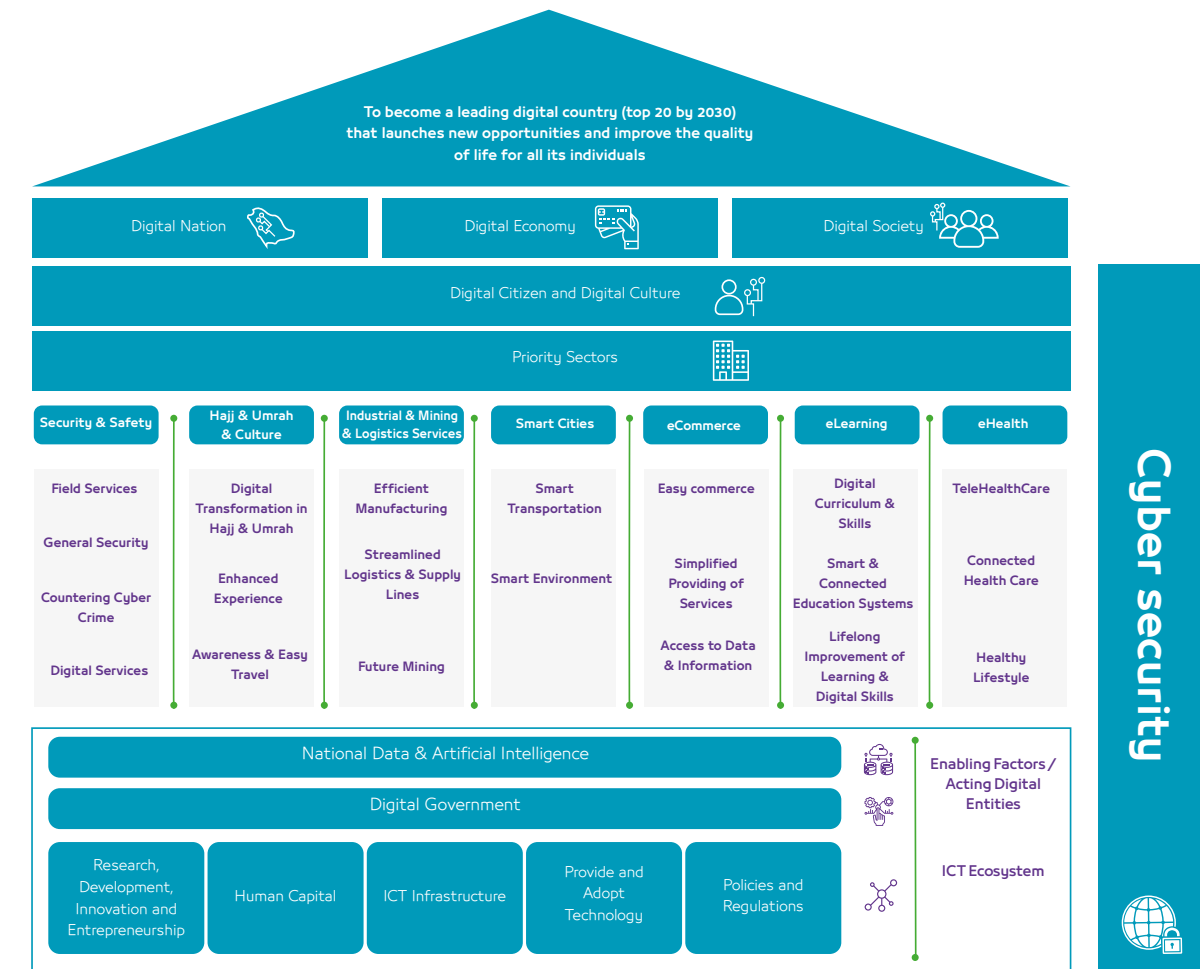
Figure (3): The role of ICT ecosystem in digital transformation

* The National Cybersecurity Authority (NCA) is the competent authority responsible for cybersecurity in the KSA, under the Royal Order No. 6801 dated 11/02/1439H (31/10/2017G). NCA aims at strengthening the protection of the KSA›s vital interests and national security with regard to cybersecurity and protecting critical infrastructures as well as government services and activities. NCA also aims at enhancing the protection of networks and IT systems, their components (hardware and software), their services and data contained therein, from any penetration, disruption, modification, access, use or unauthorized exploitation.

ICT
Sector Strategy

As part of MCIT›s efforts to lay down a strong and developed digital infrastructure that contributes to accelerating the digital transformation process, and in turn support the directions of the KSA's Vision 2030 aimed at enhancing the role of ICT sector to build a digital society, a digital government, a thriving digital economy and an innovative future for the KSA, MCIT sought to develop a strategy for the ICT sector aimed at developing the KSA's digital capabilities in ICT, and investing such capabilities in an optimal manner to grow its future projects, serve individuals and communities, keep pace with the national and global requirements, in addition to attracting more foreign technology investments. The strategy will further improve and develop the various development activities, boost the effectiveness and performance of public and private sectors through enabling digital transformation, so that the KSA may become one of the world leaders in ICT.

Preparations of the sector's strategy began with developing a comprehensive methodology that consists of four main phases namely: study of the current status, setting the target status, outlining the strategy and detailing the implementation model. In the study of the current status, the ICT sector features were mapped out, technologies were classified into three main groups (communications, traditional IT and emerging technologies as illustrated in Figure (4)), and key sectors benefitting from the ICT sector development were identified, in addition to the sector's enablers which will have an impact on the beneficiary sectors as illustrated in Figure (5). The study of the current status also included a comprehensive analysis of the sector's key features, collecting data on the ICT sector's contribution to the GDP and share of the telecommunications market, IT market and other markets of the sector in this contribution. Benchmarking studies were conducted to analyze the status of the sector in the KSA relative to other countries and global averages, in order to study and develop targets that should be achieved over the next five years. Gap analysis of the current and target statuses was performed to analyze gaps and determine requirements for the sector's development.

Figure (4):
Technologies within the ICT sector
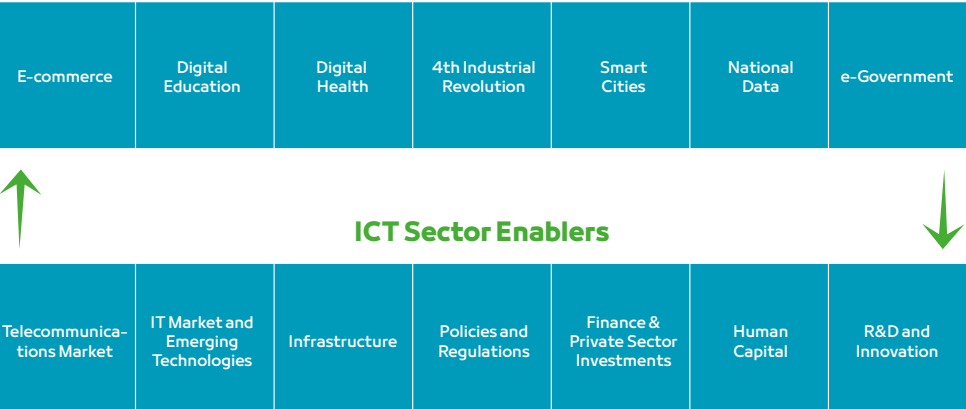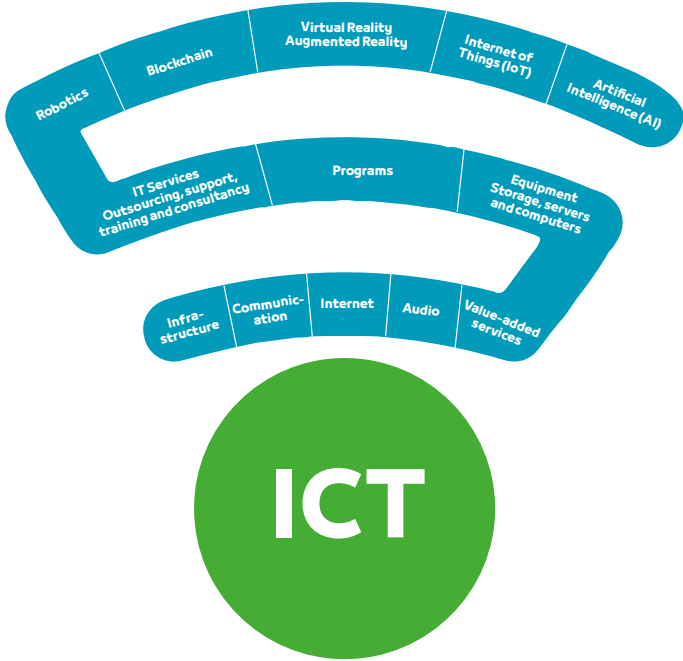
Figure (5):
Beneficiary sectors and ICT sector enablers

Based on the results of the current status study and target setting, the strategy was developed to include three strategic themes as follows:

Transformation of tele-communications sector.

Localization of technology and innovation.

Expansion of technology market.
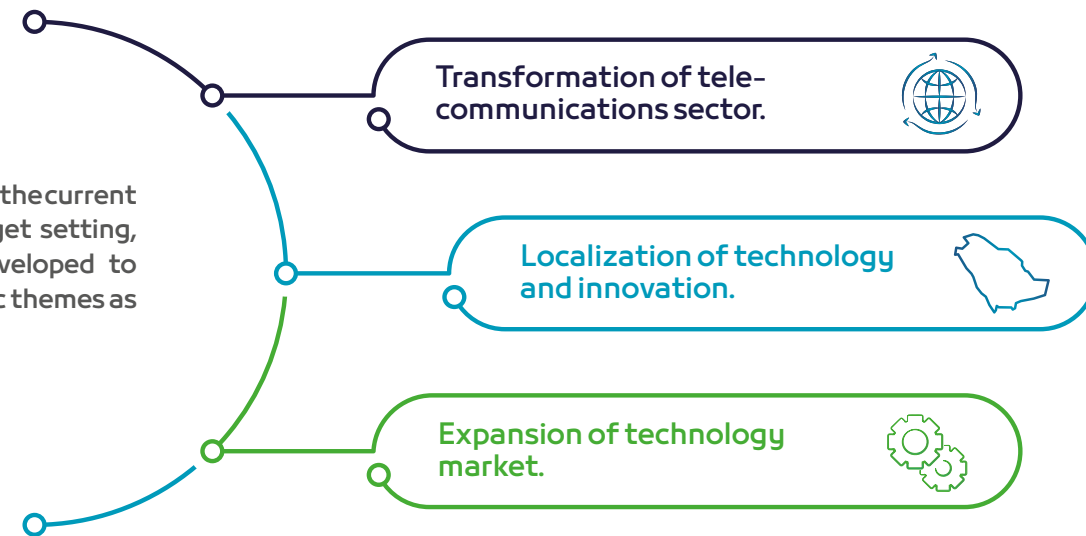
These themes were detailed into 13 sector priorities that should be achieved. Action was taken to align these priorities with the objectives of Vision 2030, where the strategy is directly linked to eight of the Vision realization programs.

13 Priorities

of the ICT Sector

Enhance
level of competition — **1**

2 — Promote fixed and mobile telecom markets

Ensure availability of infrastructure — **3**

4 — Develop sub-sectors of IT and emerging technologies

Increase women's participation — **5**

6 — Stimulate demand for products and services from Saudi enterprises

Attract international companies — **7**

8 — Improve local technical skills

Increase the share of local content — **9**

10 — Advance technological innovation

Promote knowledge and digital awareness — **11**

12 — Enable development of mega projects

Ensure coordination in government and private sectors — **13**

Main targets of the sector's strategy are as follows:

Increase the sector's contribution to GDP by SAR 50 billion.

Increase the size of IT and emerging technologies market by 50%.

Increase the nationalization of sector's jobs to reach 50%.

Generate over 25,000 high-profile jobs in the sector.

Increase women's participation by 50%.

استراتيجية قطاع الاتصالات وتقنية المعلومات

To view the related video, please scan the QR code

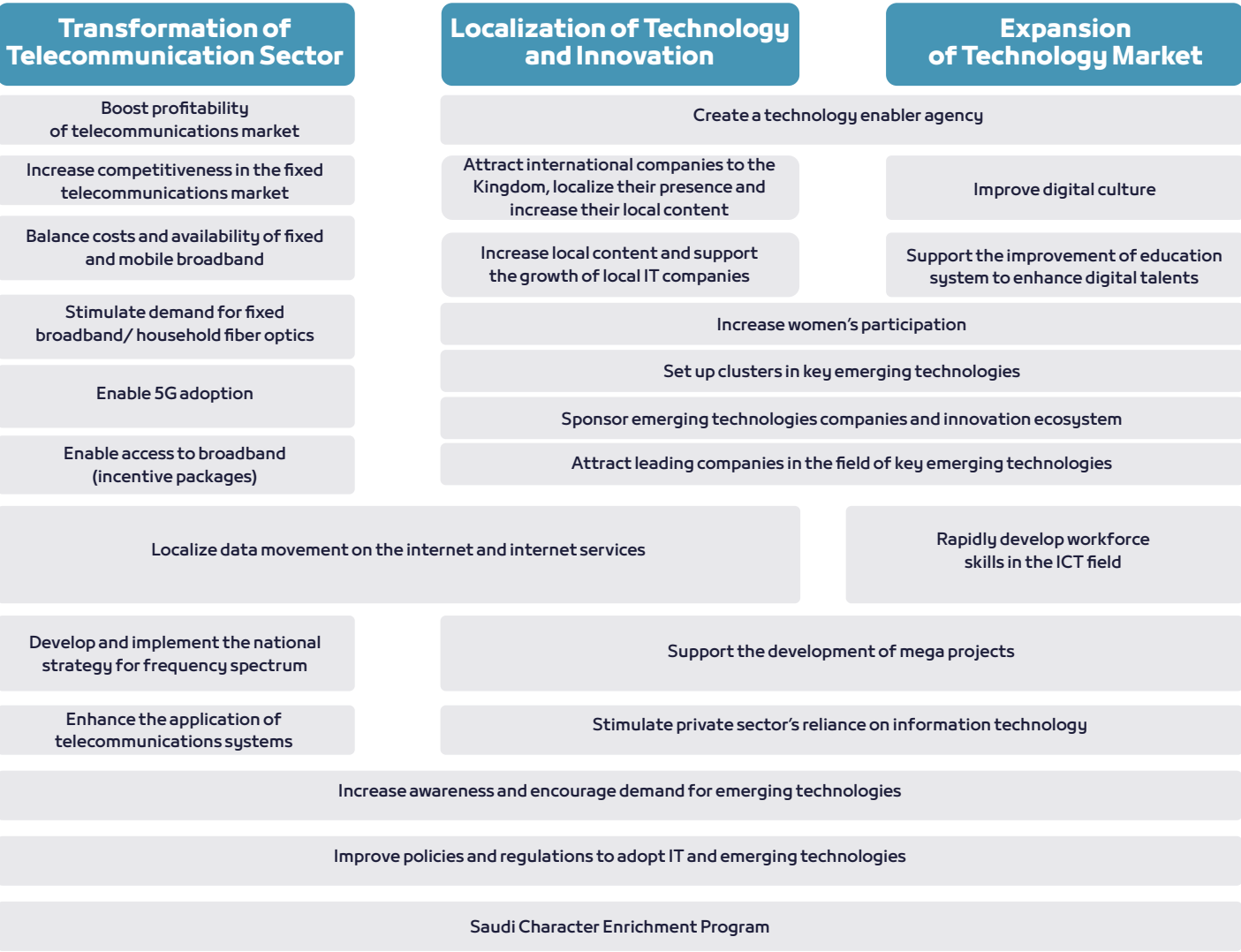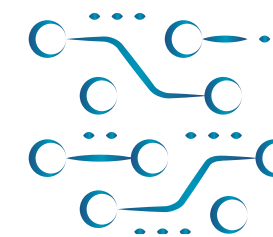| Transformation of Telecommunication Sector	Localization of Technology and Innovation	Expansion of Technology Market
Boost profitability of telecommunications market	Create a technology enabler agency	
Increase competitiveness in the fixed telecommunications market	Attract international companies to the Kingdom, localize their presence and increase their local content	Improve digital culture
Balance costs and availability of fixed and mobile broadband	Increase local content and support the growth of local IT companies	Support the improvement of education system to enhance digital talents
Stimulate demand for fixed broadband/ household fiber optics	Increase women's participation	
	Set up clusters in key emerging technologies	
Enable 5G adoption	Sponsor emerging technologies companies and innovation ecosystem	
Enable access to broadband (incentive packages)	Attract leading companies in the field of key emerging technologies	
Localize data movement on the internet and internet services		Rapidly develop workforce skills in the ICT field
Develop and implement the national strategy for frequency spectrum	Support the development of mega projects	
Enhance the application of telecommunications systems	Stimulate private sector's reliance on information technology	
Increase awareness and encourage demand for emerging technologies		
Improve policies and regulations to adopt IT and emerging technologies		
Saudi Character Enrichment Program		

Figure (6):
ICT Sector Strategy Initiatives
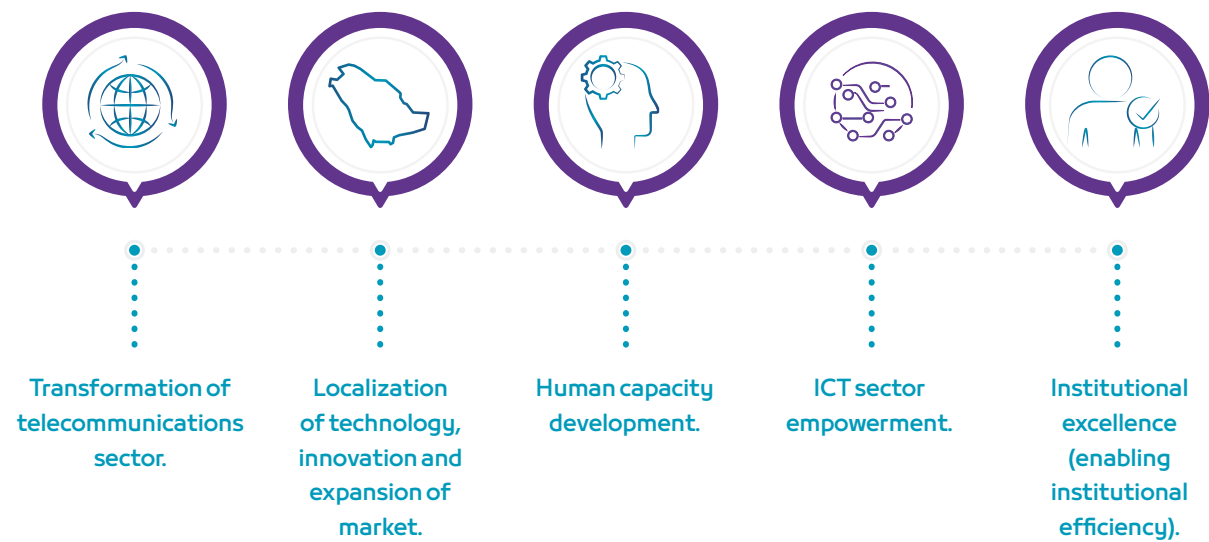
05 | MCIT
Strategy

MCIT
Strategy

As part of MCIT's pursuits to enhance the role of the ICT ecosystem in achieving the objectives and programs of the KSA's Vision 2030 and contribute to developing the sector, achieving its sustainable growth and ensure consolidated efforts of MCIT's staff, entities and departments to achieve the best desired results of the MCIT's works and efforts, MCIT sought to develop an integrated strategic plan drawn from the ICT sector strategy, while ensuring to align it with the relevant Vision realization programs. The strategy aims at enhancing MCIT's role in leading the sector, developing the necessary legislations, implementing development initiatives of the sector that will contribute to enhancing the sector's role and improving the ICT services, providing robust infrastructure that enables easy and simple access to such services by benefitting from the latest modern and emerging technologies and training distinguished national cadres who can contribute to implementing these works so that the sector in the KSA be able to improve the level of services and products provided so as to become a leader at the regional and international levels.

To achieve such aspirations, MCIT was keen to include all fields of vital importance to the sector development in its strategy. Therefore, the MCIT strategy was developed in such a manner to include five main themes as follows:

Transformation of telecommunications sector.

Localization of technology, innovation and expansion of market.

Human capacity development.

ICT sector empowerment.

Institutional excellence (enabling institutional efficiency).

Each theme has strategic goals sought to be achieved by MCIT.

Transformation of telecommunications sector

Develop the ICT infrastructure and any necessary operations to enhance the market and increase its diversity.

Human capacity development

Develop skills in all fields of ICT to support workers in the ICT sector.

Institutional excellence (enabling institutional efficiency)

Ensure the support of primary deputyships within MCIT and provide all resources necessary to achieve MCIT's objectives.

Localization of technology, innovation and expansion of market

Enhance technology and innovation through supporting emerging technologies and their localization.
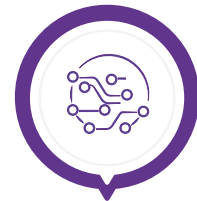
ICT sector empowerment

Introduce regulations that empower the ICT sector and ensure its digital security and risk management.

There is no doubt that the four strategic themes must be supported, and their objectives achieved by the institutional excellence theme. Through this theme, MCIT will focus on enabling and supporting achievement of objectives of the previous four themes through enablement of MCIT›s human capital, governance and institutional excellence enhancement, strengthening relations and communication locally and internationally with all stakeholders, in addition to creating an attractive environment that motivates employees to increase the productivity of MCIT and increases the job loyalty of its affiliates. All the themes have defined strategic objectives, indicators to measure and follow up achievement, initiatives and projects to contribute to achieving their targets. To ensure effective and impactful achievement of these strategic objectives, the strategy included a governance model to follow up execution through a higher strategic committee and a new organizational structure of MCIT consistent with and supportive of achievement of such objectives, in addition to a communication plan for change management (internally and externally), performance management and follow up through the Strategy Management Office, Project Management Office and Institutional Excellence Department. Last but not least, the strategy included provision of budgets required to support initiatives through the Vision realization programs and the Ministry of Finance to activate the MCIT's contribution to all Vision programs, in addition to its current role in the National Transformation Program. Programs having a direct link of special focus are

the National Industrial Development and Logistics Program, Human Capital Development Program, Hajj and Umrah Program, Quality of Life Program, Public Investment Fund Program and National Character Enrichment Program.

These themes include 17 strategic objectives that were aligned with the ICT sector strategy, which in turn was aligned with the KSA's Vision 2030 objectives. The strategy contributes directly and indirectly to achieving 21 objectives of the KSA's Vision at the third level. It participates in executing eight of the vision realization programs. Figure (7) illustrates MCIT strategy's direct connection to the Vision realization programs. The strategy execution will contribute to increasing the ICT sector's share in the KSA's GDP to more than 4.6% as well as increasing the percentage of employees in the sector to 2% of the total labor force in the KSA. Additionally, the strategy aims to increase the sector's contribution to the local content and foreign investment in the sector to SAR 3 billion per annum.
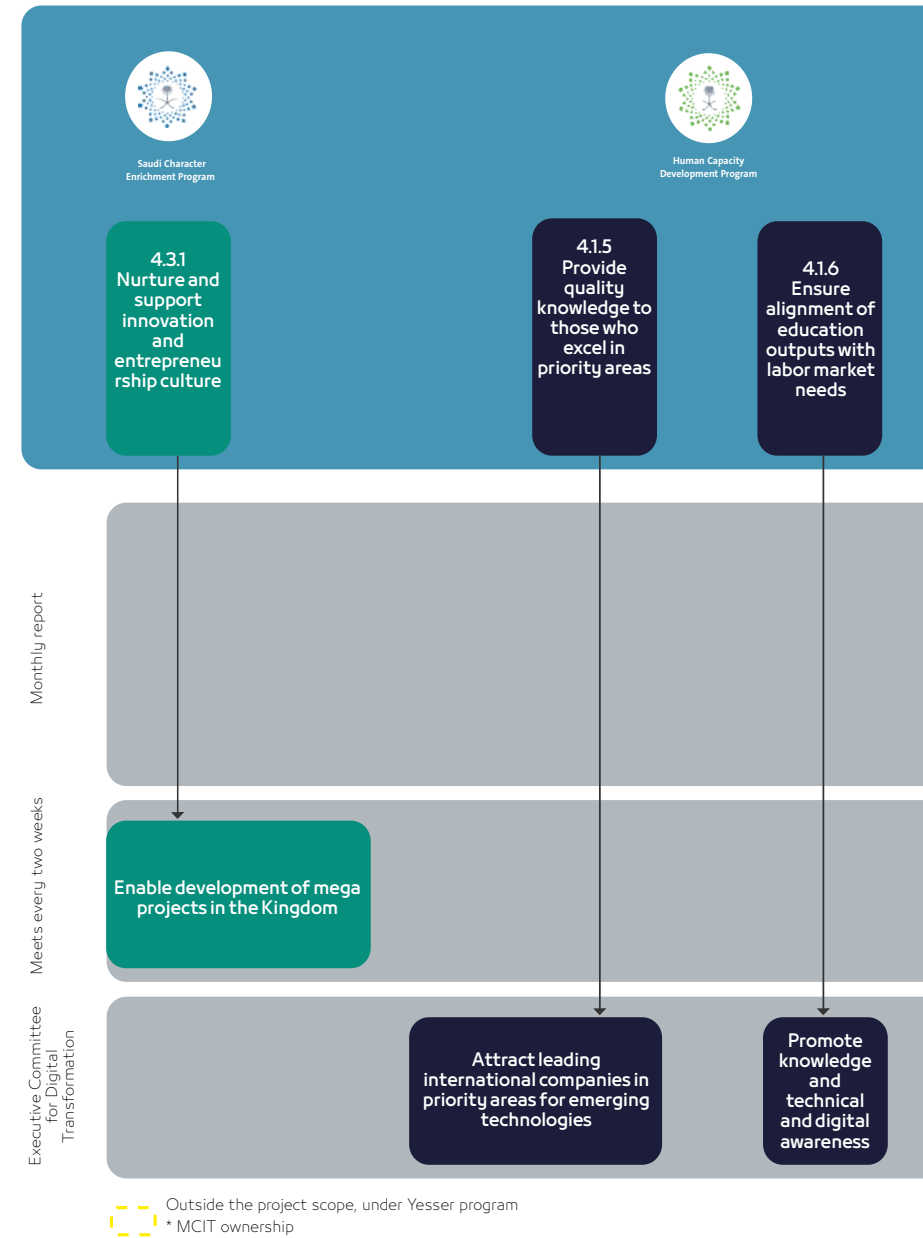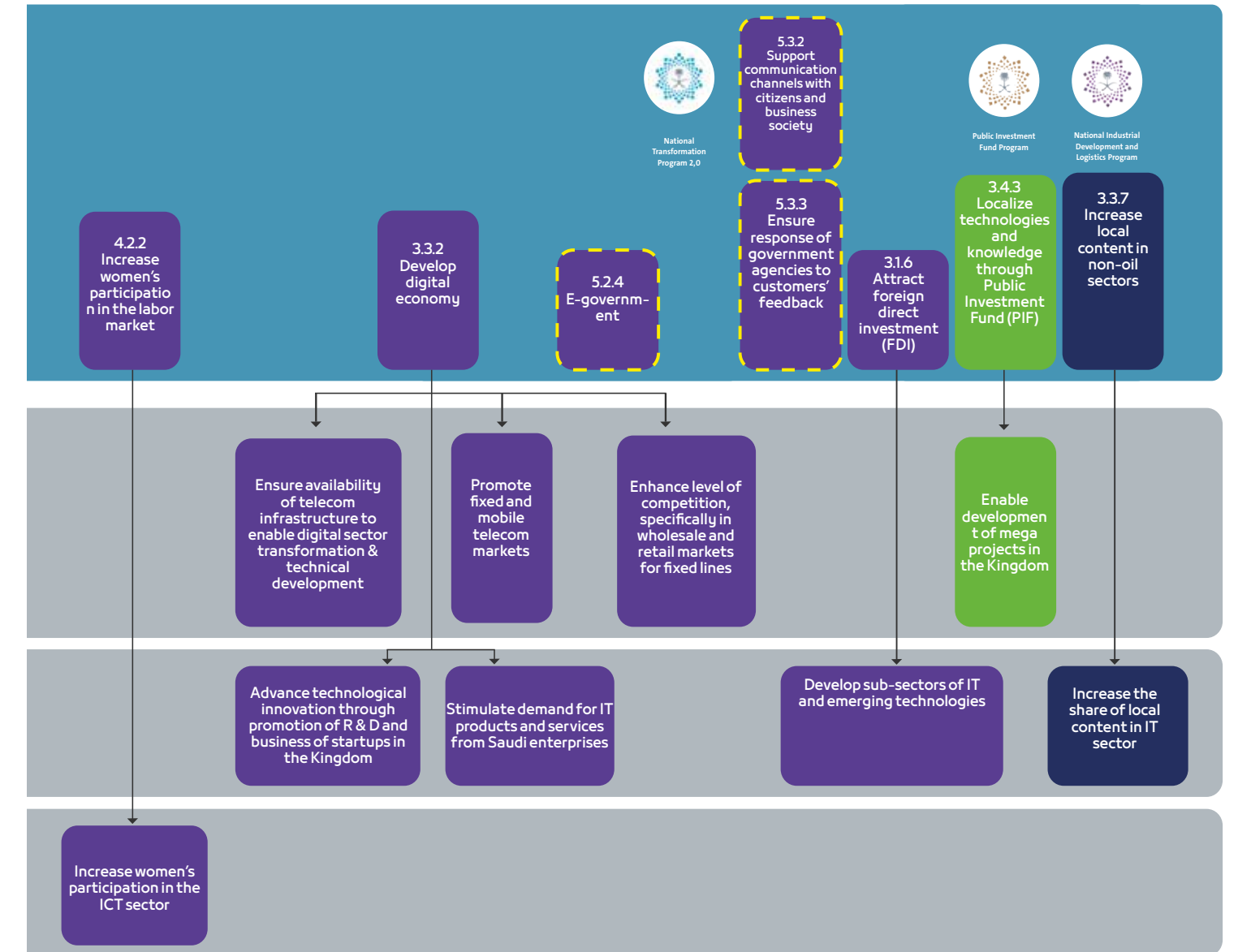
Figure (7):
MCIT strategy's direct link with the Vision realization programs.

Saudi Character Enrichment Program

Human Capacity Development Program

4.3.1 Nurture and support innovation and entrepreneurship culture

4.1.5 Provide quality knowledge to those who excel in priority areas

4.1.6 Ensure alignment of education outputs with labor market needs

Monthly report

Meets every two weeks

Enable development of mega projects in the Kingdom

Executive Committee for Digital Transformation

Attract leading international companies in priority areas for emerging technologies

Promote knowledge and technical and digital awareness

National Transformation Program 2.0

5.3.2 Support communication channels with citizens and business society

5.3.3 Ensure response of government agencies to customers' feedback

Public Investment Fund Program

National Industrial Development and Logistics Program

4.2.2 Increase women's participation in the labor market

3.3.2 Develop digital economy

5.2.4 E-government

3.1.6 Attract foreign direct investment (FDI)

3.4.3 Localize technologies and knowledge through Public Investment Fund (PIF)

3.3.7 Increase local content in non-oil sectors

Ensure availability of telecom infrastructure to enable digital sector transformation & technical development

Promote fixed and mobile telecom markets

Enhance level of competition, specifically in wholesale and retail markets for fixed lines

Enable development of mega projects in the Kingdom

Advance technological innovation through promotion of R & D and business of startups in the Kingdom

Stimulate demand for IT products and services from Saudi enterprises

Develop sub-sectors of IT and emerging technologies

Increase the share of local content in IT sector

Increase women's participation in the ICT sector

- - - Outside the project scope, under Yesser program
* MCIT ownership

06 | Achievements
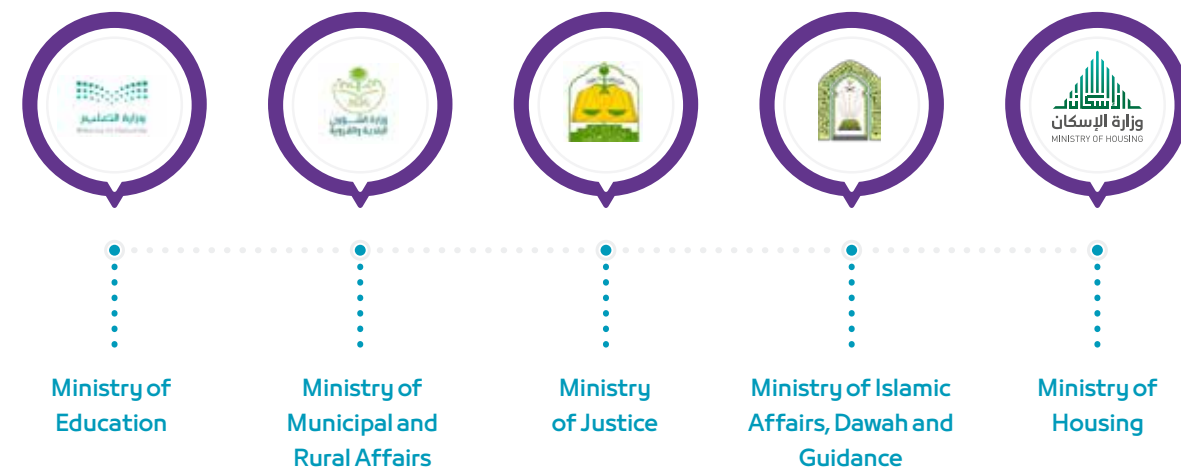
Digital Ecosystem Integration

Digital transformation of government entities and sectors – Phase I

This initiative aims at collecting and examining key obstacles, priorities, opportunities, achievements and digital transformation projects at government entities for 2019 as well as issuing a report on the status of digital transformation plans in each entity. The report includes the visions of the National Digital Transformation Unit (NDU) as well as the anticipated support from the NDU and exploring avenues for cooperation.

Target entities were identified in Phase I of the project based on the priority entities (and subsidiaries) in the National Digital Transformation Strategy, while taking into consideration the entities with the most holistic impact compared to others. Completed reports will be published in 3 batches with 5 reports in each batch. Phase I was executed through participation of reports of five government entities as shown below. Preparation is currently underway to launch Phase II of the reports.
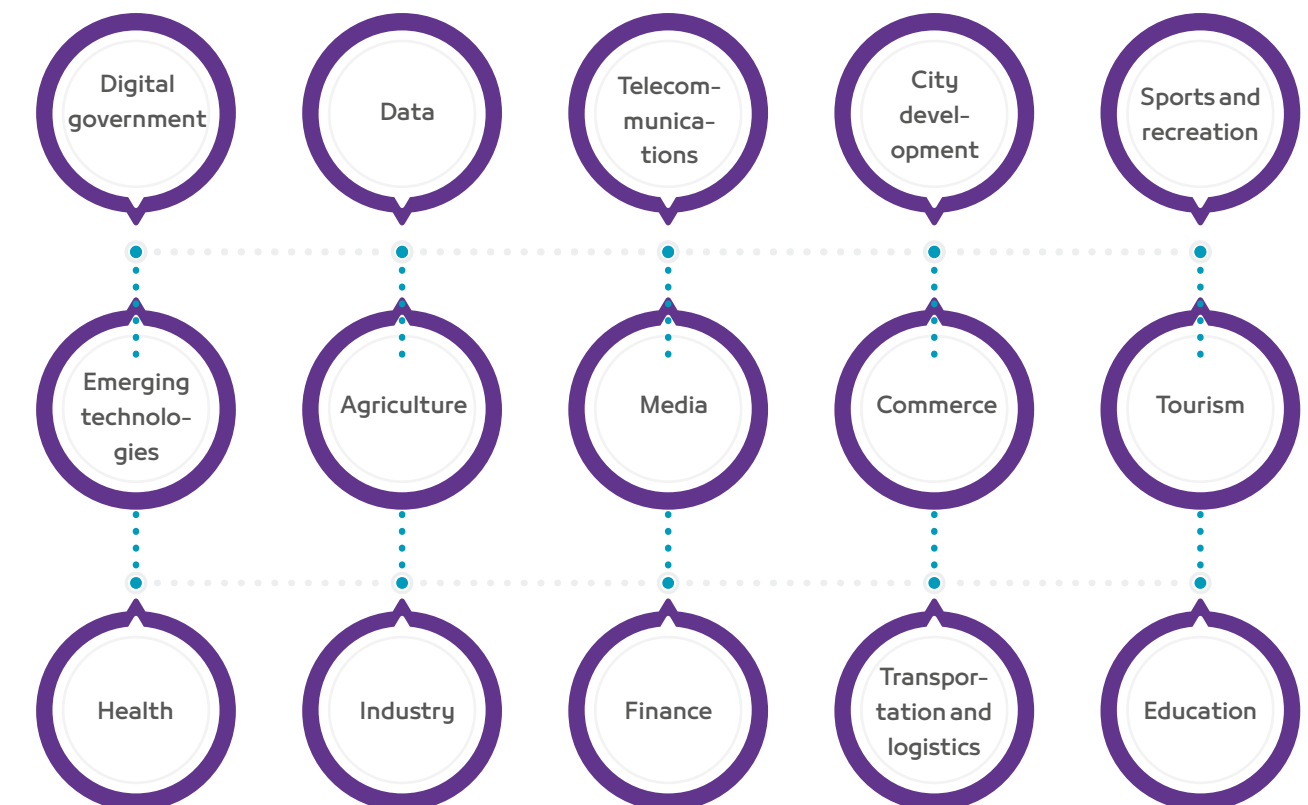
5

published reports are as follows

- Ministry of Education
- Ministry of Municipal and Rural Affairs
- Ministry of Justice
- Ministry of Islamic Affairs, Dawah and Guidance
- Ministry of Housing

Developing a gap analysis report on the digital transformation regulatory environment

Based on its mandate to propose draft laws relating to digital transformation, the NDU analyzed the regulatory environment of digital transformation over three main stages:

Identifying key fields having a link with digital transformation in accordance with the strategic directions and international practices.

- Digital government
- Data
- Telecommunications
- City development
- Sports and recreation
- Emerging technologies
- Agriculture
- Media
- Commerce
- Tourism
- Health
- Industry
- Finance
- Transportation and logistics
- Education

Rounding up nearly 100 regulatory documents related to the identified fields in some digitally leading countries.

United States

Australia

United Kingdom

European Union

United Arab Emirates
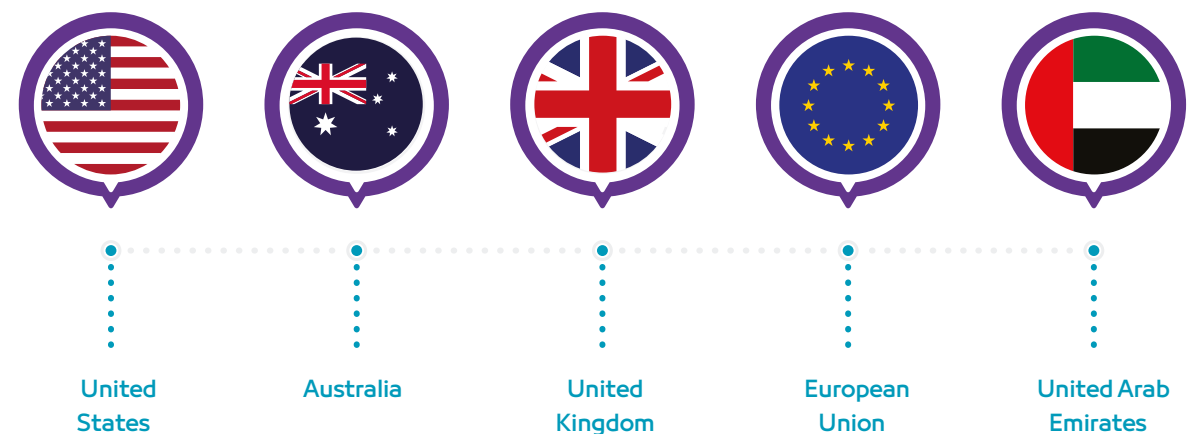
Proposing 22 regulatory documents to bridge gaps of the current situation in the KSA compared to the best global practices with regard to regulatory policies and documents based on the potential impact and aspirations of the government entities and the private sector. Work is underway with the relevant government entities to adopt and develop these documents.

Contributing to development of digital transformation applications for the health sector

The health sector is a digital transformation priority, as it is concerned with all segments of the society, and healthcare is an essential necessity. The digitization of health services and health care will have significant impact on improving the quality of services provided, in addition to enabling access to such services anytime and anywhere, which will enable health sector officials to provide the necessary services and care to all individuals in the society. Being keen to support all sectors in digital transformation, particularly important sectors such as the health sector, MCIT, represented by the NDU and in cooperation with digital transformation partners, contributed to the development of two applications concerned with the health sector as follows:

‹Tameni› application:

‹Tameni› application provides valuable information on many drugs, food and medical devices that directly affect the consumer's health. When searching for a product name or scanning the barcode, the app brings up all related information and provides food data in an easy to read and comprehend manner.

‹Sarah› application:

Smart assistant ‹Sarah› works around the clock to provide consumers of all age groups with the necessary health awareness through direct automatic reply on WhatsApp. ‹Sarah› also facilitates access to information on drugs, such as price, descriptions and alternatives, identifies the information the user is looking for and provides it in an interactive way.

Smart
cities guide

The 'smart city' concept is associated with many different technologies, such as Internet of Things (IoT), big data, Artificial Intelligence (AI), smart sensors and other technologies. With the varied and diverse used technologies, one of the biggest challenges and hardships facing the application of the 'smart city' concept is the achievement of coordination between the technologies and tools used. Therefore, it is necessary to attain key standards and notions that guarantee achievement of high levels of coherence and compatibility between various technologies, which ensures higher levels of performance to apply the 'smart city' concept and reach the best results in this context. Therefore, MCIT, represented by the NDU and in cooperation with digital transformation partners, sought to develop a guide on smart cities, with the purpose of supporting the works and efforts made to adopt 'smart city' concepts and technologies by providing fundamental information and concepts that can be used as stimulator to launch smart city initiatives. The guide further provides perspectives on the definition, dimensions, benefits and challenges of smart cities. Most importantly, it provides guidelines on key activities enabling the development and execution of successful 'smart city' strategies and initiatives, in addition to providing advice on key considerations from the perspective of businesses and technical work.

Smart cities exploratory
projects

As an extension to the 2018 Smart City Exploratory Project in Riyadh, MCIT cooperated with digital transformation partners and Diplomatic Quarter General Authority to implement smart solutions related to smart cities in the Diplomatic Quarter as follows:

Smart posts:

Two smart posts were installed, which consist of a package of services notably advertising screens, environmental sensors, surveillance cameras and power outlets.

Smart chairs:

Solar-powered smart chairs were installed, which aim to raise the level of services provided to visitors of the area.

Deployment of Single Sign-On (SSO) service

The Single Sign-On (SSO) service allows individuals to benefit from e-Government services provided by all government entities through unified digital identification instead of the need for establishing separate digital identifications for each government entity. This supports the widespread use of government services, increases their reliability and enhances their ease of use. SSO is based on digital identification, a national service provided by the National Information Center to identify individuals electronically before government and private providers of vital services. SSO service includes high security mechanisms and standards that follow the best global practices. Digital identity is verified through a single certification portal following the best service provision standards and protocols. MCIT worked with the National Information Center to link government entities with SSO, reaching 101 government entities linked to the service, compared to 42 in 2018.

101

Government entities
linked to SSO

Governance of transfer of Government Secure Network (GSN) and Hosting of Government Service Bus (GSB)

This path is one of the approved recommendations of the National Committee for Digital Transformation, based on the outputs of the Digital Government Project 2020 in order to redistribute roles and responsibilities among the relevant authorities in the digital government ecosystem and drive such authorities to be more effective and flexible. Action was taken on the governance of transfer of GSB hosting and transfer of hosting, operation and management of GSN to the National Information Center in execution of the provision of Recommendation I in the sixth meeting dated 27/08/1439H (13/05/2018G), and other relevant recommendations. The governance document on GSB and GSN transfer was approved and signed by the e-Government Program (Yesser) and the National Information Center.

Project of examining the use of AI in digitization of instruments and accuracy of its outputs

Recognition of and conveying handwriting into digital texts or documents is one of the useful uses of Artificial Intelligence (AI). Different methods of handwriting can be recognized and analyzed to identify and turn written words into digital form. This use has many benefits in digitization of documents of various kinds, which saves much time and effort in collecting, storing, coordinating and searching them. Work was initiated with digital transformation companies to launch a project for examining AI use in recognition of Arabic handwriting to accelerate digitization of instruments. The project resulted in a detailed report on the success of AI algorithms in recognizing Arabic handwriting and different kinds of documents by as much as 90%, which will significantly help in turning instruments from hardcopy to digital form.

Digital Transformation Workshops

This initiative aims at spreading awareness about digital transformation and enriching the digital society with regard to digital transformation and alignment with government entities to shed light on digital transformation achievements. During 2019, MCIT participated in the following nine workshops:

1. The NDU's initiatives workshop for 2019.

2. Workshop on alignment with the private sector in the national strategy for digital transformation upgrading project.

3. Workshop on alignment of the smart cities sector in the national strategy for digital transformation upgrading project.

4. Workshop on alignment of the education and development sector in the national strategy for digital transformation upgrading project.

5. Workshop on alignment of the e-commerce sector in the national strategy for digital transformation upgrading project.

6. Workshop on alignment of the 4th Industrial Revolution sector in the national strategy for digital transformation upgrading project.

7. Workshop on alignment of the tourism, culture and entertainment sector in the national strategy for digital transformation upgrading project.

8. Workshop on alignment of the health and life sector in the national strategy for digital transformation upgrading project.

9. Workshop on participatory innovation for the personnel of the Ministry of Municipal and Rural Affairs, municipalities and Oracle Corporation to develop the complaint platform (940).

Development Work for Unified Government Employment Platform

As part of the current pursuits to achieve inter-government digital integration and unify government platforms of joint scope, and with the aim of organizing works of government employment in order to guarantee seamless procedures and attracting competent people and employing them in the right place, work is underway with digital transformation partners to integrate all government employment platforms into a unified national platform, which will be launched in the first half of 2020.

Expansion of scope of 'Absher' platform services and launching 'Furijat' initiative to help release of debt detainees

'Furijat' initiative was launched on 'Absher' platform in partnership with the Ministry of Interior to help detainees pay their financial debts. The initiative aims to engage society in helping release of debt detainees. The number of released detainees was 550 of 25 nationalities with sums amounting to SAR 32 million.

Seventeen new services were added to 'Absher', bringing up the total number of available services to 180, which contributed to saving the Government SAR 15 billion, in addition to reducing the time needed for service provision. Service delivery time through the platform is 3 minutes. Moreover, 12.5 million nationals and residents benefit from the platform.

Development of digital platforms (Meras, FASAH, Etimad, Balady and Ejar) in cooperation with digital transformation partners

‹Meras› Platform:

‹Meras› is an electronic platform geared toward facilitating access to services for investors and businessmen. The platform provides more than 152 services through a national single platform for investors, in integration with more than 26 government entities and 50 commercial licenses to facilitate services for investors. The platform enables investors to start businesses within one day only.

‹FASAH› Platform:

‹FASAH› is a unified electronic window that reengineers all transactions and import and export procedures to facilitate access to many services related to international trade, in connection with concerned entities, tracking shipments, scheduling and electronic payments. The platform provides 135 services, while 6,000 customs declarations were issued, and 9,880 containers are cleared on a daily basis.

‹Ejar› Platform:

‹Ejar› is an integrated electronic network to regulate real estate lease sector in the KSA and maintain the rights of parties to the lease (tenant, landlord, broker), which contributes to development, regulation and facilitation of works of the property lease sector, which in turn achieves balance in the sector, enhances confidence therein and contributes to stimulating investment therein.

‹Etimad› Platform:

‹Etimad› aims at unifying and facilitating the procedures for government tenders and procurement. Payment orders amounted to over 1 million for more than 200,000 tenders worth over SAR 900 billion in total. The number of registered users and suppliers on the platform is 82,000 and 50,000 respectively.

‹Balady› Platform:

‹Balady› aims to facilitate access to municipal services by integrating services provided by municipalities and centers on a single national platform, improving quality of municipal service level, activating the role of beneficiaries as active partners, improving their level of satisfaction and enhancing transparency among municipal sector entities.

جهاز الخدمات الذاتية
Self-service Kiosk

Development of report on retail e-commerce

The KSA's retail e-commerce has witnessed significant growth over the past years. Many local consumers prefer to order products online. As a result, there is an increasing number of local and regional online stores, which compete with and are comparable to traditional stores. Along with this increasing growth, it became necessary to work on gathering sufficient data and information on this sector to analyze its performance and support its growth properly. Therefore, MCIT, represented by the NDU and digital transformation partners, sought to develop a report specialized in the retail e-commerce. The report aims to establish a single source for real number of e-commerce, based on clear definitions and scientific and validated research methods, and will participate with the private and public sectors to make effective decisions to develop the e-commerce market.

The report will contribute to setting unified concepts and definitions of indicators and terms in the retail e-commerce, which will organize and facilitate the process of collecting and studying the sector's data. The report will further lay down the foundations for drafting plans and strategic directions relevant to supporting the sector and its continued growth.

Publishing reports on Digital Transformation and Digital Economy

This initiative aims to develop comprehensive reports on digital transformation achievements to highlight major milestones in that regard, in addition to publishing reports on digital economy and reports on work done in the field of smart Hajj.

Two reports have already been published as follows:

1. Mid-year report on digital transformation in 2019 in Arabic and English.

2. Smart Hajj report on digital transformation achievements in 1440H Hajj season (Arabic and English).

In addition, 41 awareness campaigns were launched to raise awareness of digital transformation while focusing on the efforts of digital transformation partners and their contributions toward improving the quality of life for citizens. There campaigns were published on the NDU's social media accounts.

Launch of 'Esteshraf' platform to enable evidence and data-based decisions

'Esteshraf' is a national platform created to enhance data availability, foresight capacities and efficiency of spending on digital infrastructure. The platform further contributes to enabling decisionmakers to make evidence-based decisions, handling several national challenges such as unemployment and poverty and enhancing national capacities with regard to predictability and foresight of national priorities. The platform uncovered core insights of priority areas to lead the KSA using data from many entities (Ministry of Finance, Ministry of Commerce, National Information Center, Ministry of Education, Ministry of Justice, Ministry of Health, Ministry of Housing, telecommunications companies, Ministry of Labor, MCIT) and other entities.

Analysis study for a governance framework for digital national identity

This study aims to review the initiatives and regulations concerning current digital national identities and introduce a governance framework for digital identities for all sectors in the KSA, with the purpose of eliminating overlap or repetition in identities in different sectors, reducing the time spent on defining and developing identities in all sectors, and facilitating the linking of different identities relating to entities, which raises efficiency and contributes to providing better services.

E-government Effectiveness

Raising maturity level of government services

MCIT has adopted an indicator of e-services maturity level. The indicator analyzes digitization level in government services provided by the public sector to citizens, residents, visitors, the business sector and other government entities. The indicator classifies government entities into three categories according to their performance in the provision of electronic services:

Green category:
from 85% to 100% – Excellent performance

Yellow category:
from 60% to 84% – Mediocre performance

Red category:
from 0 to 59% – Poor performance

Service maturity level is divided into 5 levels:

Traditional service:
provided in paper form and has no details through the entity's electronic channels. It requires the beneficiary to visit the entity's office to know the service requirements and obtain the relevant forms.

Information service:
providing information about government services through electronic channels such as the entity's portal, which includes a description and requirements for obtaining services, in addition to printing service application forms (if any) without any interaction by the beneficiary or the entity.

Interactive service:
The interaction is one-way from the beneficiary to the government entity, so that the entity allows the beneficiary to fill in an electronic form through electronic channels, and then send it electronically, with the possibility of application query and follow-up, but this requires the beneficiary to contact the agency to complete the service procedures.

Procedural service:
The interaction is two-way from the beneficiary to the government entity and vice versa, where the entity allows the beneficiary to fill in an electronic form through electronic channels, and then send it, with the availability of application query and follow-up. The entity carries out the service with all its procedures internally within the entity until the service is completely provided with no need for the beneficiary to visit the entity's office.

Integrative service:
The interaction is two-way from the beneficiary to the government entity and vice versa, where the entity allows the beneficiary to fill in the electronic form through electronic channels, and then send it, with the availability of application query and follow-up. The entity shall carry out the service with all its procedures inside and outside the entity, through integration with other third parties until the service is completely provided with no need for the beneficiary to visit the entity's office.

As a result of the continuous work with the government entities to audit their services and ensure compliance with the criteria of the government services maturity indicator, the government entities' general maturity level in the main services reached 81% in 2019, recording a growth rate of 12.5%, higher than 2018 where services maturity level was 72%.

81%

Maturity level of digitally transformed government services

Savings from government IT projects reached SAR 800 million

Being keen on improving the efficiency of government expenditure on government IT projects, MCIT, represented by Yesser, has reviewed the government IT projects referred to it and provided technical guidance services, in addition to supporting the framework agreements and partnership with the private sector in the implementation of e-government service projects and application of government enterprise architecture standards.

As a result, total savings in the government IT projects amounted to SAR 800 million.

Launch of unified national platform (Gov.sa) with a new identity

GOV.SA
المنصة الوطنية الموحدة
Unified National Platform

The Unified National Platform (Gov.sa) represents an ambitious initiative that seeks to build an integrated ecosystem that provides high quality and efficient government services, across a unified experience through multiple channels. The platform provides government services to all groups, including nationals, residents, businessmen and visitors to the KSA. The platform also provides customized services per the user's need and provides reliable information on the various government services. It enables access to all e-Government services quickly and with total ease, anytime and anywhere.

Being keen to enhance the platform and activate its role in facilitating access to government services, MCIT, represented by Yesser, sought to design a new identity for the platform to be consistent with the best experiences in website and service provision, with the aim of providing a distinguished and seamless user experience that makes it easy for all groups of users to access the provided services quickly. The new platform also includes 'technical support' feature through live chat, to help users benefit from the platform in a way that meets their needs and requirements.

It is noteworthy that the Unified National Platform (Gov.sa) achieved widescale coverage and spread at the level of services provided as 3,300 services are available on the platform, used by 890,000 visitors to the platform. Additionally, there are 385 laws and regulations published on the platform.

Smart Government Development Center

With the high level of ambition and desired aspirations for government performance at all levels, particularly in the field of e-Government and digital transformation of government works, MCIT, represented by Yesser, sought to support and enhance the works of the Digital Government Academy, aimed at developing the government human capital in the telecommunications sector and leading the works in government entities, with a focus on developing the skills of technical and executive managers across a number of paths as follows:

1. Technical sector.
2. Innovation and government services design.
3. Business management.
4. Digital consultations.

This year, the Academy focused on launching several training courses targeting leaders in the government entities. The following specialized training courses were launched:

1. Training course for technical leaders in Imperial College London.
2. Training course for executive leaders in Oxford University.
3. 40 certified training courses in change management.
4. 2 workshops for government directors.

800 Million Riyals

Savings from IT projects in government entities

3,300 Services

linked to the platform

890,000 Visitors

Visitors to the platform

Linking entities to government platforms

Through its continued work, MCIT, represented by Yesser, sought to increase the level of interconnection between government entities by working to connect entities with the platforms that Yesser supervises, with the aim of improving the quality and accuracy of the services provided and ensuring the interconnection of data, transactions and services between these entities.

The following is a summary of what was achieved at the level of governmental platforms in 2019.

Government Secure Network (GSN):

Government Secure Network (GSN) interconnects government entities with Yesser, which was established according to the highest technical and security standards. This network has enabled Yesser to be the link between government entities, where the link mechanism is unified, and costs are saved. Yesser seeks to expand this network due to the great expansion in using it. 40% of GSN expansion project was completed, and 40 government entities were connected during 2019, bringing up the total number of government entities connected to GSN to 227.

Government Services Observatory:

The Government Services Observatory system identifies and limits the services provided by all entities, with the aim of developing such services by preparing plans to transform such services from traditional to electronic transactions. The number of government services that were identified in the Observatory in 2019 amounted to 5,059, of which 3,435 are main services and 1,624 are sub-services. The number of entities whose services were observed amounted to 167.

Morasalat:

Morasalat is a unified correspondence system for government correspondence, which aims to automatically facilitate correspondence among government entities, through electronic preparation, exchange, tracing and retrieval of correspondence and documents, according to the highest levels of safety and reliability. The total number of government entities connected to Morasalat was 34 at the end of 2019.

5,059 government services

were identified in Government Services Observatory
3,435 Main services
1,624 Sub Services

227 Government entities

linked to GSN

167 Entities

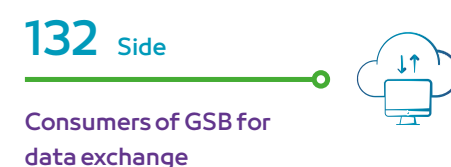monitored in the Government Services Observatory

Government Service Bus (GSB):

Government Service Bus (GSB) is a prominent platform of support to government entities, in order to provide their services in an integrated, easy and facilitative manner, especially that government services require a high level of data and information exchange necessary to deliver the provided services in an integrated manner. GSB is a central platform for integration and interconnection between government entities regarding necessary data and information for government services to be electronically delivered.

As part of the Yesser's efforts to connect the largest number of entities to GSB, the number of data providers in GSB reached 75 government entities, services were automated for 28 entities, and consumers reached 132 entities. 1,071,606,248 data exchange operations were carried out during 2019, bringing the total number of operations since the launch of service to 2,370,583,705 operations.
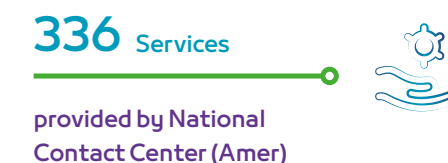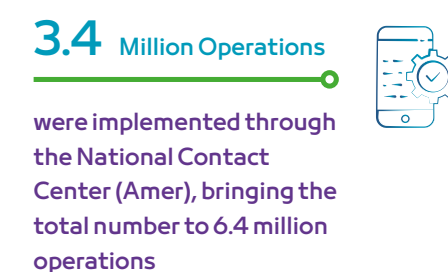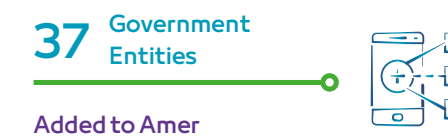
An ambitious plan was set to make e-Government data available in GSB, attaining 71% of this plan during 2019.

75 Side

Data providers in GSB

132 Side

Consumers of GSB for data exchange

1.07 Billion

Data exchange operations implemented through GSB during 2019

National Contact Center (Amer):

National Contact Center (Amer) is a unified contact center that provides a service to respond to inquiries from beneficiaries of e-Government transactions, as well as providing technical support and information to users of government services. This happens via different channels including telephone, email, website, live chat, SMS, in addition to fax, social networks and other means of communication.

‹Amer› continued the provision of unified call and support services to government entities, where the number of government entities reached 37 and the number of services delivered by ‹Amer› reached 477. The number of operations executed through Amer was 3,357,713 during 2019.

37 Government Entities

Added to Amer

3.4 Million Operations

were implemented through the National Contact Center (Amer), bringing the total number to 6.4 million operations

336 Services

provided by National Contact Center (Amer)

Provision of technical consulting services to 17 government entities and facilitating linkage to GSB

As part of the efforts done by MCIT, represented by Yesser, to support the transformation of entities to e-Government transactions, one of the services provided to government entities is the technical consulting service. This service enables government entities to leverage Yesser experiences in the field of government transactions transformation as well as the regulatory and technical requirements to achieve that. During 2019, technical consulting services were provided to 17 government entities, and action was further pursued to facilitate their operations of linkage to GSB.

17 government entities

facilitate their operations of linkage to GSB.

Completion of activating the digital seal service for government entities and developing the digital signature service for payment orders in the Ministry of Finance and National Guard Health Affairs

With MCIT's work, represented by Yesser and the National Center for Digital Certification (NCDC), to enable digital transformation in the government entities, work is underway to activate and deploy the digital seal service for government entities, with the aim to do away with the traditional seal in paper transactions and replace it with electronic seal that is legally connected to the enterprise's identity with high level of security, in addition to activating the digital signature to complete payment orders fully electronically.

This should contribute to dispensing with paper transactions and reduce the time needed to complete transactions from 3 days to 3 hours. The service has also become more flexible and easier to use, by linking it within GSN. The service was activated for 44,000 employees, 15,000 suppliers, 85 bank accounts and 11 websites including medical cities, centers and universities many cities.

3 days reduced to **3** hours

Time needed for completing transactions

Establishing and developing a portal for government chief information officers (cio.gov.sa)

Being keen on enabling all government entities in the KSA to have access to all services provided by Yesser and in order to support such entities to continue their digital transformation journey, MCIT, represented by Yesser, launched the Chief Information Officers Portal (cio.gov.sa), an interactive portal that provides updated information on the services of benefit to the entity. The portal allows IT officers and acting employees to have access to the program services, in addition to providing a user interface that enables the entity to review its use.

Improving KSA Ranking in the United Nations E-Government Development Index

The United Nations E-Government Development Index is a prominent tool to measure progress in the e-government field through international comparability, where the biennial Index measures e-service indicators, telecommunications infrastructure indicators and human capital indicators. The Index further measures development of e-governments of 193 countries through a working group consisting of 206 members from 89 countries.

Being keen on advancing its rankings in international indexes, and due to the importance of the United Nations E-Government Development Index, MCIT sought to identify entities relevant to sub-indexes. A steering committee was set up chaired by the Vice Minister of Communications and Information Technology as illustrated in Figure (8):
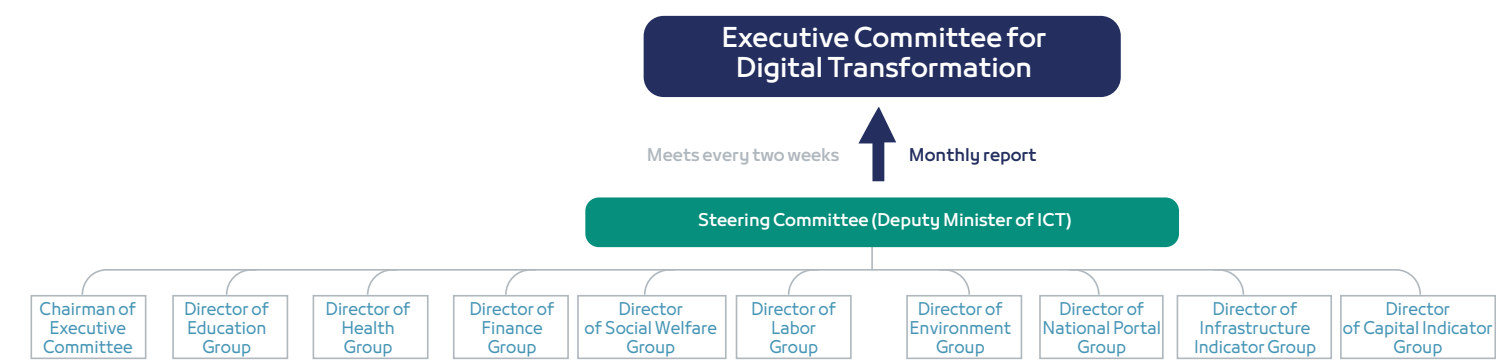
Figure (8): Steering Committee for United Nations E-Government Development Index

Other entities were added to the Committee's membership due to the importance of their presence in the Committee. These entities are as follows:

- Ministry of Economy and Planning
- Ministry of Municipal and Rural Affairs
- General Authority for Statistics
- National Information Center
- Royal Commission for Riyadh City
- National Cybersecurity Authority
- Riyadh Municipality

Agreement was made to establish an executive committee to be chaired by the Director-General of Yesser, with the membership of executive groups from stakeholders. Work was done to analyze and study all sub-indicators with the entities concerned with each indicator, and an action plan was prepared to execute the works that will positively impact the results of the indicator. A timeframe was also set in preparation for the United Nations evaluation with regard to the index. The plan included conducting an assessment of target government portals and working on increasing their readiness according to standards of evaluation in the United Nations. Such portals were evaluated based on the United Nations' standards and methodology. Therefore, a significant progress is expected to be made in the next edition of the indicator.

Digital Certification

Launch of Digital Seal at King Saud University for Physical Environment

MCIT, represented by the National Center for Digital Certification (NCDC), launched King Saud University (KSU) Digital Seal, rendering it the first entity and university to obtain the digital seal in the KSA, which enables the university to validate official electronic documents issued to its employees.

This step came as part of MCIT and NCDC's pursuits to ensure the successful implementation of digital certification, as one of the ICT ecosystem's key strategic initiatives. MCIT and NCDC cooperated and coordinated with government entities to activate and deploy digital certification services, support certified service providers in order to provide reliable certification services. This initiative is especially important for its role in supporting digital transformation and contributing to dispensing with paper transactions in an innovative way and with high reliability. The activation of KSU digital seal in the physical environment led to doing away with more than 180,000 paper identifications daily.

180,000

Paper identifications dispensed with after digital seal activation

Implementing the digital seal for pilot environment for 6 government entities

The digital seal service platform for government entities provides the authenticated digital seal feature to the user namely the government entity. Any government entity can annex a digital seal to documents, in a process similar to digital signature. The digital seal is annexed by using a special key stored in high quality encryption devices at the National Information Center (NIC) after verifying the user using highly secure means of verification, such as mutual authentication. The digital seal for documents ensures integrity of data, authenticity of seal and that the document was not modified after adding the seal. In this context, six entities were supported to activate the digital seal service to be applied to the pilot environment of the NCDC. These entities are MCIT, National Guard Health Affairs, Prince Mohammed bin Salman bin Abdulaziz Foundation (MiSK), Saudi Authority for Industrial Cities and Technology Zones (Modon), Jeddah Municipality and Ministry of Commerce and Investment.

Ministry of Communications & Information Technology

Ministry of National Guard – Health Affairs

Prince Mohammed bin Salman bin Abdulaziz Foundation (MiSK)

Saudi Authority for Industrial Cities and Technology Zones (MODON)

Jeddah Municipality

Ministry of Commerce & Investment

NCDC obtains ISO 22301 in business continuity management

The National Center for Digital Certification (NCDC) obtained ISO 22301 according to the international standard for business continuity management systems (BCMS), which was developed to provide entities with protection from potential disasters and provide the necessary requirements to ensure business continuity and effectiveness at times of crisis.

This achievement reflects NCDC's keenness on adopting preventive approach to reduce the risk of interruption of technical services, improve crisis management techniques and responsiveness to deal with emergencies or disasters. It is noted that ISO 22301 is proof on the level of readiness to face challenges resulting from electronic and physical incidents.

The certificate also affirms NCDC's ability to identify and understand threats and risks and how they impact the work flow and put the proper controls to manage and address them before they happen or limit their negative effects when they happen.

Obtaining global certificates and recognitions in digital certification

Adobe includes NCDC in its list of reliable entities to issue certified digital identities

Adobe included the National Center for Digital Certification in its list of reliable entities to issue certified IDs in digital certificates, rendering the KSA the first Arab country to obtain this certification. This certification will enable millions of people worldwide to easily validate e-signatures certified by NCDC through Adobe's file reader software.

Maintaining WebTrust's certificate for digital certification for the seventh year in a row

The National Center for Digital Certification is the first institution in the Arab World to have obtained this certificate, as a requirement for international recognition by manufacturers and providers of software and operating systems solutions worldwide.

Maintaining Microsoft's global recognition for the sixth year in a row

The National Center for Digital Certification has been included in Microsoft's list of authorized certification centers for the sixth year in a row.

Launching ‹Emdha› business digital certification services for BTC as first provider in the KSA

MCIT, represented by NCDC, approved the launch of BAUD Telecom Company (BTC) services as the first provider of digital certification and business digital trust services in the KSA under the trademark ‹Emdha›. This came after BTC fulfilled the service provision standards and specifications according to the license granted to it. This step helps in opening the door for the private sector to provide a package of services that enhances trust in government and business e-transactions. Such services enable many beneficiaries to conduct digital signature, time stamps and other digital trust service operations, which supports certifying contracts and conducting transactions with high reliability through the various electronic platforms.

This certification represents strategic partnership with the private sector in the KSA to achieve objectives of Vision 2030, as the private sector will contribute to providing the enablers required to support digital transformation and increasing the level of confidence in electronic transactions in order to attain a digital society with safe transactions.

Launching and validating the new edition of the digital signature program

Digital signature renders the message or document reliable through the use of a sender's private encryption key, with the ability to review the content through a public key. Encryption through digital signature ensures confidentiality and authenticity of messages and documents handled by the NCDC's digital signature program.

Work continues to develop the digital signature program in order to achieve the highest levels of confidentiality and reliability of texts and documents in program. As part of these efforts, the new edition of the digital signature program was released and validated as one of the value-added products developed by NCDC to activate ‹Whole-of-Government› approach in order to increase the reliability of electronic transactions.

Platform for remote digital signature service for government employees

MCIT, represented by NCDC, launched remote digital signature service for government employees, which provides the feature of using digital signature certified for user by MCIT's employees. Any user can import any PDF document or any Microsoft Office document through a file signature processing platform. A file can be converted to PDF, then the platform provides the file with all kinds of digital signatures, followed by sending it to other persons to sign it in parallel or in sequence. The document is signed according to international standards recognized by Adobe. Remote signature is done by using a private key stored in highly secure encryption devices at the National Information Center after verifying the user using SMS or mobile applications as secondary authentication factor. Digital signature of documents guarantees integrity of data, authenticity of signature and that the document was not modified after being signed.

Platform for remote digital signature service for emails

MCIT, represented by NCDC, launched remote digital signature service for emails, which provides the feature of digital signature certified for user by MCIT's employees. Any user can digitally sign Outlook email or Microsoft Office electronic documents. Remote signature is done by using a private key stored in highly secure encryption devices at the National Information Center after verifying the user using SMS or mobile applications as secondary authentication factor. Digital signature of documents guarantees integrity of data, authenticity of signature and that the document was not modified after being signed.

Continuous development of digital certification services and digital certificates

The NCDC is continuously working to develop, improve and governance digital certification services and relevant digital certificates. The NCDC developed new national policies and standards to adopt digital certification services, such as Cloud Digital Signature Policy, which governs and regulates digital signature transactions related to cloud computing services and platforms. In addition, standards for trust levels were developed to define specifications and practices that achieve high levels of reliability. The NCDC further sought to ensure that all e-services are linked in GSB using digital certificates issued by the NCDC, rendering such services more reliable and secure.

Awareness and training in digital certification

Activating the use of digital certification technologies in different government entities requires the presence of cadres equipped with the knowledge and skills necessary to handle the digital certification tools and applications. The highest levels of accuracy should be accomplished so that digital certification may reach the reliability and authenticity required to ensure the integrity of documents and transactions being dealt with. Accordingly, MCIT, represented by NCDC, sought to implement a number of initiatives for awareness and training in the field of digital certification as follows:

- Held 10 training programs for government entities to issue and manage digital certificates in their digital certification centers.
- Participated in attracting male and female Saudi graduates of 'Tamheer', a program of the Human Resources Development Fund (HRDF), to enable them to acquire the experience and skills required to prepare and qualify them to participate in the labor market.
- Participated in the collaborative training of male and female university students to enable them to acquire new skills, accustom them to innovative thinking and enable them to exercise problem-solving and decision-making skills.
- Participated in a workshop on controls for ICT use in attendance of government entities to explain the NCDC's services and how to benefit from them.

Telecommunications sector transformation

Deployment of fiber optic networks in urban areas

MCIT's determined efforts to deploy fiber optic networks as part of the National Transformation Program resulted in service delivery to 3 million homes in urban areas, with an increase of one million homes compared to 2018. Thus, fiber optic deployment increased to 53%, from 37.4% in 2018. MCIT aims to cover 60% of homes in all regions of the KSA at the end of 2020. This achievement was made in partnership with the private sector through stimulating the investment in deployment of highly secure fiber optic networks in urban areas.

Deployment of fiber optic networks is particularly important because they are a vital component of the telecommunications infrastructure and they have a vital role in accelerating digital transformation to keep pace with the aspirations desired to be achieved in the KSA's Vision 2030, aiming to enhance telecommunications sector's role in building a digital society, a digital government and a digital economy.
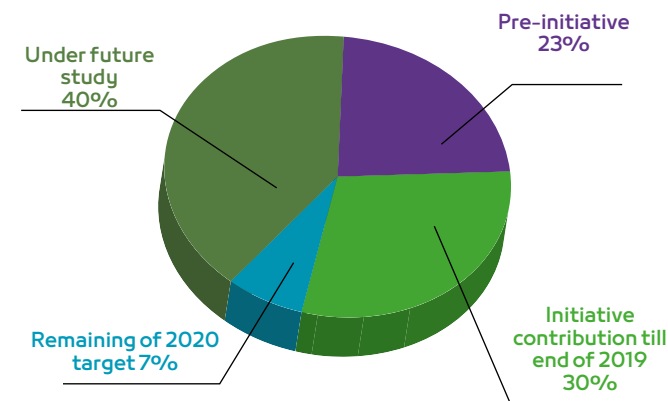
3 Million

Homes covered with fiber optic networks in urban areas

53%

Coverage of homes with fiber optic services in all regions

COVERAGE RATIO OF HOMES WITH FIBER OPTICS IN THE KSA

Under future study
40%

Pre-initiative
23%

Remaining of 2020 target 7%

Initiative contribution till end of 2019
30%

Deployment of wireless broadband networks in rural and remote areas

Based on its commitment and responsibility to deploy telecommunications services across the KSA to reach all segments of the society, MCIT, with the help of its partners in the private sector, managed to deliver high-speed wireless broadband service (at speeds exceeding 10 Mbps) to 374,000 homes in the rural and remote areas by the end of 2019, compared to 128,000 homes by the end of 2018. The coverage of wireless broadband service in these areas reached 48% of homes by the end of 2019 compared to 17% in 2018, taking into account that MCIT aims to cover 70% of homes in these areas with high-speed wireless broadband before the end of 2020 as part of its initiative to deploy telecommunications services and wireless broadband services in rural and remote areas.

374,000

Homes in rural and remote areas covered with high-speed wireless broadband

48%

Coverage of homes in rural and remote areas covered with high-speed wireless broadband

Stimulating demand for fiber optic service subscriptions

With the exponential rise in services and applications provided on the Internet across all fields, and the need for many of these services to have high-speed Internet connection available to make optimal use of them in a way that achieves more spread and effectiveness of such services and enables users to obtain higher quality services, MCIT sought to stimulate subscriptions to fiber optic service through monitoring the performance of telecommunications companies and monitoring the efforts of companies in raising the awareness of the uses of fiber optics.

In this context, MCIT launched a media campaign to raise the awareness of fiber optics and its uses in e-commerce, health and education and increase the ratio of subscriptions to fiber optics service. The media campaign was successful in attaining over 14.5 million reaches on social media channels.

These efforts resulted in increasing the ratio of subscribers to fiber optics service compared to the number of homes covered by this service, reaching 35% by the end of 2019.

35%

Ratio of subscribers to fiber optics service compared to the number of homes covered by the service

14.5 Million

Reaches of media campaign posts on social media

الفايبر يصلك بإحتياجاتك

لوطن مترابط رقمياً

Providing telecommunications infrastructure in industrial cities

Telecommunications infrastructure is a vital enabler of the industrial sector, as it enhances the ability of the industrial facilities to efficiently and effectively organize and manage their operations, which in turn enables such facilities to improve their performance and productivity levels. In view of this, as part of the National Industrial Development and Logistics Program, MCIT is stimulating investment in the provision of telecommunications infrastructure in 35 industrial cities within the 4IR Infrastructure Initiative. Phase I was launched and executed in 2019, where 1,300 plants were connected to fiber optics in 5 industrial cities.

1,300 Plants were connected to fiber optic networks

5 Industrial cities served

Allocating 690 MHz of frequencies to strengthen the infrastructure and improve service quality

According to the global radio spectrum allocation reports and statistics, the KSA ranked 2nd of G20 countries in the allocation of globally identified frequency bands for providing mobile telecommunication services. The KSA's ranking followed Japan and came before the United Kingdom, Germany, Italy, Canada and the rest of the G20 countries.

In partnership and coordination with the Ministries of Defense and Interior, 690 MHz of frequencies were allocated to the telecommunications service providers, bringing up the total frequencies allocated to 1,110 MHz. This accomplishment came as part of efforts done by the Communications and Information Technology Commission (CITC) to achieve one of the National Transformation Program's objectives, which is the "percentage of radio spectrum available to provide public telecommunications services." The percentage of 114% was achieved out of the total target for 2020.

55.58 Mbps

Internet speed over mobile networks

52.93 Mbps

Internet speed over fixed networks

Improving average Internet speeds in KSA

Working groups in MCIT and CITC have actively worked to increase the Internet speeds over the fixed and mobile networks, through the deployment of high-speed Internet services and fiber optic networks in the urban areas, and high-speed wireless broadband in the rural remote areas. MCIT has further formed a committee with members from CITC and operators with the aim to monitor the evaluation of the current situation, identify causes and consequences and develop plans necessary to improve the Internet speeds provided by the telecommunication companies in the KSA. The tasks assigned to the committee are as follows:

1- Address and ban the sale of wireless devices that affect the performance of network and Internet speed for the end user.

2- Hold workshops with a special team from all operators to review the status of networks and speeds and how to improve Internet quality. The status of fixed and mobile internet speeds has been clarified, good and bad devices have been evaluated and service quality in remote and urban areas as well as coverage ratios and signal strength have also been evaluated.

3- Share towers of poor performance with the telecommunications companies to address the situation.

4- Procedural rules have been established for permits that require devices to support 4G at a minimum.

The efforts done resulted in improving average fixed and mobile Internet speeds in the KSA. The Internet speed over fixed networks reached 52.93 Mbps, increasing by 90.8% compared to 2018, whereas the Internet speed over mobile networks reached 55.58 Mbps, increasing by 89.6% compared to 2018. In cooperation with CITC, MCIT presses forward with its efforts to improve service quality and increase the Internet speeds in order to enhance digital transformation across all sectors.

Commercial launch of 5G mobile telecommunications, the world's 3rd largest launch

Continuing the efforts initiated by MCIT and CITC in 2018 to enable deployment of 5G service in the KSA, the service was commercially launched in partnership with Saudi Telecom Company (STC), Mobily and Zain in the second quarter of 2019 as one of the world's leading countries to enable 5G. In addition, 5G was deployed in the Two Holy Mosques, Holy Places, Neom Airport, where users of ICT services can now subscribe and use this technology. More than 5,400 towers were equipped to support the 5G technology in the KSA.

The 5G network is expected to contribute to providing the digital infrastructure for critical service centers and enable the 4IR and smart cities as well as adding more than 20,000 jobs to the ICT sector by 2030, in addition to increasing the GDP by over SAR 67.5 billion by 2030.

5,400

Towers equipped to support 5G technology in the KSA

Launch of Saudi Arabian Internet Exchange (SAIX)

The Saudi Arabian Internet Exchange (SAIX) was launched in Riyadh, achieving connectivity with all infrastructure operators, reaching 6 companies connected.

Data exchange reached 22 Gbps in 2019. To improve the operational efficiency, increase coverage to more areas, and connect more members, the phase II of SAIX was launched.

It is worth mentioning that this initiative is aimed to establish an objective non-profit point of exchange for Internet data, which improves the telecommunications infrastructure, in addition to creating an effective Internet ecosystem in the KSA, which in turn contributes to the growth of digital economy by enhancing and improving Internet services, improves user experience, and enables the KSA to become a regional digital hub.

Smart
meter project

A taskforce, under the chairmanship of the Ministry of Energy with stakeholders including MCIT, Saudi Electricity Company (SEC), CITC, Local Content and Government Procurement Authority and Electricity and Cogeneration Regulatory Authority, was formed to explore avenues of collaboration and benefitting from national initiatives for the telecommunications sector to accelerate the smart meter installation project. The best means to implement the smart meter project were explored, while taking into account the best global experiences and expertise. A detailed study was conducted on technologies used in global leading companies, including PLC technologies used in Europe, Latin America and Asia, and used by EDF, Iberdrola, ENEL and EDF. The study also included RF technologies in North America and the experiences of DCC in the United Kingdom, KEPCO in Korea, SGCC in China, TEPCO in Japan and NB-IoT networks. Subsequently, the Smart Meter Committee designed a trial project for technologies in 12 cities across the KSA, by adding 1,000 smart meters. Seven companies participated in testing all technologies, including NB-Iot network, as follows:

- SGCC of China
- EDF of France
- ENEL of Italy
- Saudi Telecom Company
- Mobily
- Zain
- Dawiyat

Engaging the telecommunications companies (STC, Zain, Mobily) with the smart meter trial led to significant positive impacts on the experiments that achieved high success rates and proved the capacity of NB-IoT network provided by the telecommunications operators, which also has a significant role in enabling smart cities through the IoT technologies.
The NB-IoT technology was added to the technical solutions in the smart meter project, and a large portion of the project was awarded to an alliance under the leadership of Mobily alongside Alfanar with SAR 5 billion investment.

Updating several municipal regulations
directly associated with the ICT sector

In collaboration with the Ministry of Municipal and Rural Affairs (MOMRA), MCIT sought to update a number of municipal regulations directly associated with the ICT sector, in order to facilitate the deployment of telecommunications infrastructure across all regions of the KSA and provide the regulatory and legislative environment that enables the telecommunications service providers to easily and smoothly execute the infrastructure-deployment-related works. In this regard, MCIT carried out the following:

- Upgraded and approved the 'executive regulation for excavation licensing procedures';
- Launched the technical specifications for the ICT sector civil works within the regulation of the 'General Specifications for Civil Works of MOMRA';
- Amended the traffic safety standard specifications for the ICT sector projects within the regulation of the 'Guide for Safety Requirements in Implementation of Public Utility Network Projects';
- Contributed to drafting a service level agreement between telecommunications companies and MOMRA in order to accelerate procedures for issuing excavation permits and removing obstacles to setting a ceiling to permits, while ensuring to raise the quality of accompanying civil works;
- Upgraded the regulation of technical and municipal controls for mobile telecom towers issued by MOMRA; and
- Added and allocated routes for telecom networks within the 'road crossing specifications' issued by the MOMRA.

Applying micro-trench technology for the first time in KSA

Being keen on carrying out the excavation works related to fiber optic networks in the residential areas, MCIT has sought to apply 'micro-trenching' technology to road excavation works. This comes as a pilot phase in one of the neighborhoods covered by the residential areas fiber optics initiative.

This step comes in partnership with MOMRA, where this technology is used to extend small-diameter pipes and cables to shallow depth underground. The use of 'microtrenching'

will contribute to significant acceleration of the execution of extension works. The average time spent to execute works of extension to a neighborhood used to be month to month and a half. By using this technology, this period will be reduced to 1-2 weeks. 'Microtrenching' will also facilitate the performance of extension works without disrupting traffic, without using concrete blocks, and without the need to inspect and repave roads, in addition to reducing the excavation costs from SR 64/

meter to SR 45/meter, thus achieving 29.7% savings.

MCIT also organized a workshop entitled 'Introduction to Benefits and Requirements of Microtrenching' to explain the technical requirements for civil works of extending telecom networks using 'microtrenching'. The requirements have been identified in cooperation with the operators. In addition, the workshop introduced the advantages and requirements of 'microtrenching' technology.

Publication of a guide to implement telecom networks and include it in the Saudi building code

In pursuing enhancement to deploy telecommunications services across the KSA in a way that ensures quality of services in all regions, MCIT produced a comprehensive technical guide containing the minimum requirements for provision of telecommunications services within buildings of all kinds, including residential, commercial, industrial, educational and other types of buildings.

The guide was shared with and feedback was requested from all related entities, such as CITC, telecommunications companies, in addition to global consulting firms and standards and measurements certification entities (BICSI).

After taking feedback into consideration and finalizing the guide, the guide was approved and officially added in the Saudi Building Code published on the website of the National Committee for the Saudi Building Code. Work is underway to approve a telecommunications code to replace the existing guide and to establish a committee for the code within the Saudi Building Code committees.

Signing MOU with Modon to support digital transformation in the industrial sector

MCIT signed a Memorandum of Understanding (MOU) with the Saudi Authority for Industrial Cities and Technology Zones (Modon) with the aim to enable the 4IR, stimulate investment in the digital infrastructure and share digital solutions supporting the digitization and IT fields required for digital transformation in the industrial sector, in addition to supporting the proper regulatory and legislative environment, qualifying national digital capabilities that would contribute to creation of an industrial, technical, smart and attractive environment for investment, developing national economy, thus contributing to achieving the objectives of the KSA's Vision 2030.

The MOU aims to unify efforts and establish strong and robust partnership that contributes to addressing challenges facing the deployment of telecommunications network, provide the appropriate digital architecture for growth and development of industrial cities, in addition to contributing to creation of diverse and secure electronic work environment.

Rise in telecommunications sector revenue

The telecommunications companies achieved notable growth in the gross revenue of 2019, reaching SAR 76.2 billion with 6.8% increase rate compared to 2018. It was also noted that the revenue in 2019 increased by 2.5% compared to 2018. Company revenues amounted to SAR 11.27 billion in 2019, while all telecom companies reported net profits in 2019, which is considered to be exceptional.
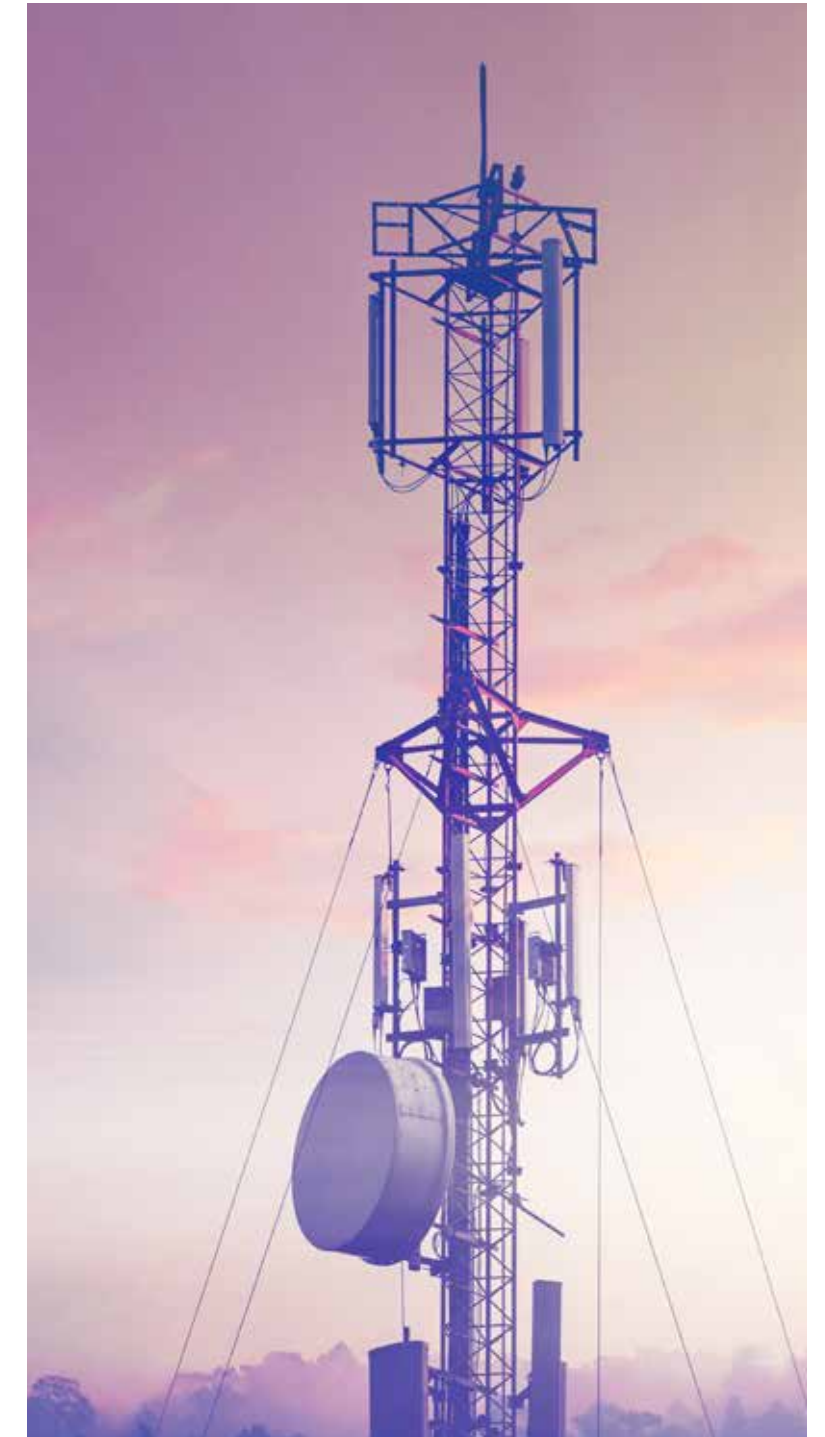
Human Capacity Development

'ThinkTech' Initiative's achievements

'ThinkTech' initiative, launched by MCIT, is an umbrella for strategic awareness projects throughout the KSA to look to updated and modern technologies to achieve sustainable development, build an informed and creative young generation who have the skills necessary to be able to cope with the realities of this age and cover the technical knowledge needs for all Arabic speakers. This initiative relies on new mechanisms with the objectives to foresee the future and spread awareness of emerging technologies to create digital society.

The initiative aims to:

- Spread awareness of emerging technologies
- Foresee the future and create digital society
- Create an attractive environment for creative thinkers
- Build a productive and curious generation in manufacturing
- Highlight the importance of the initiative for all segments in the society
- Ignite scientific creativity and spread culture of innovation and invention

Several important achievements were made through this initiative, which will contribute to raising a generation who is capable of various forms of technology and will enable them to create and innovate across all fields of technologies, thereby achieving an advantage to the KSA to be one of the leading countries in utilizing emerging technologies and relevant innovations to achieve sustainable development at the national level. The initiative also succeeded in attaining high prevalence among the target segments, where the number of beneficiaries of digital content reached 2.26 million, while the number of beneficiaries of events reached 76,000.

2.26 Million

Beneficiaries of digital content

76,000

Beneficiaries of events

'Attaa Digital' Initiative

The digital giving initiative (Attaa Digital) aims to spread digital knowledge among the Arab societies around the world, enrich Arabic technical content on the Internet through several innovative and creative means and tools with the assistance of technical specialists and amateurs. The initiative also aims to provide face-to-face and remote training for technical skills development, as well as supporting the non-profit sector in technical skills development and accelerating digital transformation in enterprise processes and multiple activities.

Major achievements of 'Attaa Digital' include the following:

- Launched more than 431 face-to-face training courses with 37,184 attendees across regions of the KSA.
- Launched 72 online courses and 234 online lessons with 58,688 beneficiaries who passed the courses.
- Registered 31,231 members in the initiative and reaching (6,988,370) beneficiaries.
- Published 800 technical content items.

- Launched the Attaa Digital Nights campaign, which aimed to raise technical awareness and enrich technical Arabic content. The campaign reached more than 11 million beneficiaries and posted over 1,000 tweets. The number of participants in the workshops, panel discussion and technology exhibition reached over 550 beneficiaries.
- Launched the Attaa Digital Club, which aims to enable and motivate technical groups.
- Held 11 public events in Riyadh, Eastern Province, Abha and Jeddah in collaboration with technical influencers.
- Held 12 events for children entitled 'Cybersecurity for Children and Learning Unity Playground' with over 380 attendees of children.
- Rewarded the societies of 'micro:bit' and 'Drupal Saudi Arabia' for their efforts in translating websites into Arabic.
- Participated in several relevant conventions, where a booth for Attaa Digital was set up as follows:

  - International Volunteer Day 2018 in Unaizah
  - 1st Continuing Education Convention in Riyadh
  - Non-Profit Sector Technology Convention 2019 in Riyadh
  - Al-Jenadriyah Festival in Riyadh
  - Technical Transformation Exhibition of the Council of Arab Ministers of Communications and Information

- Participated in international days such as International Women's Day, Day of the Programmer, International Day of Charity, International Literacy Day and World Information Society Day.
- Participated in Arduino Day by holding workshops in Riyadh, Jizan, Jeddah and Abha, where the number of beneficiaries reached 200.
- Sponsored DevFest hackathon, a worldwide event sponsored by Google, targeting creative developers. The number of beneficiaries reached 158.

6,988,370

Beneficiaries of Attaa initiative

95,872

Beneficiaries of the initiative's courses

31,231

Registrees in the initiative's courses

431

Courses provided

Fab Lab Initiative

MCIT launched the Fab Lab (fabrication laboratory) initiative. This educational initiative adopts the establishment and launch of a fabrication laboratory, which targets public school students and those interested in digital fabrication. Through the ThinkTech's online platform, the initiative provides a package of up-to-date design tools and software that enable individuals to convert their theoretical ideas into real prototypes, beginning with ideas for simple toys to ideas related to modern electronic devices. 'Fab Lab' provides all people living in the KSA the ability to design and submit their ideas to the initiative's online platform. The ideas can then be converted into prototypes and sent back to their places free of charge.

In addition, MCIT seeks to elect 30 out of 3,000 models and designs as target for 2020, in order to motivate and reward people with distinguished ideas.

To view the related video, please scan the QR code

Launching 'Digital Skill Framework' in KSA

MCIT launched the Digital Skill Framework (DSF) built based on SFIA Skills Framework for the Information Age (SFIA 7), which is used in 26,000 companies and government entities around the world. The framework aims to facilitate the process of digital skill development and employ such skills through the adoption of a common language.

Launched in partnership with the Ministry of Labor and Social Development, Ministry of Education and the Education and Training Evaluation Commission, the DSF aims to serve a number or entities, notably companies and government entities, training and educational institutions in addition to individuals through development of capabilities and human capital, directing companies and government authorities and entities toward ICT-based future skills so that they can all adjust to the anticipated changes in the labor market.
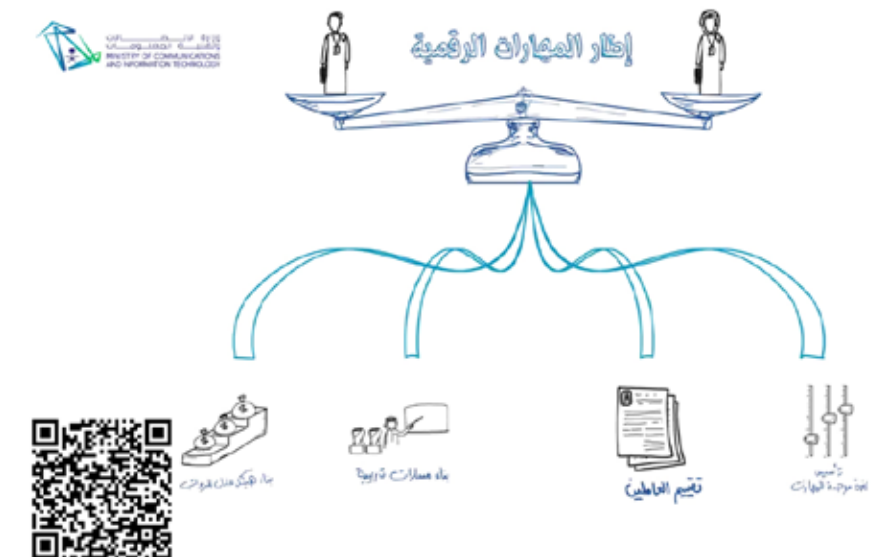
To view the related video, please scan the QR code

Launching 3rd edition of Huawei ICT Competition

Continuing the success of the previous two editions of Huawei ICT Competition, MCIT sponsored the 3rd Huawei ICT Competition organized by Huawei International. The competition tests the contestants' knowledge in the fields of cloud computing, routing and switching, and network security. Students participating in the competition also learn about the latest digital technologies, such as the IoT, AI, big data and the emerging 5G technology.

The competition aims to discover and sponsor distinguished talents in ICT fields and work with competent and concerned entities to develop their skills and prepare them to lead the future of technology in line with MCIT's plans and strategies to qualify human capital.

The competition is made up of 3 stages including preliminary stage, local finals stage and global finals stage. The top teams made it to the local finals that took place in November 2019. Besides the certificates of merit and cash/in-kind prizes earned by the winners in the local finals, 6 male and female students qualified to travel to China to explore the inside of one of the world's most prominent ICT companies. The Saudi team won 3rd place in the Middle East.

Launching Attaa Digital Club

Technical groups have an important role in digital economy development through exchanging knowledge and experiences within the various fields of technology, enriching specialized technical and digital content and spreading knowledge about the concepts of digital transformation. Therefore, MCIT launched the Attaa Digital Club to serve as an umbrella bringing together technical groups and providing them with the support and assistance needed to continue their activities and encourage members of such groups to continue their efforts to spread knowledge and enrich content.

Attaa Digital Club was widely attended by Saudi technical groups, where many of the groups benefitted from the services provided by the Club. MCIT is keen on turning the Attaa Digital Club into the main platform for technical groups in the KSA, thus enabling them to grow and develop to become in turn the main resource of knowledge and content in the various technical fields.

Holding lectures and workshops to spread technical knowledge and digital giving board sessions

Being keen to spread technical knowledge and enhance adoption of these technologies among members of society, MCIT organized a number of dialogues under the umbrella of 'Attaa Digital Board'. Through the sessions, technical specialists discussed several subjects of importance in the technology fields, such as innovation in technology, digital security in the 4IR, digital transformation and other subjects. The number of attendees of these sessions reached 170 beneficiaries who are specialized and interested in ICT.

MCIT also held a number of introductory and educational sessions and lectures on various technical fields, such as programming, 3D printing, Artificial Intelligence, blockchain, cloud computing, and other technical fields. 45 sessions and workshops were held in partnership with technical groups, with a total number of 2,211 attendees.

45
Sessions and workshops in partnership with technical groups
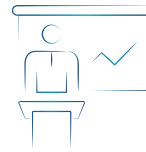
2,211
Beneficiaries of sessions and workshops

3
Digital giving boards

170
Beneficiaries of digital giving boards

Developing comprehensive program to raise digital awareness of youth

In MCIT's endeavors to develop the digital capacities of the youth, invest their capabilities to drive digital transformation, develop skills of the young people and prepare them for the new jobs in the 4IR age, and in order to achieve wider and more distinguished participation by the KSA in international technical forums, MCIT launched a comprehensive program to raise digital awareness and develop skills of the youth. The program included several unique and innovative initiatives that were widely appealing to the target young generation. The number of visitors to the educational vehicles of the 'Future Trucks' initiative reached 31,842. Additionally, 2,200 persons benefitted from the preparatory training workshops for the World Robot Olympiad (WRO), the number of young beneficiaries of Attaa Digital Initiative reached 385, while 17,000 male/female students registered in the 'Promising Programmer' competition and 4,185 students participated, 70 talented young people participated in the Global Game Jam, 34 skilled youngsters joined the Tuwaiq camp for developing skills to develop game applications for youngsters, bringing up the total number of beneficiaries of the digital awareness raising program for the young generation to 51,531. Below is a description of these initiatives.

34
Participants in Tuwaiq camp for game applications for the youth

51,531
Beneficiaries of the raising digital awareness for young generation program

2,200
Beneficiaries of the WRO workshops

385
Young beneficiaries of the Attaa Digital Initiative

31,842
Students visited the Future Trucks

17,000
Students registered in the Promising Programmer Competition

70
Young talented participants in Global Game Jam

'Future Trucks' Initiative

The'Future Trucks' initiative is part of MCIT's plans and strategic directions to develop human capital, enhance adoption of the 4IR technologies and 21st century skills. This initiative is one of ThinkTech Initiative's means relevant to foreseeing the future. The initiative consists of educational vehicles equipped with the 4IR tools and technologies as well as advanced scientific materials that support digital skills and enhance the culture of innovation and digital entrepreneurship. Through the initiative, a person can convert their theoretical ideas into real prototypes. In the first edition of the initiative, the 'Future Trucks' visited three regions in the KSA, namely Riyadh, Jeddah and Eastern Province, where the number of beneficiaries reached 31,842. The 'Future Trucks' targeted public-school students, those interested in digital fabrication and parents/guardians to introduce the STEAM approach.

31,842

Male and female students visited the Future Trucks

To view the related video, please scan the QR code

World Robot Olympiad (WRO)

World Robot Olympiad (WRO) is a global competition that aims to demonstrate the creativity and skills of youth in solving problems and challenges based on the STEAM Approach, which is an educational method focusing on the use of Science, Technology, Engineering, Arts and Mathematics as access points in robotics and Artificial Intelligence projects. ThinkTech sponsored the WRO competition throughout the KSA in 2019, by organizing training programs in various regions of the KSA.

The WRO competition was launched for the first time in the KSA to contribute to the Vision 2030, develop the 21st century skills and qualify youth for the future's new 4IR jobs. The competition was organized in partnership with the Ministry of Education, Ministry of Energy, Industry and Mineral Resources, King Abdulaziz City for Sciences and Technology (KACST), Saudi Federation for Cybersecurity, Programming and Drones, National Digital Transformation Unit (NDU) Saudi Wireless and Remote Control Sports Federation and Ensan Charity. 500 male and female trainers were qualified across the KSA to work with over 800 teams. 20 training workshops were held, where the number of beneficiaries thereof reached over 2,200 in addition to launching BE-STEAM platform for e-learning and training for participation in the finals for 100,000 participants.

The efforts exerted culminate in the Saudi team winning 7th place in the Advanced Category globally with the participation of 74 countries and 423 competing teams.

500
Trainers qualified to train the competing teams

800
Teams participated in the competition

29
Training workshops

2,200
Beneficiaries of the workshops

100,000
Participants in the final rounds

7th
Place won by the Saudi team in the WRO

To view the related video, please scan the QR code

Global Game Jam (GGJ)

Global Game Jam (GGJ) brings together many young participants from around the world to encourage them to make digital and non-digital games. Participants design game models and develop new ideas within a short time. GGJ constitutes an opportunity to generate new and innovative ideas in the game industry.

The event also includes many workshops and creative spaces that motivate the youth to learn and enjoy all the game industry stages.

For the first time in Saudi Arabia, GGJ Next was held this year. The event was organized by MCIT in conjunction with over 29 websites worldwide in more than 14 countries. The total number of young talented participants in the development field amounted to 70.

70

Young talented participants

Tuwaiq youth bootcamp

In pursuit of developing the digital skills of the young generation, MCIT set up a 4-day bootcamp of intensive training with a total of 28 training hours, and with 34 young participants. During the bootcamp, participants got to learn about the basics of programming using the most used programming languages such as Java and Python, beginning with programming principles using simple tools and platforms such as Scratch and Alice, which do not require any programming experience, in addition to introductions to website development and cybersecurity. The bootcamp also provided the participants with the opportunity to apply what they learnt through several exercises and activities, thus enabling them to develop their general and technical skills. MCIT aimed to achieve the following through the bootcamp:

- Increase awareness of Internet security
- Understand basics of programming and introductions to website development and cybersecurity
- Be able to develop games and stories using different programming platforms
- Acquire communication, analysis, cooperation and problem-solving skills

70

Participants in the bootcamp

Launching the national programming competition 'Promising Programmer'

In collaboration with the Ministry of Education and in partnership with Tatweer for Educational Technologies (TETCO), MCIT launched the first edition of the national programming competition (Promising Programmer) within the digital skills program, with the aim to enhance the 21st century skills and programming skills of elementary and middle school students and develop positive attitudes among them to learn the 4IR technologies and sciences, which includes Artificial Intelligence, Internet of Things, robotics, virtual reality, 3D printing and cloud computing.

The 3-phase competition consisted of 3 rounds and the finals. The best 16 male students and 16 female students were selected from each age group out of the total number of 4,185 student participants, to qualify to the final round. Winners in the competition won many certificates of merit and cash/in-kind prizes.

This competition comes within the determined efforts to enhance and develop skills of the Saudi youth in programming and the 21st century skills and empower them to enrich their knowledge and develop their capabilities in order to become weavers of tomorrow and builders of a better future.

4,185

Male and female participants in the competition

Launching the Saudi Digital Academy

MCIT launched the Saudi Digital Academy (SDA), specialized in building and developing national digital capabilities for future jobs related to the 4IR technologies. SDA is one of the key national initiatives aimed at developing the digital capabilities of the Saudi youth in the field of modern and advanced technologies in partnership with the private sector, as well as applying the best international experiences. SDA adopted 4 paths: Digital Business, Digital Industry, Digital Communications and Executive Programs.

SDA focuses on quality jobs and positions, including data scientists, Artificial Intelligence specialists, Machine Language experts, Cloud Computing engineers, Web Applications developers, blockchain experts, Online Videogame developers, and developers of Augmented Reality and Virtual Reality applications. SDA's business model relies on apprenticeship in such jobs through the development and implementation of intensive and face-to-face quality programs modelled on boocamps and micro degrees, as well as depending on professional skills and competences, hands-on training for professional roles, linking the program outcomes to the job before the program begins and giving the opportunity to employment entities to attract SDA's graduates.

To view the related video, please scan the QR code

SDA launched a number of apprenticeship programs aimed to qualify for quality jobs in the field of modern technologies. Foremost among these programs are:

Data Science program

The Data Science program aims to qualify 100 cadres of the newly graduates in quality jobs in the field of Data Science through the ‹Data Science Bootcamp›, which includes more than 14 programs in various professional and technical fields, including Probability and Statistics, machine learning, statistical models, data visualization, Python programming language, statistical programming language, in addition to many programs that help participants acquire many personal skills, such as problem-solving, decision-making and effective communication. Applicants to the program amounted to 3,802. In addition, the programs resulted in creating over 100 jobs in more than 21 companies, institutions and entities in the public and private sectors.

100

New jobs in data science

3,802

Applicants to the program

Telecom Cyber Pioneers (TCP)

Telecom Cyber Pioneers (TCP) apprenticeship program aims to train 32 specialists in telecommunications security jobs and reserve jobs at seven beneficiary entities in the telecommunications sector. This program, which starts with employment, consists of a package of hands-on intensive courses in 5G network security, IoT network protection, testing digital divides and data security governance in telecommunications companies, in addition to career coaching and qualification for professional degrees in information security.

32

National cadres qualified for quality jobs in telecommunications security

To view the related video, please scan the QR code

Introducing digital skills and programming to students in general education early grades

In cooperation with the Ministry of Education, MCIT launched an initiative aimed to develop and instill digital skills among general education students in the early grades, through training students on computer thinking skills, visual programming and computing applications, with the aim of raising a generation that is technologically informed based on strong digital foundations, and recognizing the principles of digital citizenship that can support their production, creativity and innovation. The Minis-

try of Education and MCIT's joint and determined efforts yielded the following achievements:

- Trained 50 teachers on technical technologies principles and digital skills teaching.

- Established an interactive electronic platform for students to be used in educational material.

- Created an appropriate digital learning environment by providing 50 labs for digital skills that contain the tools and equipment enabling students to develop their digital skills, with 25 labs for male students and 25 labs for female students.

- Taught digital skills to 10 supervisors in the directorates of education.

- Taught digital skills and programming to 8,552 students in general education schools participating in the initiative.

50

Teachers trained on digital technologies principles and taught digital skills

8,552

Students benefitting taught digital skills and programming

50

Digital skills labs created to develop students' skills

10

Supervisors taught digital skills

Holding 'Our hearts hear you' competition

MCIT organized 'Our hearts hear you' competition with the aim to support the deaf and hearing impaired, by giving the opportunity to the whole society to share technical solutions that serve the deaf and hearing-impaired people in the health, educational, social and cultural fields.

The competition was successful in attracting the attention towards supporting and empowering the deaf and hearing-impaired people, where the number of participants in the competition reached 270 and 3 digital projects won prizes amounting to SAR 500,000. In addition, 10 digital business models were launched during the competition.

By organizing this competition, MCIT seeks to spread digital and entrepreneurial awareness among all members of the society, as well as motivate entrepreneurs and technical experts to develop innovative digital solutions that serve the deaf and hearing-impaired people by leveraging modern technologies to go on their lives normally, carry out their tasks, to strengthen their role in the society, overcome the difficulties they encounter in all areas, develop their skills and strengthen their talents to serve their society through optimal use of technology, in addition to closely identifying the challenges they face and mechanisms to overcome them.

270

Participants in the competition

10

Business models launched in the competition

Launching nationalization plan for ICT jobs in partnership with the Ministry of Labor and Social Development, HRDF and Council of Saudi Chambers

As part MCIT's initiatives in partnership with the Ministry of Labor and Social Development, joint efforts to localize ICT jobs and through the MOU signed between both Ministries, MCIT launched a plan for ICT jobs nationalization in partnership with the Ministry of Labor and Social Development, Human Resources Development Fund (HRDF) and Council of Saudi Chambers.

The nationalization plan seeks to enable national cadres to obtain quality job opportunities and employ their capabilities in supporting digital transformation across all sectors. The plan aims to nationalize more than 15,000 jobs at the end of 2020.

A package of training and qualifying programs will be launched as part of the plan to support the national cadres to enter the labor market.

The training programs will include programs to train and qualify leaders in the sector, programs to support women empowerment such as female leader qualification programs in the ICT sector and technology female leaders, and intensive bootcamps, training programs in modern technologies such as Artificial Intelligence, Data Science, data security, Robotics and Blockchain, in addition to various technical subjects.

Launching ICT jobs nationalization support program in partnership with HRDF

In partnership with the Human Resources Development Fund (HRDF), MCIT launched a joint program to nationalize 14,000 job opportunities in the ICT sector enterprises. The program aims to attract and train national cadres with the aim to employ them in the sector's enterprises, by providing professional training programs, intensive bootcamps, professional qualification and guidance programs and financial support programs for employment in the ICT sector.

The program covers four phases. The first phase focuses on technical support jobs. The second phase focuses on data analysis jobs, while the third and fourth phases target project manager and contact center jobs.

Training Saudi cadres in ICTs

As part of MCIT's efforts to localize the ICT sector and enable national cadres to acquire the necessary skills for the different levels and fields of jobs in the sector, MCIT, in cooperation with major companies, trained over 18,635 national cadres in ICTs. The training programs included a variety of quality topics, including data analysis and Data Science, Artificial Intelligence, Blockchain, data security, Internet of Things and 5G networks.

18,635

Cadres trained since the initiative's launch

To view the related video, please scan the QR code

Designing a comprehensive program aiming at women empowerment in the ICT sector

In line with the KSA's Vision 2030 to empower women and raise the rate of women's participation in the labor market, MCIT designed a comprehensive program that aims to develop the digital capabilities of the Saudi women and create a digital environment that nurtures and develops digital talents in the ICTs, through rolling out several programs and projects on several tracks including:

Enhancing women's leadership skills in the sector:

Provided initiatives to develop women's leadership skills, such as 1st grade leadership skills.

Spreading digital awareness:

Participated in several events to enrich digital knowledge to increase awareness of the importance of women's participation in the sector.

Support female entrepreneurs in the sector:

Designed programs aimed at training and creating female leaders and entrepreneurs in IT sector. 39 entrepreneurs were stimulated to establish ICT startups.

Promoting digital skills:

Held several training programs to build digital skills. More than 4,700 women were trained on various critical digital areas.
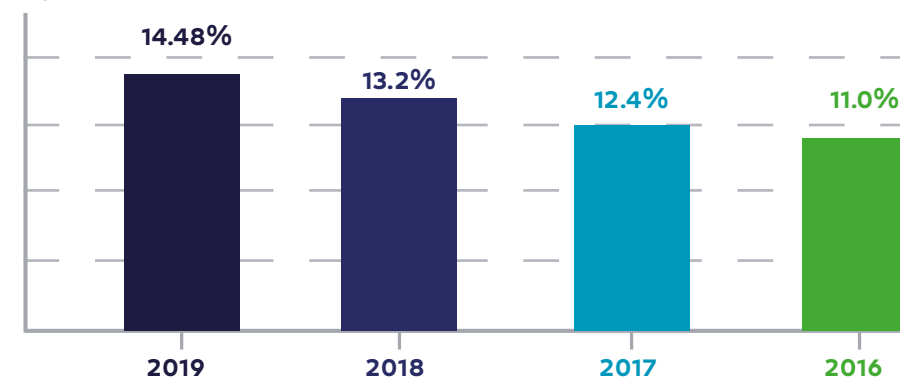
Creating business models for outsourcing centers:

Developed multiple models for women outsourcing centers, in addition to cooperating with several entities with the aim to establish a number of common services centers

Signing MOU between MCIT and MiSK Academy within the 'Future Skills' Partnerships Program

in order to increase job opportunities for women in the sector

The participation of women in the labor market slightly increased from 2018, where the rate of female workforce in the sector reached 14.48% by the end of 2019 compared to 13.2% in 2018. Figure (9) illustrates the growing rate of women employment in the ICT sector between 2016-2019.

Figure (9): Growth of women employment rate in the ICT sector between 2016 and 2019

| 14.48% | 13.2% | 12.4% | 11.0% |
| 2019 | 2018 | 2017 | 2016 |

With the aim to promote avenues of cooperation and exchange of knowledge in the field of capabilities development and qualification in the sector, MCIT signed a Memorandum of Understanding (MOU) with Prince Mohammed bin Salman bin Abdulaziz Foundation (MiSK) on the sidelines of Misk Global Forum 2019. The MOU aims to support the youth in the sector, provide training programs to job seekers in the field of applications and emerging technologies, contribute to employment of Saudi cadres and make MiSK Academy one of the certified strategic partners in the 'Future Skills' Partnerships Program adopted by MCIT.

The MOU consists of four key areas. The first area focuses on provision of technical training programs specialized in several subjects that enhance readiness of the trainees to enter the labor market. Training subjects include development of applications, basics of programming, business analysis, Internet of Things, network development, Artificial Intelligence, cybersecurity, product management, user experience design, cloud computing and professional skills.

The second area focuses on launching ICT fellowship and internship programs in cooperation with technology leaders and several distinguished international universities. The third area seeks to establish a joint innovation center to support developers and technology entrepreneurs at different levels such as primary education, higher education and young professionals. The fourth area focuses on holding ICT-related events and competitions.

Developing Technology; Supporting, Stimulating Innovation; and Expanding the Market

Growth of IT and emerging technologies market in the KSA

MCIT made determined efforts in recent years to grow the local technology market through developing the sector's regulatory and legislative environment, launching initiatives and incentive programs supporting the growth of the local IT market and providing incentives for adopting emerging technologies in the KSA. Those efforts resulted in the growth of the IT and emerging technologies market, where it amounted to SAR 45.2 billion at the end of 2019, increasing by 15% compared to 2018. Moreover, the adoption of emerging technologies increased by nearly 9%. The share of local content in the IT sector amounted to 21% of the IT products, and the cloud computing services market amounted to SAR 1.7 billion. MCIT seeks to continue its efforts to pursue more growth of the IT and emerging technologies market in order to become among the major markets at the regional and international levels.

45.2 billion SAR
Value of the IT and emerging technologies market in the KSA

15%
Growth of the IT and emerging technologies market in the KSA compared to 2018
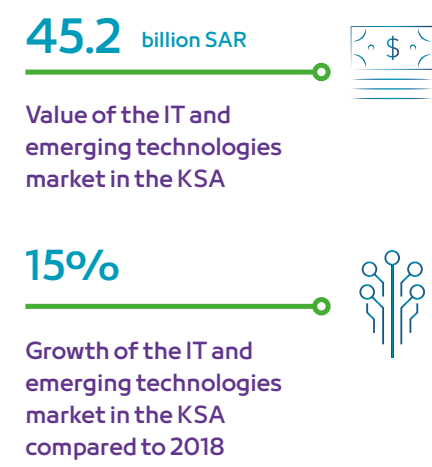
Launching Deloitte Center for Digital Solutions

MCIT has launched Deloitte Center for Digital Solutions (Deloitte Digital Center), with the aim of supporting the development of innovative digital solutions for the public and private sectors with the participation of technical entrepreneurs, in addition to creating quality job opportunities for national digital cadres. The Center will further provide digital consulting services across the GCC countries and Middle East. It is the first of its kind center in the Middle East and North Africa.

The Center aims in its next phase to qualify 200 technical consultants of national digital cadres. It also seeks to develop and nurture local human resources through special programs including scholarships and training. The Center will work on improving the consulting services in the digital field, thus having a general role in supporting the KSA's efforts in building a digital economy and stimulating a vibrant and innovative digital society.

The launch of Deloitte Digital Center is consistent with MCIT's recently launched strategy. It also supports owners of digital startups and technology entrepreneurs and provides programs to support the digital entrepreneurship ecosystem in addition to attracting more technical investments to the KSA, which should be accompanied by a growing number of quality jobs for those joining the sector. Moreover, the center supports MCIT's efforts in developing the digital capabilities of the Saudi youth.

Thereby, the number of excellence centers specialized in technology reached 7 centers, and the number of international IT firms in the KSA reached 36 firms.

Deloitte Digital Center Career Areas and Services

Digital innovation lab

Digital creative studio

Digital plant for production and services

Digital development academy
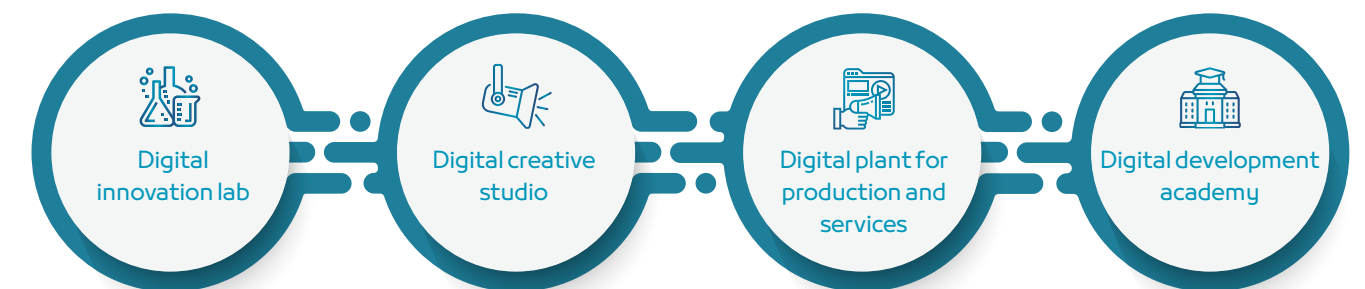
Conducting a comprehensive study for a national technology development program to realize a sustainable technical ecosystem

MCIT prepared a study for a national IT development program aimed to accelerate and promote the economic ecosystem in the traditional and emerging IT sectors in the KSA through effective financing and operational interventions in the market.

The program focuses on all stages of the operational system in the technology sector, starting with research and innovation through to localization and enhancement of the local content, as well as encouraging all economic sectors to adopt and use technology.

The proposed interventions include financial and non-financial instruments to fill the gap, ensure effectiveness and promote sustainability. The program also aims to enhance the cooperation with stakeholders, such as Saudi Authority for Intellectual Property (SAIP), King Abdulaziz City for Science and Technology (KACST), General Authority for Small and Medium Enterprises (Monsha'at), Local Content and Government Procurement Authority, Saudi Arabian General Investment Authority (SAGIA), funds such as the Saudi Industrial Development Fund (SIDF) and the National Corporation for Micro Investment. The program will help companies in the sector to strengthen their position and capabilities in order to make the leap from the local to the regional level.

Attracting global leaders in cloud services

MCIT worked on attracting global corporations for investment in the KSA in cloud computing, with most recent investment announced by Oracle Corporation and partnership agreement between Zain and Alibaba Cloud.

ORACLE

Oracle's CEO announced that the company has invested in the KSA with two data centers and considered the KSA a regional hub for cloud computing, which contributes to promoting foreign investors' confidence in the Saudi market's appeal for investment in cloud computing.

zain

Zain announced it has concluded an agreement with Alibaba to set up local cloud services in a unique partnership that promotes the local service market for cloud computing and increases the quality of supply in partnership with Alibaba Cloud, one of the world's largest cloud computing corporations.

Launching open source program

MCIT has launched an integrated program for open-source software entitled 'Masdar'. The program aims to take advantage of open-source software to contribute to the development of technology, promotion of local content and creation of a sustainable environment, thus ensuring the efficiency of digital transformation, reducing costs in a meaningful way, stimulating digital innovation, accelerating the pace of digital transformation, developing the IT market, increasing technology local content and creating quality jobs.

The launch of Masdar is aimed at driving innovation through the adoption of open-source solutions, enabling different sectors and individual volunteers to engage in the open-source ecosystem, identifying and support-

ing success stories, removing obstacles to facilitate access thereto and adopt thereof, and consolidating the concept of giving and sharing, with a view to building an active digital society in the KSA. This can be done by promoting open-source products market and service suppliers, promoting open-source success stories at the national and regional levels, training and qualifying national cadres specialized in open-source software, stimulating and developing open-source software use in all sectors, in addition to localizing technology and innovation leadership.

'Masdar operates through an integrated and coherent ecosystem of active components to enhance the localization of the technology industry, stimulate the adoption of IT services,

digitize the various sectors (government, non-profit and endowment, industrial, SMEs, studies and research), in addition to developing talents, programmers and technical communities specialized in open-source software. The program will help stimulate the adoption of open-source software use through the National Open Source Prize and will aspire to locally lead the open source index.

The program roles were distributed in the IT market and emerging technologies market between leadership, empowerment and contribution, where 28 strategic initiatives were assigned to the program, including 8 key enablers, 10 quick wins and 10 other pivotal initiatives.

To view the related video, please scan the QR code

Signing MoU with Jollychic

MCIT has signed a memorandum of understanding (MoU) with the Chinese retailer Jollychic with the aim of cooperation and exchange of knowledge. Jollychic intends to expand its logistic, digital and investment activities in the KSA, through additional cash injections over the next three years.

The MoU aims to raise the level of local warehousing jobs, increase delivery capacity and expand the national

delivery network. The company also intends to expand measures taken to facilitate logistics with the aim to raise the warehousing jobs level, obtain last-mile delivery (LMD) permits in coordination with regulatory entities and provide digital payment solutions offered by Jollypay, the company's online payment platform to support digital economic transformation in the KSA. The MoU also included Jollychic's commitment to raise customer service quality level

in the KSA in several phases consisting of larger presence of customer service areas and contact center services.

The MoU is part of MCIT's efforts to enhance the spread of e-commerce in the KSA, through the provision of a supporting environment of high-level logistics and e-payment services in a way that achieves high reliability and ease of use for e-commerce transactions.

Signing two MoUs with major Indian firms to localize technology and services of excellence centers in the KSA

MCIT has signed two memorandums of understanding (MoUs) with major ICT Indian companies, namely Tata Consultancy Services Limited and Wipro Limited, with the aim to localize technology, transfer knowledge to the KSA and develop the digital skills of national cadres in order to prepare a distinguished generation of Saudi youth who can actively contribute to supporting the desired digital transformation.

The MoUs with both firms include strategic partnership to localize technology and excellence centers, develop digital capacities in partnership with MCIT, expand the existing service in a way that contributes to enhancing the regional economy within the KSA, create job opportunities, provide high-skill training courses to contribute to job nationalization in the ICT sector and talent development programs, transfer knowledge, support and enable digital entrepreneurship, participate in digital events and exchange visits between experts and specialists with the aim to localize technology, transfer knowledge to the KSA and develop the digital skills of national cadres to prepare a distinguished

generation of Saudi youth who can actively contribute to supporting the desired digital transformation. An initial concept for the presence of the company in other regions of the KSA was attained to provide the following services:

- IT consultancy services
- Software quality and testing
- Data and analysis services
- IT systems
- Backup operations services
- Systems engineering services

Launching a SAR 1 billion emerging technologies portfolio

MCIT, in cooperation with the Social Development Bank, has launched the 'Emerging Technologies Portfolio' to support, finance and stimulate entrepreneurial projects and emerging technology activities through the creation of a SAR 1 billion portfolio with the aim to encourage digital innovation to build a digital society, a digital government and a thriving digital economy, achieve a better future for the KSA in line with the Vision 2030 to diversify national income sources, drive the Saudi economy and create more job opportunities for the Saudi youth.

The portfolio also aims to provide adequate funding to technology entrepreneurs and promising digital projects in all modern technologies, including Artificial Intelligence applications, Internet of Things, Virtual

Reality, 3D printing, robotics, e-commerce, cloud computing, financial technologies and cybersecurity, with the ultimate objective of localizing such technologies and achieving digital transformation in the KSA.

The launch of the portfolio was met with great appeal, where the number of applicants to take advantage of the portfolio's support reached 700 by the end of 2019. The portfolio is expected to have a significant impact on stimulating the emerging technologies market in the KSA, where 14,000 jobs are expected to be generated in emerging technologies, and 3,500 projects to be launched. Moreover, the contribution of emerging technologies in the GDP is expected to reach SAR 2.6 billion by 2030.

SAR 1 billion
Value of the emerging technologies portfolio

700
Applicants to take advantage of the portfolio's support

Launching 'Tech Champions' program

The 'Tech Champions' program seeks to contribute to finding digital business solutions for the KSA's Vision 2030 programs by empowering entrepreneurs through the provision of a package of technical, financing and guidance services in modern technologies and business development programs with the participation of selected partners from different sectors.

The program also offers the opportunity to enroll in bootcamps specialized in entrepreneurship and technology to refine and develop the skills of those enrolled in the program in order to provide them with the knowledge and skills necessary to launch successful technology projects. The program further includes business accelerators to support and enhance the launch of startups in a manner that ensures best results. The program has proved remarkable success as the number of people enrolled in it reached 3,500, while 350 trainees enrolled in the bootcamps, and the number of beneficiaries of business accelerators reached 60. The program represents a strategic step aimed at removing the obstacles and challenges facing the target sectors, which include e-commerce, Hajj and Umrah, industry and smart cities, entertainment and sports, and health. Emerging technologies enable many solutions and opportunities to address challenges facing such sectors. The program also seeks to introduce the importance of keeping pace with the Fourth Industrial Revolution (4IR) in the development and advancement of businesses.

3,500

Number of enrolled in the Tech Champions program
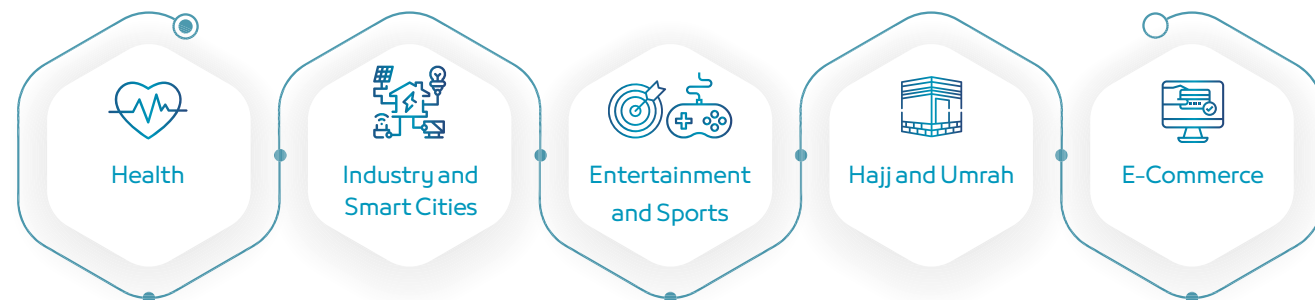
350

Beneficiaries of the bootcamps

60

Beneficiaries of the business accelerators

The target sectors:

Health

Industry and Smart Cities

Entertainment and Sports

Hajj and Umrah

E-Commerce

Launching the largest business accelerator for electronic games

MCIT, in partnership with the General Entertainment Authority (GEA), has signed a joint cooperation agreement to launch a business accelerator supporting the development of electronic games locally on the sidelines of the Joy Entertainment Industry Forum (Enjoy KSA). This joint cooperation aims to build technical cadres in the digital entertainment sector, in addition to establishing a joint center for digital innovation to build digital solutions and businesses in the entertainment sector.

Through the agreement, MCIT seeks to qualify and train national cadres in several fields relating to the digital entertainment sector, including design and programming of electronic games, entrepreneurship and acceleration of digital projects. MCIT will also provide technical guidance, business development and financing solutions for qualified projects. The parties agreed to explore avenues for cooperation in the ICT and entertainment sectors by establishing a digital innovation center aimed to empower entrepreneurs and digital entertainment startups.

The agreement also included cooperation in research and development in emerging technologies, including AI, IoT, robotics, cloud computing, Blockchain and other technologies that aim to develop new digital solutions in the entertainment sector.

Signing memorandum of cooperation between MCIT and its Indonesian counterpart

MCIT has signed a joint cooperation agreement with Indonesia's Ministry of Communication and Information Technology (Kominfo) with the aim to enhance joint cooperation between both countries, encourage innovation and entrepreneurship across various ICT areas and exchange knowledge to achieve technical development and expansion in the ICT markets that serves the interest of both countries.

On the sidelines of the discussions to sign the memorandum, several workshops were held with the participation of MCIT, Ministry of Hajj and Umrah, Saudi Arabian General Investment Authority (SAGIA) and General Authority for Small and Medium Enterprises (Monsha'at) that explored the investment opportunities in the ICT field as well as the efforts of Wadi Makkah Company for Technology in Hajj and Umrah and technology investment efforts to help Hajj and Umrah pilgrims in addition to exploring investment opportunities in touristic areas in the KSA. This agreement is part of MCIT's efforts aiming at cooperation with many friendly countries of importance in the ICT field to build meaningful and productive partnership that contributes to the development of the ICT sector and achieving the desired digital transformation.

Regulation of
the postal sector

Separating the regulatory and operational responsibilities of the postal sector to increase its regulatory maturity, stimulate investments and protect the rights of investors and consumers

The Council of Ministers Resolution No. 403 dated 12/07/1440H (19/03/2019G) was issued on assigning the responsibility of supervising the post sector to MCIT as well as developing public policies and developmental plans, proposing draft laws and amendments, coordinating with stakeholders regarding services provided to the government entities, representing the KSA in local, regional and international organizations in the postal sector and following up the KSA's obligations in this regard, where-

as the Communications and Information Technology Commission (CITC) will be responsible for the regulatory and oversight functions of the sector. Pursuant to such terms of reference, CITC will be responsible for the governance of the postal sector, market control, attraction of global investments, ensuring justice, equality and transparency and setting rules, basics and conditions related to the universal service and the right of universal use. The separation of regulatory and operational responsibilities of the postal

sector was completed, as CITC sought to register 40 delivery service companies on electronic applications and complete the preparation of 'Rules for Protection of Rights of Postal Services Beneficiaries'. Moreover, the postal communication services center was launched.

This resolution contributed to increasing the sector's contribution to the GDP and supporting the expected growth of e-commerce as the KSA today is one of the world's ten largest growing countries.

Submitting the new draft law on postal services

To implement the directive assigning MCIT with the responsibility of overseeing the post sector, MCIT has conducted a comprehensive review of laws pertaining to the postal sector, which are impacted by transferring supervisory functions to MCIT, and the regulatory and oversight functions to CITC. MCIT conducted a benchmark analysis of the current situation of the postal sector in the KSA, created a future scenario for the postal sector and urgent reforms to upgrade the sector, especially that the current law on post had been prepared a long time ago, and therefore it is not in line with the sector's vision and future aspirations, where the situation requires speeding up formulation of a new law that fulfills the goals and aspirations desired from the sector. Such efforts have resulted in developing the new draft law for the sector that is under review by the Bureau of Experts at the Council of Ministers with the participation of government stakeholders.

This legal upgrade is expected to contribute to promoting investment in the postal sector, enhancing beneficiaries' confidence and increasing commercial transactions so that the sector can become a mainstay of the national economy. This can be done by encouraging e-Government services, e-commerce and logistical

services. There is no doubt that the impacts of e-commerce and e-transactions cannot be attained without the presence of advanced postal and logistical services. Such impacts include creating job opportunities in small and medium enterprises which can be connected to global markets with the least investment cost, as well as increasing the number of individuals working from home, thus reducing road congestion and maintenance cost, enhancing competitiveness, improving the work environment and creating varied job opportunities. The draft law defined the essential regulatory framework to provide postal financial services constituting primarily of remittances and savings, which are expected to expand the concept of postal business to become like most postal banks in the world. The new postal services should enable opening saving accounts for individuals and others and benefitting from savings in projects and postal business development. In the event the draft law is approved and implemented, a number of positive impacts are expected to take place in the financial, social and economic areas as follows:

1. Transform postal services into free investment.

2. Create an environment conducive to fair and effective competition and encourage the same across all postal areas; attract additional foreign investments and expertise and localize knowledge related to postal services.

3. Attract human competencies to work in the postal field through the creation of job opportunities for nationals when licensing local and foreign firms.

4. Ensure the right to access all general postal services at reasonable prices in all regions of the KSA, and follow the continuing dual development of the quality and prices of global postal services and balance such evolution with the current reality.

5. Protect the public interest and interest of users, and improve the efficiency of oversight and accountability systems for the postal services.

6. Develop the postal services to keep pace with the global postal industry and quality standards, and transfer, localize and keep pace with the progress of post-related technologies.

7. Enable specialized postal research and studies to open new horizons for investment in the postal services regionally and internationally.

8. Increase the financial returns of the State's budget expected from licensing postal service providers.

9. Encourage the national capital to direct a portion of its investments towards investing in the postal services.

10. Promote opportunities and efforts to increase the contribution of the postal sector to the GDP.

Institutional Excellence

Adopting global standards for quality and institutional excellence

In its journey to achieve excellence, MCIT has adopted a leading scientific method, namely the European Foundation for Quality Management (EFQM) excellence model in order to create a competitive environment that is capable of keeping pace with the ongoing developments to achieve MCIT's vision and goals. The excellence model aims to enhance the capabilities in order to implement high-quality and cost-effective modern and sustainable administrative concepts in a way that achieves customer satisfaction, develops human resources, encourages the creative spirit and unleashes skills and capacities.

MCIT also worked on spreading the culture of excellence internally and introducing the best global practices to achieve ongoing development and improvement as well as sustainability in services and operations by launching a series of training workshops to spread knowledge of the basics and principles of procedures and quality management. The workshops were conducted by certified trainers and the number of trainees reached more than 150.

Being keen to raise the quality and efficiency of operations provided to the beneficiaries internally and externally, MCIT has directed its attention to enhancing the maturity of

procedures. Therefore, in early 2019, MCIT conducted a systematic evaluation based on a survey on operations and procedures addressed to employees, in addition to conducting interviews with representatives of all departments to measure the current maturity level of procedures in order to determine the baseline of maturity level. The value 2.3/5 was determined as the baseline of procedures maturity level and a target was set for the end of the year.

MCIT has subsequently developed an annual roadmap for the enhancement of the procedures maturity in MCIT to achieve the target result. At the end of 2019, MCIT reevaluated the maturity level of procedures by following the same approach, and found that it achieved the target result, which is 3.3/5. One of the most notable outcomes of the roadmap that helped enhance the maturity was the launch of the procedures portal. It is an MCIT portal to manage work procedures electronically. The procedures portal facilitated access to, viewing and understanding the procedures to enhance maturity and raise governance level therein.

An architecture for work procedures was also structured and divided into administrative, supportive and substantive procedures. This architecture was aligned with the sector's

strategy and MCIT's strategy. The procedures architecture aims to translate the strategic goals into operational terms by managing the organization through procedures. Moreover, more than 180 work procedures have been documented and developed using global and innovative modelling and developing means.

With regard to following MCIT's performance of its services, MCIT developed and published several dashboards for executive leaders, procedure owners and MCIT affiliates to follow the performance of procedures and the status of automation of documented procedures.

150

Trainees on basics and principles of procedures and quality management

From **2.3** to **3.3**

Higher evaluation of maturity level of procedures in MCIT

Increasing the building capacity by 256 desks

With MCIT's growing works in recent years, MCIT has worked to enhance its human cadres in order to be able to accomplish the mandated works and tasks in an optimal manner. This resulted in a significant increase in the number of employees. In order to provide solutions commensurate with this growth and provide the proper spatial environment to enable employees to optimally perform their jobs, MCIT studied the available spac-

es in its buildings and determined suitable means to maximize the use of such spaces. MCIT implemented developmental projects to achieve this goal. Such efforts resulted in adding 256 desks across all administrative levels, raising the capacity of the building from 1,080 people in 2018 to 1,336 people in 2019.

256

Additional desks available across all administrative levels

Managing 11,000 visitors and 543 events for MCIT

Within the work of MCIT to spread awareness and provide qualification and training across all ICT areas, and in light of the training courses and workshops held in MCIT premises, these events organized by MCIT have gained an important role in the qualification of specialized cadres in the sector, education on emerging technologies and raising awareness of many different areas in the sector. The number of events held by MCIT this year reached 543 with more than 11,000 participants.

543

Events held in MCIT headquarters

11,000

Participants in events held in MCIT headquarters

Designing and executing 8 rooms for MCIT archives

As part of MCIT's efforts to keep and maintain important documents and make them available properly, 8 archive rooms have been designed and executed in MCIT headquarters, constituting the first archiving phase for the departments.

The rooms were executed as follows:

1. Archive room for the Minister's office
2. Archive room for human resources
3. Six common rooms for all MCIT departments

Financial dashboard

To enhance the financial transparency, MCIT has launched the financial dashboard, which provides tools for the visual handling of data. The dashboard displays key performance indicators (KPIs) to monitor the financial activity of all MCIT's sectors and deliver reports that assist in decision-making.

Achieving readiness to implement the new government tender and procurement law

In cooperation and coordination with the Ministry of Finance and the Center of Spending Efficiency (CSE), MCIT worked on enhancing its readiness to activate the new government tender and procurement law, to ensure that all beneficiaries fully adopt this new law with its both legal and electronic aspects. To enhance its readiness, MCIT has trained procurement specialists through specialized courses provided by the Institute of Public Administration, qualified the procurement officer from the CSE for change management and provided over 10 workshops and informative messages to the beneficiaries in MCIT.

The new government tender and procurement law comes with several advantages for the government entities and companies competing for government projects. The new law will stimulate investment in the KSA by giving preference to startups competing for projects by providing them with several facilities. The law also supports companies listed on the stock market by giving them priority in tenders, which should encourage more companies to be listed on the stock market. In addition, the law establishes controls and standards to regulate the government procurement procedures, which ensures the achievement of spending efficiency in government projects. The law also provides support to small and medium enterprises and local content, which will enhance the national economy and increase GDP growth.

Launching quality training program for supervisory positions

MCIT is continuously working to develop and improve the competencies of MCIT's human cadres. Raising the efficiency of MCIT's employees will support it to achieve the best results. During 2019, a total of 100 training seats were provided for specialized quality training that addresses training gaps and enhances the skills required for MCIT's strategic directions through 28 workshops targeting supervisory positions in MCIT.

100

Seats for specialized quality training

28

Training workshops for supervisory positions in MCIT

Employee loyalty initiative "Because You're Worth It"

Employee loyalty is an important factor in raising the performance level of employees. Many organizations focus on enhancing the loyalty of their staff using different methods. In pursuit of attaining a work environment that supports employees to give their best, and being keen to attain a sustainable, positive and supportive work environment for its employees, MCIT has launched the employee loyalty initiative 'Because You're Worth It'. The initiative is concerned with sharing happy occasions and special events with MCIT's employees by sending them flowers and token gifts on events such as having a baby, marriage, promotion, honoring at the MCIT's level and other occasions. The initiative has had clear and positive appeal based on the feedback of employees whose happy occasions were celebrated. The number of beneficiaries of this initiative reached 115 in 2019.

115

Beneficiaries of the job loyalty initiative "Because You're Worth It"

Holding notable events to improve the work environment

The events held by MCIT on different occasions contribute significantly to improving the work environment. Such events add a different atmosphere to the routine work and enhance bonding between employees from different units and departments across MCIT, which would lead to higher levels of job satisfaction, integration and loyalty, which in turn supports the attainment of institutional happiness in MCIT to make the work environment contemporary and attractive. Therefore, the level of productivity and performance in MCIT's works will increase, and a distinguished and positive culture will be created, thus bolstering the values and positive behavior of MCIT's employees. During 2019, MCIT held 20 internal events with the aim to improve the work environment. Those events celebrated different occasions including the Saudi National Day, MCIT's annual and semi-annual open meeting, "My Child in the Ministry" event and other different events.

20

Internal events held with the aim to improve the work environment for employees

Spreading awareness and educational messages

MCIT communicates daily with its employees through the development of creative messages with unique and meaningful content. The content of such awareness messages may be relating to employment, health, personal development or other subjects of concern to the employees. Through these messages, MCIT aims to educate and make its employees aware in all areas of life. These messages also contribute to creating an informed work environment that is supportive of creativity.

Launching personal coaching workshops

Training through personal coaching is an effective means to develop and upgrade skills and transfer knowledge in the professional sphere. Being keen to develop the skills of its professionals and ensure the sustainability of knowledge and skills acquired, MCIT has identified promising leaders and employees in it and had 40 of them certified as personal coaches by the International Coaches Union. MCIT also developed a personal coaching platform to enable the provision of personal coaching sessions to MCIT's employees by the certified coaches.

40

Personal coaches in MCIT certified by the International Coaches Union

Launching 'Enable' initiative

MCIT has launched 'Makkin' ('Enable' in English) initiative, which focuses on the provision of training courses in various professional areas to enable male and female employees to optimally perform their assigned tasks. Courses are selected for the employees based on the strategy of the ecosystem, with the aim of enabling them to acquire the skills required in order to upgrade the performance levels and achieve the goals of the ecosystem. In the initial phase of 'Makkin' initiative, several varied training courses were launched to develop the administrative skills. The number of training places in the initiative reached 200.

Receiving the fastest growing entity reward in confidence index

MCIT has received the 'fastest growing entity reward' in the confidence and job satisfaction index at the levels of public and private sectors for 2018-2019.

Launching phase II of 'Mawared' mobile app

In 2018, MCIT launched 'Mawared', a resources management mobile application. Mawared allowed easy access for employees to their information in order to apply for all MCIT's services anywhere and anytime through their smart devices.

Building on the facilities provided by the mobile app to employees, MCIT launched the second phase of the app development. The second phase included addition of financial and procurement services to the list of services available on the app, in addition to completing the provision of the remaining human resources services to be available on the app.

Strengthening MCIT's technical architecture

The technical architecture, including equipment and services, is one of the most important supporting elements that enhance institutional performance and improve employee performance given that many works and procedures rely on this technical architecture. Therefore, MCIT worked to improve and enhance the technical architecture in pursuit of rendering it a contributor to developing MCIT's performance and employees.

In this context, MCIT was able to achieve the following:

- Added 25 new e-services to MCIT's internal portal, bringing up the total number of e-services to 29.
- Built an integrated portal to receive and manage technical change requests to fulfill its technical needs. 76% of total change requests (690) were processed and developed.
- Built a 24/7 security information and event management (SIEM) system
- Improved the steps of receiving a request, activating auto reply and providing accurate statistics for technical support requests in order to improve the quality of provided service.
- Established an integrated information security lab that enables MCIT to perform digital forensics analysis, malware analysis, and to conduct penetration testing, security gap analysis and incident response.
- Provided three high-speed Internet lines with different technologies from different operators to all MCIT employees and visitors, in addition to providing high-speed Internet service to all MCIT programs, camps and events and raising the Internet speed from 100 Mbps to 400 Mbps.
- Built an integrated system that contributes to organizing and managing tasks for all MCIT employees.
- Launched the internal portal with a new look and services to keep pace with the modern technologies and needs of MCIT employees.
- Completed the process of reconnecting Mersal System to the e-Correspondence System (Morasalat) on the Government Secure Network (GSN), which will contribute to facilitating the delivery of government correspondences between MCIT and the linked entities.
- Created automatic linkage between the Ministry of Civil Service and MCIT for the integration of career information on jobs and employees.
- Obtained ISO 22301 (the international standard for business continuity management system of e-services), in addition to ISO 20000 (the international standard for IT service management).

Achieving the platinum level in completing connectivity on 'Eltizam' platform by 96%

MCIT has attained the platinum level among the government entities in completing comprehensive linkage on Government Service Bus (GSB) to provide comprehensive human resources data on 'Eltizam' platform. This connectivity and exchange of data with the government entities are particularly important in building a unified and documented database on government human resources and proving it to decision makers through the Business Intelligence Center at the Ministry of Civil Service. The database includes the current job data, historical data, qualifications, performance management, operations and automation of the human resources procedures provided by the Ministry of Civil Service to the government entities. MCIT has topped other entities in the telecommunications ecosystem by achieving Eltizam (commitment) by 96%.

Enhancement of
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Upgrading the National Strategy for Digital Transformation

Given the vital importance of digital transformation in the development and progress of all sectors such as education, health, commerce, smart cities and other sectors, MCIT, represented by the National Digital Transformation Unit (NDU), worked on upgrading the National Strategy for Digital Transformation, which includes the identification of priority sectors for digital transformation, identifying high-impact initiatives and their requirements, determining the contribution of digital transformation to the KSA's Vision 2030 and developing the roadmap to digital transformation at the national level.

Additionally, initiatives were developed to support digital transformation in the KSA in all sectors. Initiatives developed under the National Strategy for Digital Transformation were approved in 7 sectors. The implementation of the initiatives set out in the National Strategy by all stakeholders after approval is expected to contribute to economic returns estimated at SAR 21 billion, which will increase the contribution of digital economy to the GDP by 19.4% until 2025, leading to the creation of 150,000 indirect jobs through the implementation of the initiatives.

7

Sectors aligned with in the national strategy for digital transformation

Launching the IoT strategy

The Internet of Things (IoT) technology has recently become one of the most prominent emerging technologies due to the wide spread of IoT applications, especially in the field of smart cities and smart homes. It has become necessary to work on regulating the works and activities of this technology in order to stimulate its growth and expand the scope of its use. Therefore, MCIT and CITC launched the IoT strategy, which included studying the current status, analyzing the obstacles facing IoT technologies and working on resolving them with all relevant entities. The strategy includes the following areas:

1. Approve the regulatory framework for IoT using tax-free frequencies, which opens up new markets for IoT applications and software.

2. Launch special path for IoT applications and solutions as part of the Tech Champions program, which qualifies small companies to enter the IoT market, develop special applications and obtain the necessary support.

3. Engage telecommunications companies (Saudi Telecom, Zain and Mobily) in the smart meters trial in cooperation with the Ministry of Energy and Saudi Electricity Company (SEC), which included 12 cities and the installation of 1,000 smart meter devices for homes. This trial proved the success of NB-IoT network, which is provided by the telecommunications operators, contributing to the enablement of smart cities and IoT technologies., NB-IoT technology was added to the technical solutions in the Smart Meter Project, and a large portion of the project was awarded to a consortium under the leadership of Mobily alongside Alfanar, with an investment exceeding SAR 5 billion.

4. Develop a content and campaign on the IoT, which focuses on educating the society on the IoT technology, how it contributes to the life of individuals and society, and its impact on applications and smart solutions in all areas of life.

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**Enhancement of
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Creating a digital policy guide

MCIT, represented by the NDU, has created a digital policy guide to attain a holistic view of the legislative aspect of digital transformation through the collection of various regulatory documents pertaining to digital transformation, including laws, regulations, guides, standards, specifications and other documents, then classifying the same per type, impact and relevant entity in a common guide. This guide will contribute to encouraging the cooperation among the government entities in the legislative front of digital transformation and reduce the duplication of efforts in the future.

The guide includes over 200 regulatory documents of 13 government entities as follows:

- MCIT
- Ministry of Commerce and Investment
- Saudi Arabian Monetary Authority (SAMA)
- CITC
- Capital Markets Authority of Saudi Arabia (CMA)
- National Cybersecurity Authority (NCA)
- General Authority of Zakat and Tax (GAZT)
- General Commission for Audiovisual Media
- E-Government Program (Yesser)
- National Information Center (NIC)
- National Center for Archives and Records (NCAR)
- National Center for Digital Certification (NCDC)
- National Data Management Office

Developing the 5G Strategy

The 5G technologies for communications became very important over the past years due to the fast speeds for data exchange available through the 5G telecom network, rendering it a central element of enabling other technologies and maximizing the benefit thereof, such as big data, Artificial Intelligence, smart cities and other technologies that rely primarily on the exchange of massive amounts of data. Therefore, countries compete to be leaders in the deployment of 5G telecom network. Accordingly, MCIT has worked with CITC to launch the 5G Strategy, which included studying the current status and the obstacles facing 5G technologies and providing the proper solutions for such obstacles to resolve them with the concerned departments and entities.

Developing the Cloud-First Policy

MCIT has continued the development of the Cloud-First Policy, which aims to rationalize government spending on IT and accelerate government transition from traditional IT solutions to cloud computing solutions. Cloud-First Policy is one of the key pillars of supporting the digital transformation in KSA and leveraging cloud computing services to increase the productivity and efficiency of the government sector.

As an ideal global practice, this policy significantly helps to improve IT efficiency expenditure, thanks to the low cost of cloud computing and the high capabilities of resource sharing among users. The policy application also reinforces flexibility and transparency among public sector institutions and enhances cybersecurity maturity and innovation tools readily provided through cloud computing platforms.

The policy provides guidance on the steps taken towards new investments in IT in the government sector, looking into the cloud computing options that meet the requirements of such investments and how to make

decision with regard to benefitting from government cloud computing services and selecting the appropriate model according to the nature of businesses and data dealt with.

The policy was prepared in line with the key pillars of the KSA's Vision 2030, and in a way that achieves its strategic goals of the cloud computing sector, including the acceleration of digital transformation, improving IT efficiency expenditure, enhancing data security and protection, developing IT ecosystem and increasing the contribution of the private sector thereto.

In the context of developing the cloud computing regulatory environment, MCIT has completed development of a Cloud Adoption Framework (CAF), which will help enterprises in the government and private sectors to adopt cloud computing solutions as well as seamless and direct transition to cloud computing platforms, which will contribute to growing the cloud services market.

Issuing e-commerce law

to strengthen confidence in e-commerce transactions, protect consumers and stimulate and develop e-commerce activities

The E-Commerce Law was issued, rendering the KSA one of the world's first countries to issue such law. The law contributed to enhancing consumer protection, raising the awareness of the rights and legislations in e-commerce, and raising maturity rate in the sector. Moreover, the e-commerce law was aligned with the UAE's Ministry of Economy with the aim of protecting consumers and merchants in both countries.

Establishing the Technology Forecast Center

MCIT established the Technology Forecast Center with the aim to support decision makers in the ICT and Postal sectors by providing comprehensive data and recommendations regarding these sectors. The Center conducts deep technical and economical research and studies in the various fields of ICT and post. A comprehensive and complete statistical database is also being built to enable and support the analysis of

sector's data and publishing circular statistical reports. The Center also conducts various studies to analyze the future trends in modern and emerging technologies and provides insights and predictions regarding these technologies. Constant work is also being done to find the latest and most interesting topics in the sector, as the Center strives to be ahead of the curve when it comes to gathering information on the latest devel-

opments and trends. Multiple local, regional and international partnerships are being built in order to exchange knowledge and experiences in similar fields of research. Through its work, the Center aims to become a primary source of information for statistics and studies in the sector, to become a major contributor towards the development and adoption of the latest technologies and trends in the KSA.

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Establishing the International Indicators Unit

Being keen to achieve its goals and progress on international classifications and indicators, MCIT has created the International Indicators Unit, which focuses on identifying international indicators, collecting data related thereto, following and analyzing them and providing recommendations and proposals to work on improving the KSA's ranking in such indicators. The Unit's tasks are focused on three key areas:

Performance control and improvement:

- Conduct technical analysis of international indicators for the ICT and postal sectors.
- Submit periodic reports on the KSA's ranking and performance in the sector-related indicators.
- Build and document indicators' improvement plans with the indicator owners in the ICT ecosystem.

Data management:

- Identify the international indicators related to the ICT and postal sectors and continuously monitor all matters relating thereto.
- Request information and data related to international indicators from the relevant actors and nominate owners for indicators not owned according to the nature of the indicator.

International representation and cooperation:

- Communicate with international organizations and stakeholders inside and outside the ecosystem with regard to international indicators.
- Represent MCIT in all matters relating to international indicators including committees and working groups inside and outside MCIT.

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Periodic statistical publications for the ICT sector

In pursuit of formulating an integrated vision of the ICT sector's features and the vital impact on building plans and strategies and relevant decision-making in the sector, MCIT worked on collecting and identifying the sector's data from the ICT ecosystem and the relevant entities, in addition to classifying, sorting and publishing the same in specialized publications. MCIT published a spe-cialized statistical book that includes all data relating to the sector in order to become the main updated source of the sector's data with a view to supporting stakeholders and decision makers in knowing and assessing the current status and take appropriate decisions with regard to the sector.

Connecting to 'Masdar'

As part of the tireless efforts to collect and verify the accuracy and credibility of the sector's data, and as part of the efforts to ensure the integration of all sources of relevant data, MCIT has begun connectivity works with the General Authority for Statistics with regard to 'Masdar' program so as to work on data transmission. 'Masdar' is a national program aimed to build national statistical databases under the supervision of the General Authority for Statistics and connect data sources from government entities and other sources to users in the Authority, entities, decision makers, researchers and concerned international organizations to facilitate access thereto.

Preparing and publishing several in-depth studies in areas of importance

MCIT worked on preparing and publishing a number of studies and reports on several modern and emerging technologies with the aim to spread knowledge and raise awareness of these technologies, seek available opportunities to leverage such technologies and help in making decisions in regard thereof. MCIT was keen on involving local and international experts in conducting such studies and reports, and in cooperation with relevant entities, so that all studies and reports are comprehensive, thorough, highly reliable and trustworthy. Key studies and reports prepared are as follows:

Beyond the buzz: Making 5G a success in Saudi Arabia:

The report offers a view of the technical developments available through 5G in several areas notably the IoT, smart cities and self-driving cars and the possibility of implementing the models for use of such technologies and others alongside the expansive adoption of 5G networks.

ICT Start-up Saudi Arabia:

The report examines the contributing factors in terms of the regulatory and legislative environment to stimulate startups in the ICT sector so that they can grow and develop in the KSA. The report shows the current requirements in strategic and regulatory terms in the short and long terms to establish a supportive environment for startups.

Transforming the ICT sector in Saudi Arabia through foreign direct investment:

The report looks at the importance of benefitting from direct foreign investments in the development of the ICT sector locally, due to their positive impact on attracting and introducing the latest technologies to the KSA, in addition to their role in generating jobs and increasing the sector's contribution to the GDP.

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Joining the quantum computing race:

The report reviews the importance of quantum computing, and how it has transformed from an emerging technology to a priority for many research centers and universities, due to the tremendous potential made available by quantum computing given its high-speed processing capacities. The report also explores the expected impacts of quantum computing development on information security, encryption and other areas of importance.

An Overview of Selected Emerging Technologies:

The study focuses on providing a view of several modern technologies such as digital commerce, digital payment, display technologies, AI and other technologies with the aim of learning about the latest developments in these technologies and the impact they are expected to have on everyday life.

Optical wireless communications: navigating uncharted territories:

The report examines optical wireless communications (OWC), which is one of the latest technologies of wireless communications. OWC relies on sending data through light signals, as light waves enable sending massive amounts of data. The report explores the opportunities and challenges associated with the adoption of this technology.

Future foresight report for promising technologies:

The report reviews 36 key pieces of news and events in the world of technology and explores the expected impact of such news and events. The report also presents 12 future prospects with regard to such events to build a vision of the prospective future in the technology world. A mechanism to build future prospects was developed as illustrated in Figure (9):

Working group report on health and environmental impact assessment of electromagnetic waves used in radiocommunication technologies:

With the technological advances and rapid changes and requirements in wireless communications, numerous questions were raised about potential health and environmental impacts of the electromagnetic waves used in modern radiocommunication technologies. Therefore, a working group of specialists from several government entities was formed to assess key studies and global research on the risks of electromagnetic waves used in radiocommunication technologies.

Future Foresight Building Mechanism
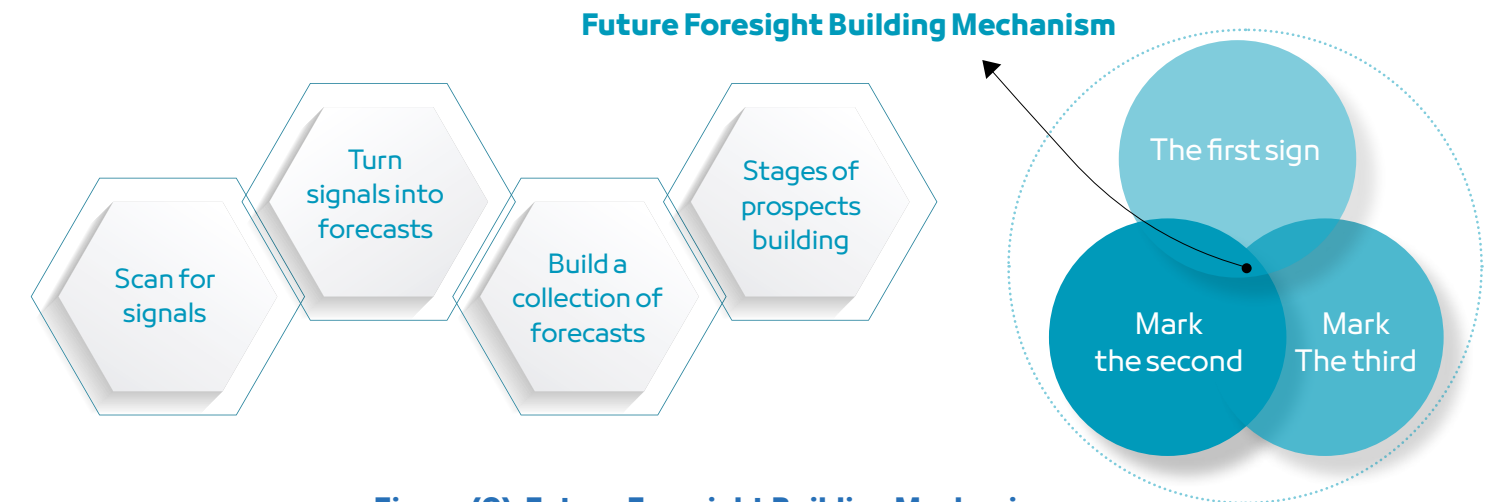
Figure (9): Future Foresight Building Mechanism

10 | MCIT's Contribution to Vision 2030
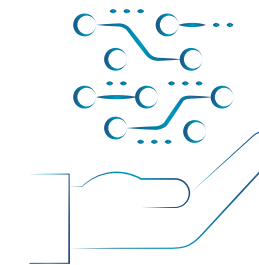
MCIT's Contribution to Vision 2030

In its capacity as responsible for and supervisor of the ICT sector in addition to its main role in the National Committee for Digital Transformation as well as overseeing the works of the National Digital Transformation Unit, MCIT contributes to the Vision 2030 at several levels, first and foremost of which is its contribution to the National Transformation Program and to other Vision programs starting from third-level objectives directly related to MCIT. Furthermore, MCIT has launched a strategy for the ICT sector, and connected it with the Vision's objectives and programs to achieve the harmonization and integration required and to enhance and enable the Vision.

Objectives

Within the framework of MCIT's contribution to the KSA's Vision 2030 realization, a set of third-level objectives within the Vision related to MCIT (directly or indirectly) were defined. Also, 3 third-level objectives within the Vision were set to be under MCIT's responsibility. Figure (10) and Figure (11) show MCIT's relation to the Vision's third-level objectives.

Directly Related Third-level objectives within the Vision 2030

2.3.1 Improve quality of services provided in Saudi cities

3.1.6 Attract foreign direct investment (FDI)

⭐ 3.3.2 Develop the digital economy

3.3.7 Increase local content in non-oil sectors

3.4.3 Localize technologies and knowledge through the Public Investment Fund (PIF)

4.1.5 Provide quality knowledge to those who excel in priority areas

4.1.6 Ensure alignment of education outputs with labor market needs

4.2.2 Increase women's participation in the labor market

4.3.1 Nurture and support the innovation and entrepreneurship culture

⭐ 5.2.4 Develop e-Government

⭐ 5.3.3 Ensure government entities' response to customer feedback

Figure (10):
Third-level Objectives within the Vision 2030 Directly Related to MCIT

⭐ Objectives within the responsibility of MCIT

Indirectly Related Third-Level objectives within the Vision 2030

1.2.2 Provide high quality services for pilgrims (Hajj and Umrah performers)

2.5.1 Develop and diversify entertainment opportunities to meet the population's needs

3.3.3 Localize promising industries

3.5.1 Establish logistics hubs and improve their performance

3.5.2 Improve local, regional and international connectivity of trade and transport networks

3.7.1 Consolidate national champions to consolidate their leadership globally

3.7.2 Develop promising local companies to be regional and global leading companies

4.1.2 Improve equity of access to education (especially in rural areas)

4.3.2 Grow contribution of small and medium enterprises (SMEs) to the economy

5.2.3 Improve productivity of government employees

5.2.5 Improve quality of services provided to citizens

5.3.1 Enhance transparency across all government sectors

Figure (11): Third-level Objectives within the Vision 2030 indirectly Related to MCIT

MCIT has developed 15 goals emanating from its three Vision objectives assigned within the National Transformation Program. Figure (12) shows the link between Vision objectives and MCIT objectives at the fourth level.

(3.3.2) Develop Digital Economy

Qualify the specialized Saudi human capital to bridge the digital gap

Raise quality level and increase services sector's contribution to GDP through e-commerce and digitization of education and health sectors

Promote innovation through R & D and support leadership of local digital companies

Create a special environment to be the best in the region to attract digital investment and establish emerging digital startups

Increase the impact of digital technologies on the social sector by raising digital awareness among citizens and work force

Improve industrial productivity through industrial technologies

Increase Internet penetration and speed in all regions of the KSA

(5.2.4) Develop e-Government

Develop governance framework to ensure implementation of e-government standards

Raise government IT spending efficiency

Enhance integration of digital services and internal government systems

Raise the use of government digital services to achieve customer satisfaction

Drive forward government entities' adoption of unified platforms

(5.3.3) Ensure Government Entities' Response to Customer Feedback

Enhance customer participation in the development & improvement of government entities' decisions, policies & services

Raise customer satisfaction with government entities' response

Accelerate government entities' response to customers

Figure (12): Details of fourth-level objectives listed under third-level objectives within Vision 2030, which falls under MCIT's responsibility

National Transformation Program 2.0

The National Transformation Program 2.0 is one of the largest executive programs of the KSA's Vision 2030, as it covers many national sectors. The program aims to achieve governmental operational excellence, enhance economic enablers and improve the standards of living, through the acceleration of implementation of basic and digital infrastructure projects, involving beneficiaries in identifying challenges, creating solutions and contributing to execution and evaluation of performance of programs' initiatives.

The National Transformation Program consists of eight themes:
- Transform Healthcare
- Improve Living Standards and Safety
- Ensure Sustainability of Vital Resources
- Social Empowerment and Non-Profit Sector Development
- Achieve Governmental Operational Excellence
- Enable Labor Market Accessibility and Attractiveness for Community Groups
- Contribute to Enabling the Private Sector
- Develop the Tourism and National Heritage Sectors

MCIT participates in the Program through the implementation of 17 initiatives that achieve the three objectives assigned to it under the Vision 2030. Below is a review of the indicators and achievement percentage of MCIT's initiatives in the Program.

Indicators

In order to measure MCIT's contribution to the implementation and achievement of the targets of the National Transformation Program and assessment of the results achieved through MCIT's work in the program, MCIT has been given ten performance indicators related to the third-level objectives. In addition, MCIT has adopted 18 indicators to measure the performance of the fourth-level objectives.

MCIT was able to achieve and surpass the targets for a number of indicators. With regard to indicators related to the goal of increasing internet penetration and speed in all regions of the KSA, coverage ratio of wireless broadband networks (more than 10 Mbps) in rural/remote areas reached 47.8%, while the target ratio was 42%. Coverage ratio of fiber optics to homes in all regions of the KSA reached 52.6%, while the target was 50%. Coverage ratio of frequency spectrum available for public mobile telecommunications services reached 114%, while the target was 80%.

In respect of e-Government development, the maturity level of electronically/digitally-transformed key government services reached 81.29%, surpassing the target for 2019, which was 70%. The target

was achieved for the number of e-government data available on GSB for 182 entities.

With regard to qualifying the specialized Saudi human capital to bridge the digital gap, the number of Saudi cadres trained in the ICT sector reached 18,635, whereas the target was 11,000.

Failure to achieve the target in the KSA's ranking in the Global Innovation Index (GII) is attributed to the multiple contributing roles and participating entities relied on to measure progress in the indicator's performance. The KSA's ranking declined in all sub-pillars (Institutions, Human capital and research, Market sophistication, Infrastructure, Knowledge and technology outputs and Creative outputs) with the exception of the Business sophistication pillar. The index faces a strategic and operational challenge represented in the absence of governance and action plan between entities concerned with the index to enable the effectiveness of effects of index aspects and measuring progress to achieve the stimulation and adoption of all innovation aspects at the national level, in addition to the lack of accuracy of data provided by the government entities to

international organizations that support the index value. Moreover, the index faces another operational challenge namely the vagueness of the concept of digitization and means of adopting it in local companies. MCIT, in coordination with entities concerned with the index, is currently working on consolidating efforts to improve the index value, in addition to verifying the availability of accurate and reliable data so that the index can reflect the actual reality of the developments taking place in the KSA at the innovation level.

In terms of the 'local content contribution to IT output' indicator, the current values of the indicator are estimates. Work is underway in cooperation with the Local Content and Government Procurement Authority to develop a methodology for the indicator›s measurements and determine the baseline. Upon completion of such works, it will be possible to perform more accurate measurements for the index.

Despite the decline in the KSA's ranking in the United Nations E-Government Development Index (EGDI) by 8 ranks down compared to its performance in the previous period, thus failing to achieve its target in 2018, by looking at the

performance of the three sub-indicators, it appears that the KSA achieved the best performance in the Online Service Index (OSI) by achieving 17.5% progress. The KSA also achieved progress in the Human Capital Index (HCI) by 1.3%, whereas there was decline by 6.8% in the Telecommunication Infrastructure Index compared to its value in 2016. This decline is due to the novelty of concepts measured by the index such as the integrated government, open data, e-participation, digital content enhancement and lack of clarity of its ownership at the national level, which led to poor response by some of the government entities contributing to the index performance, in addition to the delayed approval of budgets for index-enabling initiatives. Therefore, MCIT established a steering committee and operational committee to support the progress of work on index improvement.

MCIT, in coordination with the relevant entities, is working on adjusting the value of savings indicator resulting from the government's digital initiatives to include the returns on investment savings on Yesser's joint products and services, in addition to the savings achieved from IT investment. Work is also underway to adjust the value of savings indicator achieved through framework agreements to include the governance of ICT projects of the

government, private and military sectors, open-source software, cloud computing and national enterprise architecture. Following these adjustments, the indicators' value is expected to increase to achieve the required targets.

MCIT face some challenges in measuring some indicators due to divergence in the indicators' intended concepts. Also, some indicators in their current status are not measurable, in addition to the lack of data from reliable sources, as well as the lack of precise baseline values for determining targets. The nature of the data available at the relevant authorities differs from the data required to feed the indicators values, limiting the development of values for some indicators. In addition, the cycle of measuring some indicators is biennially such as the E-Government and E-Participation indexes. Some international indicators have also undergone change in the measurement methodology and sub-indicators, which requires reexamination of the indicator and determining targets based on the updates as with the Network Readiness Index (NRI).

MCIT coordinates with the ICT sector's ecosystem and the relevant authorities, including the General

Authority for Statistics and the National Center for Performance Measurement (Adaa), to review and study the indicators and adopt measurable indicators that are compatible with the requirements and objectives of the National Transformation Program. Table (1) shows the performance indicators and targets in 2019.

Objective Level	Strategic Objective	Indicator/Index	Achieved 2019	Target 2019	Target 2020
Develop Digital Economy					
Third Level	Develop Digital Economy	KSA's ranking in the Network Readiness Index (NRI)*	--	31	30
		Digital economy's share of total non-oil GDP	1.90%	2.8%	3.0%
		Number of specific ICT jobs created **	275,100	270,000	280,000
Fourth Level	Increase Internet penetration and speed in all regions of KSA	Coverage ratio for remote areas with basic telecommunications services (voice and internet)	100%	100%	100%
		Coverage ratio for wireless broadband networks (more than 10 Mbps) in remote areas	48%	42%	70%
		Coverage ratio for fiber optics to homes in all regions of KSA	53%	50%	60%
		Ratio of frequency spectrum available for mobile telecom services	114%	80%	100%
		Internet users ratio in KSA – Internet usage ratio	95.7%	82%	85%
Fourth Level	Qualify specialized Saudi human capital to bridge the digital gap	Number of Saudi cadres trained in ICTs **	18,635	11,000	21,000
	Promote innovation through R & D and support the leadership of local digital companies	KSA's ranking in the Global Innovation Index (GII)	68	52	50
	Increase impact of digital technologies on the social sector by raising digital awareness among citizens and workforce	KSA's ranking in the social impact sub-indicator within the NRI*	--	31	30
Fourth Level	Raise quality level and increase services sector's contribution to GDP through e-commerce and digitization of education and health sectors	Share of digital services in total non-oil GDP ***	1.2%	1.50%	1.75%
	Create a special environment to be the best in the region to attract digital investment and establish digital startups	Ratio of local content contribution to IT output	20.8%	23%	25%

Objective Level	Strategic Objective	Indicator/Index	Achieved 2019	Target 2019	Target 2020
Develop E-Government					
Third Level	Develop E-Government	KSA's ranking in the UN E-Government Development Index	52	40	30
		KSA's ranking in the open data index	29	64	60
		Savings ratio resulting from government's digital initiatives	5%	15%	20%
Fourth Level	Raise the use of government digital services to achieve customer satisfaction	Ratio of use of digitally delivered government services compared to traditional ones***	--	20%	25%
	Develop governance framework to ensure implementation of e-government standards	Ratio of government entities' transformation to government e-transactions (Qiyas)***	--	71%	80%
	Raise government spending efficiency in information technology	Savings ratio achieved through framework agreements ****	0%	10%	15%
	Increase integration level of digital services and internal government systems	Maturity level of electronically/digitally-transformed key government services	81%	70%	75%
	Increase government entities' adoption of unified platforms	Number of e-government data available on Government Service Bus (GSB)	182	182	221
Ensure Government Entities' Response to Customer Feedback					
Third Level	Ensure Government Entities' Response to Customer Feedback	KSA's ranking in e-participation index ***	67	--	30
		Ratio of government entities that have effective communication channels to interact with customers ***	--	--	Under consideration
		Ratio of readiness for enabling government entities' response***	--	--	Under consideration
		Ratio of customer satisfaction with government entities' response***	--	--	Under consideration
Fourth Level	Accelerate government entities' response to customers	Ratio of government entities' compliance with service level agreements (SLAs) set for response to entities***	--	--	Under consideration
	Raise customer satisfaction level with government entities' response	Ratio of customer satisfaction with ease of communication with government entities***	--	--	Under consideration

Table (1): MCIT performance indicators within the National Transformation Program 2.0

* The Network Readiness Index value for 2016. A report was issued at the end of 2019 with a new methodology and sub-indicators that are different from the previous versions.

** Cumulative index

*** In cooperation with stakeholders, MCIT is working on studying and determining values of indicators and targets.

Initiatives:

The ICT ecosystem is assigned with the implementation of 17 initiatives within the National Transformation Program, through which it aims to achieve the targets assigned to it under three strategic objectives: developing digital economy, developing e-government, and ensuring that government entities respond to their customer feedback.

During 2019, MCIT continued to develop and deploy the infrastructure for telecommunications services and expand the deployment of fixed broadband services through the fiber optic network. MCIT also worked on stimulating the investment and expanding the deployment of telecommunications services and broadband services through mobile networks. MCIT was keen on creating the proper regulatory and legislative environment that supports the broadband deployment in cooperation with the relevant entities. MCIT seeks to develop the infrastructure in order to provide high quality services and reasonable prices in all regions of the KSA.

In terms of development of digital capacities, MCIT has implemented many initiatives to spread awareness of various digital topics with the aim to enhance society's adoption of technologies and increase leveraging thereof, which contributes to the enhancement of digital transformation. MCIT has also worked to qualify national cadres in technical specializations of importance and emerging technologies, so that these cadres become a factor in the KSA's technical development.

With respect to e-Government development, MCIT worked on improving the e-Government services provided by providing licenses for electronic tools to measure user experience of government digital products and services, and launching report on the maturity level of e-Government services for 2019. MCIT has also linked more entities to unified government platforms to ensure the connectivity and integration of government services provided by all government entities. In pursuit of integration of initiatives and achievement of the best results therefrom to achieve the targets assigned thereto, MCIT launched a strategy for the ICT sector and a strategy for MCIT in alignment with the National Transformation Program 2.0 and the KSA's Vision 2030. Thus, MCIT and the entities within the ICT ecosystem have a clearly defined course towards achieving the desired results.

MCIT has faced some challenges and difficulties in implementing some initiatives, as budgets were not approved for some initiatives and the budget approval was delayed for other initiatives, in addition to making adjustments and changes in some initiatives, which impacted their achievement level. Efforts are underway to implement the initiatives for which the budget has been approved for the time being and to implement the initiatives where changes took place according to the updated plans. Table (2) shows the completion ratios of initiatives. More details on the initiatives can be found in Appendix C.

Initiative Title	Actual Completion Ratio	Completion Ratio According to Plan	Budget Approval	Notes
Stimulate investment in fiber optic networks deployment in urban areas	77%	75%	Approved	
Improve the quality and sustainability of Internet services and develop an environment conducive to telecommunications sector through updating regulatory frameworks and licenses	52%	49%	Not approved	
Stimulate expansion of telecommunications services by providing frequency spectrum and facilitating mechanism for obtaining permits	72%	84%	Approved	The delay in completion of initiative is attributed to failure to complete determining and approving the information required to be shared with the relevant entities according to the initiative's schedule. A meeting was held with the relevant entities and a workshop was held to discuss a mechanism for connecting relevant entities with service providers to exchange the required information.
Stimulate investment in the telecommunications and wireless broadband services deployment in remote areas	65%	54.5%	Approved	
Create a sustainable environment for advancement of ICT industry and keep abreast of rapid developments	68%	68%	Approved	
Develop strategy, roadmap and key enablers for digitalizing industry and services (commerce, education and health)	0%	60%	Not approved	The initiative is far behind the schedule, as no work has started on it since 2018 accordingly. This delay is due to lack of cost provision officially approved for the initiative to begin contracting. Efforts are underway to identify priority projects and begin developing guides to introduce them and initiate work as soon as approved costs are provided.
Stimulate and adopt digital innovation through supporting entrepreneurs and local digital companies	58%	58%	Approved	
Strengthen digital security in the ICT sector	57%	64%	Approved	The initiative is partially delayed on the planned track due to the lack of completion of framework for digital security threat management in the ICT sector according to the planned schedule. This is due to the late budget approval till the end of 2018, which led to the delay of the initiative's projects.
Launch a comprehensive program aiming at spreading awareness, digital knowledge and qualifying national cadres with high competence to drive the digital transformation process	72%	75%	Approved	The initiative is on track. The first batch of the Digital Transformation Champions Program was delegated, the digital skills for public education project was launched, Attaa Digital's event was launched and the fifth edition of 'Seeds for the Future' program was launched. The percentage is low due to making adjustments to the initiative's details and the projects included therein.

Initiative Title	Actual Completion Ratio	Completion Ratio According to Plan	Budget Approval	Notes
Implement an effective governance, common standards for e-government and enable user experience improvement	35%	39%	Approved	The initiative is on track. Licenses for electronic tools were provided to measure user experience for government digital products and services and the report on e-Government services maturity level for 2019 was released. The completion ratio is behind the target ratio due to the re-detailing of the initiative and removal and addition of new projects, in addition to lowering the ceilings of some initiatives, which led to removal of some projects. Therefore, the completion ratio does not reflect the actual completed works within the initiative.
Develop and activate comprehensive and open government platforms	44%	44%	Approved	
Launch common smart systems and applications for government transactions	37%	37%	Approved	
Launch the government cloud and raise government integration level	33%	36%	Approved	Delay in the initiative is due to delay in financial approval of the initiative, as it was approved by the Center of Spending Efficiency (CSE) in August 2019 and efforts are underway to get it approved by the program's committee.
Rationalize government expenditure and avoid duplication of investment in IT	29%	34%	Approved	Delay in the initiative is due to the delay in contracting in the consolidated procurement project with regard to IT due to the prolonged period of issuance of related authorization. The CSE was assigned by HM the King to lead this task. Moreover, the re-detailing of the initiative and removal and addition of new projects led to lack of progress in the initiative's completion.
Develop communication channels for electronic participation, including customer feedback and complaints, and a platform for monitoring response and interaction of government entities	0%	50%	Not approved	
Develop and adopt 'service level agreements' (SLAs) related to responsiveness of each governmental agency with feedback and complaints of its customers	0%	100%	Approved	This initiative was classified as 'non-imperative initiative' within the National Transformation Program. The initiative's budget was not disbursed although it was approved, and therefore work on the initiative is on hold for the time being.
Establish a functional role responsible for following up and analyzing the quality and speed of response of all government entities to their customers' feedback and development of their capabilities	0%	65%	Not approved	
Establish the National Council for Digital Transformation	100%	100%	Approved	

Table (2): Completion ratios for MCIT initiatives within the National Transformation Program (NTP)

MCIT's Contribution
to Preparations for
KSA's Presidency of
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MCIT's Contribution to Preparations for KSA's Presidency of G20

G20 is the main forum in international economic cooperation. The forum comprises the largest global economies and includes leaders representing developed and developing countries. The G20 member states represent 80% of the world economic output. Representatives of these countries meet with the aim to discuss financial, social and economic issues.

The 2020 G20 Riyadh Summit will be the fifteenth meeting of Group of Twenty and will be the first G20 summit hosted in the KSA and the second G20 summit hosted in the Middle East. By hosting the summit under the theme of "Realizing Opportunities of the 21st Century for All," the KSA seeks to focus on and achieve three aims:
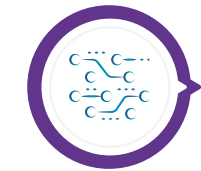
Empower People:
by creating the conditions in which all people – especially women and youth – can live, work and thrive.

Safeguard the Planet:
by fostering collective efforts to protect our global commons.

Shape New Frontiers:
by adopting long-term and bold strategies to share benefits of innovation and technological advancement.

Given the importance of digital transformation in the G20 agenda as one of the global economy pillars, the KSA seeks to highlight its remarkable achievements in the digital works and distinguished accomplishments in digital transformation. MCIT will have a central and essential role in this field given its leadership role in digital transformation.

MCIT is keen on successfully contributing to the preparation for the KSA's presidency of G20. It has sought the governance of the Digital Economy Task Force (DETF) through forming two key committees for supervising and following up the DETF's works under the chairmanship of Minister of Communications and Information Technology and Vice Minister of Planning and Development.

MCIT also represented the KSA through participation in the G20 DETF and contributing to the success of the DETF agenda within the presidency year for 2019 in Japan and formulating the Ministerial statement.

In preparation for the 2020 G20 Presidency, the group in charge developed the DETF agenda, which comprises six key priorities discussing the most important global topics relating to digital economy, which are Artificial Intelligence, cross-border data flows, smart cities, measuring the digital economy and cybersecurity.

The DETF will work on determining the regulatory priorities that require international collaboration to find solutions for emerging topics in view of the expansion of digital transformation, **through discussing the following areas:**

Trustworthy Artificial Intelligence:

The economic value added from Artificial Intelligence is expected to reach USD 1.3 trillion by 2030, with an increase of 1.2% per annum to the GDP globally.

Cyber resilience in global economic systems:

Losses resulting from cyber-attacks amount to USD 600 billion per annum, which is equal to approximately 1% of the GDP at the global level.

Data flows:

Constraints on data flow negatively affects economic performance and growth. Such constraints hinder the GDP growth at the global level by 1.7%.

Smart cities:

55% of world population live in cities. This percentage is expected to increase to 68% by 2050, hence the importance of smart cities development.

Measurement of Digital Economy:

Digital economy is expected to grow at a speed exceeding 2.5-fold the world economy. However, there are currently no clear standards for measuring the digital economy.
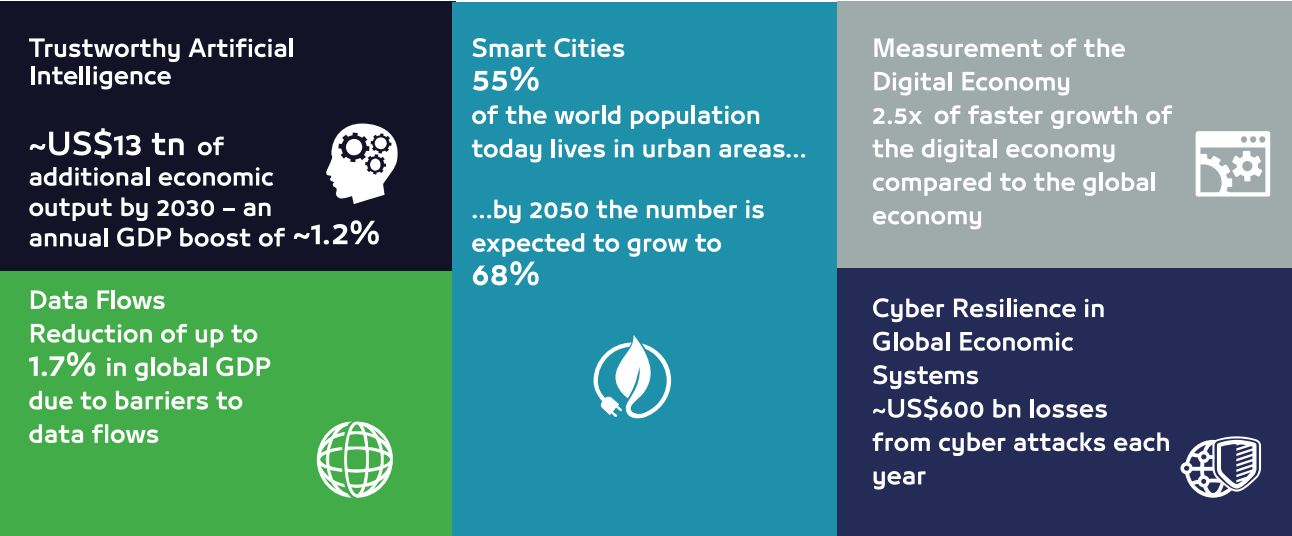
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Trustworthy Artificial Intelligence

~US$13 tn of additional economic output by 2030 – an annual GDP boost of **~1.2%**

Smart Cities
55% of the world population today lives in urban areas...

...by 2050 the number is expected to grow to **68%**

Measurement of the Digital Economy
2.5x of faster growth of the digital economy compared to the global economy

Data Flows
Reduction of up to **1.7%** in global GDP due to barriers to data flows

Cyber Resilience in Global Economic Systems
~US$600 bn losses from cyber attacks each year

The DETF developed two initiatives, namely the G20 Initiative for Interconnected World by 2030 and Upskilling Youth by 2030. Goals and high-quality outcomes have been developed, which require the need for international cooperation not only to develop policies stimulating the development of digital economy, but also to work on implementing them and achieving their goals centered on comprehensiveness, and enabling and providing appropriate opportunities for all.

MCIT has also sought alignment with all G20 member states to ensure consensus between all member states

and states invited to the KSA's presidency to the priorities presented in the agenda and proposed outputs.

To ensure the KSA's consensus position with the proposed outputs of the priorities of the DETF agenda, MCIT was keen on maintaining ongoing communication with the concerned and relevant entities, including but not limited to the Ministry of Economy and Planning, the General Authority for Statistics, Saudi Authority for Data and Artificial Intelligence, Riyadh Royal Authority, National Cybersecurity Authority and Communications and Information Technology Commission.

MCIT has worked with liaison groups represented in the private sector and civil society within the G20 file to receive their insights and suggestions on the priorities proposed for the DETF 2020 agenda and to enhance their participation.

Through its contribution to the KSA's preparations for G20 presidency, MCIT seeks to highlight the efforts and achievements the KSA made in recent years at the level of economic development and digital transformation and the rapid steps taken by the KSA to rank among major economies at the global level.

Contribution in providing telecom services and digital infrastructure

The logistics committee for G20, led by MCIT, worked on providing various telecom services and high quality digital infrastructure to meeting locations and official delegations and events during the KSA's leadership cycle, which started in December 2019.

Due to the importance of this event, a work team with members from MCIT, CITC and telecom operators was established to provide necessary services to all locations related to the summit around the KSA. The team worked on the following:

- Conduct field surveys in all locations to assess requirements for each location.
- Provide telecom and high-speed mobile internet services in meeting locations, delegation accommodations, and improve internal coverage.
- Establish high-speed internet centers and WiFi services to support delegations during meetings.
- Provide protection against cyber-attacks and maintain business continuity and prevent any intrusion attempts.
- Provide instant support during meetings to ensure business continuity of services.

World Government Summit

The World Government Summit held in Dubai is an ideal platform to exchange knowledge, ideas and the best practices on means of creativity and leadership in government services, which are considered the goal for future governments seeking to achieve customer happiness and attain an integrated ecosystem of cooperation and joint action between the government and private sectors. More than 3,500 people attended the summit, including a number of leaders, ministers, government officials, key speakers, decision makers, experts, CEOs and government thought and creativity leaders.

On the sidelines of the summit, a meeting was held with Russia's Ministry of Digital Development, Communications and Mass Media and a number of directors of Russian technical companies to explore and discuss means of enhancing bilateral cooperation in telecommunications and digital transformation.

Mobile World Congress (MWC)

Mobile World Congress (MWC) is the world's largest exhibition and conference where all that is new in the telecommunications sector and technologies is announced. MWC is held annually in February in Barcelona, Spain.

Since its inception in 2006, MWC has an enormous attendance. The Ministerial Program is held on the sidelines and is attended by more than 2,000 people who come together to discuss the main technical developments and policy directions in the mobile telecommunications sector.

To view the related video, please scan the QR code

World Economic Forum on the Middle East and North Africa

Nearly 1,000 people from government leaders and directors of companies and civil society from 50 countries around the world and more than 100 startups from around the Arab World participated in the 10th World Economic Forum on the Middle East and North Africa, which focused on economic reform topics to ensure competitiveness in the fourth industrial revolution age and meeting the expectations of the region's youth in entrepreneurship. In addition, firms operating in banking and financial services, consumer industries, energy, infrastructure and urban development and travel and tourism also participated in the forum. The Vice Minister spoke at the forum and held high-level bilateral meetings.

Saudi-Egyptian Digital Economy Forum

MCIT, in participation with its Egyptian counterpart, organized the Saudi-Egyptian Digital Economy Forum in Egypt. The forum aims to explore opportunities to leverage the resources and capabilities available in both countries in order to create an exceptional digital cooperation experience that accelerates the transition to digital economy. The Saudi Arabian General Investment Authority (SAGIA) in addition to Zain and directors of a number of Saudi technical companies have also participated in the forum, where the number of attendees reached 250 people.

On the sidelines of the forum, a memorandum of understanding (MoU) was signed between Saudi Post and its Egyptian counterpart. In addition, the Saudi-Egyptian digital partnership was launched for building digital economy and society, and a number of digital initiatives were also launched.

Digital Silk Road

Within the work of the Second Belt and Road Forum for International Cooperation under the theme "Shaping a Brighter Shared Future," which was held in Beijing, China and included 12 sub-forums, The Digital Silk Road sub-forum was held with the attendance of officials at a ministerial level, in addition to officials from international organizations and a number of businessmen, experts and scientists from around the world. MCIT participated in the Digital Silk Road sub-forum to consolidate the Saudi-Chinese close relations, and for the Digital Silk Road to become an extension of such relations towards a new economic approach by availing of all digital enablers and innovations on both sides.

G20 Ministerial Meeting on Trade and Digital Economy

MCIT participated in the G20 Ministerial Meeting on Trade and Digital Economy held in Tsukuba City, Japan. The Minister spoke at the Ministerial Meeting, where he highlighted the achievements made by the KSA in ICT and explained its actual contribution to the G20 topics raised by Japan. He stressed the KSA's commitment to the G20 DETF agenda and commended the attention devoted to modern future technologies and G5 technologies, which would open the door wide for many advanced technologies such as Artificial Intelligence, Internet of Things, Virtual Reality, robotics and smart cities.

A number of bilateral meetings were also held on the sidelines of the Ministerial Meeting, which included a meeting with China's Minister of Industry and Information Technology, Japan's Minister of Internal Affairs and Communications, Indonesia's Minister of Communication and Information Technology, Estonia's Prime Minister, in addition to meeting with the Secretary-General of the International Telecommunication Union (ITU).

The Minister signed a memorandum of cooperation between MCIT and Japan's Ministry of Internal Affairs and Communications in ICT to strengthen cooperation between both countries in this aspect.

Smart Nation Innovations Week

A high-level delegate of MCIT has participated in the Smart Nation Innovations (SNI) Week held in Singapore. The Vice Minister spoke on the sidelines of the visit where he presented the KSA's achievements in the ICT sector and discussed the digital transformation taking place in the KSA in government services, the increase of internet speed and MCIT's role in supporting entrepreneurs and innovation in the KSA.

A meeting was held on the sidelines of the forum with Singapore's Minister of Communications and Information, Senior Minister of State, who is the Minister-in-charge of GovTech in Singapore, Chief Engineer in China's Ministry of Industry and Information Technology, in addition to visiting Block71 and National University of Singapore (NUS) to support entrepreneurs and innovation leaders.

International Telecommunications Union (ITU) World Conference on International Telecommunications (WCIT)

The World Conference on International Communications (WCIT) has been held annually since 1971 under the umbrella of ITU. WCIT brings together the public and private sectors to open avenues for dialogue and find solutions for the most important challenges facing the sector. Since 2015, WCIT has focused on the important role of small and medium-sized enterprises (SMEs) in leading growth in the sector and social and economic development and exploring means of fostering the growth of SMEs.

MCIT participated in the conference held in Budapest through high-level delegate, who met with representatives of a number of countries to discuss subjects promoting technical innovation, global digital economy, localization of R&D centers specialized in artificial intelligence in the KSA and venues of supporting innovation, stimulating entrepreneurship and joint initiatives.

Future Investment Initiative (FII)

The Future Investment Initiative (FII) is a leading international platform in investment for encouraging networking and communication between global leaders, investors and innovators with the power to shape the future of global investment. It is focused on utilizing investment opportunities to drive economic growth, enable innovation and activate disruptive technologies in addition to identifying and addressing global challenges. The third edition of FII continued to build an active, global network of influential decision makers, explore the emerging industries that would define the global investment landscape and shape the future of global economy over the coming decades.

The Minister spoke through his participation about the role of digital economy in stimulating transformation in KSA and the role of emerging technologies in shaping digital societies globally within efforts to promote investments in the digital ecosystem and innovation. In addition, a number of high-level bilateral meetings were held to discuss investment opportunities in the digital architecture in the KSA. The Minister also participated in the "Seizing Opportunities in Digital Societies" dialogue.

23rd Session of the Council of Arab Ministers of Communications and Information of the Arab League

As part of efforts to realize digital economy in the Arab region, the Council of Arab Ministers of Communications and Information convened in Riyadh under chairmanship of the KSA, represented by MCIT, to address challenges and develop solutions to move towards setting the aspirations of more than 450 million Arabs under the theme "Arab Ambition for Digital Generation."

This attendance is the largest ministerial gathering in the Council's history. In pursuit of ensuring that hosting the event is the kind of standing that befits the KSA at the digital level, many associated initiatives and events were launched as follows:

- Joint Arab Digital Declaration
- High-level interactive dialogue on the sidelines of the event, which focused on the challenges of the digital economy future in the Arab world
- Ministerial Meeting of the Council of Arab Ministers of Communications and Information
- Digital Transformation Exhibition to highlight the most remarkable digital transformation achievements in the KSA, with the participation of more than 20 entities from the public and private sectors in the KSA.
- Naming Riyadh the Arab Digital Capital for the efforts exerted by the KSA in ICT.

More than 14 Ministers of Communications and Information from Arab countries attended the Council, in addition to representatives of international organizations namely the Secretary-General of the International Telecommunication Union (ITU) and Director General of the Universal Postal Union.

1st Digital Foundation Conference

The Digital Foundation Conference is an important platform to share scientific and practical experiences in digital architecture and highlight MCIT's efforts to build a robust and advanced infrastructure capable of supporting future technologies, 5G services, IoT, AI and creation of smart cities in the KSA.

Nonprofit Technology Conference 2019 (Solutions)

MCIT has organized the third edition of the Nonprofit Technology Conference (2019 Solutions), which aims to highlight digital transformation and uses of modern technologies in this area, in addition to keeping abreast of technical progress and leveraging adequate solutions to the nonprofit sector.

In line with the digital transformation plans, which is considered one of the key pillars of the KSA's Vision 2030, the nonprofit sector should continue to move forward along the same path to achieve Vision 2030 and develop transformation plans to ensure integration with other sectors. Therefore, important areas were highlighted during the Conference, which help the nonprofit sector towards digital transformation. These areas include enterprise resource planning (ERP) systems and open sources in nonprofit organizations, digitization of the nonprofit sector and data use and sharing. 700 persons representing more than 400 charities and 24 speakers participated in the Conference, in addition to global and local technical companies. The Conference also included 25 booths introducing philanthropic corporations and charitable organizations.

Saudi IoT

MCIT has organized the 2nd Saudi International Exhibition and Conference for Internet of Things (Saudi IoT), which highlighted the latest IoT achievements. Saudi IoT aims to be a leading platform to share, discuss and view the latest research in all IoT development areas and other associated emerging technologies such as Artificial Intelligence, Big Data, Machine Learning and other emerging technologies of importance.

More than 200 local and global companies participated in the Conference and more than 50 speakers including experts, scholars, researchers and heads of national and global corporations in the technology sector contributed to the associated workshops. Attendees got to learn about accomplishments and developments in the technology and internet world. In addition, participants got to showcase their accomplishments in technical solutions and efforts in supporting the KSA's Vision 2030. Moreover, a cybersecurity forum was held on the sidelines of Saudi IoT.

Dates Hackathon

MCIT, in partnership with the Ministry of Environment, Water and Agriculture (MEWA), General Authority for Small and Medium Enterprises (Monsha'at), National Center for Palms and Dates (NCPD), Riyadh Chamber of Commerce and Industry (RCCI) and Taibah Valley, has launched Dates Hackathon with the aim of harnessing modern technologies to promote dates production industry in the KSA to rank the first globally. The Hackathon was open to entrepreneurs, innovators and technology experts as well as smart application developers to innovate technical solutions that contribute to higher production efficiency and quality and lower costs.

Over three days, participants in the Dates Hackathon were supported through a range of intensive training programs and workshops to enable them to build prototypes for their innovative solutions. The first three winning projects were adopted. Through its fields focusing on fourth industrial revolution (4IR) technologies, represented in Artificial Intelligence (AI), 3D printing, Internet of Things (IoT) and e-Commerce, Dates Hackathon is geared toward finding solutions related to shipping, payment and provision of supplies and tools, in addition to developing technical solutions to the challenges facing the agricultural sector with regard to fighting pests and epidemics, and using modern technologies in the prediction, early diagnosis and prevention of such diseases, which contributes to the quality and efficiency of production, as well as the expansion and growth in sales and entering new markets, and finally to increasing the economic return. 1,000 applications were received, and 150 male and female innovators were benefitted from, represented in 32 projects.

'Tech Champions' Bootcamp

MCIT has launched a bootcamp under the 'Tech Champions' program with the aim to develop the digital capabilities of promising entrepreneurs and provide them with the skills necessary for entrepreneurship and applications of emerging technologies. The event was organized in Jeddah, Riyadh, Ahsa, and Arar respectively followed by getting into digital business accelerators in more than one region in KSA, in addition to providing participants with mentoring and guidance sessions provided by consultants from major global technical companies and experts from government entities.

The bootcamp provided entrepreneurs and participants with the opportunity to gain practical experience in emerging technologies applications in their projects. Over five days, entrepreneurs received intensive training in two programs, training and mentoring on the use of emerging technology applications, which are playing a growing role in the growth and progress of digital business.

Web Summit

MCIT, in cooperation with SAGIA, has participated in the Web Summit held in Lisbon, Portugal. Web Summit is one of the world's largest event discussing the latest advancements in technology and entrepreneurship in emerging technologies.
MCIT's participation was focused on a number of areas introducing the concept of digital transformation and achievements in KSA, in addition to supporting entrepreneurship and attracting global investments to the KSA.

This participation is especially important as it comes within MCIT's efforts to attract foreign investments, introduce services provided to investors in these sectors, increase the private sector's contribution to technical and digital transformation sought by the KSA, in addition to the KSA's pursuit of a thriving environment for entrepreneurship in the Saudi market and supporting partnerships between foreign investors and local investors in the KSA.
MCIT has also participated in "Invest Saudi" booth in cooperation with SA-

GIA. The booth included a large number of government entities such as the Ministry of Culture, General Authority for Small and Medium Enterprises (Monsha'at), Saudi Federation for Cybersecurity, Programming and Drones, National Digital Transformation Unit (NDU), Prince Mohammad Bin Salman College of Business and Entrepreneurship (MBSC), Business Incubators and Accelerators Company (BIAC), Saudi Venture Capital Company (SVC) and Saudi Technology Development and Investment Company (TAQNIA).

Emerging Technologies Forum

The Emerging Technologies Forum was held under the auspices of MCIT with the aim to discuss plans and actions in the digital transformation journey and the role of emerging technologies in this journey. The Forum gathered top leaders, decision makers and local and global specialists in 4IR and emerging technologies. Many leading companies in emerging technologies also participated in the Forum to showcase their technologies and solutions in this field. The Forum provided an opportunity to discuss the latest developments and main challenges facing the private sector in emerging technologies. The Forum was also supported by many government entities and leading authorities in the KSA. The first edition of the Forum focused on the latest applications of IoT, AI, Data science, Cyber security, Cloudification, Blockchain, AR/VR, Robotics, Deep learning (DL), Machine learning (ML) and Coding 4.0 and the role these technologies will play in rendering the KSA a global hub for technical research and 4IR development.

It is worth mentioning that the Forum is the largest event specialized in emerging technologies in the KSA, where the number of attendees was over 1,600, while and 48 specialized companies participated and 16 workshops were held with the participation of 56 speakers who have relevant competence and experience.

Dawri Thakaa

With backing and sponsorship by MCIT and in cooperation with the Saudi Federation for Cybersecurity, Programming and Drones and Artificial Intelligence (AI) Center of Advanced Studies (Thakaa), Dawri Thakaa was launched, the first sport-based hackathon with the participation of 150 teams of programmers and data scientists who competed to develop the best AI models.

The teams used data of the Prince Mohammed bin Salman Cup League for football (soccer) teams and players as well as the results of matches to predict the results of the remaining matches in the league. Following the completion of the soccer games, the hackathon teams' leaderboard is published and updated, based on the teams with the most accurate predictions. At the end of the final football game, the top three teams were announced during the awards ceremony for the Prince Mohammed bin Salman Cup League for football (soccer). The total value of awards amounted to more than SAR 500,000.

Water Technologies Bootcamp

Water is an important natural resource that constitutes an indispensable vital element in everyday life, therefore, water technologies including desalination, treatment and management of water and other resources are of great importance in providing requirements of daily living. Given the importance of such technologies, work was pursued with digital transformation partners to set up the Water Technologies Bootcamp with the aim to support and promote innovations of water technology. In addition, a number of workshops were held on relevant topics to enhance the knowledge of participants on water technologies and their characteristics. Eight projects based on four different technologies were incubated to provide them with the necessary support for their launch and success.

Participation in the 23rd Session of the Council of Arab Ministers of Communications and Information through the Digital Future Booth

The KSA hosted and chaired the 23rd session Council of Arab Ministers of Communications and Information under the theme "An Arab Ambition for a Digital Generation" with the attendance of the Ministries of Telecommunications and IT from Arab countries. This is one of the events held on the sidelines of the G20 Summit hosted by the KSA in 2020. Within MCIT's works, represented by Yesser, in the Digital Transformation Exhibit held on the sidelines of the Council, MCIT participated with the Digital Future booth through which the digital transformation journey in the KSA was presented as well as key achievements at the current stage, in addition to the services provided to support government entities in the KSA to enable them to serve beneficiaries and provide advanced services that keep abreast of their aspirations.

20th Meeting of GCC E-Government Executive Committee

MCIT, represented by e-Government Program (Yesser), has participated in the 20th meeting of GCC e-Government Executive Committee in Muscat, Oman. During the meeting, the Committee discussed the General Secretariat report on what has been implemented of the resolutions made in its previous meeting. Member States submitted working papers, where the KSA's paper focused on envisaging the establishment of a GCC e-Government excellence center.

Global Digital Government Summit

Under the auspices of MCIT, the Global Digital Government Summit was launched with the aim to give an added value to the digitization concept in the government sector as well as making optimal use thereof. The Summit serves as the starting point towards this journey and will be held annually where all those interested in digital government at the international level will be invited. The Summit features a series of technical presentations, workshops and fruitful interactive sessions geared toward finding solutions to the most significant challenges facing digitization. It also presents global best practices and seeks to influence leaders, policymakers and entrepreneurs to understand the possibilities, trends, and mechanisms of digital transformation in government, and change the leadership concepts related to digitization to benefit from them in areas that affect the economic revival of nations and evolution of societies.

The Global Digital Government Summit is a global event that contributes to raising awareness of the importance of digitization worldwide, and an international gathering for the elite experts in the IT sector, to make Saudi Arabia a leader in digital transformation and a world key digital hub.

Discussion Panel
"FromInnovation to Nobel"

MCIT hosted a discussion panel titled: "From Innovation to Nobel: The journey of Shuji Nakamura" in which Dr. Shuji Nakamura, winner of Nobel prize for physics in 2014, spoke about his scientific journey filled with scientific discoveries and achievements. He also spoke about his theories that let to the invention of blue LED, which was a major cornerstone in the developments of screen manufacturing. The panel also consisted

of a presentation titled "Beyond 5G", presented by Dr. Boon Ooi, who specializes in wireless optical communications, including successes in developing optical communication technologies with speeds that exceed 2,000 Mbps, which is a world record.

To view the full discussion panel, please scan the QR code below

To view the related video, please scan the QR code

'Smart Hajj' application and platform

MCIT has launched the second edition of 'Smart Hajj' initiative during the 1440H Hajj (pilgrimage) season, thus announcing a quantum leap in the digital transformation journey for the KSA's Vision 2030, which is under the supervision, follow up and support of the wise leadership of State. This launch is part of the efforts exerted by the ICT sector in parallel with efforts made by the relevant government and private sectors aimed to harness the best means that would facilitate for pilgrims to perform rituals. The second phase of 'Smart Hajj' included a number of sub-initiatives as follows:

Launching volunteer training platform

In line with the KSA's Vision 2030 to increase the number of volunteers to 1 million, the 'Volunteer Training Platform› was launched to train and educate volunteers for Hajj through visual lectures and interactive exercises and providing an interactive community where trainees can immediately discuss and answer questions from trainers.

Launching 'Smart Hajj' application

To enrich the digital experience for pilgrims, 'Smart Hajj' digital platform & smart phone application was developed for the initiative. The application places a package of the most important smartphone applications in the hands of pilgrims. The package includes more than 80 applications and comes as part of the services provided by the KSA for pilgrims with the aim of providing excellent digital services during Hajj and Umrah. Services cover the Holy Places and introduce the rituals and steps required to move between Holy Places, identify Qiblah direction, notify on peak times to avoid, in addition to providing guidelines, technical guides and healthy applications, and making several government applications available to benefit Hajj pilgrims and Umrah performers in Makkah al-Mukarramah and Al-Madinah al-Munawwarah in an advanced technical manner.

Training Hajj pilgrims through virtual reality platform

The technical aspect of training Hajj pilgrims was activated through building virtual reality platform to Kaaba, as well as holy locations including Mina, Arafat, Muzdalifah and Jamarat and Al-Masjid Al-Nabawi that matches actual real images. The platform targets Hajj pilgrims arriving through the Makkah Road Initiative to facilitate their trip and enrich their knowledge of the required rituals.

Signing an agreement with Alwaleed Philanthropies

MCIT has signed a cooperation agreement with Alwaleed Philanthropies with the aim to promote cooperation between the two parties to develop an application to serve the deaf and the hearing-impaired people within the KSA'. The app will be developed by the National Contact Center (Amer) and the staff and cadres will be employed with the support of Alwaleed Philanthropies in a way that achieves common goals and public interest.

The agreement aims at harnessing technology to serve and support the deaf and hearing-impaired people, where the statistics indicate that the number of the deaf and hearing-impaired is about 720,000 individuals, and to help them in the difficulties facing them in different service areas.

This comes as part of MCIT's ongoing efforts in support of all technical initiatives aimed at serving all segments of society and encouraging digital innovation to achieve Saudi Arabia's Vision 2030.

Under this agreement, a smart application will be developed to serve the deaf and hearing-impaired through Amer through visual communication and providing interpretation to contribute to the provision of all services to people with hearing disabilities and other disabilities preventing them from taking advantage of Amer-associated services provided by the government and private sectors, such as emergencies, courts, hospitals, education and other services. Moreover, efforts will be made to coordinate

between both parties to contribute to the creation of job opportunities at Amer for Saudis with special needs and study the possible creation of an appropriate environment for joint cooperation and integration among government, civil and private sectors to serve people with disabilities.

This agreement comes within MCIT's endeavors aimed at achieving fruitful cooperation with all government entities, private sector companies and non-profit organizations to harness technology in providing e-services with high quality and efficiency to the State and citizens, promoting performance efficiency, increasing productivity and saving effort, time and money for the beneficiaries.

Launching digital initiative to empower people with disability

MCIT, in partnership with the Ministry of Labor and Social Development and Authority for Care of People with Disability, has launched the Digital Initiative for Empowering People with Disabilities with the aim of enabling competent persons and facilitating their access to suitable employment opportunities, in addition to adapting the requirements of the Saudi labor market to the digital skills acquired by young people with disability.

The initiative has a number of strategic objectives, including development of programs and plans aimed at qualifying and linking competent persons to digitally appropriate job opportunities, strengthening the

position of persons with disabilities in society and organizing awareness campaigns with the private sector to enable competent persons to start and continue in the professional field. It also includes preparing studies, statistics and reports on the Saudi labor market, which contribute to providing suitable job opportunities, understanding the requirements of the labor market, creating training programs for the qualification of competent persons, and sketching the integrated career path for competent persons, from making the CV through to entering the labor market. Periodic indicator-based reports will be issued, showing employment and satisfaction ratios, in addition to

the monitoring of professional performance and educating competent persons with the key laws and regulations on the labor market.

The scientific program included self-assessment, identifying suitable career paths, understanding key laws and regulations, preparing career path, building digital CV, job interview basics, seeking job opportunities, obtaining employment opportunities and continuity, developing skills for leadership positions and advice from experts, which in turn contribute to improving job performance.

Signing MoU between Yesser and Elm

In a step to support the deaf, MCIT has sponsored the signing of a memorandum of understanding (MoU) between Elm, e-Government Program 'Yesser' and Alwaleed Philanthropies. The agreement aims to provide 'Eshara' service through 'Eshara' app for the customers of 'Amer' Center in 'Yesser' program. Also, it aims to unify the common efforts of joint government entities to better serve their customers.

The MoU is especially important as it consolidates efforts exerted in the provision of sight language interpretation services, in addition to adopting the rights principle of providing facilitative arrangements in

the government and private service sectors to support the deaf access to high quality services in an independent manner. Elm launched 'Eshara' app to serve the deaf in the KSA and region. 'Eshara' is an interactive and safe video platform that guarantees quality of service and live communication, with the notification feature to inform the beneficiary of the available locations that provide the service or through trilateral call with contact centers. The platform ensures the privacy of beneficiaries by using unique techniques to identify the gender of the beneficiary and transfer the call to an interpreter that matches the beneficiary gender

in a safe and secure manner.

It is worth mentioning that this agreement comes with additional services that will be announced soon. It will contribute to building a communication bridge between the hearing-abled people and the deaf to enhance successful communication and support the service sectors to provide facilitative arrangements to the deaf, which would contribute to increasing the efficiency level of service provision.

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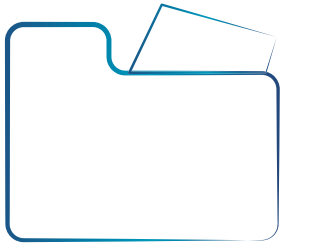
Appendix (A) - International ICT-related Indicators

(Global Competitiveness Index – GII)

INSEAD's Global Innovation Index (GII) measures innovation drivers through seven (7) themes: Institutions, Human capital and research, Infrastructure, Market sophistication, Business sophistication, Knowledge and technology outputs and Creative outputs. The GII value is expected to improve over the coming years despite the decline in recent years. MCIT is seeking to launch many initiatives to stimulate and promote the innovation culture and work with relevant entities to achieve that.

Index	2015	2016	2017	2018	2019
Ranking in the Global Innovation Index	43	49	55	61	68
Value of the Global Innovation Index	40.65	37.75	36.17	34.27	32.93
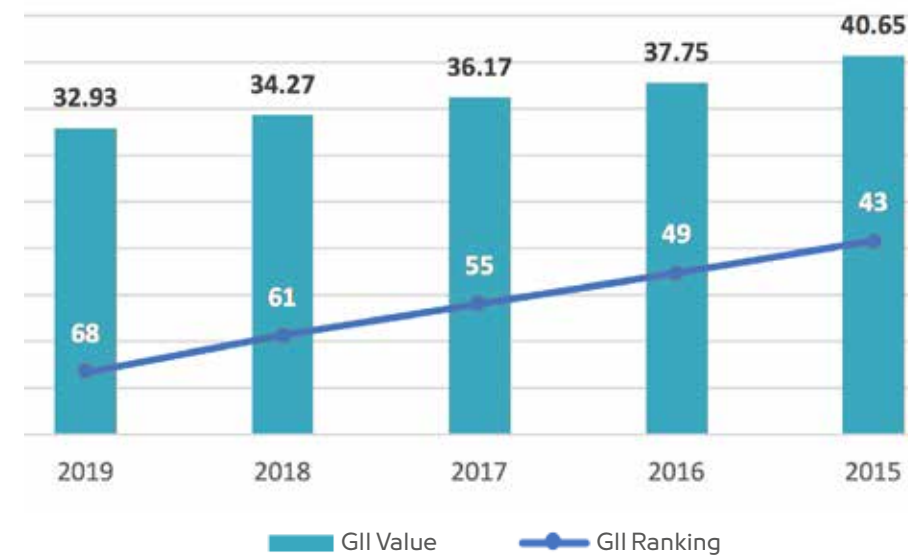
Appendix (A) cont. - International ICT-related Indicators

(Global Innovation Index – GCI)

The World Economic Forum's Global Competitiveness Index (GCI) assesses countries' ability to provide prosperity and quality of life for its citizens through leveraging their available resources. The GCI measures twelve (12) themes: institutions, infrastructure, ICT adoption, macroeconomic stability, health, skills, product market, labor market, the financial system, market size, business dynamism and innovation capability.

The KSA's ranking in the GCI improved than 2018, compared to the index's decline in recent years. The ICT adoption theme had a significant impact on the achieved progress, as the KSA's ranking increased by 9.4 points thanks to the achievements made in infrastructure deployment. More progress is expected along the results of MCIT's work on human resources development and enhancement of the sector's contribution in the GDP.

Index	2015	2016	2017	2018	2019
Ranking in the Global Competitiveness Index	25	29	30	39	36
Value of the Global Competitiveness Index	5.07 (out of 7)	4.84 (out of 7)	4.83 (out of 7)	67.5 (out of 100)	70 (out of 100)

Appendix (A) cont. – International ICT-related Indicators

ICT Development Index (IDI)

ICT Development Index (IDI), issued by the International Telecommunication Union (ITU) within Measuring the Information Society Report, is one of the most widely used indicators with regard to ICT sector. The indicator measures the data related to penetration of fixed and mobile telephone services, fixed and mobile broadband, access, use and skill level, as well as an assessment of the telecommunications and broadband services' prices in many countries. Unified standards were set for countries regardless of their geographical location, population distribution and population clusters.

It is worth mentioning that ITU is working on developing the index criteria and its measurement mechanism and therefore, no values for the index were issued in 2018 and 2019. The KSA's ranking is expected to improve significantly in the index's next version thanks to the achievements made in expansion of fiber optic networks deployment and increasing internet speeds.

Index	2014	2015	2016	2017	2018	2019
Ranking in ICT Development Index	47	38	45	54	--	--
Value of ICT Development Index	6.36	6.88	6.87	6.67	--	--

Appendix (A) cont. – International ICT-related Indicators

UN E-Government Development Index

The United Nations E-Government Index measures development of e-government in countries in terms of development of e-government services, penetration of technical infrastructure that provides access to those services, and human capital.

To improve the KSA's ranking in the index, a steering committee was formed and chaired by the Vice Minister of ICT, with the membership of relevant entities to be responsible for analyzing and studying all sub-indicators with the entities concerned with each indicator. An action place was prepared to implement the works that will positively impact the indicator's results. Additionally, a timeframe was set in preparedness for the UN evaluation in terms of the index. The KSA's ranking is expected to improve in the next version of the index thanks to the improvements achieved in government services and portals.

Index	2014	2016	2018
Ranking in the E-Government Index	36	44	52
Value of E-Government Index	0.69	0.6822	0.7119

Appendix (A) cont. – International ICT-related Indicators

E-Participation Index

The E-Participation Index is a supporter of the E-Government Index. The index measures the availability of government data and sharing it with citizens, as well as the interaction between the government and citizens in this regard. The index measures three themes: electronic availability of information, e-request, and e-decision. The KSA's ranking is expected to improve in the index's next version due to efforts explained in terms of the UN E-Government Development Index.

Index	2014	2016	2018
Ranking in E-Participation Index	51	39	67
Value of E-Participation Index	0.5686	0.7119	0.7135

Appendix (A) cont. – International ICT-related Indicators

BrC E-Commerce Index

The Business-to-Consumer (B2C) E-Commerce Index, issued by the United Nations Conference on Trade and Development (UNCTAD), measures preparedness for implementation of B2C e-commerce transactions online. The index measures internet use rate, rate of consumers with bank accounts, number of secure servers and reliability of postal and delivery services. These factors are key enablers to benefit from e-commerce services to individuals.

Index	2016	2017	2018	2019
Ranking in the B2C E-Commerce Index	56	46	52	49
Value of B2C E-Commerce Index	52.2	69	68.7	73.3

Appendix (A) cont. – International ICT-related Indicators

Integrated Index for Postal Development (ГIPD)

The UPU's Integrated Index for Postal Development (2IPD) provides an overview of postal development in the 173 member states. The index measures four dimensions: reliability, reach, relevance and resilience. The KSA improved by 5 rankings compared to 2018 due to the ongoing efforts in regulating the postal sector, which positively reflects on the quality level of postal services provided.

Index	2017	2018	2019
Ranking in the Integrated Index for Postal Development	74	73	68
Value of Integrated Index for Postal Development	40.89	39.66	40.20

Appendix (B) – Terms and Definitions

Term	Definition
Government Secure Network (GSN)	GSN is a communications network for e-Government transactions. Such a network has been envisioned to interconnect Government Entities with the e-Government Data Center (YESSER), which has been established according to the highest international technical and security standards. This network has enabled the e-Government Data Center to be the link between Government Data Center to be the link between Government entities, where the link mechanism is unified and costs are saved.
Government Service Bus (GSB)	GSB is a central platform for integration and interconnection between government entities with regard to necessary data and information for government services to be electronically delivered. GSB is a form of support and assistance provided by Yesser program to government entities, in order to electronically provide their services in integrated, easy and facilitative manner, especially that e-Government Transactions require a high level of data and information exchange necessary to complete the provided services in an integrated manner among government entities, as well as serving beneficiaries without having to receive them, which is being done through the Government Service Bus (GSB).
'Saudi' portal (saudi.gov.sa)	An online portal through which customers (citizens, residents, government entities, companies and visitors) can access e-services provided by the government entities. The Portal also pro– vides rich content at the national level.
Enterprise Architecture	Aims at alignment of business structure with information technology by linking strategic objectives to business processes, services and all other Enterprise Architectures (systems, data and technical infrastructure), building a roadmap to be converted into the target situation with change governance, and increasing the efficiency of digital assets.
Information Technology Governance	Operational procedures that help maximize the use of IT to achieve the objectives of the business system and expand its strategies.
Public Key Infrastructure (PKI) It is also called public key structure	A set of policies, laws, hardware, programs and services that enable users to securely exchange information, transactions, keys and digital signatures, allows the concerned parties to verify the identity of the sender and receiver.
Digital Certificate	An electronic document issued by a certification service provider. It is used to confirm the identity of the person holding the electronic signature system, containing the signature system, containing the signature verification data.

Term	Definition
Indicator/Index	A tool to measure the progress achieved by implementation within a certain period of time.
Key Performance Indicators (KPIs)	Indicators used to measure the success of a particular area, e.g. reducing the time needed to complete a transaction from a month to one day.
Single Sign On (SSO)	This service requires that each person has a natural or legal character with a unified identification number that is included in all the information systems, so that this number meets the requirements of all relevant parties related to e-Government transactions and applications. Single Sign-on is a central service provided to the government authorities linked with the Government Service Bus to provide a unified, reliable and secure identification number for individuals and enterprises through which they enter and execute e-Government transactions via either the 'Saudi' portal or other government portals.
Morasalat System	A unified national electronic system for government correspondence for the preparation, exchange, tracking and retrieval of correspondence and documents.
Major / main government services	Services that represent the main activities of a government entity, such as passport service provided by the General Directorate of Passports, commercial registration service provided by the Ministry of Commerce and Investment.
Supporting Government Services	Services that support the main services of a government entity.
E-Government Transactions (or E-Government)	Effective integrated use of all ICT technologies to facilitate inter-governmental (government-government or G2G), government-to-citizen (G2C) and government-to-business (G2B) transactions.
Information Technology (IT)	Include the manufacture of computers and their uses, software industry of all kinds and development and related services such as education, training, consultancy, and digital content.

Appendix (B) cont. – Terms and Conditions

Term	Definition
E-commerce	Purchase or sale online through the internet.
E-signature	Electronic data included in an electronic transaction, added or logically linked thereto in order to prove the signatory's identity and its consent to an electronic transaction, and to detect any modification to this transaction after signing.
E-services	Services provided via electronic means of communication using information technology
e-Government Transformation Measurement Report	An annual report to be submitted to His Majesty the King - prepared by the e-Government Program (Yesser) - that clarifies transformation of government entities into electronic transactions, in accordance with the indicators contained in paragraph 22 of the Council of Ministries Resolution No. 252 dated 16/07/1432 AH (2011 AD) on support and promoting transformation mechanism to the implementation of e-government transactions. The Sixth Measurement includes two frameworks for measuring the transformation of government entities: • Availability phase (Phase I): It includes four basic concepts. Each concept has several sub-themes, including several indicators with different weights according to the measurement methodology. • Excellence and Improvement phase (Phase II): It includes three basic concepts and each concept has several sub-themes, which are centered around measuring indicators of different weights according to the measurement methodology.
Artificial Intelligence (AI)	AI is defined as the technology that enables hardware and software to analyze external data and their surrounding factors, to draw conclusions therefrom and to use their conclusions to achieve the specific tasks and objectives through flexibility, adaptation, and variables. AI stimulates human mental abilities, such as learning, analysis, and decision-making in situations other than basic programming of the hardware or software. AI is one of the most important emerging technologies, because it can be used in many areas, as well as the ability of AI technologies to develop themselves outside the framework of their initial programming.

Term	Definition
Open Data	Open data is the data that any individual can use freely, without technical or financial restrictions, and reuse and publish such data, taking into account the requirements of the legal license under which such data is published.
Remote Areas	Population clusters with a population of less than 5000 persons. This classification does not affect MCIT's efforts to provide the best services to these areas. MCIT has committed to providing high quality communications and Internet services and covering 100% of KSA's remote areas.
Urban Areas	Population clusters with a population of more than 5000 persons. MCIT is working to cover these areas with fiber optic network to provide high-speed Internet services.
Hackathon	It is an event for gathering programmers and others related to programming, such as designers, project managers and specialists in the fields of programming, in order to work intensively and implement software projects and development regarding a particular subject during the Hackathon period. This event usually lasts for a day or more where the work is intensive. It is usually organized for educational or social purposes.
Blockchain Technology	A modern technology used mainly for recording, verifying and encrypting digital transactions. It consists of a distributed database in which records (called blocks) are sequentially stored and encrypted. This technology is characterized by database distribution and centralization that cannot be modified regarding records, which means that data is reliable, and encryption gives this data a high degree of security. This technique is usually used in financial transactions, especially in digital currencies, and can be used in any serial transactions such as issuing official documents, contracts and financing chains.
Internet of Things (IoT)	IoT is a network of physical things, devices, buildings, and others that integrate electronic de- vices connected to the Internet to collect and share data. This network enables things to be sensed and tangible so that they can be remotely controlled through a real network infrastructure. Thus, create opportunities for more direct integration into the real world in computer systems. This ultimately results in improved efficiency, accuracy, and economic benefit.

Appendix (C) – National Transformation Program Initiatives' Cards

Initiative Title	Stimulation of investment in fiber optic networks deployment in urban areas	Percentage of actual achievement	77%	Percentage of completion according to plan	75%
Initiative Description	Stimulate fiber optic networks deployment in urban areas through stimulating service providers.				

Initiative Title	Improvement of quality and sustainability of Internet services and development of an environment conducive to telecommunications sector through updating regulatory frameworks and licenses	Percentage of actual achievement	52%	Percentage of completion according to plan	49%
Initiative Description	• Conduct a comprehensive review of existing regulatory frameworks and the licensing mechanism for the purpose of determining the extent and relevance of market developments • Develop a plan and identify the priorities and steps needed to make the necessary changes to existing regulatory frameworks • Improve the quality of the Internet experience in KSA				

Initiative Title	Stimulation of expansion of telecommunications services through providing frequency spectrum and facilitating the mechanism to obtain licenses	Percentage of actual achievement	72%	Percentage of completion according to plan	84%
Initiative Description	• Prepare a national frequency spectrum strategy to ensure availability of frequencies required for the provision of mobile broadband services • Prepare plans to arrange frequency channels to meet the international standards and provide new frequencies for future technologies (5G technology) • Develop partnership frameworks between the Ministry of Municipal and Rural Affairs and ICT service providers to facilitate broadband services deployment				

Initiative Title	Stimulation of investment in the telecommunications and wireless broadband services deployment in remote areas	Percentage of actual achievement	65%	Percentage of completion according to plan	54.5%
Initiative Description	Stimulate the provision of telecommunications networks and high-speed wireless broadband networks to KSA's remote areas.				

Appendix (C) cont. – National Transformation Program Initiatives' Cards

Initiative Title	Creation of a sustainable environment for advancing the ICT industry and keeping abreast of rapid developments	Percentage of actual achievement	68%	Percentage of completion according to plan	68%
Initiative Description	Develop the national information technology plan in coordination with the private sector to determine priorities, commitments and basic requirements: • Establish platforms and communities to enhance transparency and communication among the relevant entities in the IT industry. • Launch a program to enable local IT enterprises to grow and compete through easy financing, participation in government projects and capacity-building. • Update the sector's policies, orientations and priorities and review and update sector-related legislations.				

Initiative Title	Development of a strategy, roadmap and key enablers for digitalizing industry and services (commerce, education and health)	Percentage of actual achievement	0%	Percentage of completion according to plan	60%
Initiative Description	Develop a strategy, road map and key enablers for digitizing the industry and services sector (commerce, education and health) in partnership with all stakeholders in sectors as well as entities serving as enablers to digital transformation in the public and private sectors and entrepreneurs. This happens through development of digital strategies and providing the necessary support for implementation of exploratory projects in addition to supporting innovation and entrepreneurs to contribute to the sectors' digital transformation as well as supporting provision of key enablers for transformation.				

Initiative Title	Stimulation and adoption of digital innovation by supporting entrepreneurs and local digital companies	Percentage of actual achievement	58%	Percentage of completion according to plan	58%
Initiative Description	• Establish a coordination center to accelerate innovation and support digital startups through technical and administrative guidance and facilitate access to finance. • Build strategic partnerships with international companies to establish R & D centers. • Launch the Digital Innovation Program.				

Initiative Title	Strengthening the digital security of the ICT sector	Percentage of actual achievement	57%	Percentage of completion according to plan	64%
Initiative Description	This initiative focuses on raising the level of digital security in the ICT sector and increasing the level of confidence in the digital services provided by the sector through: • Develop a strategy and frameworks for digital security governance in ICT sector. • Establish a digital security authority in the ICT sector. • Build partnerships and cooperative relations in digital security in the ICT sector. • Develop a digital security risk management framework and BCM plans for the ICT sector. • Develop capabilities to deal with digital security threats and increase rigidity in the ICT sector.				

Initiative Title	Launch of a comprehensive program aimed at spreading awareness, digital knowledge and qualifying national cadres with high efficiency to drive the digital transformation process	Percentage of actual achievement	72%	Percentage of completion according to plan	75%
Initiative Description	• Launch a program to develop employable skills to fill the gap between supply and demand through training programs and securing scholarships. • Launch a program to develop digital capabilities in ICT non-focused jobs in different sectors and develop government human capacity. • Establish and activate an information technology sector committee to create a channel of communication with international experts, define common professional standards and monitor the needs of the labor market. • Launch a program to raise technical awareness among citizens to increase Internet use and benefitting from available services as well as the national program of digital knowledge.				

Initiative Title	Implementation of an effective governance and common standards for e-government and enablement of user experience improvement	Percentage of actual achievement	35%	Percentage of completion according to plan	39%
Initiative Description	Develop the foundations for facilitating and efficiently enabling e-government work through application of governance and improving the user experience with activation of required roles in the ITC field, as well as dissemination, updating and unifying of policies and development of common standards and unified frameworks for open data, development of national application and technical models and enhancement of financial and technical supervision of IT projects Information, supplier management and the development of a standard institutional structure to scale up digital transformation.				

Appendix (C) cont. – National Transformation Program Initiatives' Cards

Initiative Title	Development and activation of comprehensive and open government platforms	Percentage of actual achievement	44%	Percentage of completion according to plan	44%
Initiative Description	Develop innovative concepts of the Whole of Government through: • Enriching and facilitating use of government services through unified channels • Improving user experience • Launching awareness campaigns for the concept of a comprehensive government				

Initiative Title	Launch of common smart systems and applications for government transactions	Percentage of actual achievement	37%	Percentage of completion according to plan	37%
Initiative Description	This initiative aims to enhance e-government transactions and transition to the concept of smart government through several projects, foremost among which are: • Launch of the smart government integration platform and focus on mobile services and services directly targeted to beneficiaries (mobile government with you, unified government interface) • Improve work efficiency among government entities, launch and support unified platforms and applications for a number of common government services (Government Resource Management System, Government Correspondence System, Unified National Call Center) • Add general enablers to improve services in general (spatial information systems, text messages, big data)				

Initiative Title	Launch of the government cloud and raise government integration level	Percentage of actual achievement	33%	Percentage of completion according to plan	36%
Initiative Description	This initiative aims to: • Develop key e-government data centers, expand their capacity, support business continuity and host the government cloud. • Increase government integration level and facilitate data and information exchange between government entities through completing Government Secure Network (GSN), and continue to support and develop government integration platform and automate linking process. • Strengthen infrastructure security through conducting a periodic security assessment.				

Initiative Title	Rationalization of government expenditure and avoidance of duplication for investment in IT	Percentage of actual achievement	29%	Percentage of completion according to plan	34%
Initiative Description	This initiative aims to rely on a national enterprise architecture to develop services standards, applications, data and techniques of government entities and to benefit from this in enhancing technical supervision and coordination, thus systematically rationalizing government expenditure through a number of projects, including: • Standardized purchase of software licenses to reduce short-term cost in addition to supporting open source software development to do reduce long-term cost. • Launching comprehensive government service centers to standardize usage experience and reduce cost. • Supporting framework agreements and partnership between the public and private sectors regarding e-government transactions. • Raising awareness by dissemination of a strategy to reduce, unify and consolidate data centers in each government sector. • Developing and improving a strategy to review e-government legislations. • Strengthening technical supervision and coordination with regard to rationalizing government expenditure in the field of information technology.				

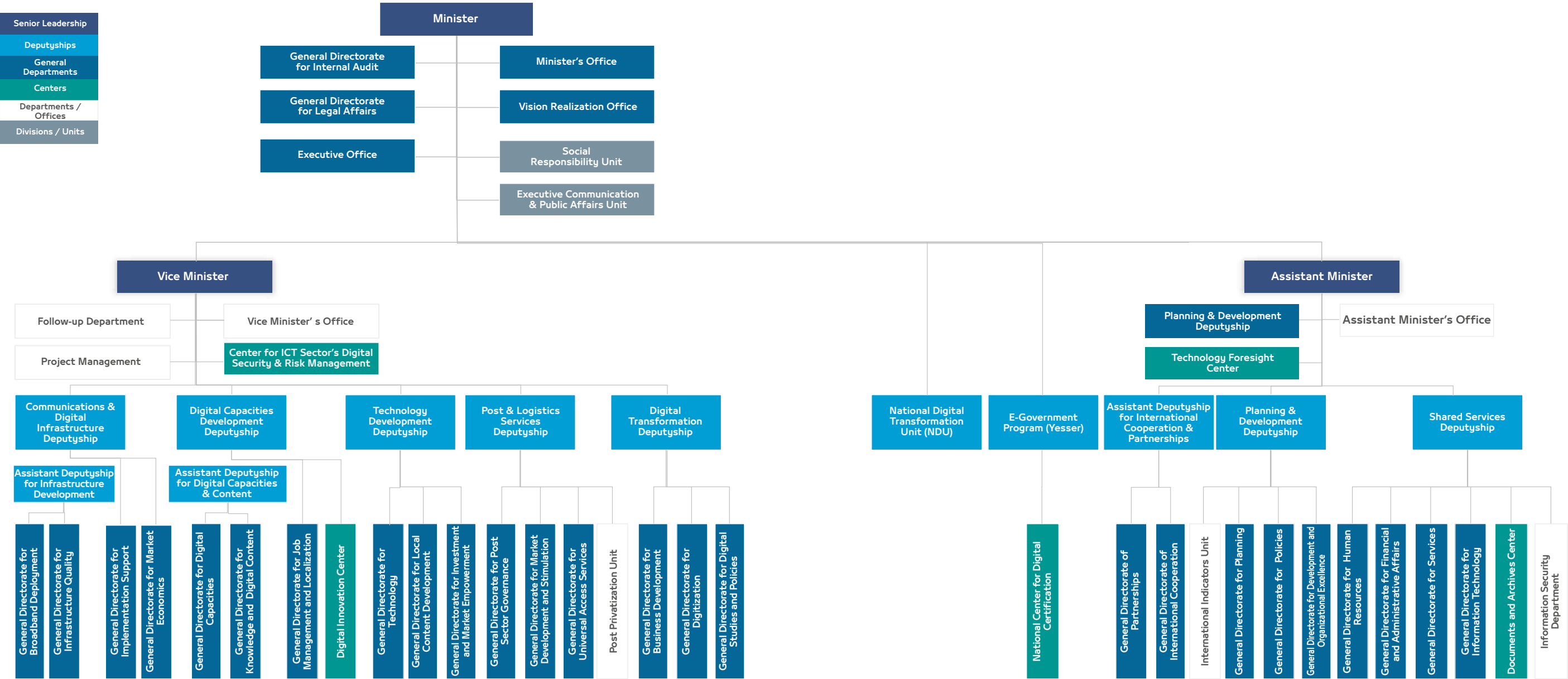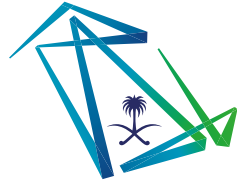| Initiative Title	Development of communication channels for electronic participation, including customer feedback and complaints, and a platform for monitoring response and interaction of government entities	Percentage of actual achievement	0%	Percentage of completion according to plan	50%
Initiative Description	• Provide communication channels for electronic participation related to a unified platform to provide customers' inquiries, suggestions and complaints as well as following-up the conduct of the response of all government entities, and to attract feedback on the response and interaction. • Assess capacities of the current government entities related to response to customers' feedback, and identify their needs and preparations for the target situation. • Coordinate with Yesser to design communication channels and integration platforms that will be deployed to government entities. These channels may include several tools such as website complaint forms, smartphone applications, social networking sites, traditional channels, etc. These can include additional applications such as automatic response to feedback. • Launch the unified e-participation platform and communication channels for government entities in order to receive feedback from their customers and link them to the unified platform.				

Initiative Title	Development and adoption of 'service level agreements' related to responsiveness of each governmental agency to feedback and complaints of customers	Percentage of actual achievement	0%	Percentage of completion according to plan	100%
Initiative Description	• Develop service level agreements (SLAs) for government entities to respond to and interact with their customers, and to include them in the SLAs initiative of the Ministry of Economy and Planning, and to ensure that these SLAs comply with government entities to make sure that they respond to customer inquiries, observations and complaints. • Execute standard SLAs and determine what measures should be included to ensure that government entities respond to customer feedback (e.g. speed of response, effective solutions). • Support government entities to execute SLAs that should be included to ensure that government entities respond to customer feedback as needed (for example, measuring response speed according to the type of service provided by the government agency). • Determine the mechanisms and requirements for following up the publication and adoption of these agreements and how to implement them (e.g. publishing these agreements on websites and identifying governmental entities that have adopted them). • Promote adoption of SLAs to ensure that government entities respond to their customer feedback and enforce compliance therewith.				

Initiative Title	Creation of a functional role responsible for following up and analyzing the quality and speed of all government entities' response to customers' feedback and development of their capabilities	Percentage of actual achievement	0%	Percentage of completion according to plan	100%
Initiative Description	Establish a specialized functional role of the Center of Excellence (COE) in the Ministry of Economy and Planning (MEP) to monitor the use of communication channels, analyze and follow up the response of government entities at various levels, and take the necessary measures to ensure compliance of the parties concerned. This includes: • Determining the operational model of the job, including organizational structure and governance model (interaction with government entities) and ensuring the issuance of the relevant decree to establish the function of the COE of the MEP. • Establishing the key actions (e.g. Escalation Procedure, etc.), job description and procedures, and recruitment plan. • Developing a government entities-customer communication strategy and enhancing the use of communication channels to provide feedback. • Developing and implementing data control systems and developing the capabilities used for these systems. • Developing standards/indicators and methods to measure the performance of government entities and their compliance with SLAs.				

Appendix (D) – MCIT's Proposed Organizational Chart

The following figure shows the Organizational Chart proposed for MCIT and is currently under consideration for adoption.

Legend:
- Senior Leadership
- Deputyships
- General Departments
- Centers
- Departments / Offices
- Divisions / Units

Minister
- General Directorate for Internal Audit
- General Directorate for Legal Affairs
- Executive Office
- Minister's Office
- Vision Realization Office
- Social Responsibility Unit
- Executive Communication & Public Affairs Unit

Vice Minister
- Follow-up Department
- Project Management
- Vice Minister's Office
- Center for ICT Sector's Digital Security & Risk Management

- Communications & Digital Infrastructure Deputyship
  - Assistant Deputyship for Infrastructure Development
    - General Directorate for Broadband Deployment
    - General Directorate for Infrastructure Quality
  - General Directorate for Implementation Support
  - General Directorate for Market Economics
- Digital Capacities Development Deputyship
  - Assistant Deputyship for Digital Capacities & Content
    - General Directorate for Digital Capacities
    - General Directorate for Knowledge and Digital Content
  - General Directorate for Job Management and Localization
  - Digital Innovation Center
- Technology Development Deputyship
  - General Directorate for Technology
  - General Directorate for Local Content Development
  - General Directorate for Investment and Market Empowerment
- Post & Logistics Services Deputyship
  - General Directorate for Post Sector Governance
  - General Directorate for Market Development and Stimulation
  - General Directorate for Universal Access Services
  - Post Privatization Unit
- Digital Transformation Deputyship
  - General Directorate for Business Development
  - General Directorate for Digitization
  - General Directorate for Digital Studies and Policies

Assistant Minister
- Planning & Development Deputyship
- Technology Foresight Center
- Assistant Minister's Office

- National Digital Transformation Unit (NDU)
- E-Government Program (Yesser)
  - National Center for Digital Certification
- Assistant Deputyship for International Cooperation & Partnerships
  - General Directorate of Partnerships
  - General Directorate of International Cooperation
  - International Indicators Unit
- Planning & Development Deputyship
  - General Directorate for Planning
  - General Directorate for Policies
  - General Directorate for Development and Organizational Excellence
- Shared Services Deputyship
  - General Directorate for Human Resources
  - General Directorate for Financial and Administrative Affairs
  - General Directorate for Services
  - General Directorate for Information Technology
  - Documents and Archives Center
  - Information Security Department

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