



هيئة الاتصالات والفضاء والتقنية
Communications, Space &
Technology Commission

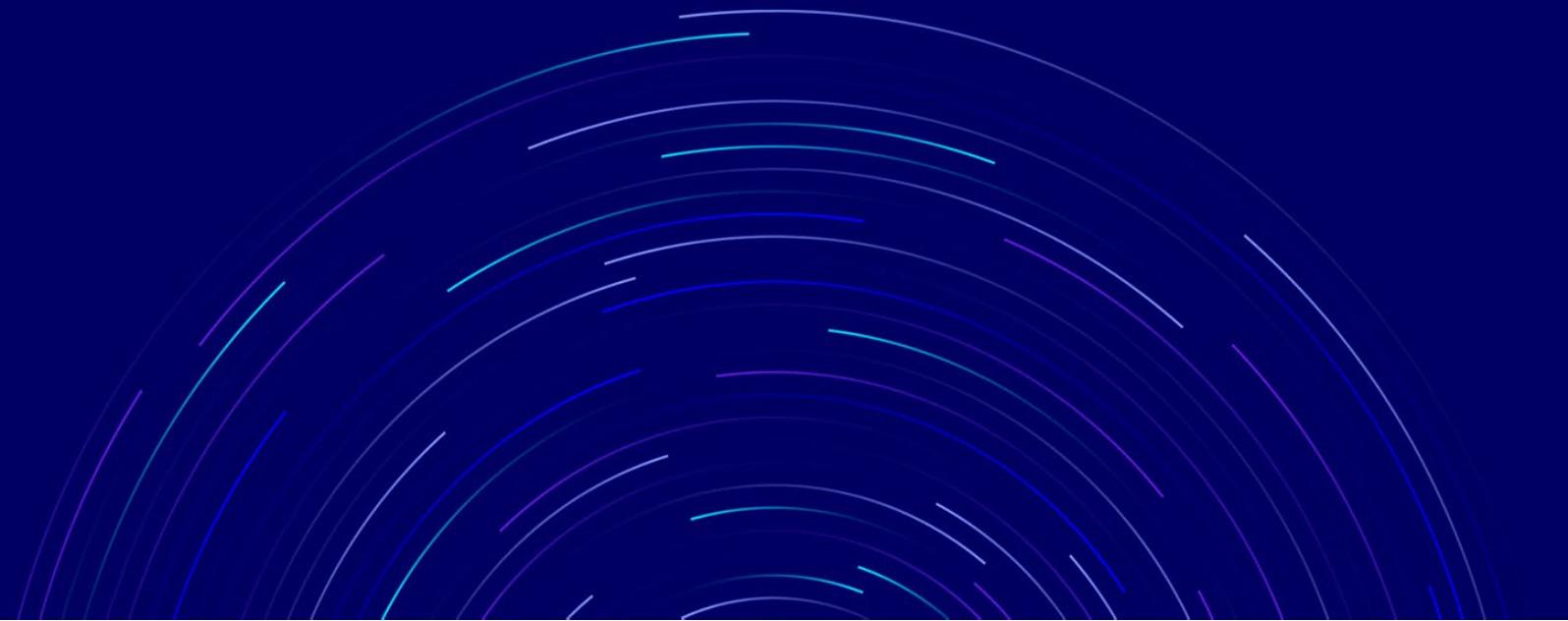
Guidance Document:

Information Technology and Emerging Technologies (IT/ET) Sector Classification

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1 Introduction

- 1-1 The Communications, Space and Technology Commission (CST) is responsible for regulating the ICT sector in the Kingdom of Saudi Arabia according to the resolution of the Council of Ministers No. (74) dated: 5/3/1422 AH, which included a number of tasks, including the following:
- Implement the approved policies, plans and programs for the development of information technology and set up the appropriate procedures.
 - Propose regulations and its amendments related to information technology and pursue approval of these regulations from the appropriate authorities.
 - Follow up all developments and updates in the field of information technology and enable its usage.
 - Orchestrate the expansion of the infrastructure of information technology in coordination with other relevant government and private organizations.
 - Encourage investment in the development of information technology services and promote the development of talent working in this field.
 - Develop a master plan for information technology after coordinating activities with the appropriate parties that are required to approve it.
 - Coordinate with related organizations the development of technology for creating databases for those concerned organizations.
 - Safeguard the interest of users regarding information technology services.
 - Hold conferences and symposiums related to information technology and participate in such events inside and outside the Kingdom.

The resolution of the Council of Ministers No. (٢٩٢) dated: ٧٢/٤/١٤١٤ AH affirmed in its 7th article the continuity of the Ministry of Communications and Information Technology (MCIT) and the Communications, Space and Technology Commission (CST) according to their mandates stated in the Telecom Act and the regulation of the CST in regulating what is related to information technology, including the Internet of Things, Cloud Computing and Blockchain.

- 1-2 This Guidance document ("*Information Technology and Emerging Technologies (IT/ET) Sector Classification*") aims at defining and explaining the products and services in IT/ET sector in a detailed and standardized manner that contributes to enhancing the suitable investment environment and developing the IT/ET sector in KSA.

2 Definitions:

- 2-1 The following phrases and terms used in this document shall have the same meanings ascribed thereto in the Telecom Act, its Executive Regulations and the relevant regulating documents, wherever mentioned herein unless the context requires otherwise:
- 2-2 The following terms and phrases shall have the meanings ascribed thereto as follows:
- 2-2-1 **CST:** Communications, Space and Technology Commission
 - 2-2-2 **Service Provider:** Any entity working in the IT/ET sector with all of its legal forms in the KSA with a legal registration
 - 2-2-3 **End User:** Any natural person or entity who uses the IT/ET products and services obtained from a service provider.
 - 2-2-4 **Information Technology:** Technologies, software, systems, networks and what is related thereto including processes to create, collect, obtain, process, store or analyze data or information; it does not include actual data and information per se.
 - 2-2-5 **Emerging Technologies:** Technological innovations which represent a progressive step in a certain field and will likely achieve a competitive advantage over existing technologies.
 - 2-2-6 **Classification Categories:** Categories to classify IT/ET products and services, classified into: Level one (1) for main products and services (main category), and Level two (2) (sub-category) for sub-products and services under the main categories.

- 2-2-7 **Emerging Industries:** Pivotal innovations in certain industries which depend on a new technology and represent an innovative step in these industries and achieve a competitive advantage over existing practices.
- 2-2-8 **Service Platforms Sectors:** Main sectors which strongly rely on providing services through digital platforms and allow the end user to interact and do business online.

3 Document Scope:

- 3-1 The articles of this document apply to IT/ET products and services by the service providers who want to classify their products and services.
- 3-2 The provisions in this document are indicative unless otherwise stated in the future.

4 Classification Purpose

- 4-1 Provide service providers and end users with the basic principles of classification, definitions and descriptions of IT/ET products and services classification categories.
- 4-2 Enable service providers who want to link or associate their products and services with a specialized classification in the IT/ET sector.
- 4-3 Align the efforts of the entities supporting the IT/ET sector by focusing their initiatives on the relevant categories in this classification.
- 4-4 Enable the measurement of the level of maturity of the IT/ET sector.
- 4-5 Enable monitoring, development and alignment of supply and demand forces in the IT/ET sector.

5 Development of the Classification

- 5-1 The IT/ET product & services classification has been developed for the KSA market following a study and digital survey of the IT/ET sector. This comprehensive and detailed classification has been reached by analyzing the approved criteria and classification in a number of countries (most importantly The USA, UK, Australia and UAE) as well as a number of local entities and a number of specialized consulting firms.

This study has enabled the classification of the IT/ET sector in a comprehensive, detailed and specialized manner linked with the emerging industries and service platforms sectors.

6 Mechanism of classifying IT/ET

6-1 Classification Principles

This classification has been created based on the following basic principles:

- 1- **Comprehensiveness:** Ensure that the classification covers all the main and subsidiary businesses and services of information technology and emerging technologies
- 2- **Alignment with business models:** Ensured that the classification includes all the products and services related to B2G, B2B and B2C.
- 3- **Accuracy:** Ensured that every category of the classification (Level 1 and 2) is analyzed in a detailed manner, to define and monitor the status of each category.
- 4- **Suitability with local needs:** Ensured that the classification is aligned with the local market and with the relevant development strategies (such as the ICT sector strategy and KSA Vision 2030 programs and initiatives).
- 5- **Future readiness:** Ensured that the classification is aligned with the new trends in the IT/ET sector with a special focus on the categories which have potential for development and growth with a high return or impact on the sector and KSA as a whole.

6-2 Classification Categories

6-2-1 Level 1- as per the below table- consists of classifying IT/ET products and services into (5) categories:

Table 1: Main categories of classification (Level 1)

Level 1 Category				
1. Hardware	2. Software	3. Data Center and Cloud Services	4. IT Services	5. Emerging Technologies
Includes all types of information technology devices product, excluding emerging Technology devices	All traditional software, which includes computer programs and operating systems used by a computer hardware	All services that allow on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage applications and cloud computing services)	Includes all shared general services are related to classification categories (e.g., consulting, IT service management, support & maintenance, and system integration & development)	Technological innovations which represent a progressive step in a certain field and will likely achieve a competitive advantage over existing technologies. (e.g. IoT, block chains)

6-2-2 Level 2 consists of classifying IT/ET sector products and services into (31) sub-categories under level 1 categories as shown in table (2):

Table 2: Categories of classification for level 2 (Sub-categories)

Category 1 Hardware	Category 2 Software	Category 3 Data Center and Cloud Services	Category 4 IT Services	Category 5 Emerging Technologies		
Hardware Devices	End-user Applications	DC Services (incl Hosting and Colo)	Consulting Services	Augmented Reality and Virtual Reality AR/VR	Emerging Industries	
Handsets & Wearables	Gaming Apps	IaaS Infrastructure as a Service	IT Services Management	Robotics		
Accessories	Middleware & Firmware	PaaS Platform as a Service	IT Staffing	Artificial Intelligence*		
Data Center Hardware	Business Software	SaaS Software as a Service	Cybersecurity Services*	Internet of Things		
Physical Access Hardware	System Software	XaaS X as a Service	Support and Maintenance	Distributed Ledger Technology		
Networking Hardware		Content Delivery Networks	Systems Integration & Development	Big Data		
Other Hardware				3D Printing	Service Platforms Sectors	
						IFintech*
						Advanced Transportation*
						IBiotech*
						Advanced Manufacturing*
					AgriTech*	
					IGreentech*	
					...	
					Transportation & Logistics*	
					Travel & Hospitality*	
					Healthcare*	
					Education*	
					General Services*	
					

*There is a competent authority to regulate this category of classification

An illustrative example of the mechanism and way of classification is as follows, assuming there is a service provider who wants to classify its products and services in the following fields:

- 1) Selling licenses for business software with the consent of the company which owns the software.
- 2) Selling and supplying database servers
- 3) Producing and selling Internet of Things Hardware and Software.

Therefore, the service provider can classify its products & services in the Level 1 categories (1) Information Technology Hardware (2) Softwares (5) Emerging Technologies and in the following categories in Level 2 of the Data Centers Hardware, Business Software and Internet of Things categories.

6-2-3

IT/ET services should also be classified along the economic value chain, which starts with Research and Development, then Manufacturing and Production, and then Sale and Resale. It is then concluded with the standard Information Technology services (such as: Consultation Services, Support and Maintenance, and System Integration) as shown in table No. 3.

Table 3: Classification of products and services as per the economic value chain

Level 1	Level 2	R&D	Production / Manufacturing	Sales / Resale	Services					
Hardware (Infrastructure & devices)	Hardware Devices	●	●	●	Consulting Services	IT Services Management	IT Staffing	Cybersecurity Services	Support and Maintenance	Systems Integration & Development
	Handsets & wearables	●	●	●						
	Accessories	●	●	●						
	Data Center Hardware	●	●	●						
	Physical Access Hardware	●	●	●						
	Networking Hardware	●	●	●						
	Other Hardware	●	●	●						
Software	End-user Applications	●	●	●						
	Gaming Apps	●	●	●						
	Middleware & Firmware	●	●	●						
	Business Software	●	●	●						
	System Software	●	●	●						
Data Center and Cloud Services	DC Services (incl Hosting and Colo)	●	●	●						
	Infrastructure as a service	●	●	●						
	Platform as a service	●	●	●						
	Software as a service	●	●	●						
	X as a Service	●	●	●						
	Content Delivery Networks	●	●	●						
Emerging Technologies	augmented reality and Virtual realityAR/VR	●	●	●						
	Robotics	●	●	●						
	Artificial Intelligence	●	●	●						
	Internet of Things	●	●	●						
	Distributed Ledger Technology	●	●	●						
	Big Data	●	●	●						
	3D Printing	●	●	●						

For the purpose of clarification, using the same example as in the previous paragraph: The service provider can define its activity in the value chain of its (sub-) categories. As the entity is "Creating and selling Internet of Things Hardware and Solutions", the respective Level 2 service is "Internet of Things", the suitable value chain activity is: "Production and Manufacturing" and "Sales and Resale".

6-3 Description of Classification Categories and Product Stages

6-3-1 Table 4 below includes the description of products and services as per the stages of the sector economic value chain,.

Table 5: Description of product stages as per economic value chain

Description of product stages as per economic value chain		
Products	Research and Development	<ul style="list-style-type: none"> Research, development and publication of Hardware, Software, Data Center and Cloud, and Emerging Technologies in IT/ET before the Production stage.
	Manufacturing and Production	<ul style="list-style-type: none"> Production of Hardware, Software, Data Center and Cloud, and Emerging Technologies in IT/ET for final use before the stage of sale to end user.
	Sale and Resale	<ul style="list-style-type: none"> Sale of Hardware, Software, Data Centers and Cloud, and Emerging Technologies in IT/ET for end user.

6-3-2 Table 5 includes descriptions of level 2 classification categories along with examples (non-exhaustive).

Table 5: Description of level 2 classification categories

Level 1	Level 2	Description	Examples
IT Devices	Hardware Devices	All types of personal computers, smart screens / displays or internal hardware parts that are not characterized as handsets or tablets	Desktop computers, laptops, hardware spare parts (e.g., video card, RAM memory, HD, etc.)
	Handsets & wearables	All types of devices that are mobile by nature and that can be carried as a personal item to access ICT-related features	Smartphones, tablets, smart watches, smart bracelets, cameras
	Accessories	All types of external computer parts, accessories and peripherals that can be plugged to computers to provide additional functionalities	Mouse, keyboard, disk reader, USB drivers, printers, scanners
	Data Center Hardware	All computing hardware equipment required to implement, operate and maintain a data center	Blade servers, mainframes, storage servers, high-performance computers, blade servers, server racks
	Physical Access Hardware	All hardware equipment designed to protect physical systems and to be used for access control purposes	Fingerprint scanner, facial recognition scanner, access gates, sensors, CCTV equipment

	Networking Hardware	All hardware required to enable the transfer of data between devices in a computer network or for telecommunication purposes	Optic fiber, RJ45, coaxial cables, Wi-Fi equipment (e.g., Wi-fi routers, Wi-fi modems), Wireline equipment (e.g., modems, routers), switches, gateways, telephony & conference equipment, 4G / 5G routers, antennas, transmitters
	Other Hardware	All hardware equipment which are sector specific or specialized and do not fit any of the other descriptions	Gaming consoles, lab specific hardware (e.g., frequency generator, oscilloscope), set-up boxes, smart TVs*.
Software			
	End-user Applications	Off-the-shelf (OTS) desktop and mobile applications that directly serves a final user need and are not linked to any consumption or purchase of third-party services	MS office, productivity apps, organization apps, graphic design software, video edition software, search engines .
	Gaming Apps	OTS Desktop, mobile or console applications that serve for entertainment purposes and are classified as gaming applications	Computer video games, console video games, mobile video games.
	Middleware & Firmware	All types of applications that serve either for integration purposes (between the operating system and application layers) or are specially designed to operate in a specific hardware (Embedded Software)	Databases, virtualization software, ESB, Embedded Software.
	Business Software	All types of applications designed to facilitate management and operation of an entity or organization; software in this category is not provided as a service (i.e., in the Cloud)	CRM, SCM, Enterprise content management, IT Helpdesk system, planning software, GIS, accounting software, healthcare software.
	System Software	All types of computer software designed to make a system run or to protect the system	Operating systems (Android, iOS, Windows, Linux), system drivers, cybersecurity software, network software, OS Kernel, bootloaders.
Data Center and Cloud Services			
	DC Services (incl Hosting and Colo)	Services related to the storage of companies' or individuals' files, web pages or systems and making them accessible through the world wide web in a centralize repository, stored in the data center host	Website hosting, FTP hosting, Web services, colocation services.
	Infrastructure as a service	All fundamental computing services (processing, storage, networks, etc.) running on cloud infrastructure, and that respects the requirements of Cloud Computing as defined by NIST*	Cloud storage, virtual computing.

	Platform as a service	All platforms (user-created or acquired) running on cloud infrastructure which the user can manage through the network under, and that respects the requirements of Cloud Computing as defined by NIST*	Containers platforms, vendor platforms, SW development platforms.
	Software as a service	All applications running on a cloud infrastructure made available by a cloud provider and accessible through the network under any deployment mode, and that respects the requirements of Cloud Computing as defined by NIST*	Open SaaS, email as a service, mobile cloud apps.
	X as a Service	Any type of information technology products that are offered as a service over the internet, provided by a cloud services provided, and that respects the requirements of Cloud Computing as defined by NIST*	Desktop as a Service, Games as a service, Security as a Service, Business Process as a Service.
	Content Delivery Networks	All services related to the management and delivery of content through the internet by providing better and faster data access to the end user	Content delivery services, load balancer, proxy servers .
IT Services	Consulting Services	All consulting services provided by professional consulting firms related to the ICT domain, which can be either specialized in a certain ICT domain or generic in ICT	All personalized consulting services related to IT services: ICT strategy, cloud strategy, infrastructure revision, system architecture review.
	IT Services Management	All services provided by specialized firms that comprise outsourcing or managed services in ICT-related domains	IT outsourcing, IT managed services, contact centers, e-mail support services, NOC (Network Operations Center).
	IT Staffing	Subcontracting services provided by specialized IT companies under the form of IT manpower resources (not outsourcing)	IT Manpower, IT Subcontracting.
	Cybersecurity Services*	All services related to the implementation and management of technologies, processes, and practices designed to protect networks, devices, programs, and data from attack, damage, or unauthorized access	Cybersecurity strategy, cybersecurity governance, Penetration tests, white hacking, vulnerability assessment, Cybersecurity Intelligence.
	Support and Maintenance	All services related to fixing issues (reactive development) or maintaining operation (preventive support) of different ICT components such as Hardware, Software, Network or Security Management	Repair services, configuration control services, operation control services, software update management.
	Systems Integration & Development	All services related to integrating, developing and implementing systems solutions, typically a combination of Hardware and Software	Software development, hardware development, hardware set-up, software configuration, security configuration.
Emerging Technologies	augmented reality and Virtual reality AR/VR	Products and services that provide computer generated simulations that integrate elements of the physical world or are entirely virtual	VR equipment, AR software, etc.
	Robotics	Products and services that involve development of machines that can automate activities that would otherwise be performed by humans	Disaster recovery robots, exoskeletons, Robotics Process Automation, etc.
	Artificial Intelligence*	Products and services related to the development of applications that contain aspects of human intelligence such as decision making, speech recognition and other	Cognitive AI technologies, machine learning, natural processing languages, etc.

	Internet of Things	Products and services related to the employment of interrelated computing devices, objects or living beings that have the ability to transfer data and interact through a network	IoT hardware, IoT software, IoT architectures, etc.
	Distributed Ledger Technology	Products and services that enable large groups of nodes in the distributed ledger networks to reach agreement and record information without the need for a central authority	Blockchain platforms, blockchain services, etc.
	Big Data	Products and services related to the management of extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations	Oracle Big Data SQL, Dell Big Data Analytics, Palantir Big Data, etc.
	3D Printing	Products and services related to the action or process of making a physical object from a three-dimensional digital model	3D printer hardware, 3D printer services, 3D printer software, etc.

*There is a competent authority to regulate this category of classification

7 General Provisions

This document is subject to periodical review by the CST as per the latest developments in the IT/ET sector products and services and will be updated accordingly.

