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IL01. CURRENT TRENDS IN ICT INFRASTRUCTURE AND THEIR IMPACTS ON ICT INFRASTRUCTURE MANAGEMENT

1. STRATEGIC

Vanishing Data Centers

In 2020 infrastructure as a service (IaaS) and platform as a service (PaaS) cloud providers will have sold and installed more computational capacity than enterprise data centers. Unless they are extremely small, most businesses will continue to maintain an on-premises (or hosted) data center. However, as the majority of computational power moves to IaaS providers, companies and vendors must focus on managing and using hybrid architectures that includes:

- On-premises.
- Off-premises.
- Cloud Components.
- Non-cloud Components.

Application Streams, Microservices and containers

Containers like Docker and microservices are the emerging cloud application platform. Containers make it easy to build per-process isolation, making them ideal for microservices development, in which applications are built as a collection of small services that run as distinct processes and connect using lightweight network-based protocols. Microservices can be deployed and managed individually, and once within containers, they have little direct interface with the underlying operating system.

2. ORGANIZATIONAL

Remote Device Management

The requirement to manage remote assets centrally is becoming increasingly important for many enterprises with remote sites/offices. As businesses focus on micro-data center support for regional or remote sites, as well as the rising role of edge computing environments for geo-specific compute requirements such as the Internet of Things, this has become more important.

Connect sensors are a new form of asset that has emerged as a result of the fast adoption of IoT solutions by business units. The sensor may require software upgrades or battery replacement on a regular basis, necessitating a new level of information and control inside an asset tracking and management system.

New Roles in ICT

As IT changes to accommodate these developments, new positions in infrastructure and operations will be necessary.

- The first will be the ICT cloud broker, who will be in charge of monitoring and managing multiple cloud service providers.
- The IoT architect will come next, tasked with determining the impact of different IoT technologies on data centers. This architect will also collaborate with business units to ensure that their closed loop IoT solutions are either compatible with the core IoT architecture or use standard protocols and data structures.

Micro and Edge Computing Environments

At the nearer edge servers, micro and edge computing conducts real-time applications that require high-speed responses. Instead of several hundred milliseconds, the communication delay is reduced to a few milliseconds. It offloads some of the user's device's computation-intensive processes to edge servers, making application processing less reliant on the device's capabilities.

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3. TACTICAL

Stranded Capacity

Stranded capacity, or capacity which has been paid for but not used, can be found in both on-premise and cloud data centers. IT leaders should learn to focus on capacity, utilization, and density in addition to uptime and availability. Fixing this can extend the life of an existing data center and save carriers money on operational costs.

Data Center as a Service

IT leaders must develop a data center as a service (DCaaS) model in which IT and the data center are responsible for delivering the appropriate service, at the right time, IT becomes a service broker.

IT leaders can facilitate the usage of cloud services across the organization, but only if they focus on selecting the right service, at the right time, from the right provider, and in a way that does not jeopardize core IT service and support.

Business-Driven ICT

According to recent Gartner polls, up to 29 percent of IT spend comes from business units rather than traditional IT, and this figure is expected to rise in the coming years. This business-driven IT was frequently used to avoid typical slow-paced IT processes. In today's environment, however, it is more commonly designed to give technically skilled business professionals with a way of quickly adopting new ideas while adapting to, or entering, new markets as easily as feasible.

Today's astute IT executives know that business-driven IT adds real value to the company, and that IT's duty should be to create relationships with key business stakeholders, keeping central IT informed of new projects and their potential long-term impacts on overall operations.

IoT

1
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8 IL02. DEMONSTRATE AN AWARENESS OF CURRENT ICT GOVERNANCE FRAMEWORKS AND THEIR RELEVANCE TO THE DEVELOPMENT OF ICT INFRASTRUCTURE MANAGEMENT PLANS AND PROPOSAL

ICT Governance defines the decision rights and accountability structure in order to support desirable IT behavior. One of the most significant roadblocks to development is the complexity and difficulty of communicating IT governance.

ICT governance is concerned with who makes decisions, whereas management is concerned with making and implementing such decisions.

4
An effective ICT governance framework should include the following:

- 4
• The executive management, especially at the level of the deputy head of the firm, should have strong leadership over the ICT governance infrastructure.
- A suitable Chief Information Officer (CIO) or equivalent in a senior-level position with overarching responsibility and authority, as well as access to executive management
- A well-established method for monitoring the ICT strategy's execution
- 4
• Organizational efforts to track ICT costs and perform audits have been stepped up. Post-implementation evaluations of big ICT investments to aid strategic decision-making, cost-effectiveness, accountability, and transparency

Importance of ICT Governance

ICT governance has evolved into a dynamic and strategic asset for an organization's success in achieving its mission and objectives. ICT is critical for managing transactions, information, and knowledge, all of which are required to achieve and maintain an organization's mandate and goals. As a result, businesses are growing more reliant on a well-functioning ICT infrastructure.

ICT Governance Structures and Frameworks

The ICT governance committee or equivalent is the primary component, which is made up of business managers who provide overarching advice and direction on ICT across the enterprise. A technical committee, which gives technical advice and support to the committee or board, is frequently present. Local ICT committees are also found in the substantive departments and/or regional and national offices of UN organizations, as well as those with regional and field offices.

A general framework for ICT governance design concerns. The framework diagram shows how institutional strategy and organization must be aligned with ICT governance frameworks and institutional performance goals.

The ICT organization and desirable behaviors, ICT governance mechanisms, and performance measurements are used to implement the institutional strategy, ICT governance arrangements, and performance targets, respectively.

6 The ICT Strategic Framework identifies the important elements that must be taken into account while managing a local government's information resources. It depicts the key elements and their interactions that might be found in an 'ideal' setting. In practice, the extent to which it applies will inevitably be determined by the size and complexity of the local administration.

6 The ICT Framework is not a requirement for compliance. It's a tool that municipalities may use to plan for, manage, and evaluate their information and technology assets.

Plans and Proposal

The Ins⁴ectors believe that when developing and upgrading ICT strategies, companies should ensure that they are tightly aligned with their medium- and long-term strategic goals. This is best accomplished if the ICT strategy includes specific ref⁴erence to and describes how the ICT strategy's core ICT objectives, projects, and activities re²³spond to and support the organization's corresponding strategic goals, as outlined in the overall medium- and long-term strategic plan.

4 Not all ICT strategies are closely aligned with the medium- and long-term strategic plans of the particular firm. As a result, these busi⁴nesses run the danger of their ICT failing to adequately support and sustain the organization's business needs and priorities, as specified and detailed in their strategic plans.

12 IL03. ANALYSE CURRENT ICT INFRASTRUCTURE MANAGEMENT PLANS AND PRACTICE, AND ASSESS THEIR DEGREE OF ALIGNMENT WITH ORGANISATIONAL BUSINESS AND STRATEGIC GOALS

11 Business is enabled by ICT, and ICT is driven by business. Globally successful organizations are those that bring these seemingly diverse divisions together to form one unified team. Knowledge, talents, and resources are merged through business and IT alignment, allowing you to work smarter, not harder.

3 The way businesses arrange their business processes, communicate with consumers and potential customers, and offer services is still being challenged by information technology.

3 Despite the fact that there is no single dominating reorganization plan, common firm structures all lean toward decentralizing IT, bringing it closer to end-users, and integrating information with business goals. For market impact and growth, business and IT alignment is critical.

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3 Information technology continues to disrupt the way firms organize their business processes, connect with customers and potential customers, and provide services. Despite the fact that no single reorganization model is dominant, common company architectures all trend toward

decentralizing IT, bringing it closer to end-users, and integrating information with business goals. Business and IT alignment is crucial for market impact and growth.

Business and ICT Alignment: Strategy

Because they achieve their goals with less effort, businesses perform better, create more profit, and enjoy greater ROI as a result of this continuous strategic loop. While there is no one-size-fits-all approach to aligning IT with business strategy, organizations that do so can boost agility and operational efficiencies.

Business and ICT Alignment: Convergence and Integration

These companies have improved the effectiveness of technology investments and decreased the financial and operational risks associated with business and technical change. However, if the rate of change and economic flux is as rapid as we claim, we should be discussing convergence and integration rather than merely alignment. To put it another way, let's investigate and learn, but let's also empower next-level thinking so we can focus on co-creating "real value" and responding to consumers and users more quickly.

Strategic Alignment: Emerging trends and debates

Company and information technology strategies have traditionally been considered as two separate business operations, and I.T. teams have frequently done work as required by business management and client requests. However, advances in the field of information and communication technology (ICT), combined with a better understanding of the value of business and information technology strategic alignment, have resulted in a shift in culture and paradigm in how the two are viewed, with scholars and practitioners advocating for better integration and harmony of business and information technology functions and strategies.

IL04. DEMONSTRATE AN UNDERSTANDING OF THE NEED FOR THE ACHIEVEMENT OF INTEROPERABILITY IN ENTERPRISE-WIDE ICT INFRASTRUCTURES

Interoperability in enterprise-wide ICT infrastructures is required. ICT Interoperability is defined as the capacity to communicate, execute programs, or transfer data and then convert it into useful information for the user. For interoperability to occur, two systems must be able to communicate data and then present the data in a way that the user can comprehend. This improves communication between people in many types of businesses.

Systems in the healthcare industry share data from vital sources. Interoperability in health care allows for quicker access to information in patients' electronic health records, which increases hospital efficiency, lowers costs, and ensures a safer transition of treatment to patients.

A family doctor, for example, may refer a patient to a radiology practice to treat a complex fracture. Even if the two practices use different software systems internally, the physician can send the patient's records to the radiologist, and the radiologist's team can quickly send over the imaging department's results. The United States contributes to healthcare interoperability by developing standards for how computer systems communicate and promoting specific standardized terms to describe the systems and their connections.

18 To protect secret and sensitive patient information, the government also creates protocols for data networking, email transmission, and strengthening other security and encryption systems. Three levels of interoperability exist in the health information technology.

Some Healthcare Information and Management Systems Society states are explained below:

- 9 • **Foundational Interoperability** - Interoperability at the foundational level allows one information system to exchange data with another information system. This information does not need to be interpreted by the system that receives it. It will be available for use right away.
- **Structural Interoperability** - defines the format of data exchange. This is connected to standards that control the format of messages transferred from one system to another, ensuring that the operational or clinical purpose of the information is evident and passes through unaltered. We're talking about information at the data field level, as in a patient record database.
- **Semantic Interoperability** - The highest level of connection is semantic interoperability. Between two or more separate systems or sections of systems, information can be conveniently transferred and utilized.
- **Interoperability through standardization** - non-interoperability does not always imply or result in a market failure, and interoperability can be achieved in a variety of ways. The EU Commission, on the other hand, consistently emphasizes the importance of interoperability as a key component of its Digital Single Market Strategy.

5 Recognizing the significance of interoperability is crucial for any profession, especially those in the healthcare industry. Given that so many of our systems and pieces of equipment are linked to one another via wired and wireless networks, we must all stay up to date on interoperability developments in government and industry.

8 IL05. DEMONSTRATE AN UNDERSTANDING OF THE ROLE AND IMPORTANCE OF ICT SERVICE PROVISION AND IMPORTANCE AND ACQUISITION IN THE RESPONSIBILITIES OF AN ICT INFRASTRUCTURE MANAGER.

2 The management of ICT (Information and Communication Technologies) services has recently received a lot of attention in the research literature and among ICT practitioners.

2 The management of all processes that collaborate to ensure the quality of live IT services, in accordance with the levels of service agreed with the customer.

2 A comprehensive framework that enables the design and implementation of a service catalogue based on consistent service definition and categorization is an important prerequisite for ICT service management.

2 The lack of a clear specification of ICT services architecture complicates the development of enterprise IS (Information Systems) solutions, particularly when various forms of outsourcing are used. This can be especially difficult in the context of cloud computing services, with organizations utilizing a variety of SaaS (Software as a Service), PaaS (Platform as a Service), and IaaS (Infrastructure as a Service) services from various service providers.

2 Cloud computing introduces specialized requirements for the extension of existing service management frameworks to allow the integration and management of various types of ICT services potentially sourced from a number of external providers. 2 The following are the most important requirements: ICT services are clearly classified and can be used by both ICT service providers and ICT service users. Integrated enterprise-wide service catalog for ICT services sourced both internally and externally.

The ICT services management framework should not force user organizations to make decisions about application and technological architectures before deciding which services to outsource, because in the case of outsourced services, the application and technological architectures become the responsibility of the service provider. The framework should allow for the integration of internally and externally offered services.

2 The SPSPR (S-Strategy, P-Business Processes, S-ICT Services, P-ICT Processes, R-ICT Resources) framework is our contribution to ICT service management frameworks.

In the context of cloud computing, SPSPR is a layered framework for illustrating the relationship between business and ICT management. ICT services describe how particular business processes or sub-activities are supported as a result of the interaction between business and ICT. ICT services might be offered domestically or purchased from third-party vendors.

2 ICT service providers are accountable for the ICT processes that underpin ICT services, the ICT resources that these processes consume 2 and the underlying application and technology architectures. Metrics that quantify the quality, volume, efficiency, and other properties of monitored components within the overall framework are a key component of the SPSPR framework.

2 The primary goal of the SPSPR framework is to clearly define roles at various levels of enterprise management, enabling for the mapping of business goals to the ICT management layer.

Let's take a look at the SPSPR model's first essential characteristic. A recommendation of ICT services that would ideally assist the business process must be included as part of the process specification. The process manager must determine the acceptable (maximum) cost of the requested ICT services.

2 Finally, our solution, which is based on the SPSPR architecture outlined in this study, provides the following advantages for enterprise ICT management: A clear definition of 2 ICT duties for all levels of corporate managers. Transparency in the deconstruction of corporate business goals for ICT operations management. Development of a schema from which important success criteria metrics for each process types and responsible managers may be determined.

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