



Position DC In Thailand

(การส่งเสริมสนับสนุนศูนย์ข้อมูลในประเทศไทย)

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Topic

- Thailand Digital Government Development Plan (2017-2021)
- Government Data Center Modernization





Thailand Digital Government Development Plan (2017-2021)

Strategic Technology Trends for Digital Government



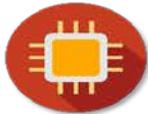
Virtual Reality / Augmented Reality

Application of Virtual Reality (VR) and Augmented Reality (AR) technologies in simulating environment or situations for the purpose of public safety management, telemedicine, and new formats of education and tourism



Advanced Geographic Information System

Application of Advanced Geographic Information System technology in geographical data management, as well as its applications in management of agricultural resources, transportation system and other areas



Big Data

Processing big data and make forecasts and estimations in business environment, using Internet of Things (IoT) and Smart Machine technologies to perform real time analysis and responses with users



Open Any Data

Disclose informative data to users through refurbishment of database and website to allow wider public access and promote linkage of those disclosed data with other entities



Smart Machine / Artificial Intelligence

Application of Smart Machine technology to enable management and responses of automated services - the Smart Machine system will gradually evolve and consequently be able to evaluate and address problems throughout the service supply chain



Cloud Computing

Application of Cloud Computing technology for data storage to reduce complication in system installation, reduce system maintenance cost, and save network establishment investment



Cyber Security

Addressing cyber security issues by setting cyber security standards, revising related regulations to make them more updated and flexible, as well as reforming the mindsets in handling cyber security issues



Internet of Things

Using the Internet of Things (IoT) technology to facilitate the transformation of government services into digital formats, and at the same time, the IoT technology can also support government's works in communication, utilization of mobile technology, analyzing big data, and cooperation with private business sector



Block Chain / Distributed Ledger Technology

Application of Block Chain technology in data storage and utilization of the network for the purpose of verification and reduction of intermediaries under reliable security environment

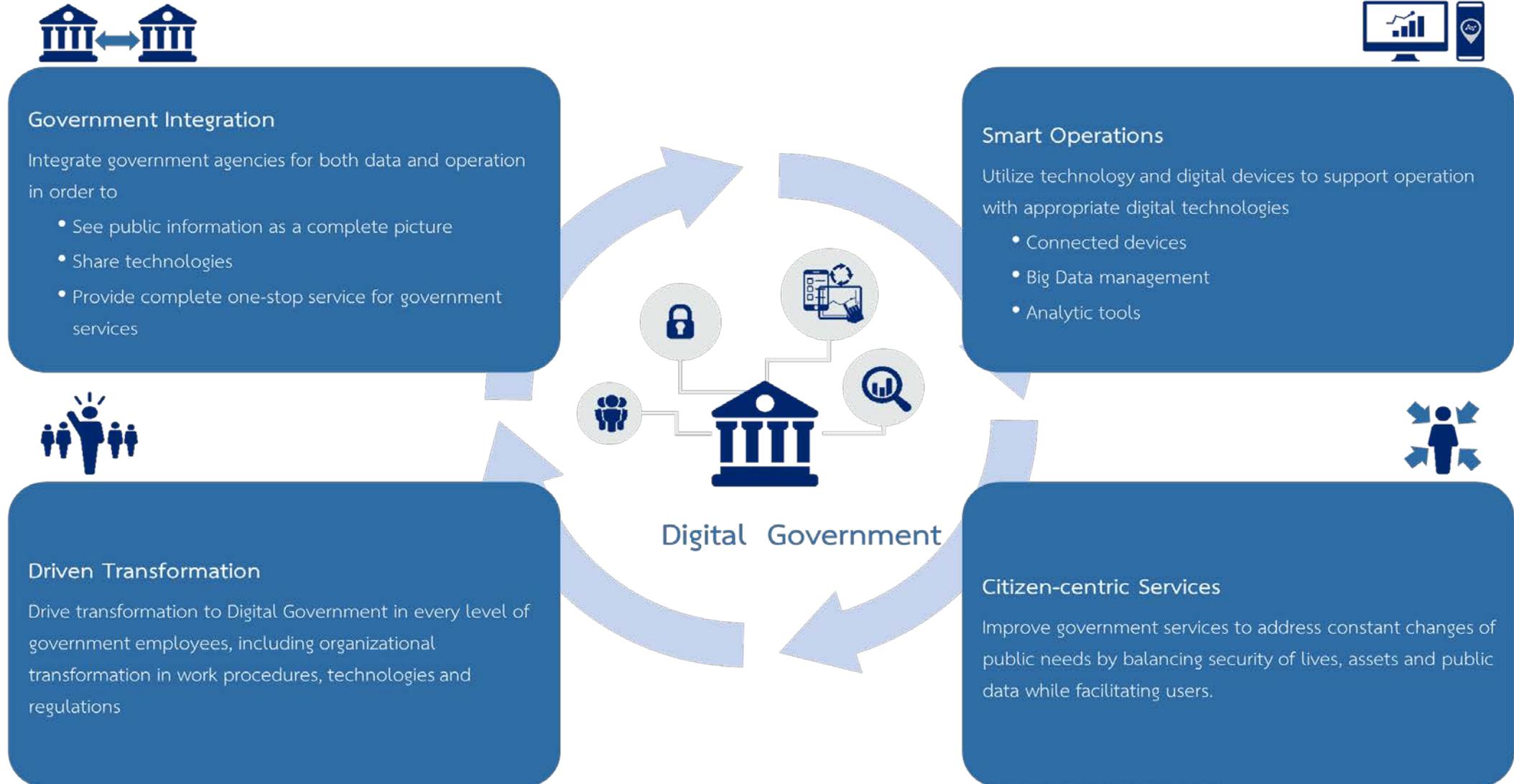


Connectivity of Thailand Digital Government Development and National Plan



Vision of Digital Government

Enhance Thai Government to become Digital Government with Government Integration, Smart Operations, Citizen-centric Services, and Driven Transformation



Strategies of Digital Government

1 Elevating Citizen's Quality of Life

-  **Public Welfare:** Proactively manage and integrate public welfare
-  **Labor :** Fully integrate labor market
-  **Education:** Increase education opportunities and quality for all
-  **Health:** Increase access to public health services with good quality and strengthen efficiency of health service providers

3 Increasing National Security and Public Safety

-  **Public Safety:** Proactively manage public stability and security using analytic tools.
-  **Border Management:** Advance risk assessment and authentication through automated channels
-  **Natural Disaster :** Integrate data for natural disaster prevention
-  **Crisis Management:** Integrate data across agencies to manage crises

4 Improving Government Efficiency

-  **Finance:** Centralize electronic finance system to increase efficiency, transparency and benefit maximization
-  **Procurement:** Develop electronic procurement system for all processes to increase efficiency, transparency, convenience and accessibility.
-  **Asset Management:** Centralize, electronic asset management system to increase efficiency, transparency and benefit maximization
-  **Human Resource and Payroll:** Integrate human resource information system with acceptable standard

2 Enhancing the Capacity of the Business Sector's Competitiveness

-  **Agriculture:** Fully integrate agriculture for individual farmers
-  **Tourism:** Fully integrate tourism
-  **Investment:** Integrate investment services across related agencies
-  **Trade (Imports & Exports):** Fully integrate import/export system
-  **SMEs:** Integrate data to support SME's growth
-  **Tax and Revenue:** Integrate taxation system across agencies
-  **Transportation:** Integrate multimodal transportation data
-  **Public Utility:** Enhance efficiency of public utility providers and related services

5 Developing the Capacity to Support Government Services

-  **Data Integration:** Integrate and centralized government data
-  **Data Authentication and Verification:** Develop Smart Card for individual or central electronic account for business
-  **Information:** Develop One-stop service for government data with Citizen-centric services
-  **Feedback:** Enhance and proactively manage government complaint channels
-  **Digital Government Infrastructure:** Increase efficiency of government operation through utilizing central digital infrastructure
-  **Digital Government Capacity Building:** Enhance digital skills of government officers

Strategy 5: Developing the Capacity to Support Government Services

Integrate government services through connected systems from various agencies. Build digital government infrastructure while developing digital skills for government officers for all levels and agencies in order to sustain a strong foundation towards digital government.

Challenges

- To handle large databases which require security and privacy as well as comply with existing laws and regulations
- To develop appropriate digital infrastructure for all agencies given different natures and levels of usage
- To work with constantly changing digital technologies
- To handle complexity of data integration among agencies
- To manage relatively limited budget while provide digital skill trainings for many employees

Solutions

- To develop data and service integration systems for various capacities in order to provide services to public
- To amend existing laws and regulations to support the movement to digital government in various capacities
- To have a central agency allocating and developing digital government infrastructure for all agencies in order to integrate and share the infrastructure
- To raise awareness of agencies in the importance of developing digital skills for their officers

Benefits

- To increase government operation and service efficiency
- To increase digital skills and capacities for government officers and agencies

Digital Government Infrastructure

Flagship Projects:

- 1) Government Shared Services
- 2) GIN Extension
- 3) G-Cloud Extension
- 4) G-CERT Extension
- 5) Government Data Analytics Centre
- 6) Government IoT Network
- 7) Data Centre Modernization

Digital Government Capacity Building

Key Responsible Agencies:

- 1) Electronic Government Agency (Public Organization)
- 2) Office of The Civil Service Commission

Flagship Projects:

- 1) Thailand Digital Government Academy
- 2) Digital Skills for Government Employees
- 3) Thailand Digital Government Academy as Hub for Government Digital Training

Data Integration

Key Responsible Agencies:

- 1) Office of the Permanent Secretary, Ministry of Interior
- 2) Electronic Government Agency (Public Organization)
- 3) Office of the Public Sector Development Commission
- 4) Department of Business Development

Flagship Projects:

- 1) Citizen Data Integration
- 2) E-Government Act
- 3) Smart Service
- 4) Biz Portal

Data Authentication and Verification

Key Responsible Agencies:

- 1) Electronic Government Agency (Public Organization)
- 2) Department of Provincial Administration
- 3) Office of the Public Sector Development Commission

Flagship Projects:

- 1) Biz Portal
- 2) Smart Card Extension

Information

Key Responsible Agencies:

- 1) Electronic Government Agency (Public Organization)

Flagship Projects:

- 1) Smart Government Kiosk
- 2) GovChannel

Feedback

Key Responsible Agencies:

- 1) Office of the Permanent Secretary, The Prime Minister's Office
- 2) Office of the Permanent Secretary, Ministry of Interior
- 3) Office of the Auditor General of Thailand
- 4) Electronic Government Agency (Public Organization)

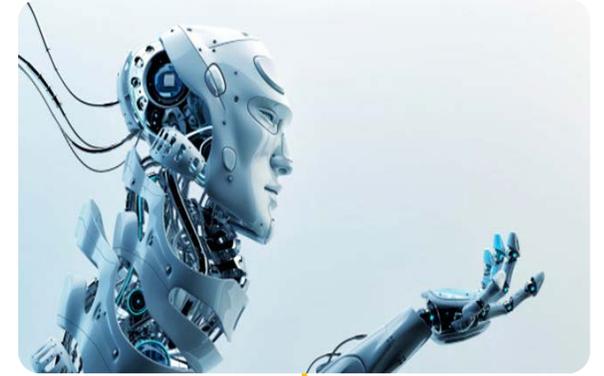
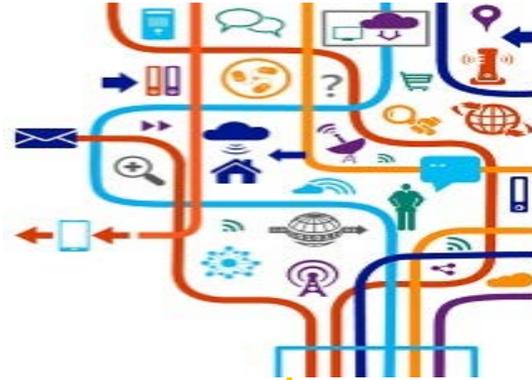
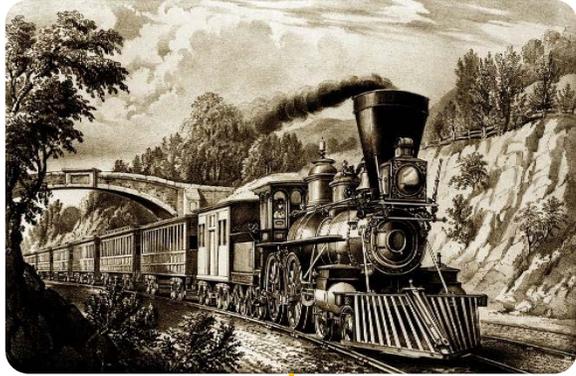
Flagship Projects:

- 1) Extension of 1111 Centre for Complaints
- 2) Proactive Needs Analysis



Government Data Center Modernization

4th Industrial Revolution - blurring the lines between the physical, digital, and biological spheres



1800

1

Industry 1.0

The Steam Engine

1900

2

Industry 2.0

Henry Ford's T-Model

2000

3

Industry 3.0

IT-OT Convergence

2020

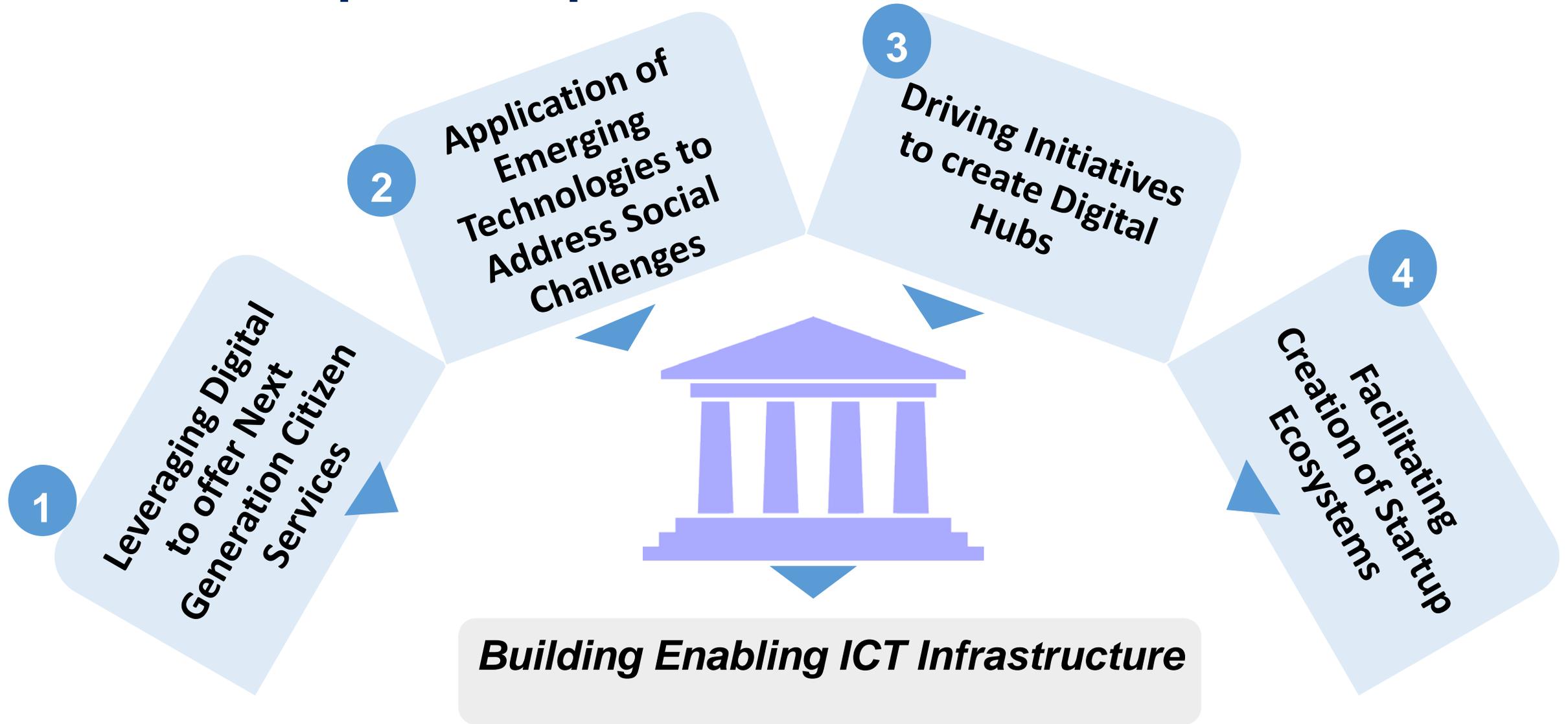
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Industry 4.0

Digital Transformation

Source: WEF

Digital priorities vary across governments globally – but are of prime importance



Government and government agencies globally are focusing on Datacenter Modernization to support the Digital Plans

India:
National & State Data Center initiatives for e-Gov services

South Korea:
Modernization & Cloud PaaS Initiatives

USA:
Data Center Optimization Initiative (DCOI)

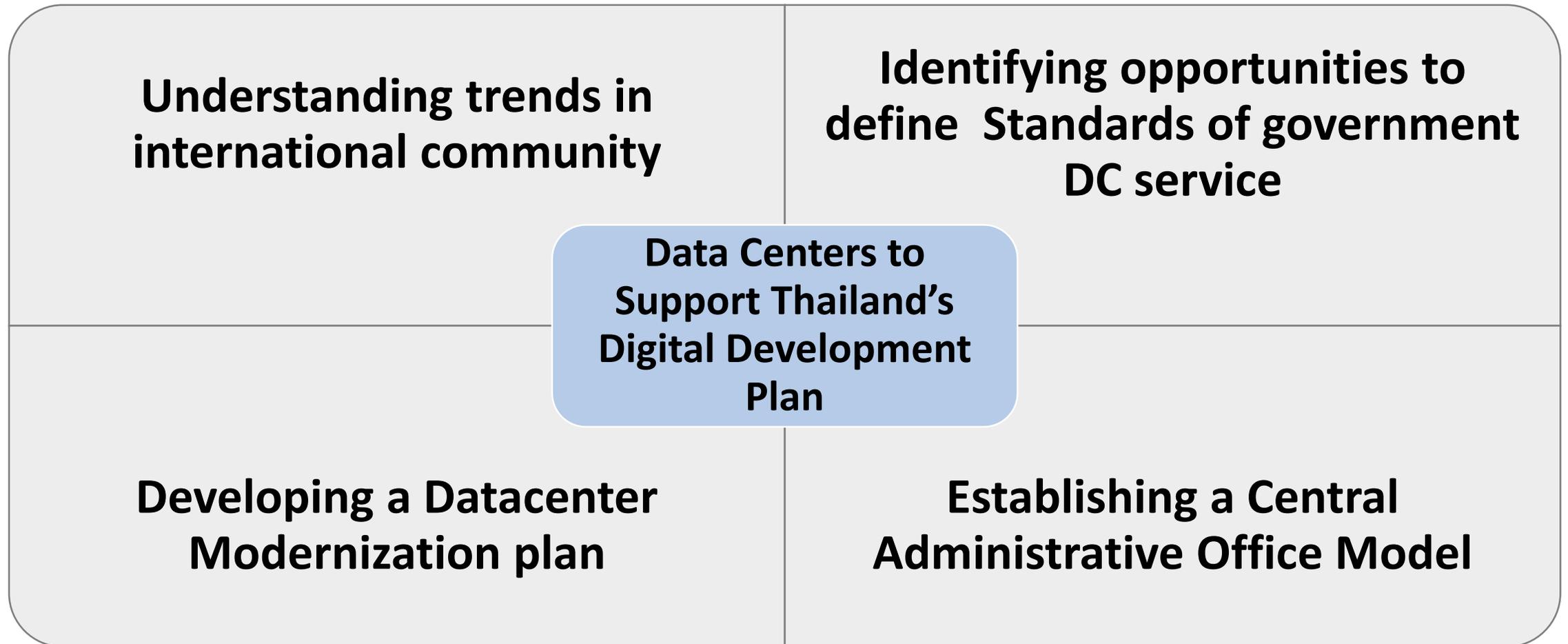
Australia:
Phased approach to Data Center Modernization

UK:
Modernization - consolidation of disparate systems

Malaysia:
Data Center & outsourcing to support ICT plans

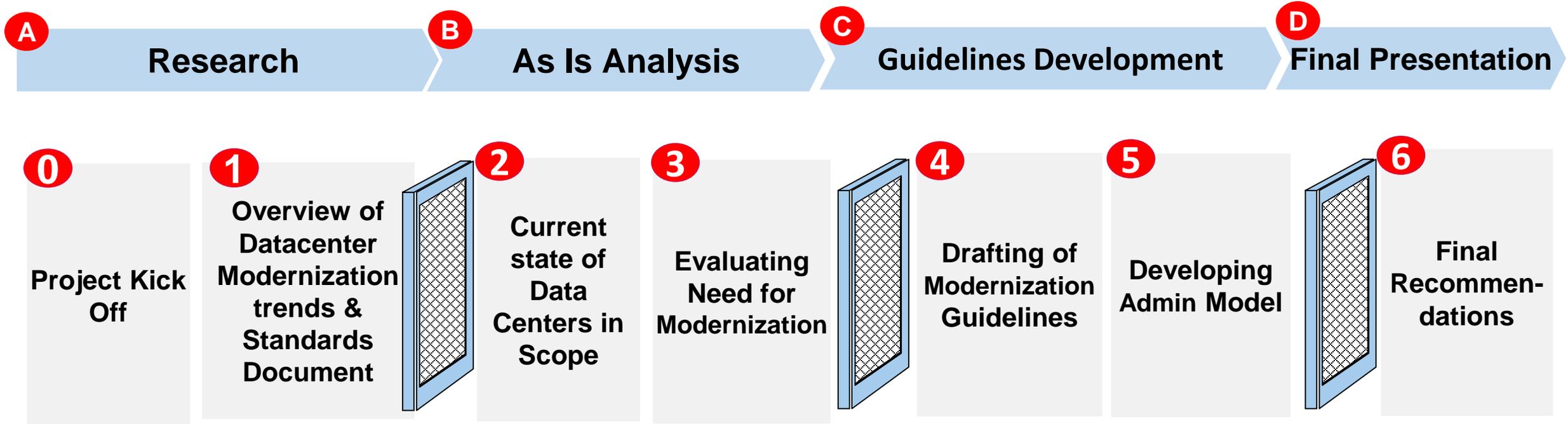


EGA has identified 4 broad aspects to the Data Center Modernization initiative



The Project has been delivered in 3 Phases

Approach



Case Study Malaysia and USA

Malaysia Data Center Modernization Effect

Establishment of two government data center

209 Government agencies using 1Gov*net

**84 Government agencies using GDC1
50 Government agencies using GDC2**

83% of the government services online

USA Data Center Modernization Effect

4000 + data centers closed and \$2.8 billion in cost savings

180,000 plus servers still with the agencies

95% of agencies procuring network through government

1.5 million Square feet of data center space

Across the world, countries adopt DC Modernization through new tools, technologies and optimization techniques

1

Adoption of cloud at a rapidly growing pace in line with increasing maturity of cloud operations across the globe

2

Increasing investments in security technologies including encryption for own data center setups

3

Increased usage of cross-agency infrastructure sharing and shared services

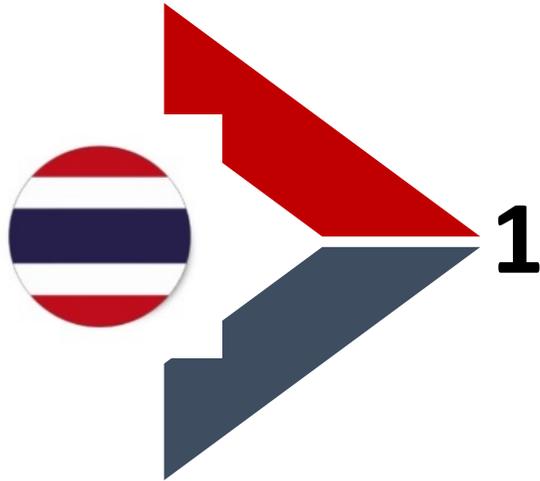
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Focus on cost optimization resulting from tighter government budgets

5

Increased focus on handling of high security data

Thai Government Data Center Modernization is a strategic initiative to help the agency data infrastructure align better with Thailand Digital Economy



1

THAILAND OPPORTUNITY

- 70 mn population
- Strong internal demand for data center
- Data center requirements to grow 30% YOY till 2020



2

DIGITAL THAILAND

- Digital technology to develop infrastructure, innovation, data capability, human capital, and other resources
- 6 Strategies to implement goals: Build high-capacity digital infrastructure, Boost economy with digital technology, Create equitable society through digital technology, Transform into digital government, Develop digital workforce, and Build confidence in use of digital technology



3

DATA CENTER INFRASTRUCTURE

- Data center infrastructure an important component of Digital Economy
- A modern data center infrastructure is the most crucial element to accommodate growing demand for data, services, quality and digital economy

Consumer needs, aspirations and resulting data is growing at rapid pace

28_{mn}

2016
Internet
Users

34_{mn}

2021
Internet
Users

39%

2015
Internet
Penetration

8th

Fastest
Internet in
Asia

86_{mn}

Mobile
Subscribers
2015

127%

Mobile
penetration
2015

Sources: Stastica, Worldbank, Bangkokpost, NBTC

Key Considerations for Data Infrastructure

**Higher
Utilization**

**Higher
Reliability &
Availability**

**Higher
Security**

**Higher
Capacity**

Government Data center issues and priorities



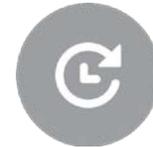
Data Security based decision making



High volume and growth of data



Efficient operations



Data Availability at all times



Multiple standards and adherence



Hiring and retaining right employees



Aging infrastructure



Outsourcing decisions

Future of data centers

The ongoing and massive surge in data traffic will pave the way for a stronger infra backbone.

Cloud adoption will continue to thrive and agencies would increasingly rely on cloud including Government cloud services.

Critical factors for choosing a data center options will include data security, location, cost and environment need.

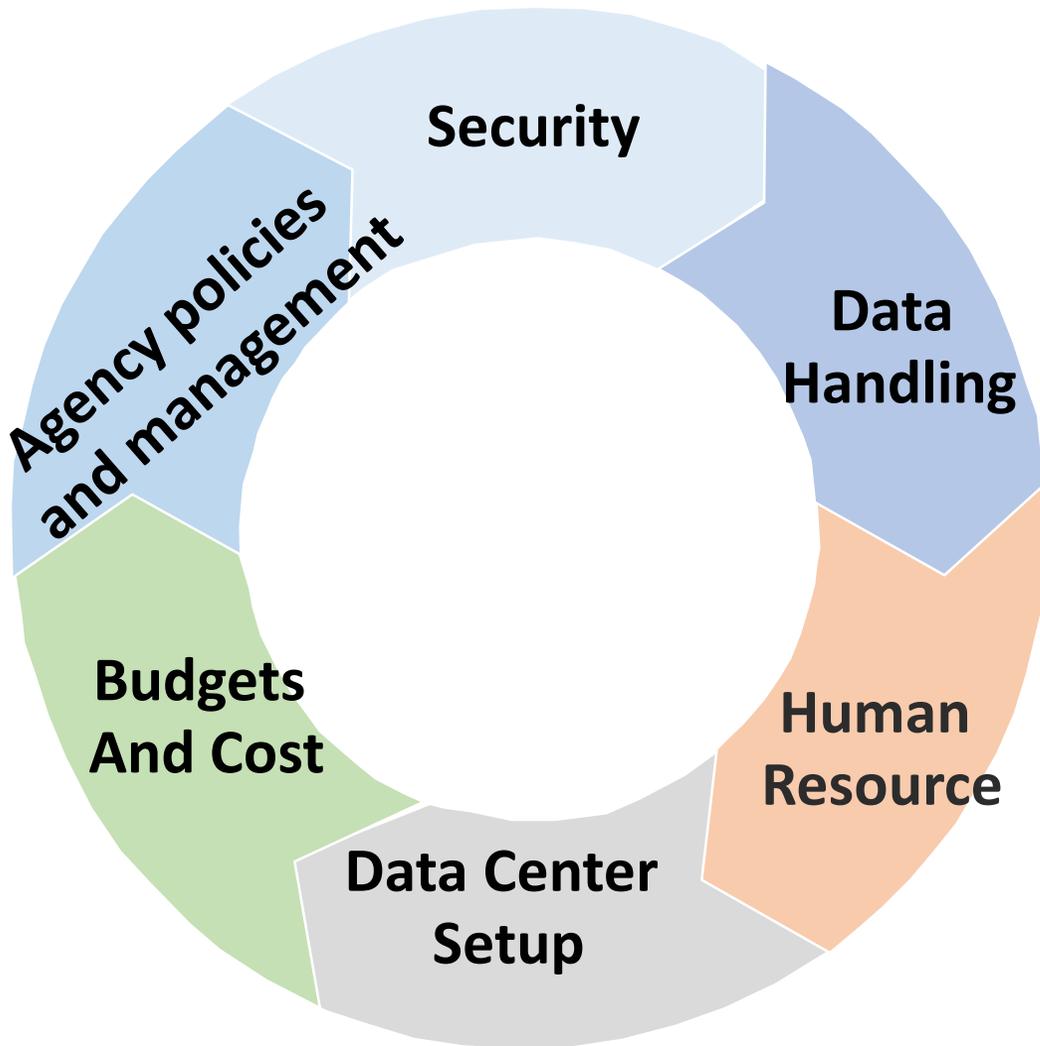
Data centers would need to offer higher quality and reliable services to enable seamless business and government operations

Data centers would need to keep scalability perspective in mind due to sheer growth of data in mind.

Data centers need to be ready for needs resulting from IoT, analytics and increase in intra ministry and inter agency data management with real-time business and operational excellence

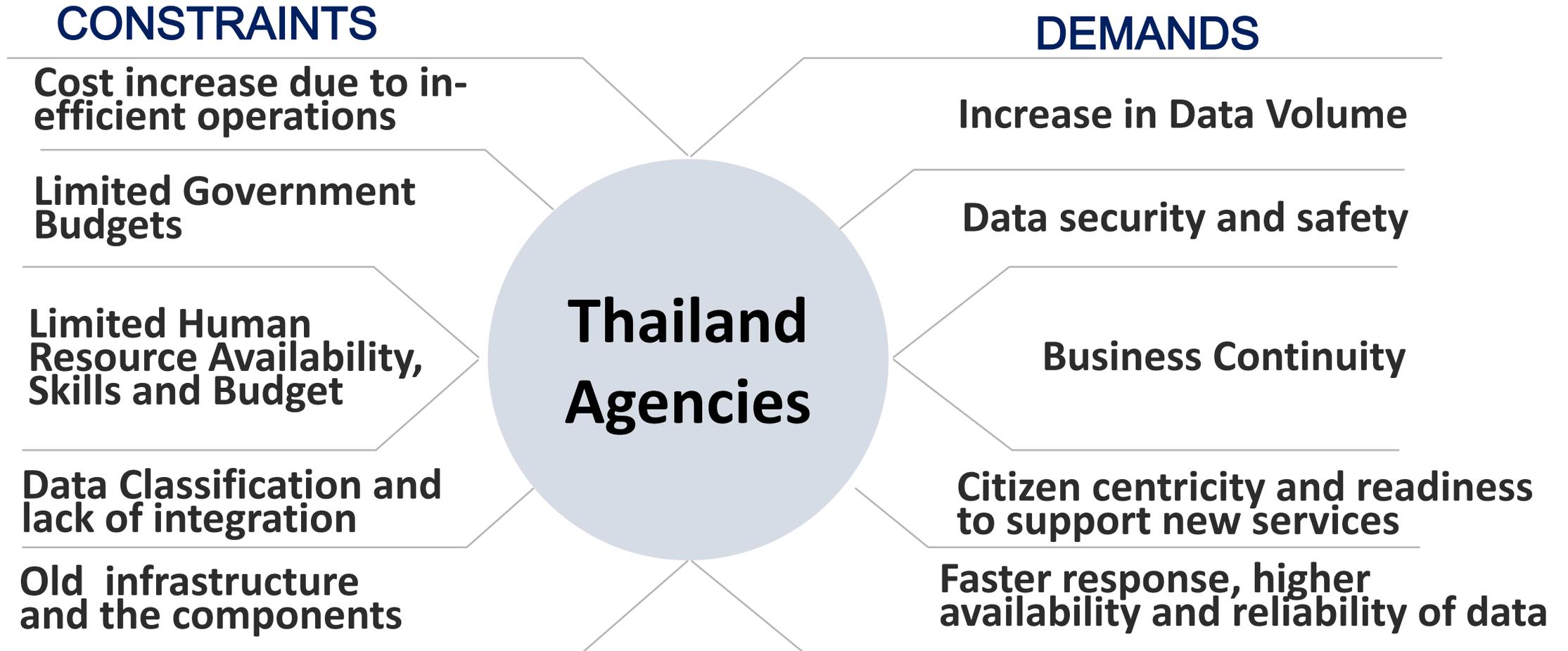
Current and Future State of Thailand Government Data Infrastructure

6 core areas of challenges faced by agencies



- **Security includes: data security, security handling at the agency, handing of high risk and mission critical data.**
- **Data handling includes data integration and classification, agency responsibility, data cleansing, accuracy and quality.**
- **Human resources include: lack of human resources at the agency, lack of skills and overall lack of availability of skilled resources**
- **Budget and Cost include the allocated budgets for expenses and increasing costs of operations as well as upgradation.**
- **Agency policies and management include shared utilization, planning, focus on DR and backup, citizen centricity etc.**
- **Data Center Setup include server, storage, cabling, cooling set, power setup, floor architecture, racks, building design etc.**

Government Agencies constrains and demands



Important areas of improvement

1

Identification of standards that the agencies need to follow based on best practices and driving compliance

2

Developing key skills amongst the agency personnel on their business areas, technologies and servicing, and concrete steps to develop skills

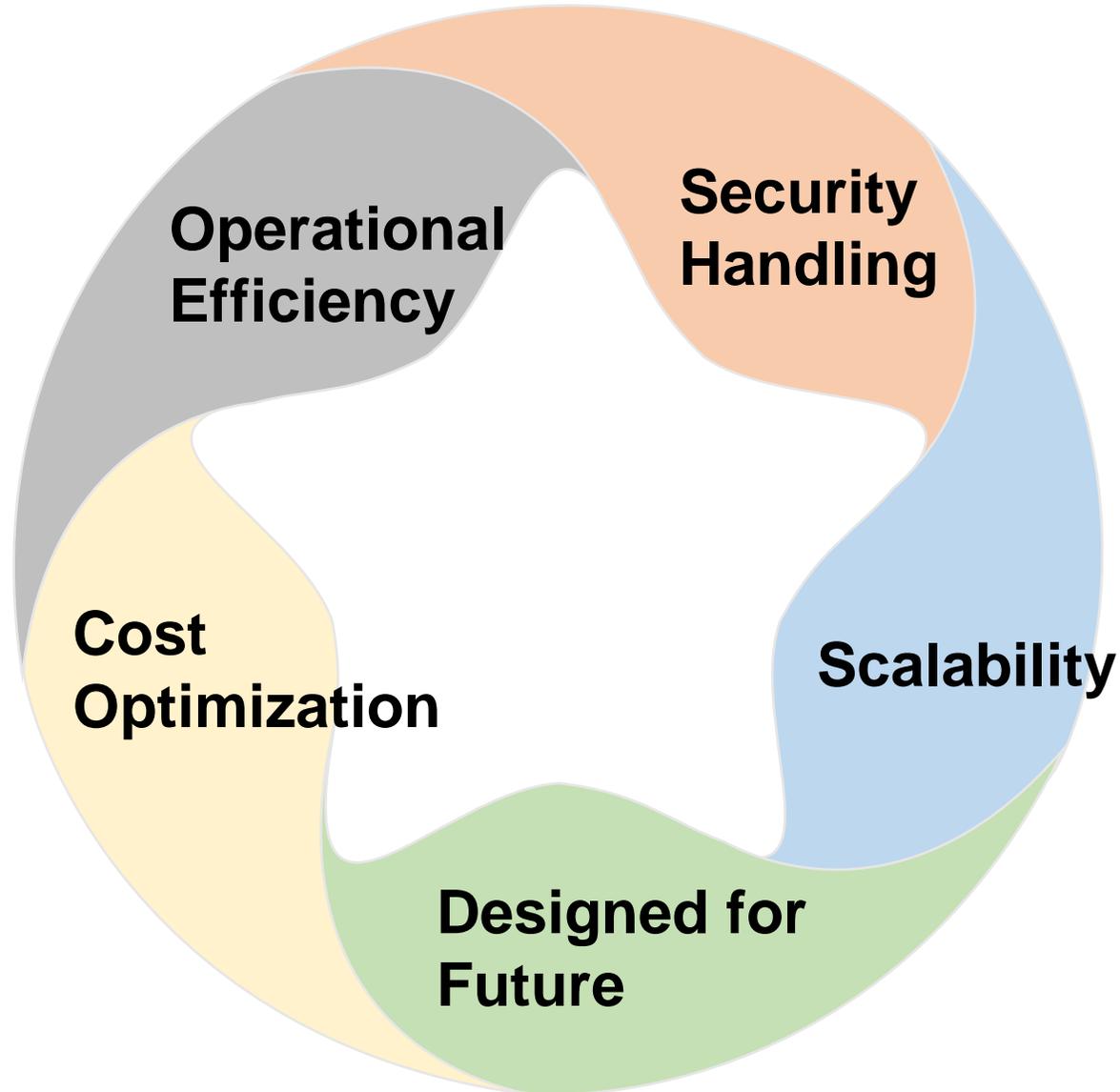
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Central operations and shared services should be an important consideration

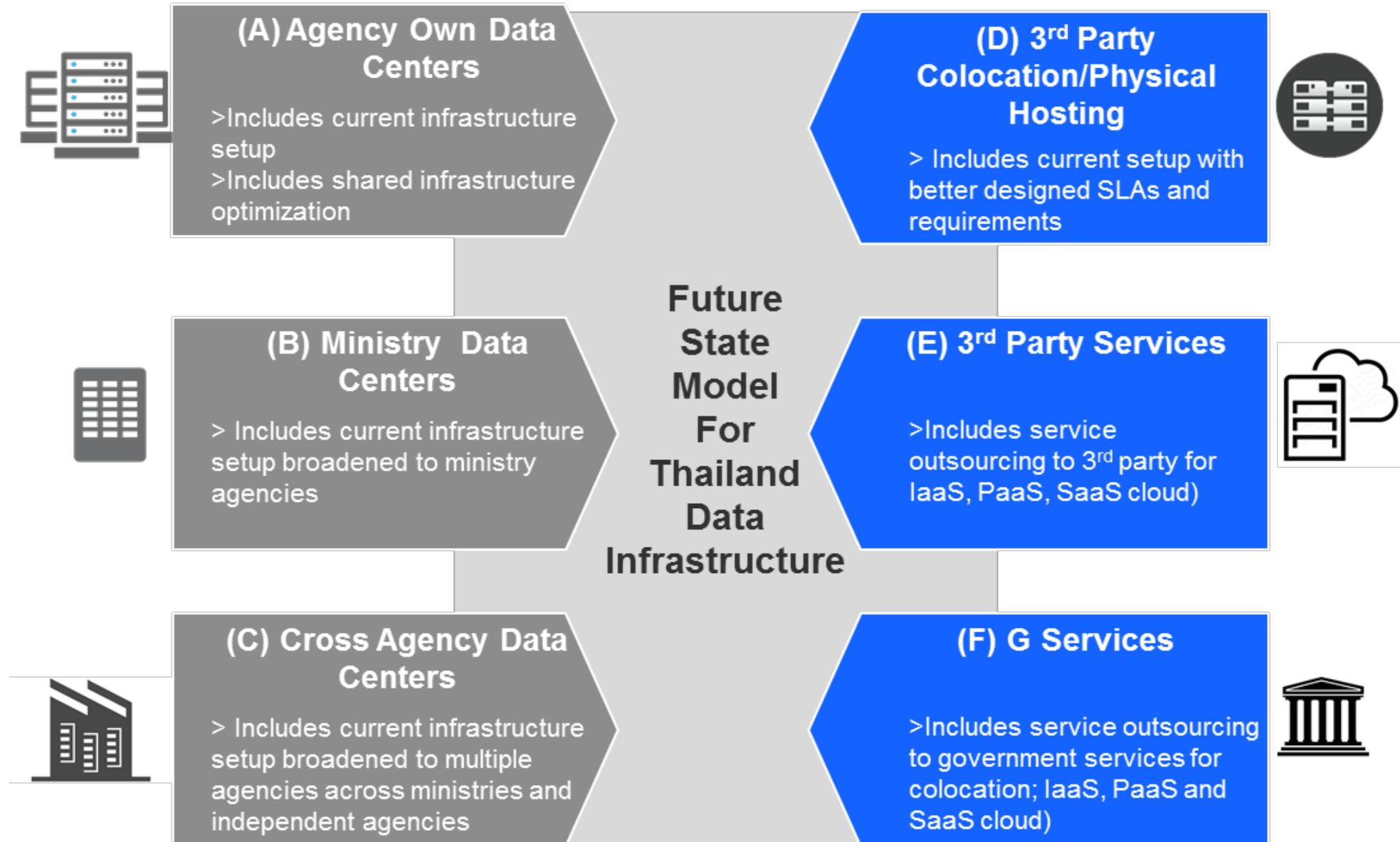
4

Security handling and cloud adoption

Features that should represent future state



Future State Operating Model



Note: (E) 3rd party services does not include 3rd party colocation, which is captured as a separate service that's being also used currently as (D)

Future State Operating Model

	<i>Future State Model improvement over current state</i>					
	(A) Agency Own Data Center	(B) Ministry Data Center	(C) Cross Agency Data Center	(D) 3 rd party Colocation	(E) 3 rd party Services	(F) G-Services
GREEN: Improvement from current state						
BLUE: No change from current state						
● ● ● ● ○						
Very High High Medium Low None						
Handling of high security data	●	○	○ ^B	○ ^B	○	●
Handling of public data	○ ^B	●	●	○ ^B	●	●
Handling of important and mission critical data	○ ^B	●	●	○ ^B	○ ^B	●
Improvement in standard adoption	●	●	●	○ ^B	○ ^B	●
Support in data integration	●	●	●	●	○	●
Cost efficiencies	●	●	●	○ ^B	●	●
Solves issues of procurement lead times and OPEX budget	○	●	●	○ ^B	○ ^B	●
Solves human resource availability and quality issues	●	●	●	○ ^B	○ ^B	●

Future State Operating Model

GREEN: Improvement from current state

BLUE: No change from current state



Future State Model improvement over current state

	(A)	(B)	(C)	(D)	(E)	(F)
	Agency Own	Ministry	Cross	3rd party	3rd party	G-Services
	Data Center	Data Center	Agency Data	Colocation	Services	Services
			Center			

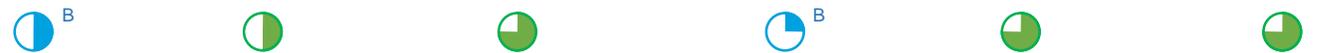
Better utilization of resources and infrastructure



Reduces reliance on government budgets



Reduces overall cost spent by government



Ensures high scalability



Ensures high resilience, availability and reliability



Effectively balances and manages technology advancements



Ability to manage future growth of data analytics/other complex computing needs.



Optimal use of government resources



Government Data Center Modernization (GDCM) Strategy

Guiding Principles

- 1** Alignment with Digital Economy and Prime Minister's vision for Government Infrastructure and Modernization
- 2** Strategy based on data security, criticality of applications, current operations perspective and inclusive growth
- 3** Utilizes the key improvements in technology via standards and SLA adoption for identified models to enable a successful realization of benefits
- 4** Consideration of skillsets, people development, human capital availability, and technology transfer
- 5** Accountability of agencies and ministries through granular steps to realize overall objectives.

GDCM Strategy



The key objective of the Strategy is to develop a data infrastructure approach to protect Thailand's high security data and to achieve operational excellence in service delivery. In achieving these, there are several other objectives including: business sustainability over long term, cost efficiency, technology innovation and preparedness for data revolution



Vision of GDCM

“To be an effective government data infrastructure that enables public service delivery through efficient, secured, cost effective and optimized operations”

GDCM Goals

Realigning government data based on security characteristics of the data to enable higher security to national security data and appropriate handling of important data

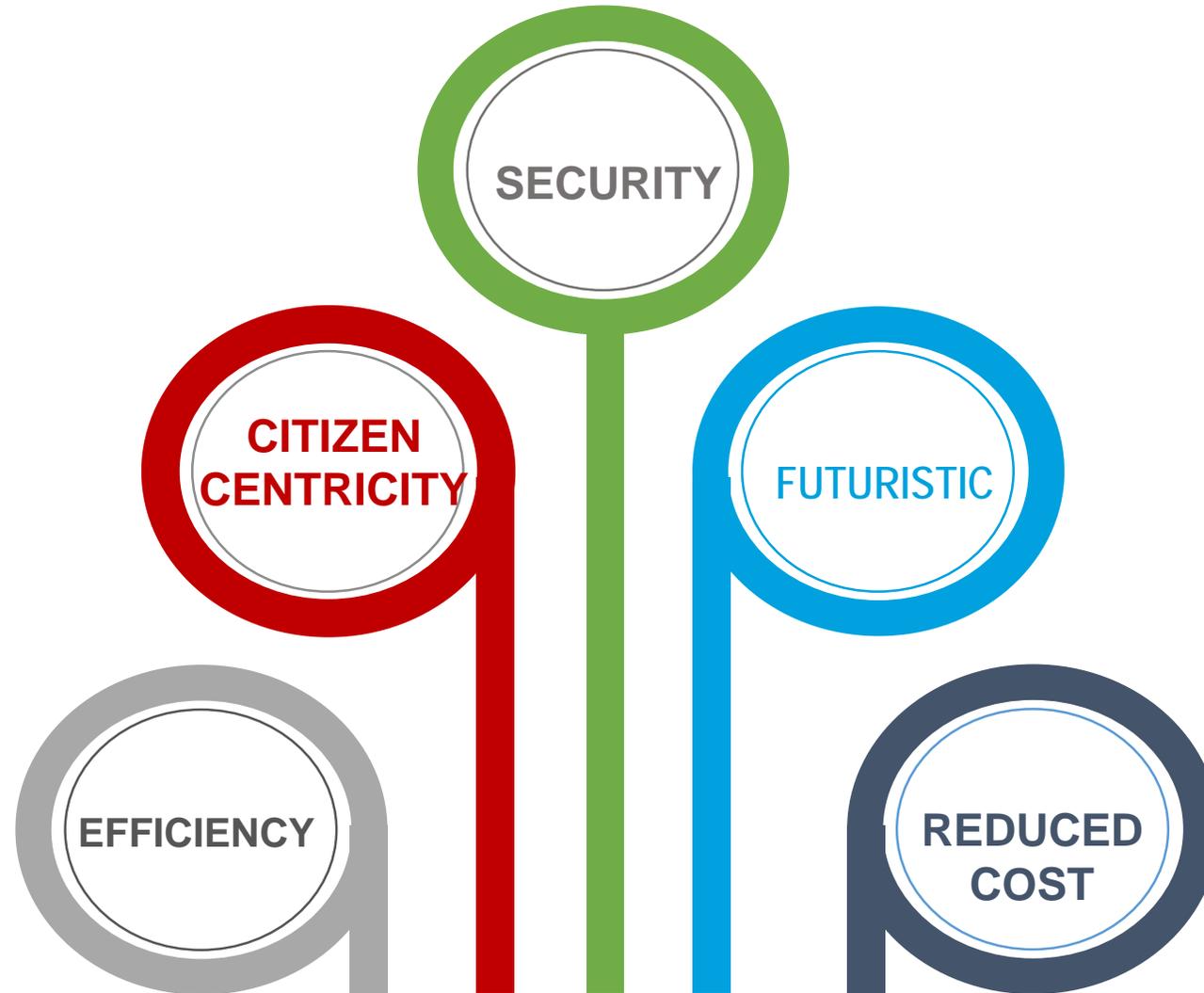
Enabling infrastructure with standardised approach and service delivery

Optimize the cost and investment for the infrastructure

Implement shared operations at agency level, ministry level and government level

Improve agency efficiency

Resulting Benefits



GDCM Implementation Objectives

- ✓ **Aggregate the total data center demand and establish feasibility studies to the realization of GDCM Strategy**
- ✓ **Identify and develop business requirements for the future model**
- ✓ **Assist early adopters to move to shared resource solutions;**
- ✓ **Adopt the standards to be used in data center equipment and operations so that maximum efficiencies can be achieved;**
- ✓ **Established shared service models**
- ✓ **Adoption by the identified agencies**
- ✓ **Publish the improvement and progress of the 5 year initiative.**

GDCM Strategy Implementation Projects



P1: iDISCOVER
Discovery study to understand feasibility of the model and requirements for alternate hosting



P4: iTRANSITION
Project to deploy human resources across agencies and models as required



P7: iLEARN
Project to provide training to human resources



P2: iTRANSFORM
Project to transform agency data centers into ministry and cross agency DCs



P5. iADOPT
Project to adopt the identified standards



P8: iMONITOR
Project to monitor and report progress



P3: iOPTIMIZE
Project to migrate data from one model to other

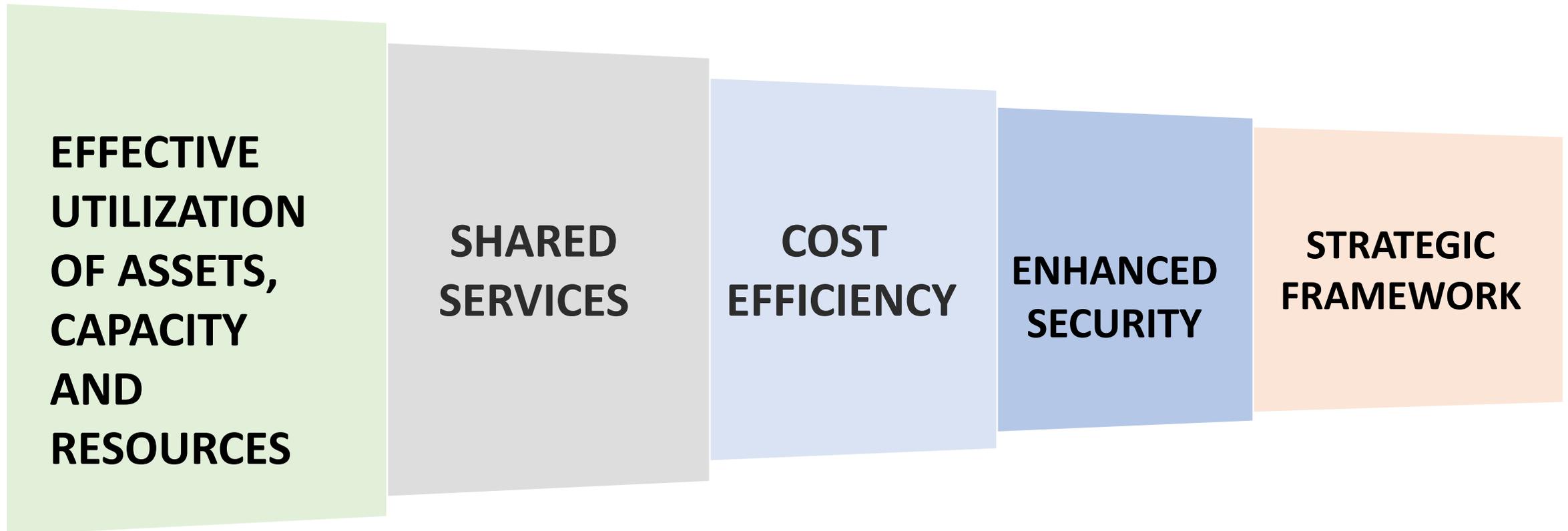


P6: iCHANGE
Project to management change implementation and management

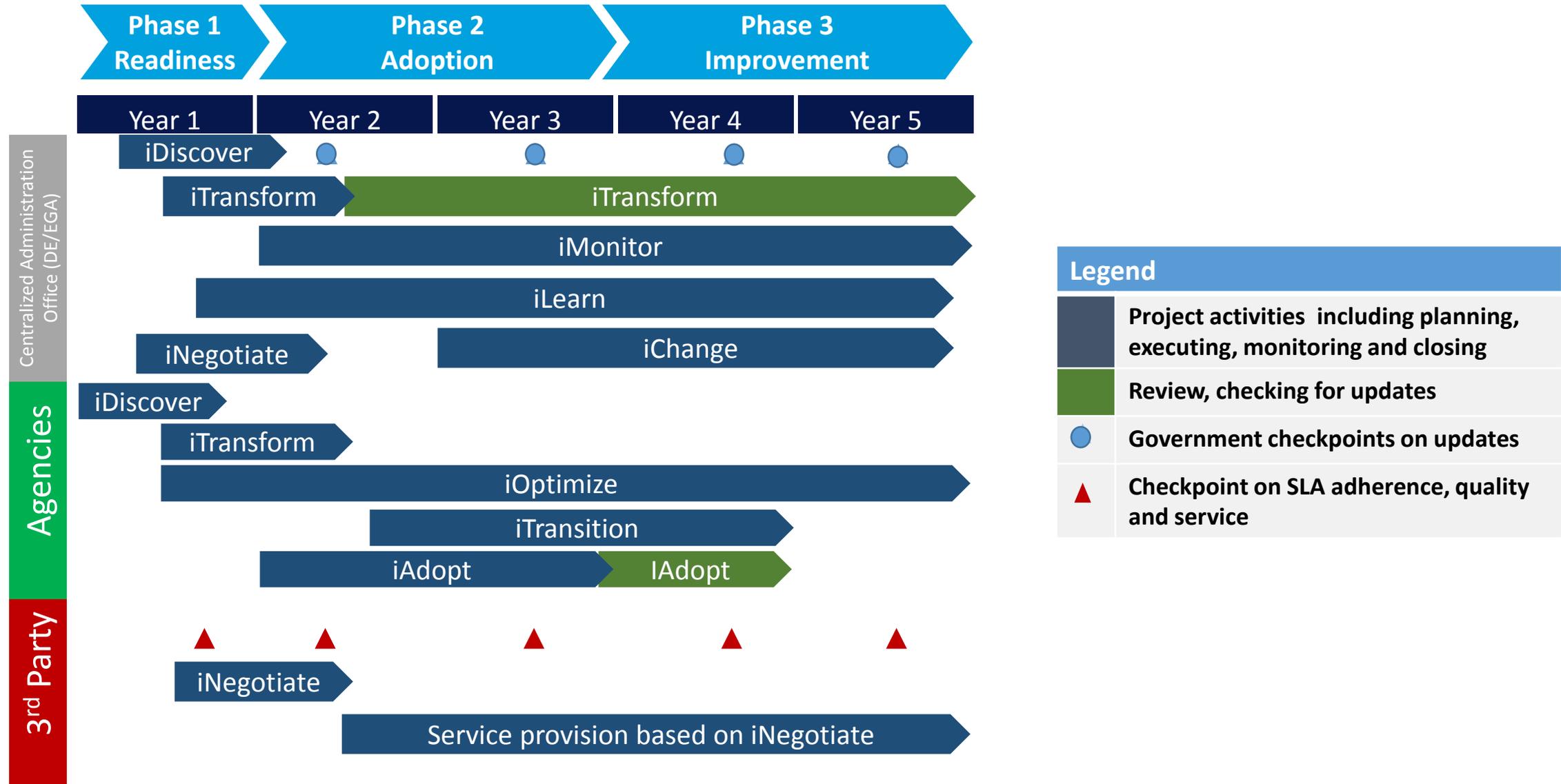


P9: iNEGOTIATE
Progress to negotiate better rates, services, SLAs with 3rd. party

Performance Management of GDCM Strategy



GDCM Implementation Plan (Short Version)



How ministries and agencies will operate in future from data perspective

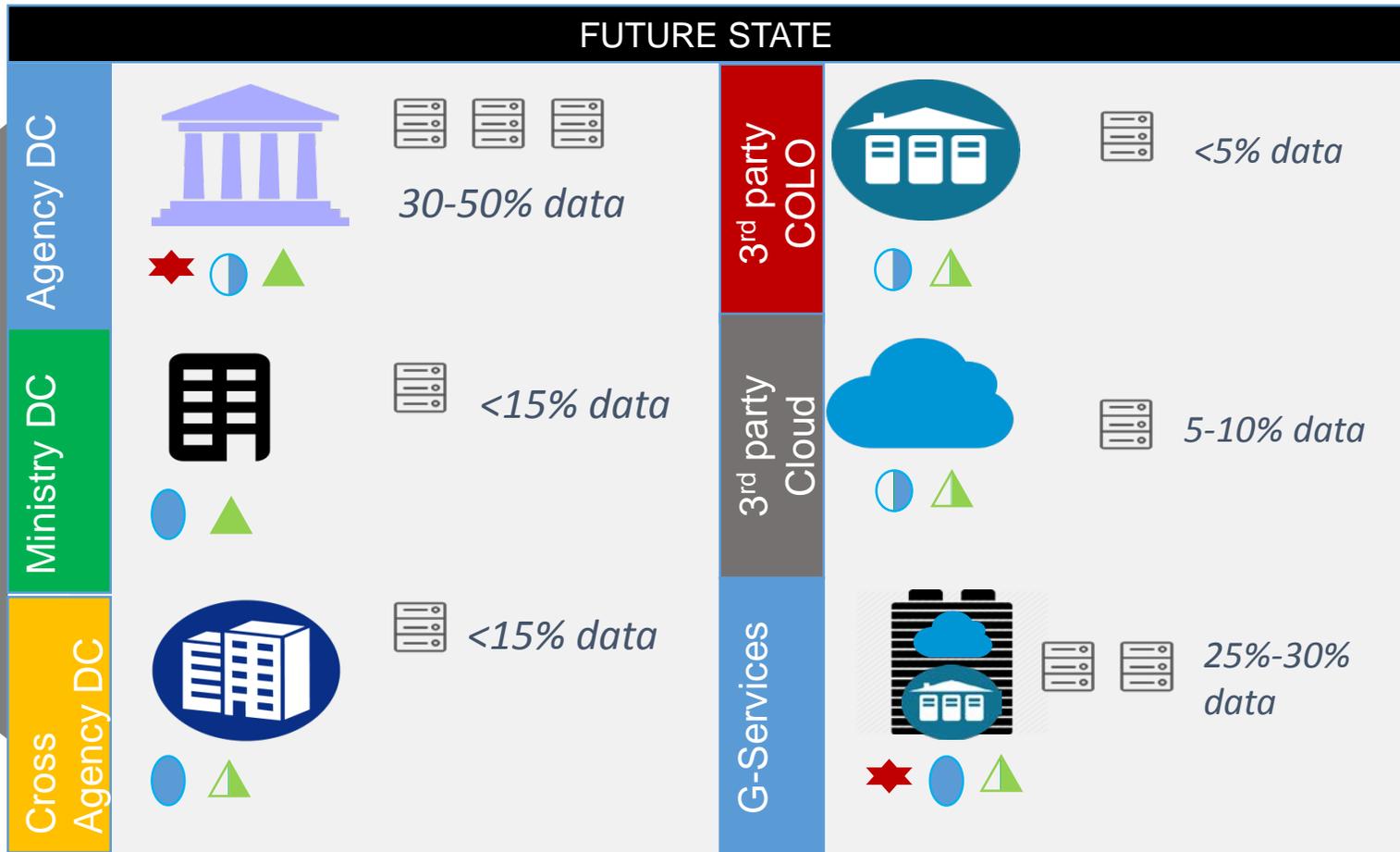
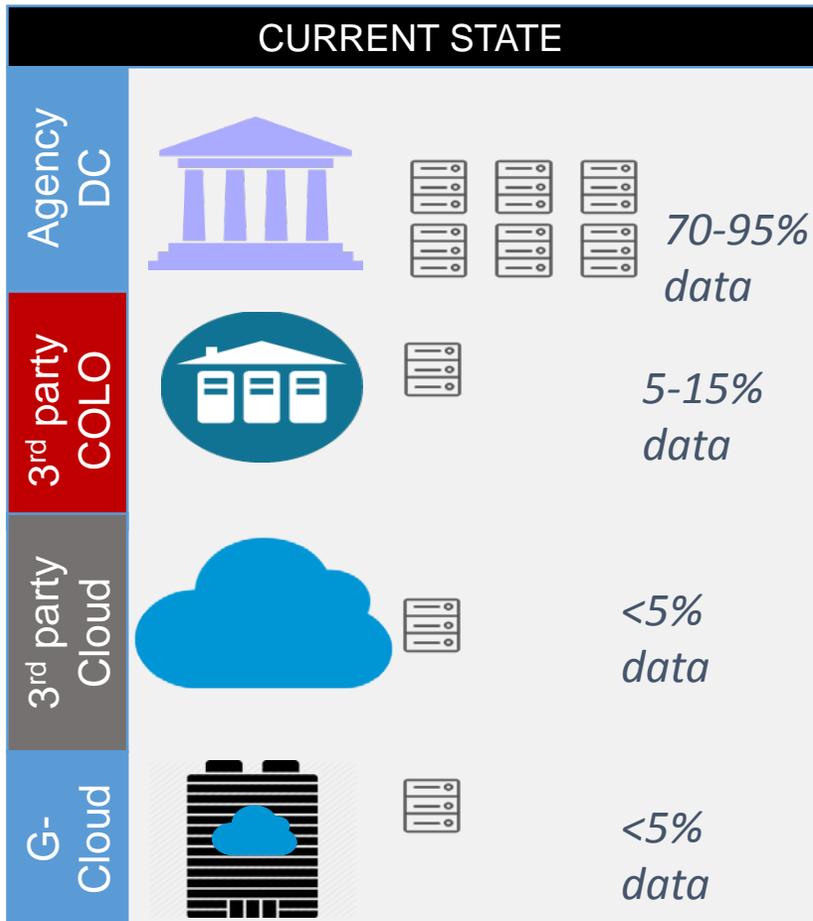
ILLUSTRATIVE

-  High Security
-  Important
-  Public

High total data volume

10-20 Agencies part of Ministry

Mixed Data



How ministries and agencies will operate in future from data perspective

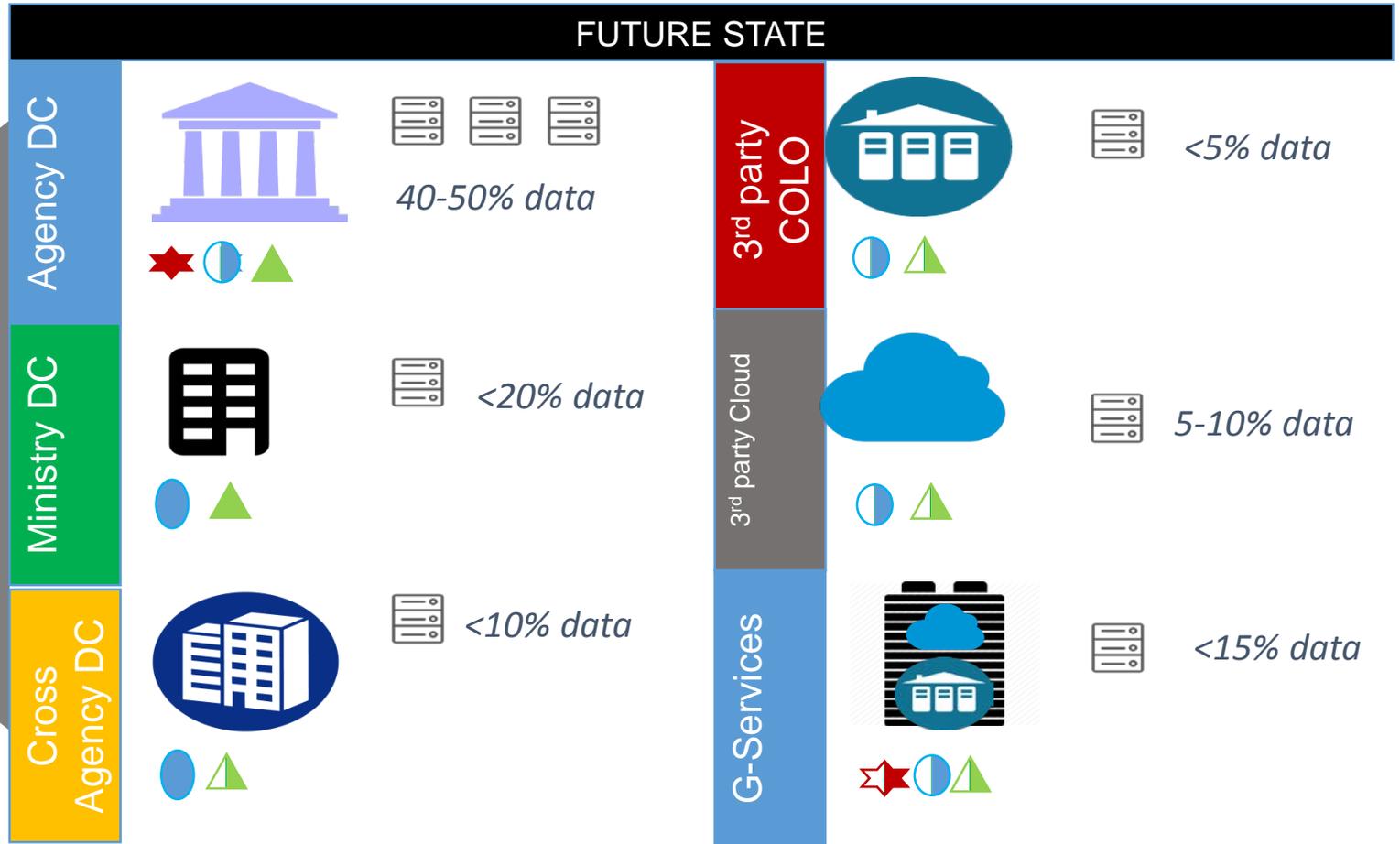
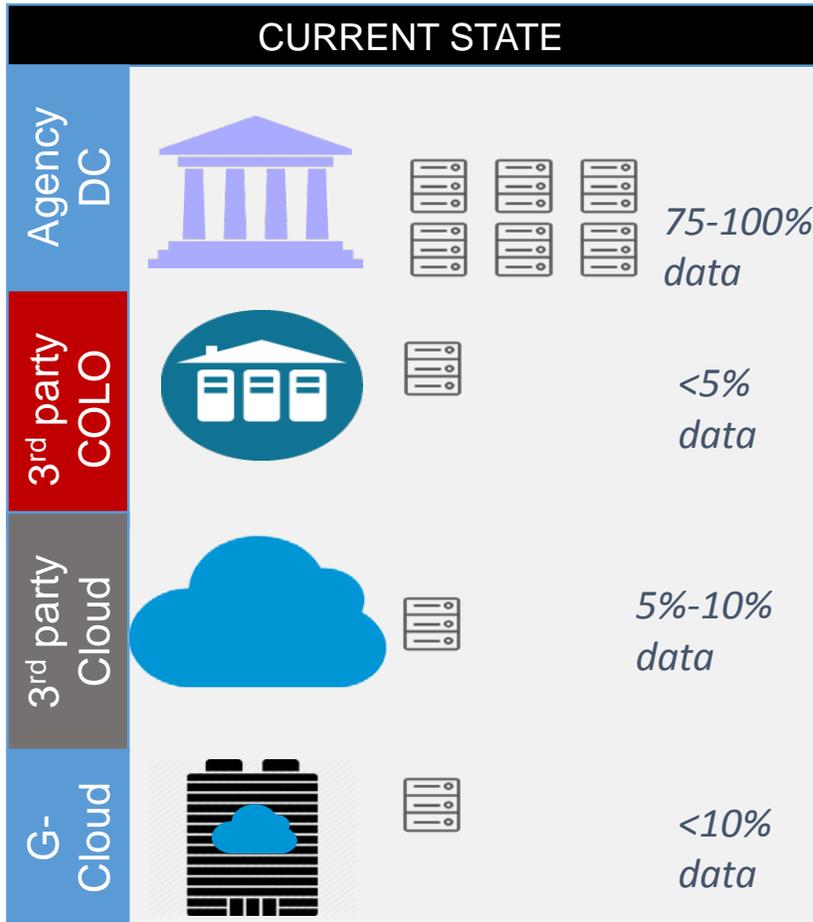
ILLUSTRATIVE

-  High Security
-  Important
-  Public

Medium total data volume

~12 Agencies part of Ministry

Mixed Data



How ministries and agencies will operate in future from data perspective

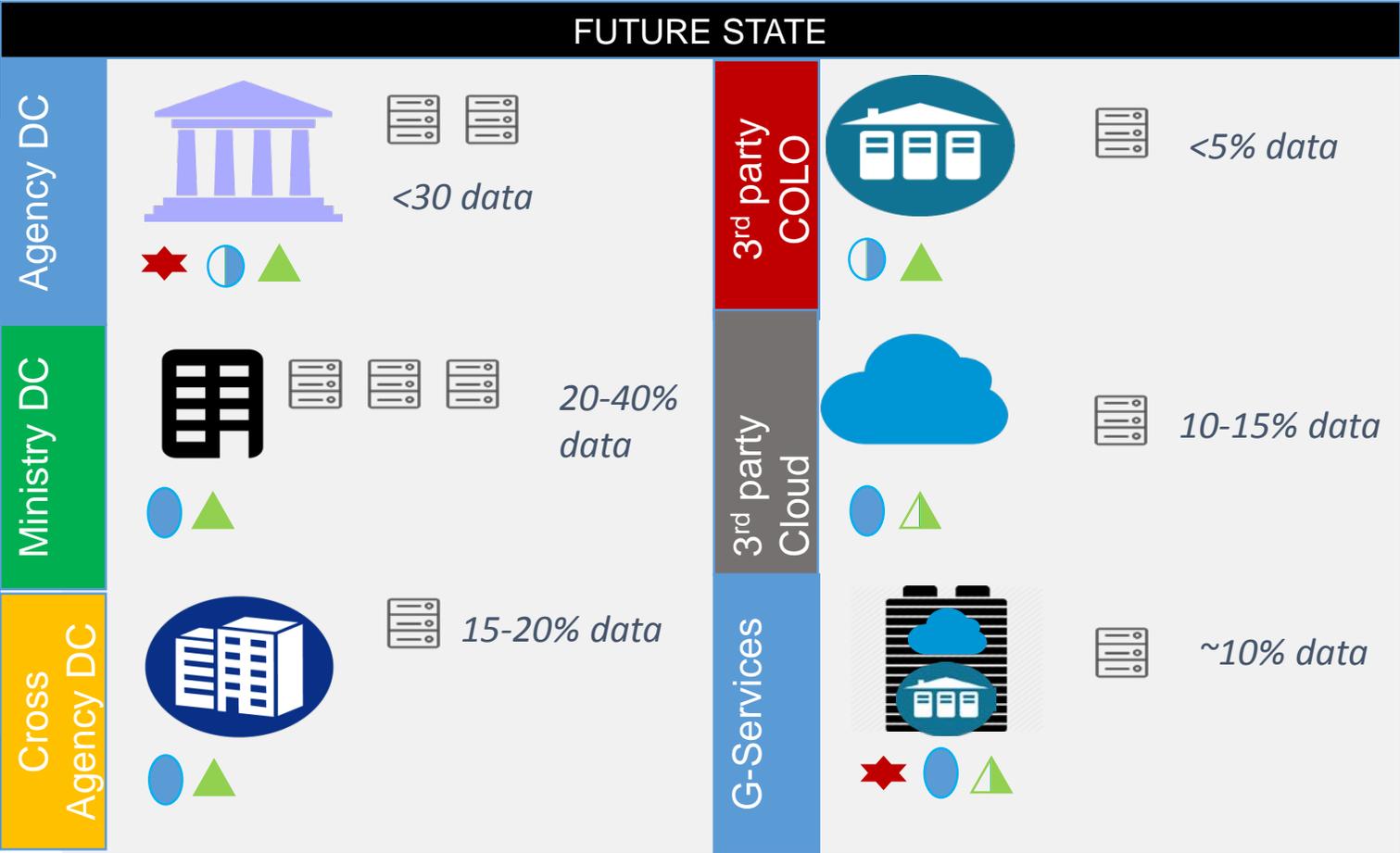
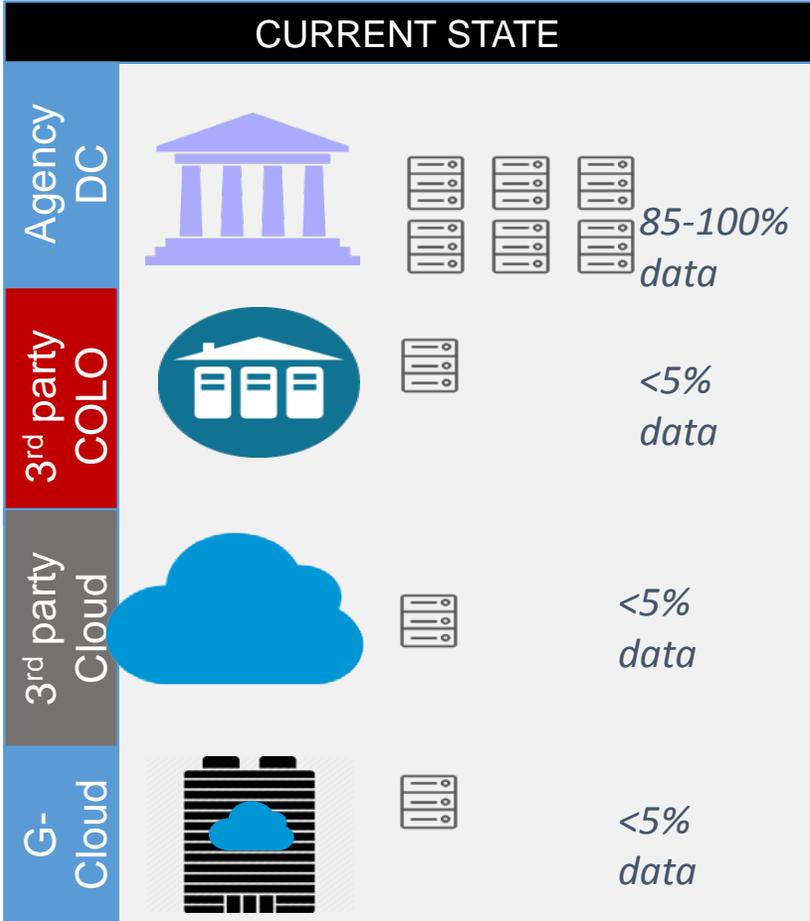
ILLUSTRATIVE

-  High Security
-  Important
-  Public

High total data volume

<5 Agencies part of Ministry

Mixed Data



What are Standards and why are they used?

Standards play an important role in practices and requirements to enable effective management and provisioning of services in the dynamic environment performance



WHAT ARE STANDARDS?

- Standards are universally or widely accepted, agreed upon, or established means of determining what a product, service, facility or a concept is required to be or is required to behave.
- In Data Centers to develop a commitment to operate facilities that meet the rigorous guidelines and compliance needs of global businesses.
- Companies that develop industry standards work with several regulatory and standards organizations to ensure compliance—from operation of the data center to sustainability and environmental regulations.

Why are standards needed?



New technologies like data analytics, big data, Internet-of-Things and venture into smart cities



Data Explosion: f5 Exabyte's of data online in 2002 35 zettabytes in 2021

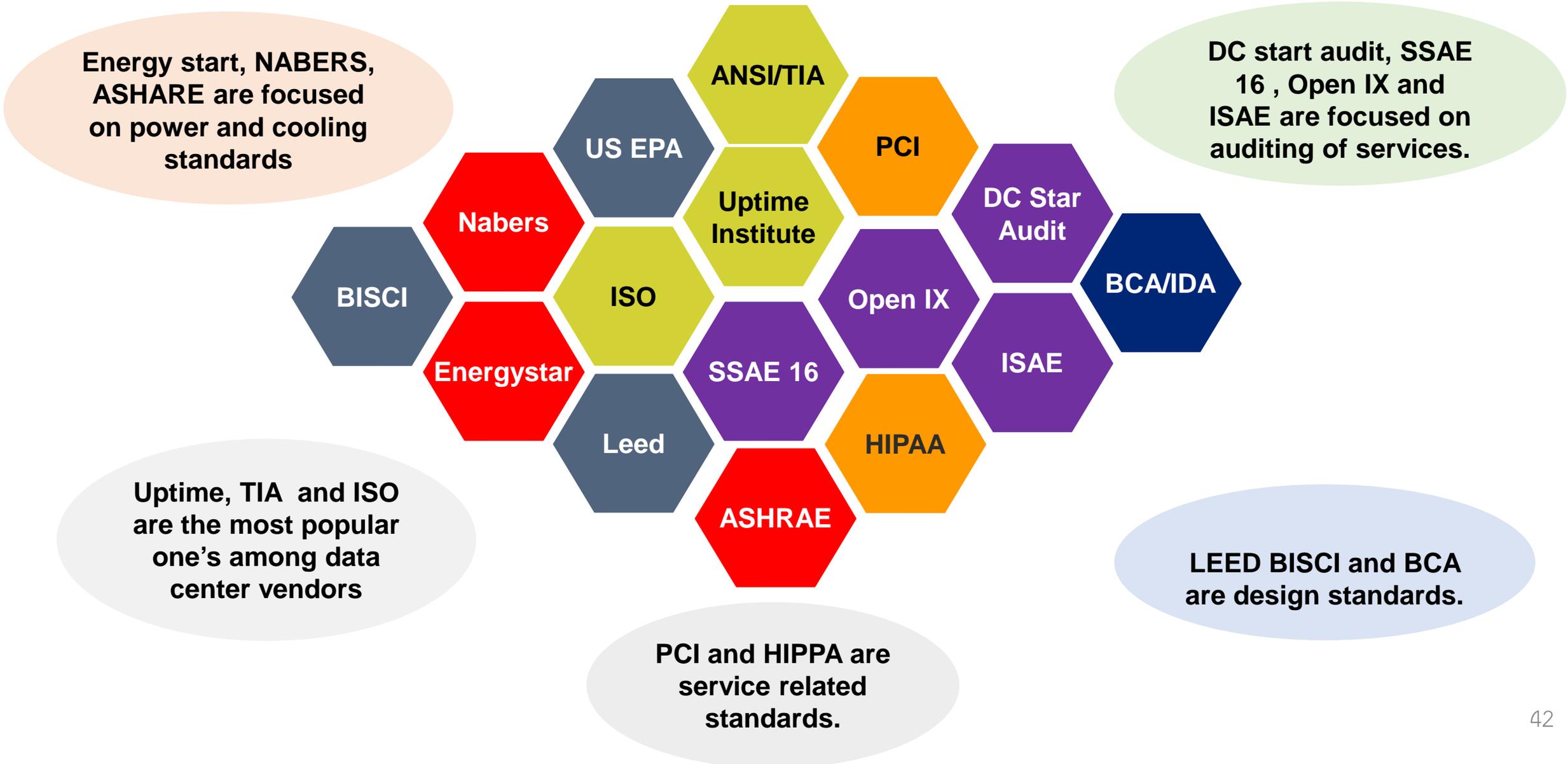


Exceptionally high energy intensity of a data center may be 10 to 100 times of a typical commercial building.



Rising energy prices and growing data center carbon emissions by 7% year-on-year through 2020.

Examples of Data Center International Standards



Standard Adoption

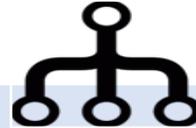
Adoption Insights by Countries

Energy



- US government-PUE
- UK government Green Grid
- Australian government-ASHARE

Design and Structure



- US government uses TIA 942 and BICSI
- Government of Singapore-Threat assessment
- Australian government-Protective Security Policy Framework
- US government recommends-LEED design standards

Server Storage & Utilization



- Singapore government-PTDCI
- Indian government-data center IT infrastructure monitoring tools
- Hong Kong government- Help desk for the data center
- Australian government -Proper backup, storage, and handling of data

Adoption Insights by Countries (Cont.)

Location & Site



- **Government of Canada-** Appropriate selection of the facility site
- **Government of India** accessible and expandable enough.
- **US government** -Ready access to electrical power is available from diverse sources
- **Philippines government-** Data centers should be in a zone where it needs to be free from earthquake and flooding.

Service Level Agreement



- **The Ministry of Electronics & Information Technology of India-** Appropriate Disaster Recovery and Business Continuity Plan.
- **India-** All the state government should have a DR site
- **Multiple governments** recommends using TIA or Uptime.

Relevance and Challenges

Relevance of Standards– Data Center Standards



Efficient data centers

The cost of data center downtime has increased significantly for companies in the last couple of years. . Data center operators in the last couple of year have improved the availability and efficiency of data centers by adopting globally recognized data center standards.



Comparative analysis

By providing a common method of comparison, standards help insulate customers from the need to make their decisions on solely on the basis of the claims of a provider..



Cost Optimization

Adopt industry standards recognized technologies would help in reducing overall efficiency of data center support functions. This would help in reducing the overall costs



Environmental Impact

By adopting the data center industry best practises(using renewable energy and efficient data center), the companies are able to reduce the impact on the environmental

Key Challenges – Data Center Standards



Expensive to adopt

One of the biggest challenges faced by the data center operators is that the standards are expensive to adopt. The standards offer guidelines for operating and maintaining the data center efficiently. Adopting these best practices comes at a big price tag



Long list for data center standards

Over the years, the number of standards have increased at very fast pace globally. It is challenging for data center operators to choose between which standards to use and which not to use.



Lack of people with standards knowledge

As the list of standards is quite long, there is lack of people with skills that have data center standards knowledge. As there is scarcity of such people, it is challenging for data centers to adopt standards



Lack of people with operational knowledge

Once the data center standards are adopted, another challenges that comes into place is maintaining the standards. There is lack of people who have knowledge on how to maintain the data center standards. This is also a big challenge for data center operators.

Key Challenges – Data Center Standards



Budget is big issue for standards adoption

Most of the government agencies have fixed budgets and these budgets are not much flexible to cover the standards expenses.



Many data center operators are still using legacy infrastructure

Most the data center operators in Thailand are running their data center on legacy infrastructure and legacy buildings. Adopting standards for these data centers would not be easy.

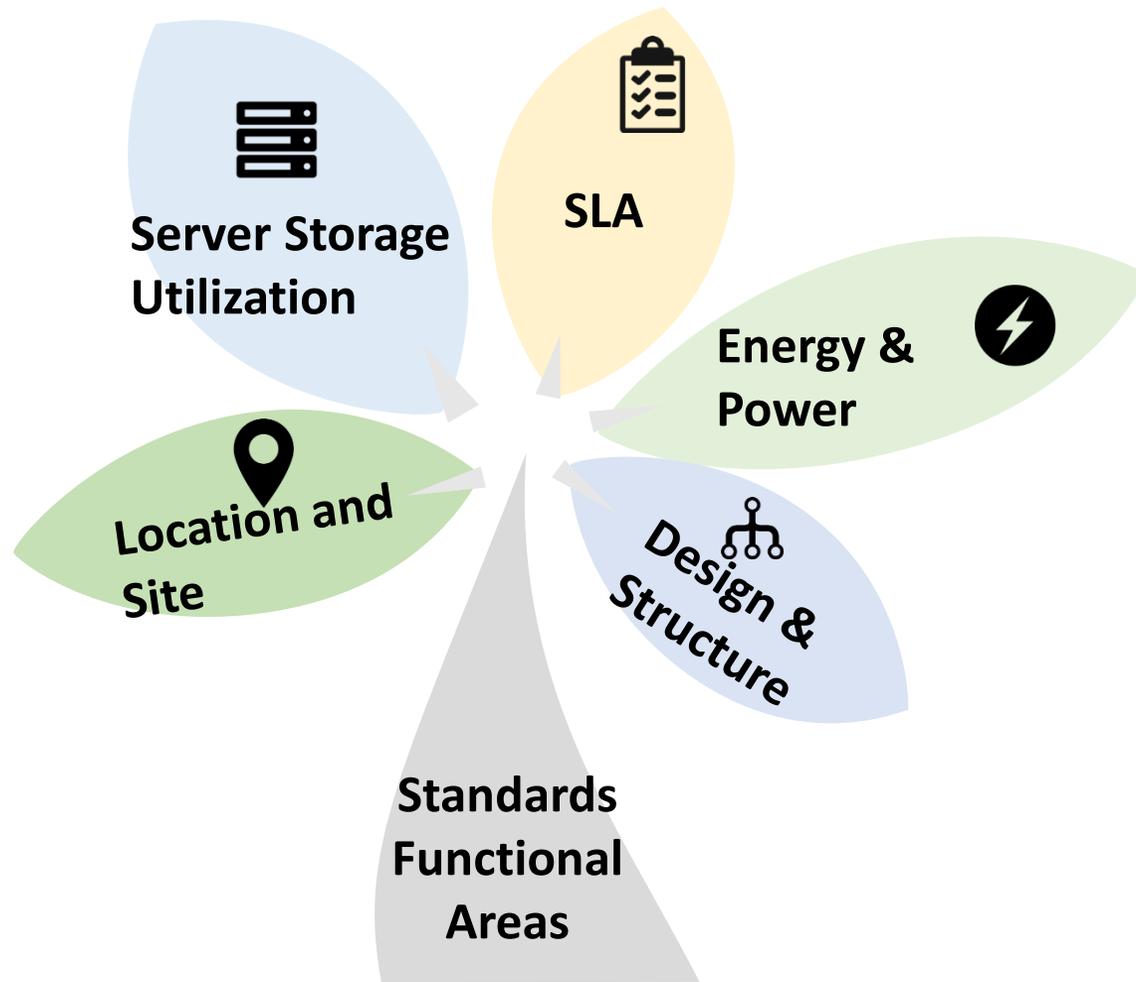


Data center operators are not experienced enough

Data center operators are not mature enough to understand value behind the adoption of data center standards.

Standard functional areas

Data Center Standards by Functional Areas



- Energy and Power :** This standard deals with measuring the energy consumed by equipment in data center.
- Server Storage Utilization:** This standard deals with utilization, monitoring of rates of IT infrastructure
- Service level Agreements :** This standards deals with defining the availability of data center services.
- Location and Site:** This Standard deals with the ideal location of data centers
- Design and Structure:** This standard deals how the data centers should be designed.

Data Center Standards by Functional Areas (Cont.)

Server Storage & Utilization



- ✓ Energy is one of the most important components in data centers.
- ✓ Data Centers consume an immense amount of power to perform functions reliably and effectively.
- ✓ The electrical costs in Data Centers typically accounts for 40-60% of the total operating costs.

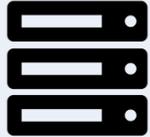
Location & Site



- ✓ The data center is home to the computational power, storage, and applications necessary to support an enterprise business.
- ✓ The data center infrastructure is central to the IT architecture, from which all content is sourced or passes through.
- ✓ Proper planning of the data center infrastructure design is critical, and performance, resiliency, and scalability need to be carefully considered.

Data Center Standards by Functional Areas (Cont.)

Server Storage & Utilization



- ✓ The data centers are equipped to host / co-locate systems (e.g. Web Servers, Application Servers, Database Servers, SAN, and NAS etc.) to host applications at the data center to use the centralized computing power.

Location & Site



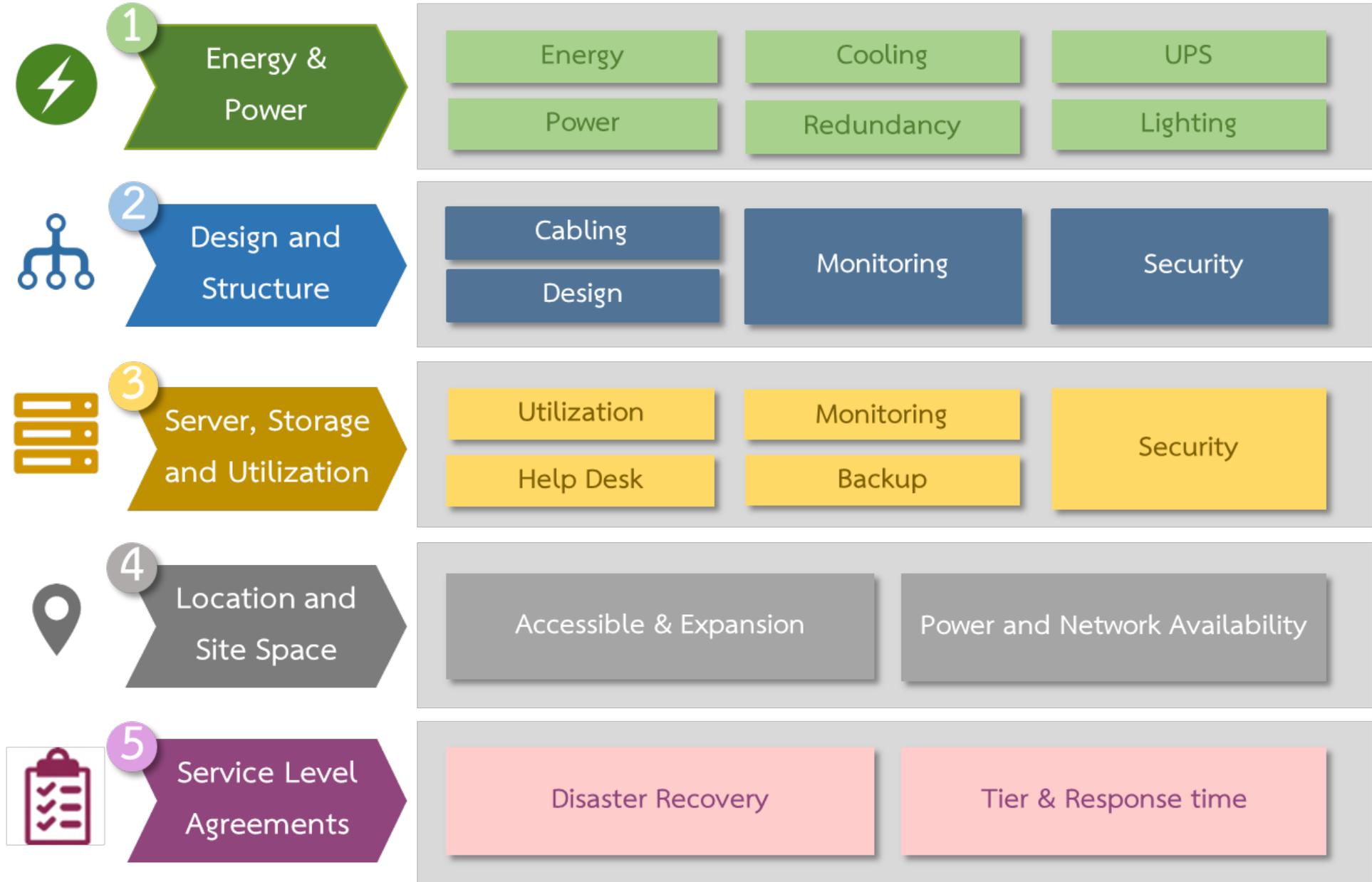
- ✓ Determining the location of a data center is one of the crucial decisions for a company as it is based on strategy and goals of a company or government.
- ✓ Site selection plays an important role for the same as it will have direct impact on cost and TCO.

Service Level Agreement



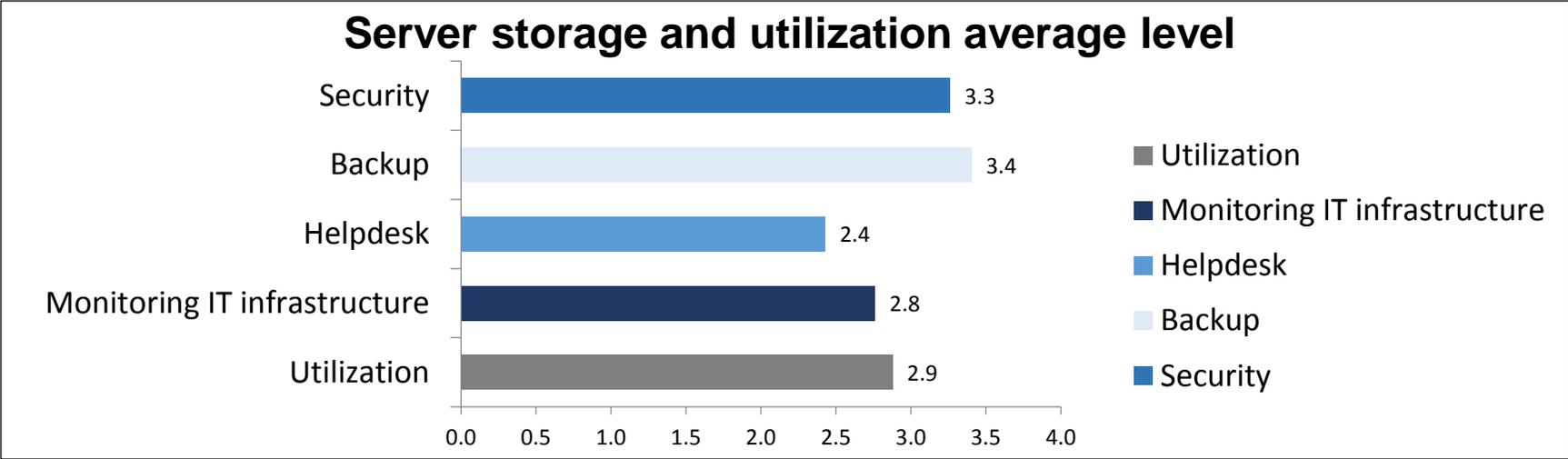
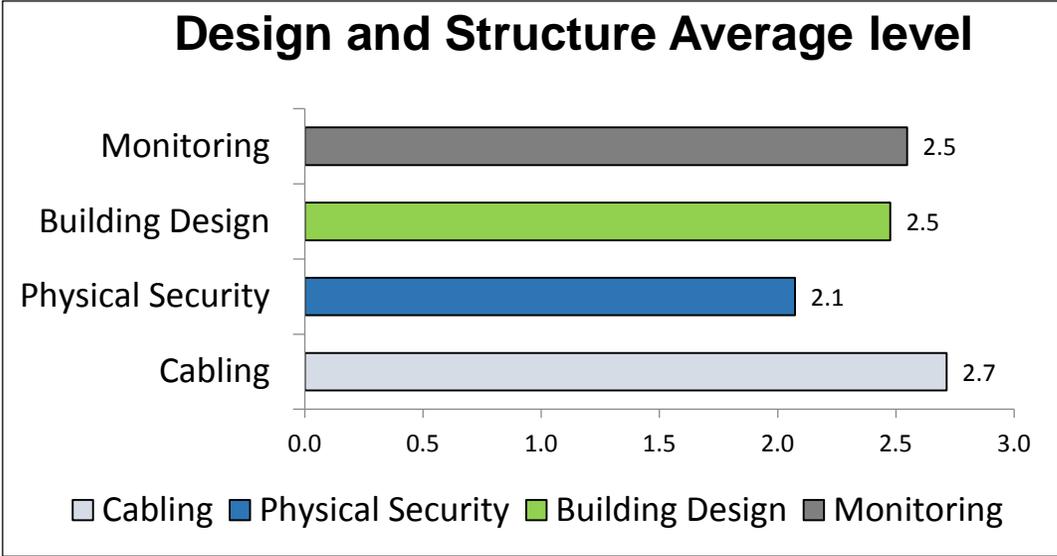
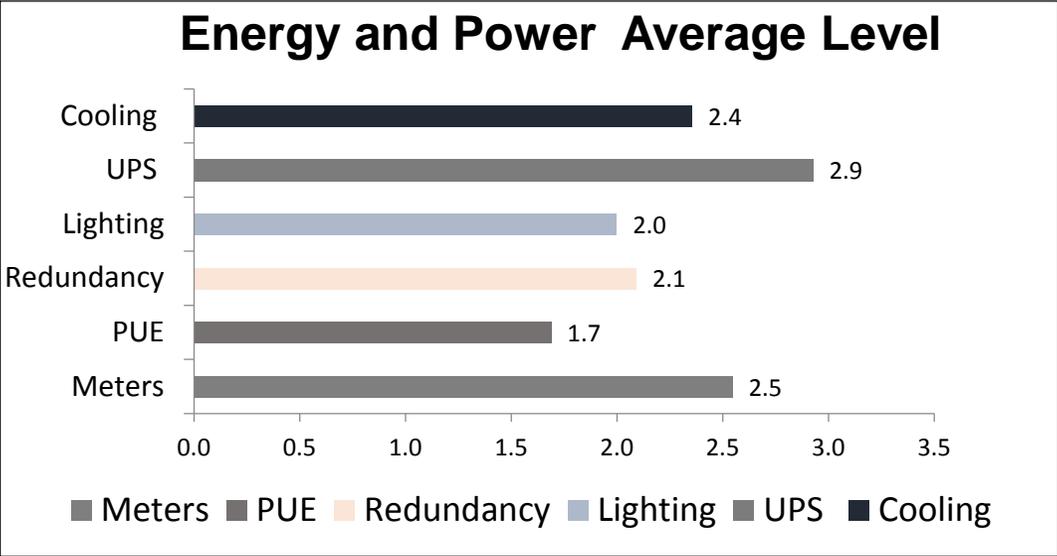
- ✓ End-to-end service availability of the data center and its independent monitoring is the prime requirement to have reliable, seamless, smooth delivery of the services to the citizens.

Data Center Standards Divided Further into Sub Parameters



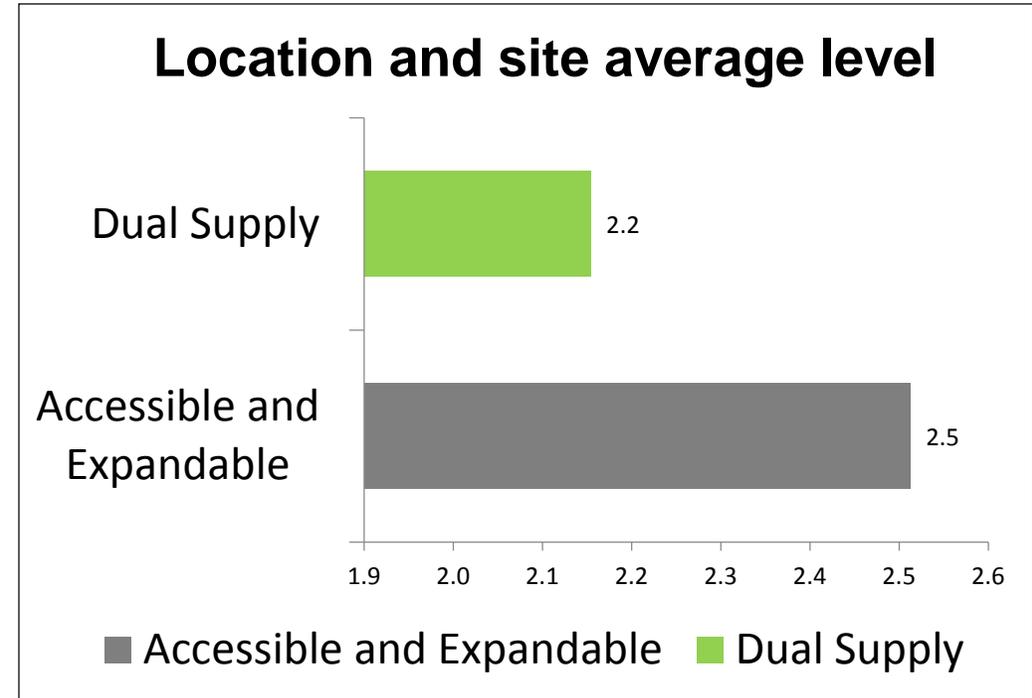
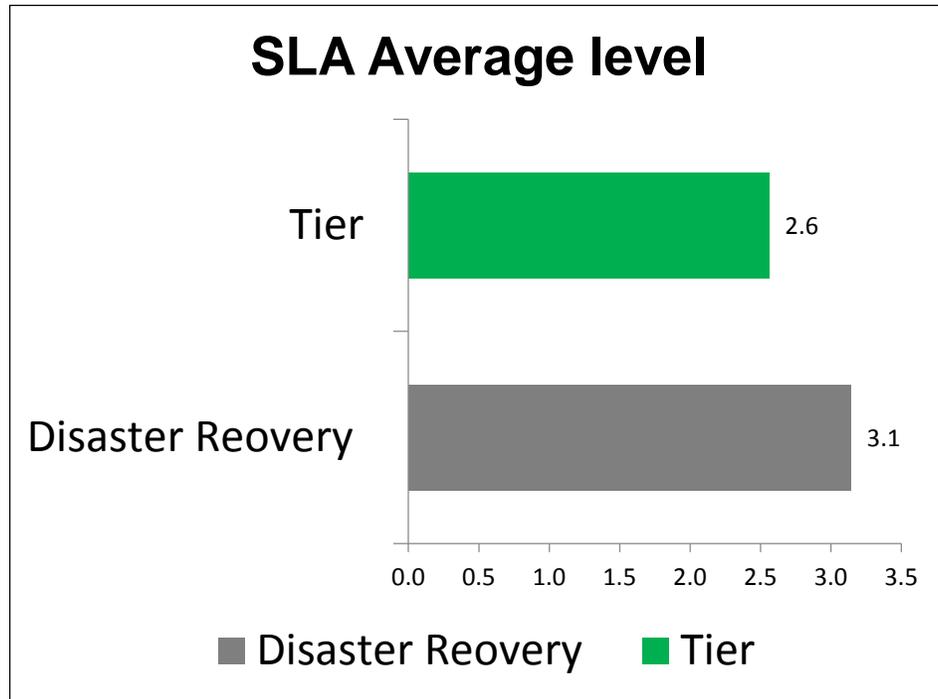
Agencies Current and Future Level for Standards

Current State of Agency Data Centers



Remark: Please refer to Word document for description of Average Level

Current State of Agency Data Centers (Cont.)



Remark: Please refer to Word document for description of Average Level



Future Recommended State of Agency Data Centers



Frost & Sullivan Future Recommended Level

Standards	Our Analysis Agency DC Level	Our Analysis Ministry DC Level	Our Analysis Cross DC Level	Our Analysis G services Level
Energy consumption				
Power usage effectiveness				
Redundancy				
Lighting				
UPS				
Cooling				
Color Coding				
Security Assessment				
Building design				

*** The chart that has been designed for the future standard adoption for government agencies. These are minimum standards that any agency should adopt and any agency having high security data should higher level of standards.**

Future Recommended State of Agency Data Centers (Cont'd)

 (Levels) Five Four Three Two One	Frost & Sullivan Future Recommended Level			
Standards	Our Analysis Agency DC Level	Our Analysis Ministry DC Level	Our Analysis Cross DC Level	Our Analysis G services Level
Monitoring				
Utilization & Virtualization				
Monitoring IT infrastructure and software				
Help desk				
Backup				
Security for IT infrastructure and data				
Accessible and expansion				
Power and network availability				
Disaster recovery				
Tier and Response time				

Service Level Agreements

3rd Party SLA - Key Elements

01

➤ It will state the business objectives to be achieved in the provision of the services.

02

➤ It will describe in detail the service deliverables.

03

➤ It will define the performance standards the customer expects in the provision of the services by the service provider.

04

➤ It will provide an ongoing reporting mechanism for measuring the expected performance standards.

3rd Party SLA - Key Elements (Cont.)

05



It will provide a remedial mechanism and compensation regime where performance standards are not achieved

06



It will provide a mechanism for review and change to the service levels over the course of the contract.

07



Ultimately it will give the customer the right to terminate the contract where performance standards fall consistently below an acceptable level.

Colocation SLA Main Elements

Service description

Power	Network	Cooling
Fire	Service Reporting	Physical Security
Racks	Floor and Caged Space	Remote Hands

Service Level Metrics

Power SLA	Network SLA	Cooling SLA
Fire	Availability	Response Time

General Metrics

Maintenance	Customer Responsibilities	Terms and Conditions
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3rd Party Cloud Computing SLA - Key Elements

Service details

IaaS

PaaS

SaaS

Deployment Models

Public Cloud

Private cloud

Hybrid Cloud

Service level Metrics

Service Availability

Service Credit

Service Reporting

3rd Party Cloud Computing SLA - Key Elements (Cont.)

Data policies

Data Privacy	Data security and Integrity	Data compromise response
Data Retention and disposal	Data transfer upon termination	Data location

Other Generic metrics

Interruptions	Support	Service Correction
Trainings	Transition assistance	Invoicing
Terms and termination	Warranties and covenants	Audit

Summary

- **Data Center Modernization is a global need which most governments across the globe are adopting in different capacities.**
- **Thailand will go through a massive need for data center infrastructure in years to come due to increase in data, population and economic growth.**
- **Thailand data infrastructure need a modernization strategy to make it agile, secured, cost effective and efficient ecosystem.**
- **GDCM enables agencies to choose from 6 available options to support their data infrastructure: Agency Own Data Center, Ministry Data Center, Cross Agency Data Center, 3rd Party Colocation/Physical Hosting, 3rd Party Services and G-Services.**
- **Establishment of 6 models based on standards as well as strategy will ensure improved performance for agencies and reduced overall spending.**
- **Proposed Standards comprised of 5 domains: Energy & Power; Design and Structure; Server, Storage and Utilization; Location and Site Space; and SLA with 19 element.**
- **GDCM is an initial 5-year plan consisting of 9 projects to drive long-term plan.**

Thank you