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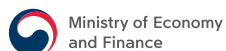


Blog
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KPFIS is setting the global standard for digital national fiscal management

KPFIS goes deeper and swings wider for
public finance services!



Address Ministry of Economy and Finance, Sejong Government Complex, 477, Galmae-ro, Sejong-si
Website www.moef.go.kr



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Website www.kpfis.or.kr Open Fiscal Data www.openfiscaldata.go.kr

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KPFIS is setting the global standard for digital national fiscal management

Korea Public Finance Information Service



KPFIS
Korea Public Finance
Information Service

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A global finance platform builder
Leading in information security and fiscal innovation



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01

Introduction to the Korea Public Finance Information Service (KPFIS)

A global finance platform builder leading
Leading in information security and fiscal innovation



Production of fiscal statistics & research

Operation of Integrated Government Subsidies Management System

dBrain Operations

International cooperation in FMIS (financial management information system)

Cyber security for the information and communication network of public finance and the economy



1 Introduction to the Korea Public Finance Information Service (KPFIS)

The Korea Public Finance Information Service is a public institution under the Republic of Korea’s Ministry of Economy and Finance (MOEF). It contributes to national fiscal management by ensuring stable operation of the Digital Budgeting and Accounting System (dBrain) and supports the development of public finance policies. It also supports exports of dBrain to assist fiscal informatization in the international community and thereby strengthen international cooperation.

Mission	Vision
Contribute to national fiscal management through fiscal informatization	A global finance platform builder leading in information security and fiscal innovation [Global Finance Platform Builder]



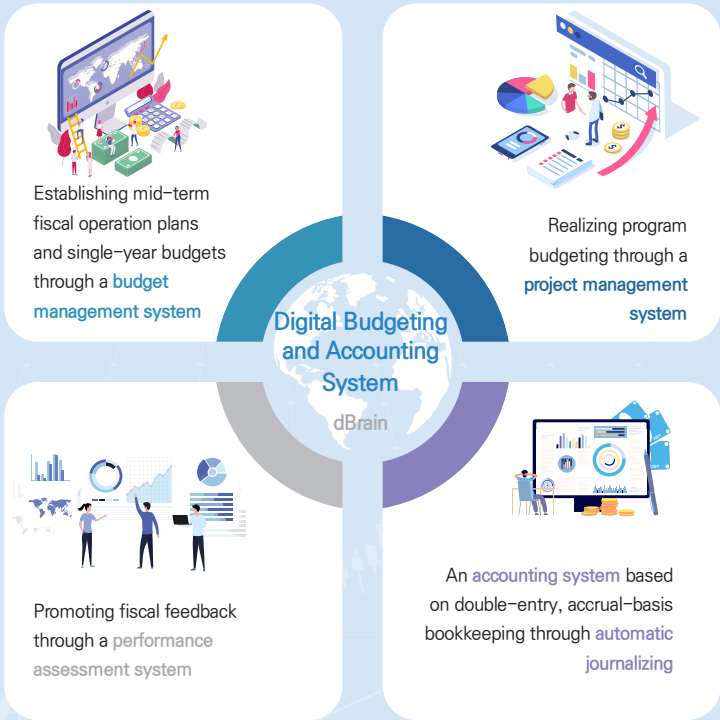
2.1 What is dBrain?

The Digital Budgeting and Accounting System (dBrain) is an FMIS that computerizes overall national fiscal tasks such as budget formulation and execution, funds management, payments, management of national assets, settlement of accounts and performance assessment.

dBrain is linked to 83 systems of 48 institutions, including the Bank of Korea, Korean National Police Agency, National Tax Service, Public Procurement Service, Korea Customs Service and Korea Financial Telecommunications & Clearings Institute. It is accessed by 67,850 civil employees responsible for fiscal operations at the central and local governments. An average of 16,000 persons connect to dBrain every day to process fiscal tasks, including 129 million payments received annually, worth KRW 2.39 quadrillion.



An **integrated fiscal information system** that controls the entire lifecycle of national public finance



What is dBrain?

- dBrain is an integrated fiscal information system that performs the whole process of fiscal management online, producing valuable information through connection to the fiscal systems of multiple institutions.
- Incorporating innovations in Korea's fiscal infrastructure such as program budgeting systems, and double-entry, accrual-basis accounting systems, dBrain enables more detailed control and analysis of fiscal affairs and establishment of more reasonable policies.

2.2 Establishment, Operation and Results



June 23, 2013
Awarded 1st place in the category of
"Promoting Whole-of-Government
Approaches in the Information Age"
by the UN's CEPA (Committee of
Experts on Public Administration)
No. 1 Selection



2004

- Integrated fiscal information system designated as a national administrative task
- National fiscal operation plan
 - Combined mid-term (5-year) operation plan with a single-year budget formulation

* NaFIS(National Finance Information System - treasury system)
* FIMSys(Fiscal Information Management System - budgeting system)



2005

- BSP, BPR, ISP
- Top-down budgeting and program budgeting introduced
 - Set expenditure limits by sector
 - Top-down budgeting
 - Base for budget formulation, execution and settlement
 - Budgeting focused on projects



2006

System buildup and pilot operation (integration of NaFIS and FIMSys)



2007

dBrain launched



2009

Accrual-basis, double-entry bookkeeping introduced



2013

Received US Public Service Award (1st place)



2015 ~ 2019

- Open national fiscal information website ("Open Fiscal Data") launched
- Next-generation dBrain project commenced



2020

Next-generation dBrain to be established by 2021

Framework of International Cooperation for User Countries

3.1 Roadmap for International Cooperation

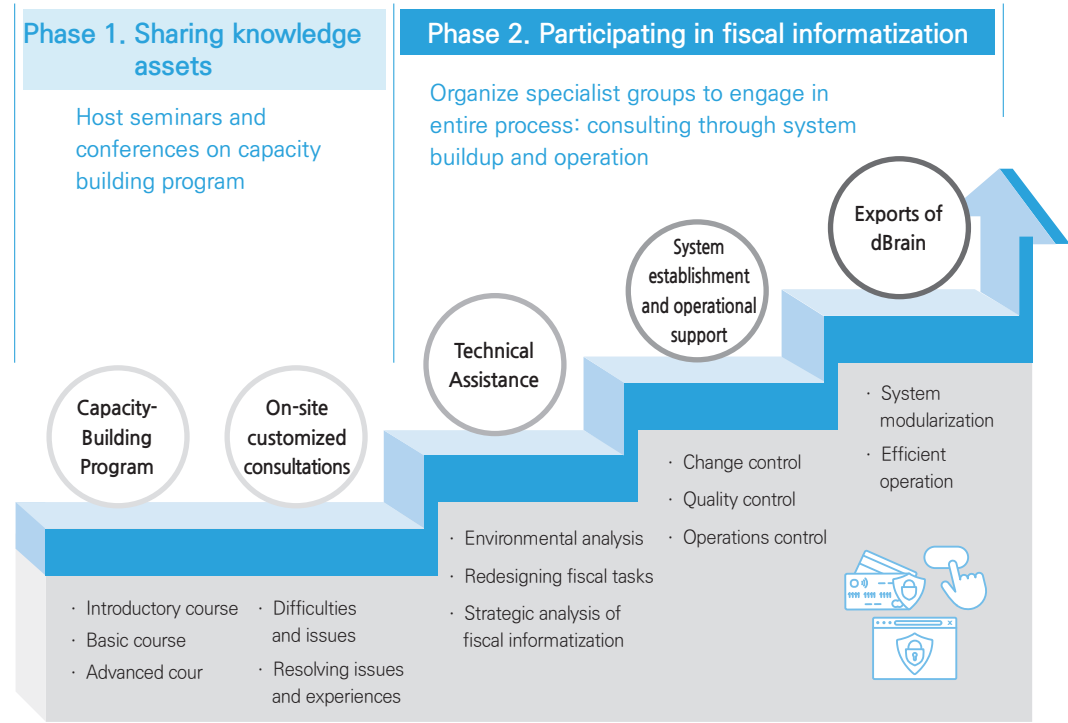


The Korea Public Finance Information Service (KPFIS) is promoting international cooperation in fiscal informatization towards exporting and publicizing the main functions of dBrain. Through partnerships with international financial organizations, KPFIS offers capacity-building programs for government employees responsible for fiscal management in developing countries and lends technical support customized to user countries as a follow-up to the capacity-building program.

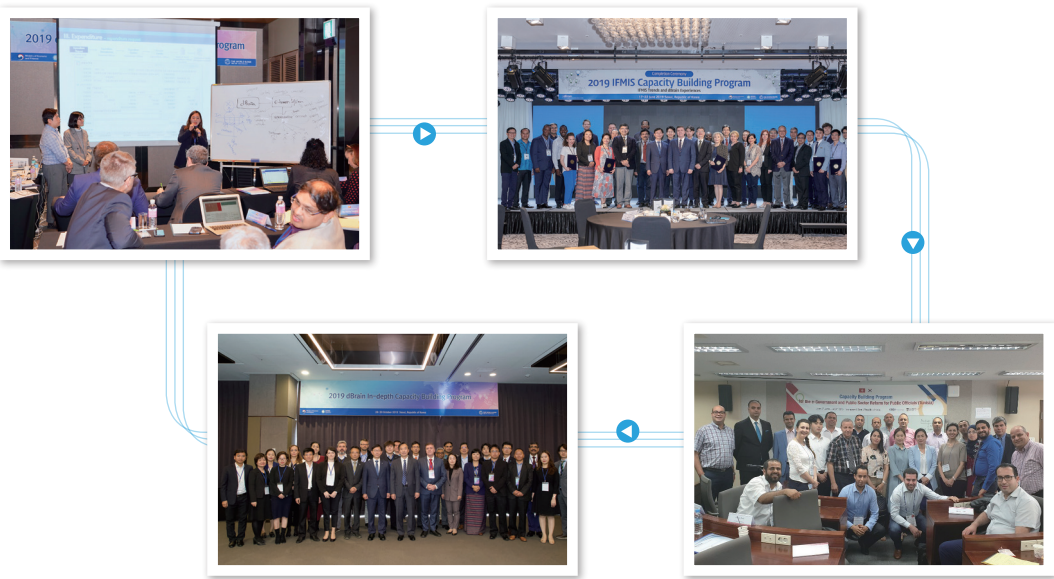




Contributing to the international community by **sharing knowledge assets** and **participating in fiscal informatization efforts**



3.2 Capacity-Building Program



We offer capacity-building program consisting of **introductory, basic, and advanced courses** for government employees in user countries

Course	Introductory course	Basic course	Advanced course
Frequency	On demand	Once per year	Once per year
Content	– Introduction to dBrain – Introduction to KPFIS – International projects of KPFIS' international cooperation projects	– Basics of dBrain – Korea's fiscal system – Latest ICT trends by theme – Introduction to current systems of user countries	– In-depth study of dBrain – Introduction to fiscal system of the specific country that will make use of dBrain and implications of Korea's experience – Latest ICT trends by theme – Sharing and discussion of selected issues

3.3 On-site customized consultations

We provide consultation on a customized fiscal information system to selected trainee countries who attend the Introductory, basic, and advanced courses of the capacity building program. Identify fiscal system characteristics of trainee countries and visit those nations to share Korea's experience.



We select trainee countries who participated in capacity building program and provide consultation on a customized fiscal information system.



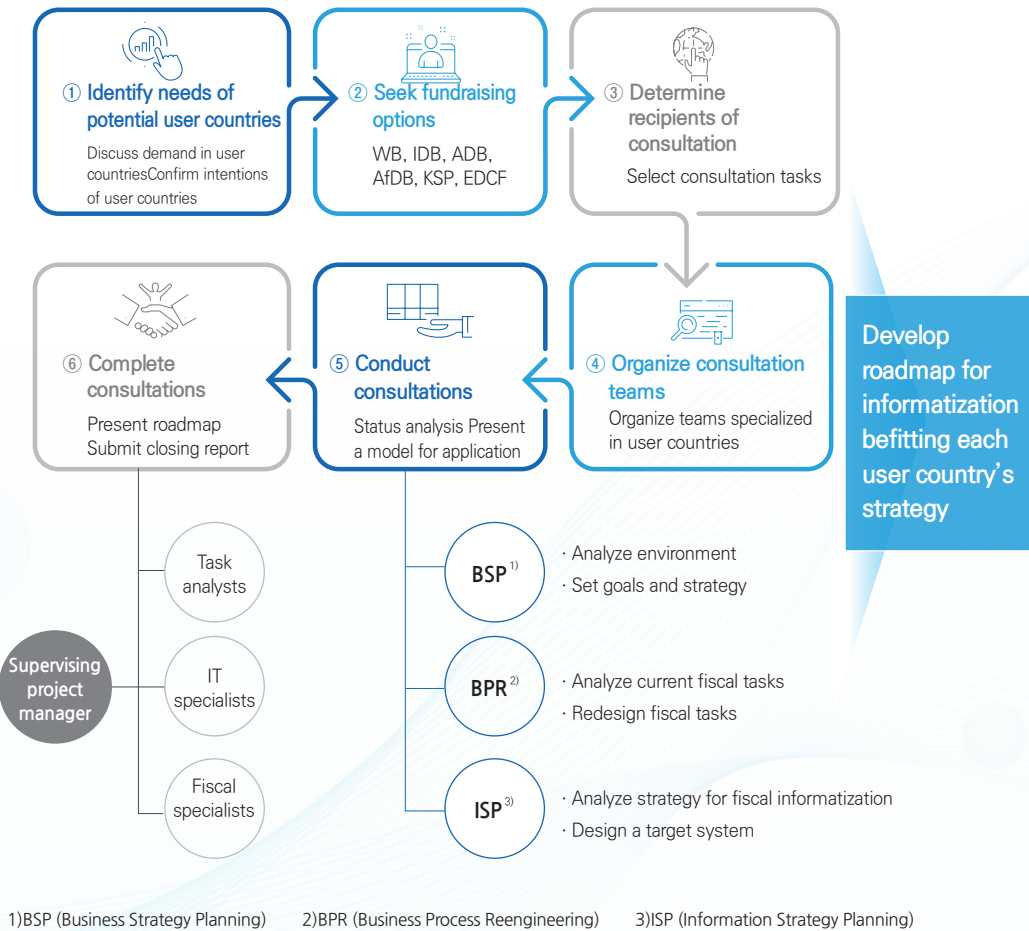
Case Study

We provide customized on-site consultation for five World Bank member states that completed basic and advanced courses in the capacity building program (Vietnam, India, Bhutan, Hungary, North Macedonia)

ex) cyber security, management of national funds, commitment, fiscal statistical system, etc.

3.4 Technical Assistance

We provide on-site **technical assistance (TA)** for improving and establishing user country fiscal systems **through professional KPFIS manpower.**



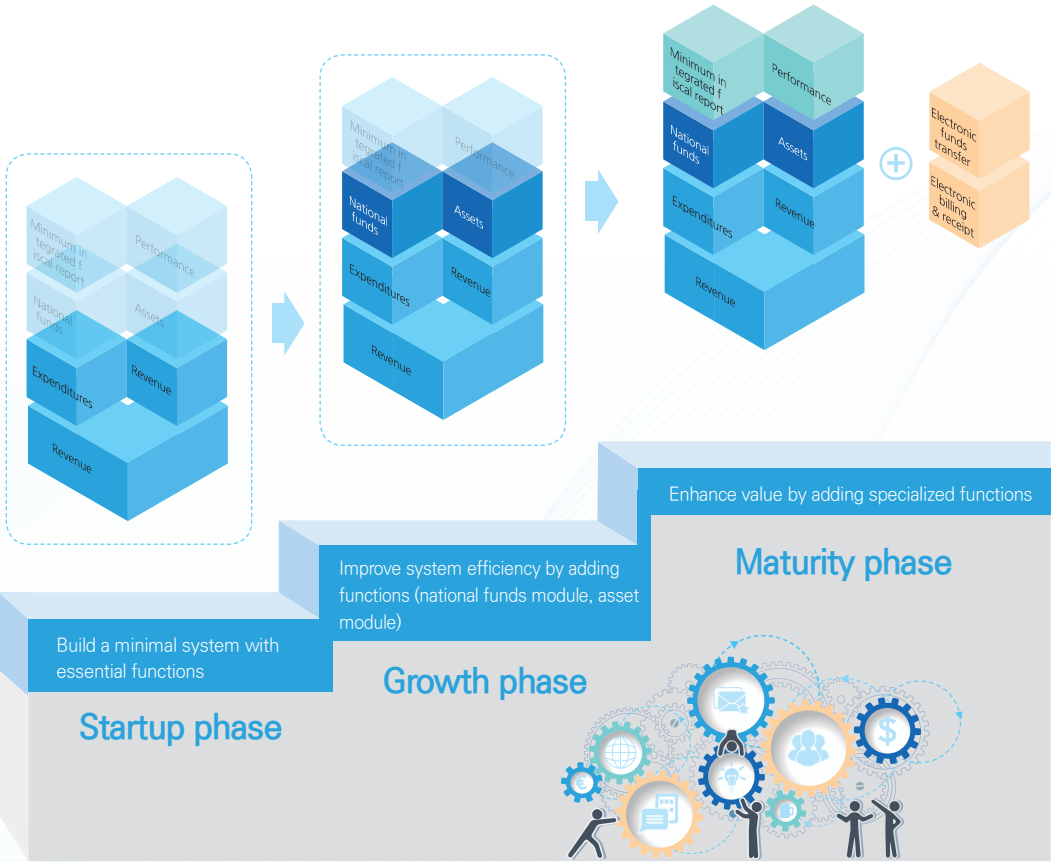
3.5 System establishment and operational support

We establish strategy and plans for building a fiscal information system commensurate with user country fiscal policies and provide support for system buildup. Upon completion of the system buildup, We provide support to ensure it operates smoothly through change management, quality management, and operation management.



3.6 Exports of dBrain

We provide a system tailored to user country needs and support for continued growth.



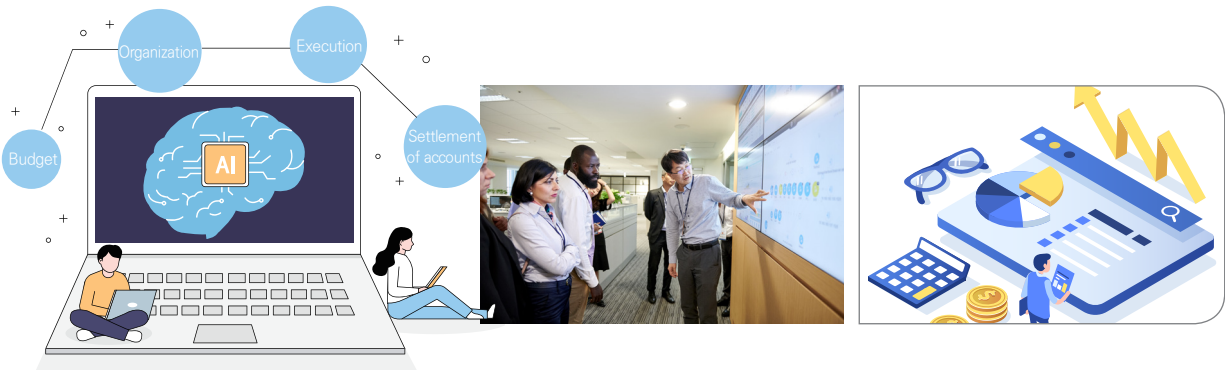


Functions of dBrain

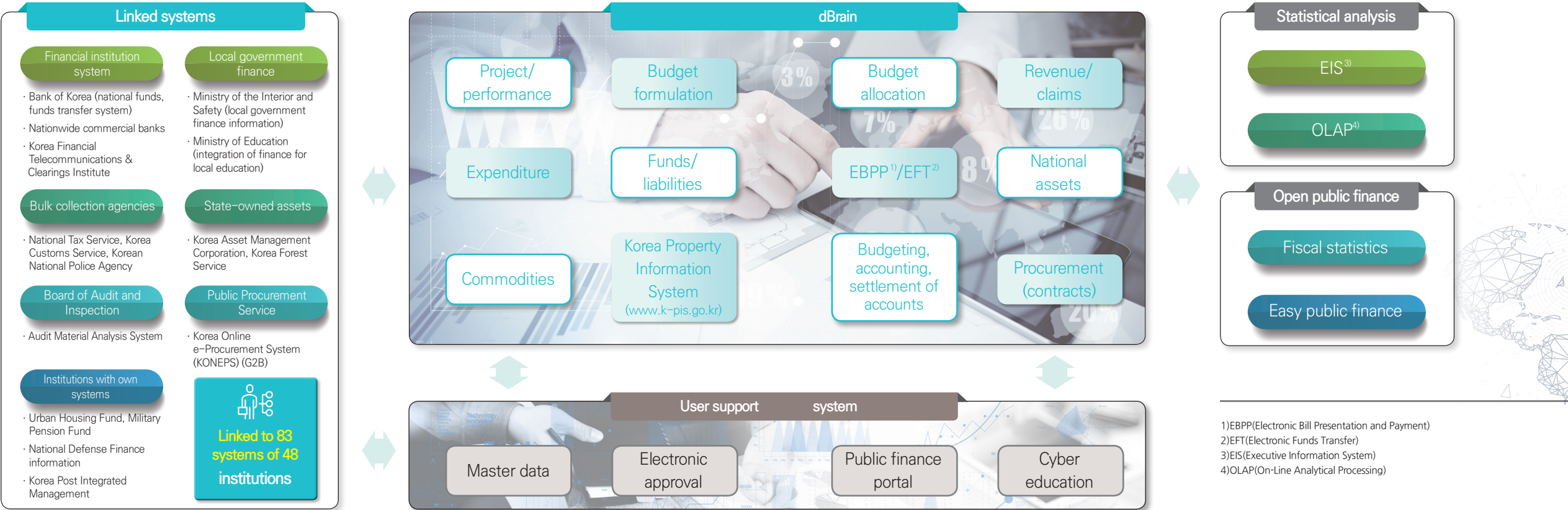
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4.1 System Configuration

“dBrain supports the efficient operation of overall fiscal tasks such as budget formulation and execution and settlement of accounts, ensures integrated management of national fiscal information, and discloses national fiscal information to the public.”



Configuration of dBrain

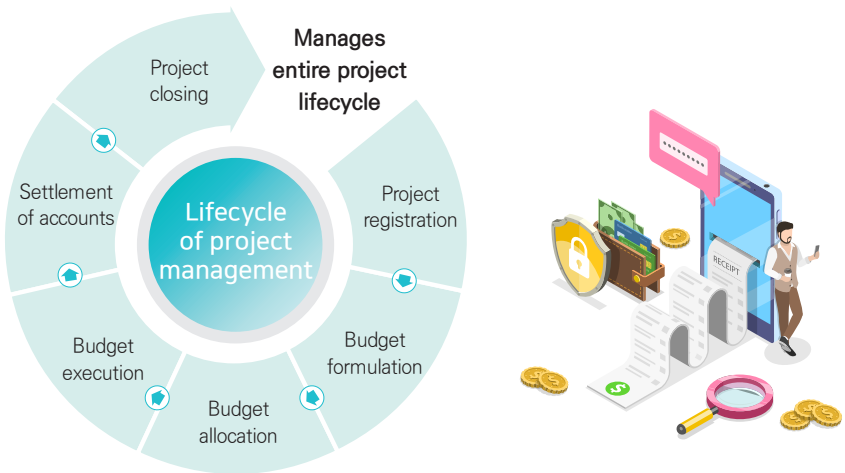




4.2 Project Management

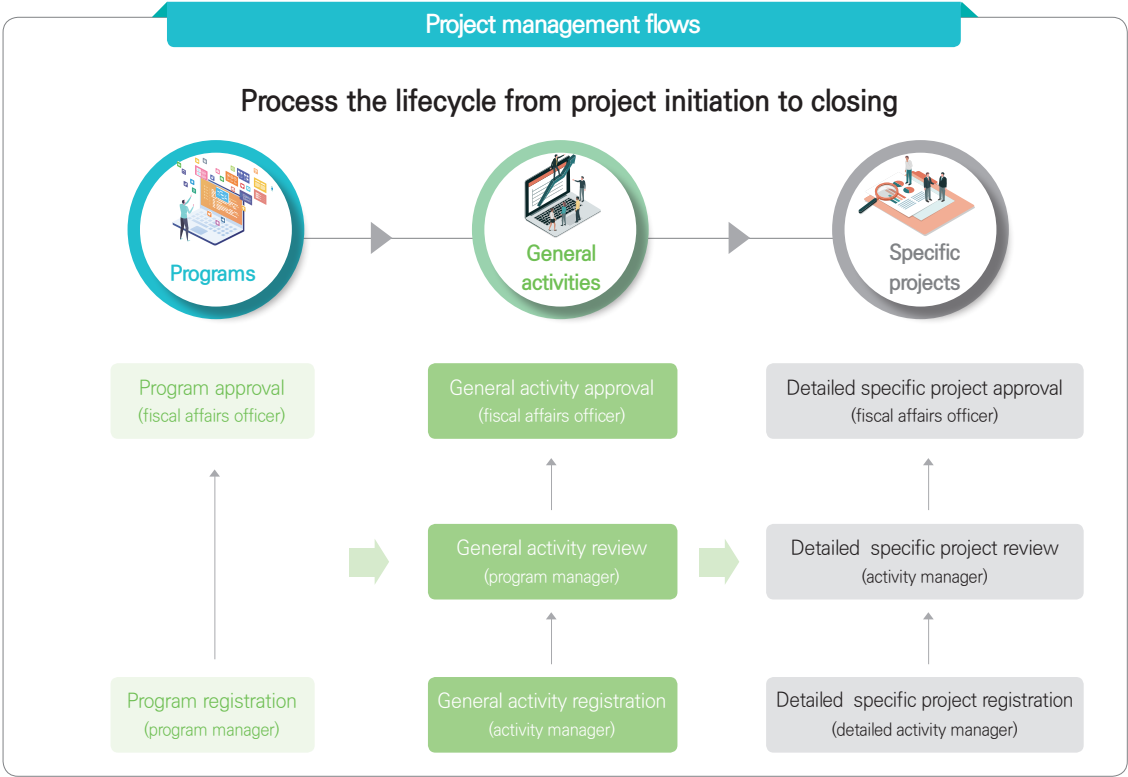
Project management is a basic structure necessary for budget formulation. It comprises programs, and general and specific projects. Government ministry projects are registered under dBrain as detailed projects, through which single-year budgets are formulated.

Under a program budgeting system, the project lifecycle (project registration, execution and closing) is managed



Budgeting system

- ▶ **Program budgeting**
 - Introduced program budgeting system with a focus on a 2007 project to increase linkage between policies and budgets and to boost fiscal performance.
 - **What is program budgeting?** Formulation of a budget based on a specific program*
- *A cluster of projects and projects to implement the same policy





4.3 Performance Management

Performance management refers to using performance information for fiscal operations. It targets fiscal projects that generate results due to performance management. Performance management tasks include performance planning, performance reporting, integrated fiscal project evaluation reporting, and performance management status monitoring.

Performance management tasks utilize performance results for fiscal operations to set program goals and develop performance indicators.



4.4 Budget Management (1)

Budget management involves drawing up plans for national revenue and expenditures for specific fiscal years according to law, regulations and guidelines, managing the allocation of limited resources, and preparing various reports such as budget bills, budget summaries, and performance reports through mid-term fiscal plans, budget execution and performance assessments.

Government budget of the Republic of Korea is formulated and allocated according to national revenue and expenditure plans reflecting single-year and long-term fiscal operations.



Definition of performance management

▶ 「Performance management」 refers to a process where stakeholders of a budget establish performance plans, execute budgets for fiscal projects with limited financial resources, assess results, and consider such results to evaluate policies, budgets, and individuals.

▶ Aims

- Increase government budget transparency and accountability
- Boost fiscal project efficiency and effectiveness
- Improve distributional efficiency through budget reallocation

Performance management flows

Use fiscal project performance information for future fiscal operations

Basic structure of fiscal performance target management

Establishment of performance plan (Year-1)

Fiscal operation (Year)

Performance assessment and report (Year+1)

Draw up performance plans (set performance goals and develop measurement methods)

Allocate and execute budget as per performance plan

Prepare performance report Reports and feedback

- Performance plans establish performance goals, performance indicators and their target measures for relevant year (Y) in the preceding year (Y -1)
- The performance report in the subsequent year (Y+1) analyzes and reports on the attainment of performance goals, causes for deficiencies, etc., based on performance in relevant year (Y)

Definition of "budget"

▶ A 「budget」 refers to the plans of revenue expected and the expenditures those revenues will fund over a defined period for the government, institutions or organizations in pursuing a particular policy and purposes.

· **Single-year budget requests** : The Ministry of Economy and Finance (MOEF) issues guidelines for preparing budget bills and fund operation plans after collecting the opinions of specialists, government ministries and organizations. The heads of central government agencies submit requests for funds for the following fiscal year according to these guidelines.

· **Mid-term fiscal plan** : Priority and timing of project investments are reviewed from a long-term perspective to overcome problems in single-year budgeting, thereby achieving consistency, efficiency and soundness in financial resource allocation.

Relevant laws

▶ National Finance Act, Government Organization Act, National Accounting Act

Relevant laws

Central government agency → MOEF

Applications (May)

- Central government agencies apply for budget funding.
- Submit budget applications to MOEF by May

MOEF, central government agencies

Deliberation of government budget bill (June~Sept)

- MOEF reviews single-year budget applications.
- Submit government budget bill to National Assembly in early September

National Assembly

(Early December)

- Deliberation and passing of the government budget bill
- National Assembly finalizes budget.

MOEF, central government agencies

Reflect finalized budget (Early December)

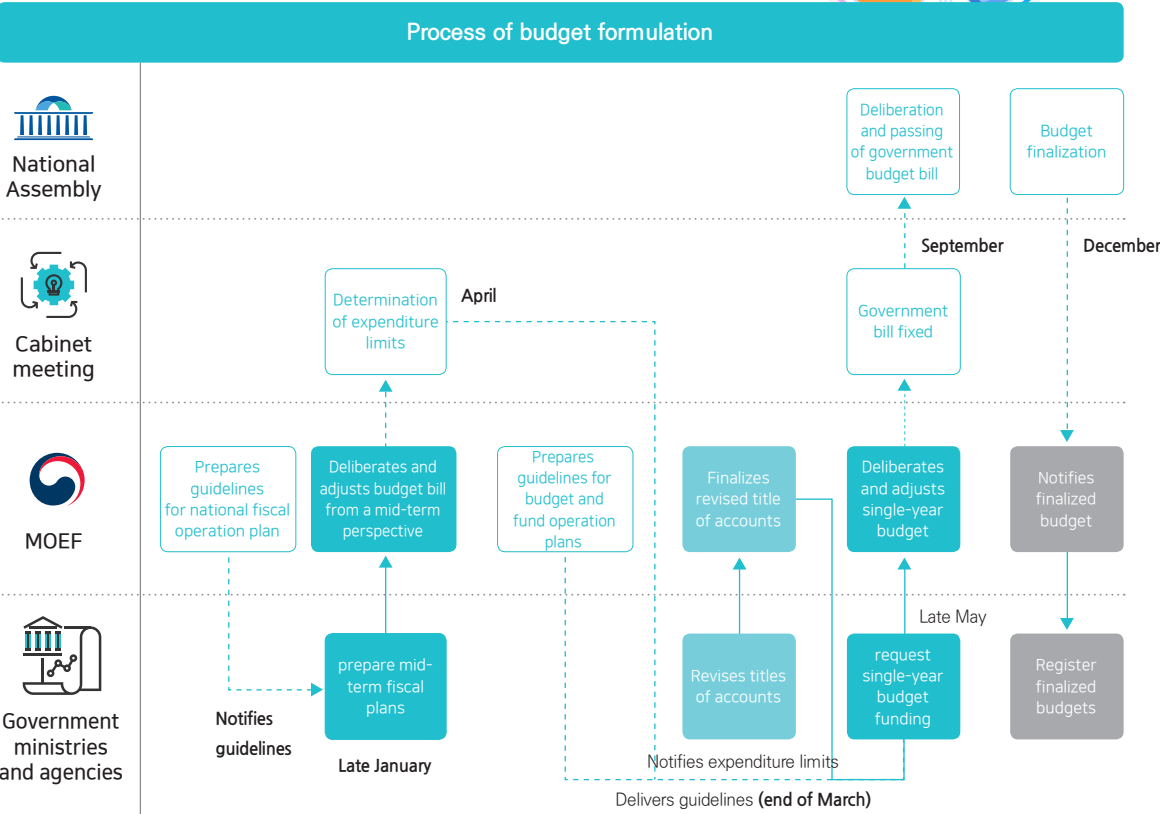
- Enter finalized budget into dBrain



4.4 Budget Management (2)

Central government agencies register and submit budget bills, which are received and reviewed by MOEF, which in turn prepares a government budget bill. Budgeting tasks include preparation of the government budget bill, budget finalization by the National Assembly, and quarterly allocations. Budgeting tasks are concentrated on a specific time of the year.

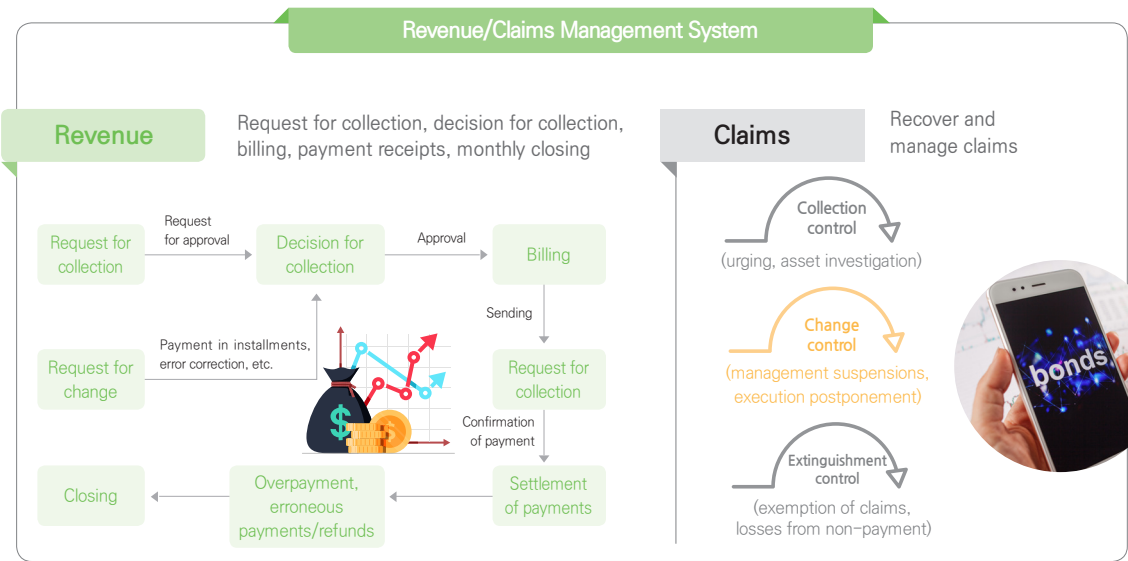
Budget funding requests from central government agencies are reviewed by MOEF and finalized by the National Assembly.



4.5 Revenue/Claims

The revenue system manages billing and receipt of national taxes, and supervises overall national revenues, through connection to bulk collection agencies (National Tax Service, Korea Customs Service, Korean National Police Agency) and the financial infrastructure (Korea Financial Telecommunications and Clearings Institute, Bank of Korea). It supports the whole revenue process: collection by revenue collection officers as per requests from departments in charge of national assets and commodities, billing, and payment receipt and settlement. When national taxes are billed and paid for, the nation's claims are created and removed automatically, enabling efficient national claims management.

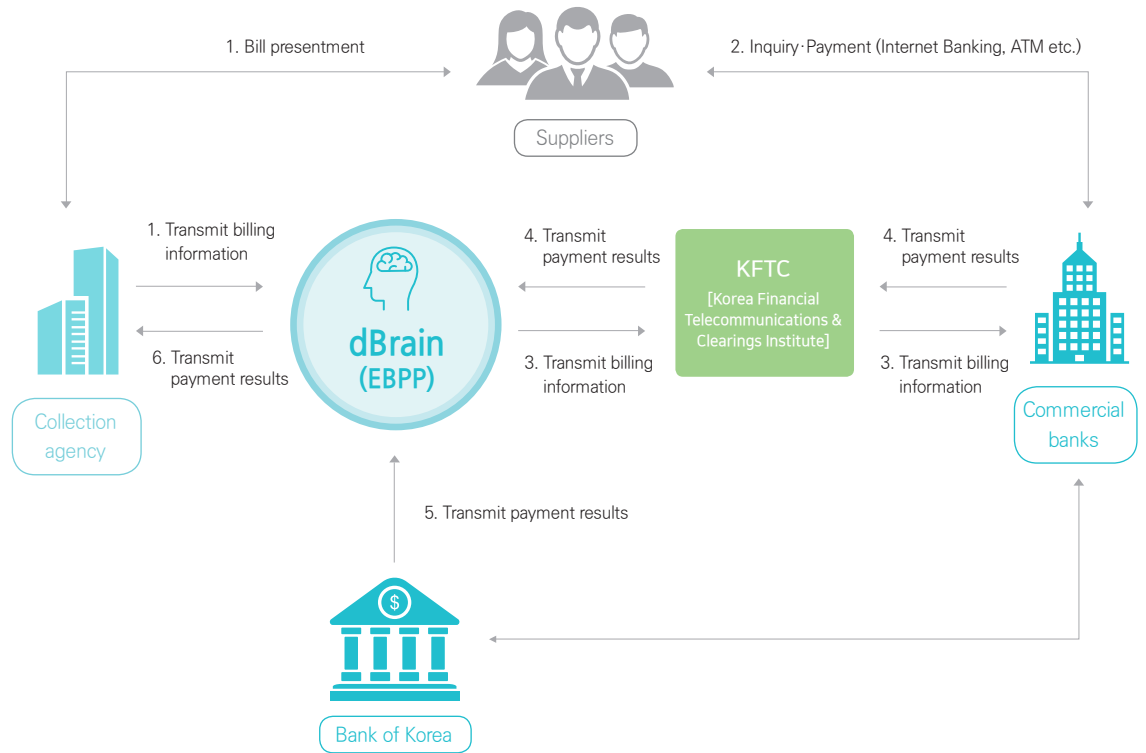
Request collection of national funds, manage payment bills, settle receipts and urge payment





4.6 EBPP (Electronic Bill Presentation and Payment)

All payment notices are entered onto EBPP, which enables financial institutions to access notices data and receive payments on a real-time basis. Taxpayers can pay conveniently online, by phone or at an ATM. Collection agencies present notices to taxpayers, who pay taxes online or at a bank. Commercial banks can access billing information on the EBPP system, receive payments and transmit results to dBrain on a real-time basis.

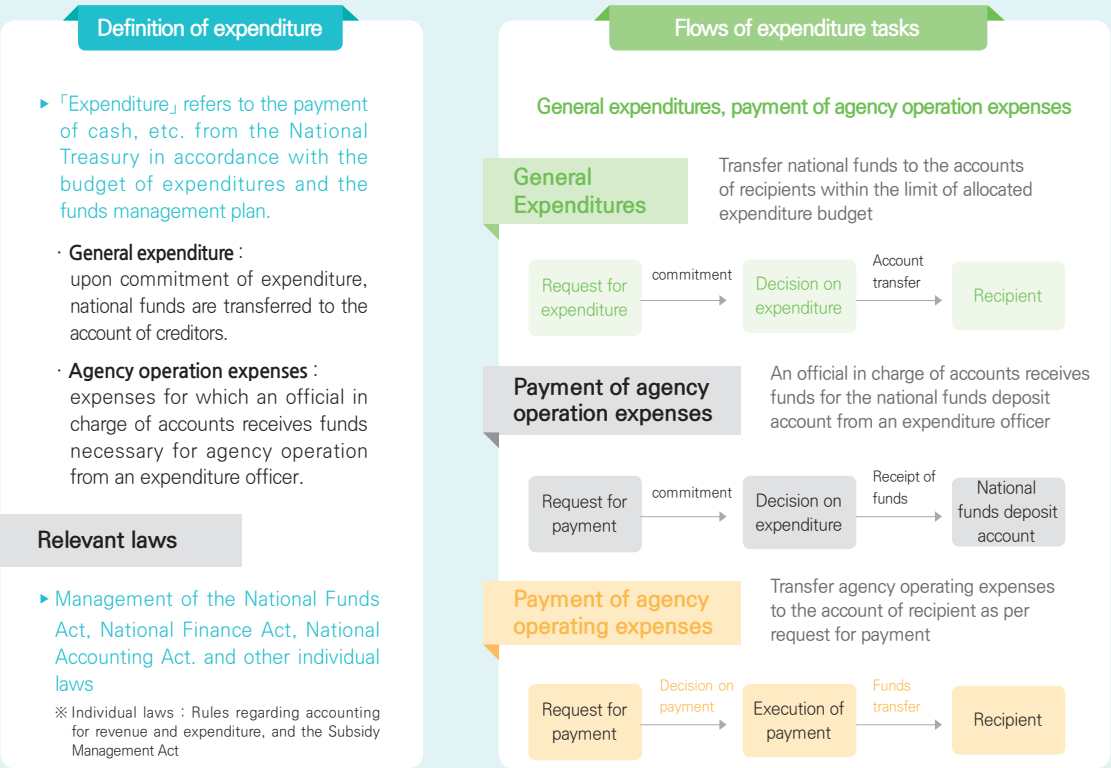


4.7 Expenditures

dBrain supports real-time payment of national funds within the limits of the expenditure budget and according to the funds operation plan. General expenditures are executed through procedures (requests for expenditures, commitment of expenditure, and decisions on expenditures) while agency operating expenses are paid for by an expenditure officer. dBrain also manages government purchase cards.



Expenditure control (function) performs tasks comprising requests for expenditure, commitment of expenditure, and funds transfer to use national funds.

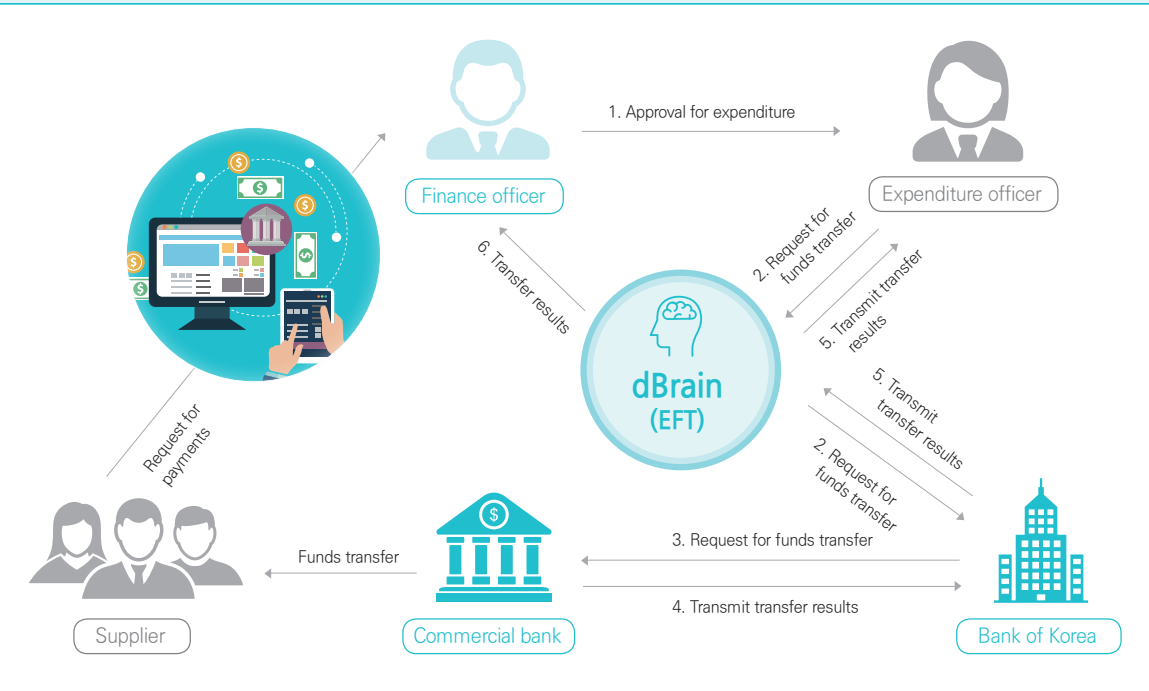




4.8 EFT (Electronic Funds Transfer)

The EFT system is electronically linked to the Bank of Korea and commercial banks to transfer national funds to the accounts of creditors, view balances, or conduct monthly account reconciliation on a real-time basis. dBrain’s EFT is also linked to external systems such as the Public Procurement Service’s Korea Online e-Procurement System (KONEPS) (G2B) and the Korea Financial Telecommunications & Clearing Institute’s NaraBill. Upon requests for payment, payments are immediately effected to supplier accounts in accordance with procedures.

When creditors apply online for payment for supplied goods, the government follows internal approval procedures on dBrain, which then requests the Bank of Korea to transfer funds to the account of those creditors. The Bank of Korea then effect payment and sends verification to dBrain in real time.

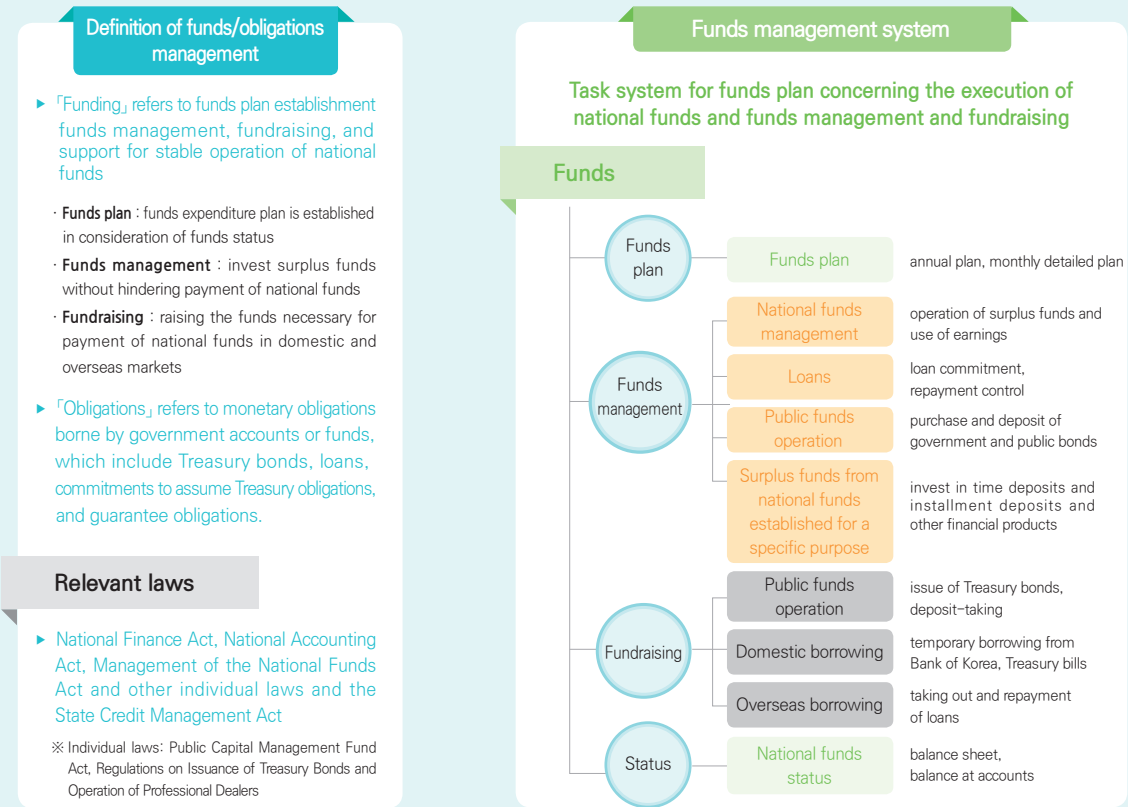


4.9 Management of National Funds

Management of national funds refers to timely raising of national funds, and management of interest income from placing temporary surplus funds with financial institutions, etc. Its tasks include funds planning, funds operation, and funds borrowing. It involves establishing expenditures plans in consideration of funding conditions, investing surplus funds to the extent that it does not cause problems in national funds payment and receipt, and borrowing funds from the domestic and overseas markets.

Obligations are created when the national government borrows funds at home and abroad to cover fiscal deficits. Depending on the type of borrowing, obligations are classified into government bonds, borrowings, commitments to assume treasury obligations, and guaranteed obligations.

Fund planning, funds management, and fundraising to ensure stable operation of national funds





4.10 Asset Management (1)

National assets comprise State properties and commodities. dBrain comprehensively manages the life cycle of assets from acquisition and transfer of title to closing of ledger.

The term "State property" refers to property falling under the ownership of the State at a cost borne by the State, by contributed acceptance, or by operation of statutes or treaties. It is classified into eight categories: land, buildings, standing trees, structures, machinery and equipment, ships and aircraft, securities, and intangible property. The term "commodity" refers to any movable item owned by or held in custody for use by the State. State commodities are classified by commodity list numbers.

Manages State-owned property and commodities that fall under the ownership of the State, by statute or treaty.

Definition of State property	Definition of Commodity
► State property in the broad sense · All property held by the State to perform its purpose ► State property in the narrow sense · Property which fall under the ownership of the State at a cost borne the State, by contributed acceptance, or by operation of statutes or treaties (property defined under Article 5 of the State Property Act) ※ Land, buildings, standing trees, structures, machinery and equipment, ships and aircraft, securities, and intangible property	► Commodity · "Commodity" refers to any movable item owned by or held in custody for use by the State. ※ Movable (cash, securities) as per Management of the National Funds Act, and ships and aircraft as per State Property Act are excluded. ► Commodities are classified by commodity list numbers · Commodities are divided into large, medium, and small categories, depending on their function, use, and characteristics, and assigned unique codes (16-digit number)
Relevant laws ► State Property Act, Enforcement Decree to the State Property Act, Enforcement Rule to the State Property Act, Act on Regulation of Social Cases of State Property, National Accounting Act, individual laws ※ Individual laws : Road Act, River Act, Harbor Act, State Forest Administration and Management Act	Relevant laws ► Commodity Management Act, Enforcement Decree to the Commodity Management Act, Enforcement Rule to the Commodity Management Act, National Accounting Treatment Guidelines, etc.



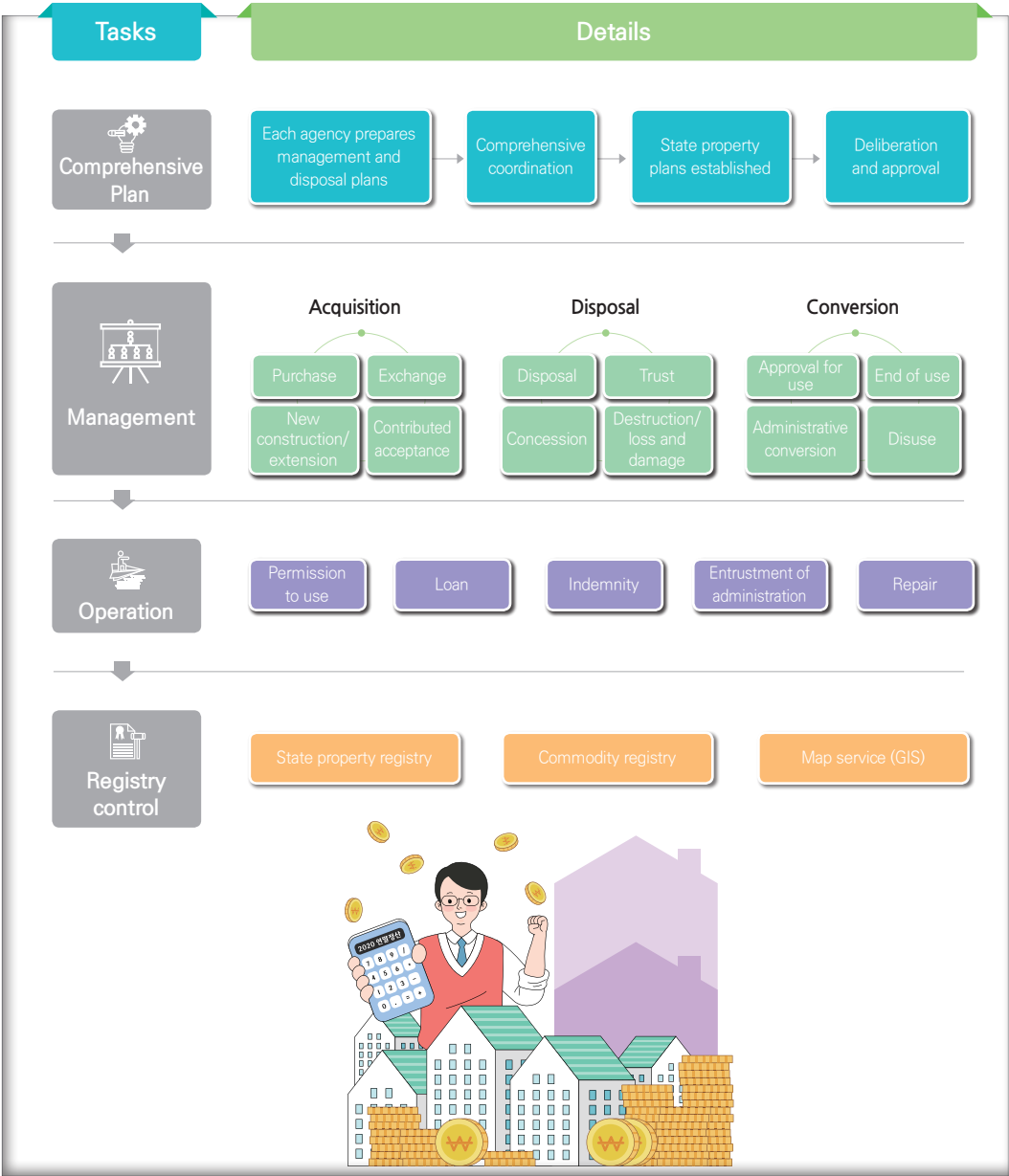
4.10 Asset Management (2)

Asset management tasks comprise comprehensive planning, management, operation, and registry control.

Comprehensive planning refers to preparing and adjusting plans for managing and disposing of agency property every year and establishing long-term operation plans. Agencies manage property as per the comprehensive plan, which includes tasks such as acquisition, disposal, issuing permits for use, and lending. All property is listed and managed under ledgers.



Comprehensive management of acquisition and disposal of State property and commodities.

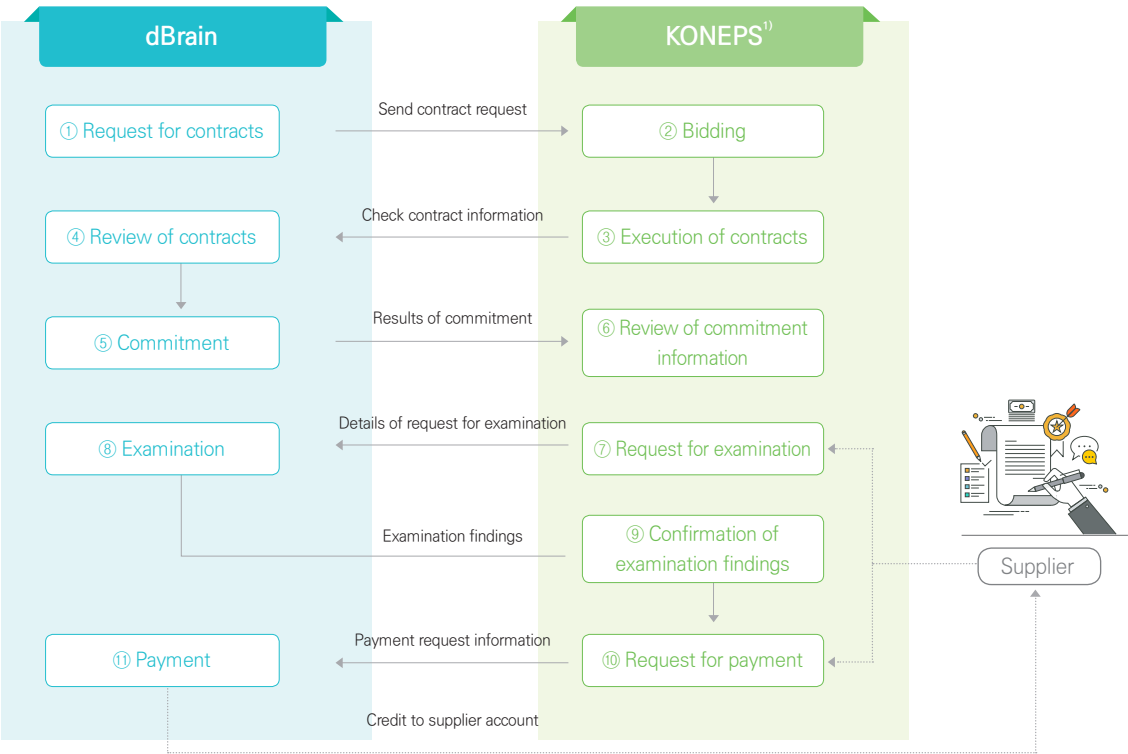


4.11 Procurement

Procurement contracting involves managing contracts signed by the State, which include contracts for commodity purchase, construction, services, real estate acquisition, and rental, among others. As it is connected to the Public Procurement Service's KONEPS, dBrain computerizes the whole process from request for contracts to payment of proceeds



Handle contracts through linkage to KONEPS

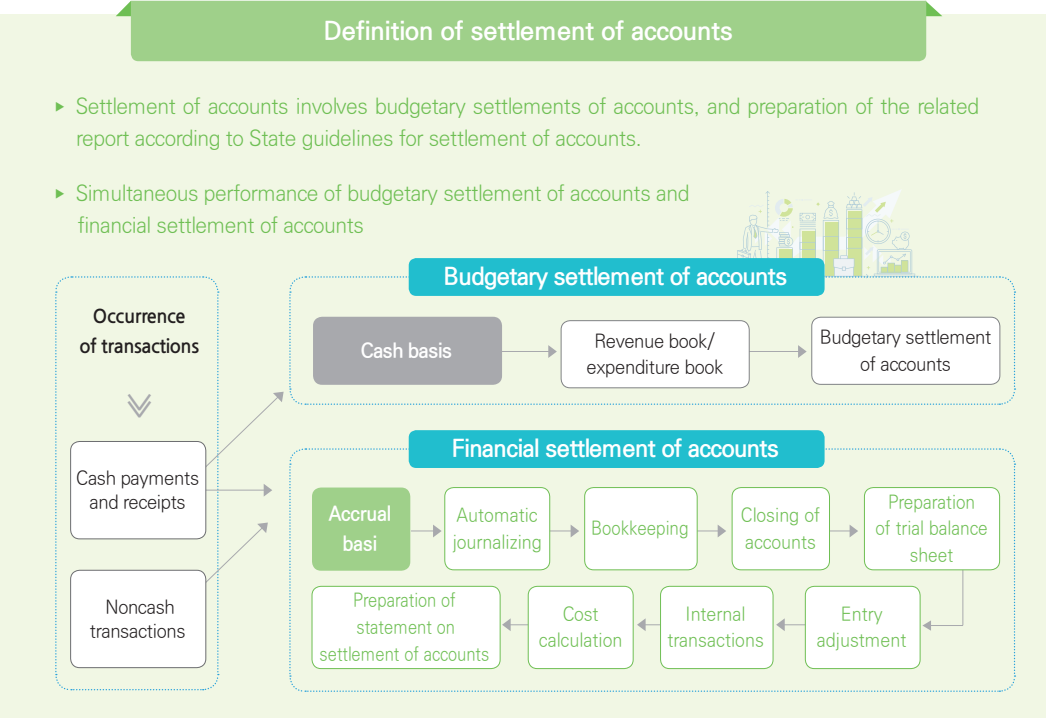


1) KONEPS (Korea ON-line E Procurement System) is the electronic bidding system built and operated by the Public Procurement Service

4.12 Accounting Management

The settlement of accounts system settles accounts (budgetary settlement of accounts, financial settlement of accounts) and supports preparation of the State report of settlement of accounts, in accordance with the National Finance Act and the State Accounting Act, following the procedures and reporting format prescribed under the Guidelines on Preparing Reports of Settlement of Accounts. Budgetary settlement of accounts refers to finalizing revenue and expenditures for a fiscal year, and preparing a report of settlement of revenue and expenditure accounts. Tasks include settlement of revenue and expenditures, and the closing of total revenue and expenditure accounts. Financial settlement of accounts refers to identifying the financial conditions and outcomes of financial operations based on accrual basis and double-entry accounting and preparing financial statement. Tasks include automatic journalizing, adjusting financial statement closing, eliminating intercompany transactions, and cost accounting.

Perform budgetary settlement of accounts, and prepare the related report according to the State guidelines for settlement of accounts.



4.13 Open Fiscal Data

The Open Fiscal Data website consists of an “Easy Public Finance” section that assists with easy understanding of public finance through visual aids; a “Fiscal Statistics” section with detailed fiscal data using a variety of analytical methods; a “Customized Information” section that gives the public access to tailored information; a “Fiscal Data Room” section that explains public finance reports, related laws, and trends; and a “Participation and Communication” section where members of the public are encouraged to get involved and which uses fiscal information to support the development of mobile applications.



Disclose the State’s public finance information including national fiscal operation plans, budgets and settlements of accounts



Background



Content of disclosure

- Increase transparency in fiscal operations through information disclosure
- Provide integrated fiscal information to support the Government 3.0 initiative
 - Expand the scope of open data and improve functions to meet the needs of the public
- Disclose 780 types of fiscal information
- Provide 785 types of information for various users
 - Offer domestic and foreign economic indicators related to public finance



“Increase transparency in fiscal operations”





Users

The Public



Internal links

- dBrain information

External links

- Local government finance
- Local educational finance
- Central government offices

Sections on the Open Fiscal Data website

Easy Public Finance

- Public finance at a glance
- Statistics by theme
- Learn about public finance

Fiscal Statistics

- Fiscal statistics
- Execution (project data)
- Detailed fiscal statistics
- Integrated statistical analysis
- Economic indicator statistics
- Sources

Customized Information

- Projects of public interest
- Projects ordered by the government
- Big data on fiscal issues
- Data order service

Fiscal Data Room

- Published fiscal reports
- Laws related to public finance
- Press releases
- Information on treasury bonds
- Guide to public finance websites

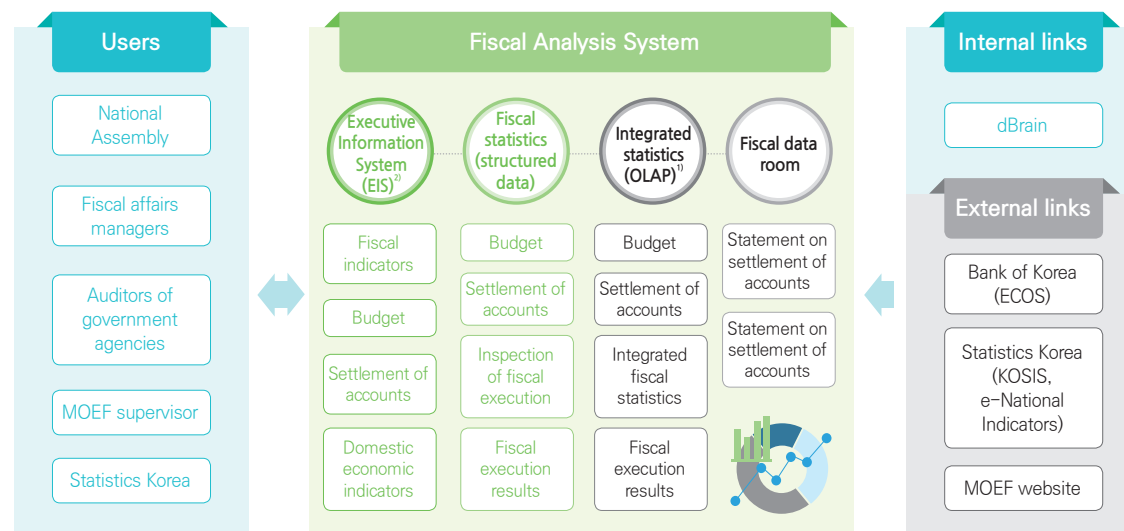
Participation & Communication

- Announcements
- FAQs
- Q&A, suggestions
- Online monitors
- Space for developers
- Data registration by institutions

4.14 Fiscal Analysis System

dBrain analyzes statistical information by fiscal task from budgeting and settlement of accounts using Online Analytical Processing (OLAP)¹⁾, and provides statistics summaries in tables and graphs, through the Executive Information System (EIS)²⁾.

Provide information necessary for policy decision making through analysis of accumulated data



1)OLAP (On-Line Analytical Processing) 2)EIS (Executive Information System)



4.15 Impact



Expected effects of dBrain

1 Support overall fiscal activity

A one-stop integrated system allowing the central government to efficiently implement various fiscal tasks such as budget formulation and execution, funds management, management of State property and commodities, management of State claims and obligations and settlement of accounts

2 Promote fiscal innovation

Program budgeting system adopted to support national fiscal operations planning, fiscal innovation such as a top-down budget system, and performance-based budgeting. Introduced assets and liabilities management and double-entry accrual basis accounting for precise calculation of fiscal data.

3 Manage fiscal operations in real time

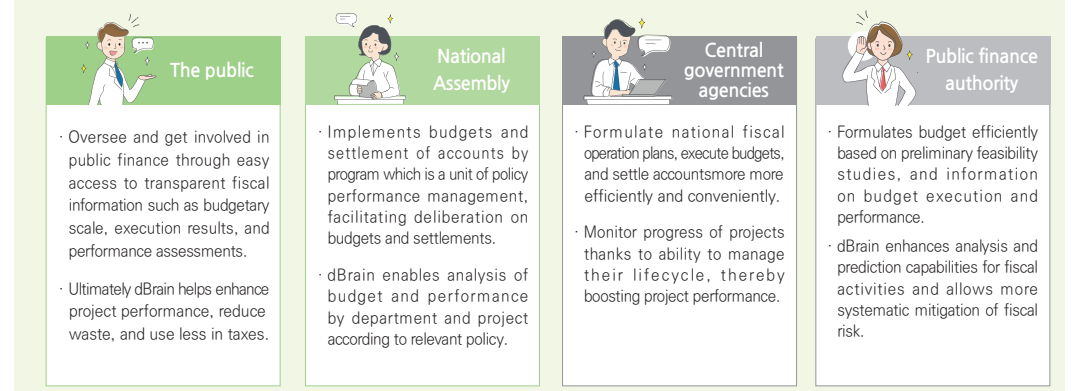
Computerized the entire process of fiscal funds payment and receipt, enabling real-time monitoring of fiscal operations.

4 Produce analysis of fiscal statistics

Provide complete data such as performance, current status, and forecasts through analysis of statistics by category, government agency and function. Support decision making by the government and allow the public to access transparent fiscal data.



Level of satisfaction with dBrain by fiscal activity entity



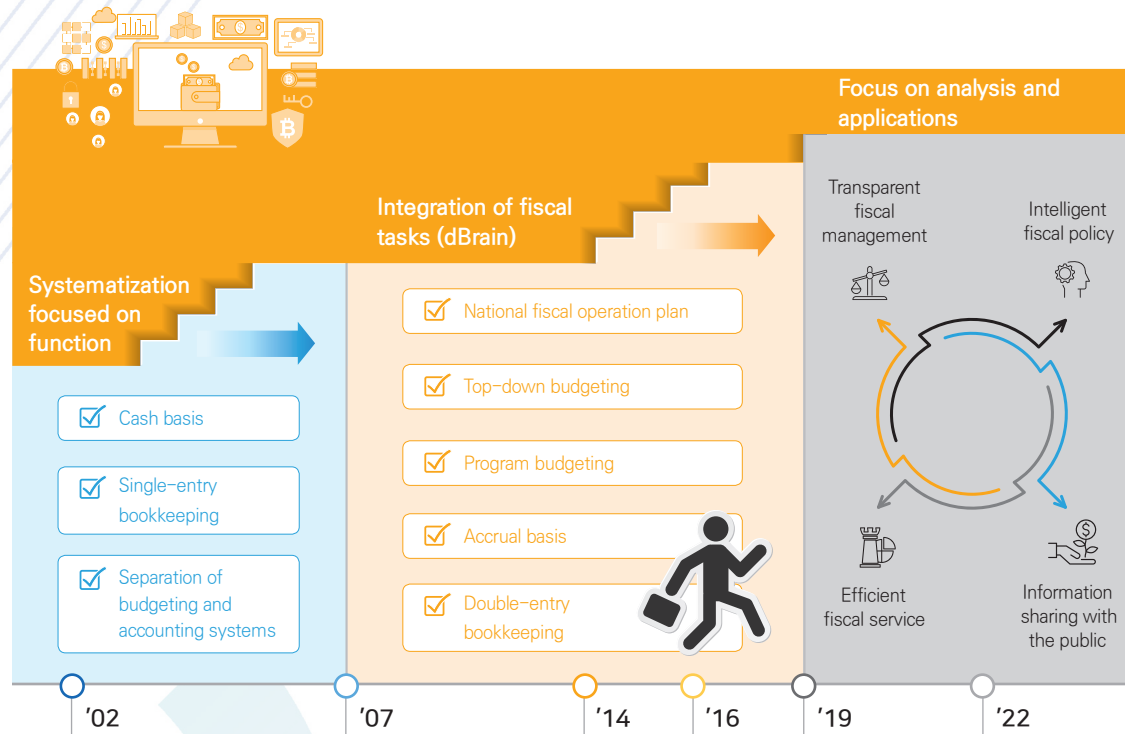
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Direction of Growth for dBrain



5.1 dBrain's Development History

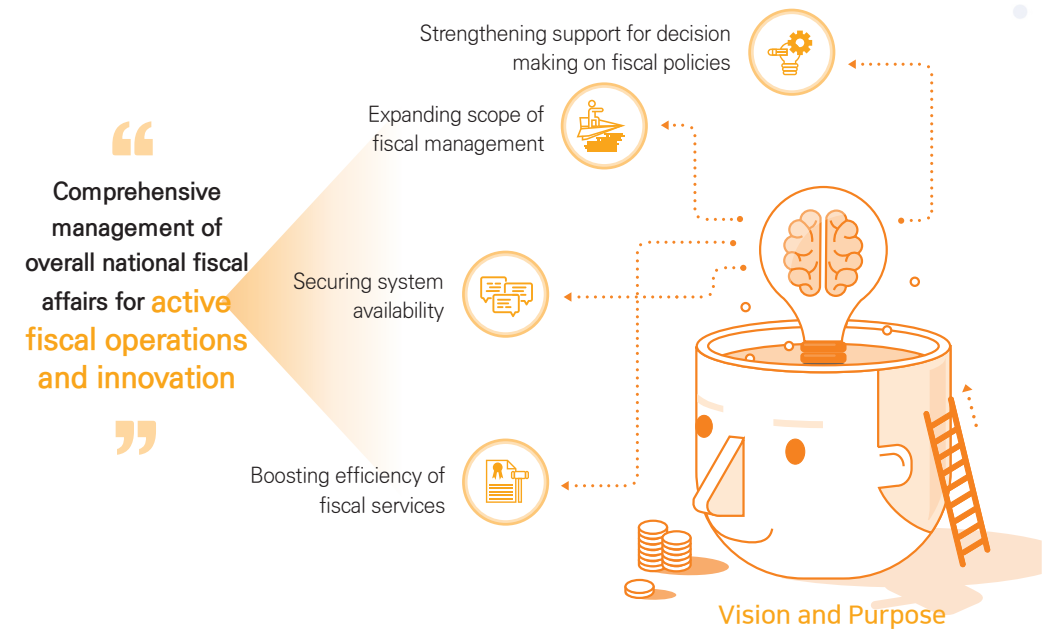
Continuous development of a **top-notch budgeting and accounting system**



Paradigm shift in policy (100 tasks of the new government) and continuous innovations in Fourth Industrial Revolution technology (big data, AI, etc.)

5.2 Vision of the Next-generation dBrain

Aims to realize **future-oriented fiscal administration** through establishment of integrated fiscal information system and strengthening of analytic and application system.

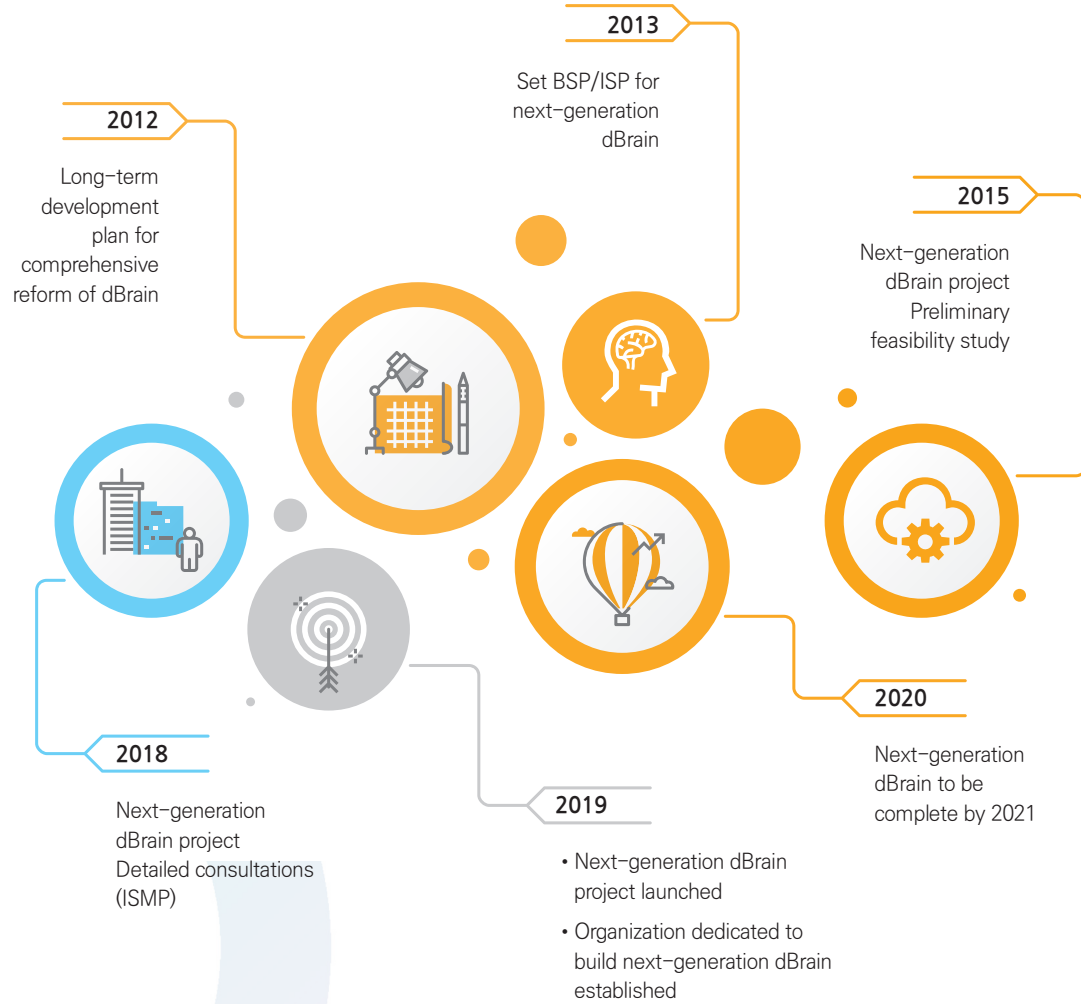
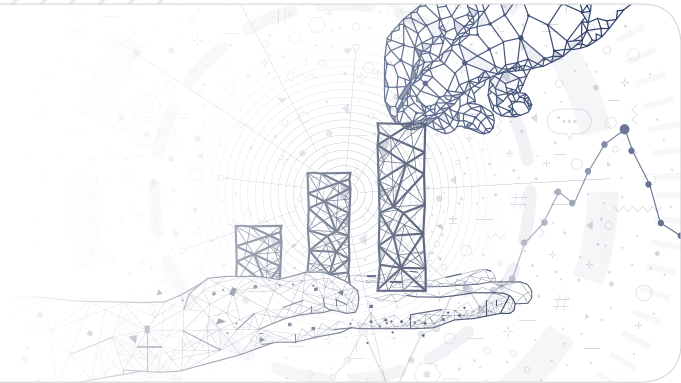


Building a next-generation dBrain to promote innovation in fiscal administration



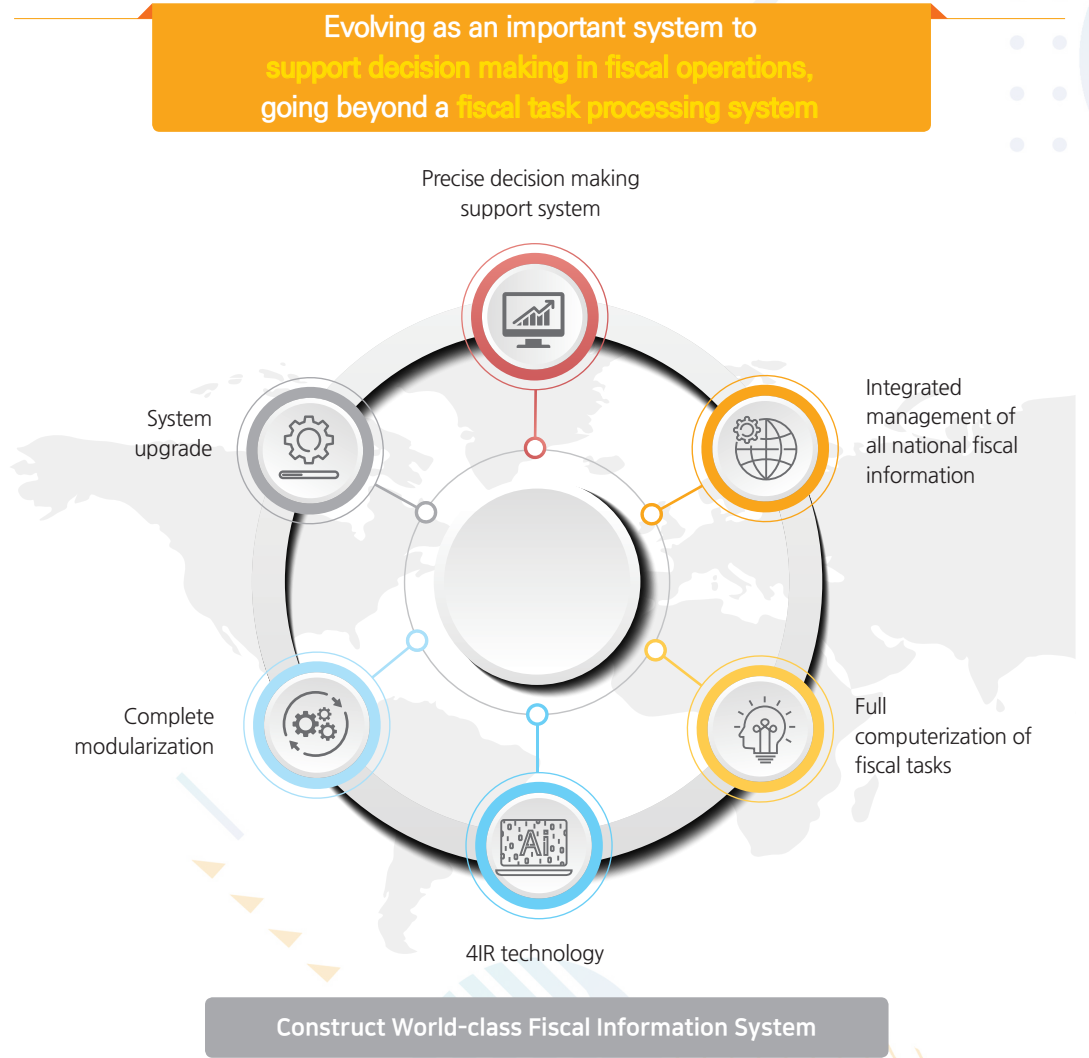
5.3

Progress and Timetable



5.4

Next-generation dBrain



How to operate dBrain to overcome COVID-19 crisis

- The Korea Public Finance Information Service held an international online seminar introducing “financial management information system operation experience under COVID-19” on the request of World Bank and Inter-American Development Bank
- BCP (business continuity plan) in the “post-corona” era shall include “the protection of operating personnel” and “user untact support” in addition to hacking and disability responses

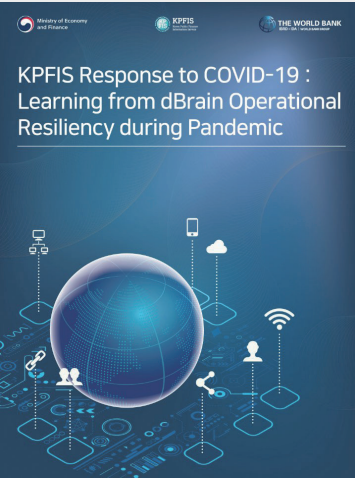
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[Special Contribution] The Exemplary K-Prevention Case



The global economic crisis caused by COVID-19 pandemic has continued for several months. “It is the biggest crisis since the Great Depression”, but it is unknown if it is close to the bottom and when this crisis will end. As international organizations such as IMF and OECD have recommended the expansion of public finance, each country has been intensively releasing finance. It will be a disaster if the FMIS, the financial execution channel, stops due to COVID-19. How can COVID-19, not a computer virus, paralyze a computer system? It can happen rather easily. A system stops when the necessary personnel to operate the system are infected and quarantined on a large scale. Numerous repeated anti-hacking training and fault recovery training are useless against an infectious disease. The World Bank (WB) and the Inter-American Development Bank (IDB) requested the Korea Public Finance Information Service “to share the tips of operating a financial system with the world, since it seems South Korea has a systematic response for the financial management information system operation just like other K-Prevention measures.”



〈A poster of a seminar organized by the World Bank 〉

1. Finance is the “Most Important” Factor for All Countries in Responding to the Crisis

In the economic crisis, the role of finance is like the “top striker” in soccer. Even though each country responds to the crisis by combining monetary policies, financial policies, and fiscal policies, fiscal policies stand out owing to the immediateness and size of the effectiveness. The economic crisis triggered by an infectious disease is unprecedented, so the expansion of public finance is the only remedy proposed by IMF and the OECD. It is said that a country that has financial resources can release funds quickly and a country without sufficient financial resources can release funds by loaning money. Given the circumstances, the US and Japan's fiscal response amounts are equivalent to 7.8% and 8.7% of GDP, respectively, and Germany, which has a relatively low economic impact, released 4.4% of its GDP.



South Korea also responded promptly and boldly with the 1st and 2nd revised supplementary budgets, and the 3rd revised supplementary budget of KRW 35.1 trillion passed at the National Assembly earlier this month. The total amount of them was KRW 59.0 trillion¹, which is much larger than the size of the total revised budget for the 1998 financial crisis or the 2009 global financial crisis². Because South Korea has minimized the spread of COVID-19 with the successful disease prevention in addition to this financial support, the OECD and the IMF predict that South Korea will have the least economic impact in the world³. The South Korean government defines the current crisis as a “wartime situation,” and plans to implement all possible policies and resources to cope with the crisis in the future.

2. Stable Operation of Financial Management Information System is Essential for National Financial Activities

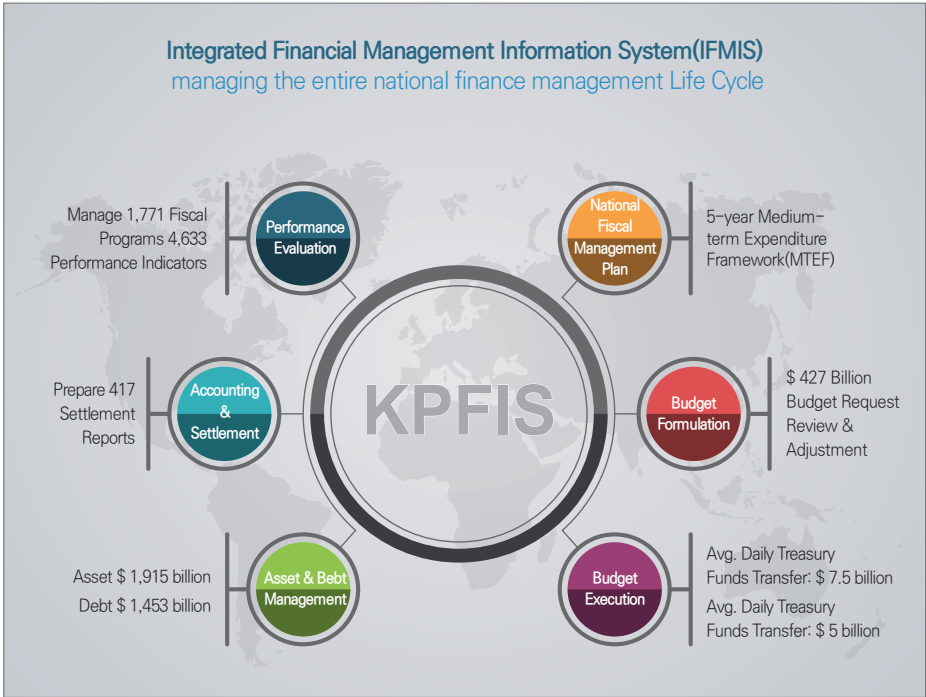
The government’s fiscal expansion or the central bank’s quantitative easing is often described as “helicopter money,” but it is not possible to spray cash in the air for real. How is finance executed? It is the Financial Management Information System (hereinafter referred to as FMIS). National money must go through all or part of the FMIS to reach the subject: when paying construction costs for bridges and roads to private companies; paying more unemployment benefits to unemployed people; paying a salary to civil servants; or giving disaster reliefs to the public. Therefore, all major countries operate such FMIS. The name of South Korea’s FMIS is the Digital Budget Accounting System (hereinafter referred to as dBrain). dBrain is owned by the Ministry of Economy and Finance, a financial authority, and it is operated by the Korea Public Finance Information Service(hereinafter referred to as KPFIS). As you can see from “the digital brain”, the nickname of dBrain, it has many smart functions. It even won the UN Public Administration Award in 2013. The FMIS of each country has a different name and functions, such as OSCAR in the United Kingdom, FMS in the United States, HERMES in Sweden, FM-SC in Canada, and SIDAFF in Mexico.



1 The 1st revised supplementary budget KRW 11.7 trillion + The 2nd revised supplementary budget KRW 12.2 trillion + The 3rd revised supplementary budget KRW 35.1 trillion = KRW 59.0 trillion
2 KRW 13.9 trillion in 1998 and KRW 28.4 trillion in 2009
3 OECD forecasted “the 20-year global growth rate as -6.0%, the mean growth rate of member countries as -7.5%, and the mean growth rate of South Korea as -1.2%” (2020.6.10) and the IMF forecasted “global mean as -4.9%, developed country mean as -8.0%, and South Korea as -2.1%” (2020.6.10)

In South Korea, the annual budget of KRW 500 trillion is set, executed, and settled in dBrain. Moreover, the management of state-owned properties, KRW 1,080 trillion, is executed using dBrain. When the government releases the emergency fund in response to the COVID-19 crisis or a revised supplementary budget is organized or executed, all must go through dBrain. This is the foundation of the government’s finance activities. As a result, the amount of money transfer per day in dBrain is KRW 8.7 trillion. If dBrain stops, the government’s fiscal policy also stops.

Figure 1. Key features and operational status of dBrain



EX 1) Based on FY 2019 figures
2) DBAS(Digital Budget and Accounting System)
3) dBrain: nickname for DBAS; combination of 'D' which stands for "digital and "brain"

3. 'Before COVID-19' hacking defense and fault prevention were the core of securing the business continuity plan (BCP) of FMIS

Because FMIS is such an important system, each country is concerned that this system may be hacked or stopped due to a fault. When the money is used at an appropriate time in an appropriate way, the effectiveness of it can be maximized. Therefore, to use money cost-effectively, stable operation of the system is essential. Therefore, securing a Business Continuity Plan (BCP) of national financial activities focuses on the stable operation of the system. This is the same in South Korea. KPFIS regularly conducts the disaster recovery simulation training that operates the auxiliary system(Gwangju) instead of the system(Daejeon). In particular, the daily inspection list for computer equipment has increased considerably from 284 in 2019 to 396 this year. Participation in Safe Korea Exercise, Mock Hacking training, and DDoS Handling Training is also mandatory.

When the system was operated by the private sector from 2007 to 2016, while the system was built, there were more than 30 major and small faults. However, there was only one issue at night time since it has been managed by KPFIS, a system operation agency.

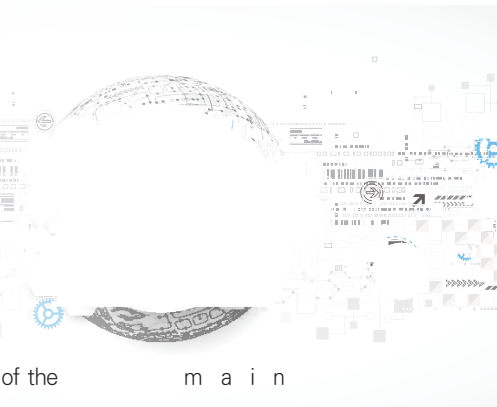


Figure 2. Schematic diagram of dBrain disaster recovery

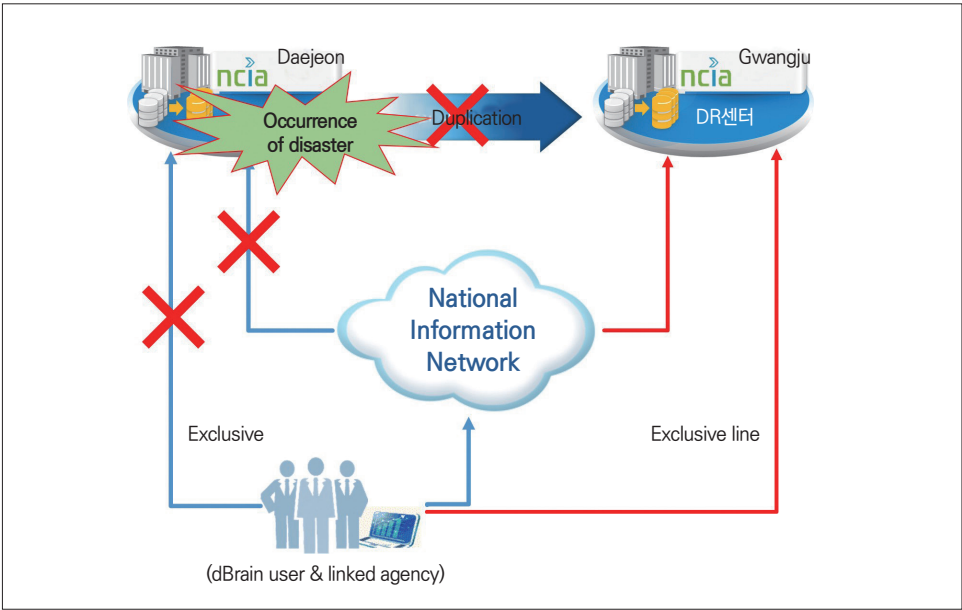


Figure 3. World Bank online seminar presentations and main speaker



4. Just Defend the System? Appropriate BCP Only When Including Operating Personnel

However, current economic crisis is caused by the reduction in economic activities, which was due to the rapid transmission of an infectious disease from people to people. It means that the FMIS can be stopped due to the infection of the personnel operating the system, not hacking or system failure. This makes all countries concerned. "What is the use of disaster recovery training or hacking defense training? What should we do if system operation personnel are hospitalized and quarantined on a large scale due to COVID-19 infection? If there is no manpower, the system will stop, and eventually, the national financial activities will stop."

As a result, the World Bank and the Inter-American Development Bank asked KPFIS "whether the agency has a systematic response to the operation of a FMIS, since South Korea has already become a model around the world because of K-Prevention. If so, can you share it with us?" The name of the seminar proposed by international organizations indicates the status of K-Prevention. The World Bank Seminar is entitled as "KPFIS response to COVID-19: Learning from dBrain resilience." The goal is to learn the resilience of dBrain through the COVID-19 response of the Korea Public Finance Information Service (KPFIS). On June 16, finance officials from developing countries, including Bhutan, Vietnam, Hungary, North Macedonia, and Albania, invited by the World Bank and approximately 60 members (e.g., the United States, China, and Mongolia) of the FMIS CoP run by the World Bank participated in it. The theme of the seminar hosted by the Inter-American Development Bank is "FMIS operations under the COVID-19 pandemic The Korean Experience". It was held online on July 10 while 147 high-ranking treasury officials from 24 Latin American countries participated in it.

5. Five Keywords to Understand South Korea's 'Securing Business Continuity under an Infectious Disease Situation'

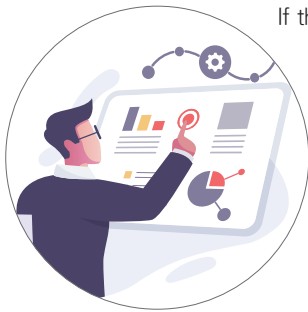
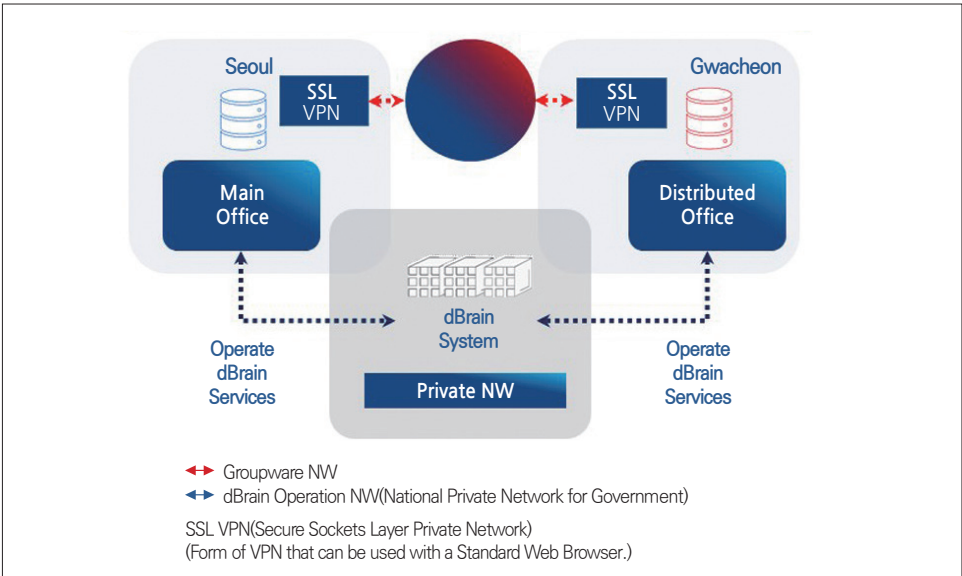
COVID-19 is dangerous because of its strong and rapid contagion. When a person is confirmed to be infected, the building shall be closed and those who were in the same place or in contact with the person shall be quarantined for two weeks. The importance of the work, whether it is education, medicine, or FMIS, is ignored. The entire organization may not be able to work for up to two weeks.

As it is the first global economic crisis caused by an infectious disease, it is the first time that there is a concern that the operation of the FMIS may stop due to an infectious disease. It is the same in South Korea. Although infectious diseases were included in various natural and social disasters such as earthquakes, hacks, and fires, it never assumed a system interruption. That is why South Korea is still constantly supplementing and developing the "Securing Business Continuity under the COVID-19 situation". Here are the 5 keywords of South Korea's responses presented at the online seminar. Of course, it shall be further developed and verified to be the "global standard" in the future.

① (Distribution and Connection) Put in multiple baskets while connecting them with ICT technologies

KPFIS is renting and using 5 floors (17th–21st floors) of a 21-story tall private building opposite to Seoul Station, which has a large floating population. The 90 people operating the dBrain work on the 19th to 20th floors.

Figure 4. Conceptual diagram of distribution and connection speaker



If the government-announced COVID-19 prevention measures were applied as they were, it was possible that, if a confirmed case was found in the dBrain operation headquarters, the operational personnel could be almost completely isolated and facilities were closed. In other words, the facility could be "annihilated". Distributing workplace was urgent. The problem was that, due to the nature of the dBrain operation, it can only work in a place equipped with a nation-only exclusive network.

In response, the agency began to construct a temporary office at the Gwacheon Government Complex with the cooperation of the Ministry of Economy and Finance and the Ministry of Public Administration and Security. The construction period was 2 weeks. Before the completion of the temporary office, the agency ordered 17 people, who were the minimum required personnel to maintain the system, to work from home to prevent "annihilation" on February 27. Moreover, GVPN⁴ was built so that they could perform certain tasks on their PCs at home. People were distributed, but the work was connected. The infrastructure maintenance and repair personnel were also distributed to the Seoul headquarters and the National Information Resource Service located in Daejeon. Following it, on March 10, the temporary office at Gwacheon Government Complex opened, and 37 people including dBrain e-Naradoun operation personnel were relocated to it. It was to stably maintain the core functions of the FMIS under any circumstances, such as Seoul headquarters building lockdown or all employees' quarantine. After the distributed office of Gwacheon Office was closed, a distributed office was established in the Yonsei Building opposite the agency to maintain the distributed work system over 4 months.

② (Selection and Focus) "Prioritize core functions" determining what to save until the end

There was one standard when putting 15% to 25% of the FMIS's manpower, such as dBrain e-Naradoun, to the temporary office in Gwacheon. "Select the core functions that must be functional in any situation and focus on them." It is because it is impossible to operate hundreds of dBrain's functions fully even in times of crisis. It is inevitable to determine task priorities by arranging a wide range of complex functions such as the establishment, allocation, change, carryover of the budget, the collection, change, closing, and annihilation of bonds, and the exchange, sale, concession, disuse, and loan of goods.



⁴ It is an abbreviation of Government Virtual Private Network, and it is a virtual private network that helps people handle administrative tasks during a business trip or at home

For example, the supplementary budgets to respond to the COVID-19 economic crisis are the top priority. The same is true for financial affairs, which have statutory deadlines. The importance and priority of each task for each crisis situation were measured and the minimum core personnel necessary for conducting the task were allocated to each department. Afterward, missions were given to the distributed workforce.

③ (Customer Contact Point) Safely protect the primary contact point with system users

dBrain is a platform that is unfamiliar to the public, but financial officials have to use dBrain even when they spend a dime. The problem is that it is difficult to learn. There are hundreds of functions to learn, but civil servants change their positions every 1 to 2 years. As a result, civil servants call KPFI, which operates dBrain, 1,500 times per day on average. There are thousands of inquiry types, such as overpayment or erroneous payment processing, the deficit in payment, internal transaction removal, and settlement fraction. The user support center, so-called a call center, handles these inquiries and instructs them kindly. This call center is the primary contact point for dBrain users, and it is outsourced. As you know, the call center is one of the most vulnerable working environments against COVID-19. It has a high population density, speaks the whole day, and is a closed environment.

Of course, for this reason, the government advised the call center to the operator to “lower the density”, but it is a difficult task to achieve in reality because expanding space means more money. Moreover, a call center needs more than offices. Infrastructure such as switchboards, in/outbound equipment, and building a consultation system also needs more money.

Therefore, KPFS provided some of the agency's space to be used as a distributed workplace for call center employees. The call center used to have 32 employees but it now only has 17 employees and the others moved to the training center provided by the KPFS to drastically lower the density. In addition, transparent partitions were installed between call center employees to prevent droplet infection that inevitably occurs during counseling. The communication network due to the distribution of the call center was also provided by the agency. It explicitly tolerates a drop in the response rate due to the distributed operation, and supported the center to expand chatting services in response to the increase in user waiting time.

Figure 5. Keywords users frequently ask about



④ (Untact) Strengthening untact in the work environment and user support

KPFIS was able to distribute work move quickly because the government and the agency were relatively well equipped with untact infrastructure. People working from home were also provided with attendance management, signing, data sharing, and meeting participation through GVPN, then the agency's ERP system, and video conference system.

Particularly, cloud-based storage and shared storage for work data have become tools to achieve the two goals, security and remote work. All materials produced by employees are stored on cloud storage, not on a individual PC. It is like it is safer to use a bank vault than using a private safe with multiple locks to store gold bars. People can continue working by connecting to the cloud anytime, anywhere at the same time.

User support tasks were also quickly reorganized to meet the untact environment. When users complained of a technical error while using dBrain, we immediately remotely accessed the user's PC and solved the security program installation or OS version patch. Of course, the group training was replaced with video education, and we strengthened the chat and bulletin board functions to support inquiries untactly. Even after distributed some of operators to a temporary office, the office and the temporary office clearly shared what we had to do.





⑤ (Manual) Everyone knows who should do what

The agency updated the crisis response manual in 2019 and added infectious diseases in addition to ordinary natural and social disasters such as earthquakes, fires, and hacking. According to this manual, the Safety Management Promotion Group (President, Executive Director) announced a “General Situation” among four steps⁵ on January 29. Additionally, it established the prevention measures of epidemics which include providing hand sanitizer and thermometers, checking fever of all employees, training room lockdown, and the prohibition of face-to-face meetings and business trips and forced people to comply with them. On February 24, the response level was upgraded to a “Caution” and a disaster response headquarters was formed. The department head was also given the authority to △ preemptive self-isolation and release decision, △ determine and adjust the quarantine period, △ check for compliance with precautions, and △ designate alternative workers. Particularly, it created a “work scenario according to the location of an infected person occurrence” and helped all employees understand how to act and what to do when they are infected. Although there is no guarantee that employees will not be infected, it became possible to respond promptly to an occurrence.



⁵ The Phase Responding to an Infectious Disease of the KPFIS: General → Observation → Caution → Urgent



6. Need to Redefine the FMIS Business Continuity in Line with ‘After COVID-19’

All fields are going through a great shift. At the seminar, Cem Dener, the World Bank’s lead governance specialist, said that the seminar is an extension of the FMIS Capacity Building Program offered by KPFIS for the financial officials of member countries around the world. It means that handling infectious diseases is now a part of the system operation. In the greeting of the seminar, Jae-hoon Kim, President of KPFIS, also said, “The experience of South Korea will become an asset to the seminar participants” and emphasizing the meaning of the experience sharing.

Indeed, many economists as well as environmental organizations now predict that we will have to live in an economic environment along with infectious diseases such as COVID-19 and it will be “a common condition, not a one-time event.” It means that even if a vaccine for COVID-19 is developed in the near future, another infectious disease or ecological disaster will always occur. The same applies to the operation of the FMIS. If the terms “before COVID-19” and “after COVID-19” mean “a fundamental change in our way of life, work, and economic activity is inevitable.” Consequently, it is

inevitable to change the operation of the FMIS. In particular, securing business continuity should not be at the level of current hacking detection or failure recovery. The keys to secure business continuity may be to focus on protecting the workforce, strengthening the untact working environment, and investing in infrastructure to enable untact training and consultation for system users. Even though each country has strived to handle this crisis by blocking the border and regulating imports and exports, FMIS operators must need to work together to create global standards for securing business continuity after COVID-19. It must start by redefining the concept and content of business continuity, and this seminar will be the first step of it.

