



**General Stewards of the Global Initiative
for Fiscal Transparency (GIFT) Meeting**

Digital Solutions Guidelines for Public Financial Management

NOVEMBER 27TH, 2023

Sailendra Pattanayak (Deputy Division Chief),
Lorena Rivero del Paso (PFM Advisor), Chloe
Cho (Research Analyst)
FAD-M2, IMF

#DigitalPFM

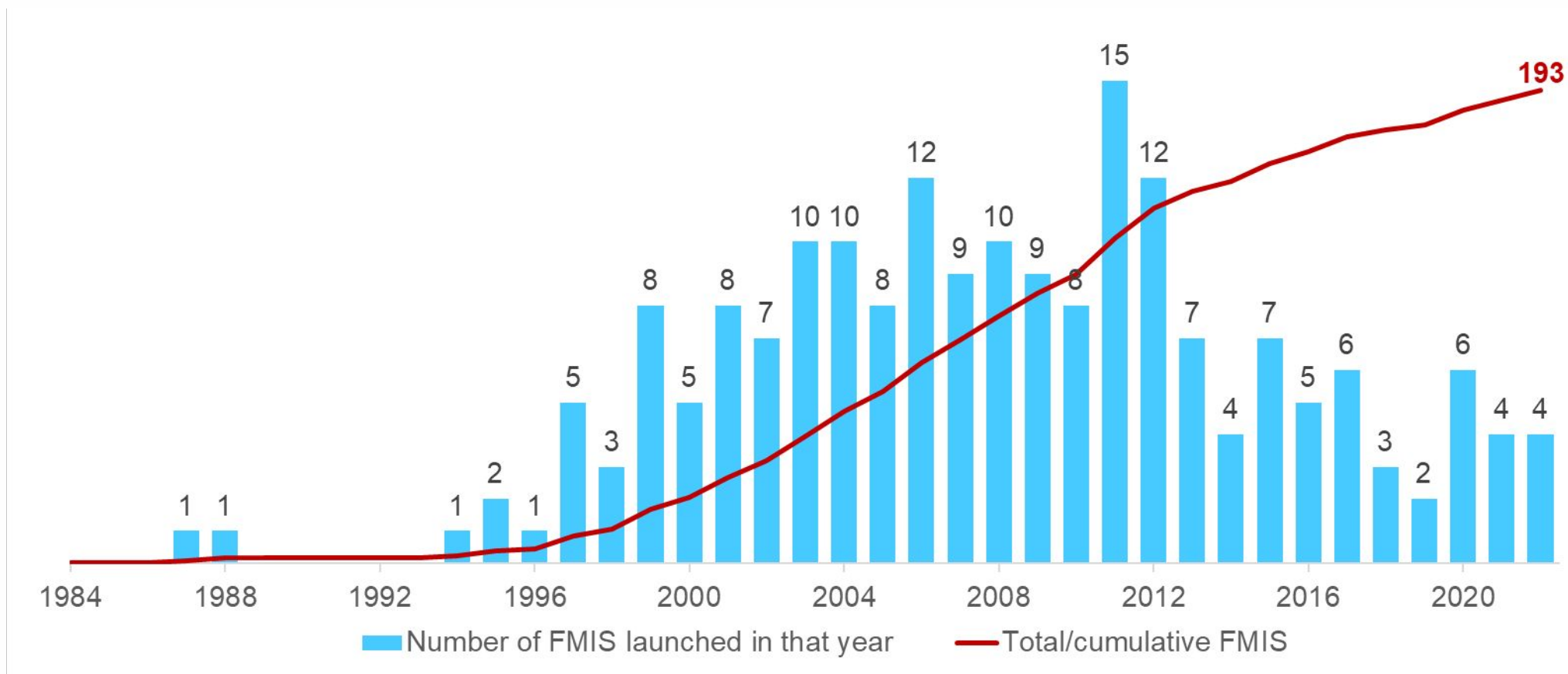
Outline

- A snapshot on the global embracement of Digital PFM: Trends, risks and challenges, successes and failures
- Framework for adopting technological development within public financial management architecture
- How to apply the framework: *Assess-Design-Improve* strategy
- Potential areas to build a strategic partnership among member countries and IMF

Outline

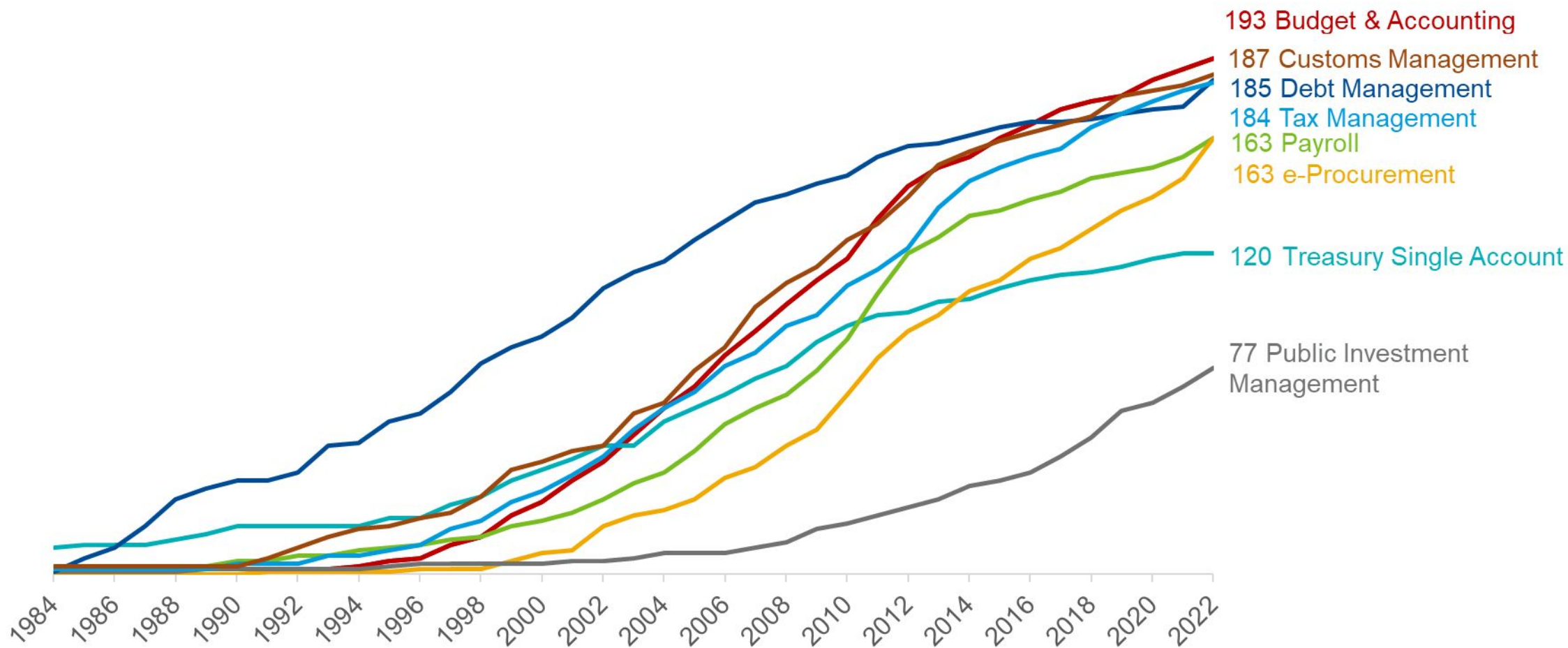
- **A snapshot on the global embracement of Digital PFM: Trends, risks and challenges, successes and failures**
- Framework for adopting technological development within public financial management architecture
- How to apply the framework: *Assess-Design-Improve* strategy
- Potential areas to build a strategic partnership among member countries and IMF

Trends in the adoption of Financial Management Information Systems (FMIS)



Source: IMF based on GovTech Dataset (Oct 2022), World Bank. Note: The survey is self reported by country authorities and does not indicate the quality of the systems.

Trends in coverage of PFM functions



Source: IMF based on GovTech Dataset (Oct 2022), World Bank. Note: The survey is self reported by country authorities and does not indicate the quality of the systems.

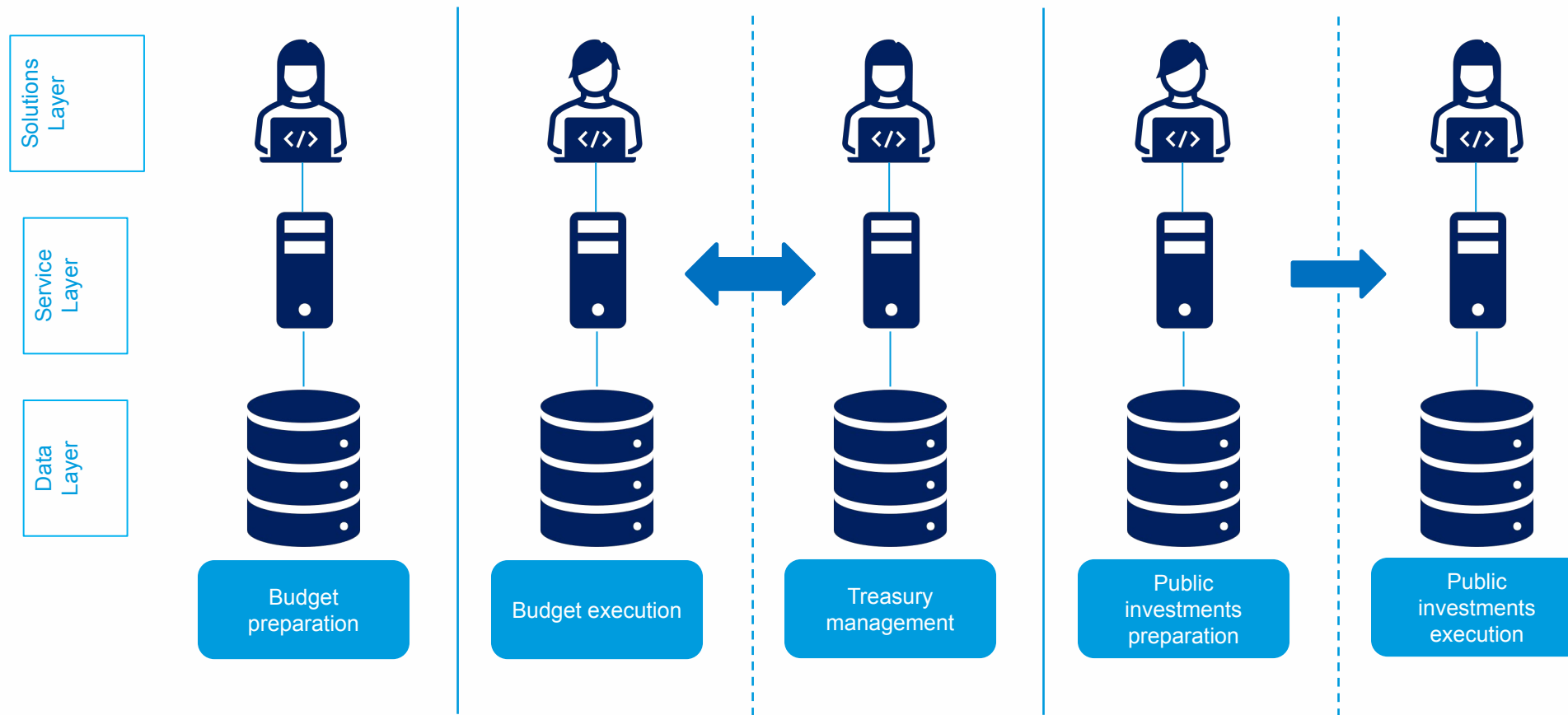
Main concerns faced by countries related to digital PFM

A recent survey (2023) of 30 countries across different regions and income groups showed that lack of interoperability, cybersecurity concerns, and evolving needs of governments remain a significant challenge for IT systems that support PFM functions.



Source: Digital Solutions Guidelines Workshops (May 2023), IMF

Trends around fiscal data exchange (interoperability)

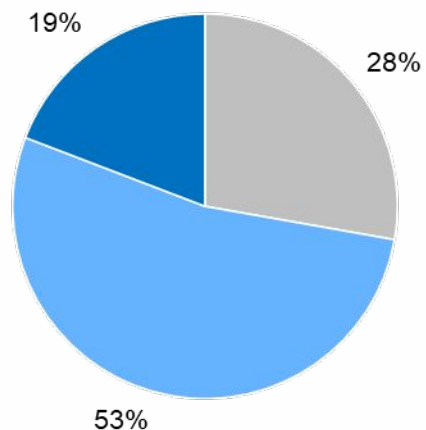


Trends around fiscal data exchange (interoperability)

- 72% of the core FMIS functions exchange data with other PFM information systems

Do the core FMIS functions exchange data with other systems?

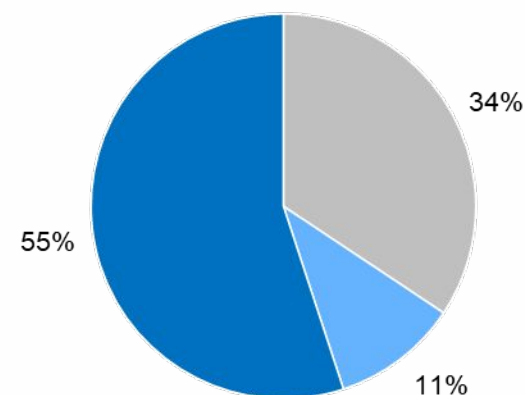
- No
- Yes (via separate interfaces)
- Yes (centralized government services)



- Only 55% of digital TSAs are linked with Central Bank systems

Is there a TSA interface linking FMIS with the Central Bank systems?

- No
- Implementation in progress
- Yes (in use)

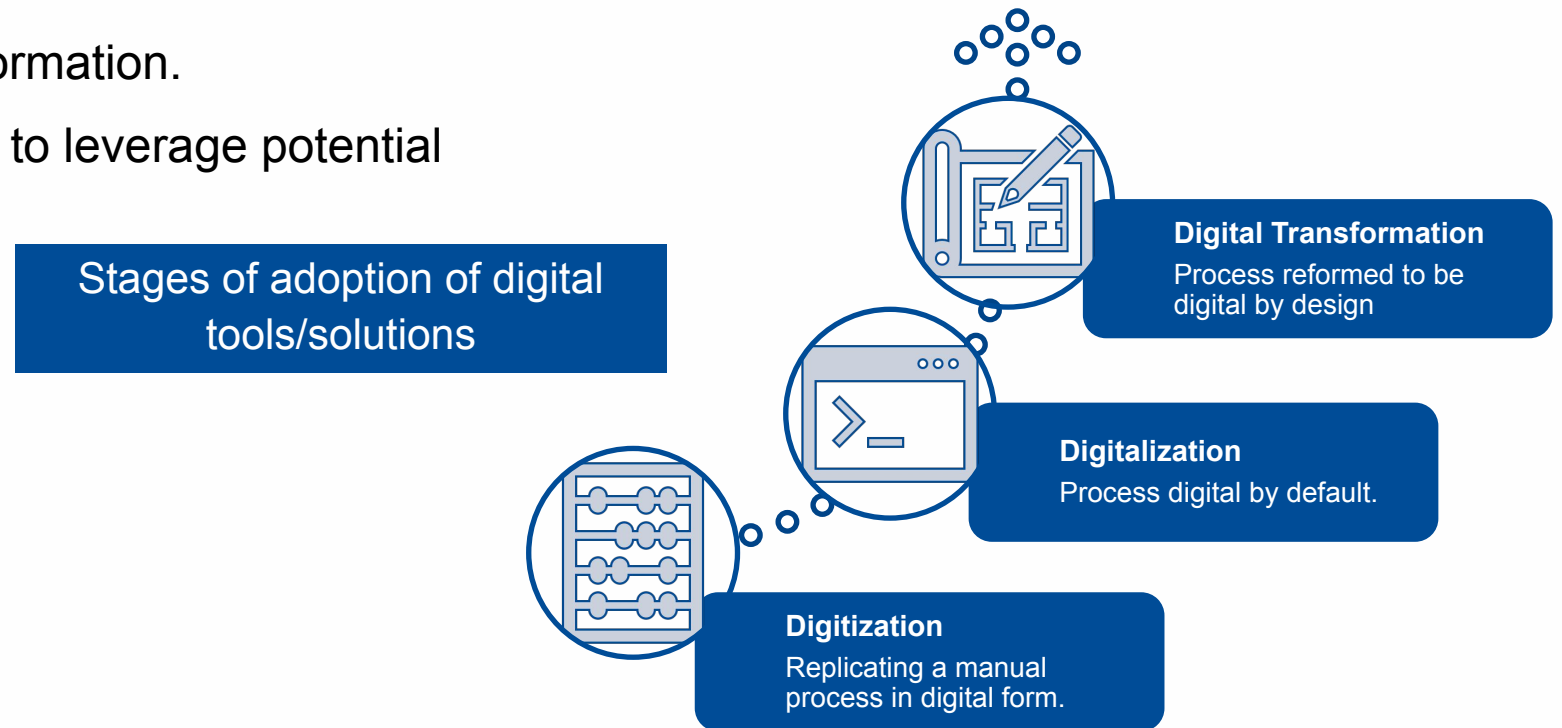


*Core FMIS: Budget preparation, execution, treasury, accounting and reporting.

Source: IMF based on GovTech Dataset (Oct 2022), World Bank

Other highly ranked concerns: Evolving needs, data quality and user-centric design

- Legacy systems do not always support modern forms of PFM.
 - Such as active cash management, performance budgeting, nowcasting for macrofiscal aggregates, among many others.
- Digitization vs Digital Transformation.
 - Processes not redesigned to leverage potential of digital tools.



Outline

- A snapshot on the global embracement of Digital PFM: Trends, risks and challenges, successes and failures
- **Framework for adopting technological development within public financial management architecture**
- How to apply the framework: Assess-Design-Improve strategy
- Potential areas to build a strategic partnership among member countries and IMF

Digital Solutions Guidelines for PFM

What they are:

- A framework for digital PFM, based on Core Functional, IT Architectural, and Governance & Management Pillars.
- A detailed practitioner's view of the desirable functional attributes for each of 11 PFM functions.



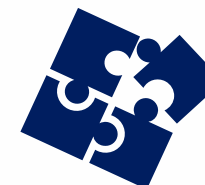
Components and target audience



Digital Solutions Guidelines for PFM



Handbook



Digital Solutions Guidelines Implementation Tool (DiGIT)

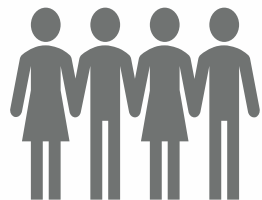


Content

Framework with Pillars, Principles and Attributes. Levels of maturity of each Attribute. Use of the guidelines for digital transformation of PFM.

Expanded Attributes and their levels of maturity with examples. Functional Pillar's levels of maturity applied to 11 PFM functions with 30 subfunctions/processes.

Templates for assessing: (i) coverage of digital solutions across PFM subfunctions, (ii) degree of systems' interoperability, and (iii) maturity levels across the three Pillars. Graphic summary reports.



Target audience

Framework: Policymakers and senior managers of the MoF and agencies in charge of digital transformation and open government.

Levels of Maturity per Pillar: Officials and policymakers with operational responsibility.

Officials and policymakers with operational responsibility. Developers of technical and functional requirements.

Assessment templates for officials with operational responsibility. Summary reports for senior managers and policymakers.

Private sector, including GovTech startups, and **civil society** that develop or strategize digital solutions for PFM and can support the creation of digital skills. **International financial institutions** and **development partners**.

User oriented: Extensive consultation and piloting process

Collaborative development process – with participation from FAD staff, other IMF departments, different organizations, and government officials (intended users)

The process included:

- Initial consultation with a working group
- Closed-door workshops
- Design thinking sessions
- Regional workshops



Objectives: Assess-Design-Improve Digital PFM

The Guidelines aim to facilitate digital transformation of key PFM functions by:

- providing a basis to **assess** existing PFM digital solutions and the associated governance and management practices, to identify strengths and weaknesses;
- assisting with the **design** of new PFM IT systems or digital transformation strategies; and
- supporting the development of detailed functional requirements or strategies that can enable innovation and **improve** digital solutions for PFM.



Assess

Evaluate strengths and weaknesses across Functional, IT Architectural and Governance and Management Pillars. Compare the level of maturity of existing or news solutions.



Design

Apply the core Attributes to produce functional and technical requirements' documentation to develop a new or updated solutions.

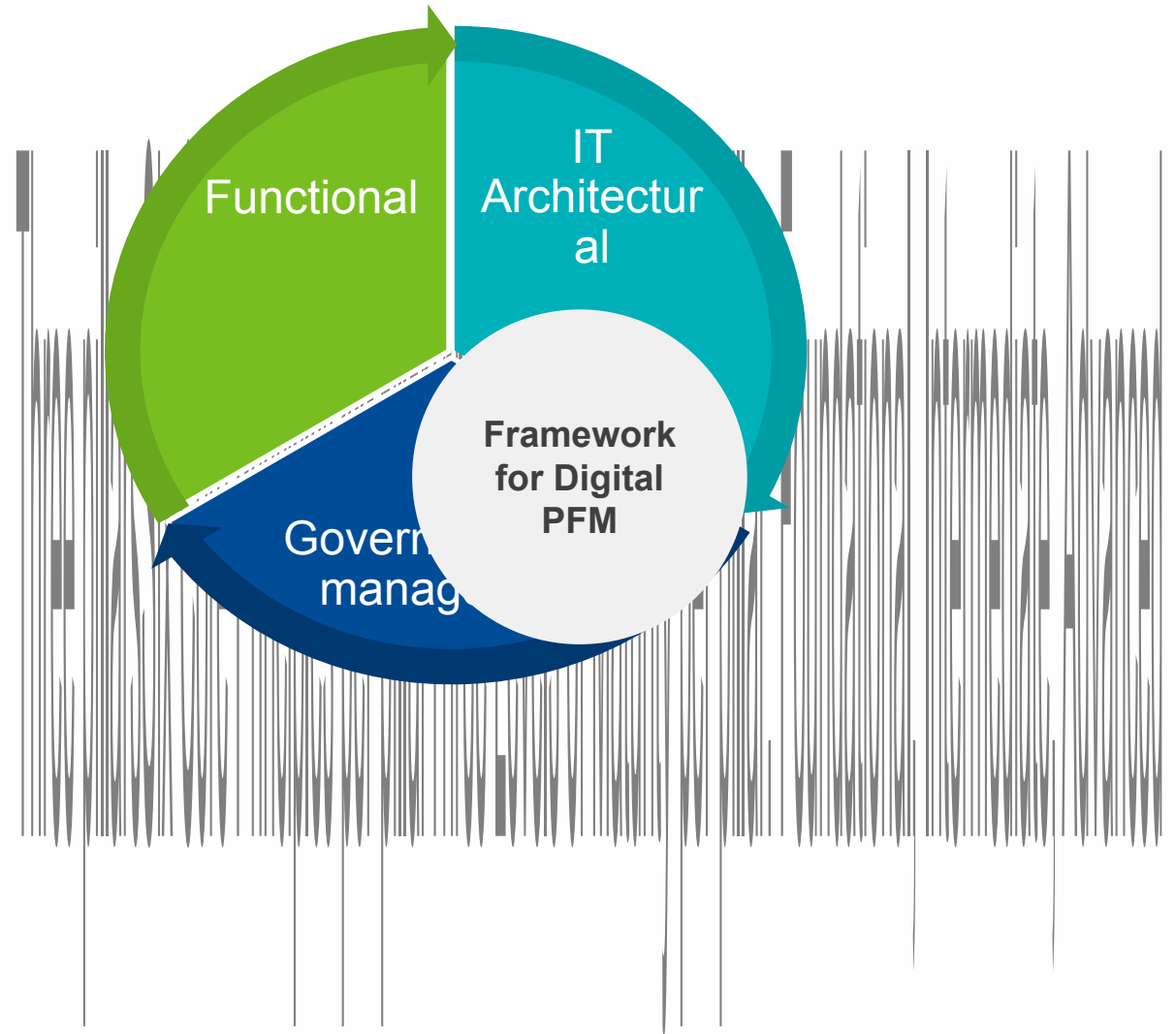


Improve

Develop policies and a strategic roadmap to improve a system or the ecosystem of digital solutions.

Digital Solutions Guidelines for PFM

- **Three Pillars**
- **Six Principles per Pillar**
- **Up to Four Attributes per Principle**
 - 13 Functional
 - 10 IT Architectural
 - 15 Governance and Management
- **Three Levels of Maturity per Attribute**



Pillar I



Functional

Principle 1. Process transformation



- 1.1. Stage of transformation
- 1.2. Automation of controls

Principle 2. Data capture



- 2.1. Accessibility
- 2.2. Comprehensiveness

Principle 3. Data architecture & exchange



- 3.1. Codes and catalogues
- 3.2. Data structure
- 3.3. Data exchange

Principle 4. Data storage



- 4.1. Data integrity
- 4.2. Historic archive

Principle 5. Information for decision-making



- 5.1. Analytical capabilities

Principle 6. Transparency



- 6.1. Timely publication
- 6.2. Open by default
- 6.3. Progressive disclosure

Pillar II



IT Architectural

Principle 1. Adaptive



- 1.1. Flexible and scalable
- 1.2. Vendor neutral
- 1.3. Cloud-enabled

Principle 2. Anticipatory



- 2.1. Forward-looking
- 2.2. Holistic Enterprise Architecture

Principle 3. Pragmatic



- 3.1. Once-only

Principle 4. Secure



- 4.1. Asset inventory
- 4.2. Resilient

Principle 5. User-centered



- 5.1. Adoption-driven

Principle 6. Open architecture



- 6.1. Contributing to reusability

Pillar III



Governance and Management

Principle 1. Legal framework



- 1.1. Digital components
- 1.2. Transparency in digital form
- 1.3. e-Archives management
- 1.4. e-Procurement

Principle 2. Strategic vision



- 2.1. Purpose oriented
- 2.2. Data driven
- 2.3. Innovation enabling
- 2.4. Collaborative environment

Principle 3. Project management



- 3.1. Project design
- 3.2. Project procurement
- 3.3. Project implementation

Principle 4. Data governance



- 4.1. Management framework
- 4.2. Data ownership

Principle 5. Data protection



- 5.1. Data ethics and privacy

Principle 6. Digital risks management

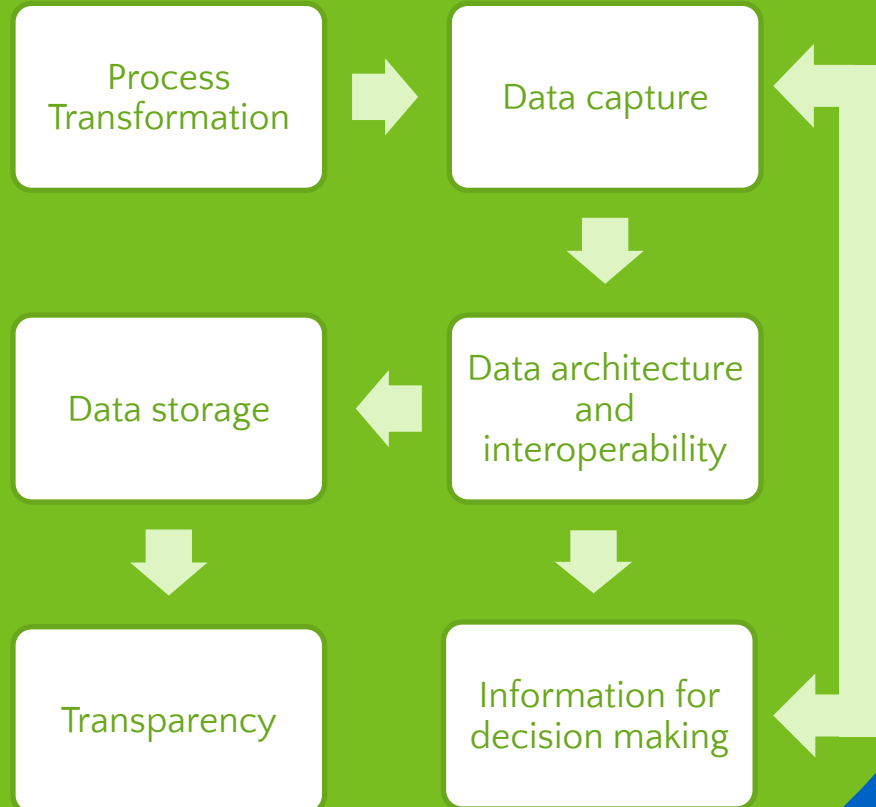


- 6.1. Risk management

IT ARCHITECTURAL

GOVERNANCE & MANAGEMENT

FUNCTIONAL



1. Adaptive

2. Anticipatory

3. Pragmatic

4. Secure

5. User-centered

6. Open architecture

1. Legal framework

2. Strategic vision

3. Project management

4. Data governance

5. Data protection

6. Digital risks management

Pillar I. Functional

Business processes support
Attributes by levels of maturity or progression

	Foundational	Intermediate	Advanced
1. Process Transformation	1.1. Stage of transformation		
	The business processes are embedded in the PFM IT system, with some steps still manual (e.g., signature, additional exchange of hard copies or digital documents) (“digitization”).	The business processes are embedded in the PFM IT system to be digital by default, with no manual intervention (“digitalization”).	The business processes are reviewed and streamlined to be digital by design, including the adoption of digital innovations to transform the processes (“digital transformation”).
2. Data Capture	1.2. Automation of controls		
	The system automatically checks that data are consistent, its processes comply with a country’s business processes and rules based on the PFM legal framework, which has been redesigned and streamlined to accommodate digital reforms and generate control/ exception notifications if these requirements are not met.	The system facilitates the enforcement and oversight of government’s fiscal objectives and rules through the PFM framework such as budget planning, budget execution, and financial plans/reports.	The system monitors unexpected or possible future deviations from the government’s fiscal, budget or financing plans (including due to mismanagement) by adopting digital innovation tools such as ML and/or robotic process automation (RPA).
3. Data Architecture and Interoperability	2.1. Accessibility		
	Users access the system online through a network outside of the MoF, to input data into the system, with secure access.	Users can upload data in bulk from a file or another database using automated procedures such as through extract, transform, load (ETL) processes. The system is operational even in low connectivity and low bandwidth.	The system additionally allows automated and seamless capture of relevant data when requiring original input, for example, using application programming interface (API). The system maintains high availability (i.e., at least 99%) of the functions or processes minimizing potential disruption or downtime for reporting.
3. Data Architecture and Interoperability	2.2. Comprehensiveness		
	Coverage of data captured, depending on the PFM function, is aligned with international standards, including at least Basic Practices under the coverage related principles of the IMF’s Fiscal Transparency Code.	Coverage of data captured, depending on the PFM function, is aligned with international standards, including at least Good Practices under the coverage related principles of the IMF’s Fiscal Transparency Code.	Coverage of data captured, depending on the PFM function, is aligned with international standards, including at least Advanced Practices under the coverage related principles of the IMF’s Fiscal Transparency Code.
3. Data Architecture and Interoperability	3.1. Codes and catalogues		
	The system uses a data architecture based on government-defined taxonomy (e.g., Chart of Accounts), which can be easily mapped to international standards when applicable.	The system integrates codes and catalogues (e.g., procurement IDs, beneficiary IDs, investment project IDs) to enable interoperability. Codes and catalogues are aligned with international standards (such as ISO for dates and times, coordinates), when applicable.	The system allows having expanded codes and catalogues, or extensions for specific information required by public agencies, or for strategic analysis of cross-cutting issues (e.g., gender, climate, SDGs).
	3.2. Data structure		
3. Data Architecture and Interoperability	The database stores structured data, but relevant information is stored as unstructured data (e.g., PDFs or scanned documents).	The database stores structured data of the main PFM processes; however, supporting information is stored as unstructured data (e.g., scanned documents, emails, etc.).	The database stores only structured data. If non-structured data is gathered, there is corresponding metadata.
	3.3. Data exchange		
3. Data Architecture and Interoperability	Based on the data architecture, the system can exchange data with other IT systems manually or as a bulk transfer, for example, through ETL processes.	The system is interoperable with other core PFM systems based on relevant business process interactions, using automated procedures such as APIs or similar solutions.	The system is fully interoperable with other pertinent IT systems outside of the core PFM framework, using automated procedures (e.g., APIs).

	Foundational	Intermediate	Advanced
4. Data Storage	4.1. Data integrity		
	All modifications that affect the original data records are captured separately, and individual data records are never overwritten.	Every addition, modification or deletion of the data has a timestamp and user-log (including users making the changes and validating data, when applicable).	Regular internal automated audits of the data (using error detection software or other) are performed to assure the data are reliable when they are gathered and used.
5. Information for Decision-Making	4.2. Historic archive		
	The database stores the PFM function's data of the current year and at least three prior years.	The database stores the PFM function's data for a period between three and five prior years.	The database stores the PFM function's data for ten or more years. The data is stored according to digital data archive preservation rules.
6. Information Transparency	5.1. Analytical capabilities		
	The system generates timely and reliable automated reports according to the PFM legal framework when applicable, enabling the users to make operational and managerial decisions, and present information for audit and the legislature. The system supports limited facilities to define customized reports.	The system generates extensive automated reports based on the needs of the different organizational roles and users. The system allows extensive tailoring and personalization of reports.	The system incorporates advanced data analytics, algorithms, and models (i.e., using ML or similar tools) that further support informed decision-making.
6. Information Transparency	6.1. Timely publication		
	The system allows the publication of reports online at intervals not greater than those defined in the PFM legal framework or aligned with the corresponding Basic Practice of the IMF's Fiscal Transparency Code, when applicable. The online publication is consistently available to the users (general public).	The system supports the publication of in-year reports at least on a quarterly basis, within a month, or as the corresponding Good Practice of the IMF's Fiscal Transparency Code, when applicable.	The system supports the publication of monthly reports monthly, or as the corresponding Advanced Practice of the IMF's Fiscal Transparency Code, when applicable.
	6.2. Open by default		
6. Information Transparency	Data related to the corresponding fiscal reports are published in machine-readable formats; however, it lacks granularity. The publication requires manual intervention.	The granular data (including the corresponding codes and catalogues) are published in non-proprietary machine-readable formats (e.g., CSV), with limited exceptions to address individual data privacy and national security. The publication is done through automated connections to the PFM IT system (does not require manual intervention).	The granular, machine-readable dataset is accompanied by a data dictionary, and a data license explains the conditions for data to be used and reused. The dataset is accompanied by tools for automated consumption by external users (e.g., open API). When available, the data are published using international thematic open data standards or specifications (e.g., Open Contracting Data Standard, Open Ownership and Open Fiscal Data Package).
	6.3. Progressive disclosure		
	Comprehensive reports are made publicly available in a centralized government website for disseminating fiscal information (e.g., MoF website or fiscal transparency portal).	The government centralized website for disseminating fiscal information includes an explanation of the contents of the published data or reports, and visualizations or data queries.	A government portal uses progressive disclosure of information to cater to different users (e.g., by using interactive visualizations, ML or similar tools).

PFM FUNCTIONS COVERED BY THE GUIDELINES

Fiscal Forecasting
and Budget
Preparation

Budget Execution
and Control

Treasury
Operations and
Cash Management

Debt Management
Operations

Accounting and
Reporting

Public Investment
Management

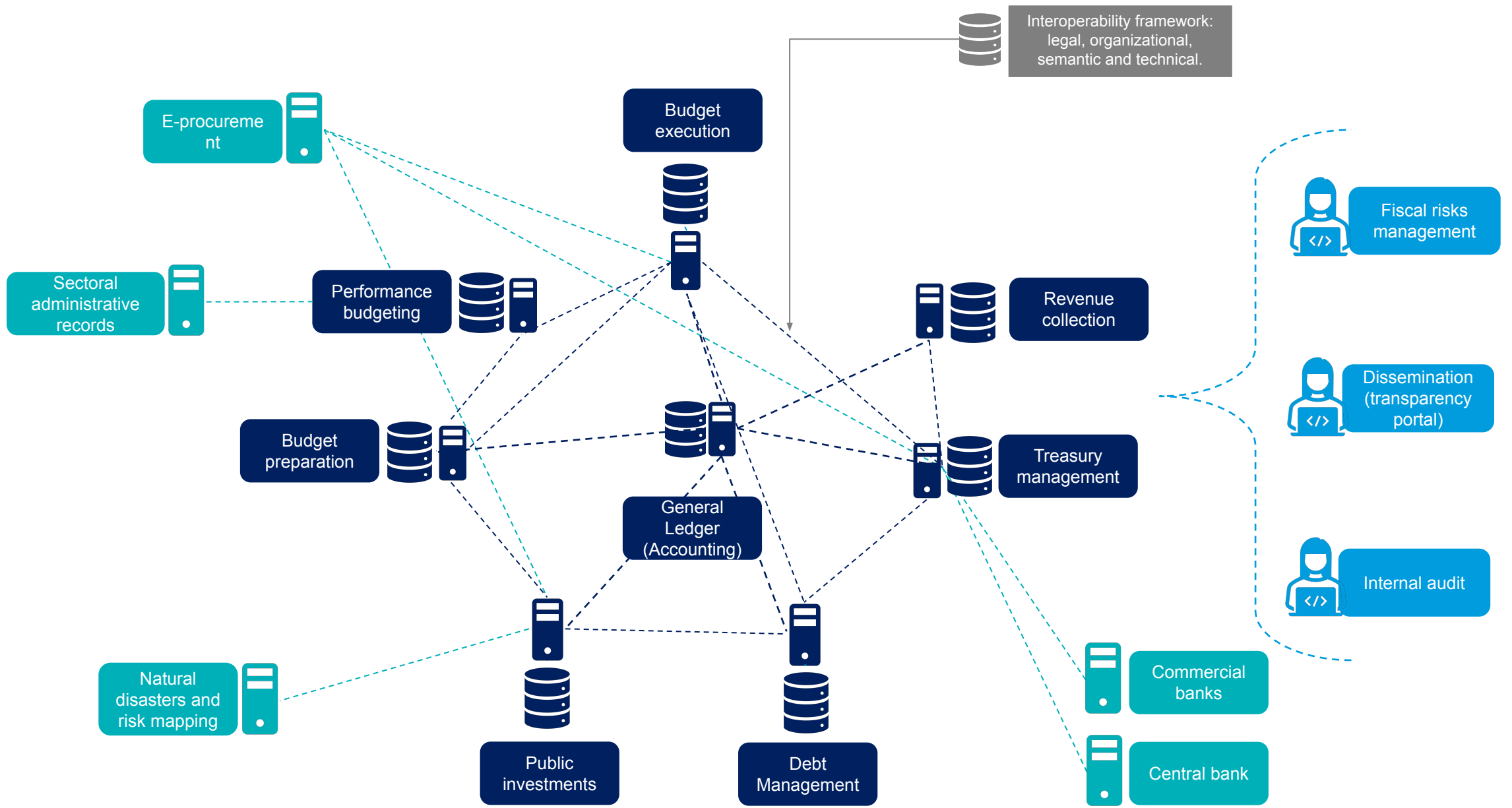
Performance
Orientation of the
Budget and
Improved Service
Delivery

Collection of Tax
and Non-Tax
Revenues

Fiscal Risks
Management and
Disclosure

Dissemination of
Fiscal Information
and PFM
Outcomes

Internal Audit



■ PFM functions of original data input covered by the Guidelines

■ PFM functions of intermediate use of data

■ External and PFM auxiliary systems (examples)

Pillar II. IT Architectural

Features of underlying technology
Attributes by levels of maturity or progression

	Foundational	Intermediate	Advanced
1. Adaptive	1.1. Flexible and scalable		
	The system has a monolithic architecture.	The data, service and solutions layer are loosely coupled.	Services are decomposed, and are broken down into small, independent, and loosely coupled components (i.e., micro-services support registry, service discovery, data transport and sharing, etc.).
	1.2. Vendor neutral		
	The products and/or services have low coupling such that it is possible to change them with minimal effort, including that no business rules are coded at the database level, and adaptations, changes and maintenance can be done internally or through other third-party providers.	The system adopts standardized interfaces and protocols that would allow seamless communication and data exchange between different solutions. The system is based on a modular design, enabling the integration of additional components or services from various vendors or in-house development.	The system has a vendor-agnostic architecture and design, ensuring flexibility to switch or integrate vendors without disruptions. The system leverages a dynamic ecosystem that facilitates seamless integration with multiple vendors.
2. Anticipatory	1.3. Cloud-enabled		
	The system needs to be run in on-premise servers and does not allow migrating to the cloud.	The system allows for hybrid/partial use of cloud, or can be configured for the cloud; however, it is not cloud-native.	The system is cloud-native. When cost, performance, security, and compliance are positive, the system runs in cloud (“cloud-when-needed strategy”).
	2.1. Forward-looking		
	The system runs with components that are not fully supported at present (i.e., it requires extended support). Legacy components or components nearing obsolescence are continuously identified and documented.	The system runs with components that are fully supported at present. A test environment is in place to enable exploration of new technologies and systems via pilots/ proof of concept, using real data, while controlling risk.	New technologies that can improve effectiveness, automate tasks or leverage benefits are used (e.g., generative AI solutions are used to improve efficiency and productivity).
3. Pragmatic	2.2. Holistic Enterprise Architecture		
	The system adheres to organizational directives of Enterprise Architecture, including at least the application and technology architecture that enable system support. The related documentation is kept up to date.	The system additionally adheres to organizational directives on information and security architecture, and service management. The related documentation is kept up to date.	The system additionally adheres to organizational directives on performance and changes management. The related documentation is kept up to date.
	3.1. Once-only		
A small number of data sources are shared and consumed by the system; however, the system has redundancies in reporting with other systems. A mapping of data sources, including their structure, update frequency and ownership, identifies opportunities for exchanging data with other systems, as well as potential challenges.	The system exchanges data through digital solutions developed ad hoc (e.g., APIs) for each use case, as needed. The government wide (or organizational) data interoperability framework for developing optimized and secure data sharing mechanisms, including data models, standards and taxonomy, is followed.	The system exchanges data through a government’s (or organizational) centralized data exchange hub, with built-in security features. The interface used for sharing data is scalable.	

	Foundational	Intermediate	Advanced
4. Secure	4.1. Asset inventory		
	An inventory is maintained for at least the most critical digital assets of the system, including applications, workstations, hardware, software assets, code, licenses, etc.	All data and digital assets hosted internally or externally are identified, classified, and protected according to their sensitivity, criticality, dependency, and interdependency with other digital assets.	All data and digital assets are additionally tagged, tracked, protected (end-to-end) and maintained according to a compliance management policy.
4. Secure	4.2. Resilient		
	<p>The system and management of its data (processed, in-transit or stored) meet minimum security and privacy requirements, including secure coding practices, access control and privilege management, regular software updates and patches, firewall and intrusion detection/prevention systems, and data encryption when necessary.</p> <p>A basic disaster recovery and business continuity plan is in place, including, at least, risk assessment and impact analysis, roles and responsibilities, and regular data backup and storage.</p>	<p>The system is designed to avoid single point of failure, and a layered architecture (“defense in depth”) that reduces disruption is in place. If the system is considered critical, it is segmented from other systems to avoid cascade failure or spillover to other systems.</p> <p>A comprehensive disaster recovery and business continuity plan is in place, including additionally, recovery procedures, alternate site and infrastructure, and regular testing, at least annually.</p>	<p>The system is subject to regular vulnerability assessments and penetration testing to anticipate and detect threats/disruptions.</p> <p>Fail-over capabilities are automated to withstand or recover after a disruption.</p> <p>Incidents related to disaster recovery and business continuity are recorded and monitored to identify patterns and anticipate future threats/disruptions.</p>
5. User-centered	5.1. Adoption-driven		
	The system can run in different web-browsers and/or operating systems. The system has a clear and intuitive navigation structure that allows users to easily move between different sections, features, or functions. Labels, menus, and navigation elements are organized logically and consistently to minimize cognitive load and improve efficiency.	The system has a responsive design and streamlined workflows. The system development and its updates include conducting user research to inform design decisions and conducting usability testing before the system is launched. Usability tests are done early in the development of the solutions.	The system includes error prevention and feedback mechanisms. User behavior tracking is used to gain insights into user interactions and preferences to further optimize the user experience. Technology and functional administrators have access to diagnostic and analytics tools to analyze various aspects of system’s performance and user interactions.
6. Open architecture	6.1. Reusability		
	<p>The system uses government or ministry wide shared available standards and components (such as digital building block or GovStacks), based on a government registry of existing cross-shared components; however, some available components are system specific.</p> <p>Open-source software is not officially vetted but is sometime used in the development of the system; however, it lacks official support, clear maintenance or cybersecurity policies.</p>	<p>The system is developed or customized using government wide standards and components, whenever available (e.g., digital public infrastructure or digital building blocks (or GovStacks)).</p> <p>A review process is in place for approving open-source software, including its license, support and maintenance options, overlap with existing software, integration with the existing environment, true cost of operation, and security testing.</p>	<p>The software components’ technical documentation and licensing enable contributing to the repository of governmentwide shared solutions and/or digital public goods.</p> <p>Open-source software implementation frameworks are adopted and adhered to. Open-source software are properly managed, supported and secured, like any other critical system in the organization. When using open source for mission critical systems, managed open-source software are given a priority.</p>

Pillar III. Governance & Management

Legal and institutional aspects
Attributes by levels of maturity or progression

	Foundational	Intermediate	Advanced
1. Legal framework	1.1. Regulating digital components		
	Some digital PFM functions are supported by legal framework.	All of the digital PFM functions included in the coverage of the <i>Guidelines</i> are supported by legal framework. The legal framework does not require additional manual intervention (i.e., digital signatures, hard copies), enabling the process to be digital by default.	The laws and regulations envisage details such as frequency, timeframes, roles and responsibilities, procedural requirements, oversight and responsibility mechanisms, as applicable.
	1.2. Transparency in digital form		
	The government has enacted legislation to enable right to access to public information and transparency of the PFM functions with clear processes and procedures.	The legal framework for right to information and/or transparency requires prioritizing the delivery of information in human and machine-readable formats to requests that apply to PFM functions.	The legal framework for right to information and/or transparency requires proactive publication of information in human and machine-readable formats to requests that apply to PFM functions.
	1.3. e-Archives management		
The legal framework provides guidance on retention and preservation of PFM records, including responsible authorities for recordkeeping; defines different types of legal retention periods for PFM data, with at least 10 years in hot storage for critical data; and specifies any exemptions and access criteria.	The legal framework recognizes born-digital records as legally valid. Regulations provide for contemplate metadata management; policies for preservation of PFM data, data selection and access; and infrastructure for archiving.	The legal framework incorporates provisions for technical standards for electronic record formats and e-archive management; regular audits and compliance assessments; and legal safeguards for the authenticity and admissibility of electronic records.	
1.4. e-Procurement			
The legal framework provides the basis for e-procurement, including, at least, provisions for electronic submission of bids. Exceptions to the procurement law are not overused.	The legal framework embraces e-procurement for all stages of procurement and procurement types. It encourages agile and iterative procurement cycles and includes legal safeguards for agile procurement approaches, such as clear evaluation criteria and competition.	The legal framework provides for dynamic purchasing systems, framework agreements, and flexible procurement procedures. It includes provisions for monitoring and evaluation of agile procurement projects to ensure accountability and continuous improvement. It permits the use of advanced digital tools and technologies (such as AI-based decision support systems, and smart contracts, or data analytics) for procurement optimization.	
2. Strategic vision	2.1. Purpose-oriented		
	Clear definition of problems and objectives is required for digital PFM initiatives. A diagnostic assessment informs how the proposed solution would address the problems and is used to define the project's scope and nature.	Key performance indicators are developed to monitor the impact of the digital solution.	The monitoring of the indicators and associated feedback are systematically integrated with further iterations of the digital solution.
	2.2. Data-driven		
	Strategic policy documents refer to data and their potential to improve services. Data are collected and used, at least, in the forecasting and monitoring of macrofiscal aggregates.	Some data-driven initiatives, aside from macrofiscal aggregates, are in place; however, they are not yet fully integrated into the PFM operations.	Data are systematically used to inform decision-making, improve operations, and develop or improve public service delivery.
	2.3. Enabling innovation		
There is a government-wide digital strategy that recognizes that innovation requires change in people (including organization culture), technology, and processes.	The national digital strategy is accompanied by required resources and incentives for innovation initiatives. The ministry of finance (or corresponding PFM agencies) plays an active role in such digital strategy.	The government has tools for innovation, such as regulatory and technology sandboxes, in which the ministry of finance plays an active role (either as user and/or coordinator).	
2.4. Collaborative environment			
The organization in charge of the digital strategy engages with relevant internal stakeholders in other agencies, informs external stakeholders (e.g., citizens and businesses) of its decisions, and consults them where necessary.	The culture across government agencies rewards collaboration, and sharing of data and competencies.	Policies and mechanisms that help achieve whole-of-government coordination are actively used in the development of digital solutions for PFM. Digital building blocks are shared government wide and considered in new developments.	

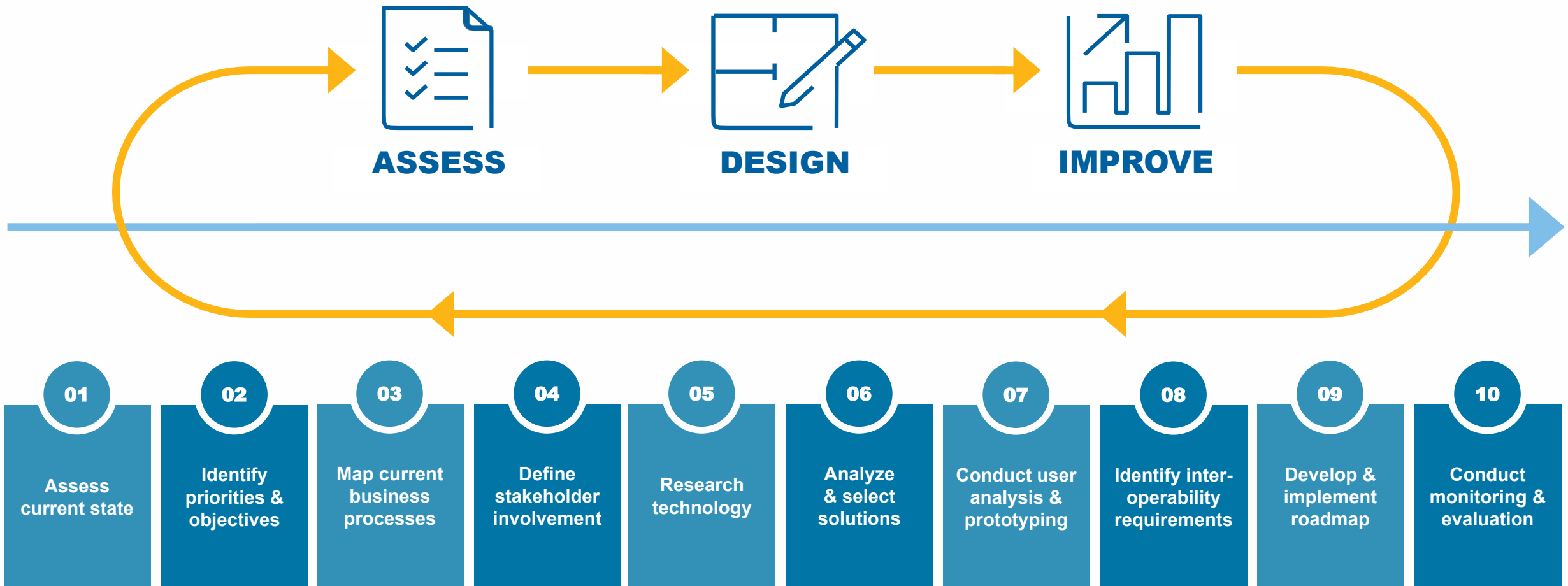
	Foundational	Intermediate	Advanced
3. Project Management	3.1. Project design		
	All digital PFM projects are backed by (i) functional, (ii) technical, (iii) performance, (iv) security, (v) user-experience, (vi) integration, and (vii) testing and quality assurance requirements. New projects require all these elements before any coding is started.	The digital projects are aligned with other government strategies (i.e., national digital strategy); is supported by a strong business case; requires an assessment of existing assets, resources and systems; and includes a formal framework for testing and improving.	The digital projects team has developed a flexible roadmap to accommodate unexpected delays or changes, and has adopted an approach that aims for short iterations and continuous improvement.
	3.2. Project procurement		
	The procurement processes are conducted electronically for the planning, bidding and award stages. There is a project procurement manager who communicates with vendors and documents and negotiates service contracts. The launch of the tender requires a review of existing digital assets across government.	The e-procurement platform interacts with the budget execution systems to enable monitoring of any changes in the procurement contract from the award to the payment stages.	Procurement contracts are agile, modular, and based on relevant standards and regulations. Contracts provide for measurable performance metrics, conducting regular quality assurance activities, and having a defined governance structure for decision-making and issue resolution.
	3.3. Project implementation		
	The project team includes IT professionals and business users who meet regularly to monitor progress. There is an implicit agreement on the objectives, roles, responsibilities and deliverables amongst key internal stakeholders.	The project team meets regularly and keeps a record of the progress. All stakeholders and objectives are identified, and there is an explicit agreement on the roles, responsibilities, deliverables and timeline (e.g., in an action plan).	The project manager has a Project Management Professional (PMP) or similar certification and uses key performance indicators to measure project status. Roles and deliverables (with deadlines) are clearly defined, assigned and tracked according to the positions.
4. Data governance	4.1. Management structure		
	There is a government wide data strategy or governance framework that provides the necessary data infrastructure and data architecture for PFM IT systems (e.g., data registers, standards and a common taxonomy for data exchange, and guidelines for reporting).	The data governance framework covers the entire data value cycle, adapts or reengineers legacy practices, and provides more advanced data infrastructure (e.g., APIs and cloud-based solutions) to further support sharing and reuse of data. It includes data classification policies (including how private data is collected, used, exchanged, secured, and destructed or declassified).	The data governance framework is robust and comprehensive. It covers all the key components, enables data exchange across relevant IT systems, ensures proper management of data, and promotes transparency and efficiency in the use of data.
	4.2. Data ownership		
	The government has some ownership and control over the underlying databases related to PFM Functions; however, vendors manage the data, limiting the government's control over data storage, security and use. Data access restrictions hinder the potential of data analysis. Data migration challenges arise due to the lack of ownership rights.	Some restrictions on data access exist, and efforts are made to enhance decision-making and analysis, allowing the use of data for third party solutions selected by the government. Challenges in data migration persist but are mitigated through negotiated ownership rights.	The government has complete data ownership and control. It has full authority over data storage, security, and usage. This enables informed decision-making and analysis. Data migration is seamless, as the government possesses unrestricted ownership rights, ensuring flexibility and autonomy.
5. Data protection	5.1. Data ethics and privacy		
	Digital PFM initiatives that involve personal data include a clear statement on the purpose of data collection, a guidance on the appropriate and ethical use of data, and adequate safeguards for data privacy.	There are formal requirements for ensuring privacy protections and ethical use and management of data in regard to all digital initiatives regarding data collection, processing, sharing, use and reuse.	There is a comprehensive data ethical framework that supports and complements data privacy laws, as well as required criteria for the use of data in AI models or similar.
6. Digital risks governance	6.1. Risk management		
	Critical digital PFM solutions are identified and risks around them are managed in an ad-hoc manner. There are basic policies and standards to guide administration and operations of critical digital assets.	A digital risks register (for digital assets) and a governance structure with a designated role for management/oversight of digital risks are in place. Senior management are aware of operational risk management. Digital risks management is integrated into the enterprise risk management.	There is robust digital risks management at different levels covering different perspectives (strategic, operational and on ad-hoc perspectives). Digital resilience capabilities are in place, and are tested and proven to be able to anticipate and mitigate potential risks. There is visibility and awareness of potential risks and their management within and outside the organization.

Outline

- A snapshot on the global embracement of Digital PFM: Trends, risks and challenges, successes and failures
- Framework for adopting technological development within public financial management architecture
- **How to apply the framework: Assess-Design-Improve strategy**
- Potential areas to build a strategic partnership among AFRITAC Central member countries and IMF

Using the Guidelines

Assess-Design-Improve ... and iterate



Zoom-In: Using DiGIT

What is DiGIT?

An interactive tool that allows for a systematic assessment of digital solutions for PFM

- Functional coverage
- Interoperability
- Levels of maturity for each Pillar

Table of Content: Assessment Sheets	
<input type="checkbox"/>	Select All
<input checked="" type="checkbox"/>	Functional Coverage of PFM IT Systems Go to sheet
<input checked="" type="checkbox"/>	Interoperability of PFM IT Systems Go to sheet
Pillar I. Functional	
<input checked="" type="checkbox"/>	1. Fiscal Forecasting and Budget Preparation Go to sheet
<input checked="" type="checkbox"/>	2. Budget Execution and Control Go to sheet
<input type="checkbox"/>	3. Treasury and Cash Management
<input type="checkbox"/>	4. Debt Management Operations
<input type="checkbox"/>	5. Accounting and Financial Reporting
<input checked="" type="checkbox"/>	6. Public Investment Management Go to sheet
<input checked="" type="checkbox"/>	7. Performance Orientation of the Budget for Improved Service Delivery Go to sheet
<input type="checkbox"/>	8. Collection of Tax and Non-Tax Revenues
<input type="checkbox"/>	9. Fiscal Risks Management and Disclosure
<input type="checkbox"/>	10. Dissemination of Fiscal Information and PFM Outcomes
<input type="checkbox"/>	11. Internal Audit
<input checked="" type="checkbox"/>	Pillar II. IT Architectural Go to sheet
<input checked="" type="checkbox"/>	Pillar III. Governance and Management Go to sheet

Clear All Input

Start Assessment

Zoom-In: Using DiGIT

Assess current state – overall ecosystem



Functional Coverage of PFM IT Systems

Indicate which PFM subfunctions are currently covered by digital systems in the highlighted column. In the next column, indicate system names.

Function	Sub-function/s	Assessment	System/s	Notes
Original input data functions	1. Fiscal Forecasting and Budget Preparation	Preparation of macroeconomic and fiscal forecasts	Covered	System A
		Decision on fiscal objectives/targets and budgetary ceilings	Partially Covered	[Enter Name]
		Preparation, negotiation, and finalization of budget proposals with ministries, departments, and agencies	Not Covered	[Enter Name]
2. Budget Execution and Control	Authorization of expenditure		[Enter Name]	
	Authorization of adjustments		[Enter Name]	
	Apportionment/ budget warrants		[Enter Name]	
	Reservation/ precommitment		[Enter Name]	
	Commitment		[Enter Name]	

Interoperability of PFM IT Systems

Indicate which other systems each PFM function is connected to

Note: Green boxes will be marked automatically, assuming two-way interoperability

Function/ System/ Module					
Fiscal forecasting	Budget preparation	Budget execution	Treasury management	Debt management	Accounting and financial reporting
<input type="checkbox"/> Budget preparation	<input type="checkbox"/> Fiscal forecasting	<input type="checkbox"/> Fiscal forecasting	<input type="checkbox"/> Fiscal forecasting	<input type="checkbox"/> Fiscal forecasting	<input type="checkbox"/> Fiscal forecasting
<input type="checkbox"/> Budget execution	<input type="checkbox"/> Budget execution	<input type="checkbox"/> Budget preparation	<input type="checkbox"/> Budget preparation	<input type="checkbox"/> Budget preparation	<input type="checkbox"/> Budget preparation
<input type="checkbox"/> Treasury management	<input type="checkbox"/> Treasury management	<input type="checkbox"/> Treasury management	<input type="checkbox"/> Budget execution	<input type="checkbox"/> Budget execution	<input type="checkbox"/> Budget execution
<input type="checkbox"/> Debt management	<input type="checkbox"/> Debt management	<input type="checkbox"/> Debt management	<input type="checkbox"/> Debt management	<input type="checkbox"/> Treasury management	<input type="checkbox"/> Treasury management
<input type="checkbox"/> Accounting and financial reporting	<input type="checkbox"/> Accounting and financial reporting	<input type="checkbox"/> Accounting and financial reporting	<input type="checkbox"/> Accounting and financial reporting	<input type="checkbox"/> Accounting and financial reporting	<input type="checkbox"/> Debt management
<input type="checkbox"/> Public investment	<input type="checkbox"/> Public investment	<input type="checkbox"/> Public investment	<input type="checkbox"/> Public investment	<input type="checkbox"/> Public investment	<input type="checkbox"/> Public investment
<input type="checkbox"/> Performance budgeting	<input type="checkbox"/> Performance budgeting	<input type="checkbox"/> Performance budgeting	<input type="checkbox"/> Performance budgeting	<input type="checkbox"/> Performance budgeting	<input type="checkbox"/> Performance budgeting
<input type="checkbox"/> Revenue collection	<input type="checkbox"/> Revenue collection	<input type="checkbox"/> Revenue collection	<input type="checkbox"/> Revenue collection	<input type="checkbox"/> Revenue collection	<input type="checkbox"/> Revenue collection
<input type="checkbox"/> Fiscal risks management	<input type="checkbox"/> Fiscal risks management	<input type="checkbox"/> Fiscal risks management	<input type="checkbox"/> Fiscal risks management	<input type="checkbox"/> Fiscal risks management	<input type="checkbox"/> Fiscal risks management
<input type="checkbox"/> Dissemination (transparency portal)	<input type="checkbox"/> Dissemination (transparency portal)	<input type="checkbox"/> Dissemination (transparency portal)	<input type="checkbox"/> Dissemination (transparency portal)	<input type="checkbox"/> Dissemination (transparency portal)	<input type="checkbox"/> Dissemination (transparency portal)
<input type="checkbox"/> Internal audit	<input type="checkbox"/> Internal audit	<input type="checkbox"/> Internal audit	<input type="checkbox"/> Internal audit	<input type="checkbox"/> Internal audit	<input type="checkbox"/> Internal audit
<input type="checkbox"/> Procurement	<input type="checkbox"/> Payroll	<input type="checkbox"/> Payroll	<input type="checkbox"/> Procurement	<input type="checkbox"/> Procurement	<input type="checkbox"/> Tax administration
<input type="checkbox"/> Pensions / social security	<input type="checkbox"/> Procurement	<input type="checkbox"/> Procurement	<input type="checkbox"/> Tax administration	<input type="checkbox"/> Central bank systems	<input type="checkbox"/> Central bank systems
<input type="checkbox"/> Central bank systems	<input type="checkbox"/> MDAs systems	<input type="checkbox"/> Interoperable across stages	<input type="checkbox"/> Central bank systems	<input type="checkbox"/> Commercial bank systems	<input type="checkbox"/> Commercial bank systems
<input type="checkbox"/> Others	<input type="checkbox"/> Autonomous entities	<input type="checkbox"/> Interoperable across stages	<input type="checkbox"/> Commercial bank systems	<input type="checkbox"/> Others	<input type="checkbox"/> Others
	<input type="checkbox"/> Others	<input type="checkbox"/> Others	<input type="checkbox"/> Others		

Zoom-In: Using DiGIT

Assess current state – levels of maturity per attribute

Functional Attributes: Fiscal Forecasting and Budget Preparation

Review the descriptions for each subfunction and assess the overall maturity in the highlighted cells

Subfunction list

1. Preparation of macroeconomic and fiscal forecasts
2. Decision on fiscal objectives/targets and budgetary ceilings
3. Preparation, negotiation, and finalization of budget proposals with ministries, departments, and agencies

		Foundational	Intermediate	Advanced	Assessment	Notes
Preparation of macroeconomic and fiscal forecasts		System/s being assessed for 'Preparation of macroeconomic and fiscal forecasts':				System A
1. Process Transformation	1.1. Stages of transformation	Main macroeconomic and fiscal forecasts are calculated through the system by the MoF, with some manual processes externally conducted by other agencies, such as the aggregation of economic activities to calculate the GDP.	All calculations for determining macroeconomic and fiscal forecasts are conducted through the system, based on clearly stated formulas. Parameters are still captured manually by MoF personnel, based on the macroeconomic and fiscal context and political considerations.	The process for determining macroeconomic and fiscal forecasts was designed entirely digital and does not require any additional in-person interaction. All formulas are clearly stated for each major forecast, and the calculations are conducted straightforward without deviations from technical parameters established previously. All actions and validations are made through the system.	Not Met	
	1.2. Automation of controls	The system automatically checks the reliability of the previous year macroeconomic and fiscal forecast data against the data included in the previous year budget documentation and casts alerts that need to be validated by the MoF.	The system facilitates the enforcement of the fiscal targets by controlling its accomplishment in the annual prepared budget and in medium-term macro fiscal forecast. Whenever the system detects major variations, it generates automatic alerts to be considered in the budget preparation.	The system automatically detects and monitors deviations of the macro fiscal forecast from the fiscal targets by applying automatic algorithms and prevents from including inconsistent information, allowing the adjustment of the fiscal targets instead of the macro fiscal variables.	Foundational	

IT Architectural Attributes

Review the description and assess the maturity for each module in the highlighted cells

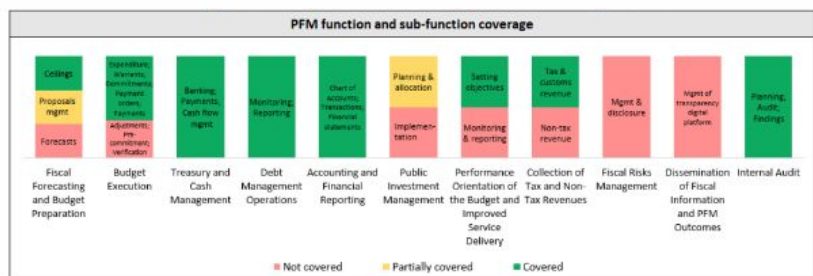
**** you can override the default names and rename your modules in the gray cells; leave the cell blank if you are not assessing the module ****

		Foundational	Intermediate	Advanced	Assessment								
					Fiscal Forecasting and Budget Preparation	Budget Execution and Control	Public Investment Management	Performance Orientation of the Budget for Improved Service Delivery					
1. Adaptive	1.1. Flexible and scalable	The system has a monolithic architecture.	The data, service, and solutions layer are loosely coupled.	Services are decomposed and are broken down into small, independent, and loosely coupled components (that is, micro-services support registry, service discovery, data transport and sharing).	Advanced								
	1.2. Vendor neutral	The products and/or services have low coupling such that it is possible to change them with minimal effort, including that no business rules are coded at the database level, and adaptations, changes and maintenance can be done internally or through other third-party providers.	The system adopts standardized interfaces and protocols that would allow seamless communication and data exchange between different solutions. The system is based on a modular design, enabling the integration of additional components or services from various vendors or in-house development.	The system has a vendor-agnostic architecture and design, ensuring flexibility to switch or integrate vendors without disruptions. The system leverages a dynamic ecosystem that facilitates seamless integration with multiple vendors.	Advanced								

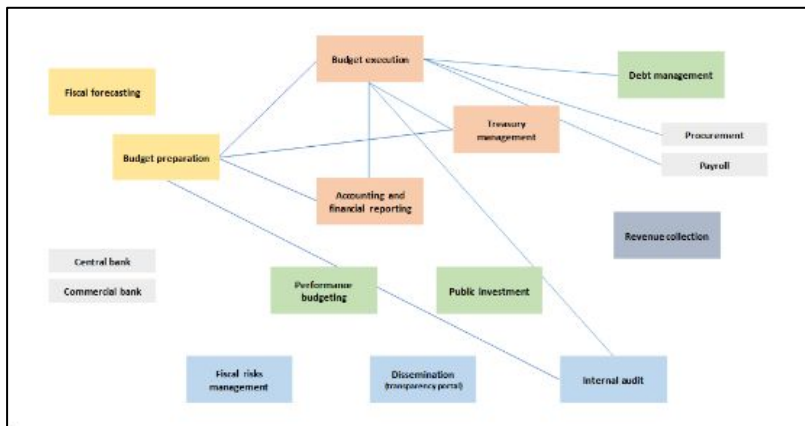
Zoom-In: Using DiGIT

Design and Improve – summary reports

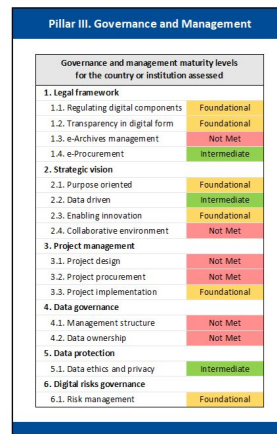
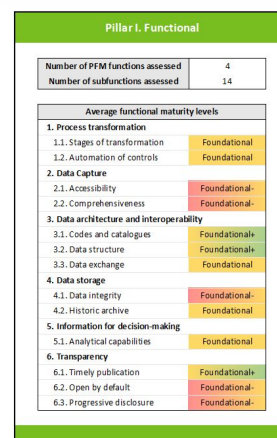
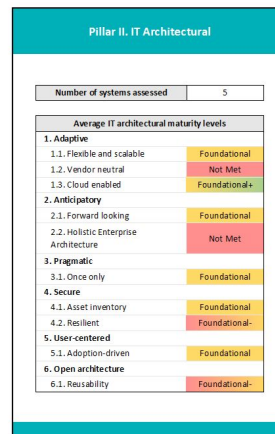
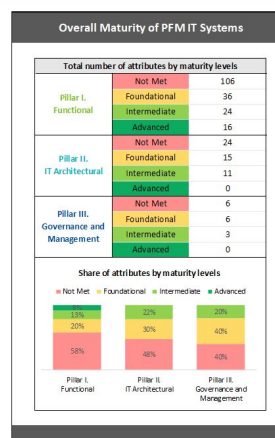
Functional coverage



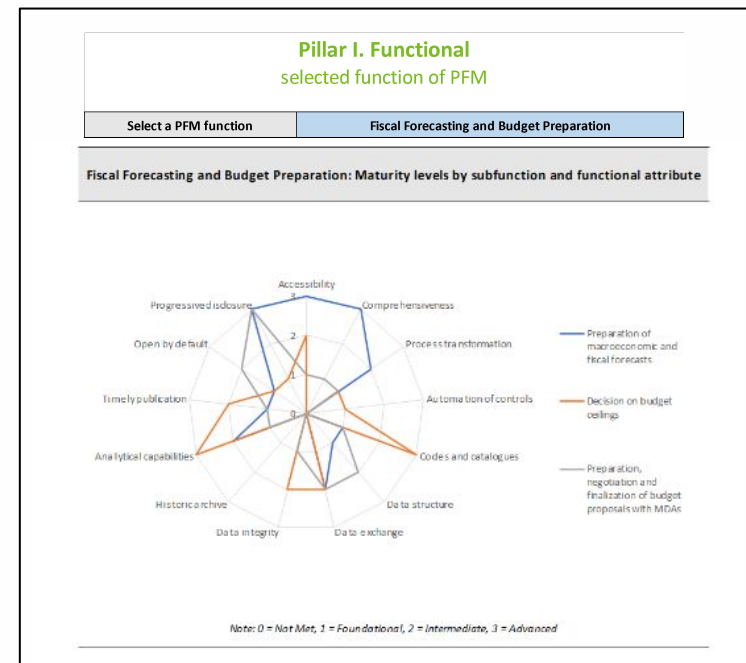
Interoperability mapping



Maturity level



Detailed maturity level per PFM function and sub-function



Zoom-In: Using DiGIT

Design and Improve – recommendation examples

Functional coverage

- Develop roadmap to improve system coverage of PFM functions/subfunctions

Interoperability mapping

- Implement a government-wide interoperability framework applicable to PFM IT systems and other government systems

Maturity level

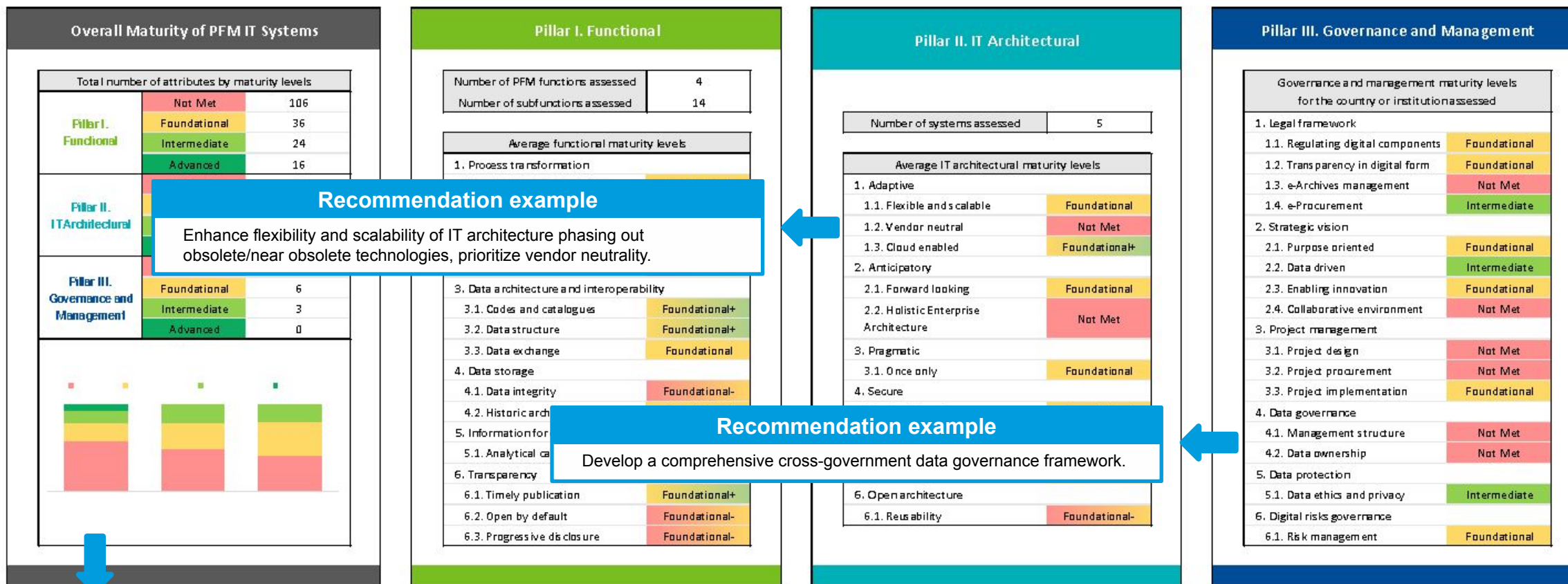
- Enhance functional maturity beyond the foundational level
- Review existing business process to optimize
- Strengthen cybersecurity
- Develop an agile project management approach
- Develop a comprehensive cross-government data governance framework

Detailed maturity level per PFM function and sub-function

- **Budget preparation:** Improve system interoperability
- **Budget execution:** Improve data capture, data integrity, and transparency
- **Performance budgeting:** Apply data science initiatives
- **Public investment management:** Bridge identifiers with Unified Accounts Code Structure

Zoom-In: Using DiGIT

Design and Improve – recommendation examples



Recommendation example
Enhance flexibility and scalability of IT architecture phasing out obsolete/near obsolete technologies, prioritize vendor neutrality.

Recommendation example
Develop a comprehensive cross-government data governance framework.

Recommendation example
Enhance functional maturity of PFM IT systems beyond the foundational level.

calculated as composite averages of maturity levels in each PFM sub-function, that is, 0 = Not met, 0-0.5 = Foundational-, 0.5-1 = Foundational, 1-1.5 = Foundational+, 1.5-2 = Intermediate, 2-2.5 = Intermediate+, 2.5-3 = Advanced.

Note: The levels of maturity represent averages of the different systems analyzed. The number of systems may differ from the number of functions covered, as a certain PFM function could be covered through several systems in a particular country. 0 = Not met, 0-0.5 = Foundational-, 0.5-1 = Foundational, 1-1.5 = Foundational+, 1.5-2 = Intermediate, 2-2.5 = Intermediate+, 2.5-3 = Advanced.

Note: To assess more than one institution, duplicate the process and provide different assessments only to the applicable attributes.

Zoom-In: Using DiGIT

Design and Improve – action plan example



Recommendations	Responsible Agencies	Timeline for implementation
1. Overall landscape of PFM digital solutions		
1. Develop roadmap to improve system coverage of PFM functions/sub-functions not covered or only partially covered by existing systems.		End October 2023
2. Review of existing business processes to eliminate unnecessary steps and optimize workflows in a digital environment. Consider initiating with budget preparation.		Establishing vision, objective and first working group November 2023
3. Enhance functional maturity of PFM IT systems beyond the foundational level.		Roadmap: End November 2023
4. Enhance flexibility and scalability of IT architecture phasing out obsolete/near obsolete technologies, prioritize vendor neutrality through non-proprietary solutions or with multiple authorized implementers, and transition to cloud-native solutions.		Roadmap: End February 2024
5. Strengthen cybersecurity and adopt DevSecOps practices, including a disaster recovery plan with a business continuity center at an alternate location.		July 2024
6. Strengthen the Project Management Office (PMO) and develop an agile project management methodology.		March 2024
7. Strengthen e-procurement system and legal framework for procurement of digital components.		July 2024
2. IFMIS and systems covering specific PFM functions		
1. IFMIS. Evaluate the three identified options of IFMIS and select the most viable one based on a thorough analysis of the benefits and limitations of each option. Address vendor neutrality and data ownership issues.		July 2023

- 02** Set timeline based on priorities & objectives
- 03** Map and streamline business processes to be digital by design
- 04** Identify stakeholders and establish working groups
- 09** Develop and implement roadmap
- Plan for iteration**
- 05** Research ...
- 06** ... and analyze solutions before selecting

Outline

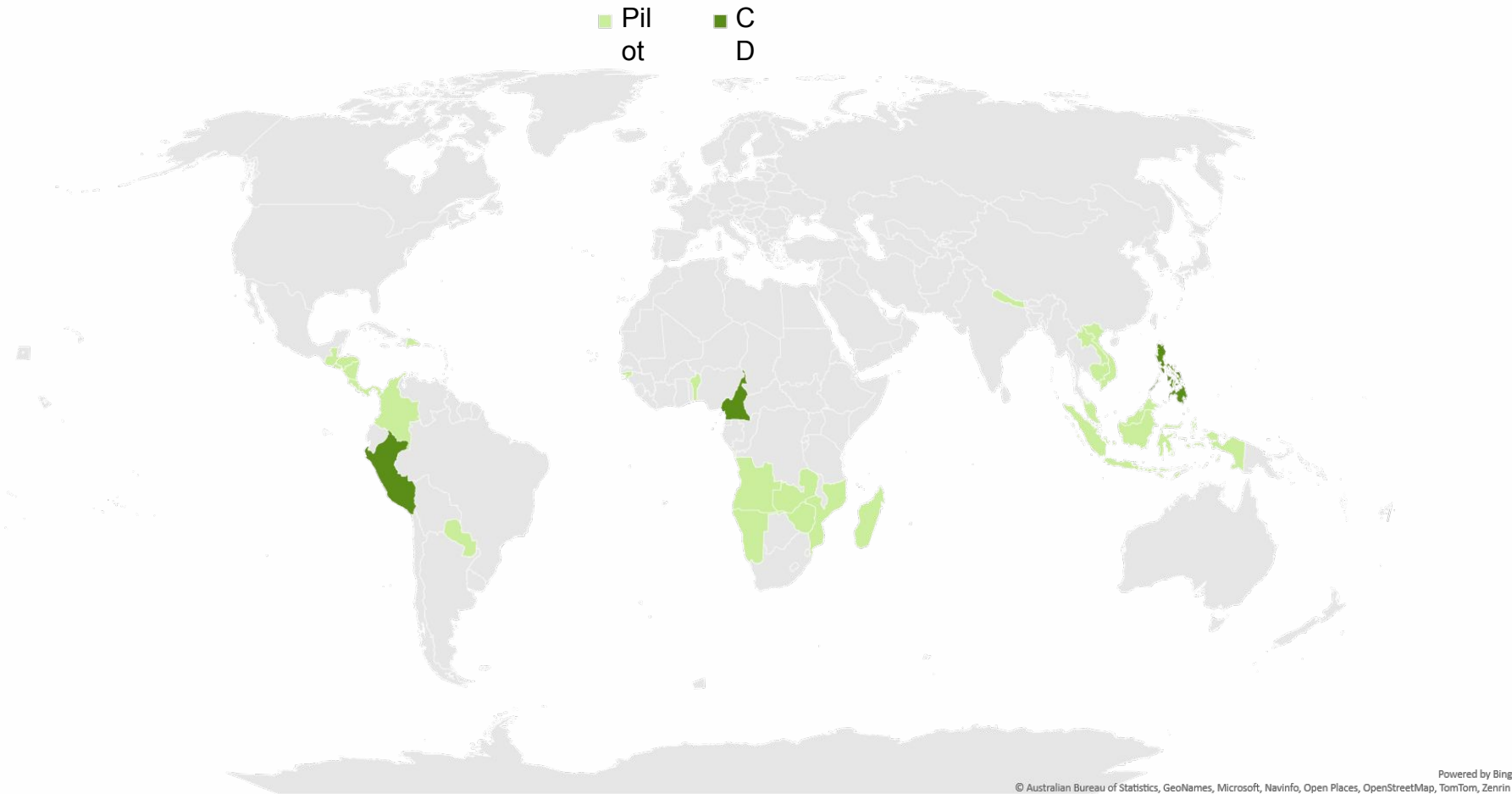
- A snapshot on the global embracement of Digital PFM: Trends, risks and challenges, successes and failures
- Framework for adopting technological development within public financial management architecture
- How to apply the framework: Assess-Design-Improve strategy
- **Potential areas to build a strategic partnership among member countries and IMF**

Strategic partnerships to improve Digital PFM

- Foster sharing experiences and digital components.
 - Opportunities to improve cross-country collaboration and building together.
- Capacity Development and Technical Assistance from FAD to **Assess-Design-Improve** Digital PFM.



Countries using the Guidelines (since March 2022)



Pilot

- Angola
- Benin
- Cabo Verde
- Cambodia
- Colombia
- Comoros
- Costa Rica
- Dominican Republic
- El Salvador
- Guatemala
- Guinea-Bissau
- Honduras
- Indonesia
- Lao PDR
- Madagascar
- Malaysia
- Mauritius
- Mozambique
- Namibia
- Nepal
- Nicaragua
- Panama
- Paraguay
- Peru
- Philippines
- Sao Tome and Principe
- Seychelles
- Vietnam
- Zambia
- Zimbabwe

Capacity Development

- Cameroon
- Peru
- Philippines
- Sao Tome and Principe

Thank you!