BIG DATA INSTITUTE

Thailand National Big Data Utilization Strategy Plan (2025-2027)

Big Data Institute (Public Organization)

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Executive Summary

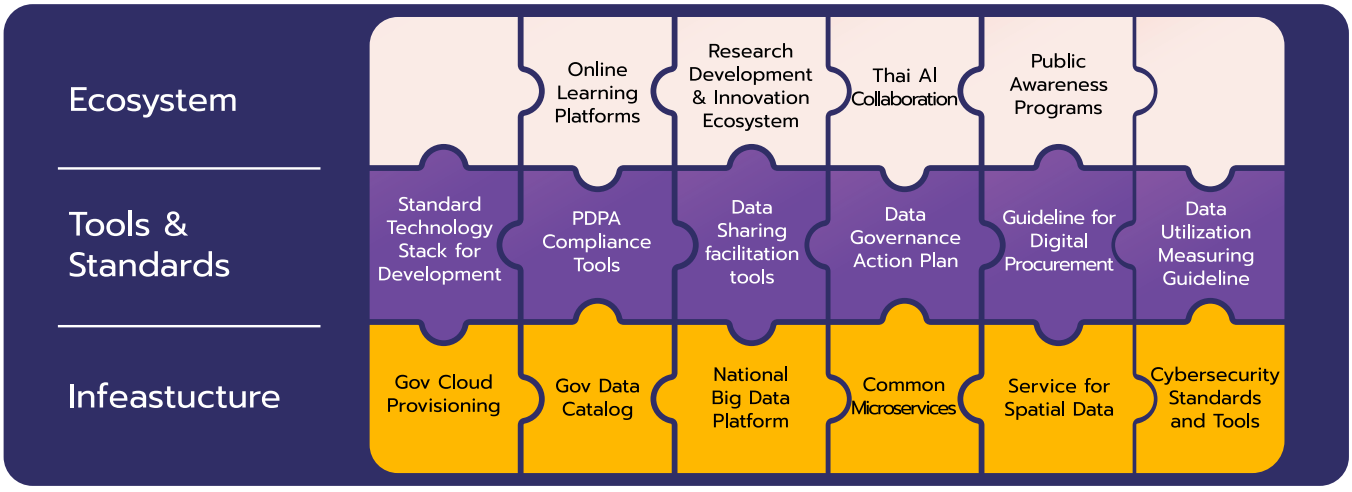
One of the key factors driving economic and social development in the digital era, creating value, efficiency, and a leap in competitiveness, is data. Data has become an increasingly significant production factor. As various sectors transition to digital operations and services, massive amounts of data are generated. Such large volumes of data, if managed, systematically stored, structured, linked, exchanged, and applied according to needs, will form Big Data that can be used analytically to improve and enhance operational efficiency as well as policy or strategic decision-making.

For Thailand, over the past half-decade, the government has placed increasing emphasis on data-related issues. It has initiated policies, frameworks, and regulations concerning the management and utilization of the country's data. Specifically, the establishment of an agency tasked with promoting and supporting the application of Big Data for policymaking, service improvements, and enhancing the quality of life of citizens—**the Big Data Institute (Public Organization)**. One of the Institute's missions is to develop the **Thailand National Big Data Utilization Strategic plan** to be presented to the Cabinet. This plan serves as a roadmap for driving the application of Thailand's data resources, detailing goals, strategies, measures, expected outcomes, and a clear, measurable implementation timeline.

The **Thailand National Big Data Utilization Strategic plan**, developed for the first time in Thailand, covers a 3-year implementation period (2025-2027). In preparing this Strategic Plan, the **Big Data Institute (Public Organization)** has studied and analyzed key challenges critical to the development and utilization of Big Data in Thailand, which include the following issues:

key challenges critical to the development and utilization of Big Data in Thailand		
Thailand's Big Data is stored in a decentralized manner across multiple agencies.	The country's laws and regulations regarding the disclosure of digital data to the public do not cover high-value data.	Budgets for implementing projects to link data, develop platforms, and improve systems are insufficient and inconsistent.
There is a shortage of skilled data specialists in Thailand, and the public has limited knowledge about data and technology.	The utilization of Big Data in Thailand has not yet been effectively applied at the local level.	Data regarding the use of open data and information has not been systematically collected, resulting in a lack of successful model examples.
Cybersecurity and personal data protection concerns may impact the willingness to consent to data-related operations.	There is a risk of technological sovereignty loss, as Thailand tends to adopt technologies from leading technology countries rather than producing and exporting its own technologies.	

In addition, the current state of Big Data development, along with the challenges and limitations that Thailand is currently facing, have been considered. This has led to the formulation of key guiding principles for developing the **Thailand National Big Data Utilization Strategic plan (2025-2027).** It states that for the effective, efficient, and impactful utilization of Big Data—creating positive economic and social impacts on a broad scale—the government must establish fundamental components that serve as the building blocks for a data-driven economy and society. These components are illustrated as interlocking puzzle pieces below, which consist of:



The essential infrastructure for linking, exchanging, and providing data services, enabling various agencies to utilize the data immediately. This will facilitate the development and extension of services to users across different sectors conveniently and quickly.

Tools and standardized approaches appropriate for database development and data management at various stages, ensuring the full utilization of data potential while maintaining compliance with relevant data governance regulations, including technical aspects, data security, and protection of various data types.

An ecosystem that supports the application of Big Data to create economic and social benefits across various use cases. Measures must be in place to promote stakeholders within the data ecosystem, from upstream to downstream. This includes research and development of innovations and services, promotion of the data and artificial intelligence industries, and capacity-building for the workforce on both the demand and supply sides.

The aforementioned guiding principles are critical considerations used by the Big Data Institute in formulating strategic issues, measures, and success indicators that must be implemented to achieve the goals and vision of the Thailand National Big Data Utilization Strategic plan (2025-2027). The vision of this plan is: *"Harnessing the Power of Data for Inclusive Growth and Well-Being."*

The Strategic Plan sets three main objectives:

1. To enable the use of data for planning and decision-making (Enabling Data-driven Decision and Planning).
2. To drive economic growth through data utilization (Thriving Data Economy).
3. To promote AI-enabled data services (Promoting AI-enabled Data Services).

The plan comprises four strategies and various tactics under each strategy to achieve its objectives. The details are as follows:

Key Performance Indicators (KPIs)

Indicators	Unit	Target Value		
		2025	2026	2027
BD1 : The growth rate of economic value resulting from the utilization of Big Data through Big Data systems/platforms for decision-making in policy, public sector planning and management, and the establishment of rules/measures for economic and social development by government agencies. Additionally, this includes promoting the use of Big Data and artificial intelligence innovations in the private sector and among the public to enhance business operations and improve quality of life.	Percentage (compared to the previous year)	32	35	35
BD2 : The ranking under the sub-factor "Use of Big Data and Analytics" under the Future Readiness factor of the World Digital Competitiveness Ranking (WDCR) by IMD.	Rank	28	27	25

Strategy 1

Developing Required Infrastructure for Big Data Utilization

The implementation under Strategy 1 is focused on developing the necessary infrastructure for efficient data integration and analysis, which requires collaboration among government agencies in the digital sector. The details of the indicators, target values, and key measures under Strategy 1 are as follows:

KPIs and Target Value: Strategy 1

Indicator	Unit	Target Value		
		2025	2026	2027
IT: Readiness level of Infrastructure and Tools* for utilizing big data	Percentage and Readiness level	50% (Readiness at level 3)	50% (Readiness at level 4)	70% (Readiness at level 3)

Note.: * Infrastructure and tools consist of 12 components. Therefore, 50% corresponds to 6 components, and 70% corresponds to 8 components. The descriptions for readiness levels 1–4 are as follows:

Level 1: The project/plan is in the process of being developed.

Level 2: The project/plan has been approved, including budget allocation (if necessary), for implementation.

Level 3: The outputs from the project/plan have been partially achieved, but further development is required to reach a level where they can be operationalized or provided as services.

Level 4: The outputs are fully operational or being provided as services.

Key measures for driving Strategy 1

- Developing National Big Data Platform
- Enhancing readiness of basic infrastructure for data utilization

Strategy 2

Promoting the utilization of infrastructure to address key development issues of the country

The implementation under Strategy 2 is focused on promoting the utilization of infrastructure to address key national development priorities, including both sector-based and agenda-based initiatives. The goal is to enable government agencies to effectively adopt the developed infrastructure to establish data systems, artificial intelligence, and analytical data applications in a systematic and efficient manner. The details of the indicators, target values, and key measures under Strategy 2 are as follows:

KPIs and Target Value: Strategy 2

Indicator	Unit	Target Value		
		2025	2026	2027
VA: The number of sectors/industries/issues with data integrated from relevant agencies into the government's big data system or platform for economic and social utilization at the national level.	sectors/ industries /issues (Cumulative from previous years)	6	8	10

Key measures for driving Strategy 2

- Action Planning for Data Utilization
- Developing a Framework for Data Integration and Analysis

Strategy 3

AI Development and Utilization

The implementation under Strategy 3 is focused on establishing the foundation for Thailand's artificial intelligence (AI) technology infrastructure and data innovation. This foundation aims to support further development, facilitate the application of AI-powered data services, and enable their provision in ways that enhance quality, improve efficiency, and create value added. The details of the indicators, target values, and key measures under Strategy 3 are as follows:

KPIs and Target Value: Strategy 3

Indicator	Unit	Target Value		
		2025	2026	2027
AI1 : The growth rate of the number of AI model service providers in the country, encompassing both startups and established companies providing AI services.	Percentage (compared to the previous year)	10	15	20
AI2 : The growth rate of the number of organizations utilizing AI innovations, including government agencies, businesses, and new enterprises	Percentage (compared to the previous year)	10	10	10

Key measures for driving Strategy 3

- Creating a Data Service Platform for AI Development
- Promoting AI-Enhanced Public Services
- Promoting AI Adoption in Industry

Strategy 4

Manpower in Big Data and AI

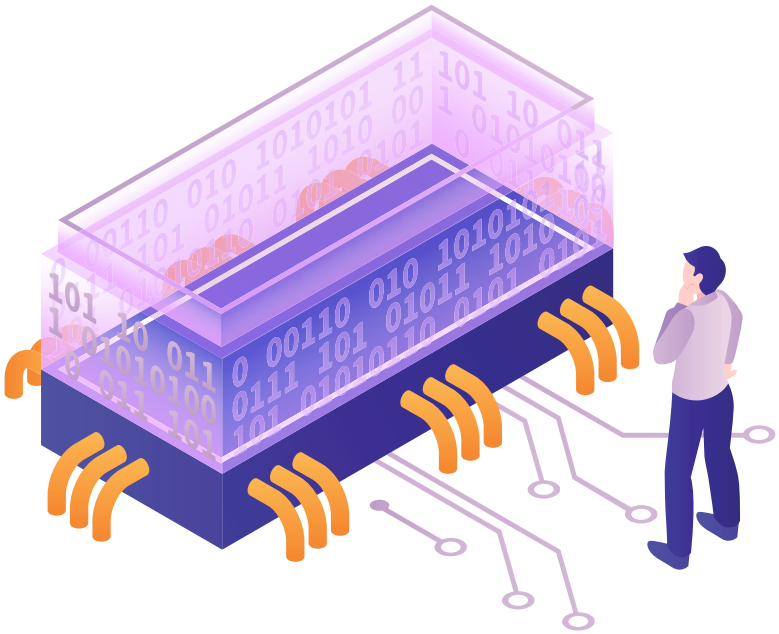
The implementation under Strategy 4 is focused on developing a foundation of human capital by enhancing competencies to ensure sufficient knowledge in data-related fields. This will enable the effective utilization of technology, innovation, and data to its full potential. The details of the indicators, target values, and key measures under Strategy 4 are as follows:

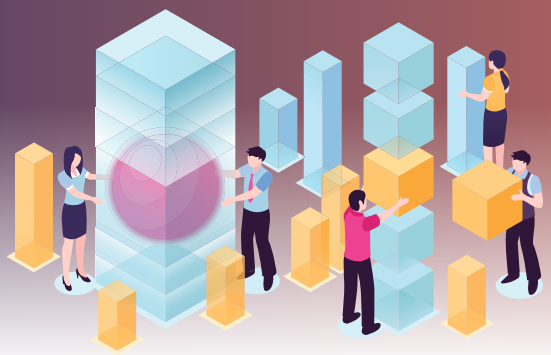
KPIs and Target Value: Strategy 4

Indicator	Unit	Target Value		
		2025	2026	2027
MA: The number of participants in training or knowledge enhancement programs on Big Data and AI, both offline and online	People (Cumulative)	100,000	130,000	160,000

Key measures for driving Strategy 4

- Developing Thai Content for Data Analysis and AI
- Fostering Platforms for Online Learning
- Fostering Public Awareness and Engagement





Chapter 1 Introduction

One of the key factors driving economic and social development in the digital age—creating value, efficiency, and a leap in competitiveness—is data. Data has increasingly become a critical production factor. As various sectors transition their operations and services into digital formats, this has generated a massive amount of data. If appropriate technologies are employed to support the various stages of data management—ensuring proper, organized, and structured storage that enables linking, exchanging, and diverse applications—it will result in Big Data. Big Data can be utilized for analytical purposes to support decision-making in public policy, private sector business strategies, and improving operational efficiency and services. This ultimately advances economic and social development and improves people's quality of life.

At the same time, in the global context, countries are facing challenges in competing to become regional leaders in data or maintaining their data competitiveness to avoid losing their global role.

For Thailand, in the past half-decade, the government has consistently placed greater importance on data-related issues. Policies, frameworks, and regulations for managing and utilizing national data have been introduced. These include improving public services through digital systems, establishing a central government data exchange, setting data standards and best practices, ensuring data security, protecting personal data, implementing the *Cloud First Policy*, and creating an agency tasked with promoting and supporting the practical use of Big Data. This agency—the *Big Data Institute (Public Organization)*—is responsible for developing a **Thailand National Big Data Utilization Strategic plan**, which will be submitted to the Cabinet. This plan serves as a roadmap to drive the application of Thailand's data resources, with clear goals, strategies, measures, expected outcomes, and a timeline for implementation that can be evaluated effectively.

The **Thailand National Big Data Utilization Strategic plan** developed on this occasion is Thailand's first. It covers a three-year period (2025–2027). In preparing the Strategic Plan, the Big Data Institute (Public Organization) analyzed the state of Big Data development and the key challenges at both the international and national levels. This analysis serves as a basis for assessing Thailand's capabilities and potential and designing approaches to address the challenges and limitations in utilizing data in the country. The key challenges are as follows:

Thailand's Big Data is stored across various agencies according to their mandates, responsibilities, and missions for operations and services. However, these datasets remain disconnected, lacking seamless integration and interoperability.

Thailand's laws and regulations require government agencies to disclose publicly held data in digital formats (Open Government Data). However, this requirement covers only concession contracts, Cabinet resolutions, and laws and regulations related to operations. It does not extend to high-value or other critical data, such as statistical data collected by agencies. This limits the effectiveness of data disclosure, integration, and linkage.

Budgets for various projects are often insufficient and inconsistent, leading to challenges in ensuring continuity. As a result, projects to link data, develop platforms, improve systems, or foster collaborations may lack sustainability and fail to deliver tangible, applied benefits.

The shortage of skilled personnel specializing in data in Thailand hinders integrated database management, development, and data linking. Coupled with the general public's limited knowledge of data, technology, and innovations, this hampers the full utilization of Big Data and artificial intelligence (AI).

The utilization of Big Data in Thailand is not yet effective at the local level. For instance, there is a lack of in-depth spatial resource data or population statistics at the local level, which are critical for policy analysis and decision-making to address localized challenges.

Although some agencies provide open data for relevant sectors to use, they do not track how the data and information are applied. This results in a lack of successful case studies that could be further leveraged to support and guide other agencies.

Cybersecurity and the protection of personal data pose challenges that may affect motivation and willingness to engage in data-related activities. These challenges span data collection, processing, storage, maintenance, linking, and sharing. They also impact the readiness and quality of data across various sectors.

Thailand predominantly adopts technology and innovations from leading technology countries rather than producing technologies for export or providing technological services abroad. This increases the risk of technological sovereignty loss.

From an assessment of the state of Big Data development, along with challenges and limitations that Thailand currently faces, the key guiding principle for formulating the Strategic Plan to Drive Big Data Utilization (2025–2027) was established. It emphasizes that the effective, seamless, and impactful utilization of Big Data to positively influence the economy and society at large requires **the government to provide the fundamental building blocks for a data-driven economy and society:**

[1]The Official Information Act B.E. 2540 (1997) and Digitalization of Public Administration and Services Delivery. Act B.E. 2562 (2019).

Essential infrastructure for data integration, exchange, and services that enables agencies to immediately utilize and develop services for various sectors efficiently and quickly.

Tools and standardized guidelines for database development and data management across all stages, ensuring maximum potential for data usage while complying with relevant data governance regulations, including technical standards, data security, and protection for various types of data.

An ecosystem conducive to applying Big Data for economic and social benefits in diverse ways. Measures are needed to support all stakeholders in the data ecosystem—upstream to downstream. These measures must include research and development of innovations and services, promotion of the data and AI industries, and capacity development for both supply- and demand-side human resources.

The government's role as a provider of these fundamental building blocks for a data-driven economy and society—via a central government agency tasked with developing each component—will reduce the burden and redundancy of resource costs for individual agencies in building their own infrastructure. This includes saving on budgets, personnel, time, and ensuring system quality and standards. Another key reason is to enable the government to control costs and ensure all citizens have equitable access to basic data services under the principles of *inclusiveness and equity.*

The above guiding principles serve as critical considerations for the Big Data Institute in formulating strategic priorities, measures, and success indicators to achieve the goals and vision of the Thailand National Big Data Utilization Strategic plan (2025–2027). The vision of the plan is "Harnessing the Power of Data for Inclusive Growth and Well-Being"

This Strategic Plan consists of three main objectives:

1. Enabling Data-driven Decision and Planning
2. Thriving Data Economy
3. Promoting AI-enabled Data Services

To achieve these objectives, the plan comprises 4 key strategies, each with associated key measures to drive the plan's success.

Furthermore, the Thailand National Big Data Utilization Strategic plan (2025–2027), classified as a Level-3 national plan, aligns with and connects to other relevant national policies and plans, including:

1 Level-1 Plan: The 20-year National Strategy (2018-2037)

- Security
- Competitiveness Enhancement
- Developing and Strengthening Human Capital
- Eco-Friendly Development and Growth
- Public Sector Rebalancing and Development

2 Level-2 Plans:

- The Master Plans under the National Strategy
- The Country Reform Plan
- The National Security Policy and Plan (2023 - 2027)
- The 13th National Economic and Social Development Plan (2023-2027)

3 Level-3 Plans:

- The Thailand Digital Economy and Society Development Plan (2018 – 2037)
- The Digital Government of Thailand Development Plan (2023 – 2027)
- The Digital Economy Promotion Master Plan Phase 2 (2023 – 2027)
- The Strategic Plans on Electronic Transactions (2023 – 2027)
- Thailand national AI strategy and action plan (2022 – 2027)

The alignment of this strategic plan with national plans at all three levels and the Sustainable Development Goals (SDGs) is summarized in the following table.

Plans/Policies	Strategies under the Thailand National Big Data Utilization Strategic Plan (2025-2027)*			
	1	2	3	4
Level-1 Plan/Policy				
The 20-year National Strategy (2018-2037)				
- Security (Addressing and resolving issues impacting national security)	/	/	/	
- Competitiveness Enhancement (Future industries and services: Digital industries, data, artificial intelligence (AI). Infrastructure connecting Thailand to the world: Developing modern technological infrastructure.)	/	/	/	
- Developing and Strengthening Human Capital (Promoting lifelong learning development)				/
- Eco-Friendly Development and Growth (Elevating paradigms to define the nation's future)		/		
- Public Sector Rebalancing and Development (A citizen-centric government that meets demands and provides convenient services. An integrated public administration system guided by national strategy, connecting development at all levels, across all issues, missions, and regions)		/		

Plans/Policies	Strategies under the Thailand National Big Data Utilization Strategic Plan (2025-2027)*			
	1	2	3	4
Level-2 Plans/Policies				
The Master Plans under the National Strategy (2023-2027)				
- 3rd Agriculture		/		
- 4th Future Manufacturing		/		
- 5th Tourism		/		
- 6th Smart City		/		
- 7th Logistics and Digital Infrastructure	/		/	
- 8th Small and Medium Enterprises		/		/
- 11th lifelong learning development				/
- 12th Education				/
- 18th Sustainable Development		/		
- 20th Government		/		
- 23rd Research and Innovation	/	/	/	
The Country Reform Plan				
- Economy		/		
- Public Administration		/		
- Society		/		
- Education				/
The 13th National Economic and Social Development Plan (2023-2027)				
- Milestone 1: Thailand is a leading country in high-value agricultural produce and processed agricultural products		/		
- Milestone 2: Thailand is a sustainable quality-oriented tourist destination		/		
- Milestone 4: Thailand is a high-value medical and wellness hub (Developing a digital and ICT system to support medical services)		/		
- Milestone 6: Thailand is ASEAN's hub for digital and smart electronics industry	/	/	/	
- Milestone 7: Thailand has strong, high-potential and competitive SMEs (Developing a platform to link SME databases and encouraging SMEs to participate in the system)		/		
- Milestone 8: Thailand has smart cities as well as safe and livable regions with sustainable growth	/	/	/	/
- Milestone 10: Thailand is a circular economy and low-carbon society		/		
- Milestone 11: Thailand Can Mitigate Risks and Impacts of Natural Disaster and Climate Change		/		
- Milestone 12: Thailand has a high-capability workforce committed to lifelong Learning and responsive to future developments				/
- Milestone 13: Thailand has a modern, efficient, and responsive public sector		/		

Plans/Policies	Strategies under the Thailand National Big Data Utilization Strategic Plan (2025-2027)*			
	1	2	3	4
National Security Policy and Plan 2023-2027				
- Management of public health emergencies and emerging infectious diseases		/		
Level-3 Plans				
The Thailand Digital Economy and Society Development Plan (2018 – 2037)				
- Build country-wide high-capacity digital infrastructure	/		/	
- Boost the economy with digital technology		/		
- Develop workforce for the digital era				/
- Build trust and confidence in the use of digital technology	/			
The Digital Government of Thailand Development Plan (2023 – 2027)				
- Enhancing digital transformation in government to build resilience and agility and expanding to local government agencies	/	/		
- Promoting ease of doing business and value creation		/		
- Facilitation open government through citizen participation and open government data	/	/		
The Digital Economy Promotion Master Plan Phase 2 (2023 – 2027)				
- Transform human capital for the digital economy and society				/
- Transform traditional economy into high-value digital economy		/		
- Optimize use of digital infrastructure	/			
The Strategic Plans on Electronic Transactions (2023 – 2027)				
- Develop mechanisms and support the use of digital infrastructure and essential ecosystems to enable transactions that generate economic and social benefits.	/			
- Promote the adoption of electronic transaction systems that create economic value for the country		/		
Thailand national AI strategy and action plan (2022 – 2027)				
- Developing infrastructure for sustainable AI development	/		/	
- Increasing human capital and improving AI education				/
- Driving technology and innovation development			/	
- Promoting the use of AI in public and private sectors			/	

Plans/Policies	Strategies under the Thailand National Big Data Utilization Strategic Plan (2025-2027)*			
	1	2	3	4
เป้าหมายการพัฒนาที่ยั่งยืน (SDGs)				
Goal 2: Zero hunger		/		
Goal 4: Quality education				/
Goal 5: Gender equality				/
Goal 6: Clean water and sanitation		/		
Goal 8: Decent work and economic growth		/		
Goal 9: Industry, innovation and infrastructure	/	/	/	
Goal 11: Sustainable cities and communities	/	/		
Goal 12: Responsible consumption and production		/		
Goal 16: Peace, justice and strong institutions	/			

Note. * Strategy 1: Developing Required Infrastructure for Big Data Utilization
Strategy 2: Promoting the utilization of infrastructure to address key development issues of the country
Strategy 3: AI Development and Utilization
Strategy 4: Manpower in Big Data and AI

The detailed alignment and linkages of this strategic plan with national plans at all three levels and the Sustainable Development Goals (SDGs) are provided in Appendix 1

Chapter 2 Guiding Principles for Infrastructure Development to Utilize Data and Artificial Intelligence

The development of analytical data utilization and artificial intelligence (AI) technology in Thailand is a crucial step toward enhancing governance and driving economic and societal advancement across all sectors. Leveraging data analytics through AI not only enables us to better understand economic trends and strengthen the country's competitive advantage, but also promotes societal transparency and a deeper understanding of public behavior. Therefore, propelling Thailand to become a Data-Driven Nation will lead to concrete national reforms by using data for planning, policymaking, and implementing actions clearly and effectively.

This section focuses on the guiding principles for developing the essential state infrastructure. It explains the components necessary to create a cohesive framework that efficiently drives the nation forward using data. The government's core databases must be capable of seamless data integration and exchange, enabling multi-dimensional data analysis. Investments in such infrastructure will support integrated government operations through data connectivity, as well as foster collaboration with the private sector and academia.

Figure 2.1 The framework for data utilization infrastructure serves as a guiding principle for driving Thailand toward becoming a data-driven nation

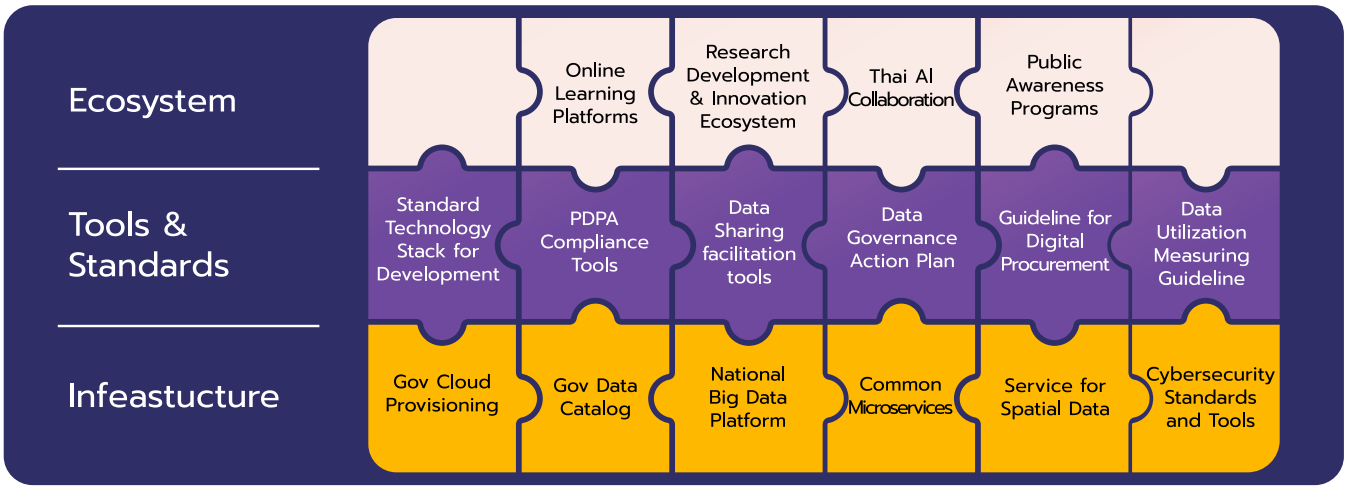


Figure 2.1 illustrates the jigsaw puzzle of the "Big Data Nation" by specifying the infrastructure components that the government should fully invest in which the components can be pieced together as the infrastructure necessary for developing data utilization in the country where the "jigsaw" is divided into 3 levels, which are: 1) The information infrastructure that provides data exchange and visualization services which will help various agencies develop conveniently, quickly, and to standard, without the need to separately invest in these structures 2) Tools and guidelines to establish standards for the development of information systems which agencies can apply to reduce obstacles in linking data with other agencies in the future 3) An ecosystem that will drive the application of analytical data utilization from upstream to downstream.

2.1 Infrastructure

To promote the widespread utilization of data, the government should invest in developing information infrastructure, as illustrated in Figure 2.1. This infrastructure will enable government agencies to advance their data capabilities more rapidly and integrate data more efficiently to address societal challenges more effectively. Furthermore, agencies will not need to develop separate systems, which will help reduce redundancy in government budget expenditures.

2.1.1 Government Cloud Provisioning

Thailand requires a robust digital infrastructure, including high-speed internet and affordable cloud computing systems accessible to all target groups, particularly government agencies. Internet and cloud infrastructure are critical for advancing data and artificial intelligence (AI) development. Currently, the government provides cloud services through the Government Data Center and Cloud (GDCC) project, an infrastructure system for data storage and processing. GDCC supports government agencies by reducing information system management costs and enhancing data security. The GDCC project began in 2018 under the responsibility of the Office of the National Digital Economy and Society Commission (ONDE), the agency under the Ministry of Digital Economy and Society (MDES), with system management and service provision handled by National Telecom Public Company Limited (NT).

At present, GDCC offers both CPU-based processing for general services and GPU-based processing for AI systems. Additionally, the National Science and Technology Development Agency (NSTDA) provides high-performance computing through its supercomputer system named LANTA. These two services partially meet the country's big data and AI needs. However, with the growing interest in generative AI and limitations in processing capacity of GDCC and LANTA, government agencies must also consider relying on private cloud services.

In 2024, the government announced an additional cloud service policy called the “Cloud First Policy.” This policy mandates that government agencies prioritize cloud services as the primary approach for developing their information systems and digital services. The policy aims to expand cloud services for government agencies from GDCC to public cloud services under specific conditions. Public cloud providers must meet the following standards for providing services in public cloud service:

- Cloud Information Technology Service Standards (ISO/IEC 20000-1)
- Information Security Management Standards (ISO/IEC 27001 and CSA STAR)
- Data Privacy Management Standards (ISO/IEC 27701)
- Service Level Agreements (SLAs) of no less than 99.95%.

Providers must establish primary data centers within Thailand (Data Localization) and enable integration with the centralized cloud management system of the Ministry of Digital Economy and Society via API connections for data interoperability.

Therefore, the information infrastructure services for storage and processing can be widely expanded under the GDCC project and the "Cloud First" policy. Additionally, when utilizing private cloud services, government agencies may consider leasing Platform-as-a-Service (PaaS) solutions, which integrate technologies and software that support artificial intelligence (AI) development. This approach also helps save time in system development.

2.1.2 Government Data Catalog

Creating the government data catalog that serves as a repository of critical information from all government agencies will facilitate easier search and access to essential state data for civil servants, government officials, citizens, and researchers. Having well-organized and systematically searchable data will enhance the efficiency of data utilization and promote data analysis to support better policy development.

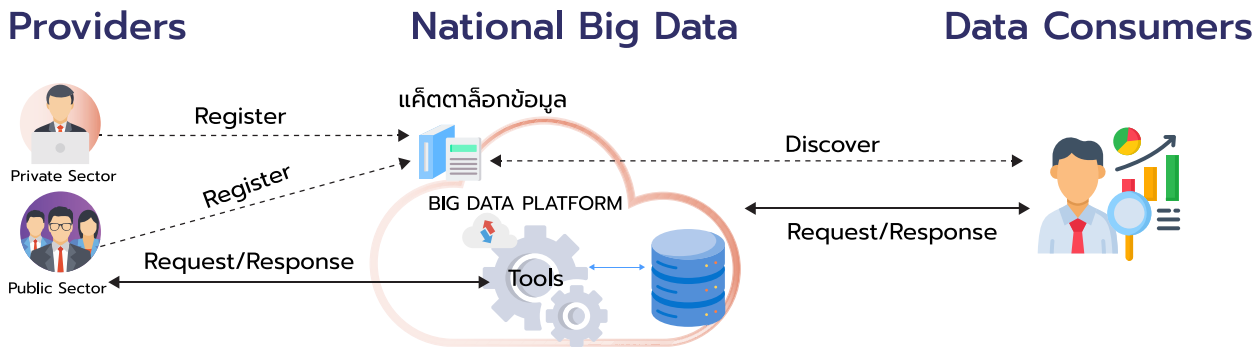
Currently, the National Statistical Office (NSO) under the Ministry of Digital Economy and Society has developed the GDCatalog project, which focuses on managing and disseminating critical national data with clear access controls for users from government agencies seeking to study records, statistical data, and spatial data for analysis purposes.

The GDCatalog system provides access to key datasets and metadata, including access licenses, but does not directly publish the data itself. Government officials intending to utilize analytical data can use GDCatalog to identify suitable datasets for their needs. However, data requests must still be processed through the respective data-owning agencies.

2.1.3 National Big Data Platform

The National Big Data Platform will facilitate the utilization of data among various agencies, fostering effective data integration and collaboration. Having a well-defined platform for data exchange will reduce redundancies in the operations of government agencies and support the creation of higher-quality and more reliable data.

Figure 2.2 Decentralized Data Integration



The Big Data Institute (Public Organization) (BDI) has initially designed and developed a decentralized data exchange architecture to reduce barriers to data integration, as illustrated in Figure 2.2. A decentralized architecture means that data exchange occurs without requiring all source data to be centrally stored.

When a data-owning agency registers the datasets they allow to share in the data catalog, requesters can discover these datasets and make requests through the central platform. The platform will verify access rights before forwarding the request to the data owner. In cases where the data is open or intended for sharing to support artificial intelligence (AI) systems—such as articles, documents, or text datasets—a backup copy of the data is stored on the platform. Data-owning agencies can upload datasets to allow partner agencies participating in the project to download and use them.

In addition, the Big Data Institute (BDI) will design a framework for data management, including methods for data retrieval, basic data quality checks, access rights verification, and personal data management. The framework will also include mechanisms for security, storing only necessary data, connecting to data sources for requests, and logging data requests and access activities, etc.

The Big Data Institute (BDI) will collaborate with partner agencies to identify and collect essential datasets from various domains and sources for analytical purposes, which will be integrated into the data catalog system. Then, BDI will also develop appropriate data integration mechanisms as a Data Processor, including tools to process data into user-friendly formats.

Additionally, mechanisms and processes will be established to control data access in accordance with the guidelines set by Data Controllers from the respective data sources. This will involve implementing international-standard encryption and authentication protocols to safeguard transmitted data. Furthermore, key datasets should be regularly updated to ensure completeness and usability.

Most of the designed mechanisms will adhere to open standards, facilitating development and integration with other systems. These mechanisms will support various types of data, including structured and unstructured data. By integrating data from multiple sources, the government's data exchange platform will enable agencies to access comprehensive and up-to-date information, supporting policy-level decision-making and operational activities.

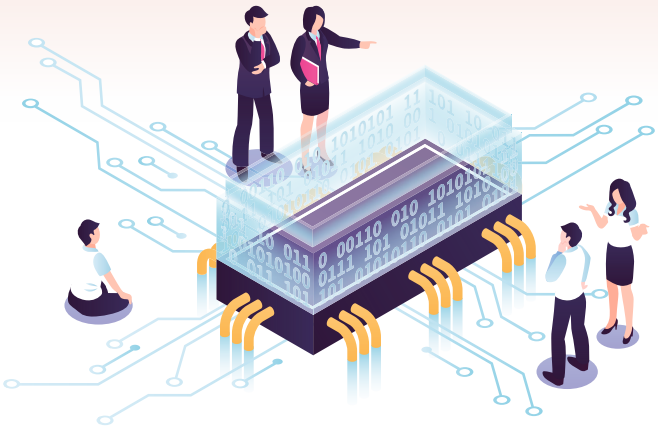
2.1.4 Common Microservices

The development of government agency systems should follow software design principles that divide applications into independent microservices. Each service is specialized and can be developed, tested, and deployed separately, allowing the system to remain flexible and adaptable to scaling and changes. In this architecture, microservices are small, task-specific units that can be developed and improved independently while communicating through standardized APIs. Moreover, the failure of one service does not affect the entire system.

To support government agencies in adopting this development approach, the Digital Government Development Agency (DGA) should establish a registry of microservices already developed by government agencies. This registry should include complete technical specifications and promote the development of additional critical services by relevant organizations. In the future, both government and private entities will be able to reuse developed microservices in multiple projects, saving costs, accelerating development, and reducing the overall complexity of software systems.

Additionally, government agencies developing and providing core microservices should receive budgetary support to ensure continuity and security of services. Examples of such microservices include:

- Digital ID: A digital identity verification and authentication service
- Wallet System: A digital wallet platform
- e-Payment and e-Receipt: Systems for electronic payments and receipts
- Disaster Alert: A system for disaster notifications
- e-Voting: An electronic voting system
- Online Queue Management: A service for managing online appointments
- Data Breach Notification: A system for alerting individuals about data breaches



2.1.5 Service for Spatial Data

Geospatial data is essential for government policy planning at both the central and local levels. Data surveyed and collected by the government should include geospatial components, such as administrative boundaries (districts/sub-districts) or location information. This enables the government to compare geospatial data effectively and develop plans that address the specific needs of different areas.

For the government to process data and present geospatial analysis results in a consistent and standardized manner, it is necessary to establish a technology stack that can be shared and integrated with other government infrastructures. This ensures uniformity in analysis and enhances interoperability across systems.

A Technology Stack for geospatial data refers to a set of technologies and software used collectively in the development and operation of applications focused on geospatial data. This includes components such as spatial database management systems, map servers, libraries and APIs for geospatial data processing, libraries for web-based map visualization, geospatial data analysis tools, coordinate reference systems, and more.

Developing a standardized set of technologies for geospatial components will enhance the efficiency of creating applications and systems related to geospatial data. Clear standards facilitate easier collaboration among agencies and enable citizens to access location-related information quickly and accurately.

Currently, the Geo-Informatics and Space Technology Development Agency (GISTDA) has established a Technology Stack that can be used as a standard, including both open standards and proprietary solutions. GISTDA has developed a service called Sphere (https://sphere.gistda.or.th/) to support the development of geospatial systems for government agencies. "Sphere" aims to reduce costs and eliminate redundancies in the development efforts of government agencies in the future.

Thus, further development of Sphere to function as a Platform-as-a-Service (PaaS) integrated with other systems is essential. In addition to defining the Technology Stack, Sphere should provide Web Map Services (WMS) for delivering interactive maps and Web Feature Services (WFS) for transmitting coordinate, line, and polygon data, enabling visualization or advanced analysis in applications of the requesting agencies. Sphere should also offer geospatial data services, such as using coordinate data to query administrative boundaries.

In this concept, the government agencies that need to build geospatial data processing and visualization systems will not need to invest in studying the underlying technology. Instead, they can directly consult and utilize GISTDA's services.

2.1.6 Cybersecurity Standard and Tools

The development of cybersecurity standards and tools is essential to protect critical government and public data from cyberattacks. Investment in cybersecurity will enhance confidence in government data systems and online services by preventing unauthorized access and safeguarding critical information from various threats.

To ensure that government agencies understand the principles of organizational cybersecurity and can implement them uniformly, the government should establish minimum cybersecurity standards for data and critical infrastructure. Additionally, centralized tools or services should be developed to provide cost-effective and convenient access for government agencies. Examples of such tools and services include:

- Multi-Factor Authentication (MFA) systems
- Encryption tools
- Penetration testing tools
- User and Entity Behavior Analytics (UEBA) tools
- Continuous personnel training and policy updates on cybersecurity are also necessary to ensure government agencies can adopt and utilize these services or hire third-party providers with ease.

Currently, the National Cybersecurity Agency (NCSA) is responsible for implementing the Cybersecurity Act B.E. 2562 (2019), which is already in effect. The agency has also announced the Cybersecurity Policy and Action Plan (2022–2027). Then, when the NCSA develops centralized cybersecurity tools or services tailored to the specific context and needs of Thailand, the government can reduce redundant investments in similar systems, minimize the time required to develop new systems, and establish uniform cybersecurity standards. This standardization simplifies audits and facilitates the identification and mitigation of vulnerabilities.

In summary, the investment in these six infrastructures will enhance the efficiency of leveraging analytical data and artificial intelligence in both the public and private sectors. These will foster innovation in services and products that benefit society as a whole.

In addition to infrastructure, a "complete guiding principle jigsaw" also requires tools and guidelines to establish standards for the development of information systems that facilitate data integration.

2.2 Tools and Standards

To develop government information technology systems that are efficient and aligned, it is essential to establish appropriate standards, tools, and best practices. Having standards that are easy to implement will enable government agency data systems to work seamlessly together, facilitate data integration, and simplify maintenance. This will ultimately result in long-term cost savings.

2.2.1 Standard Technology Stack for Development

A Technology Stack refers to the set of technologies used in software development, including programming languages, frameworks, databases, and tools. Establishing a centralized Technology Stack will create standards for information system development, reduce redundancy, enhance investment efficiency, and promote knowledge and skill sharing among agencies.

For instance, using the same or similar programming languages and database management systems will enable IT personnel in government agencies to transition smoothly between roles in different departments. This approach facilitates faster problem-solving and the development of new systems. Furthermore, this approach also can reduce training costs.

Having standards for system development leads to efficiency and long-term sustainability. An example of a Technology Stack could involve the government mandating that all agencies exchange data via APIs developed using FastAPI, communicate through REST APIs, format data in JSON, and encrypt communications with HTTPS at a minimum. Additionally, software systems should be developed using widely adopted technologies such as React, Java, Python, or NodeJS, with authentication conducted via the ThaiD system.

To ensure consistency across government information systems, the Digital Government Development Agency (DGA) should establish and publish guidelines for standardized government information system development, specifying appropriate technologies. These standards should be reviewed every three years to address long-term challenges in government information system development.

2.2.2 Personal Data Protection Act (PDPA) Compliance Tools

Data exchange and integration between government agencies must consider personal data protection to ensure that data is utilized effectively, securely, and without infringing on citizens' rights. To facilitate this process for numerous government agencies, the Office of the Personal Data Protection Commission (PDPC) should consider developing guidelines, tools, and services for personal data protection. This would establish standardized practices, reduce inconsistencies in interpretation and application, and eliminate the need for individual agencies to develop their own tools, resulting in overall savings in budget and resources.

Additionally, having tools specifically designed by the PDPC would reduce errors and risks of legal violations. In cases of future legal amendments, centralized tools would enable the rapid and efficient distribution of updated tools or services to all agencies. Collectively, these measures would streamline data exchange between agencies, making it smoother and more efficient.

The examples of tools and services for personal data protection that the government should provide include:

- Tools to help organizations identify and assess risks related to the processing of personal data.
- Consent management systems that can provide evidence of consent.
- Services to assist in the creation and maintenance of records of data processing activities as required by law.
- Systems to manage and alert in cases of personal data breaches.
- Tools to anonymize personal data to reduce risks.

2.2.3 Data Sharing Facilitation tools

In addition to providing tools to support personal data protection, the government should establish guidelines and design templates as examples for data-sharing agreements. These templates would promote clarity and standardization in data exchange between agencies and ensure compliance with relevant laws, such as the Personal Data Protection Act (PDPA), the Cybersecurity Act, the Electronic Transactions Act, the Computer Crime Act, the Official Information Act, and the Digital Government Administration and Services Act.

The Electronic Transactions Development Agency (ETDA), as the regulator under the Ministry of Digital Economy and Society, should design templates tailored to the operational context of the public sector. These templates should include, at a minimum:

- Clear objectives for data sharing.
- Types and scope of data being shared.
- Clauses specifying rights to store and disseminate the data.
- Duration of the agreement.
- Roles and responsibilities of each party.
- Security measures and assurances of data privacy.
- Mechanisms for transparency and accountability in data management.
- Processes for handling data breaches.
- The templates should be in a ready-to-use format applicable to various types of data exchange, facilitating ease of use for government agencies.

2.2.4 Data Governance Action Plan

Data Governance is an approach to data management that emphasizes transparency, accountability, and legal compliance. Its goal is to ensure that existing data can be utilized securely. Government agencies exchanging sensitive data must establish clear principles for data management, such as:

- Defining policies and measures for data access.
- Establishing a committee or team responsible for data governance.
- Providing training to personnel to enhance knowledge and understanding of proper data management practices.

Additionally, agencies should implement systems for regular monitoring and evaluation of data usage to ensure compliance with established standards. This will enable agencies to share data effectively with other organizations, fostering high-quality data collaboration within the public sector.

Currently, the Digital Government Development Agency (DGA) has officially announced a data governance framework and guidelines (https://standard.dga.or.th/category/standard/). Government agencies can adopt this framework and guidelines for planning their operations and may seek additional consultation from the DGA.

However, effective data control cannot be achieved through frameworks and guidelines alone. It requires secure information mechanisms, such as encryption technologies and the development of a Data Exchange Gateway that is accessible only to authorized agencies and does not disrupt the operation of core systems.

Additionally, agencies should provide manuals for relevant personnel, establish communication channels to collect feedback and input from stakeholders, and develop plans for monitoring and evaluating data management operations. This approach ensures continuous and systematic improvement and development of data management practices.

2.2.5 Guideline for Digital Procurement

To ensure that all government agency information systems can support standardized data exchange in the future, the government should issue guidelines for drafting Terms of Reference (ToR) for database development procurement. These guidelines should specify details related to Data APIs to ensure that critical data can be systematically exported from databases under appropriate controls. Additionally, they should include provisions for Microservice APIs where system components can be utilized as shared services by other agencies.

Furthermore, the ToR for all government information systems should mandate minimum security measures to prevent unauthorized data access. It should also require user authentication using government-standard technologies, such as ThaiD, to enhance credibility and reduce risks associated with weak passwords.

Including these specifications in the ToR will facilitate seamless integration with other information systems in the future, eliminate technical barriers, and avoid the need for additional budget allocation to engage existing vendors for system modifications to enable interoperability.

2.2.6 Data Utilization Measuring Guideline

To improve and evaluate data integration systems, the government should establish clear guidelines for measuring performance and cost-effectiveness to enable a concrete assessment of system efficiency and impact. These measurements should encompass both qualitative aspects (data accuracy, dataset completeness, data timeliness) and quantitative aspects (number of participating agencies, datasets shared, frequency of access and usage). Additionally, evaluations should include data exchange speed, response time for data access, reuse rates, and the number of user suggestions and complaints to assess user satisfaction.

A mechanism should also be established for measuring cost-related factors, such as operational and maintenance expenses, direct impacts such as time saved in data requests, cost reductions from minimizing redundant data storage, and benefits derived from data-driven decision-making and policy development. This could include the emergence of new services created through shared data and the economic value generated by such services.

Additionally, Performance measurement should be conducted continuously with clear goals to track progress and improve the system effectively. Regular reporting to stakeholders is essential to build trust and encourage participation in system development.

As the agency responsible for government data integration, the Big Data Institute (Public Organization) should prepare documentation outlining evaluation guidelines and methodologies, mechanisms for information system-based evaluations, and the development of measurement tools. These tools and guidelines should be made available for adoption and adaptation by other agencies. The examples of such tools include:

- Data analysis dashboards.
- Logging and analytics systems.
- Performance monitoring systems.
- Automated scripts to verify data accuracy, completeness, and consistency.
- Automated reporting systems for daily, weekly, or monthly summaries.
- APIs for accessing measurement data.

2.3 Ecosystem

An ecosystem for data utilization is a critical foundation for driving organizations and society toward the efficient creation and exchange of data. Collaboration among the public sector, private sector, and academic institutions, as discussed in this section, will continuously advance the nation's and citizens' capabilities in data and artificial intelligence in the future.

2.3.1 Online Learning Platforms

Having an Online Learning system that aggregates content in the Thai language is essential for building knowledge in data technology and artificial intelligence (AI) within the local and national context. Such a system would enable broad access to relevant knowledge, particularly through non-degree learning formats, which provide opportunities for individuals from all groups to access education equitably.

Developing knowledge and understanding in these areas not only enhances the capabilities of the national workforce to keep pace with technological advancements but also supports sustainability and scalability in the country's data and AI sectors. Equipping citizens with the necessary skills and knowledge will enable them to adapt and compete effectively in the digital era.

Moreover, disseminating knowledge in a structured format fosters continuous and tangible learning, which drives sustainable innovation and technological development. Non-degree learning, in particular, allows individuals to quickly and efficiently develop specialized skills aligned with labor market demands, thereby increasing their employability and productivity.

Currently, Thailand has numerous Online Learning platforms provided by leading private companies, both domestic and international, universities, the Ministry of Digital Economy and Society, the Ministry of Education, the Ministry of Labor, and other independent agencies. These platforms contribute significantly to expanding access to knowledge.

However, the government should establish a centralized body to collaboratively design standards for workforce data and appropriate mechanisms for data sharing. For data and artificial intelligence-related disciplines, the Office of the National Digital Economy and Society Commission (ONDE), as the organization responsible for designing the Learn to Earn system, could act as the lead agency. This role could be shared with the Thailand Professional Qualification Institute (TPQI), which oversees the e-Workforce Ecosystem Platform (EWE), along with the Ministry of Higher Education, Science, Research, and Innovation and the Ministry of Labor.

Together, these organizations could foster collaboration in developing data standards and data exchange guidelines. All Online Learning systems that store learning data should enable data sharing through APIs, utilizing a standardized Data Exchange Gateway. This approach would allow the country to efficiently utilize workforce data for labor development planning, ensuring alignment with future needs and demands.

2.3.2 Research, Development, and Innovation Ecosystem

Having a state-driven ecosystem for research, development, and innovation in data technology and artificial intelligence (AI) that integrates resources, knowledge, and innovations from various sectors—such as government, private industry, and academia—is crucial for national development. This includes financial and human resource support.

Currently, the government has mechanisms for funding research, fostering collaboration networks between researchers and industries, and providing support systems to facilitate the commercialization of research outputs. The National Research Council of Thailand (NRCT) and Project Management Units (PMUs) play significant roles in funding research and innovation development in the country. The National Electronics and Computer Technology Center (NECTEC) is a primary R&D agency focused on research and development in data technology and AI.

Additionally, the National Innovation Agency (NIA) and the Digital Economy Promotion Agency (DEPA) support the commercialization and practical application of innovations derived from research.

National development in data and artificial intelligence requires a clear vision and the establishment of critical frameworks, achieved through collaboration among relevant agencies. This ensures that all sectors within the ecosystem can work cohesively and move in the same direction, with an emphasis on targeted support each year.

Setting well-defined frameworks allows funding sources to operate with a guiding principle that addresses the country's real needs, rather than issuing calls for proposals based on overly broad topics, which can lead to inefficient resource utilization. A clear framework ensures that research and development support is streamlined and goal-oriented, resulting in innovations that are valuable and applicable to the country's social and economic landscape.

2.3.3 Thai Artificial Intelligence (AI) Collaboration

In the context of Thailand's emergence in the era of artificial intelligence (AI), establishing a framework for collaboration is essential to ensure that AI technology development is well-directed and maximizes social and economic benefits for the country. At a time when numerous government and private organizations are showing interest in developing AI systems—particularly those focused on the Thai language—fragmented efforts risk redundancy and hinder the country's ability to compete with international AI technologies.

To foster domestic innovation, gain a competitive edge within ASEAN, and promote the ethical application of artificial intelligence (AI), the government should support the creation of networks for education, research, and development that connect academic institutions, private sector research units, and government agencies. Collaboration across these sectors, involving personnel from diverse backgrounds, will facilitate in-depth research and the development of scalable products.

The government should invest in AI development with a focus on open-source code and open-license initiatives. Encouraging such collaborative approaches will enhance the nation's technological self-reliance and allow for control over and direction of the country's technological advancement.

Additionally, foundational AI models will serve as the cornerstone for AI innovation, enabling the government to ensure equitable and inclusive access to AI technology. This will also provide a platform for cultivating top-tier AI talent in the country.

To foster effective collaboration, the government should support the establishment of a Thai AI Consortium, comprising key stakeholders from both the public and private sectors. This consortium would be complemented by the development of a centralized platform that aggregates data and facilitates convenient access and sharing across all sectors. The consortium would be responsible for

defining AI development and investment strategies that align with the country's needs and potential, under the supervision of the National AI Committee, chaired by the Prime Minister.

Moreover, Government agencies should be involved in the Thai AI Consortium during its initial phase include relevant entities under the Ministry of Digital Economy and Society, such as ONDE (Office of the National Digital Economy and Society Commission), BDI (Big Data Institute), DEPA (Digital Economy Promotion Agency), and ETDA (Electronic Transactions Development Agency). Agencies under the Ministry of Higher Education, Science, Research, and Innovation, such as National Research Council of Thailand (NRCT), National Electronics and Computer Technology Center (NECTEC), and National Innovation Agency (NIA), should also participate.

To encourage private sector participation, the Thai AI Consortium should establish clear models for commerce, financing, and the sharing scheme of technology and data. For example:

- Providing funding for high-potential collaborative projects to attract private sector investment.
- Creating opportunities for Thai businesses to gain advantages in scaling and further development.
- Clearly communicating the benefits for all stakeholders, such as fostering scalable innovations, enhancing the competitiveness of Thai businesses against international companies, and developing valuable datasets that benefit all sectors in the long term.

Additionally, building a robust Thai AI Consortium will enable Thailand to develop high-quality AI systems that can be sustainably leveraged for tangible benefits in the future.

2.3.4 Public Awareness Programs

To increase public awareness of the applications of data technology and artificial intelligence (AI), relevant government agencies and private companies should establish mechanisms to enhance understanding and public engagement. Several approaches can be considered:

- Producing mass media content, such as online articles, short online lessons, television programs, and podcasts, to discuss the benefits of applying technology and data analysis in various contexts such as healthcare, agriculture, and education.
- Organizing seminars and workshops that demonstrate the use of data technologies in daily life, such as applications for personal data analysis or business operations. These activities can provide a clearer understanding of the broader importance of these technologies.
- Conducting activities that allow the public to learn about and experiment with AI in real-world scenarios.
- Developing online platforms offering free and easily accessible learning courses.
- Creating online communities where people can share knowledge and experiences.

Raising awareness at the local community level is another essential approach. Collaborating with local organizations and educational institutions to organize activities or projects related to the use of analytical data and artificial intelligence (AI) can help citizens feel more engaged and tangibly involved in the development of new innovations. The government should support agencies at various levels to adopt these mechanisms to foster awareness and understanding within Thai society.

To summarize, in an era where data and AI play critical roles in national development, the foundational principles of infrastructure presented in this strategic plan act as crucial pieces of a jigsaw puzzle that form a complete picture. Government agencies within the digital sector can contribute

their respective pieces of the puzzle by building infrastructure that supports the effective use of analytical data and enables other organizations to leverage these resources efficiently.

Furthermore, other agencies planning to implement data-related projects can study and adopt the appropriate " guiding principle jigsaw " suited to their specific contexts. This approach allows for the extension of data utilization in a way that aligns with overarching goals without requiring redundant investment in infrastructure development. Such practices facilitate data exchange between agencies and promote the creation of an integrated data system governed by strong data governance principles.

By collaborating to create and connect these " guiding principle jigsaw " the government can accelerate the delivery of public services, reduce redundancy in system development, and enable agencies to save budgets. Data sharing between agencies also enhances transparency in government operations. The guiding principles outlined in this chapter serve as essential tools for fostering inter-agency collaboration in the future.

Chapter 3 The Thailand National Big Data Utilization Strategic Plan 2025-2027

This chapter presents the key elements of the Thailand National Big Data Utilization Strategic Plan 2025-2027. It focuses on establishing a clear framework based on the guiding principles outlined in Chapter 2 to support data-driven decision-making, foster innovation, and enhance operational efficiency across all sectors.

3.1 Vision

"Harnessing the Power of Data for Inclusive Growth and Well-Being"

3.2 Objectives

The Strategic Plan sets three main objectives:

1. To enable the use of data for planning and decision-making (Enabling Data-driven Decision and Planning)
2. To drive economic growth through data utilization (Thriving Data Economy)
3. To promote AI-enabled data services (Promoting AI-enabled Data Services)

3.3 Key Performance Indicators (KPIs)

Table 1 Overall Key Performance Indicators (KPIs) of the Thailand National Big Data Utilization Strategic plan (2025-2027)

Indicators	Unit	Target Value		
		2025	2026	2027
BD1 : The growth rate of economic value resulting from the utilization of Big Data through Big Data systems /platforms for decision-making in policy, public sector planning and management, and the establishment of rules/ measures for economic and social development by government agencies. Additionally, this includes promoting the use of Big Data and artificial intelligence innovations in the private sector and among the public to enhance business operations and improve quality of life.	Percentage (compared to the previous year)	32	35	35
BD2 : The ranking under the sub-factor "Use of Big Data and Analytics" under the Future Readiness factor of the World Digital Competitiveness Ranking (WDCR) by IMD.	Rank	28	27	25

3.4 Strategies, KPIs, Key measures and Collaborating Agencies

the Thailand National Big Data Utilization Strategic Plan 2025-2027 consists of 4 strategies. These cover actions to enhance the readiness of various foundational components necessary for effective data utilization. The plan aims to facilitate different sectors in leveraging data resources conveniently and efficiently, addressing the data usage needs of all agencies and the general public. This is achieved while ensuring compliance with regulations and standards related to proper data management. The details of the 4 strategies are as follows:

Strategy 1

Developing Required Infrastructure for Big Data Utilization

The implementation under Strategy 1 focuses on developing the necessary infrastructure for efficient data integration and analysis, as outlined in the guiding principles presented in Figure 2.1. This requires collaboration among government agencies within the digital sector.

As this strategy is critical, relevant government agencies must collaborate to develop infrastructure that is flexible and adaptable to user needs. They should also jointly provide modern tools and technologies at various levels and establish clear standards and guidelines for data exchange. The Big Data Institute (BDI) will serve as the coordinating body, facilitating discussions and planning among relevant agencies. This includes defining the roles and responsibilities of each agency based on the guiding principles in Chapter 2 and ensuring these roles are incorporated into the agencies' action plans, leveraging the mechanisms of the Ministry of Digital Economy and Society and the National Digital Economy and Society Committee.

Clear infrastructure and operational mechanisms will enable agencies to collaborate effectively without redundancies in system development. This will also support a culture of transparent and well-governed data usage, ultimately leading to valuable data utilization across all sectors.

KPIs and Target Value: Strategy 1

Table 2 KPIs and Target Value under Strategy 1

Indicator	Unit	Target Value		
		2025	2026	2027
IT: Readiness level of Infrastructure and Tools* for utilizing big data	Percentage and Readiness level	50% (Readiness at level 3)	50% (Readiness at level 4)	70% (Readiness at level 3)

Note. * Infrastructure and tools consist of 12 components. Therefore, 50% corresponds to 6 components, and 70% corresponds to 8 components. The descriptions for readiness levels 1–4 are as follows:

Level 1: The project/plan is in the process of being developed.

Level 2: The project/plan has been approved, including budget allocation (if necessary), for implementation.

Level 3: The outputs from the project/plan have been partially achieved, but further development is required to reach a level where they can be operationalized or provided as services.

Level 4: The outputs are fully operational or being provided as services.

Key measures for driving Strategy 1

The implementation under Strategy 1 focuses on developing infrastructure for data utilization through two key strategies as follows:

KM 1.1: Developing National Big Data Platform

The Big Data Institute (BDI) (Public Organization) is responsible for developing and maintaining the government data exchange platform. This platform is designed with all essential components and is being developed systematically to enable government agencies to utilize it effectively. Continuous development and improvements are planned to meet practical usage needs.

1. Design and develop mechanisms for decentralized and secure data exchange that align with the policies of data-owning agencies.

2. Facilitate data integration and establish access mechanisms in collaboration with data-owning agencies.

3. Create a catalog of key datasets across various fields to support efficient data search and retrieval.

4. Design and develop data services in appropriate formats based on specific requirements.

5. Develop storage and sharing spaces for open data and datasets used for training AI models, with controlled access mechanisms to ensure secure and efficient usage of the government data exchange platform.

KM 1.2: Enhance readiness of basic infrastructure for data utilization

This initiative involves developing a collaborative network among digital sector agencies to jointly create the components of the jigsaw puzzle for infrastructure supporting data utilization. This includes both hard infrastructure and soft infrastructure, which will help propel Thailand toward becoming a Data-Driven Nation. Emphasis is placed on collaboration and continuous monitoring to ensure efficient data integration and analysis.

1. Infrastructure Components: These include technologies related to Cloud, Data Catalog, Exchange Engine, Microservices, Spatial Data Technology, and Security. The collaboration involves agencies such as Office of the National Digital Economy and Society Commission (ONDE), National Telecom Public Company Limited (NT), National Statistical Office (NSO), Big Data Institute (BDI), Digital Government Development Agency (DGA), Electronic Transactions Development Agency (ETDA), Geo-Informatics and Space Technology Development Agency (GISTDA), and National Cybersecurity Agency (NCSA), among others.

2. Tools, Guidelines, and Standards Components: These include Software Technologies, PDPA (Personal Data Protection Act) compliance, Data Sharing, Data Governance, Software Procurement, and Utilization. Collaboration involves agencies such as Digital Government Development Agency (DGA), Personal Data Protection Commission (PDPC), Electronic Transactions Development Agency (ETDA), and Big Data Institute (BDI), among others.

Collaborating Agencies

- National Digital Economy and Society Committee (ONDE)
- National Statistical Office (NSO)
- Big Data Institute (BDI)
- Digital Economy Promotion Agency (DEPA)
- Electronic Transactions Development Agency (ETDA)
- Office of the Personal Data Protection Commission (PDPC)
- National Telecom Public Company Limited (NT)
- Digital Government Development Agency (DGA)
- National Cybersecurity Agency (NCSA)
- National Science and Technology Development Agency (NSTDA)
- Office of the Science, Research, and Innovation Promotion Commission (OSRI)
- Geo-Informatics and Space Technology Development Agency (GISTDA)
- National Innovation Agency (NIA)

Strategy 2

Promoting the utilization of infrastructure to address key development issues of the country

The implementation under Strategic Priority 2 focuses on promoting the utilization of infrastructure to address key national development priorities, encompassing both sector-based and agenda-based challenges. The objective is to enable government agencies to systematically and efficiently leverage the infrastructure (as referenced in Figure 2.1) developed to support data systems, artificial intelligence (AI), and analytical data applications.

Figure 2.1 illustrates this infrastructure using the concept of a "jigsaw puzzle." This framework allows government agencies responsible for developing data systems in various fields to integrate the relevant "Guiding principle jigsaw " to form a coherent and meaningful data framework. This integration facilitates efficient data exchange, promotes collaboration among agencies, and maximizes the benefits of data utilization for national development.

KPIs and Target Value: Strategy 2

Table 3 KPIs and Target Value under Strategy 2

Indicator	Unit	Target Value		
		2025	2026	2027
VA: The number of sectors/industries/issues with data integrated from relevant agencies into the government's big data system or platform for economic and social utilization at the national level.	sectors/ industries /issues (Cumulative from previous years)	6	8	10

Key measures for driving Strategy 2

KM 2.1: Action Planning for Data Utilization

The Big Data Institute (BDI) has developed an operational plan for medium- and long-term implementation to stimulate the utilization of the nation's data infrastructure. The plan begins with identifying targeted sectors (Sectoral Strategy) divided into four groups based on development perspectives: (1) Economic Dimension: Focus on the agriculture sector, tourism, and SMEs/manufacturing. (2) Social Dimension: Address healthcare and population health promotion. (3) Structural Dimension of National Development: Emphasize human capital development by integrating existing government data, such as civil registration data, surveys from the National Statistical Office, social security data, state welfare data, and education data to support workforce development. And (4) Future Readiness Dimension: Focus on environmental and sustainability issues by leveraging data related to water resources, climate, and pollution, among others.

The outlined Sectoral Strategy serves as a starting point for the Big Data Institute (BDI) to identify relevant agencies and select key subtopics to detail data-related operations. This includes identifying data sources, leveraging big data infrastructure to connect datasets, designing data processing mechanisms, and creating tailored visualizations for specific users.

When drafting the operational plan, key considerations include human resource constraints, the readiness of data and technology, and the progress and current status of operations within relevant agencies. Therefore, it is crucial to prioritize tasks in an appropriate and clear sequence, focusing initially on initiatives that can yield quick results. Additionally, incorporating artificial intelligence (AI) for data processing should be considered to enhance operational efficiency.

KM 2.2: Developing a Framework for Data Integration and Analysis

Relevant agencies across the entire data value chain in each sector or development agenda should collaboratively establish guidelines and steps for developing data integration and analysis systems. The Big Data Institute (BDI) plays a supporting role by providing technical advice and recommendations on system development and the application of analytical data to meet the specific needs of agencies in each sector or development agenda.

In the future, the BDI should develop a framework for the integration and analysis of data systems to address shared challenges or needs among multiple agencies. This framework would provide centralized tools for agencies to use as a guide for managing, analyzing, and utilizing data independently.

The development of such a framework would begin with defining clear subtopics for each sector or development agenda and verifying their validity. Subsequently, the necessary infrastructure for implementation would be identified, along with the creation of a clear user journey and the collection of stakeholder requirements at each stage. Relevant data and sources would be identified, and coordination plans would be established to obtain the necessary data. Finally, mechanisms and methods for delivering data to relevant parties would be defined, ensuring efficient and systematic data analysis.

For the data value chain development within the Sectoral Strategy, detailed work plans should be established, specifying the lead and collaborating agencies involved in the value chain. Additionally, the possibility of implementing Joint KPIs should be considered to evaluate the success of collaborative efforts within the value chain for each sector or development agenda.

The example of Designing a Sectoral Data Integration Platform can be found as follows:

1. Assess stakeholder needs: Study the requirements of stakeholders in relevant areas.

2. dentify relevant data sources: Analyze data sources that align with stakeholder needs and define the scope of data necessary for analysis, ensuring feasibility and practicality for integration within a specified timeframe.

3. Design system architecture: Develop the system architecture of the central platform and the mechanisms for data connection by assembling existing components from the jigsaw puzzle framework and identifying additional developments, such as a Gateway for connecting data according to the policies of data sources.

4. Create a data inventory and use cases: Develop a data inventory and identify feasible and appropriate use cases.

5. Engage stakeholders: Organize meetings with stakeholders to present the conceptual framework, methodology, and implementation approach, and gather feedback.

6. Develop user interfaces: Design and develop appropriate user interfaces and cross-system visualization tools.

7. Establish governance documentation: Prepare data governance documentation, including access and usage policies, and identify system users and data users.

8. Compile and process datasets: Collect relevant datasets, study and transform them into suitable formats, analyze the data based on the defined use cases, and develop dashboards to present analytical results.

9. Test the system: Perform system testing, including usability and security assessments.

10. Finalize and promote: Organize stakeholder meetings to present the project results, implement improvements based on feedback, and publicize the project to the public.

An example of a sectoral data integration platform development project (Tourism Sector) is provided in **Appendix 2.**

Collaborating Agencies

- Big Data Institute (BDI)
- Agencies under the Ministry of Digital Economy and Society
- Agencies under the Ministry of Higher Education, Science, Research, and Innovation
- Other agencies relevant to data-related issues and challenges

Strategy 3

AI Development and Utilization

Thailand has developed a National Artificial Intelligence Action Plan for National Development (2022–2027) through collaboration between the Ministry of Higher Education, Science, Research, and Innovation, and the Ministry of Digital Economy and Society. One of the key initiatives in this plan focuses on preparing AI infrastructure and promoting the application of AI technologies to enhance both public and private sector services. These efforts are further expanded in Strategic Priority 3, particularly in laying the foundation for AI technology infrastructure and data innovation. This foundation supports the development and application of AI-powered data services to improve quality, efficiency, and value creation.

To ensure targeted AI development in Thailand, key stakeholders—such as associations, research laboratories, educational institutions, investors, startups, large organizations, and relevant government agencies—must collaborate to create a strong community capable of producing advanced research and service-oriented innovations. The government should invest in essential information infrastructure, such as GPU-based cloud processing services and data service platforms for model training.

Additionally, the government should allocate research and development funding through various funds with the aim of ensuring that AI models developed can be offered as open-source code and open-license solutions. These models would provide tangible opportunities for the country's industrial players to build upon. Investment in infrastructure will enable Thailand to determine its own technological development trajectory and increase self-reliance. Foundational AI models will serve as the cornerstone of AI innovation, allowing the government to set fair pricing and equitable access to this technology.

In the initial phase, development should focus on the country's key sectors, such as healthcare, tourism, finance, and agriculture, to maximize impact.

Key measures for driving Strategy 3

Table 4 KPIs and Target Value under Strategy 3

Indicator	Unit	Target Value		
		2025	2026	2027
AI1: The growth rate of the number of AI model service providers in the country, encompassing both startups and established companies providing AI services.	Percentage (compared to the previous year)	10	15	20
AI2:The growth rate of the number of organizations utilizing AI innovations, including government agencies, businesses, and new enterprises	Percentage (compared to the previous year)	10	10	10

Key measures for driving Strategy 3

KM 3.1: Creating a Data Service Platform for AI Development

The National Big Data Platform, which primarily provides data services for analysis, can be expanded to support data services for training artificial intelligence (AI) models. This expansion will be achieved through a modular approach using a centralized data warehouse architecture. To establish this AI infrastructure, the Big Data Institute (BDI) will collaborate with partners from government, private sectors, and academia to develop a national data repository and mechanisms for delivering data through a central platform specifically designed for AI model training.

The initial efforts by BDI and partners will focus on collecting Thai-language data to enable the AI community to train Large Language Models (LLMs) for research and the development of services such as smart search systems and domain-specific chatbots in key areas. Following this, the initiative will expand to include other necessary data types. This process represents a technology localization effort, adapting existing technologies in the market to the local context before transitioning to deeper technological development (Deep Technology) in the future.

To support the early-stage development of artificial intelligence (AI) in Thailand, government agencies will be encouraged to disclose data in compliance with legal and ethical AI principles. This data will be made accessible to the AI community through data service platforms. Additionally, agencies will be encouraged to improve the quality of their data for effective utilization. Government data will play a critical role in the initial stages of AI development in the country.

This initiative can leverage the mechanisms of the Ministry of Digital Economy and Society and the National Digital Economy and Society Committee. Moreover, the Big Data Institute (BDI) and its partners will establish appropriate mechanisms to promote and encourage data donations for AI model training from private organizations, academic institutions, and large corporations, contributing to the overall advancement of the nation's technology.

Key Activities Under this Strategy:

1. Develop a centralized data repository specifically for AI model training.
2. Collect Thai-language data from various sources aligned with the Sectoral Strategy to build foundational language models (initial phase).
3. Establish a non-profit data service platform.
4. Create mechanisms to ensure government agencies maintain high-quality data and legally donate it to the centralized repository.
5. Promote mechanisms for private sector, civil society, and academia to donate data for national development.
6. Develop mechanisms to ensure that models created from donated data are open source/open license, enabling Thai enterprises to build upon them.

Collaborating Agencies

- Big Data Institute (BDI)
- Agencies under the Ministry of Digital Economy and Society
- Agencies under the Ministry of Higher Education, Science, Research, and Innovation
- AI Industry and universities

KM 3.2: Promoting AI-Enhanced Public Services

Public service delivery through digital systems is crucial in the modern era. Integrating artificial intelligence (AI) into these services can significantly enhance their quality, efficiency, speed, and accessibility across all targeted sectors (Sectoral Strategy). Examples of such services include: (1) Telemedicine consultations where doctors use AI to assist in diagnosing illnesses. (2) Enhancing tourism experiences by leveraging big data to analyze tourist behavior and tailor services to their needs. (3) Providing unlimited learning opportunities through platforms with AI recommending personalized lessons. And (4) Implementing smart traffic management by analyzing real-time traffic data to optimize traffic signals, route planning, and public transportation schedules.

The government should promote AI-driven innovations to elevate public services. Beyond investing in data platform infrastructure and high-speed computing networks, the government should fund pilot projects and scale-up initiatives by allocating dedicated budgets for AI applications in public services. Additionally, the private sector should be encouraged to participate in designing, developing, and delivering such services where appropriate.

Examples from both domestic and international contexts demonstrate that involving private organizations in public service management can improve service efficiency and quality. Private organizations are incentivized to compete and enhance operations, while their ability to quickly adopt and implement new technologies and innovations allows them to adapt and meet the changing demands of the market and citizens effectively.

To select organizations for public service management, specific mechanisms can be implemented, such as:

1. Conduct a Government Service Hackathon to generate new ideas for improving supported public services. This initiative aims to encourage government agencies that have allocated budgets to select private sector winners from the Hackathon for further engagement. The selected participants must meet three fundamental criteria: (1) Creative design capability (Great Idea). (2) Strong development expertise (Competent Development). And (3) Sustainable service potential, ensuring consistent, secure, and ready-to-use service delivery. The winning private sector entities will then be considered for service contracts.

2. Encourage private entities to exchange and share ideas and demonstrate their capabilities.

By involving private organizations, the government can reduce budgetary burdens and focus on its role as a regulator overseeing operations. Additionally, the government can establish appropriate ethical frameworks to guide the efficient and responsible use of AI in public services in the future.

Collaborating Agencies

- Agencies under the Ministry of Digital Economy and Society
- Digital Government Development Agency (DGA)
- Other agencies involved in piloting public services

KM 3.3: Promoting AI Adoption in Industry

The application of artificial intelligence (AI) in the industrial sector can be encouraged through various government mechanisms, as illustrated by the following examples:

1. Financial Incentives: Tax reductions and grants for businesses adopting AI in their operations. Tax incentives can encourage companies to invest in new technologies by alleviating financial burdens associated with technology development and integration into production processes.

2. Grants for Business Improvement: Financial assistance can support businesses in experimenting with AI to enhance operational efficiency, such as increasing productivity, reducing costs, or developing new products and services.

3. Knowledge Sharing and Advisory Platforms: Organizing seminars, events, and training sessions featuring AI experts to share knowledge and experiences can help businesses understand AI's potential and its appropriate application.

4. Strengthening the Startup Ecosystem: Supporting a robust ecosystem for startups to provide affordable AI solutions tailored to the industrial sector using local technologies. The focus should be on stimulating targeted private and foreign investments in AI innovation.

5. International Partnerships and Collaboration: Promoting alliances with international partners for knowledge sharing, best practices in AI application, and the development and regulation of AI systems in accordance with global standards.

The mechanisms outlined above not only facilitate the adoption of AI in the industrial sector but also contribute to fostering innovation and enhancing the long-term competitiveness of domestic industries.

Collaborating Agencies

- Digital Economy Promotion Agency (DEPA)
- Agencies under the Ministry of Digital Economy and Society
- Agencies under the Ministry of Higher Education, Science, Research, and Innovation

Strategy 4
Manpower in Big Data and AI

Strategic Priority 4 aims to establish a strong and sustainable foundation for driving the effective utilization of big data. This strategy focuses on human capital development, enhancing competencies in data-related knowledge to enable the effective use of technologies, innovations, and data resources.

Development efforts must be comprehensive in both breadth and depth:

- Breadth: Covering a wide range of sectors in the big data ecosystem, including manufacturing, industry, services, and government.
- Depth: Encompassing diverse target groups, from the general public with limited or basic digital literacy to experts and developers with advanced education, knowledge, and expertise in digital and data domains.

This strategic approach ensures the capacity to harness the full potential of big data technologies across all sectors and levels of expertise.

KPIs and Target Value: Strategy 4

Table 5 KPIs and Target Value under Strategy 4

Indicator	Unit	Target Value		
		2025	2026	2027
MA: The number of participants in training or knowledge enhancement programs on Big Data and AI, both offline and online	People (Cumulative)	100,000	130,000	160,000

Key measures for driving Strategy 4

KM 4.1: Developing Thai Content for Data Analysis and AI

The Big Data Institute (BDI) collaborates with domestic university networks, private sector entities, and relevant government agencies to develop Thai-language content for courses related to data technology, data analytics, and artificial intelligence (AI). The initiative also promotes partnerships with AI service providers operating in Thailand to encourage the translation or creation of Thai-language materials tailored for diverse learner groups. These range from primary and secondary education to training programs at universities and vocational schools, as well as skill enhancement for the current workforce.

The focus should be on producing micro-courses that are concise, engaging, targeted, and practical. These courses can be adjusted, curated, and structured into clear learning paths based on the specific needs of each career field. Emphasis should also be placed on achieving measurable learning outcomes that equip learners with practical skills applicable in the workplace. In the initial phase, the content should prioritize foundational skills to complement learning at the school and university levels.

Collaborating Agencies

- Big Data Institute (BDI)
- Agencies under the Ministry of Digital Economy and Society
- Agencies under the Ministry of Higher Education, Science, Research, and Innovation
- Industrial Sector

KM 4.2: Foster Platforms for Online Learning

Having an E-Learning system that consolidates Thai-language content is essential for building localized and national knowledge bases. Such a system enables widespread and equitable access to relevant knowledge for all citizens, particularly through Non-Degree learning programs that can develop specialized skills aligned with labor market demands.

While Thailand already has numerous learning platforms—offered by leading private companies, universities, the Ministry of Digital Economy and Society, the Ministry of Education, the Ministry of Labor, and other independent organizations—this diversity expands knowledge access but poses challenges in consolidating data on the nation's workforce and human capital. To overcome these challenges, the government should take the following actions:

1. Establish a centralized group of agencies to collaboratively design workforce data standards, led by the Ministry of Labor.

2. Big Data Institute (BDI): Design and develop mechanisms for appropriate workforce data sharing to facilitate policy planning for both the public and private sectors.

3. Ministry of Digital Economy and Society: Encourage e-Learning systems to collect citizens' learning data and make it exchangeable via APIs through a standardized Data Exchange Gateway.

4. Ministry of Digital Economy and Society: Create a registry of platforms offering technology-related learning that adhere to data exchange standards and provide courses accredited by ONDE, MHESI, the Thailand Professional Qualification Institute, or other relevant government agencies.

5. Big Data Institute (BDI): Link human capital data from various e-Learning systems via APIs and develop dashboards to support national workforce planning.

6. Government agencies: Collaborate to promote widespread learning about data and AI technologies on various e-Learning platforms by considering the following mechanisms:

- Tax incentives for individuals who pursue studies in data and AI technologies on registered platforms.
- Budget allocation to support government agencies that promote public learning on registered platforms, through partial or full funding.

Collaborating Agencies

- Big Data Institute (BDI)
- Ministry of Labor
- Ministry of Digital Economy and Society
- Ministry of Higher Education, Science, Research, and Innovation
- Ministry of Education

KM 4.3: Foster Public Awareness and Engagement

To promote widespread awareness of the applications of data and artificial intelligence (AI) technologies, relevant government agencies and private companies should establish mechanisms to enhance public understanding and participation. Examples include:

Supporting the creation of "online communities" dedicated to data and AI technologies, where individuals can exchange knowledge and experiences. These communities could feature online articles, short e-learning modules, video clips, and podcasts that explore methods and benefits of applying technologies and data analytics in various contexts, such as healthcare, agriculture, and education.

Encouraging campaigns or exhibitions organized by public and private entities to allow citizens to observe, learn, and experiment with data and AI in real-world scenarios.

Additionally, the government should raise awareness at the local community level by collaborating with local organizations and educational institutions to organize activities or projects that demonstrate the benefits of data analytics and AI. These initiatives can help communities feel more connected and engaged in the development of new innovations.

Collaborating Agencies

- Digital Economy Promotion Agency (DEPA)
- Agencies under the Ministry of Digital Economy and Society
- Agencies under the Ministry of Higher Education, Science, Research, and Innovation
- AI Industry Agencies and Universities

3.5 Implementation Mechanisms

To successfully implement the Strategic Plan, clear, effective, and flexible operational mechanisms are required to drive various strategies and monitor the progress and success of the plan. For the Thailand National Big Data Utilization Strategic Plan (2025–2027) to achieve its goals, the following key implementation mechanisms are essential:

1. Collaborative Working Mechanisms

To enable relevant agencies to implement projects that advance the plan's goals, collaboration across sectors must be fostered. This includes:

Developing prototype projects for data integration and analysis.

Creating common tools and standards for data management that can be shared among agencies, such as operational mechanisms for data governance, template data-sharing agreements, and standardized tools or guidelines for complying with data security and privacy laws.

All sectors of the data ecosystem should play an active role in driving the plan forward, ensuring alignment between the strategies and the missions and objectives of each organization.

Roles of Key Stakeholders:

- Central government agencies play a critical role in developing and providing state infrastructure for operations, including essential tools and robust security frameworks. They are responsible for establishing regulations, guidelines, and standards for data management applicable across all government entities. Additionally, these agencies should focus on creating shared services to ensure cost-efficiency and seamless operations, while also enhancing the skills and capabilities of personnel to utilize data effectively on a national scale.
- The private sector, academic institutions, civil society, and international or intergovernmental organizations are vital partners in driving innovation and creating value from public data. Collaboration with these sectors can help promote data monetization to generate revenue responsibly. Furthermore, various models of collaboration, such as consortiums, public-private partnerships (PPP), sandboxes, sector-funded initiatives, and crowdfunding, can be explored based on the specific context of data and technology use cases.
- Sector-specific agencies should work to integrate and connect data throughout their respective value chains to establish foundational support for open platforms and AI-enabled platforms. These platforms will serve users across government, private sectors, and the public. Sectoral efforts should also include developing specialized skills and capabilities to maximize data utilization and ensuring the long-term maintenance and enhancement of these platforms for sustainable service delivery.

2. Budgetary Mechanisms

Feedback from public consultations and interviews with stakeholders indicates that limited and inconsistent budget allocation has hindered progress. Adequate funding from diverse sources must be prioritized, such as annual budget appropriations, integrated budget frameworks, and relevant development funds. Experts should evaluate the feasibility, impact, and cost-effectiveness of proposed projects while minimizing redundancy in budget allocations.

3. Stakeholders Engagement Mechanisms with Partners and the Private Sector

Engaging partners and private sector entities enhances the success of big data applications. This includes participation in policy-making, planning, data sharing, and financial support. Facilitating access to big data platforms for SMEs and supporting collaborative models like Digital Testbeds and Digital Sandboxes can promote innovation by allowing private entities to experiment with real-world data in a controlled environment.

4. Capacity Development Mechanisms for Public Sector Workforce

The government should support initiatives to upskill public sector personnel to adapt to changing digital landscapes. This includes adopting Agile Unit workforce management models and leveraging external expertise. Advanced technologies such as Large Language Models (LLMs) for Thai can enhance public service delivery and decision-making. Specific skill development programs, such as micro-credentials, should be implemented alongside clear career paths to attract and retain talent for critical roles in the digital era.

5. Monitoring and Evaluation Mechanisms

Monitoring and evaluating projects and activities is vital to assess their efficiency and effectiveness. This includes developing datasets to track project lifecycle—from budget allocation to performance assessment—and integrating these datasets across agencies. Regular evaluations of key performance indicators (KPIs) for the plan and its strategies will provide a clear picture of progress and areas for improvement.

6. Local Engagement Mechanisms

Encouraging local agencies to design policies and services tailored to their specific contexts can enhance the relevance and sustainability of data utilization. Feedback channels for local agencies to share project proposals, services, or processes with central authorities will ensure grassroots innovations meet user needs effectively.

7. Policy-Level Steering Mechanisms

A high-level policy committee should guide the implementation of the plan. Existing mechanisms, such as the Digital Economy and Society Committee, can oversee operations, assign responsibilities, and monitor progress toward achieving the plan's objectives. Periodic reviews and updates to the plan should ensure its relevance and alignment with current circumstances. Subcommittees or working groups may be established to manage specific strategies as needed.

3.6 Readiness Analysis of Big Data Infrastructure Framework (Guiding Principle Jigsaw)

To Implement the Strategic Plan to yield tangible results, stakeholders in both the public and private sectors must implement projects and activities. These initiatives may include existing projects within various agencies (Bottom-Up) or additional projects required to enhance the development and utilization of big data (Top-Down). This approach aims to systematically and effectively enhance the practical use of big data.

The Big Data Institute (BDI) has compiled an initial list of 53 key projects from 13 agencies. These projects are instrumental in advancing the development and utilization of big data across the value chain and include contributions from the following entities:

1. Big Data Institute (BDI)
2. Electronic Transactions Development Agency (ETDA)
3. Digital Government Development Agency (DGA)
4. National Cyber Security Agency (NCSA)
5. Office of Personal Data Protection Commission (PDPC)
6. National Statistical Office (NSO)
7. Office of the National Digital Economy and Society Commission (ONDE)
8. Office of Agricultural Economics (OAE)
9. Office of the National Economic and Social Development Council (NESDC)
10. Ministry of Labour
11. National Agriculture Information Center
12. National Science and Technology Development Agency (NSTDA)
13. Digital Economy Promotion Agency (DEPA)

In this context, an evaluation of the alignment between key projects and the Big Data Utilization Infrastructure Framework (Guiding Principle Jigsaw), which serves as a guiding principle for driving Thailand toward becoming a Data-Driven Nation. This framework is structured across three dimensions: infrastructure, tools and standards, and the ecosystem that supports the effective utilization of big data.

While key stakeholders have initiated projects to enhance the readiness of infrastructure for data utilization, additional efforts are still required to ensure completeness and accessibility. Such efforts would enable agencies to leverage the infrastructure for big data utilization in a seamless and efficient manner. The details of these findings are outlined as follows.

Data Infrastructure

The key projects align comprehensively with the data infrastructure component, particularly focusing on developing software architectures and services based on common microservices. These enable flexible, scalable, and modular systems with standardized frameworks.

However, the alignment with the framework's principles, there remains a critical gap: the absence of a National Big Data Platform. Such a platform would streamline data utilization across agencies, fostering integration and collaboration without necessitating centralized data storage. This approach ensures that data governance and ownership remain with the originating agencies.

Additionally, although the Geo-Informatics and Space Technology Development Agency (GISTDA) has established a Technology Stack with both open standards and proprietary options, there is a lack of widespread adoption by other agencies managing geospatial data. This oversight could hinder the integration and effective utilization of geospatial data in the future.

Tools and Standards for Data Integration

Most projects focus on tools supporting Personal Data Protection Act (PDPA) Compliance, aiding public agencies in securely linking and sharing data. However, there are gaps in the development of additional tools and standards necessary for a cohesive system. These include:

- Standard Technology Stack for Development: Building upon ETDA's research to define standardized technology packages for software development related to data management, governance, and utilization.
- Data Sharing Agreement Template: Providing standardized agreements to streamline inter-agency data sharing while ensuring clarity and compliance.
- Data Utilization Measuring Guidelines: Establishing robust frameworks to evaluate the efficiency, impact, and value of data-sharing systems, encompassing both qualitative and quantitative metrics.

There is also a need for guidance on drafting Terms of Reference (ToR) for procuring data systems. Such guidance should include templates and standardized procedures to ensure interoperable and systematic data sharing.

However, certain aspects of development under the guiding principles, while supported by existing projects, still require additional efforts to achieve comprehensive outcomes that are practical, convenient, and efficient in application. For instance, the guidelines for drafting Terms of Reference (ToR) for data system procurement remain underdeveloped. There is a lack of detailed recommendations and standardized templates for drafting ToRs and procurement documents. These resources are essential to ensure that database system procurement follows a structured and standardized framework, enabling the seamless and systematic transmission of critical data. Additionally, such guidelines should consider cost-effectiveness and the long-term benefits for government agencies.

To address these gaps, further consultations and collaborations with key relevant agencies are necessary. These include the Digital Economy Promotion Agency (DEPA), the National Electronics and Computer Technology Center (NECTEC), the Electronic Transactions Development Agency (ETDA), the Digital Government Development Agency (DGA), and the Big Data Institute (BDI). By working together, these agencies can enhance the development of tools and methodologies for comprehensive data integration. Such efforts are essential to ensuring that Thailand achieves its goal of becoming a fully operational and effective Data-Driven Nation.

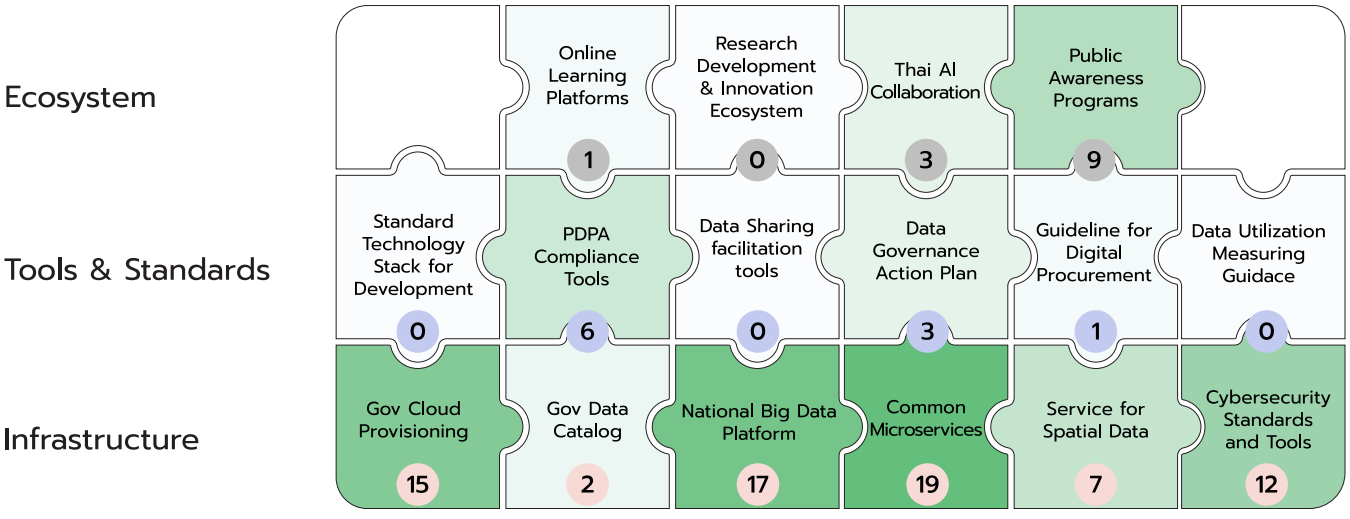
Ecosystem for Data Utilization

Most projects contribute to supporting public awareness programs aimed at raising widespread awareness of the applications of data and artificial intelligence technologies. However, under the development of the ecosystem for data utilization, there is a notable lack of projects supporting the research, development, and innovation ecosystem. This part of ecosystem is vital for generating knowledge and fostering innovation to advance national development. Achieving this requires collaboration among relevant agencies, such as the National Research Council of Thailand, the National Electronics and Computer Technology Center (NECTEC), the National Innovation Agency (NIA), the Digital Economy Promotion Agency (DEPA), and educational institutions at all levels across the country.

Furthermore, in the realm of education and workforce skill development for data-related fields, a more comprehensive approach is required to ensure broad access to relevant learning opportunities. To address the needs of various workforce groups and skill levels effectively, the government must prioritize the utilization of online learning platforms and implement strategic planning for data workforce development.

This includes defining critical knowledge requirements for each skill level within the data workforce and enhancing online learning platforms to provide tailored educational resources. These platforms should offer teaching materials and micro-credential programs that allow individuals from all backgrounds to access education equitably. Such initiatives would equip the workforce with the necessary skills to meet labor market demands promptly, fostering a more inclusive and adaptable talent pool.

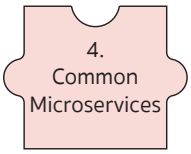
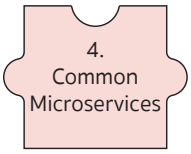
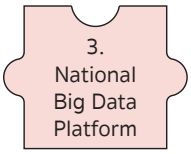
Figure 3.1 Number of Projects/Activities within Each Framework of Data Utilization Infrastructure

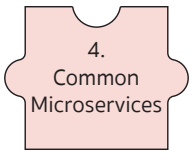
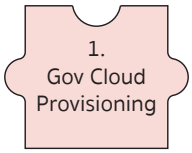
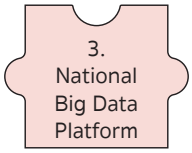
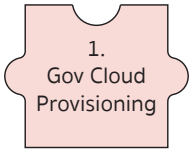
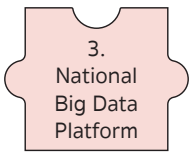
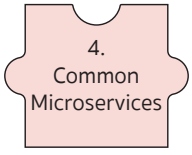


Note. The listed projects are compiled from project data of government agencies funded by the Annual Budget Expenditure Act, in-depth interviews, and Focus Group sessions.

In this regard, the list of projects and their alignment with the strategies and guiding principle jigsaw under the Thailand National Big Data Utilization Strategic Plan for 2025–2027 is presented in the following table.

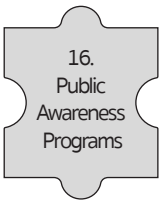
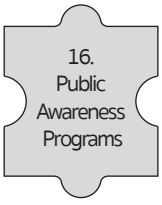
3.7 Examples of Projects Driving the Thailand National Big Data Utilization Strategic Plan 2025–2027

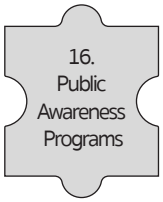
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.1	National Digital ID Promotion and Regulation (โครงการส่งเสริมและการกำกับดูแล Digital ID ของประเทศ) - Electronic Transactions Development Agency (ETDA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Common Microservices 
1.2	Study and Development of Key Digital Infrastructure (โครงการศึกษาและพัฒนาโครงสร้างพื้นฐานด้านดิจิทัลที่สำคัญ) - Electronic Transactions Development Agency (ETDA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Common Microservices 
1.3	Development of Standards or Guidelines to Facilitate Digital Government Development (2023–2027) (โครงการพัฒนามาตรฐานหรือแนวปฏิบัติเพื่ออำนวยความสะดวกในการพัฒนารัฐบาลดิจิทัล) (ปี 2566 - 2570) - Digital Government Development Agency (DGA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Guideline for Digital Procurement 
1.4	Development of the Open Government Data to Enhance Quality (2023–2027) (โครงการพัฒนาศูนย์กลางข้อมูลเปิดภาครัฐเพื่อยกระดับคุณภาพ) (ปี 2566 - 2570) - Digital Government Development Agency (DGA)	1.1 Developing National Big Data Platform	- National Big Data Platform  - Data Governance Action Plan 

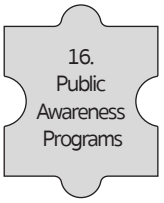
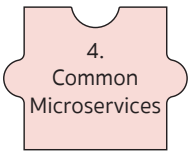
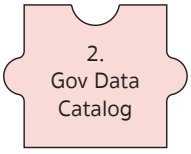
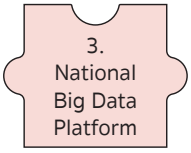
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.5	Development of Prototype Public Digital Services (2023–2027) (โครงการพัฒนาบริการดิจิทัลสาธารณะต้นแบบ) (ปี 2566 - 2570) - Digital Government Development Agency (DGA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Common Microservices  - Government Cloud Provisioning 
1.6	Development of the Government Data Exchange (GDX) (2023–2027) (โครงการพัฒนาศูนย์แลกเปลี่ยนข้อมูลกลางภาครัฐ) (ปี 2566 - 2570) - Digital Government Development Agency (DGA)	1.1 Developing National Big Data Platform	- National Big Data Platform  - Government Cloud Provisioning 
1.7	Development of Secure Digital Infrastructure for the Public Sector (2023–2027) (โครงการพัฒนาโครงสร้างพื้นฐานดิจิทัลภาครัฐที่มีความมั่นคงปลอดภัย) (ปี 2566 - 2570) - Digital Government Development Agency (DGA)	1.2 Enhance readiness of basic infrastructure for data utilization	- National Big Data Platform 
1.8	Development of Centralized Digital Tools (2023–2027) (โครงการพัฒนาเครื่องมือกลางดิจิทัล) (ปี 2566 - 2570) - Digital Government Development Agency (DGA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Common Microservices  - Data Governance Action Plan 

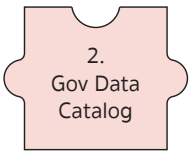
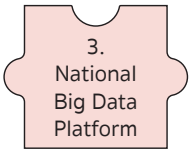
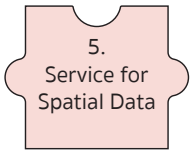
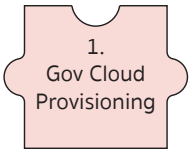
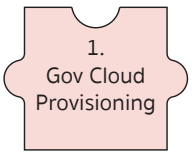
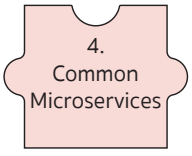
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.9	Announcement by the Digital Government Development Committee on Public Sector Data Governance (ประกาศคณะกรรมการพัฒนารัฐบาลดิจิทัล เรื่อง ธรรมาภิบาลข้อมูลภาครัฐ) - Digital Government Development Agency (DGA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Data Governance Action Plan 
1.10	Guidelines and Cybersecurity Framework (2021) (ประมวลแนวทางปฏิบัติและกรอบมาตรฐานด้านการรักษาความมั่นคงปลอดภัยไซเบอร์ พ.ศ. 2564) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 
1.11	Cybersecurity Standards for Cloud Systems (2024) (มาตรฐานด้านการรักษาความมั่นคงปลอดภัยไซเบอร์ระบบคลาวด์ พ.ศ. 2567) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 
1.12	The National Security Policy and Plan Implementation (2023–2027) (โครงการการขับเคลื่อนนโยบายและแผนการรักษาความมั่นคงปลอดภัยไซเบอร์) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 
1.13	National Computer Security Coordination Center (2023–2027) (โครงการจัดทำศูนย์ประสานการรักษาความมั่นคงปลอดภัยระบบคอมพิวเตอร์ของประเทศ) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 

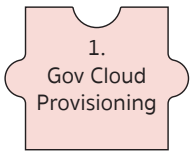
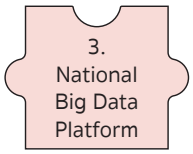
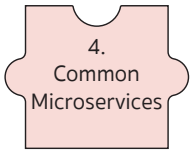
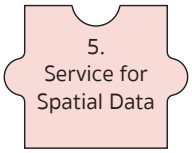
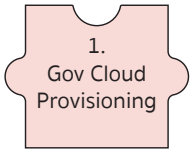
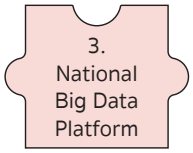
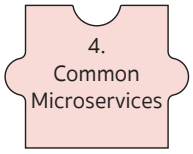
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.14	Cyber Security Laboratory Establishment (2023–2027) (โครงการการจัดตั้งห้องปฏิบัติการความมั่นคงปลอดภัยไซเบอร์) (Cyber Security Lab) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 6. Cybersecurity Standard and Tools
1.15	Platform Development for Cyber Threat Incident Reporting and Sharing (2023–2027) (โครงการพัฒนาแพลตฟอร์มสำหรับการรับและแบ่งปันเหตุการณ์ภัยคุกคามทางไซเบอร์) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.1 Developing National Big Data Platform	- National Big Data Platform 3. National Big Data Platform - Cybersecurity Standard and Tools 6. Cybersecurity Standard and Tools
1.16	National Cybersecurity Exercise and Risk Mitigation (2023–2027) (โครงการฝึกซ้อมเพื่อการป้องกันรับมือและลดความเสี่ยงจากภัยคุกคามไซเบอร์ของประเทศ) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 6. Cybersecurity Standard and Tools
1.17	Help Desk System for the National Computer Security Coordination Center (2023–2027) (โครงการระบบช่วยเหลือ (Help Desk) ของศูนย์ประสานการรักษาความมั่นคงปลอดภัยระบบคอมพิวเตอร์แห่งชาติ) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 6. Cybersecurity Standard and Tools

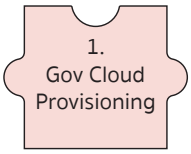
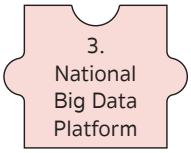
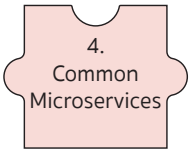
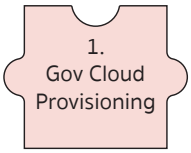
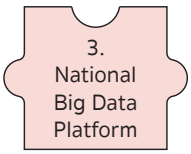
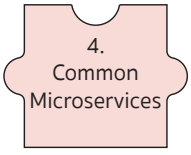
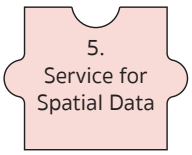
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.18	Cyber Operations Joint Command Center (NCSA War Room) (2023–2027) (โครงการจัดตั้งปฏิบัติการร่วมทางไซเบอร์ (NCSA War Room) (ปี 2566 – 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools 
1.19	Capability Development for Cybersecurity Operations of Critical Information Infrastructure Organizations in Compliance with International Standards (2023–2027) (โครงการพัฒนาขีดความสามารถกระบวนการปฏิบัติงานด้านไซเบอร์ตามมาตรฐานสากลของหน่วยงานโครงสร้างพื้นฐานสำคัญทางสารสนเทศ) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools  - Public Awareness Programs 
1.20	Cybersecurity Awareness Building for All Sectors (Cyber Clinic) (2023–2027) (โครงการการสร้างการรับรู้ด้านการรักษาความมั่นคงปลอดภัยไซเบอร์ให้กับหน่วยงานทุกภาคส่วน Cyber Clinic) (ปี 2566 - 2570) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools  - Public Awareness Programs 

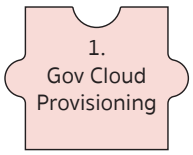
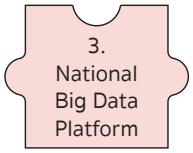
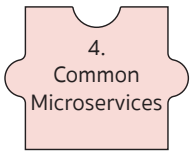
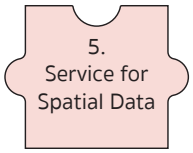
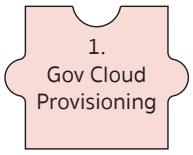
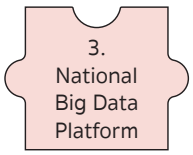
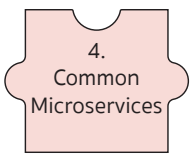
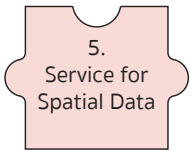
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.21	Cybersecurity Knowledge Sharing and Awareness Program (โครงการเสริมสร้างความรู้ความเข้าใจและสร้างความตระหนักเกี่ยวกับการรักษาความมั่นคงปลอดภัยไซเบอร์ Cybersecurity Knowledge Sharing) - National Cybersecurity Agency (NCSA)	1.2 Enhance readiness of basic infrastructure for data utilization	- Cybersecurity Standard and Tools  - Public Awareness Programs 
1.22	Proactive Data Protection Program (PDPC Eagle Eye) (2023–2027) (โครงการคุ้มครองข้อมูลส่วนบุคคลเชิงรุก)(PDPC Eagle Eye) (ปี 2566 - 2570) - Personal Data Protection Commission (PDPC)	1.2 Enhance readiness of basic infrastructure for data utilization	- PDPA Compliance Tools 
1.23	Promotion of Personal Data Protection Standards Program (2023–2027) (โครงการส่งเสริมมาตรฐานการคุ้มครองข้อมูลส่วนบุคคล) (ปี 2566 - 2570) - Personal Data Protection Commission (PDPC)	1.2 Enhance readiness of basic infrastructure for data utilization	- PDPA Compliance Tools 
1.24	Development of Personal Data Protection Act (2023–2027) (โครงการพัฒนากฎหมายด้านการคุ้มครองข้อมูลส่วนบุคคลของประเทศ) (ปี 2566 - 2570) - Personal Data Protection Commission (PDPC)	1.2 Enhance readiness of basic infrastructure for data utilization	- PDPA Compliance Tools 

No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.25	Development of National Data Protection Personnel Program (2023–2027) (โครงการพัฒนาบุคลากรด้านการคุ้มครองข้อมูลส่วนบุคคลของประเทศ) (ปี 2566 - 2570) - Personal Data Protection Commission (PDPC)	1.2 Enhance readiness of basic infrastructure for data utilization	- PDPA Compliance Tools  - Public Awareness Programs 
1.26	PDPA Center (2023–2027) (โครงการศูนย์บริการประชาชน) (PDPA Center) (ปี 2566 - 2570) - Personal Data Protection Commission (PDPC)	1.2 Enhance readiness of basic infrastructure for data utilization	- PDPA Compliance Tools 
1.27	Government Platform for PDPA Compliance (GPPC) (2023–2027) (โครงการเพิ่มประสิทธิภาพและขยายการให้บริการแพลตฟอร์มภาครัฐเพื่อรองรับการปฏิบัติตามกฎหมายคุ้มครองข้อมูลส่วนบุคคล (GPPC: Government Platform for PDPA Compliance) (ปี 2566 - 2570) - Personal Data Protection Commission (PDPC)	1.2 Enhance readiness of basic infrastructure for data utilization	- Common Microservices  - PDPA Compliance Tools 
1.28	Integration of Statistical and Government Information Data Program (2023–2027) (โครงการบูรณาการข้อมูลสถิติและสารสนเทศภาครัฐ) (ปี 2566 - 2570) - National Statistical Office (NSO)	1.1 Developing National Big Data Platform	- Government Data Catalog  - National Big Data Platform 

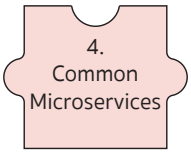
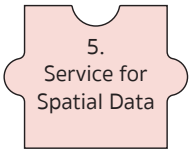
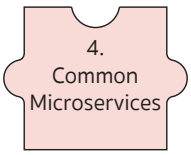
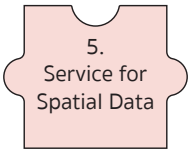
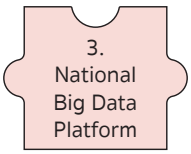
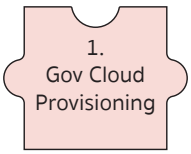
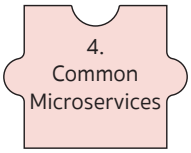
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 1: Developing Required Infrastructure for Big Data Utilization			
1.29	Development of Statistical and Information Data at the Provincial Level Across 76 Provinces Program (2023–2027) (โครงการพัฒนาข้อมูลสถิติและสารสนเทศระดับพื้นที่ 76 จังหวัด) (ปี 2566 - 2570) - National Statistical Office (NSO)	1.2 Enhance readiness of basic infrastructure for data utilization	- Government Data Catalog  - National Big Data Platform  - Service for Spatial Data 
1.30	Government Data Center and Cloud Service (GDCC) for General Systems or Open Data Services (2024–2025) (โครงการบริการระบบคลาวด์กลางภาครัฐ (Government Data Center and Cloud Service: GDCC) สำหรับระบบงานทั่วไปหรือบริการข้อมูลเปิด) (Open Data) (2567 - 2568) - Office of the National Digital Economy and Society Commission (ONDE)	1.2 Enhance readiness of basic infrastructure for data utilization	- Government Cloud Provisioning 
1.31	Development of the National Healthcare Cloud System Program (2023–2026) (โครงการพัฒนาระบบคลาวด์กลางด้านสาธารณสุขของประเทศไทย) (2566 - 2569) - Office of the National Digital Economy and Society Commission (ONDE)	1.2 Enhance readiness of basic infrastructure for data utilization	- Government Cloud Provisioning  - Common Microservices 

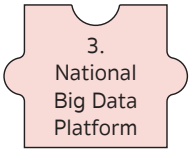
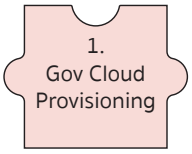
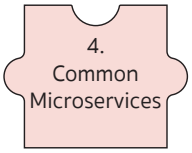
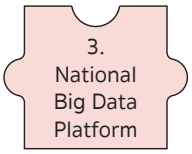
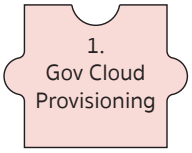
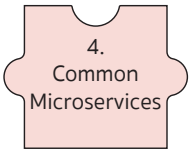
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 2: Promoting the utilization of infrastructure to address key development issues of the country			
2.1	Environmental Data Catalog (Envi Link) (แพลตฟอร์มเชื่อมโยงข้อมูลสิ่งแวดล้อมเพื่อการพัฒนาที่ยั่งยืน และยกระดับคุณภาพชีวิตคนไทย) (Envi Link) - Big Data Institute (BDI)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning  - National Big Data Platform  - Common Microservices  - Service for Spatial Data 
2.2	Health Information Exchange Platform (Health Link) (แพลตฟอร์มข้อมูลสุขภาพทั่วประเทศ) (Health Link) - Big Data Institute (BDI)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning  - National Big Data Platform  - Common Microservices 

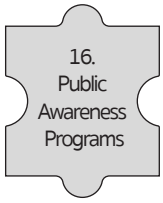
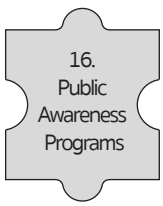
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 2: Promoting the utilization of infrastructure to address key development issues of the country			
2.3	National Tourism Intelligent Data Platform: Travel Link (โครงการแพลตฟอร์มข้อมูลอัจฉริยะด้านท่องเที่ยว (Travel Link)) - Big Data Institute (BDI)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning  - National Big Data Platform  - Common Microservices 
2.4	City Data Platform (โครงการขับเคลื่อนการพัฒนาเมืองอัจฉริยะด้วยการเชื่อมโยงข้อมูล) (City Data Platform) - Big Data Institute (BDI)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning  - National Big Data Platform  - Common Microservices  - Service for Spatial Data 

No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 2: Promoting the utilization of infrastructure to address key development issues of the country			
2.5	Thailand Agricultural Data Collaboration Platform (THAGRI) (แพลตฟอร์มความร่วมมือเพื่อสนับสนุนการวิเคราะห์และใช้ประโยชน์ข้อมูลขนาดใหญ่ภาคการเกษตร) (Thailand Agricultural Data Collaboration Platform: THAGRI) - Office of Agricultural Economics (OAE)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning  - National Big Data Platform  - Common Microservices  - Service for Spatial Data 
2.6	Thai People Map Analytics Platform: TPMAP (ระบบบริหารจัดการข้อมูลการพัฒนาคนแบบชี้เป้า) - Office of the National Economic and Social Development Council (NESDC)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning  - National Big Data Platform  - Common Microservices  - Service for Spatial Data 

No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 2: Promoting the utilization of infrastructure to address key development issues of the country			
2.7	Electronic Monitoring and Evaluation System of National Strategy and Country Reform: eMENSCR (ระบบติดตามและประเมินผลแห่งชาติเพื่อวิเคราะห์เชิงนโยบาย) - Office of the National Economic and Social Development Council (NESDC)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning 1. Gov Cloud Provisioning - National Big Data Platform 3. National Big Data Platform - Common Microservices 4. Common Microservices
2.8	Labour Big Data Analytics (โครงการบูรณาการจัดการข้อมูลแรงงานเพื่อเพิ่มศักยภาพการวิเคราะห์ข้อมูลขนาดใหญ่ด้านแรงงาน) - Ministry of Labour (MOL)	2.2 Developing a Framework for Data Integration and Analysis	- Government Cloud Provisioning 1. Gov Cloud Provisioning - National Big Data Platform 3. National Big Data Platform - Common Microservices 4. Common Microservices

No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 2: Promoting the utilization of infrastructure to address key development issues of the country			
2.9	Small Area Estimate modelling (การจัดทำแบบจำลองเพื่อประมาณค่าข้อมูลสถิติประชากรที่อาศัยอยู่ในอาคารสูงหรือพื้นที่ที่เข้าถึงยากและจัดเก็บข้อมูลประชากรไม่ได้ โดยใช้ข้อมูลขนาดใหญ่) - National Statistical Office (NSO)	2.1 Action Planning for Data Utilization	- Common Microservices  - Service for Spatial Data 
2.10	Estimation of Distance from Residences to Major Transportation Systems (การประมาณค่าระยะทางจากที่อยู่อาศัยไปยังระบบขนส่งหลัก) - National Statistical Office (NSO)	2.1 Action Planning for Data Utilization	- Common Microservices  - Service for Spatial Data 
2.11	Agriculture Big Data Analysis System (ระบบการวิเคราะห์ข้อมูลขนาดใหญ่) (ด้านการเกษตร) - National Agriculture Big Data Center (NABC)	2.2 Developing a Framework for Data Integration and Analysis	- National Big Data Platform  - Government Cloud Provisioning  - Common Microservices 

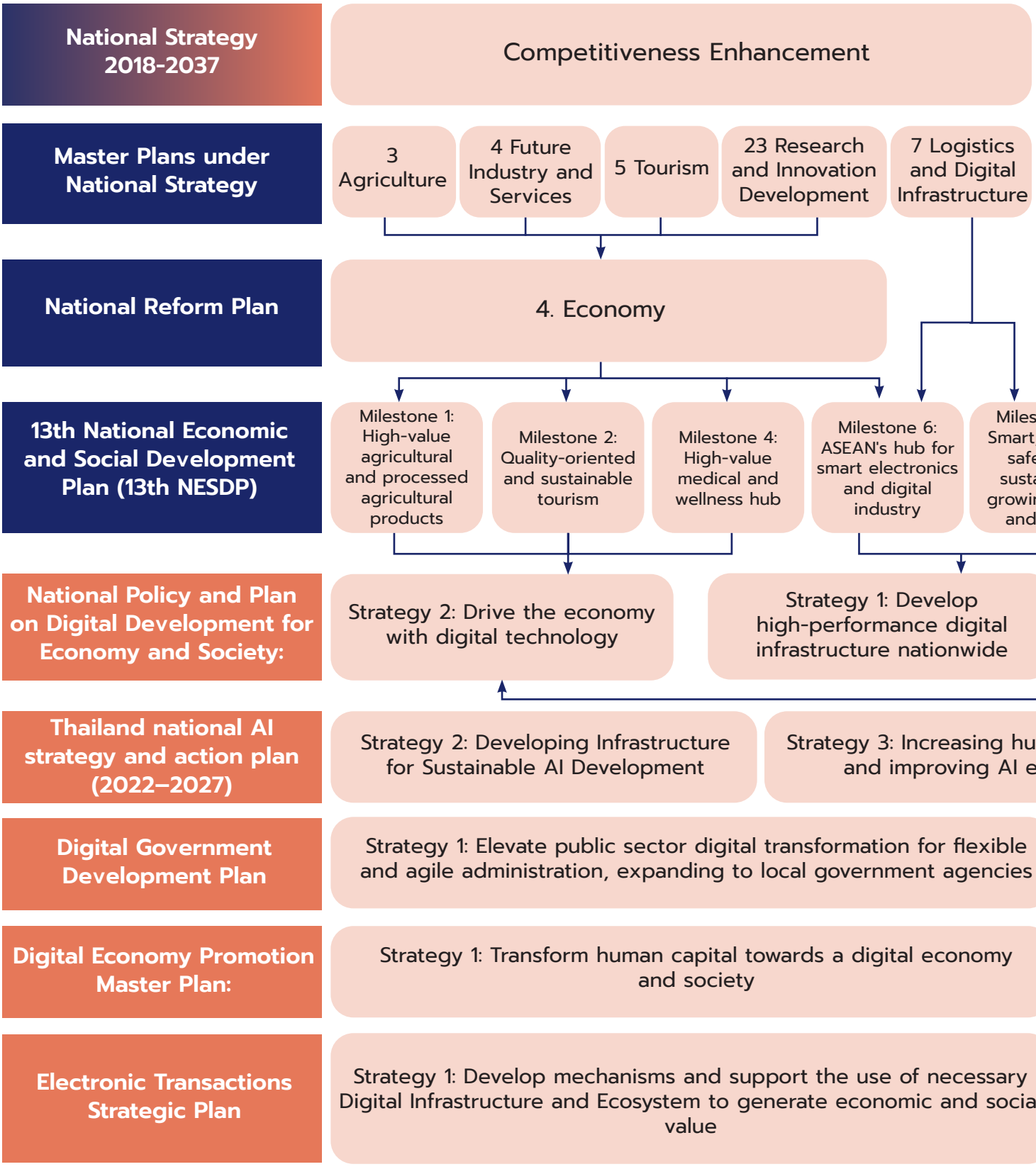
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 2: Promoting the utilization of infrastructure to address key development issues of the country			
2.12	Data Integration and Reporting System (Agriculture Sector) (ระบบการบูรณาการข้อมูลและจัดทำรายงาน) (ด้านการเกษตร) - National Agriculture Big Data Center (NABC)	2.1 Action Planning for Data Utilization	- National Big Data Platform  - Government Cloud Provisioning  - Common Microservices 
2.13	Urban Problem Management Platform Project (โครงการแพลตฟอร์มบริหารจัดการปัญหาเมือง) - National Science and Technology Development Agency (NSTDA)	2.2 Developing a Framework for Data Integration and Analysis	- National Big Data Platform  - Government Cloud Provisioning  - Common Microservices 

No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 3: AI Development and Utilization			
3.1	AI Standard & Governance (โครงการส่งเสริมการใช้งานปัญญาประดิษฐ์อย่างมีธรรมาภิบาล) - Electronic Transactions Development Agency (ETDA)	3.3 Promoting AI Adoption in Industry	- Thai AI Collaboration 
3.2	Targeted AI & Digital Transformation Support and Advisory Center Project (โครงการศูนย์ให้คำปรึกษาและพัฒนาผู้ประกอบการเพื่อส่งเสริม AI & Digital Transformation แบบมุ่งเป้า) - Electronic Transactions Development Agency (ETDA)	3.3 Promoting AI Adoption in Industry	- Thai AI Collaboration 
3.3	Thai Large Language Model Training: Thai LLM Training (โครงการฝึกปัญญาประดิษฐ์ด้วยข้อมูลขนาดใหญ่ที่เป็นภาษาไทย) - Big Data Institute (BDI)	3.2 Promoting AI-Enhanced Public Services	- Thai AI Collaboration 
Strategy 4: Manpower in Big Data and AI			
4.1	Digital Skills Development for Adaptation to Change Project (โครงการพัฒนาทักษะด้านดิจิทัลให้เท่าทันต่อการเปลี่ยนแปลง) - Electronic Transactions Development Agency (ETDA)	4.3 Foster Public Awareness and Engagement	- Public Awareness Programs 
4.2	Sustainable Tourism Development Project (โครงการพัฒนาการท่องเที่ยวอย่างยั่งยืน) - Big Data Institute (BDI)	4.3 Foster Public Awareness and Engagement	- Public Awareness Programs 

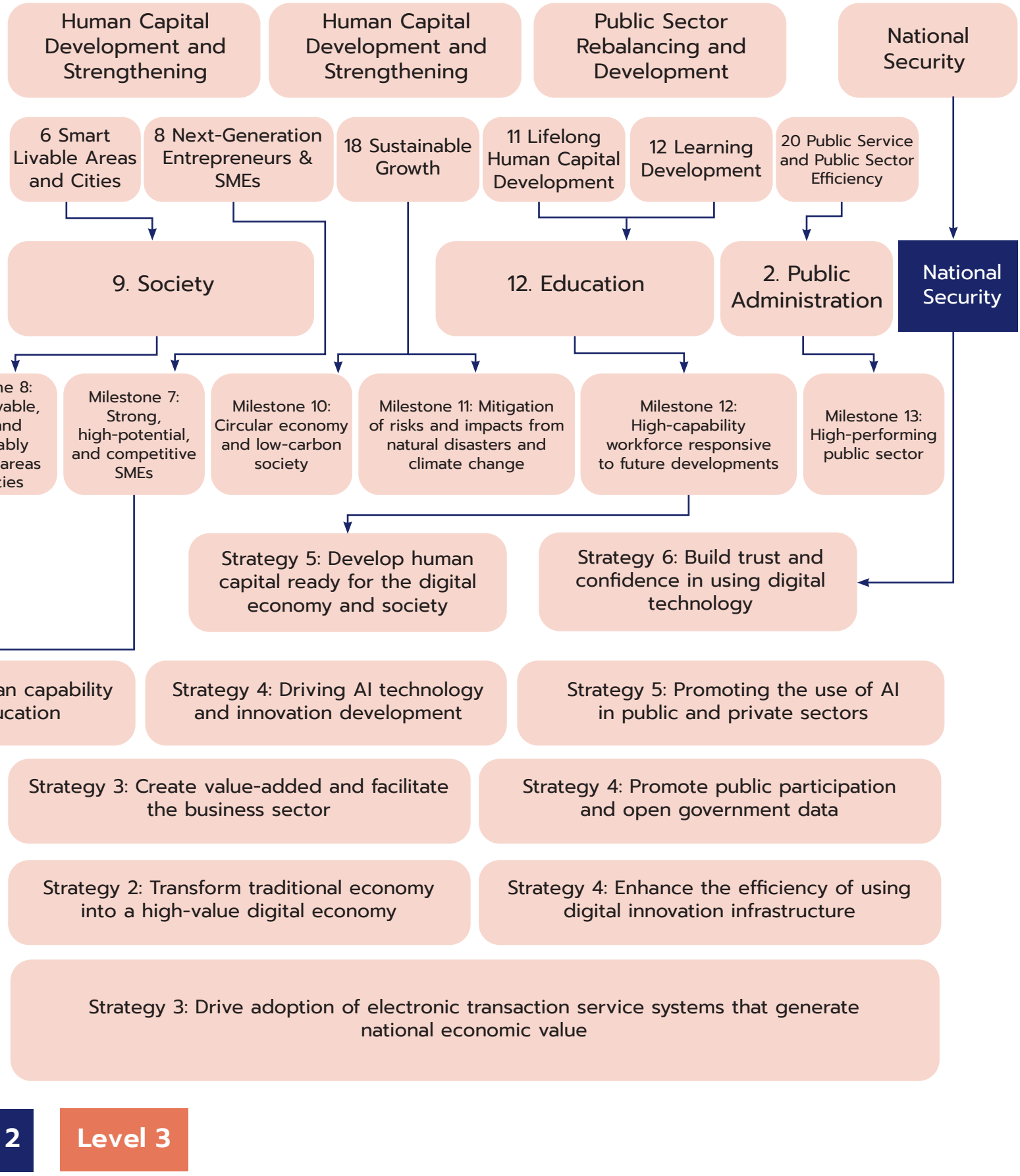
No.	Project/Activity Examples	Strategies	Guiding principle jigsaw
Strategy 4: Manpower in Big Data and AI			
4.3	Big Data Industry Development and Network Collaboration Project (โครงการพัฒนาอุตสาหกรรมและประสานเครือข่ายด้านข้อมูลขนาดใหญ่) - Big Data Institute (BDI)	4.3 Foster Public Awareness and Engagement	- Public Awareness Programs 16. Public Awareness Programs
4.4	Big Data Workforce Development Project (โครงการพัฒนากำลังคนด้าน Big Data) - Big Data Institute (BDI)	4.3 Foster Public Awareness and Engagement	- Public Awareness Programs 16. Public Awareness Programs
4.5	Digital and AI Transformation for Thai Entrepreneurs to Thrive Project (2024–2025) (โครงการดิจิทัลและเอไอทรานฟอร์เมชันเพื่อผู้ประกอบการไทยต้องรอด (Digital and AI Transformation) (ปี 2567 - 2568) - Digital Economy Promotion Agency	4.3 Foster Public Awareness and Engagement	- Public Awareness Programs 16. Public Awareness Programs
4.6	Development of Government Platform for Digital Skill Development: Learn to Earn for Lifelong Learning and Income Generation (โครงการพัฒนาแพลตฟอร์มภาครัฐเพื่อรองรับการพัฒนาทักษะดิจิทัล เรียนรู้มีรายได้ เรียนรู้ง่ายตลอดชีวิต ผ่านรูปแบบ Learn to Earn) - Office of the National Digital Economy and Society Commission (NESDC)	4.3 Foster Public Awareness and Engagement	- Online Learning Platforms 13. Online Learning Platforms

Appendix

Alignment of Thailand National Big Data with Related National Strategies and Plans. Ov



a Utilization Strategic plan (2025–2027)
erview of Strategic Alignment across 3 Levels:



2 **Level 3**

20-Year National Strategy (2018–2037)

Vision: " to become a developed country with security, prosperity and sustainability in accordance with the Sufficiency Economy Philosophy"

"A secure nation, happy citizens, continuously developing economy, equitable across multiple dimensions, developing people of all ages to be good, cap eco-friendly growth, and building a government for the people and public inte

National Strategy on Security

- Internal peace and order
- Addressing security threats
- Enhancing national readiness
- ASEAN and international security integration
- Holistic security management mechanisms

National Strategy on Competitiveness Enhancement

- Value-adding agriculture
- Future industry and services
- Diversifying tourism
- Connectivity infrastructure
- Entrepreneurship-based economy.

National Strategy on Human Capital Developing and Strengthening

- Values and cultural transformation
- Lifelong human capital development
- 21st-century learning reform
- Recognizing diverse human intelligence
- Enhancing physical and mental well-being
- Conducive development environments
- Sports potential development.

e society, and sustainable natural resource base." Elevating the country's potential pable, and quality citizens, creating social opportunities and equality, fostering erest.

National Strategy on Social Cohesion and Equity

- Reducing inequality across all dimensions
- Decentralizing growth hubs
- Empowering social forces
- Boosting local community self-reliance.

National Strategy on Eco-Friendly Development and Growth

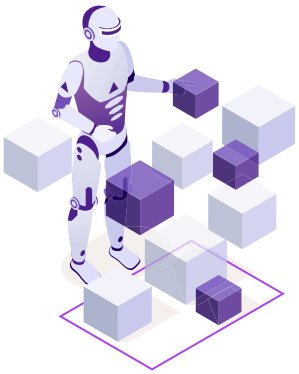
- Sustainable green growth
- Marine/blue economy growth
- Climate-friendly growth
- Eco-cities, rural, and industrial development
- Water, energy, and food security.

National Strategy on Public Sector Rebalancing and Development

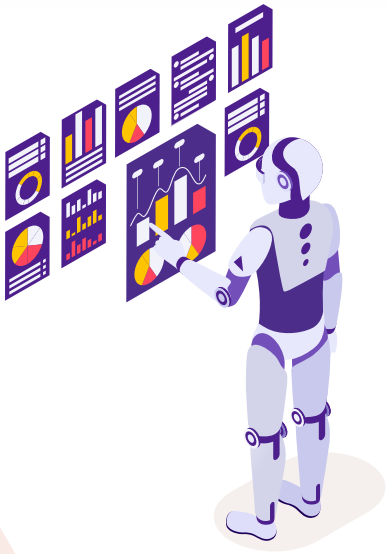
- People-centric, transparent, and fast government
- Integrated strategic administration
- Small and flexible government
- Modern public sector
- Competent and ethical workforce
- Anti-corruption
- Relevant and essential laws
- Fair justice system respecting human rights.

Master Plans under National Strategy (2023–2037) (Revised)

Consists of **23 Key Master** Plan Issues to ensure integrated alignment towards achieving the National Strategy Vision:



1. National Security
2. Foreign Affairs
3. Agriculture
4. Future Industry and Services
5. Tourism
6. Smart Livable Areas and Cities
7. Logistics and Digital Infrastructure
8. Next-Generation Entrepreneurs & SMEs
9. Special Economic Zones (SEZs)
10. Values and Cultural Transformation
11. Lifelong Human Capital Development
12. Learning Development



13 Promoting Health and Well-being

17 Social Equity and Social Protection

21 Anti-Corruption and Misconduct

14 Sports Potential

18 Sustainable Growth

22 Law and Justice System

15 Social Power & Forces

19 Integrated Water Management

23 Research and Innovation Development

16 Grassroots Economy

20 Public Service and Public Sector Efficiency

National Reform Plan (Revised)

Political Reform

Foster democratic understanding with the King as Head of State, promote political participation, maintain stability, and ensure politicians act for public benefit.

Public Administration Reform

Prepare for multi-dimensional changes and the New Normal, align with national strategies, ensure public sector transparency, quality, and results.

Legal Reform

Enact good and necessary laws (pursuant to Section 258 C of the Constitution), facilitate public law-making participation, and ensure easy legal access.

Justice System Reform

Deliver transparent, timely justice, ensure equal access, reduce disparity, and eliminate discrimination

Economic Reform

Elevate national economic capacity, distribute growth, adjust institutional governance mechanisms to drive competitiveness, and reduce inequality.

Natural Resources and Environment Reform

Systematically restore natural assets, balance conservation with economic utilization, and mitigate natural disasters via Pracharath partnership

Public Health Reform

Provide efficient, modern healthcare services, boost health literacy, prevent diseases, and enable quality eldercare at home and in communities.

Mass Media and Information Technology Reform

Balance media freedom with ethical responsibility, regulate digital media, and foster media as a social learning platform

Social Reform

Eliminate poverty, protect vulnerable groups, ensure fair resource allocation, and leverage data for localized policy solutions.

Energy Reform

Ensure fair market competition, promote clean/eco-friendly energy, and share energy analysis data to prepare national infrastructure.

Anti-Corruption Reform

Combat misconduct, educate citizens, enforce good governance, and mandate transparent, open government data.

Educational Reform

Enhance educational quality, reduce disparities, pursue excellence, optimize resource efficiency, and support lifelong learning

Culture, Sports, Labor, and Human Development Reform

Promote morality, add cultural economic value, encourage active lifestyles, improve health literacy, and build workforce skills.

The 13th National Economic and Social Development Plan

The 13th National Economic
"Progressive Society with Susta

Objectives

- Restructuring manufacturing and service sectors towards an innovation-based economy
- Developing human capital for the new global era
- Creating a society of opportunities and fairness
- Ensuring the transition of production and consumption towards sustainability
- Enhancing Thailand's capability to cope with changes and risks in the new global contex

High Value-Added Eco-Friendly Economy

1. High-value agricultural and processed agricultural products
2. Value-oriented and sustainable tourism
3. Electric Vehicle (EV) manufacturing base
4. Comprehensive medical and wellness hub
5. Trade, investment, and logistics gateway
6. Smart electronics and digital services

Society of Opportunity and Equality

7. Strong, high-potential, and competitive SMEs, community, and social enterprises
8. Modern, prosperous, and livable smart areas and cities
9. Reduction of intergenerational poverty and adequate social protection

and Social Development Plan
ainable Value-Creating Economy"

Key Goals & 13 Development Milestones

- High-value agricultural and processed agricultural products
- Value-oriented and sustainable tourism
- Electric Vehicle (EV) manufacturing base
- Comprehensive medical and wellness hub
- Trade, investment, and logistics
- Smart electronics and digital services
- SMEs, community, and social enterprises
- livable smart areas and cities
- Reduction of intergenerational poverty and adequate social protection
- Circular economy and low-carbon society
- Mitigation of risks and impacts from natural disasters and climate change
- High-capability workforce responsive to future developments
- High-performing public sector

Sustainable Way of Life

10. Circular economy and low-carbon society

11. Mitigation of risks and impacts from natural disasters and climate change

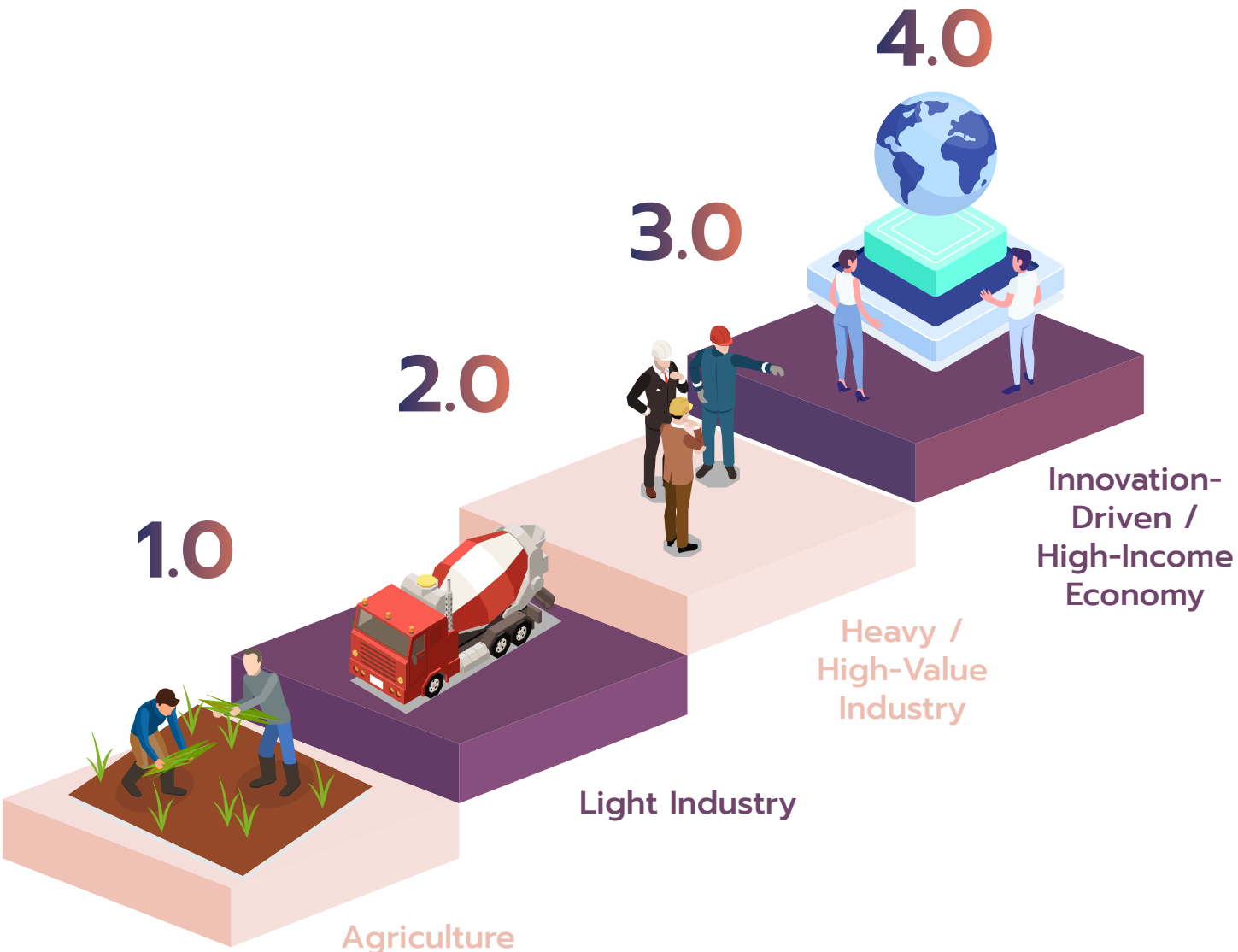
Key Enablers for Transformation

12. High-capability workforce responsive to future developments

13. High-performing public sector

The National Policy and Plan on Digital Development for Economy and Society (2018–2037)

> Reform Thailand into "Digital Thailand"



Strategy 1 Build country-wide high-capacity digital infrastructure

Strategy 2 Boost the economy with digital technology

Strategy 3 Create a quality and equitable society through digital technology

Strategy 4 Transform into digital government

Strategy 5 Develop workforce for the digital era

Strategy 6 Build trust and confidence in the use of digital technology

The 5-Year Action Plan of the Ministry of Digital Economy and Society (2023–2027)

Vision

" Lead and drive the utilization of digital technology and innovation to transform Thailand towards Thailand 4.0 "

Strategic Focus Areas

1. A digital ecosystem, infrastructure, and innovation system are in place to support enhanced competitiveness and increased economic value.

2. Citizens enjoy a better quality of life through the use and literacy of digital technology.

3. Citizens, the private sector, and the public sector receive services delivered through digital technology and innovation.

4. The workforce possesses digital knowledge and skills that can be applied to drive economic and social development.

5. All sectors have confidence in the secure and reliable use of digital technology, in compliance with international standards and with effective application of laws.

Strategy 1

Drive the modern economy through digital ecosystems, infrastructure, and innovation.

Tactics

- Promote the use of digital technology and innovation to enhance competitiveness.
- Create an ecosystem to facilitate the development of Smart Cities.
- Support digital startups in the manufacturing and service sectors.
- Encourage and support investors and entrepreneurs to apply digital technology and innovation.
- Provide high-quality and comprehensive telecommunications network services.
- Promote and develop technology-based goods transportation and logistics systems.
- Form a national space management policy.
- Establish mechanisms to drive strategic initiatives at the provincial level.

Strategy 2

Build a future society and reduce inequality using digital technology

Tactics

- Create opportunities and encourage the equitable and inclusive utilization of technology across all sectors, including research, development, and innovation for education and healthcare services.
- Develop technology skills for all population groups.
- Promote the application of digital technology at the community level, including developing community networks to raise awareness and understanding.
- Improve the quality of life for people in pilot provinces using technology in daily life.
- Establish a mechanism to drive the strategy at the provincial level.

Strategy 3

Promote digital technology and service innovations for citizens, private sector, and public agencies

Tactics

- Develop smart services and service innovations that facilitate and meet the needs of citizens and businesses, including promoting the creation of a central platform for government services.
- Develop high-quality government service systems using technology.
- Promote the development of digital infrastructure for the government.
- Promote standardized public sector management, including criteria and guidelines for driving digital transformation, and ensuring the disclosure and linkage of data with good governance.
- Encourage the collection, analysis of big data, database development, and dissemination of information to the public, and promote Big Data.
- Establish mechanisms to drive strategies at the provincial level.

Strategy 4

Prepare workforce and human capital for the digital era

Tactics

- Promote the development of curricula and skills development in digital technology for the digital workforce, as well as develop organizational leaders in applying technology in organizational planning and development.
- Promote and develop digital technology skills to ensure a sufficient workforce in these fields to meet future needs and support the entry into the labor market, including encouraging the employment of foreign personnel with digital expertise.
- Establish a mechanism to drive the strategy at the provincial level.

Strategy 5

Build trust and cybersecurity confidence in digital usage

Tactics

- Develop and modernize existing laws, regulations, measures, standards, and mechanisms, including developing policies, plans, frameworks, and cooperation both domestically and internationally, while promoting confidence in the use of technology.
- Implement and support the prevention and suppression of tech-related crimes.
- Promote and support all sectors in conducting secure and trustworthy e-Commerce.
- Encourage all groups of people to use all forms of media and technology creatively, with awareness and social responsibility, and support all sectors in producing creative digital media.
- Establish a mechanism to drive strategic initiatives at the provincial level.

Thailand Digital Government Development Plan 2023 – 2027 (1)

Vision

"Towards Convenient, Transparent, Resilient and Responsive Public Services"

Goals

- Agile Government
- Responsive Government
- Enhance Competitiveness
- Open Government & Trust

Indicators

85 percent of the satisfaction levels of Citizen with public services

Thailand's ranking in the UN's E-Government Development Index (EGDI) rising to **top 40**

Strategy 1

Enhancing digital transformation in government to build resilience and agility, and expand digital transformation support to local government agencies

Indicators

1. By 2027, 100% of government agencies adopt data government practices.
2. By 2027, the progress rate of data sharing and integration in key focus areas4 is at 100%.
3. By 2027, 100% of government agencies comply with common guidelines on government digital process.
4. By 2024, the progress rate of common services/shared application enabling services development is at 100%.
5. By 2027, the percentage of government officials equipped with skills and capabilities required to undergo digital transformation at least 90%

Tactics

1. Set standards and operational guidelines related to digital government
2. Develop information according to the principles of data governance and promote the use of Big Data to create policy
3. Provide and exchange of digital data between government agencies through a data exchange center
4. Develop a common platform and digital infrastructure for government agencies to work Seamlessly
5. Creating a general digital service package for government agencies
6. Improve operational procedures, reduce & stop requesting copies of documents from the citizen. (Re-Engineering Process and Digitalization Process)
7. Review, improve and develop laws, regulations to support digital government.
8. Upgrad digital skills and the culture of using digital technology among government personnel.
9. Promote cooperation between the public and private sectors to develop the digital government.

Strategy 2

Making public services more convenient and accessible

Indicators

1. By 2027, the progress rate of one-stop-service platform development for citizens in key focus areas1 is at 100%.
2. By 2027, the proportion of government-to-citizen online services reaches 90%.
3. By 2027, citizens' satisfaction with government online services in key focus areas is not lower than 85%.

Tactics

1. Develop and improve government services to be Online Service by adhering to the Citizen Centric principles that all groups of people can easily access.
2. Development of one-stop digital services
3. Build a platform for integrated management and government digital services.
4. Develop a personalized service without requesting by citizen
5. Research and innovation development for Services and Platform

Strategy 3

Promoting ease of doing business and value creation

Indicators

1. By 2027, the progress rate of one-stop-service platform development for businesses in key focus areas2 is at 100%.
2. By 2027, the proportion of government-to-business online services is at 90%.
3. By 2027, businesses' satisfaction with government online services in key focus areas is not lower than 85%.

Tactics

1. Develop of online services and government digital platforms to facilitate End-to-End business value chain of digital Service Platform
2. Review and improve processes that hinder entrepreneurs to run business operations.
3. Provide digital tools or work systems for entrepreneurs to increase their competitiveness

Strategy 4

Facilitating open government through citizen participation and open government data

Indicators

1. By 2025, the progress rate of budget management systems integration is at 100%
2. By 2025, the progress rate of public engagement channels development in key focus areas3 is at 100%
3. By 2026, the progress rate of citizen complaints management system development is at 100%
4. By 2027, 100% of government agencies opening up data on Data.go.th with data governance standards compliance.
5. By 2027, at least 10 of projects/activities incorporating the use of open government data are initiated.

Tactics

1. Develop a mechanism for auditing government to ensure transparency.
2. Provide channels for listening opinions in policy formulation, laws and regulations to promote the sharing opinions towards the development by area (Strong from the Bottom)
3. Provide a public disclosure of open government data in the form of digital data

Digital Economy Promotion Master Plan - Phase 2 (2023–2027)

Vision

TO DEVELOP A STRONG, RESILIENT, AND DYNAMIC DIGITAL ECONOMY AND SOCIETY BASED ON ADVANCED HUMAN CAPITAL, TECHNOLOGY, AND INNOVATION.

Goals and Indicators

1	Digital Density Index	Level 3.0
2	Contribution of digital economy to GDP	30%
3	SME productivity growth	6%
4	Less than 5 times of income gap between the top-earning 10% and the bottom 40%	Below 5 times

Strategy 1

Transform human capital for the digital economy and society:

Goals

- Develop 500,000 workers with digital skills

Tactics

- Build new skills for new generations
- Upskill and reskill existing workforce
- Fill up a digital talent pool

Strategy 2

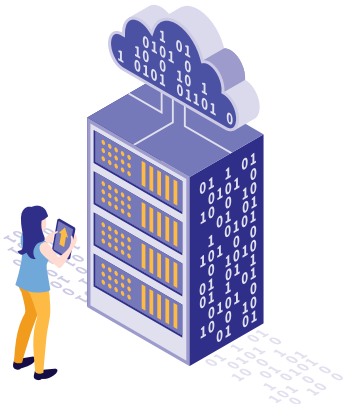
Transform traditional economy into high-value digital economy

Goals

- Digitalize 100,000 traditional businesses
- Increase digital industry value by 12%.
- Increase investment value of digital industry by 10%

Tactics

- Accelerate digital startups to reach global markets
- Accelerate value creation by digital industry
- Accelerate digitalization of indigenous sectors
- Accelerate digitalization of the local economy:



Strategy 3

Create new opportunities and ensure inclusive economic development

Goals

- Upgrade 1 city in Thailand to rank among world's top 10 livable smart cities
- 95% of people have digital literacy and access to digital technology

Tactics

- Build livable smart cities
- Build inclusive new opportunities
- Build a quality digital society

Strategy 4

Optimize use of digital infrastructure

Goals

- Establish 3 new digital infrastructure projects
- Attract 3 leading digital corporates to invest in Thailand

Tactics

- Optimize digital infrastructure for all
- Enhance competitiveness of the Thai digital ecosystem

The Strategic Plan on Electronic Transactions 2023–2027

Vision

Thailand provides an optimal ecosystem for electronic transactions as a key mechanism to foster opportunity, sustainability, and competitive advantage

Objectives 1

The proportion of value-added in the digital economy to GDP increased to 30%.

Objectives 2

Thailand's Competency in Digital Competitiveness ranking is not less than 30th.

Strategy 1

Develop mechanisms and support the use of digital infrastructure and ecosystem necessary to ensure that transactions are carried out. Creating economic and social benefits

Goal

- There are mechanisms that support the development of digital infrastructure and modern ecosystems, which significantly affect the country's economic and social development.
- The number of Thai service providers/Thai entrepreneurs in the field of digital infrastructure each year increased compared to the base year.

Tactics

- Establish mechanisms for using digital infrastructure/ ecosystems such as Trust framework and Interoperability
- Establish cooperation to support the connection or exchange of information for electronic transactions with an emphasis on creating a broad impact.

Strategy 2

Develop standards and guidelines to build confidence and facilitate transactions under proper supervision. To increase competitiveness and equality.

Goal

- Evaluation of the achievement of the law It is not less than 60 percent in 4 areas (competitiveness/ international conformity/suitability for social conditions/reducing inequality and creating fairness).
- The public has confidence in the services that are certified/audited based on standards. Transaction Criteria Not less than 80%

Tactics

- Develop and promote the use of transaction standards in the public and private sectors that are on par with the world, competitive, and create digital sustainability.
- Promote the development and communication of legal mechanisms that are conducive to Thailand's digital economy.
- Use prospective data or research to create a roadmap for standards and regulations or review their suitability.

Strategy 3

Promote the use of electronic transaction service systems that create economic value of the country. (Adoption)

Goal

- Thailand has more than 80% of digital adoption and digital leaders within 5 years.
- The increase in transaction volume that has a significant impact on increasing digital GDP has an annual growth rate of at least 15% per annum (YOY).

Tactics

- Raise the standard of Thailand's service system to be able to compete internationally
- Support the private sector service system to be able to connect with the government sector effectively.
- Promote the use of PR & NETWORK

Strategy 4

Encourage the public to have knowledge in electronic transactions in a secure and secure manner. and ready for change

Goal

- IMD's World Digital Competitiveness Knowledge Pillar is ranked no lower than 42nd and within 40th place in 2027.
- Thailand's average score of information literacy and digital literacy at 72 points in 2027 (GCI 4.0)

Tactics

- Create knowledge and awareness for the public to be able to transition through transactions in a timely and equitable manner.
- Produce and develop personnel in the field of transactions to meet the needs and keep up with technological changes.
- Promote the utilization of databases and exchange knowledge in research and development.

Thailand national AI strategy and action plan (2022–2027)

Vision

Thailand has an effective ecosystem to promote AI development and application to enhance the economy and quality of life within 2027

Goals

- Human capacity and technology
- Economic growth
- Social and environmental impact

Indicators

- Readiness of foundational technology supporting artificial intelligence technology
- Technological capabilities and educational systems in artificial intelligence

Strategy 1

Preparing Thailand's readiness in social, ethics, law, and regulation for AI application

Work plans

- Policy and standard for AI Ethics
- Driving awareness and education for AI Ethics

Indicators

- At least 600,000 Thai population have awareness of AI law and ethics
- An AI Law & Regulation is enforced

Strategy 2

Developing Infrastructure for Sustainable AI Development

Work plans

- Creating AI expert networks
- Creating a national platform for advanced data analytics and management
- Creating a national AI service platform
- Developing High Performance Computing (HPC) infrastructure

Indicators

- Increase Thailand's Government AI Readiness index to rank among top 50 globally
- Increasing digital infrastructure investment 10% per year to support AI development in both public & private sectors

Strategy 3

Increasing human capability and improving AI education

Work plans

- Improving AI education and knowledge creation
- AI Scholarship programs
- Cooperation mechanism development with researchers & experts from abroad

Indicators

- Creating more than 30,000 AI talents within 6 years

Strategy 4

Driving AI technology and innovation development

Work plans

- Applying AI technology and innovation for strategic sectors
- Developing AI core technology and platform

Indicators

- Strengthen AI technology by developing at least 100 R&D prototypes within 6 years
- Wide adoption of AI research, development and innovation helps create business & social impact of at least 48 billion Baht by 2027

Strategy 5

Promoting the use of AI in public and private sectors

Work plans

- Promoting AI use in government sector
- Promoting AI use in key industries
- Promoting system integrator industry with AI capability
- Developing mechanisms & sandboxes for business innovation and AI startup

Indicators

- Number of agencies (government, business & new entrepreneurs) using AI innovation is increased to at least 600 agencies in 6 years
- Thailand's AI competitiveness is increased by AI applications

Appendix 2

National Tourism Intelligent Data Platform: Travel Link

National Tourism Intelligent Data Platform: Travel Link

The Big Data Institute (Public Organization) (BDI) initiated the development of the National Tourism Intelligent Data Platform (Travel Link) by studying the needs of stakeholders in the tourism sector within relevant areas. Since each area has distinct tourism goals and requirements, understanding stakeholder needs is essential for platform development. Stakeholders can be categorized into two primary groups: public sector and private sector. The private sector can further be divided into various industries such as hotels, restaurants, and shopping malls. The methods for gathering stakeholder needs include:

- In-depth Interviews: Conducted one-on-one with respondents, allowing detailed inquiries, especially for sensitive topics not suitable for group discussions.

- Focus Groups: Gathering stakeholders from the same industry (e.g., hotel operators) to exchange views and experiences collectively.

Subsequently, the Big Data Institute (BDI) **conducted a study of data relevant to stakeholder needs and defined the scope of data necessary for analysis, ensuring feasibility and suitability for data integration within the specified timeframe.** Given the diverse requirements, usage patterns, and varying levels of importance to stakeholders, platform developers had to analyze the interview findings to identify datasets relevant to stakeholders, identify the data owners, and prioritize datasets based on their significance and ease of access.

This process allowed both developers and stakeholders to establish a clear and shared understanding of the data landscape, while also guiding platform development. The defined scope included details such as the historical timeframe of the data, geographical areas of interest, and the procedures and costs associated with acquiring the data (if applicable).

After finalizing the datasets and tasks achievable within the specified timeframe, data engineers and system developers will **design the platform's system architecture and data integration mechanisms.** This included identifying necessary developments or adjustments, such as **creating a gateway to connect specific datasets in accordance with data owner policies.** Concurrently, data analysts and data scientists will **compile a data inventory and identify feasible use cases** aligned with the needs of stakeholders in the area.

For example, a study of stakeholder requirements in Phuket revealed that the most critical and highly demanded data included the number of visitors to Phuket and their demographic profiles. This information could be used for targeted marketing plans tailored to specific nationalities or for preparing infrastructure to accommodate incoming tourists.

These findings and the conceptual framework were presented in stakeholder engagement activities, where methodologies and operations were discussed, and feedback was gathered for further system refinement. These meetings involved stakeholders who had previously participated in interviews to ensure continuity and to enable targeted improvements. **Additionally, these sessions collected input for designing user interfaces optimized for cross-system data visualization.**

Given that some datasets required for integration and analysis may include sensitive information, such as national ID numbers or passport numbers, defining the rights and responsibilities for data management was crucial. **This involved creating comprehensive data governance documentation, specifying access and usage policies, user roles, and responsibilities for managing sensitive data.** These documents outlined clear procedures for handling sensitive information, including the scope of access permitted for users at different levels, ensuring secure and compliant data usage.

Next, the Big Data Institute (BDI) **gathered and stored relevant datasets,** such as the number of visitors to Phuket and their demographic profiles, held by the Immigration Bureau. Direct contact was made with the agency to establish data connections. Once the data was transferred to the central platform, data scientists **studied the datasets, transformed them into appropriate formats, and analyzed the data using methods tailored to the predefined use cases. Dashboards were then created to present the analysis results, aligned with stakeholder requirements.** Examples of widely-used dashboards include:

- **Monthly Foreign Passenger Statistics by Entry Point:** Using passenger data from the Immigration Bureau combined with flight details from https://www.flightradar24.com/, this dashboard analyzes the travel patterns of international passengers. It provides statistical and trend data on passenger numbers by nationality, entry point, and country of origin, offering insights into international travel dynamics.

- **Provincial Visitor Statistics Overview:** Based on provincial tourism data from the Ministry of Tourism and Sports, this dashboard presents visitor statistics and trends, including numbers, revenue, and per capita expenditure. It can estimate monthly accommodation demand by province and support policy planning to promote tourism in low-season periods for specific regions.

- **Length of Stay Analysis for Foreign Visitors:** Utilizing entry and exit data from the Immigration Bureau, this dashboard analyzes travel behaviors, including entry and exit patterns by nationality and length of stay. These insights can guide tourism supply planning to match the preferences of different nationalities effectively.

- **Distribution of Foreign Guests Across Provinces:** Using foreign guest accommodation reports under Section 38 from the Immigration Bureau, this dashboard analyzes the clustering and dispersion of foreign guests by province. It provides insights into accommodation preferences and travel patterns of foreign visitors by nationality.

Additionally, the website https://www.travellink.go.th/ provide other dashboards, such as analyses of tourism-related social media data from platforms like TripAdvisor and Pantip.com (Blueplanet forum), as well as analyses of accommodation distribution based on guest registration data (Registration Book: Form ร.ร.4) from the Department of Provincial Administration.

Before the official launch of https://www.travellink.go.th/, which consolidates various dashboards, the system developers conducted thorough **testing of the platform,** including performance and security evaluations, to ensure its accuracy and reliability. Finally, the Big Data Institute (BDI) organized **the stakeholder engagement activities to present the project outcomes, incorporate feedback,**

and promote the project to the public, particularly to relevant government agencies and tourism operators in pilot provinces.

From the initial stages of assessing stakeholder needs in the tourism sector, studying datasets and data sources for analysis, to designing and developing the system and platform, the BDI received extensive collaboration from both public and private organizations. Key contributors included the Office of the Permanent Secretary for the Ministry of Tourism and Sports, the Tourism Authority of Thailand (TAT), the Immigration Bureau, the Thailand Convention and Exhibition Bureau (TCEB), the Ministry of Culture, the Department of Provincial Administration, the Phuket Tourism Association (PTA), and the Thai Hotels Association (THA), among others.

The outcomes of the Travel Link project have been utilized by both public and private sectors, as follows:

- Public Policy Planning: The government used dashboards on foreign passenger arrivals to establish free visa policies for China and Kazakhstan. This policy resulted in a significant increase in tourist numbers compared to 2023, contributing approximately 3 billion THB to the economy.

- Inter-provincial Movement Analysis: Local authorities analyzed data on provincial entries using Immigration Bureau data for areas with border checkpoints and mobile signal data for regions without checkpoints (e.g., pilot study in Nakhon Ratchasima). This analysis supported the management of tourism resources and safety for tourists, as well as promotional campaigns to boost local tourism.

- New Target Tourists Analysis: The Phuket Tourism Association (PTA) used statistics and trends on passenger arrivals at Phuket Airport, combined with demographic and length-of-stay data, to identify new target markets. This information guided decisions on marketing campaigns and roadshows in specific countries to attract targeted international tourists, thereby boosting the local economy.

- Marketing Analysis and Resource Management: A local coffee shop utilized data on tourist recovery rates by nationality to plan for new customer segments. The shop optimized its inventory to align with the preferences and quantities demanded by these new customer groups during the post-COVID-19 recovery period.

- Market Research: Hotels, including those under the Thai Hotels Association (THA) and others, used data on tourist distribution by nationality and length of stay to prepare tailored services for their customers. They also identified opportunities to attract emerging customer segments with increasing accommodation trends.

In the next phase, Travel Link plans to expand its data collection and analysis capabilities to include more diverse dimensions, such as:

- Movement Analysis of Foreign Tourists: Combining entry and exit data with accommodation reports under Section 38 to analyze tourist movements.

- Intra-Provincial Tourist Behavior: Using mobile signal network data to study the movement patterns of both domestic and international tourists within provinces.

- Expenditure Analysis of Foreign Tourists: Analyzing accommodation preferences using multiple data sources, such as booking data from Online Travel Agencies (OTAs), accommodation reports under Section 38, guest registration data (Registration Book: Form ร.ร.4), and accommodation license registration data (Form ร.ร. 2).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