

# How to Design an FMIS—the Modular Approach

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# Outline of the Presentation

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4. Evolution in the coverage and design of FMIS
5. Key design challenges
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# 1. Introduction

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- FMISs can be defined as “as set of automated solutions that enable governments to plan, execute and monitor the budget, by assisting in the prioritization, execution and reporting of expenditures, as well as the custodianship and reporting of revenues.” (Dener, et. al., 2011)
- The enduring objective of an FMIS is to generate timely, relevant and reliable financial data and reports that support improvements in fiscal discipline, the quality of public spending, and fiscal transparency
- FMIS design features, however, have undergone a major transformation during the past 30 years
- A soon-to-be published IMF How to Note reassesses approaches to designing and implementing FMISs

## 2. Purpose of the “How to Note”\*

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- Review recent experiences of FMIS developments in emerging economies and developing countries
- Summarize main characteristics of various approaches to FMIS design that have been applied in recent years
- Assess the expected impact of the digitalization of PFM functions on the design of FMISs
- Discuss how increased flexibility can be built into the design of FMISs through a proposed “modular approach”

\* Richard Allen, Gerardo Uña, and Nicolas Botton, *“How to Design a Financial Management Information System: the Modular Approach”*, IMF How To Note (Forthcoming).

### 3. Why should we take another look at FMIS?

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- Developing countries and EMs – with support of donors – have invested substantially in FMIS since the late 1980s
- But, the results have not been uniformly successful. Many of the FMIS projects didn't deliver the expected results
- Similar situation is observed in the private sector. – a study shows that 45% of large IT projects – with a budget of over US\$ 15 million - run over budget and 17% fail catastrophically
- Most studies focus on how to design and implement an FMIS where no such system previously existed – **BUT** for most developing countries this assumption is incorrect
- Looking forward 10-20 years, digitalization is likely to radically change the nature of FMIS into a “virtual system” for collecting and processing financial data

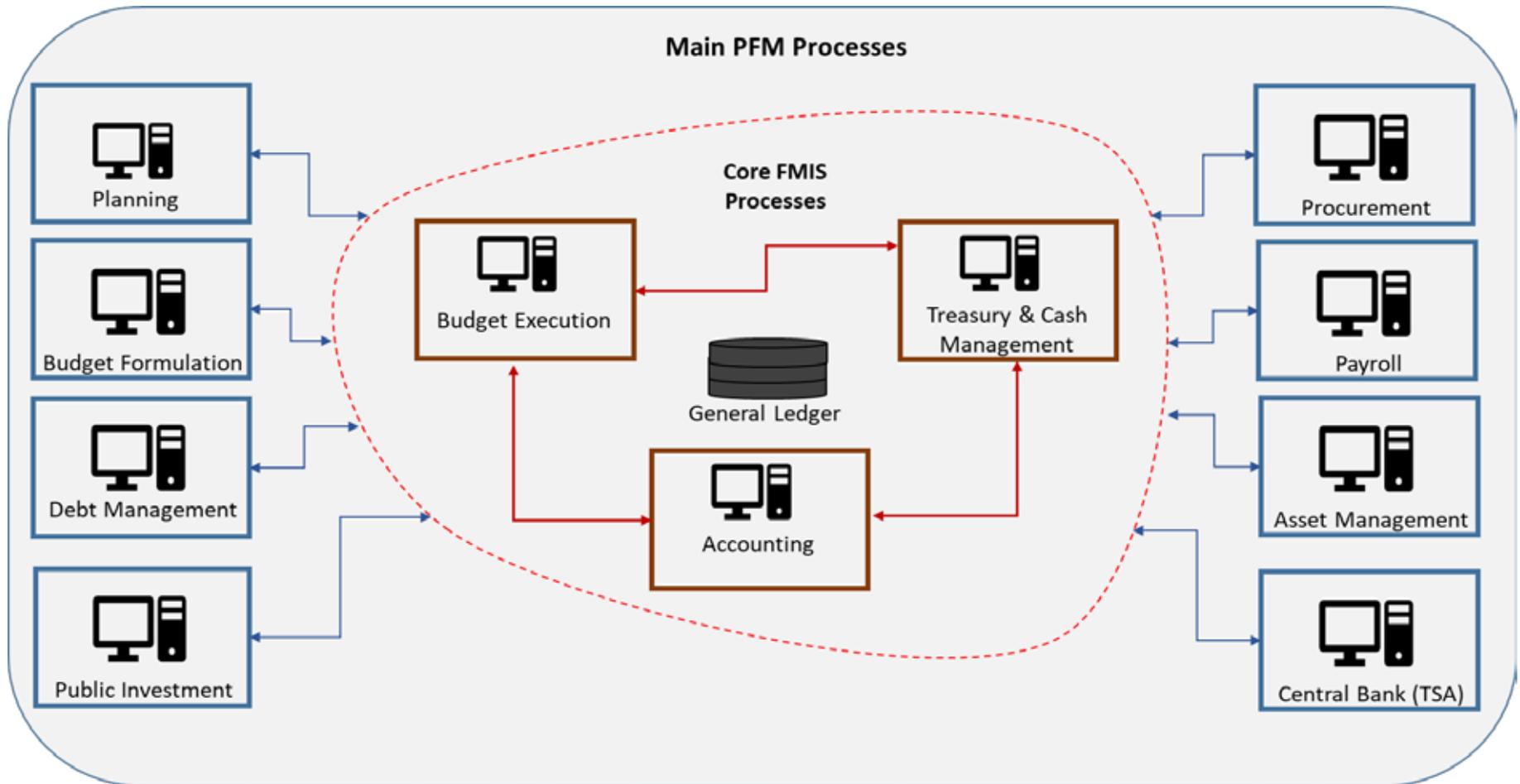
## 4. Evolution in the coverage and design of FMIS (1)

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- Fully integrated systems (IFMISs) were once the flagship brand
- But they have proved less efficient than systems focusing on a group of “core” PFM modules which are implemented in a sequenced way
- These “core” modules include budgeting, accounting, and treasury, and cash management
- Auxiliary PFM functions – payroll, public investment management, procurement, etc. – can be linked through interfaces
- Nevertheless, several countries and their development partners continue to promote the adoption of a full core FMIS from scratch

# 4. Evolution in the coverage and design of FMIS (2)

Figure 1. FMIS Core and Auxiliary PFM Functions



## 4. Evolution in the coverage and design of FMIS (3)

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- In many regions – e.g., Africa, Central and South Asia, Latin America and the Caribbean, the Pacific Islands, and SE Europe, essential preconditions for implementing FMIS have often been lacking
- Implementation challenges are complex and can lead to cost overruns and disappointing results. Cost overruns of x2 or x3 are not uncommon
- All phases of designing and implementing a typical FMIS project can take 6-7 years to complete, much longer in some cases

## 5. Key design challenges

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- A survey of 37 countries conducted as part of the How To Note shows that failures of FMISs in developing countries result from many factors, including:
  - Failure to carry out an adequate conceptual design
  - Poorly-defined functional requirements
  - Automation of existing inefficient business processes
  - Inefficient parameterization of COTS solutions
  - Short cuts taken to ensure that the FMIS is up and running early
  - Failure to modernize basic PFM processes (e.g., chart of accounts) in parallel to the FMIS development

# 5. Main findings of the survey of 37 countries

Table 1. Main Challenges in Implementing a Core FMIS in Developing Countries and EMs

#	Functional Area	Main Weaknesses of the Core FMIS Functionalities
1	Accounting and Fiscal Reporting	Problems in the generation of accurate and timely fiscal reports
		Deficiencies related to bank reconciliation and electronic payments
		Failures to integrate the chart of accounts and the budget classification
2	Budget Execution and Internal Controls	Weaknesses in supporting the management and control of the budget
3	Treasury and Cash Management	Insufficient support for government banking functions
		Unreliable and untimely information for cash management
4	Institutional Coverage	Incomplete coverage of central government entities
#	IT Area	Main Weaknesses of the Core FMIS IT Platforms
5	IT Platform	Software licenses expired
		Poor or non-existent connectivity in regional or remote locations
		Limited hardware capacity and/or inadequate database maintenance

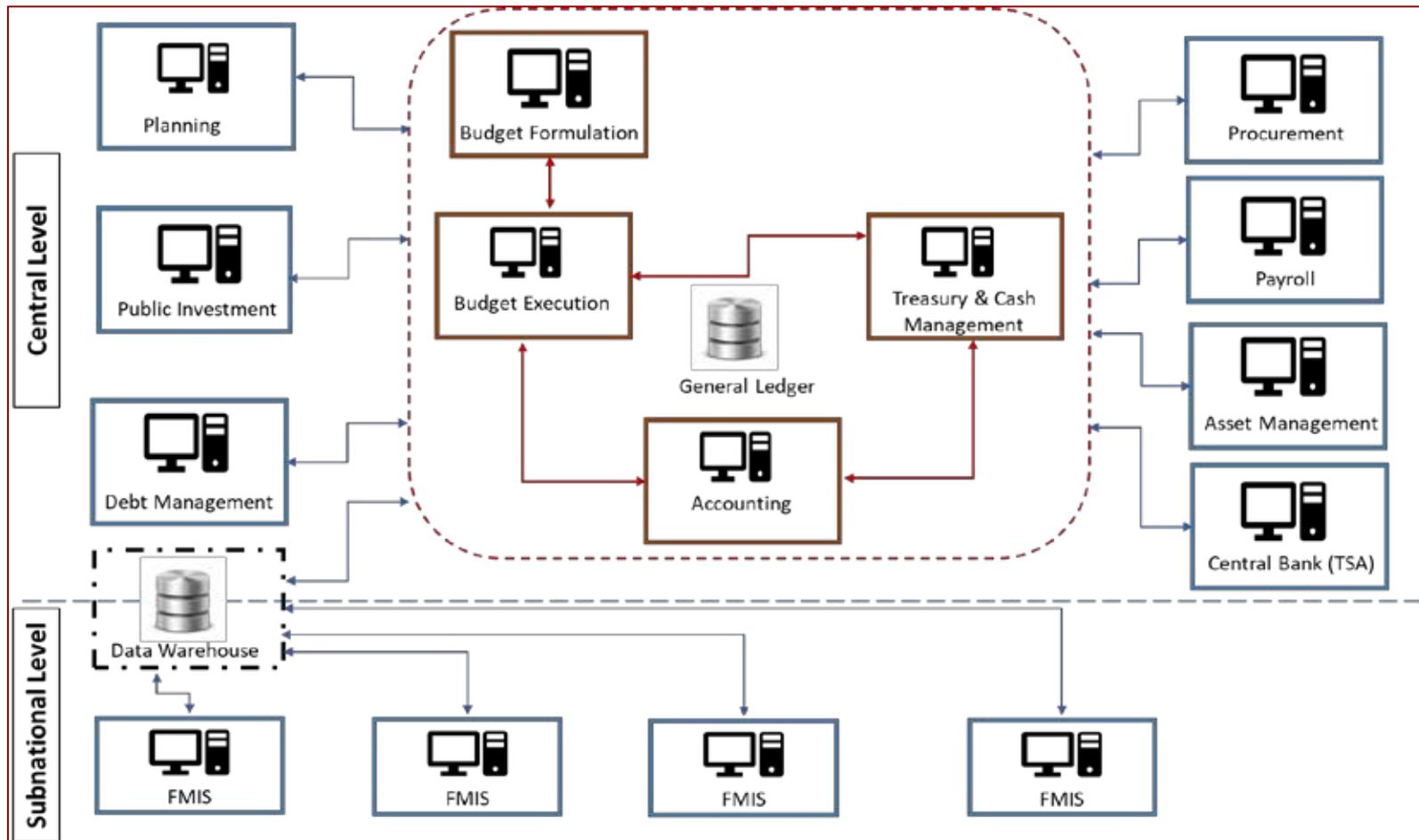
## 6. How to improve the design of the FMIS (1)

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- Many developing countries and EMs are implementing initiatives to modernize their FMIS
- Core FMIS functions are still treated as an integrated package
- At the central government level, countries are also trying to connect the core system with auxiliary functions, and have established a data warehouse
- Some countries also include in their data warehouse information from subnational levels of government that extends the coverage of the FMIS to the general government sector
- These new initiatives typically focus on the interoperability and automation of data exchanges (API and/or interoperability layers)

# 6. How to improve the design of the FMIS (2)

Figure 2. Schematic Representation of a Comprehensive FMIS in Developing Countries



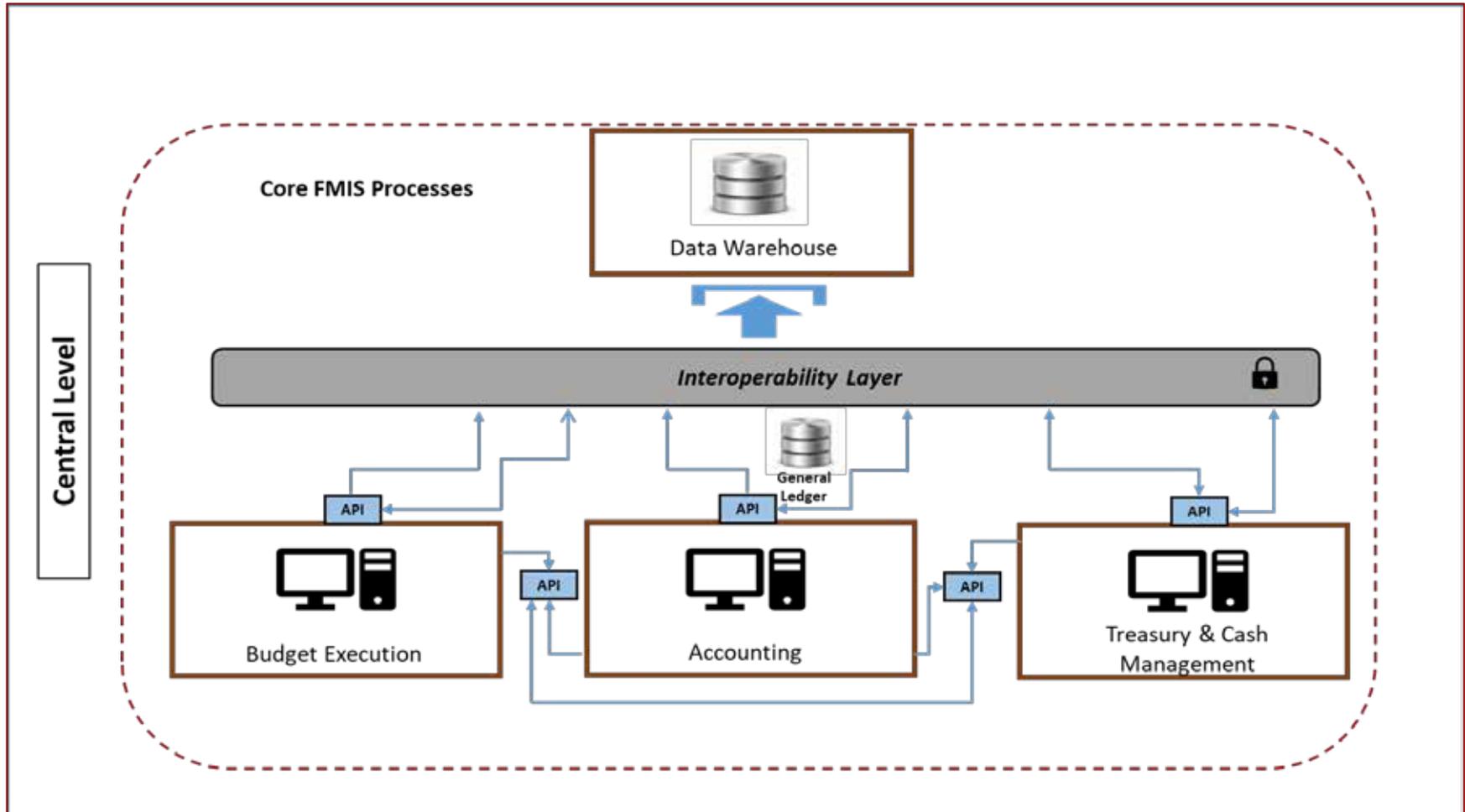
## 6. How to improve the design of the FMIS (3)

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- The “modular approach” focuses attention on strengthening and modernizing the “core functions” of the FMIS (*i.e., budget execution, accounting, and treasury & cash management*)
- It proposes **upgrading, reengineering, or replacing one module of the “FMIS core” at a time** by utilizing APIs and/or interoperability layers between different information systems, as well as more agile software development approaches
- At the same time, the modular approach proposes maintaining all other modules in operation, without a need to replace the full information system

## 6. How to improve the design of the FMIS (4)

Figure 3. Schematic Representation of the Modular Approach



## 6. How to improve the design of the FMIS (5)

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- In considering the options for modernizing its FMIS, a country should first undertake an in-depth diagnostic assessment of the functional and technological challenges that need to be resolved
- The assessment should review the main business rules and definitions included in the conceptual design of the FMIS, and update these rules as required in the system's software applications
- The FMIS functionalities needed to address planned reforms—for example, to expand the coverage and comprehensiveness of fiscal reports—should also be considered at this stage

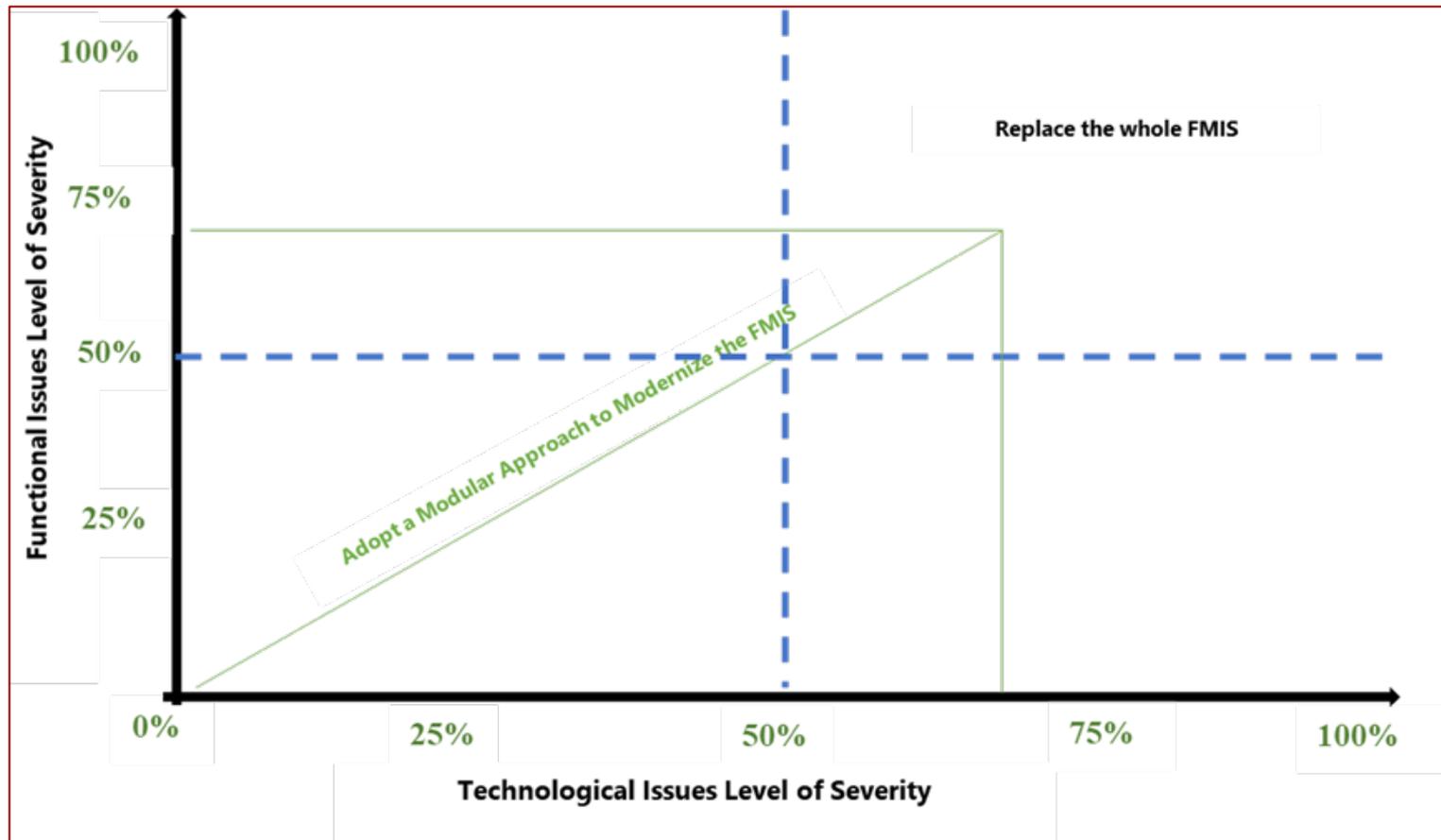
## 6. How to improve the design of the FMIS (6)

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- Based on this diagnostic, it should be possible to categorize the challenges facing a FMIS according to the level of severity of the functional and technological performance of the system
- When the diagnostic assessment shows that the FMIS presents severe weaknesses related to both functional and technological dimensions (more than 75% of its core functionalities and IT aspects) replacing all “core FMIS” modules could be the optimal decision
- When the FMIS presents fewer functional and technological challenges, it may be possible to formulate solutions based on the modular approach, rather than replacing all “core FMIS” modules at the same time
- The suitability of the modular approach will depend on an analysis of the costs and benefits of alternative solutions and the level of coupling and cohesion in the FMIS

# 6. How to improve the design of the FMIS (7)

Figure 4. FMIS Modernization Matrix Strategy



## 7. Benefits and costs of the “Modular Approach”

Benefits	Costs
More agile solutions in rapidly evolving environments	Need to develop a common set of standards for the various information fields
Flexibility to incorporate advanced technologies	Such standards may add to technological complexities and maintenance costs of the system
Use of diverse types of software and hardware architecture – not tied to web-based solutions	
Avoidance of the need to replace all or most of the existing FMIS modules	
Facilitated exchange of information between core and non-core modules	

## 8. Main conclusions

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- Many developing countries and EMs continue to face severe challenges in modernizing their core FMISs
- These challenges are associated with the systems' core functions, institutional coverage and IT platforms
- Emerging challenges are linked to cybersecurity, privacy concerns, digital inclusion, and e-government initiatives
- Replacing a core FMIS with an entirely new system is unlikely to be the optimal strategy in most cases
- A “modular approach” is usually to be preferred in which specific core modules are updated or replaced
- Measures should also be taken to improve the system's interoperability and/or re-platform the system
- Solutions should be country-specific, taking account of the objectives of FMIS modernization and the level of political will and institutional capacities

# Fiscal Affairs Department

*Ambrogio Lorenzetti; The Effects of Good Government on the City Life; Fresco; Palazzo Pubblico, Siena (Italy)*

**Thank you!**

