Committee on Payment and Settlement Systems

General guidance for payment system development

Consultative Report

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Foreword

There is no single recipe for effective payment system development, but the questions countries undergoing a reform process ask themselves are largely similar. For example, who should be involved and who should initiate the process? What are the priorities in which to invest and are they based on a solid understanding of the payment system? What are the different infrastructures needed and what are their supporting institutional arrangements?

Answers to these questions are often sought in the publications of the Committee on Payment and Settlement Systems (CPSS). These publications provide expertise in payment systems and the consensus view of central banks. However, the priorities of CPSS countries need not be the same as those of other countries. Indeed, reform priorities differ from country to country based on the country's needs and capabilities.

Drawing on a comparison with the transportation system, buying the most expensive technology to build an airport can be pointless if the rest of the system is not sufficiently developed to make effective use of that airport. Or it may provide only a modest contribution to the overall transport system if most still use ground transportation. Indeed, the objective of the payment system, just like that of the transportation system, should be to develop an appropriate mix of infrastructures and an institutional framework to connect people in an efficient and safe way.

This report aims to give assistance in and advice on the planning and implementation of reforms in the payment system as a whole. It underlines that the central bank is always a driving force in the development of the national payment system. However, reforms in this field depend on a parallel development of the banking system, and should therefore be a cooperative effort, involving stakeholders from, for example, the banking sector and regulatory agencies. An adequate understanding of the different infrastructures and their institutional framework is needed and is indispensable for getting the priorities right.

The present consultative report includes 14 guidelines and accompanying explanatory text on payment system development. The report also includes implementation sections, which illustrate the guidelines with practical examples, issues and possible approaches to implementation. In preparing the report, the CPSS drew on the contribution of a working group, which consisted of a broad range of central bank experts from developed and developing countries around the world.

The CPSS is now releasing the guidelines in this report for consultation, and is seeking comments by 30 September 2005. We believe that wide participation in the consultation process would be beneficial and we therefore encourage any interested parties to submit their comments to the BIS (cpss@bis.org). The guidelines will then be reviewed by the working group, based on the comments received.

The CPSS is very grateful to the members of the working group, its chairman, Sean O'Connor of the Bank of Canada, and the CPSS secretariat at the BIS for their excellent work in preparing this report.

Tommaso Padoa-Schioppa, Chairman
Committee on Payment and Settlement Systems

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1. Executive summary

1.1 Introduction and overview

The planning and implementation of payment system development is a difficult task, due to its complexity and the varying approaches to reforms. Countries that promote new initiatives in their national payment systems generally look to the systems in other countries and to the Committee on Payment and Settlement Systems, the International Monetary Fund and the World Bank for information, advice and assistance regarding how best to plan and implement reforms.

The purpose of this report is to assist countries that are building their national payment systems, and those that wish to develop their system further, with practical guidance for development. The report contains 14 guidelines, which are based on the experiences of a broad group of central banks from developed and developing countries around the world, and those of the World Bank and the IMF, with regard to the development of payment systems. It draws as well on earlier and current work of the CPSS, the World Bank, the IMF and other central banks on payment systems. However, unlike much of this work, which often refers to specific instruments, procedures and interbank transfer mechanisms, this report takes a broad perspective on the composition of a payment system.

The guidelines are not a detailed "blueprint" for national payment system development. There is no single construct that can meet all the specific needs of all countries. Instead, the guidelines focus on the main elements of a national payment system to be considered when initiating a process of reform, especially major structural reform.

Central banks and payment system development

While the report is relevant for all public and private sector stakeholders in payment system development, it is directed particularly at central banks and their interactions with other stakeholders. The development of a national payment system has relevance to both the financial stability and the monetary policy interests of a central bank. By linking financial institutions together for the purpose of transferring monetary claims and settling payment obligations, a payment system becomes a channel through which financial risks can be transmitted across financial institutions and markets. In promoting a safe and efficient national payment system, central banks limit the prospect of financial contagion through this channel.

Safe and efficient payment systems are also critical to effective implementation of monetary policy. In particular, an efficient and stable payment system is a precondition for interbank money markets and other short-term credit markets used in monetary policy market transactions. Both payment systems and money markets enhance the short-term influence of monetary policy actions on overall financial and economic activity. In addition, developments in the payment system that affect the speed and predictability of the turnover of monetary balances for a given value and volume of transactions can influence the overall demand for money in the economy. Central banks monitor developments in the payment system to assess their impact on the demand for money and adjust their monetary policy strategy accordingly.

A central bank is a core contributor to national payment system development. It generally plays a variety of essential roles in the payment system. It is a provider of payment accounts and credit, an overseer in core payment arrangements, and an operator, provider and user of various payment services. Through these roles, central banks acquire a broad perspective on the role of the payment system in the financial system and the economy, and an extensive expertise in specific payment systems. Central banks can thereby advise on payment and other financial system policy and act as an effective catalyst for initiating, promoting and contributing to payment system reforms.

Elements of a national payment system

In this report, a national payment system describes the entire matrix of institutional and infrastructure arrangements and processes in a country for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities. Although cash remains an important form of payment in all systems, the report focuses on non-cash payments from commercial bank and central bank deposits. The main elements of a national payment system include:

- payment instruments used to initiate and direct the transfer of funds between the accounts of payers and payees at financial institutions;
- network arrangements for transacting and clearing payment instruments, processing and communicating payment information, and transferring the funds between the paying and receiving institutions;
- institutions that provide payment accounts, instruments and services to consumers and businesses and organisations that operate payment transaction, clearing and settlement service networks for those financial institutions;
- market conventions, regulations and contractual arrangements for producing, pricing, delivering and acquiring the various payment instruments and services; and
- laws, standards, rules and procedures set by legislators, courts, regulators and payment organisations that define and govern the mechanics of the payment transfer process and the conduct of payment service markets.

These elements can be grouped into institutional and infrastructure arrangements. The infrastructure arrangements contain an array of payment instruments and various types of infrastructures for payment transaction, clearing and settlement services. They include all the specific individual payment systems in a country. The institutional arrangements include the market arrangements for various types of payment services and the financial institutions and other organisations that provide payment services to users. They also include a legal and regulatory framework for market organisation and conduct and mechanisms for consultation and coordination among the principal stakeholders. The institutional structure links infrastructure arrangements and stakeholders together functionally in the national payment system.

Factors, triggers and trends for national payment system reform

Reform initiatives in a national payment system strive for improvements in system-wide safety and efficiency. The success of these initiatives and the resulting pattern of development in a country's national payment system are influenced by environmental, economic, financial and public policy factors.

- Demographic, geographic and social factors are among the main *environmental factors* shaping particular development initiatives through their influence on potential demand.
- The principal *economic factors* involve different market factors, such as a skilled labour force and industrial infrastructures including those for telecommunications and transportation. Their evolution influences the development of a country's future payment service needs and capabilities.
- The key *financial factors* refer to the balance of costs, risks and benefits of new and emerging payment instruments and services between providers and users, which shape their decision to invest in the development of these services.
- The important *public policy* factors relate to the legal and regulatory framework for the national payment system and the conduct and performance of participants in the various payment service markets.

Relevant aspects of these factors need to be considered when planning and implementing reforms in the payment system to help ensure a successful and smooth development process.

In general, reforms in the national payment system are triggered by: (i) an increasing awareness of payment system risks and concerns about financial stability; (ii) a policy decision to comply with international standards for payment systems, sometimes related to a country's entry into regional or global trade and financial arrangements; (iii) new developments and increasing user needs in the financial and non-financial sectors requiring new cost-efficient payment instruments and services; or (iv) evolving central bank responsibilities and payment needs.

The recent trends in payment system development have usually involved initiatives to:

- broaden the range of payment instruments and services;
- better contain legal, operational, financial and systemic risks in payment infrastructures;

- enhance the interoperability and resiliency of banking, payment and securities infrastructures;
- improve cost efficiency, particularly in terms of operating costs and liquidity usage, and access to settlement credit for financial institutions;
- create a more suitable oversight and regulatory regime for the national payment system; and
- establish more efficient and better organised markets for delivering and pricing payment services.

However, experience indicates that the development process of a national payment system is not always a smooth and efficient one. The most common problems for effective development are: (i) limited vision and leadership for development due to a narrow view as to what constitutes a national payment system; (ii) limited knowledge of emerging payment needs and system capabilities; (iii) weak support and commitment from stakeholders due to inadequate consultation; (iv) limited development resources; and (v) legal, regulatory, public policy and market barriers to ongoing development of the national payment system. These are the main issues that the general guidance addresses.

1.2 General guidance for payment system development

In preparing this report, an analysis of experience and evidence related to a variety of recent reform programmes in countries from different parts of the world helped identify lessons for the development of payment systems. These lessons are expressed in the form of general guidelines for effective development of a national payment system. There are 14 guidelines grouped together to reflect the four key dimensions of developing a national payment system: (i) the role of the banking sector, (ii) effective planning and project implementation, (iii) developing the institutional framework required to sustain payment system reform, and (iv) designing a safe and efficient payment infrastructure to meet the particular emerging needs of a country's economy. The guidelines are designed to help orient a country's programme for safe and efficient development rather than to provide specific recipes for it.

Even though not all of them may be equally relevant to all countries in all specific situations, the guidelines need to be considered together as a unified set. At a point in time, development may focus on a specific aspect in one dimension of a national payment system. Such development initiatives, however, need to reflect some awareness of other aspects and dimensions of the payment system that may require complementary reform at some future point. Indeed, for all countries, payment system reform is a continuing process.

The general guidance in the report is high-level. Each guideline is composed of a guideline statement, a brief explanation of its relevance to payment system development, and issues and approaches for its implementation. These guidelines are developed from actual reform experiences of different countries. Analytical tools used to identify, formulate and prioritise initiatives for institutional and infrastructure development are among the implementation instruments discussed. Since the development of a national payment system is highly country-specific and conditional on a variety of institutional, financial and economic factors, the specific implementation approach for a particular guideline should be considered in the context of each country's own environment. The high-level guidelines, while generally found to be effective, may therefore not necessarily be "best practice standards" for every country.

The guidelines are summarised below, and the guideline statements are listed in Annex 1 for quick reference.

A. Banking system

Guideline 1: Keep the central bank at the centre: *due to its overall responsibility for a sound currency, the central bank has a central role in the development of the use of money as an effective means of payment.*

Summary: The specific tasks directly carried out by the central bank in the payment system area vary from country to country. However, the performance of the payment system is an essential element of the quality of a currency and is therefore to be regarded as an essential concern by the central bank.

This naturally places the central bank at the centre of developments in the payment system with a number of possible roles: issuer of money, primary creator of liquidity, interbank settlement agent, provider of payment services, adviser on legislation, overseer, banking supervisor, catalyst and user. The payment system function should rank high on the agenda of central bank decision-making bodies and be followed at a senior executive level, for example by a deputy governor, with support from dedicated resources having clear responsibilities.

Guideline 2: Promote the role of a sound banking system: *payment accounts, instruments and services available to end users are mainly provided by banks, which compete individually but often need to act cooperatively as a system.*

Summary: The development of the payment system generally involves an expanding share of bank deposits in the total stock of money and hence an expansion of the role of banks as providers of payment services. To adequately support many of the reform initiatives in the national payment system, banks need to develop their own internal facilities for payment services in a corresponding manner. In addition, banks and authorised non-bank providers should compete in the provision of services to clients while at the same time cooperating as a system in developing proper functioning arrangements for payments. While paying attention to systemic risk, the central bank should welcome and facilitate these developments.

B. Planning

Guideline 3: Recognise complexity: *planning should be based on a comprehensive understanding of all the core elements of the system and the principal factors influencing its development.*

Summary: The central bank and the banking community should take a broad view of the factors influencing development of a safer and more efficient national payment system. The payment system should be seen as a full set of instruments, networks, rules, procedures and institutions that ensure the circulation of money. The factors influencing its development include innovation in payment infrastructure design, the nation's economic and financial structure, and the system's institutional arrangements including its legal framework, market arrangements and regulatory regime. A comprehensive understanding of a payment system does not end with its technological aspects. It also considers the factors influencing the changes in the economic environment which can affect the demand for and supply of various payment instruments and services.

Guideline 4: Focus on needs: *identify, and be guided by, the payment needs of all users in the system and by the capabilities of the economy.*

Summary: An efficient and sustainable payment development process ought to be built around the current and foreseeable payment needs of the users in the economy, such as consumers, government and financial and non-financial businesses. These needs should be weighed against the current economic and technical capabilities of the economy to supply the required payment instruments and services in a cost-effective manner. In this regard, the development of skilled and knowledgeable human resources is as critical as the development of the physical infrastructure of the economy such as its telecommunication and transportation systems. It is also important to clarify the roles and interests of the key stakeholders in the system.

Guideline 5: Set clear priorities: *plan and prioritise payment system development strategically.*

Summary: A strategic approach is one that defines the desired end state or vision for the national payment system and sets clear priorities, based on the needs of users and the capabilities of the economy. A strategic plan also includes a description of the roles of key players and a conceptual design of all relevant elements of the system. While the plan defines the characteristics of the future system, it is not possible to do everything at the same time. Top priority should not necessarily be assigned to the introduction of highly sophisticated technology. The plan should consider which elements of the existing system can be an avenue for future development. Payment system development is primarily an evolutionary process that often re-engineers existing payment and financial systems to develop new instruments, infrastructures and institutions.

Guideline 6: Implementation is key: *ensure effective implementation of the strategic plan.*

Summary: The success of payment system reforms depends crucially on the effective implementation of the strategic plan. Indeed, the implementation process should be considered as a critical part of the plan. Effective implementation involves commitment of all stakeholders, suitable project governance, well defined deliverables and progress milestones, a realistic resource management and financing strategy, and a well defined rollout strategy. Implementation cannot proceed effectively without focused attention and strong motivation in the top ranks of the central bank, commercial banks and other stakeholders.

C. Institutional framework

Guideline 7: Promote market development: *the expansion and strengthening of market arrangements is a key aspect of the evolution of the payment system.*

Summary: The development of the payment system is normally characterised by reliance on market arrangements. Competitive market arrangements are instrumental to efficient and reliable production, delivery and pricing of various new and existing payment instruments and services to users. However, the development of market arrangements also requires a degree of cooperation among market participants in such fields as the definition of standards, the organisation of circuits and operational procedures. Indeed, particular market arrangements for payment instruments and services are characterised in part by their degree of cooperation and competition.

Guideline 8: Involve relevant stakeholders: *encourage the development of effective consultation among relevant stakeholders in the payment system.*

Summary: Consultation is crucial for effective collaboration among stakeholder groups. It helps establish an understanding of the needs, capabilities and interests of the various parties involved in the system. Structured consultation establishes trust and a level of commitment that is critical for payment system development and is indispensable for implementing plans and for setting up effective market arrangements. The involvement of relevant stakeholders in information sharing, consultation and collaboration facilitates coordination between the central bank and other key players on emerging payment system changes and policy initiatives. Such involvement is especially required for cooperative initiatives, such as those for setting technical and operational standards.

Guideline 9: Cooperate with other authorities: *effective payment system oversight by the central bank requires collaborative arrangements with other authorities.*

Summary: The central bank oversees the payment system. For this function to be performed effectively, cooperation with other authorities and regulatory agencies influencing national payment system development is desirable. In its oversight function, a central bank monitors and evaluates key developments in the national payment system with regard to their implications for the system's safety and efficiency. However, other public sector agencies such as banking supervisors, securities regulators, competition authorities and consumer protection authorities may have policy and regulatory interests and influence on the development of the system. Arrangements between the central bank and these other agencies to exchange views, collaborate on relevant issues and, where needed, coordinate relevant policies can help to ensure safe and efficient development of the system.

Guideline 10: Promote legal certainty: *develop a transparent, comprehensive and sound legal framework for the system.*

Summary: To be effective, market arrangements, oversight and regulatory regimes, operating rules, and procedural and organisational characteristics of the infrastructures in the overall system require a sound legal framework that provides legal certainty and reduces risk. A comprehensive legal framework for a national payment system consists of a body of laws as well as of the procedures and institutions to interpret and enforce them. Such a framework would include private property ownership and transfer laws, laws of association and business conduct, and contract laws relating to payment instruments, services and network participation. It would also include laws supporting payment system oversight by central banks.

D. Infrastructure

Guideline 11: Retail – give more choice to more people: *extend the coverage and choice of non-cash payment instruments and services available to end users by expanding and improving infrastructures.*

Summary: The development of a country's economy generally increases demand for greater diversity of non-cash retail payment instruments and services. This can only be supplied through reliable, secure and efficient infrastructure arrangements for the transaction, clearing and settlement of retail payments in a safe and efficient way. The focus, therefore, should be on increasing the share of the population with access to payment instruments and services and on enhancing the availability of various retail payment instruments and services in a cost-effective way.

Guideline 12: Large value – business case leads, technology follows: *develop a large-value payment system based primarily on the needs of financial markets and the growth in time-critical interbank payments.*

Summary: The best choice of a large-value payment system is the one that best meets the interbank payment needs related to large-value and time-critical business, financial and policy transactions. It need not be the one with the most sophisticated technology. As the volume of large-value and time-critical payments increases, intraday finality in central bank money as provided by a large-value payment system becomes necessary. These types of payments demand specialised infrastructure services to contain systemic risks to the transactors, which are predominately financial institutions. There is a choice among various types of large-value payment systems, that should be fully compliant with the CPSS Core Principles for Systemically Important Payment Systems.

Guideline 13: Securities – plan securities and payment systems together: *coordinate the development of the infrastructures for securities and large-value payments.*

Summary: Securities systems and payment systems are mutually dependent. To achieve delivery versus payment, settlement of the securities leg in the securities settlement system is conditional on settlement of the cash leg, normally in a large-value payment system. In parallel, credit extensions in large-value payment systems are often dependent on the provision of collateral, normally through a securities settlement system. Therefore, the interaction between these infrastructure arrangements needs to be cost-efficient, reliable and secure. In addition, the timing of finality in one system should be consistent with that in the other system. As a result, the infrastructures for securities and large-value payments cannot be developed in isolation from one another, and the securities infrastructure should be developed to be fully compliant with the CPSS-IOSCO Recommendations for Securities Settlement Systems and, if applicable, for Central Counterparties.

Guideline 14: Retail, large value and securities – coordinate settlement: *coordinate settlement processes for the core systems to effectively manage the interrelated liquidity needs and settlement risks among them.*

Summary: As the infrastructures for retail payment, securities settlement and large-value payment systems develop, the country's principal financial institutions generally become participants in all of them. Settlement in one system can, therefore, affect the safety and efficiency of settlement in the others. The institutions typically coordinate and integrate the settlement processes in the core infrastructures to better manage liquidity and settlement risks, which can further increase the interdependency among the systems. Although coordinated settlement processes for these systems can improve overall cost efficiency in interbank transfers and achieve settlement finality in central bank money, the potential cross-system risks of greater coordination and integration – the legal, operational, financial and systemic risks – need to be monitored and well managed.

1.3 Organisation of the report

The next section of the report considers the concepts and development factors that formulate the framework and context for the general guidance. Section 3 presents the general guidelines on payment system development in separate sections for banking, planning, institution-building and infrastructures. Each guideline includes a descriptive statement, an explanation of its primary role in the development of a national payment system and a discussion of some approaches for implementing the guideline. The report ends with several annexes that contain details on some of the more critical parts of the report.

2. The development of a national payment system

A national payment system is one of the principal components of a country's monetary and financial system and, therefore, crucial to a country's economic development. It is through the national payment system that money is transferred between buyers and sellers in commercial and financial transactions. This section discusses the role of a national payment system and recent trends in its development. It also highlights the principal factors that drive or influence development and provides the context for the general guidance presented later in the report.

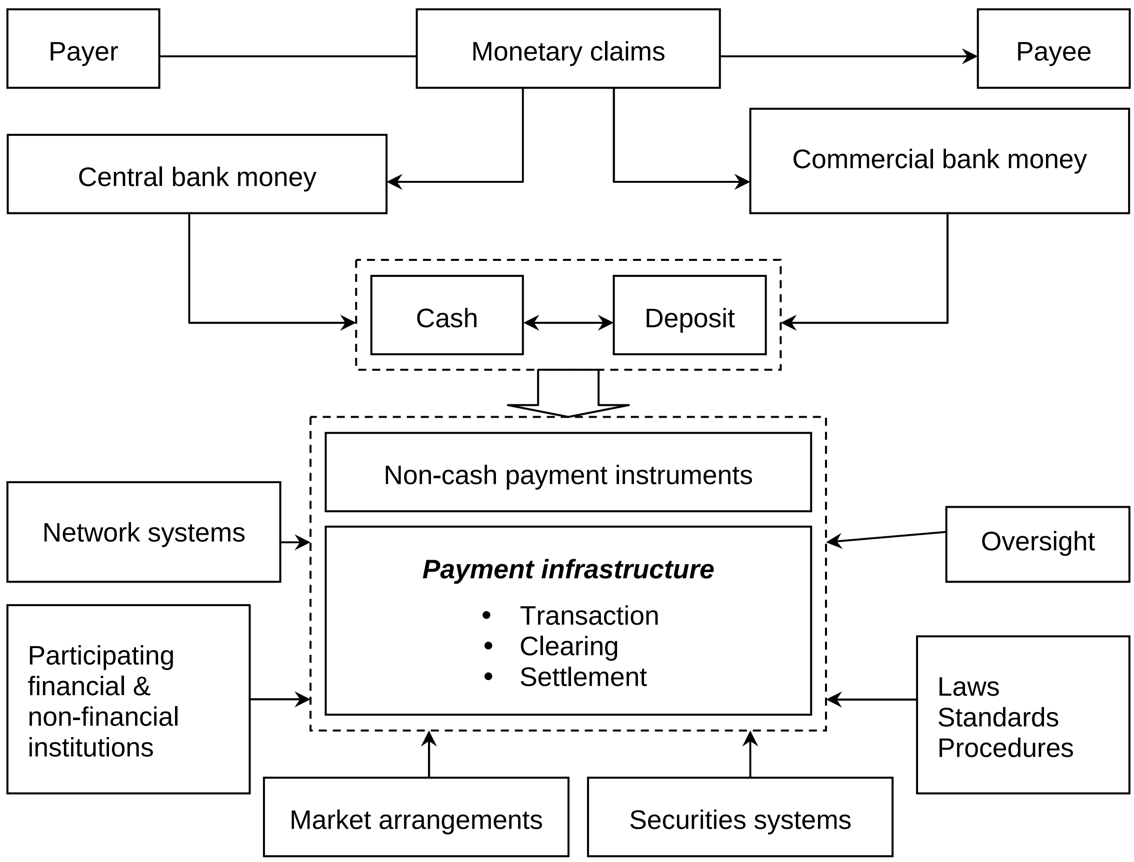
2.1 Money and payment systems in the development process

A principal role of money is its medium of exchange function. A payment is the process by which monetary instruments, typically cash and deposit claims, are transferred between the two parties to finalise a transaction. A national payment system is the configuration of diverse institutional and infrastructure arrangements that facilitates the transfer of monetary value between the parties, as shown in Figure 1.

This report focuses on non-cash payments. Such payments involve a complex process of money transfers from the deposit (or credit) account of the payer at one financial institution to the account of the payee at another financial institution. This process requires the development of an acceptable array of payment instruments, institutional and processing procedures, and money or "funds" transfer mechanisms to complete payments.

Figure 1

National payment system



In general, the complexity of the dimensions of payment instruments, organisations, standards, rules and procedures, and market arrangements increases as the development of the system progresses. It is, therefore, important to establish a basic unifying framework to facilitate the safe and efficient development of the overall payment system. Once a framework is firmly in place and well understood, many of the subsequent developments in the system can originate through the interaction of the payment organisations and users.

2.2 Payment system development

The process of developing a national payment system, while different in specific detail from country to country, has a number of development factors, motives and trends in common. Those outlined below are drawn from development experiences in different countries.

2.2.1 Factors influencing payment system development

To understand the development process in a national payment system, the key development factors need to be identified. The main factors, as well as their influence on system development, are discussed below.

(i) Development factors

The four general factors influencing payment system development could be grouped together as environmental factors, economic factors, financial factors and public policy factors.

The main *environmental factors* include: (i) demographic factors such as population size and urbanisation; (ii) geographic factors, including the level and distribution of resource endowments; and (iii) social and cultural values and norms. These factors can determine the likely acceptance of particular development initiatives.

The principal *economic factors* involve different market factors which include: (i) the level and stability of overall economic growth; (ii) wealth distribution; (iii) the education and skill levels of and availability of training facilities to the labour force; (iv) the development of industrial infrastructure such as telecommunications and transportation systems; and (v) the pace of innovation and technological change. The core economic factors, and their influence on development in the commercial, industrial and financial sectors, are particularly relevant to the payment service needs and capabilities of the country.

The key *financial factors* refer to the financial costs, risks and benefits of development initiatives to the future payment service users and providers. Improvements that reduce the user costs in payments for commercial and financial transactions and increase the opportunities for making these transactions can motivate demand and supply for new payment instruments and services. But, the payment process also involves direct and indirect credit and liquidity risks that need to be shared between service providers and users. To be successful, payment system development initiatives need to identify these costs, risks and benefits and try to balance their allocation between providers and users.

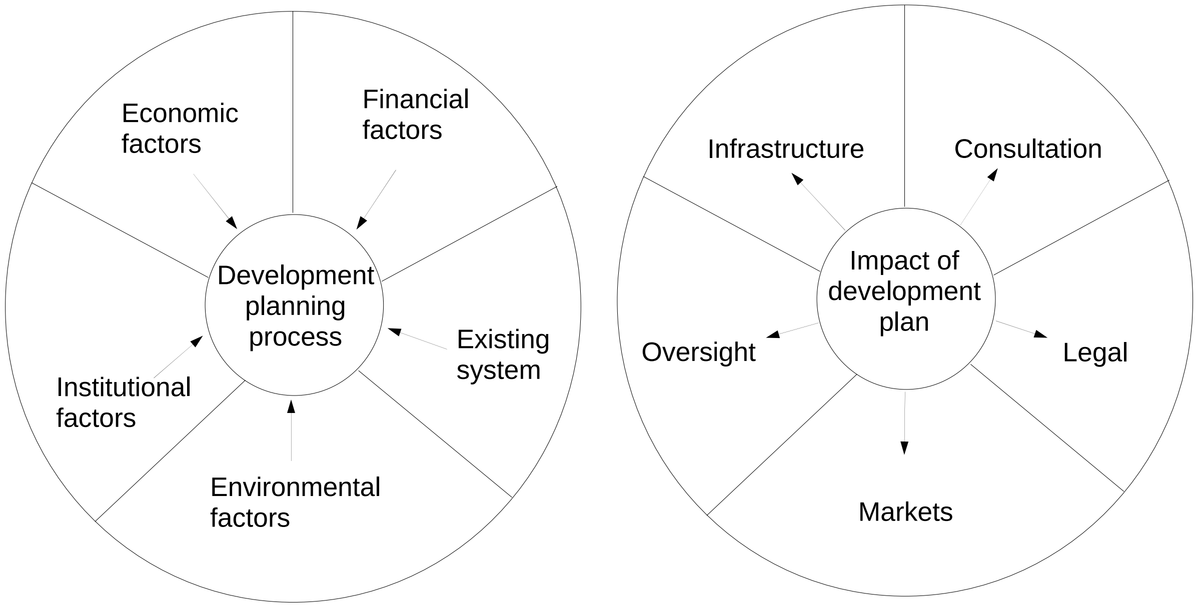
The important *public policy factors* relate to: (i) the legal framework for the payment system; (ii) the financial regulatory and payment system oversight regime and its organisation; and (iii) the policies affecting the conduct and performance of various payment service markets. Other key public policy factors include the government's education, industry, trade and macro-economic policies. The involvement of the country's authorities is also a fundamental institutional factor in system development, directly affecting the other institutional arrangements. These public policy factors interact with the environmental, economic and financial factors to condition and shape overall system development.

Knowing how these general factors can influence payment system development is important for planning development initiatives. Together, these general factors influence the direction in which the national payment system develops through their effects on the demand, supply and market arrangements for payment instruments and services. To be successful, the initiatives need to take these factors into account when improving the efficiency and safety of payment instruments, services and their market arrangements.

Figure 2 illustrates how the development factors can contribute to the development planning process and how the plan itself is designed to reform some of the key elements of a national payment system.

Figure 2

Development planning process



(ii) Characteristics demanded of payment services

In the end user markets, the most common characteristics demanded of payment instruments and services are: (i) high availability and choice of instruments; (ii) information on the relative benefits, user costs and risks of different instruments; (iii) low user costs; (iv) interoperability among rival transaction networks for the same type of payment instrument; and (v) low legal risk and a high degree of information security. As the system develops, payment needs evolve and end users typically demand increasingly rapid and reliable payment execution from the financial institutions that provide payment instruments and services to them.

The characteristics of system reforms typically demanded by the financial institutions from their infrastructure service providers are: (i) equitable access to services; (ii) low network participation costs; (iii) fast and predictable delivery of transaction, clearing and settlement services; (iv) reliability of network operations; (v) low settlement risks; and (vi) settlement finality, particularly for large-value payments. These financial institutions are also now demanding greater transparency about the features and implications of these factors from their infrastructure service providers.

These demands for more transparency, greater efficiency and lower risk for users and providers promote improvements in the existing payment system. They also lead to fundamentally new developments in non-cash payment instruments, such as the introduction of electronic credit transfer and card-based retail payment systems.

(iii) Characteristics of supply in payment services

Service providers in end user markets aim to enhance their opportunities for revenue generation and to reduce their costs and payment risks. They achieve this through: (i) the introduction of new technologies for information processing, telecommunication and even inter-city transportation for the transmission and transfer of payment instructions and instruments; (ii) the interoperability in payment transaction arrangements, such as ATM, EFTPOS and internet payment systems; and (iii) the expansion of bank and non-bank service providers into new payment services and market areas.

The main objectives of the financial institutions in reforming the arrangements and markets for infrastructure services are savings in operating, liquidity and risk management costs. These are generally sought through: (i) nationwide integration of clearing and settlement networks; (ii) legal and regulatory reforms relating to the organisation, governance and operations of infrastructure networks; and (iii) reforms to enhance the resiliency of network operations to lower operational risk.

2.2.2 *Motives for payment system reform*

Payment system development is generally triggered by specific developments and events. Typically, these events relate to:

- increasing awareness, transparency and knowledge about payment systems and their risks, and rising concerns about financial stability;
- internal and external pressures to comply with international standards for payment and securities systems;
- developments in the financial and non-financial sectors that present new needs and opportunities for payment instruments and services; or
- political-economic developments, such as the evolution of economic and monetary unions among countries, and the country's re-entry into global trade and financial markets.

In the wake of these events, the existing payment system is found to be inadequate for the emerging payment needs of the economy. Initiatives to reform some elements of the national payment system are, therefore, undertaken.

2.2.3 *Trends in payment system development*

Payment system development initiatives generally strive for improvements in system-wide safety and efficiency. In general, these development initiatives focus on one or more of the following:

- the gradual emergence of a broader range of payment instruments and services;
- the design of the payment infrastructure arrangements to contain legal, operational and financial risks better for participants and to improve the cost efficiency of providing infrastructure services to them;
- the interoperability, interrelationships and resiliency of banking, payment, securities, foreign exchange and telecommunication infrastructures to facilitate straight through processing of payments;
- better access for financial institutions to low-cost settlement credit and better liquidity-saving mechanisms in payment settlement systems;
- the development of a suitable regulatory regime for the national payment system with an effective oversight function in the central bank; and
- more efficient, more stable and better organised markets for delivering and pricing various payment services to their users.

2.2.4 *Issues in payment system development*

The past experience of many countries points to a number of issues that need to be addressed if the development process for a national payment system is to proceed smoothly and effectively. Among the most common are:

- inadequate knowledge about the overall breadth of the basic elements relevant to a national payment system, resulting in ad hoc changes in the system, and limited vision, leadership and trust among the principal stakeholders;
- limited information about the emerging payment needs and capabilities of the developing economy and the existing system's ability to meet them;
- weak support and commitment to reform from public and private stakeholder groups due largely to inadequate consultation;
- limited expertise and financial resources for developing and implementing reform initiatives; and
- legal, regulatory and other public policy impediments to the development of new payment instruments, services and technologies that compound the natural risk aversion towards new payment system arrangements and innovations.

The development guidelines presented in the report address these development issues and their influence on the recent trends in the development of a national payment system.

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3. General guidance for payment system development

The general guidance, derived from the experiences of selected countries around the world, has four underlying themes:

- All institutional and infrastructure elements in a national payment system are equally important. In other words, the development of a system requires a broad perspective on what constitutes a national payment system and attention to all its principal elements.
- The various stakeholders in the national payment system are closely interrelated through market arrangements for producing and delivering various types of payment services.
- The different elements of the national payment system are highly interactive. The integration between the infrastructures for payment clearing or settlement, for example, can generally be developed successfully only with accompanying collaboration and coordination between the different stakeholders.
- National payment system development is an ongoing process. In all countries, there is always some element of the system in the process of reform. Consequently, these guidelines can be of use to all countries regardless of the present level of development of their national payment system.

The guidelines in the first section focus on the role of the banking system in payments. The next section presents guidelines for the development planning process for a national payment system. The third section focuses on the reform of the institutional aspects (markets, consultation, oversight and legal developments) of the system. The last section focuses on the infrastructures in the payment system.

3.1 Banking system and payment system development

Guideline 1: Keep the central bank at the centre: *due to its overall responsibility for a sound currency, the central bank has a central role in the development of the use of money as an effective means of payment.*

Explanation: The objectives of the central bank are to increase safety and efficiency in the national payment system. As highlighted in Box 1, the central bank has several means to do so – operator, catalyst, overseer and user.

In terms of these roles, there are three main ways that a central bank can contribute to the orderly development of the payment system. It can: (i) be a catalyst for change, drawing on its expertise about the payment system to help formulate realistic development initiatives; (ii) perform its various activities and evolve its operating policies in the payment system to better meet the emerging needs of the system; and (iii) act through its oversight function to promote and facilitate the development of a national payment system that is more efficient and stable than the present one. Experience in many developing countries indicates that the central bank may sometimes need to take the lead in proposing, planning and implementing some fundamental payment system reforms, using all its roles in the payment system to move the development programme forward. In other cases, where privately led reform initiatives meet central bank development objectives, the central bank role would be to advise on, and facilitate, change mainly through its catalyst and oversight functions.

The catalyst, operational and oversight roles of a central bank are likely to evolve over time in response to the various development factors. Early in the development of a national payment system especially, markets can experience coordination difficulties among service providers and users. Also, competing financial institutions may be reluctant to cooperate in the development of some common standards and infrastructures or even be the first to introduce innovative products and services. To deal with such situations, in some cases, central banks have chosen to provide new infrastructure services directly. At the same time, to complement or help develop alternatives to some of their own operations, central banks have encouraged the development of private service providers and markets for some of the emerging payment service requirements and have developed their oversight functions to monitor them effectively.

Box 1

Roles of a central bank in payment system development

As **operator** or payment service provider, the central bank may provide and develop payment and credit services by:

- issuing cash as a direct payment instrument and deposit claims as the asset for interbank payment settlement;
- operating systemically important settlement networks or participating directly in private sector arrangements that operate clearing and settlement networks as well as possibly in their governance arrangements;
- operating non-systemically important payment clearing and settlement arrangements, possibly participating in their governance arrangements or participating directly in retail payment transaction networks; and
- managing settlement accounts and providing settlement credit, both intraday and at the end of day, for participants in the payment settlement network.

As a **catalyst**, the central bank may contribute to payment system reform and development by:

- initiating, coordinating, researching and consulting on payment system design, operation and policy; and
- advising, and on occasion even drafting, proposed legislation on the payment system.

As the **overseer** of the payment system, the central bank may:

- publish its oversight principles, policies and guidelines;
- monitor existing and planned systems and assess them against safety and efficiency objectives; and
- consult, advise and, if necessary, induce change to payment system organisation and operations.

As a **user** of payment services in its operational activities, the central bank may participate in clearing and settlement systems to:

- participate in, or use, systems owned and operated by external parties to make and receive payments on behalf of its own customers (such as the government and its agencies);
- participate in, or use, securities settlement and depository systems for its own operations; and
- use correspondent banking services for other central banks and financial institutions.

Oversight is the central bank function that promotes the safety and efficiency of payment, clearing and settlement systems by: (i) monitoring existing and planned systems; (ii) assessing them against standards and guidelines pertaining to the safety and efficiency of specific systems; and, if necessary, (iii) inducing changes in the systems. As market conditions have improved and their oversight functions have developed, some central banks have chosen to outsource or even privatise some infrastructure services that they had initially provided directly, notably in retail payments.[1] Annex 2 illustrates such an evolution in a brief case study of the 2001 reforms of the Central Bank of Sri Lanka with respect to its various functions in the national payment system.

Implementation: For the central bank to function as the central agency in payment system development, the central bank's principal challenge is to become an effective educator. Educating its own senior management and staff, as well as other stakeholders in the national payment system, is the precondition for the central bank's effective use of its catalyst, oversight and operations functions in the system's development. Within the central bank itself, increasing knowledge of the role of the payment system in the country's economic and financial development, its relevance to both the monetary and financial stability policies of the central bank, and the importance of the central bank to the development of the payment system have typically encouraged central banks to:

[1] Some of these operations may be assigned to the central bank through legislation. Exiting from the direct provision of some services may, therefore, be more difficult than a simple policy decision.

- organise their payment system function as one of their core functions;
- invest in training and knowledge development to continue to enhance expertise;
- plan and prioritise development within their own payment system function to facilitate broader reforms in the system; and
- develop a communication strategy around their payment system function to help educate other stakeholders and to facilitate ongoing development of the national payment system.

(i) Organise payment system functions

The payment system function of a central bank can generally be organised around the central bank's operations, policy and oversight functions in the payment system. The organisational units involved in the payment system function should be separate from other core functional units at the central bank, such as those dealing with monetary policy, client funds management and corporate administration. This allows the units concerned to focus on the central bank's payment system objectives and tasks exclusively. The organisation of the payment operations, policy and oversight units within the payment system function varies across central banks. The oversight unit is now often separate from the operations unit with its own reporting lines directly to the senior official responsible for the payment system function.

As a "core" central banking function, the payment system function should be directly accountable to the central bank's policy board through a senior level official, such as a deputy governor. Also, internal communication and coordination across the various units within the payment system function is critical. It allows new policy proposals and operational procedures to be considered from the different perspectives and expertise of the various units within the central bank's payment function to help ensure their acceptability. These communication and coordination mechanisms could be either formally or informally organised. By way of an example, Box 2 outlines the mechanism used by the Bank of Canada.

Box 2

Country example: Bank of Canada's CLACSS

- The Committee on Liquidity and Clearing and Settlement Systems (CLACSS) is an internal committee, chaired by the Senior Regulatory Advisor to the Governor.
- CLACSS is designed to exchange views and coordinate policy recommendations on payment and securities clearing and settlement issues to the Bank of Canada's Financial System Committee, which is the Bank's policy committee for financial systems and is chaired by the Governor.
- CLACSS involves senior staff members from the departments for:
  - payment system operations and operational research;
  - monetary policy implementation and funds management;
  - payment clearing and settlement oversight and policy research; and
  - legal services.

(ii) Continue development of knowledge and expertise

To maintain its influence in system development, a central bank needs to continually deepen its knowledge and expertise about the emerging trends and issues for national payment systems. It must be able to assess the implications of proposed developments in the system with respect to system-wide efficiency and safety and to determine how best it can contribute to those developments. For this, it needs to train resources and dedicate them to payment operations and to the analysis of payment service markets and infrastructure arrangements.

Also, while the primary focus should always be on one's own national system, knowledge of the trends and developments elsewhere can help in formulating useful reform initiatives. The central bank will also need, therefore, to dedicate resources to ongoing consultation and discussion with a range of stakeholders that influence development in the payment system. These consultations could also involve experts from international organisations such as the CPSS, the World Bank and the IMF, as well as those in other central banks.

(iii) Plan and prioritise development of payment system roles

A central bank needs to develop its operational, catalyst and oversight roles as part of the overall development process for the development of the national payment system. However, depending on the immediate needs of the overall development plan, it may be necessary to focus more effort and resources on a particular role. For example, as the payment system is beginning to develop its core institutions and infrastructures intensively, the central bank may need to focus its resources on its own operational roles and its catalyst roles to help lead the planned reforms forward. Its oversight role, while still important, could be further developed at a later point in the reform process.

In terms of its operational roles, possibly the most fundamental project for a central bank to undertake is the reform of its own settlement account processing and administration procedures. Such reform can facilitate the developments of new payment services and processes in the banking system. For example, regional banks and regional branches of nationwide banks often hold their settlement accounts at the regional branches of the central bank. If the central bank has only a decentralised account management structure, banks would be less able to manage effectively their central bank liquidity on a bank-wide basis. For that matter, the central bank may have less precise measures of central bank balances outstanding nationally, which can limit the efficiency of implementation of its monetary policy. Therefore, an operational priority for a central bank that is promoting development of a nationwide payment system would be development of its own national account administration and processing system.

The banks may still hold their settlement accounts at the regional branches of the central bank but they would be within a unified and common central bank account management system. As the communication technologies develop nationally, the central bank would be able to upgrade its account management system into a single online account management system. This system would be integrated with its other internal accounting and processing systems used in providing payment settlement services. Banks that operate similar unified account management systems for their branches nationwide would have better information on their central bank funds positions, which would allow them to manage these positions more profitably. Also, the central bank would have better information on the aggregate demand and supply of central bank funds, which would allow it to implement monetary policy more effectively.

In its catalyst role, the central bank would wish to prompt and coordinate suitable actions by the relevant stakeholders to implement other development initiatives. For example, it may wish to promote and facilitate the collection and public dissemination of information on the new instruments, services or infrastructure arrangements. This could help improve their acceptance among stakeholders and encourage follow-up innovations and institutional reforms within the private sector. The central bank may also wish to focus the attention of other relevant agencies on policies and regulations that can impede payment system development. These could include public policies or regulations inappropriately affecting: (i) access to payment service markets for different types of service providers and users; or (ii) usage or provision of inpayment accounts, instruments and transfer services resulting unintentionally from tax and subsidy policies or from pricing regulations in various banking or payment service markets.

Payment system oversight, although an established practice in most central banks, has now become a more formal and organised function in many. However, even in the earlier stages of fundamental reforms in the payment system, central bank oversight of the development process was evident, even if the central bank's organisation of its oversight function was still rudimentary. Generally, in the earliest stages of development, central bank oversight would be focused on the design of the core infrastructure arrangements, with particular attention paid to their access conditions and their settlement risk control and management processes. As these infrastructure arrangements become more established, the focus of oversight is usually shifted to monitoring new developments in these arrangements and in the national payment system more broadly. Oversight would also focus on the assessment of the implications of these developments for system-wide safety and efficiency. The oversight function would, in addition, monitor and assess developments in the central bank's own systems, using the same standards and similar approaches used for private infrastructures. The 2005 (forthcoming) CPSS report *Central bank oversight of payment and settlement systems* provides some useful detailed guidance on developing the oversight function. For these activities, the central bank often needs to organise its oversight activities more formally and effectively. This is especially important if the central bank operates systems that it oversees and has statutory powers to induce change in the rules and operations of other specific systems.

(iv) Communicate the central bank's roles

The central bank's influence on payment system development is most valuable and effective if its objectives, policies and reform proposals are clearly and comprehensively communicated to the other key stakeholders in the system. The importance of this requirement is highlighted by the creation and propagation of the IMF Transparency Codes for Monetary and Financial Policies. The central bank must ensure that the information is communicated consistently to all relevant stakeholder groups through a variety of communication instruments - legislation, policy statements, publications and stakeholder agreements. Box 3 illustrates the communication policy regarding the central bank's oversight role in Italy.

Box 3

Country example: payment system transparency policy as promoted by the Bank of Italy

The Italian Banking Law officially assigned the payment system oversight function to the Bank of Italy in 1993.

In May 1997, the Bank of Italy published a *White paper on payment system oversight*, defining the institutional framework and the theoretical grounds for the oversight function. In November 1999, a second paper was published (*White paper on payment system oversight. Objectives, methods, areas of interest*), with a more detailed analysis of the function's areas of interest and methods of intervention. The aim of the two papers was to start discussions with market operators, service providers and academic experts on the role of the oversight function in increasing the efficiency and reliability of payment systems.

In February 2004, the Bank of Italy issued *Provisions on the oversight of payment systems* to give clear and transparent general guidelines on the market. Such statements are used to complement traditional oversight instruments such as stakeholder cooperation and moral suasion in influencing payment system development.

Guideline 2: Promote the role of a sound banking system: *payment accounts, instruments and services available to end users are mainly provided by banks, which compete individually but often need to act cooperatively as a system.*

Explanation: The development of the national payment system and the development of the nation's banking system are closely intertwined. For the purposes of this report, a bank is any financial institution that accepts deposits, provides credit directly and offers payment services to end users as its principal business functions. This would include both privately owned institutions and state-owned banks.

Although banks are generally the principal suppliers of payment accounts, instruments and services to end users some payment accounts, instruments and services are provided by non-bank institutions, such as post offices, micro-finance institutions and private payment transfer providers. These non-bank institutions either operate in a partnership arrangement with banks or as users of bank payment services in the provision of their own specialised services to consumer or business clients. Box 4 summarises the roles of bank and non-bank payment service providers in end user markets.

To facilitate their provision of payment services to end users, banks are the key users of payment transaction, clearing and settlement services and often cooperative owner-participants in many of the infrastructure arrangements. Accordingly, they are the principal source of demand for central bank balances and credit and the major reserve and deposit account holders at central banks.[2]

[2] Primary reserves for banks are usually held as deposits at the central bank. Typically, the funds in these reserve accounts are also eligible for use as settlement funds for payment obligations. Frequently, the reserve account itself is used as the bank's account for payment settlement.

Box 4

Banks and non-banks in end user markets

Payment system development is inextricably linked to the development of the bank and non-bank sectors with respect to the provision of instruments and services to end users.

- Banks are generally the main suppliers of payment accounts, instruments and services to the customers in the end user markets for most countries.
- Non-bank payment service providers, such as postal payment offices and financial service kiosks in retail organisations, can also provide payment accounts and services to end user markets.

Non-bank providers often focus in particular on:

- market segments (eg low-income individuals and small businesses);
- locations (eg small rural communities and regions); or
- infrastructure services, such as ATM networks, internet payment schemes and specific processing, clearing and settlement services.

As the principal supplier of payment instruments and services to end users, and the principal user of related infrastructure services, the banking system must correspondingly develop in terms of: (i) national coverage and innovative technologies and procedures for service delivery; (ii) internal account management and payment processing systems; and (iii) connectivity arrangements vis-à-vis the networks for payment infrastructure services. At the same time, the banking system as a whole needs to cooperate and invest in the development of new institutional arrangements, especially market arrangements, for delivering payment services to end users and acquiring other services from infrastructure service providers. Reforms in the legal and regulatory framework for banking might also be needed to support these development initiatives for a sound banking system and their role in the payment system. Indeed, the appropriate regulation and supervision of the banking system is one of the key factors strengthening the confidence of consumers and businesses in the national payment system.

Implementation: Although the central bank may be able to catalyse and facilitate developments in the banking system that will support development initiatives for the payment system, the principal responsibility for sound banking system development is with the banking community.

(i) Extend payment service coverage

The priority initiative would be to extend the core payment services to all the regions of a country. Existing banks and newly emerging service providers could be encouraged to expand their branch networks to smaller urban areas and into rural areas, and to develop basic low-cost payment accounts and services for retail clients especially. Banks and non-bank service providers might also consider developing mobile banking and payment services in less populated regions, and participate and invest in innovative electronic banking and payment networks, such as those involving secure wireless technologies. Banking authorities might authorise the development of community and cooperative banks in rural centres and permit banks to contract with non-bank institutions willing to provide payment instruments and transactions services to end users for accounts held at banking institutions. In this arrangement, payment accounts remain at regional banks, but access to those accounts for payment services is decentralised into local areas. An example of this approach used in Brazil is described in Box 5.

Box 5

Country example: enlarging access to banking services in Brazil

Some 1,740 out of 5,578 municipalities in Brazil (30%) have no bank branches but receive banking services instead through *correspondentes bancários* (bank correspondents). There are about 16,000 *correspondentes bancários* - almost the same number as bank branches. They act on behalf of banks as an agency under agreement and are authorised, among other things, to:

- receive deposits and general payments;
- make payments related to the accounts concerned; and
- receive applications related to loans and proposals related to credit cards.

The most important *correspondente bancário* is the Brazilian post office (ECT - Empresa Brasileira de Correios e Telégrafos). ECT acts on behalf of Bradesco, the major Brazilian private bank, and serves all but a few of the municipalities where there is no bank branch. Other *correspondentes bancários* include lottery houses, supermarkets, drugstores and other small retailers.

The activities of the *correspondentes bancários* are regulated by the National Monetary Council, a government body in which the Central Bank of Brazil participates. The rules set forth:

- the kinds of financial institutions that can contract to be *correspondentes bancários*;
- the types of services that they can execute;
- the payment settlement procedures between the *correspondente bancário* and the bank for which it acts; and
- the requirement that a *correspondente bancário* cannot use its own funds for its banking service activities.

To expand access to banking and payment services nationwide, individual banks will, over time, need to:

(i) extend access to payment accounts and services nationwide through branch, agency or electronic banking networks (eg ATMs and internet banking schemes);

(ii) invest in unified account management and information systems across their various client access networks; and

(iii) connect or integrate their internal account management systems with their other systems for initiating and authorising payments by clients to:

  – facilitate the provision to customers of both cash and a variety of non-cash retail payment instruments; and

  – provide customers with nationwide interbranch access to their payment accounts at lower user cost and with less delay in transferring funds from their accounts and accessing funds received in them.

Where permitted by telecommunication infrastructures, a bank's access networks could be connected to an electronic account information and management system through a computerised online network. As the telecommunication technologies develop and infrastructures extend their coverage, more of the access facilities can be integrated into the online system.

(ii) Have the banking system develop standards

As a group, banks should be encouraged to develop industry groups and forums that can propose and develop standards for payment instruments and services cooperatively. Particularly important are standards for the security of client information in various types of access and payment transaction networks and instrument standards to facilitate efficient and secure payment clearing. This industry group would also be effective in developing market conventions and standards for payment services and in dealing with the central bank and banking authorities on policy issues of common interest to all banks in the country. Banks might also be encouraged to cooperate in the development of common infrastructure arrangements for payments. These would include standards and procedures for the clearing of different payment instruments and the organisation of clearing houses. It would also allow banks to share the development and installation costs for the automation of clearing houses and for the development of shared electronic payment networks, such as those for debit card payments and ATMs.

(iii) *Central bank contributions*

The central bank should facilitate and even provide leadership, where necessary, in developing the banking system since it is a necessary condition for developing the national payment system. For example, the central bank should ensure that community and cooperative banks and authorised non-bank providers of payment services to end users have direct or effective indirect access to any central bank clearing and settlement facilities. Banks in particular should be eligible for direct access to such facilities, but should have the choice of accessing these indirectly through another bank in the clearing and settlement networks if the business case so indicates. The central bank's account administration system should also be flexible enough in structure to meet the settlement account needs of newly emerging banks as well as of the existing banks in the system.

In its catalyst role, the central bank may help the banking industry organise its industry group and consult with the group on payment and monetary policy issues that affect the banks directly. This provides the central bank with a forum in which to educate banks on payment system issues and development opportunities and to encourage cooperation among the banks on issues of common interest and need to them. The central bank can also consult with banking authorities on legal and regulatory reform initiatives for coordinated development of countries' banking and payment systems.

Suggested references for the banking system and payment system development

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3.2 Planning payment system development

The guidelines for planning payment system development contribute to the formulation of the specific development initiatives. The key messages of the guidelines are that: (i) the payment system should be viewed from a broad perspective; (ii) development initiatives should be focused on the emerging payment needs and capabilities of the economy; (iii) plan and prioritise development initiatives strategically; and (iv) the implementation process for the development plan has to be well defined and organised for the plan to succeed.

Guideline 3: Recognise complexity: *planning should be based on a comprehensive understanding of all the core elements of the system and the principal factors influencing its development.*

Explanation: The concept of a national payment system described and discussed in Section 2 of the report indicates the broad range of elements and factors that need to be considered when planning reforms in the payment system. Unfortunately, payment system development is often too narrowly focused on instruments, technologies and infrastructure designs. Sustainable development of the payment system implies that all of the major elements of the system - market arrangements, legal and regulatory framework, banking system developments - and the principal development factors have to be considered when formulating reform initiatives.

A broad perspective on the payment system helps produce a comprehensive development plan. Such a plan would reflect the interrelationships between payment infrastructures and the institutional arrangements and propose the required parallel development initiatives in the relevant institutional, technological and infrastructure elements of the system. A broad perspective in the planning stage of development can also help avoid unanticipated and unintended outcomes from reforms in payment technologies and infrastructures that otherwise often arise.

Implementation: A comprehensive stocktaking of the present state of the core elements of a national payment system is the key instrument for implementing this guideline. Annex 3 provides a general outline for a stocktaking exercise. This exercise is similar to the structural, institutional and statistical descriptions of country's payment and settlement systems published by the CPSS and other regional and international organisations.

(i) Consult for stocktaking

The stocktaking exercise is best conducted as a cooperative exercise involving all relevant public sector and private sector stakeholders. Questionnaires, self-assessments, interviews and on-site visits with the relevant stakeholders provide information that can be used to outline the organisation, critical infrastructures and principal institutional arrangements of the existing payment system. These tools also help in assessing the current capability of the existing system to meet emerging payment needs and address emerging payment system issues.

The consultation process provides a mechanism that allows all stakeholders to improve their knowledge of the broad context of the national payment system. It is also a vehicle for "sensitising" stakeholders to the system-wide development needs, plans and policy approaches. The sensitisation process can be implemented through roundtable meetings or workshops with various public and private sector stakeholders. This process allows the stakeholders to discuss goals and priorities for development, which can help promote their "buy-in" and commitment to the payment system development programme.

(ii) Central bank contributions

Where needed, a country's central bank could be a principal facilitator, contributor and, possibly, catalyst for the stocktaking exercise and consultative process. Its broad expertise and perspectives related to its multiple roles in the system are critical to this process. At a minimum, it should be an active participant since the central bank is a direct beneficiary from such an exercise. An initial comprehensive stocktaking of the national payment system is an excellent reference base for evaluating its new developments. A central bank monitors new developments continuously and consults with the relevant stakeholders to update its stocktaking periodically. The impact of new development initiatives on the efficiency and safety of the national payment system can then be evaluated in an up-to-date comprehensive framework.

Experts from the World Bank, the IMF and other central banks can assist in this exercise. In fact, several regional initiatives to exchange experiences in payment system issues have been set up by regional central banks and central banks in neighbouring countries, often in collaboration with the World Bank or others. Experienced expertise in the development of national payment systems is often in limited supply both internationally and domestically. Experienced consultants can be helpful in implementing complex reform initiatives but may often have a narrower perspective on and range of expertise in the overall payment system than other central banks, the World Bank and the IMF. Box 6 provides a short description of such expert assistance for payment system development from the two organisations.

Box 6

World Bank and IMF: payment system development assistance

The **World Bank** has provided support for payment system development in more than 65 countries over the past 10 years through:

Technical assistance

- Comprehensive stocktaking reports
- Expert advice on payment system development needs and capabilities
- Strategic planning for payment system development
- Advice on implementation of the reform initiatives

Funding assistance

- Bank loans to finance payment system reforms

Other assistance

- Support for Regional Payments Initiatives
- Participation in CPSS, IOSCO and other policy committees and task forces
- Support for Financial Sector Assessment Programs for payment and securities settlement systems
- Coordination for financial sector reforms for payment, securities, credit and other financial services and institutions
- Payment system research and training for member countries

The **IMF** is involved in the development and improvement of payment systems worldwide to promote financial stability, effective execution of monetary policy, the efficiency and effectiveness of financial markets, and economic development through:

Surveillance

- Assessments in both developing and developed countries of compliance with international standards, codes and best practices in the framework of the Financial System Assessment Program
- Article IV consultations on economic development and the stability of the financial system

Technical assistance

- Advice on planning and reform
- Development of infrastructure for financial markets and the implementation of monetary policy
- Role and organisation of the central bank's payments function
- Development of the legal basis for, and implementation of, central bank oversight
- Rebuilding systems and institutions in post-conflict areas

Education and consultation

- Education and training (through, for example, HQ-based seminars and courses, the Joint Vienna Institute and the Joint Africa Institute), often in cooperation with the CPSS and the World Bank
- Development of standards and guidelines in working groups and task forces such as those of the CPSS and IOSCO
- Consultation through regional payment initiatives organised by the World Bank

Guideline 4: Focus on needs: i*dentify, and be guided by, the payment needs of all users in the system and by the capabilities of the economy.*

Explanation: Payment systems generally develop to allow users greater choice among various payment instruments for a particular type of transaction. Particular payment instruments and services can be matched to particular types of transactions. For example, automated credit transfers are generally preferred for large-value payments, credit cards for remote internet payments and cash for face-to-face micropayments. The choice among the various instruments is then based on the specific characteristics demanded by users for that type of transaction. Existing payment infrastructures are rearranged and new ones introduced to transact, clear and settle these payment instruments efficiently and securely.

The emerging payment needs of an economy are also typically associated with the trends and potential developments in the commercial, industrial and financial sectors of an economy. Information about the private and public sector development initiatives in these areas is useful to recognise and understand the emerging payment needs of consumers, businesses, financial institutions, government agencies and the central bank. They can indicate what types of new transactions involving these stakeholders are likely to develop in the foreseeable future, which can be quite relevant to planning payment system reforms.

The needs of particular stakeholders in the payment system will depend on their roles in various payment service markets. Some key stakeholders play different roles, and thus have different interests, in the different service markets and organisations in a payment system. Banks, for example, provide payment instruments and services to retail clients but demand clearing and settlement services from infrastructure service providers. Central banks are settlement service providers but also users of infrastructure services for their monetary policy transactions and overseers of these systems. Knowledge of these different roles is critical to understanding the different interests and concerns key stakeholders may have in specific development initiatives. It also helps indicate who may bear most of the risks and costs, and who may benefit most, from particular reforms. Designing reforms to share these risks, costs and benefits appropriately among the stakeholders can contribute to the success of a reform initiative.

Implementation: The two focal points for implementation of this guideline are a realistic analysis of business requirements and a review of resource requirements and capabilities to meet them.

(i) Analyse business requirements

A "business requirements" analysis is the principal tool for identifying the payment needs of stakeholders and the capabilities of an economy to meet them. Together with the stocktaking exercise, it should help define: (i) the emerging trends in the demand for and supply of payment instruments and infrastructure services; (ii) the legal and financial risk for participants; and (iii) the specific roles of the key participants as direct service providers, service users, and supervisors or regulators in various payment service arrangements. It should also consider the emerging trends and likely developments in the institutional framework for the payment system, such as service market arrangements and the legal and regulatory regimes that support ongoing development. The business requirements analysis helps create the business case for possible reform initiatives. Box 7 illustrates some of the specific elements of the business requirements analysis that could prove relevant.

To complement and inform the business requirements analysis, consultation with relevant stakeholders is needed. To focus these consultations around development issues relevant to particular groups of stakeholders, the roles of stakeholders in the system can be mapped into the different payment service markets and infrastructure arrangements. With such a mapping, an agenda for follow-up focus surveys and discussions with the individual stakeholders can be established. The central bank would be an active participant in the consultations around its business requirements. It might even need to organise and facilitate the process where the private sector is unable to do so independently.

Box 7

Elements of a business requirements framework

- The supply conditions for payment instruments and infrastructure services, including requirements relating to:
  - flexibility and modularity in network technologies and design for likely future payment system needs;
  - risk management mechanisms (eg legal, financial, operational) to limit participation and systemic risks in infrastructure service networks;
  - the availability, terms and conditions of interbank settlement credit facilities for participants;
  - operating schedules and scheduling requirements and procedures; and
  - compliance with national and international standards.
- The demand conditions for payment instruments and services, including the identified needs and expectations for:
  - various payment instruments, their use in particular types of transactions and their related transfer and infrastructure services;
  - instrument risks and processes for authentication and security of payment and account information; and
  - instrument and service demands particular to special transactions such as those related to monetary policy transactions, to government payment flows and to interbank credit transfers for foreign exchange and securities settlement.
- The market and other institutional arrangements, including the conditions for:
  - end user market availability and accessibility of instruments and services;
  - access to network infrastructure arrangements and cross-network participation requirements;
  - nature and conditions of indirect access to various payment infrastructure systems;
  - direct and indirect participation risks (ie legal, operational and financial);
  - relevance, appropriateness and transparency of legal rights and obligations of users and providers of payment instruments and infrastructure (including rules and procedures); and
  - instrument and service pricing methodologies and price levels.
- The regulation and oversight aspects, including transparency of:
  - system regulation and oversight (including the types of agencies and their legal scope and authority and the rights and obligations of the entities that they oversee and regulate);
  - regulatory and oversight dispute mechanisms; and
  - regulatory accountability.

(ii) Determine resource requirements and capabilities

Planning system reforms around users' needs could also require appropriate development of the country's technological capability and human resources. Development programmes for the telecommunications and information technology sectors are critical to the development of specific types of payment infrastructures, such as those for card payments and other forms of internet-based payments. Even development programmes for transportation systems are important for certain types of payments and payment instruments. Directly, transportation systems can affect the interregional physical transfer of paper-based instruments used in remote payments. Indirectly, they can affect the volume of such remote payments, and thus the need and business case for developing particular types of payment instruments.

The development of skilled and knowledgeable human resources is as critical to payment system development as the development of an economy's physical infrastructure. Programmes and facilities for training personnel for developing, operating and managing increasingly sophisticated payment service technologies and organisations need to be part of the planned development of payment system capabilities. Similarly, ongoing education programmes about emerging payment instruments and services, and their related institutional and infrastructure arrangements, are useful to users as well as service providers.

Guideline 5: Set clear priorities: *plan and prioritise payment system development strategically.*

Explanation: A strategic plan indicates the specific direction, scope and end point for a national payment system development programme. In doing so, it still takes a broad view of the payment system encompassing its core institutional elements and infrastructures and the key factors influencing their development. It recognises the interplay among these elements and defines the concrete objectives and priorities for reform based on a comprehensive analysis of the country's specific emerging payment needs and system capabilities. The plan is formulated through broad consultation and consensus-building on particular reforms and initiatives, especially those involving fundamental and broad-based change.

A strategic plan is designed to be country-specific. However, particular aspects of payment systems elsewhere can provide useful models for planned reforms. For example, particular institutional arrangements or infrastructure designs in one country's payment system might be adaptable to the reform programme of another. It would, however, need to meet the particular payment needs, system capabilities and environmental circumstances of the country as well as enhance the safety and efficiency of the country's national payment system.

Box 8 highlights some of the key features of a strategic plan for payment system development.

Box 8

Components of a strategic development plan

- A vision of a desired end state over the planning horizon that articulates the consensus view of all stakeholder groups regarding the high-level objectives, guiding principles, properties, benefits, risks and costs of the future payment system.
- A statement of the roles, commitments and responsibilities of the key public and private sector stakeholders in the development process.
- Critical success measures for the development plan that include a range of observable factors related to the elements of the vision statement.
- A presentation of the conceptual design of the planned infrastructure for payment and securities settlement that could include the relation to the existing system with reference to its structure, key characteristics, functionality and potential for further expansion and re-engineering as future financial developments warrant.
- A statement of the implementation strategies that include the specific implementation priorities and procedures, and timelines, budgetary allocations and financing schemes, critical milestones and observable measures of achievement for public progress reports.
- A description of the procedures for ongoing cooperation and coordination among the relevant stakeholders; the processes for resolving conflicts and disputes that arise during programme implementation and thereafter; the procedures for communicating progress and achievement over the implementation period.

The strategic plan outlined above presumes a significant and wide-ranging reform programme for a payment system and thus involves a substantial planning effort. The investment of time and financial resources in the planning process will depend on the scale and scope of the reform programme. However, even modest reform of one specific element of the system can have a significant impact on the overall system because of the interrelationships among the elements. Therefore, the basic principles for planning and prioritising payment system reform strategically are essentially the same for reforms of any size: (i) plan the specific reform initiatives with a broad view of the system in mind; (ii) create a vision for the future system where the reforms are based on specific current and emerging payment needs and capabilities; and (iii) prioritise the elements of the reform programme based on their net realistic long-term benefits to the system.

Implementation: In implementing this guideline, two analytical tools that can be quite useful are a "gap" analysis and a costs-risks-benefits analysis.

(i) Identify reform initiatives - gap analysis

A gap analysis is used to help identify the specific elements of the payment system in need of reform. The first part of the analysis contrasts some of the key results of the business requirements analysis with the stocktaking analysis of the existing system discussed in the previous planning guidelines. The "gaps" identified by this comparative analysis point to the institutional and infrastructure elements of the system that will need to be reformed. The analysis also indicates which elements of the existing system might already meet some of the future payment needs.

The second part of the analysis assesses the "gaps" in the payment system against the emerging capability of the economy to help fill them with new payment products, technologies and services. The evaluation of specific capabilities would consider, for example, the human and capital resources required and available for implementing particular types of payment system reform and the cost-sharing possibilities for financing specific initiatives. The "gaps" between the prospective needs and capabilities help identify which reform initiatives are most efficient to pursue in a development programme.

(ii) Prioritise initiatives - costs-risks-benefits analysis

In practice, not all possible initiatives can be developed simultaneously, especially if reforms are far-reaching. For wide-ranging development plans but limited development resources, reform initiatives are specifically prioritised according to the most realistic needs and capabilities of the payment system and "packaged" together for the most cost-effective implementation possible. A costs-risks-benefits analysis helps prioritise the potential reform initiatives identified by the gap analysis. It can help define priority initiatives, their time schedules and the responsibilities of the various stakeholders for their implementation.

While the gap analysis might well point to a need for fundamental reforms in the institutional or infrastructure arrangements of the system, the costs-risks-benefits analysis may point to highly visible and relatively low-cost reforms as priority initiatives. Often, these involve modest reforms to particular institutions and infrastructures in the existing system. Reform of the existing system should not be immediately disregarded as an avenue for development. Payment system development is an evolutionary process that can build on the basic institutional and infrastructure arrangements of the existing payment system to satisfy emerging payment needs efficiently. However, the focus should not just be on cost. The benefits of more fundamental changes in the institutions and infrastructures of the payment system and the risks of not doing so - especially systemic risks leading to financial system instability - should receive substantial weight in the analyses for payment system reform.

As an illustration of a strategic plan, Box 9 outlines the plan for the South African national payment system developed and implemented over the past decade.

Box 9

Country example: South African national payment system - framework and strategy

Principles

- The provision of payment system services is not the exclusive domain of banks.
- The evolution of the payment system infrastructure is a cooperative responsibility.
- Risks and exposures are visible.
- Participants are liable for the risks that they introduce into the payment system.
- A balance is maintained between risk reduction and cost.
- The central bank response to a problem in the payment system will be in the interest of the system, not individual participants.
- Surveillance (*oversight*) is necessary to ensure the safety and soundness of the payment system.

Vision

- The national payment system is easily accessible and cost-efficient.
- There is healthy competition amongst customer payment service providers.
- Appropriate infrastructures for retail and wholesale payments and for payments related to foreign exchange, commodities market, capital market and money market transactions are in place.
- Eligible participants access interbank clearing and settlement services on an equal footing.
- Settlement of domestic interbank obligations is effected on a same day basis.
- The payment settlement system makes optimum use of available liquidity.
- The payment system supports electronic delivery versus payment (DVP) for securities transactions and payment versus payment (PVP) for foreign exchange transactions.
- Payment settlement time lags resulting from trading transactions are in line with international practice.
- The payment system is internationally compatible and the international community has an appreciation of the effectiveness of the system.

Critical success factors

- Adequate risk control measures, irrevocability of settled transactions and sufficient liquidity.
- Synchronisation of delivery and payment.
- Sound legal foundation and adherence to national rules, regulations and procedures.
- Confidentiality and security of payment information and effective fraud prevention and detection measures in place.
- A suitable variety of payment instruments and services available to all the people in the country.
- The public is aware of payment system features.

Strategies

- Clarification of the roles and responsibilities of all participants in the payment system.
- Revision of the statutory powers of the central bank regarding payment systems.
- Establishment of payment system standards and review of cross-border/foreign currency market practices.
- Introduction of a regulatory framework for clearing service providers.
- Equitable and transparent access conditions.
- Creation of participation agreements for utilising common investments in infrastructure.
- Introduction of measures to limit credit exposures in bulk clearing processes.
- Liaison with banks and financial authorities in the region and creation of a payment system forum to discuss and resolve relevant issues.

(iii) *Central bank contributions*

Where development expertise for the payment system is limited, the central bank is well placed to organise, direct or advise, and consult with the external experts engaged to formulate or help perform the gap and costs-risks-benefits analyses. However, the central bank and other stakeholders in the system, not the consultants, should be responsible for decisions regarding the final development programme. They have the best knowledge of the country-specific needs and development factors relevant to their country's national payment system.

Where some of the reforms are industry-led, the central bank should, at a minimum, participate in the consultation among the stakeholders in the system to advise on the planning and prioritisation of development initiatives. The final development proposals should reflect a consensus agreement on current and future payment needs, issues and capabilities.

Guideline 6: Implementation is key: e*nsure effective implementation of the strategic plan.*

Explanation: The success of the planned projects for payment system reform requires a well organised and well managed implementation process. As the specifics of the development projects become clearer, the strategies for implementing these projects need to be incorporated into an explicit project implementation plan. Project implementation typically involves different stakeholder groups, and the implementation plan clarifies their roles and responsibilities in the project.

An effective implementation plan for a payment system reform project contains: (i) suitable project governance arrangements; (ii) well defined deliverables; (iii) measurable progress milestones; (iv) contingency and resolution procedures; (v) an effective "rollout" strategy; and (vi) a realistic resource and financial management strategy. Box 10 outlines the basic requirements for the governance and organisation of a major payment system reform project.

Box 10

Organisational requirements for project implementation

Depending on the scale and scope of the project, an effective organisation for project implementation could require:

- at least one influential high-level sponsor that will promote and facilitate the project;
- a project steering committee, which is the decision-making body for the project involving a representative from each of the key stakeholder groups;
- a project director that will monitor the project, help resolve its problems and communicate its progress to the steering committee;
- a project manager that, like a general contractor, is responsible for the day-to-day management of the implementation plan;
- a well defined role, scope of responsibilities and range of authority for project directors and managers;
- acquisition of the necessary expertise from stakeholder groups, international organisations such as the BIS, the World Bank, the IMF, other central banks and possibly other private consulting organisations for the project teams;
- project team coordinators with some content and management capabilities regarding the specific initiatives for the team; and
- clear reporting, information sharing and accountability processes and schedules for project team coordinators to project managers and through to the project director and the steering committee.

The project organisation outlined above refers primarily to a large-scale development project. However, the main elements of the implementation plan and the same functional requirements for implementation are relevant for more narrowly focused project initiatives as well. The main difference is in the scale of resources needed. An initiative focused on a very specific element of the payment system, for example, usually involves a single project team of very limited size. The project sponsor takes on the role of the steering committee, and the roles of the project director, manager and coordinator are combined in one individual. However, the roles, scope of responsibility and range of authority of the project group members still need to be clearly specified.

Implementation: Aside from project planning and organisation, effective project implementation depends critically on resource availability and project rollout.

(i) Acquire necessary resources

Project implementation for payment system reforms requires expertise in project management as well as expertise in payment systems. Experts from the World Bank, the IMF and other central banks, if required, can provide some assistance in developing an effective implementation programme. One of the most important services demanded of these experts should be the transfer of knowledge and competence regarding payment systems and payment system reform to help develop the central bank's own expertise for future development of the system. Other experts dedicated to the project may also need to be engaged or trained. Indeed, the broader the scope of the reform project, the more likely will be the need for sub-groups of experts to be formed that will focus on specific elements and tasks in the project plan. Some of these expert resources could be mobilised from stakeholders in the reform project, such as legal, payment operations and project management experts from the banking community.

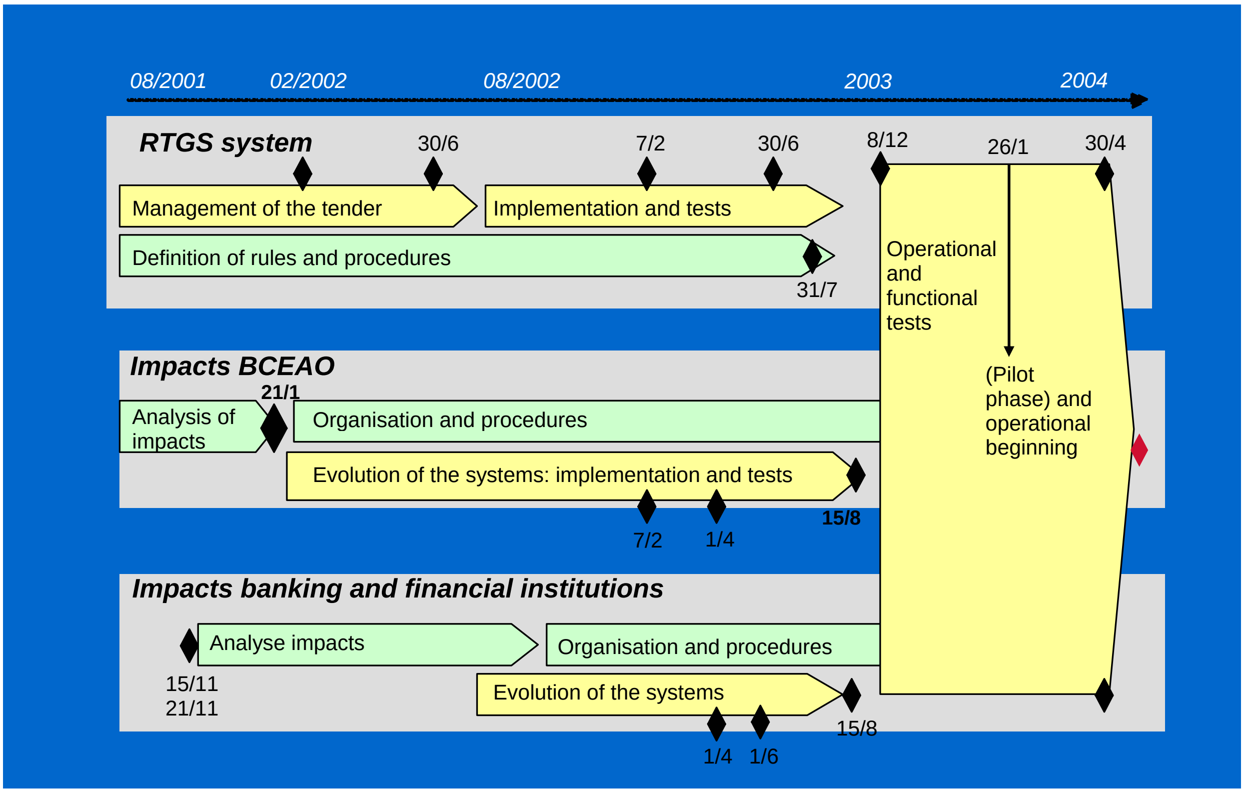
Similarly, the financial resources available for specific projects need to be predetermined. As much as possible, financing from key stakeholders, at least with respect to those elements of the project most directly related to their own operations, should be committed before the implementation process begins. Remaining financing requirements could be met through commitments from the government sector and external official organisations such as the World Bank.

(ii) Specify rollout strategy

A project's rollout strategy depends on its nature. For some initiatives, such as those related to technological change and the reform of some types of infrastructure procedures, pilot testing may be feasible and useful. This would allow any technical problems to be identified and resolved before the reform is implemented system-wide. The actual system-wide implementation of technology and infrastructure reforms can also be staged or sequenced over particular regions, payment instruments and services or stakeholder groups. Figure 3 illustrates a Gantt chart for the implementation of the RTGS development project in the West African Economic and Monetary Union (WAEMU).

Figure 3

Country example: schedule of RTGS implementation in the WAEMU



For projects related to legal, regulatory and market reforms, pilot testing and a sequenced rollout strategy are generally less feasible. Implementation synergies over regions or payment service markets or an "all or nothing" implementation requirement would rule against such gradual implementation strategies. For these types of reforms, the "big bang" or "all at once" approach is often the only efficient rollout strategy.

(iii) Central bank contributions

The central bank can be valuable as a leader and catalyst for project implementation. It can sponsor, organise, advise and participate in project groups as required. It would participate in the steering committee and organise expertise from within the country's financial sector and from international organisations. At a minimum, the central bank could facilitate the implementation of reform initiatives by planning and coordinating implementation of the required changes in its own operating procedures and policies with other aspects of the project plan. Box 11 illustrates the roles of the central bank in the planning and implementation of Indonesia's recent payment system reforms.

Box 11

Country example: Indonesia's National Payment System Blue Print Project

The Indonesian Blue Print Project was an interdepartmental effort by the central bank initiated in 1998. The *INPS Blue Print* is the principal document specifying:

- the components of payment systems;
- the development issues within and around each component; and
- the charting methods and projects to tackle these issues within a certain period of time.

The strategic planning document dealing with these payment system development issues specified 22 projects to be deployed within the 10 years following the approval of the Blue Print. The 22 projects were aimed at:

- Payment instruments, including projects to develop an electronic interbank payment instrument.
- The legal environment, including projects developing guidelines and regulations to ensure:
  - the legality of electronic payment instruments;
  - clarity regarding the contractual rights and responsibilities of all parties in a funds transfer; and
  - the legality of netting and other aspects of clearing and settlement arrangements.
- IT Infrastructure, including projects on:
  - telecommunication infrastructure;
  - hardware and software upgrades; and
  - standards for information security in payment gateways.
- Payment and settlement risk, including projects to:
  - develop an RTGS system;
  - re-engineer clearing (netting) cycles; and
  - facilitate cross-border payments.
- Institutional issues, including the creation of a Payment System Department within the Bank of Indonesia, with a separate oversight unit, and a National Payments Forum.
- Efficiency issues, including projects to link various card payment operators.

Over the past six years, 18 projects have been completed and implemented.

The Bank of Indonesia is now in the process of developing the second National Payment System Blue Print, which will combine the remaining projects from the first plan with a set of new projects aimed at developing an even safer and more efficient national payment system.

Suggested references for planning payment system development

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3.3 Developing the institutional framework of a payment system

Reform programmes for the payment system often focus principally on infrastructure development. Experience indicates, however, that requirements for accompanying institutional reforms quickly arise. Considering the role of the institutional arrangements in the payment system and the need for reform in these arrangements is inevitably a necessary part of the development plan.

Broadly defined, the institutional framework for the national payment system includes the laws, practices and organisational arrangements facilitating payment transfers. The guidance in this section focuses on: (i) the market arrangements for payment services; (ii) the organisation of structured consultation with stakeholders; (iii) the coordination of payment system oversight and regulation in the payment system; and (iv) the structure of laws and legal arrangements for payments.

Guideline 7: Promote market development: *the expansion and strengthening of market arrangements is a key aspect of the evolution of the payment system.*

Explanation: Market arrangements include the procedures, conventions, regulations and contracts governing the payment service relationships and transactions between the service providers and users. As the payment system develops, it generally becomes more complex as the range of different payment instruments and services, as well as service providers and users, expands. Market arrangements to coordinate the production, pricing and delivery of the expanding array of payment instruments and services to users need to develop correspondingly. Effective market arrangements can contribute directly to the efficiency and the stability of the national payment system.

(i) Market organisation and interdependency

Payment services and service markets are generally classified into two types: (i) "wholesale" interbank service and market arrangements; and (ii) "retail" or end user service and market arrangements. Payment clearing and settlement services provided to financial institutions are examples of a wholesale payment service market. Retail or end user service markets can be illustrated by such examples as those for card payments, chequing privileges on deposit accounts, or internet bill payments. Each of these contains different specific payment instruments, services, organisations and market characteristics.

These markets are highly interdependent. Many of the same financial institutions that are users in a particular payment service market are also service providers in another. In some cases, payment services and their markets are complementary to one another. The provision of debit card services by a bank to its clients in a retail market and the acquisition of interbank clearing services in another is one example. In other cases, the payment instruments and services are market substitutes. Different credit card brands or cheques and credit cards are examples. Also, the pricing and service levels offered by different providers in a particular payment service market are influenced by their costs of acquiring complementary services in other markets and by the relative user demand and user fees for substitute payment services.

(ii) Market cooperation and competition

All payment service market arrangements involve some degree of cooperation and competition. For example, the financial institutions that use the clearing and settlement services provided by network operators typically cooperate in setting network service standards, procedures and acceptable pricing methodologies. They may also cooperate with network operators in setting interoperability standards between competing infrastructure arrangements. Conversely, these financial institutions compete with each other in providing payment instruments and services to end users on price, risk-sharing and service agreements. The challenge for developing effective markets for payment services is finding and promoting the right balance of cooperation and competition for each market. The various payment service markets have different features that can either enhance or limit their efficiency, stability and future development through their effects on the cooperation-competition balance.

(iii) Market structure and conduct

Markets for infrastructure services are often the most challenging to develop effectively. Some payment infrastructures and their service markets feature interdependencies characterised as "network externalities" for the service user participants in the infrastructure network. Debit card or shared ATM networks and large-value payment systems are examples. These network interdependencies create joint costs, risks and benefits to network participation beyond those directly accruing to the individual user participants. As new participants join the network, the existing members share in new revenue opportunities and lower participation costs. However, other externalities may discourage individual participants from investing in new service technologies, service standards or interoperability arrangements for the network. For example, if individual participants consider their cost or financial risk of investing in a new technology or new risk control procedure excessive relative to the value of benefits they expect to receive, there is little incentive to invest. Even if only some of the participants are unwilling to invest, others are often reluctant to proceed. Since the benefits from their investment would be shared system-wide, they would effectively be subsidising the participants that did not invest yet compete with them in related payment service markets. In this case, cooperation regarding the appropriate allocation of capital and operating costs in relation to benefits for all participants is critical.

Often smaller institutions acquire necessary payment infrastructure services indirectly through the services of a larger institution that participates directly in an infrastructure network. Even though the two institutions may actually compete against each other in some end user markets for payment services, the smaller institutions choose to participate indirectly in the infrastructure network for reasons of cost efficiency. In doing so, the small institution accepts the risk that the large institution connecting it into the infrastructure arrangement may have mixed incentives in negotiating contract prices, service levels and risk-sharing arrangements and might put it at a competitive disadvantage in end user markets. These are called “tiered” payment systems. Competition among the large institutions in providing smaller institutions with access services to infrastructure networks can help limit their market risk.

The consolidation of similar payment infrastructures into a single service provider is another example. It could lower operating costs for network participants over the near term but could also reduce incentives to invest in new cost-saving, risk-mitigating or service-enhancing technologies for the future. Competing providers of infrastructure services can help encourage innovation in service technologies and service quality for users. But, infrastructures that are not linked to existing complementary arrangements, such as an interbank settlement network, or to similar arrangements in other regions, can sometimes fragment payment service markets. The convenience for users may be lower system-wide and, if market size is limited, the effects on user costs from competing systems might be offset by the higher operating costs for each individual system due to fragmentation.

Implementation: Establishing effective markets for payment services requires an appropriate balancing of cooperation and competition in each of the markets and market arrangements that promote the participant’s incentives for positive action over those for less efficient and secure market behaviour. Practical strategies for implementing this guideline are difficult to design but should focus on the three core properties of an effective market arrangement: (i) the coordination of activities among the service users and providers in individual and interrelated payment service markets; (ii) transparency about the contractual terms and conditions for user access to payment services, service levels, and service risks and costs; and (iii) fair and equitable opportunities and incentives for similar individuals and organisations to participate in the same payment service markets. Specific reform initiatives in these market arrangements should be planned, designed and prioritised for implementation based on the emerging payment needs of the country’s system.

(i) Develop mechanisms for market coordination

Market coordination requires that service providers and users have the opportunity to accept, reject or negotiate the terms and conditions for transactions. In practice, this is done through representative banking, business and consumer groups, not just on an individual user and provider basis. Clear direction as to the acceptable balance between cooperation and competition within the industry groups, such as a national banking association, and between the industry and consumer groups would be required for retail and wholesale payment service markets. Competition and consumer protection laws related to unfair pricing and marketing practices are useful in this regard. Together, the banking and other groups can help develop an effective operating framework for payment service markets by formulating the market conventions, standards and procedures for market transactions. An example of such a cooperative group is Germany’s Central Credit Committee described in Box 12.

Box 12

Country example: Germany's Central Credit Committee

The **Central Credit Committee** (CCC) of the banking industry is one of the most important forums for discussing banking and payment issues in Germany. Within the CCC:

- the Business Management Sub-Committee is responsible for legal issues, standards and regulations for payments and payment systems; and
- its Working Group on Automation (chaired by the Bundesbank) coordinates discussions on enhancing payment efficiency and safety.

The Bundesbank cooperates closely with banking industry groups on payment matters and relies on them to:

- initiate and implement payment system standards and state-of-the-art technologies; and
- establish industry-wide agreements relating to operational, technical and legal standards for payments and payment processing, which legally bind the Bundesbank and the banking associations' members.

Examples of specific contributions to market development through cooperation among these groups would be: (i) industry codes of business conduct and consumer protection for payment service providers; (ii) format standards for payment instruments that facilitate efficient choice for users and clearing for providers; (iii) coordination of schedules among providers for the introduction of fundamentally new payment instruments and services that involve new payment infrastructures; and (iv) formulation of model provider-user contracts for payment services. Model contracts need not be mandatory but should propose which terms and conditions are standard and which are bank-specific and potentially negotiable, such as price and service levels. These groups can also be influential in the development of new laws governing payment service markets since they provide a forum for obtaining consensus among individual market participants and a focus group for consultation by the authorities.

(ii) Develop mechanisms for market transparency

Market transparency promotes effective market competition and discipline by making information relevant to service users and providers accessible and clear to all. Most critical to market effectiveness is information on: (i) competition and consumer protection laws, including complaint and resolution procedures and costs; (ii) system-wide contract standards for payment services, especially with regard to consumer rights and provider obligations; (iii) clear disclosure of bank-specific contract terms and conditions, especially all-in user costs and service levels; and (iv) industry codes of conduct and practices. Less critical but useful information for service providers and central banks especially are periodic data on payment volumes and values through the various infrastructure arrangements and on instrument usage in various financial and commercial transactions. Accompanying information on indicative user-pricing for various payment instruments and services would also furnish valuable market benchmarks for service users and providers.

Various industry groups and public authorities are helpful in obtaining this information. Central banks that operate payment infrastructures have some of this information as well. Since there are costs to gathering, processing and publishing this information, there is often reluctance on the part of industry groups and their members to provide it. Even so, industry-wide information on payment instrument and service usage allows individual payment service providers to assess their own competitiveness and plan their own particular business and market strategies. It can also help inform the industry groups, central bank and other authorities about the needs for future developments in the payment system.

(iii) Develop conditions for appropriate market access

While effective payment service market organisation and transparency may involve cooperative group behaviour, market transactions are still between a single service provider and user. Individual users have choice and some degree of market sovereignty, and providers are subject to some degree of market discipline if similar participants have equitable access to the organised service markets. This implies similar participants face the same market conditions for access, pricing and risk-sharing. Some of these conditions would be based on market regulation, others on market practices.

Access conditions are possibly the most influential factor determining the balance between cooperation and competition in the various markets. Cooperation is generally enhanced through the participation of relatively homogeneous entities involved in a common activity, where there is usually some form of financial risk-sharing and prudential regulation involved. Thus, generally only banks, or similarly regulated financial institutions, have access to payment clearing and settlement arrangements. Competition is generally enhanced by broad access with relatively few regulatory restrictions on participation. Market restrictions, such as those involved in tiered infrastructure arrangements, are more prevalent and often require regulatory monitoring to limit their existence. In end user markets and certain payment transaction networks, the range of service providers and users can usually extend beyond banks, as noted in Guideline 2.

(iv) Central bank contributions

The central bank can play a useful role in all of these implementation approaches. For example, central banks generally participate, or at least cooperate with, banking associations and other industry groups on policy matters. They can ensure that issues related to the development of various payment service markets become part of the agenda for the relevant groups. If no such groups yet exist, the central bank can help establish and organise them. A particular helpful role for the central bank, through its oversight function, would be to use these groups in promoting an appropriate balance and direction for cooperation and competition in the various payment service markets.

With respect to transparency, the central bank can take the lead as a service provider in publishing the terms and conditions for access to its own payment infrastructures and services. The central bank can also propose legal reforms that would require all payment service providers to disclose the terms and conditions of their service agreements and that would develop effective resolution and enforcement mechanisms. Indeed, it might even encourage banking associations to set up their own consumer complaint and resolution facility to complement an industry code for consumer protection. In terms of transparency with regard to payment instrument and flow data, the central bank can also take a lead by publishing the data available to it through its own infrastructure operations, while complying with confidentiality agreements regarding individual participants. It might also share in the cost of other industry-generated payment data by negotiating reporting formats and schedules and by processing and publishing the data on the industry's behalf.

Finally, the central bank can take the lead again on access to markets by ensuring that its own service contracts are non-discriminatory for all eligible participants of the same class and as standardised as they can possibly be. It can also propose that general competition and consumer protection laws extend to payment and related banking service markets in the absence of such laws specific to banking and financial markets.

Guideline 8: Involve relevant stakeholders: *encourage the development of effective consultation among relevant stakeholders in the payment system.*

Explanation: As indicated in the previous guidelines, consultation with stakeholders is an important tool for strategic planning and for the development of effective payment service markets. It is an effective vehicle for acquiring information on emerging trends and developments in payment service needs, technologies and service market opportunities and issues and helps educate central banks and other key stakeholders on policy issues, proposals and initiatives for payment system development.

The major stakeholders involved in a consultation process, besides the central bank, should include: (i) consumer, retail, private and public sector cash management associations and their major participants as key user groups; (ii) banking, securities, funds management and payment associations, as well as some of their principal industry participants as key service providers; and (iii) financial infrastructure organisations such as payment transaction, clearing and settlement network operators and securities exchanges, broker associations, and settlement system operators. Consultation with other public authorities is discussed in Guideline 9.

Consultations take place in both structured groups and less formal arrangements. Structured bilateral and multilateral consultations are powerful tools for developing consensus on the common goals and broad directions of reforms. Organising consultation on a structured basis can also help develop an understanding and a trust among the key stakeholder groups that facilitates commitment, collaboration and coordination of effort for future development.

Implementation: As indicated, there is more than one approach to effective consultation. For structured consultation, central banks, banking associations or payment associations in many countries have organised various types of payment and stakeholder advisory groups. They usually function as a high-level, forward-looking, strategic group to: (i) organise background information and research on payment system issues; and (ii) advise on policy initiatives to resolve these issues and to facilitate ongoing development in the national payment system. Participants in these advisory groups representing institutions that play multiple roles in the payment system can often bring to the discussion a comprehensive and coordinated view on critical issues in payment system development from the different perspectives of payment, treasury and securities operations and payment business development.

Cooperative regional bodies of central banks, such as the World Bank/CEMLA group described in Box 13, are also being organised for similar purposes to those of the payment advisory groups.

Box 13

Regional example: cooperation in payment and securities settlement systems

In 1999, the World Bank, in partnership with the Centre for Latin American Monetary Studies (CEMLA), launched the Western Hemisphere Payments and Securities Clearance and Settlement Initiative (WHI). A core element of the initiative is the International Advisory Council (IAC) comprised of experts in the field from several institutions outside the region, including international organisations, central banks and securities commissions. In 2003, the WHI evolved into a permanent forum managed jointly by the Working Group on Payment System Issues of Latin America and the Caribbean (WGPS-LAC), created under the auspices of the WHI, CEMLA, Council of Securities Regulators of the Americas (COSRA), the World Bank and the IAC.

The objective of the forum is to describe and assess the payment and securities settlement systems of the western hemisphere with a view to identifying possible improvement measures in their safety, efficiency and integrity. To carry out this mandate and help ensure quality and effectiveness, all studies are conducted with the active participation of country officials and build on the existing work in the respective countries. Also, through the IAC, international and national experts provide guidance, advice and alternatives to current practices.

Following this model, the World Bank and regional central banks in 2004 launched the Commonwealth of Independent States Payments and Securities Settlement Initiative, and in 2005 the Arab Payments and Securities Settlement Initiative, in cooperation with the Arab Monetary Fund.

Other consultative groups involving network operators and major participants are often organised privately or through the central bank. Often, these types of groups establish specific forums with more focused interests in particular elements of the payment system. Such forums may cover: (i) strategic planning; (ii) payment technologies and standards; (iii) market development and risk management; and (iv) regulatory and oversight coordination.

Guideline 9: Cooperate with other authorities: *effective payment system oversight by the central bank requires collaborative arrangements with other authorities.*

Explanation: Although the central bank has oversight responsibility for the national payment system, it is not typically the only public agency with influence on the system. Other authorities and regulatory agencies can influence the efficiency and competitiveness of payment service markets and the risk management practices and customer relations of various financial institutions providing services in them. These agencies include:

- banking supervisors that assess and regulate the financial risk management practices of financial institutions participating in network infrastructures and providing payment instruments and services to end users;
- securities regulators and self-regulatory organisations (SROs) that deal with the client service and prudential risk management practices of securities brokers and fund managers and with some aspects of the business conduct of securities organisations;
- competition regulators that focus on anticompetitive business practices of various types of business organisations, including those that provide payment infrastructure services;
- Treasury or Finance Ministry departments that sponsor the legislation and other statutory instruments underpinning the legal and regulatory framework for the payment system; and
- consumer affairs agencies that influence contract terms for payment accounts and services and protect the contractual rights of clients with their financial institutions.

Combining the payment system-specific expertise of the central bank with the other agencies' expertise on other aspects of financial institutions' operations and market conduct can often improve the quality of public policy affecting payment systems. In addition, the development of the national payment system can be more efficient when the central banks and these other regulatory agencies coordinate relevant policy initiatives. Where the mandates of the central bank and other authorities have the greatest synergies, these collaborative arrangements could be structured for regular interaction.

Implementation: The purposes of cooperative arrangements between central banks and other authorities are to: (i) discuss payment system development trends and initiatives; (ii) consider their interaction with existing laws and regulations and implications for new ones; and (iii) coordinate regulatory and payment system oversight policies to facilitate and influence system development. Collaborative arrangements exist in several countries, and also internationally between countries. They are most commonly organised around central banks, banking supervisors and securities regulators. In some countries, they include competition or Treasury authorities if their specific statutory mandates have direct influence on payment service markets and payment system development.

The collaborative arrangements have different forms. The form depends on the constitutional and administrative arrangements of the country's governance and on the preferences of the participating agencies. Some are formal - through statute or memoranda of understanding - and multilateral. Others are informal, ad hoc and bilateral. Often, central banks are involved in both types of arrangements with different agencies, depending on which is most cost-effective for the agencies involved.

Box 14 outlines some of the basic elements for a formal cooperative arrangement between the central bank and other relevant authorities.

Box 14

Basis for cooperation between authorities

Cooperative arrangements should:

- outline motivation and purpose (eg an ad hoc or standing, mutual exchange of information, advisory or policy coordination) of the committee;
- state the organising principles:
  - autonomy with respect to individual statutory responsibilities;
  - compliance with generally accepted principles for cooperative oversight arrangements (eg Lamfalussy Report (1990), CPSS oversight principles (2005));
- detail its organisational structure and state its general practice guidelines, including:
  - primary organiser;
  - level of participation;
  - determination of agenda;
  - responsibilities and commitments of participants;
  - transparency of discussions and recommendations;
  - communication policy.

Where there are already existing bilateral or multilateral arrangements with other agencies for reasons other than payments policy, such as financial sector committees or financial system stability committees, central banks could propose incorporation of payment system policy discussions when required. If no such arrangements exist, the central bank could organise an arrangement for periodic meetings between central bank oversight authorities, banking supervisors and other relevant agencies to coordinate policy for payment system developments.

Guideline 10: Promote legal certainty: *develop a transparent, comprehensive and sound legal framework for the system.*

Explanation: The legal framework for a national payment system is the body of law which determines the rights and obligations of parties in the system, whether established by legislation or other statutory instruments, common law, administrative law, contracts (including system rules), or international treaties and regulations. It deals as well with the transfer procedures and resolution of disputes regarding instruments, services, organisational arrangements and governance procedures for transferring and settling obligations with finality. A sound legal framework for the national payment system reduces the legal uncertainty and risk for the participants in payment infrastructures and service markets.

The legal framework involves laws of general applicability (such as property, contract, corporate and insolvency laws) that affect the payment system, as well as those that are specific to it (such as payment legislation, netting laws and clearing house rules). In addition, it includes the legislative and judicial arrangements for establishing, interpreting, adjudicating and enforcing those laws. Box 15 outlines a basic legal framework for the national payment system.

Box 15

A basic legal framework

Laws of general application which support a payment system:

- Property and contract laws - established through common law (jurisprudence) or applicable legislation (including a civil code) that create legally enforceable rights and obligations to make and receive payment.
- Banking and finance laws - establishing the rights and obligations of financial institutions to take deposits, make loans, grant and take collateral security, and hold and deal in securities.
- Insolvency laws - establishing the rights and obligations of creditors of an insolvent entity.
- Laws on the use of credit and collateral - including credit terms (interest rates, duration, rights on default), debtor's rights, and the creation, realisation and priority ranking of rights in collateral.
- Laws for determining which jurisdiction's laws apply - including contractual choice of law clauses and conflict of laws rules.
- Laws on electronic documents and digital signatures.

Laws specific to payment systems:

- Laws specific to payment instruments - including currency laws, bill of exchange and cheque laws, electronic payments laws, regulations against unfair payment instruments and services, and rules establishing instrument standards (size, configuration, coding).
- Laws relating to the calculation and discharge of payment obligations - including netting, novation, finality of payment and settlement.
- Laws on default proceedings and disputes in payments - priority ranking of payment settlement claims, settlement guarantees and loss allocation agreements, priority rights to collateral for settlement credit, evidence laws regarding electronic payments, and dispute resolution mechanisms such as arbitration clauses.
- Laws related to central bank oversight of the national payment system.
- Laws relating to the formation and conduct of infrastructure service providers and markets - formation and operation of clearing and settlement arrangements, access and participation in infrastructure systems, pricing of infrastructure services, rules on the issuance and redemption of e-money, and protection of central counterparties from risk.
- Laws governing securities infrastructure services - addressing dematerialisation and immobilisation of securities, book-entry holding and transfer of securities, delivery versus payment, finality of transfer and settlement.

Annex 4 lists the types of laws generally considered to be important for various aspects of the legal framework of a national payment system.

Implementation: At a minimum, a basic legal framework of laws of general applicability is necessary for safe and efficient payment system development. If not already in place, particular priorities for legal reform should be property and contract laws, banking and finance laws and insolvency laws. Some of the key issues that should be considered to guide these reforms are the following:

- the control of legal risk to users, participants and providers through general contract instruments;
- the recognition of basic contractual rights among participants in network infrastructure arrangements and market relationships under insolvency laws; and
- the additional legal risks in using the same applications of general law to accomplish specific public policy objectives other than legal risk control in payments.

(i) Adapt the legal framework to system development

The type of legal instrument (private contract or public legislation) should be appropriate to the need of the system. As the payment system develops, so too must the legal framework. Legal reform in the payment system could be based on relevant "model" laws developed by international legal organisations or comparable to laws of other countries.

As the system develops, laws of general applicability may need to be supported by payment-specific laws. For example, for systemically important infrastructure arrangements, legal risk control for the system and its participants may move beyond the capability of general contract law. In this case, specific payment legislation can provide a degree of certainty that contracts and the common law cannot. An appropriate legal framework is particularly critical for large-value payment and securities settlement systems. The exposure of the participants in these arrangements to extremely large potential losses relative to their liquidity and capital positions subjects them to the risk of systemic failures in the event of legal challenges. Consequently, such systemically important network arrangements should have sound legal protection for finality, payment netting, settlement and collateral security to ensure the certainty of settlement and limit system-wide losses in the event of a default.

As the range of participants in the payment system expands, contractual rules among payment network participants may still be sufficient to govern their mutual rights and obligations in the event of an insolvency of a network member. They cannot be relied on, however, to govern the rights and obligations of indirect participants or non-participants in the network that also may have competing claims on the estate of the bankrupt network member. If this becomes a concern, new legislation, either through amendment to existing laws or new statutes, may be required to deal with it.

(ii) Develop the legal framework through consultation

To be most effective, the substance of the law should be consistent with acceptable payment practices of providers and users and be sufficiently flexible to avoid major amendments resulting from new developments, at least over the near-term. Accordingly, consultation both with the stakeholder groups (service providers, users, system participants) and with regulators and legislators is necessary for fundamental reform to the legal framework. Broad consultation limits the risk of legal initiatives producing unintended consequences. Political momentum for legislative reform related to the payment system also requires effective consultation between legislators and authorities such as the central bank and legal experts.

(iii) Make the legal framework transparent and accessible

In an effective legal framework, the relevant laws are transparent to stakeholders. This requires the clear drafting of legislation, regulations and system rules and the use of widely-accepted standard form agreements. The laws and regulations also need to be easily accessible to all stakeholders, which requires their broad publication. They are well communicated to relevant judicial and enforcement personnel and backed by effective enforcement mechanisms and sanctions through civil, criminal or administrative proceedings.

(iv) Develop a legal basis for central bank oversight

The legal framework can also be important to the central bank's oversight function in the national payment system. Central banks can derive their oversight responsibilities and powers from explicit statutory or contractual instruments or from general agreements on their functional mandate. The legal framework for the payment system needs to support the central bank's oversight function. With this in mind, laws or other statutory arrangements could be established to: (i) authorise and empower the central bank to oversee, and possibly regulate, the payment system; (ii) ensure that financial institutions and payment networks effectively manage their financial and operational risk; and, (iii) require payment systems and financial institutions to conduct operations consistent with applicable regulations in order to support safe and efficient payment and financial systems markets. The central bank would need to contribute significantly to the development of these laws in consultation with legislators and other relevant authorities.

(v) Central bank contributions

Where legal expertise on payment systems from other sources is limited, the central bank could monitor legal developments and identify critical legal issues that may have impact on the payment system. Under some circumstances, it might even occasionally report publicly to stakeholders on the status of the legal framework for the payment system. In conducting this exercise, especially when the payment system is undergoing significant change, the central bank should assess whether a particular aspect of a payment system requires specific legislation or regulation or if it can be left to the common law or private contract.

Suggested references for developing the institutional framework for a payment system

Balto, D and J McAndrews (1998): "Joint venture payment networks and public policy", in *Payment systems in the global economy: risk and opportunities*, 34th Annual Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, 1998.

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3.4 Developing the infrastructure for a payment system

The core infrastructure in a national payment system refers to its transaction, clearing and settlement arrangements. These infrastructure arrangements consist of network facilities, information technologies, operating procedures and rules for: (i) providing access to payment instruments; (ii) payment initiation and transaction services; and (iii) processing, clearing and settlement services for these payments. They provide services either directly to the financial institutions that own, operate or simply participate in their network arrangements or, as is sometimes the case for transaction infrastructures, directly to the clients of these participating institutions. The principal services provided by the different infrastructure arrangements are outlined in Box 16.

Box 16

Payment infrastructure services

Transaction infrastructure provides services to create, validate and transmit payment instructions by:

- verifying the identity of the parties involved in the transaction, sometimes using encryption technologies;
- validating the payment instrument against accepted standards;
- verifying the ability to pay;
- authorising the transfer of funds between the payee's and the payer's financial institutions;
- recording and processing payment information; and
- communicating the information between the institutions.

Clearing infrastructure provides services to transmit, reconcile and in some cases confirm payment orders between financial institutions and calculate inter-institution payment settlement positions by:

- sorting and matching payment transactions between institutions;
- collecting, processing and aggregating payment data for each institution;
- storing payment data reports and transmitting them to each institution; and
- calculating gross or net payment settlement positions (payables or receivables) for each institution.

Settlement infrastructure provides inter-institution funds transfer services by:

- collecting and checking the integrity of settlement claims;
- verifying the availability of funds for settlement in the participating institutions' accounts at the settlement bank;
- settling the claims through funds transfers on these accounts at the settlement bank; and
- recording settlement and communicating it to the participating institutions.

These infrastructure services are relevant to all types of payments. However, the specific nature of the services and the design of the infrastructure arrangements providing them can vary across national payment systems and even across payment instruments within a national system. The most notable differences in payment infrastructures are between retail payment and large-value payment systems. For example, in retail payment systems, transaction infrastructures are somewhat instrument-specific and, therefore, become more diverse as the retail payment system develops. In large-value payment systems, electronic credit transfers are typically the only payment instrument and the transaction infrastructure is generally proprietary to individual banks and highly computerised.

Reforming retail payment, large-value payment and securities system infrastructures may all be critical for a country's financial and economic development. But, with limited development resources, where to start is a difficult decision. The focus could be on the development of automated clearing houses in retail payment systems as a priority or on developing a specialised large-value payment system. The large-value payment system could be developed ahead of the securities settlement system, or they could be developed in parallel. There is no simple, universal plan applicable to every country. Again the answer depends on a realistic assessment of the current and emerging payment needs and capabilities of each country; and the guidelines for infrastructure development reflect this. These infrastructure guidelines focus on general conditions and approaches for:

- developing retail and large-value payment infrastructures;
- coordinating infrastructure development for securities and large-value payment systems; and
- coordinating the settlement processes of core systems.

Guideline 11: Retail – give more choice to more people: *extend the coverage and choice of non-cash payment instruments and services available to end users by expanding and improving infrastructures.*

Explanation: The development of a country's commercial, industrial and financial sectors generally increases demand for greater diversity and use of non-cash retail payment instruments and services. Reform initiatives in retail payments would need to focus, therefore, on enhancing the availability to users of various retail payment instruments and services cost-effectively and on promoting safe and efficient delivery, clearing and settlement service arrangements. These services can only be supplied through reliable, secure and efficient infrastructure arrangements for the transaction, clearing and settlement of retail payments.

Development initiatives for transaction arrangements in the retail payment reform programmes might need to aim at:

- enhancing access for users, through the day and over more locations, to the most basic payment instruments and accounts;
- widening accessibility to a range of standardised paper or electronic payment instruments, especially with respect to credit transfer instruments;
- establishing legally sound service agreements for providers and users with regard to payment accounts and instruments and network participation; and
- improving interoperability among point-of-sale transaction networks for specific types of payment instruments, notably payment card and ATM networks.

For clearing and settlement arrangements, useful development initiatives could involve:

- improving interregional payment clearing and settlement through interconnection of regional clearing houses and, if possible, national clearing facilities;
- integrated settlement account management systems for regional central bank branches and ultimately the development of a nationwide centralised account administration system;
- setting common standards for particular types of payment instruments and common clearing house standards and procedures for clearing different types of retail payment instruments; and
- developing rules and procedures for the settlement of retail payment obligations that balance efficiency, reliability and financial safety of settlement arrangements reasonably for the capabilities of the participating institutions.

Important reform initiatives common to all core infrastructures should relate to:

- specifying policies that ensure equitable access to infrastructure services, particularly with respect to institutions participating directly in the infrastructure network;
- strengthening governance of the core infrastructure arrangements to reflect the needs of all financial institutions participating in them, and not just the largest;
- improving the transparency of rules and procedures and of operational and financial risks; and
- strengthening risk control and risk-sharing arrangements and the resiliency levels and business contingency plans for network operations.

Implementation: The banking sector and other relevant private sector service providers, such as those in the telecommunications industry, will be expected to play a major role in implementing many of these reforms. The process should not be vendor-driven, and all stakeholders should be involved in defining the specifications and needs. The central banks would need to contribute to the process and, possibly, take a lead role in catalysing the private sector and the authorities to undertake certain reforms. But, it should not necessarily aim to be the sole, or even principal, developer of the transaction infrastructures or the sole owner and operator of all clearing and settlement infrastructures.

Implementing many of these reforms will involve changes in information processing and communication technologies for some countries. All will likely involve institutional changes in: (i) operating rules and procedures for network arrangements; (ii) service market conventions, procedures, agreements and participation; and (iii) the legal framework for retail payment systems.

(i) Standardise, automate and interoperate

Reform objectives and implementation approaches for retail payment transaction infrastructures were discussed in Guideline 2 in reference to banking system development, since most are bank-owned and -operated, and in Guidelines 7 and 10 on payment system market arrangements and legal frameworks. The focus in this guideline is on implementing technical and procedural reforms for retail payment infrastructures. There are three general approaches to expanding user access to retail payment instruments through clearing and settlement arrangements that can, at the same time, enhance the efficiency and reliability of these arrangements. These are standardisation of instruments, automation through adoption of IT technologies, and interoperability of networks. Box 17 outlines some techniques for implementing these approaches.

Box 17

Development initiatives in retail payment infrastructure

Automated and standardised payment transaction infrastructure: Electronic communication networks, such as those for various types of card payments and for telebank and internet payments, allow customers real-time initiation and authorisation of retail payments. Common initiatives for developing these networks include:

(i) the creation of standardised transaction and transfer processes for paper-based instruments bank-wide and nationwide that are efficient, reliable and predictable;

(ii) the introduction of electronic payment transaction networks as a substitute for branches to lower transaction costs and allow users a choice among alternative instruments and their related access and transaction services; and

(iii) the introduction of technologies and processes that digitise paper instruments for electronic clearing and settlements.

Interoperability among transaction infrastructures: The interoperability of some competing network arrangements or their consolidation into single systems can achieve scale and scope economies and reduce user cost with:

(i) the adoption of common standards for instruments, communication and transmission security for all networks providing interoperable services;

(ii) the facilitation of interconnectivity among proprietary network arrangements, notably ATM and EFTPOS networks, to increase low-cost accessibility to customers of all participating banks; and

(iii) the adoption of common equipment (eg hardware and switch) and software standards to allow interoperability at point of sale (ie ATMs, card readers, internet connectors) among competing networks.

Interoperable and automated retail payment clearing and settlement infrastructures: Achieved through common interconnected information technology and often through actual centralisation or consolidation of existing arrangements. Common initiatives for developing these infrastructure arrangements include:

(i) the establishment of national or regionally interconnected automated clearing houses to help lower the cost and improve the speed, reliability and predictability of retail payment clearing and settlement; and

(ii) interoperability or centralisation of interbranch and interbank payment clearing and settlement through regional and national centres that:

- clear and settle within-region interbranch payments on their own bank's books and interbank payments at the central bank's regional or national facility; and
- reconcile any regional settlement accounts of participating banks at the central bank through the account management systems of the central bank and participating commercial banks.

(ii) Develop legal and regulatory support

While many of the reform initiatives for enhanced automation and interoperability seem largely technical and procedural in nature, they may in fact require legal or regulatory changes to proceed without undue legal risk or regulatory barriers. Common examples would include a legal basis for electronic payments and authorisation of non-bank payment service providers. The stakeholder consultation, payments advisory and policy coordination mechanisms involving private and public sector organisations discussed in Guideline 8 should be used to initiate and facilitate the elimination of any legal and regulatory barriers to market access, automation and interoperability. Key legal and regulatory barriers that should be addressed include those that effectively prevent:

- the authorisation of non-bank providers of retail payment instruments and transaction services to end users or even their indirect access to clearing arrangements;
- the "digitisation" and migration of paper instruments into standardised electronic payments;
- the migration of some large-value payments, such as government payments, to safe and efficient instruments and infrastructure systems; and
- the full adoption of accepted international standards for electronic payments and infrastructure design.

(iii) Central bank contributions

The central bank, as noted above, should be a catalyst for many of these reforms. However, it can also facilitate some of these reforms through its operational function. For example, a central bank should, at minimum, provide facilities to settle interbank cumulative or net obligations arising from the banking system's retail payment operations. Minimum facilities would include settlement accounts and appropriate arrangements for central bank credit. The central bank could also develop policies to ensure that newly emerging authorised providers of retail payment instruments and services have access to the central bank's clearing and settlement facilities. To help insulate the retail payment system from systemic risks as the value and volume of large-value payments rise, the central bank might consider setting limits on the value of individual payments that it will accept in its own clearing arrangements.

As a fiscal agent of the government, the central bank could advise it about the best procedures for transacting, clearing and settling its retail payments through the automated retail payment system. These government payments would not only transact, clear and settle more efficiently and securely but might also help establish new initiatives for improving infrastructure arrangements and even prompt further ones.

The central bank might also contribute to the development of the infrastructure arrangements and service markets through its oversight role. In particular, it could help design and monitor the development of standards for retail payment infrastructures.

Guideline 12: Large value – business case leads, technology follows: *develop a large-value payment system based primarily on the needs of financial markets and the growth in time-critical interbank payments.*

Explanation: A national payment system requires a core infrastructure for the transfer of interbank payments, and, as the development of financial markets progresses, a large-value payment system becomes the most appropriate infrastructure for interbank payment transfers. As bank and non-bank financial markets develop, an increasing proportion of large-value interbank payments relate to financial transactions. For example, as the payment system develops, banks typically cooperate in establishing an interbank credit market to redistribute central bank funds from those with excess balances to those in need of central bank funds. Such markets facilitate efficient and timely payment settlement among banks and can lower each individual bank's need for central bank funds.

Large-value payments are also time-critical for participants' ongoing financial transactions because of the impact on their intraday liquidity positions. By speeding up and ensuring final payment settlement, a large-value payment system can help minimise their need to hold costly liquidity. Conversely, the value and volume of payment flows associated with financial and some business transactions can be large enough to threaten the liquidity and capital positions of the financial institutions involved directly in the transactions or in the provision of large-value payment services. It could even impose systemic risks on the financial system as a whole.

The essence of a large-value payment infrastructure is in its settlement network. In a less specialised and more basic system, a default on a settlement obligation by a participant in the settlement network can cause other participants to default on their payment obligations. This might spill over to "contaminate" other payment networks and financial markets. The "contagion risk" is "systemic" to a settlement arrangement that is not designed to mitigate system-wide, and cross-system, financial risk. A principal motivation, therefore, for developing a system specifically for large-value payments is to control the participants' exposures to liquidity and credit losses that can result in systemic risk.

Large-value payment systems are designed to balance three objectives: (i) the rapid settlement of time-critical payments (regardless of value); (ii) minimisation of systemic risk; and (iii) achievement of the largest possible operational and liquidity cost savings for participants. The business case for the type of large-value payment system should be carefully analysed. The design and organisation of the system would depend on the specific payment needs and capabilities of the economy. A decision should not be driven solely by the availability of new technologies; new technologies should be adopted principally for reasons of need.

Implementation: The three key elements for the implementation of this guideline are: (i) the business case and other development planning analyses; (ii) the appropriate design for a large-value payment system; and (iii) the role of the central bank.

(i) Keep the business case analyses realistic

The immediate issue of the implementation for this guideline is not whether there will be a need for a specialised large-value payment system at some time in the future, but rather whether this should be a priority reform for the infrastructures of the national payment system. As discussed in the planning guidelines, the business requirements analysis, the gap analysis and the costs-risks-benefits analysis, which together form the business case for reform, are critical for answering this question.

The business case analyses for a large-value payment system should be focused on whether there is an imminent need for developing a specialised large-value payment system or whether the existing clearing and settlement infrastructure can be adapted cost-effectively to clear and settle the current and foreseeable number of large-value payments in the system. In formulating realistic analyses, the following key factors would need to be considered:

- the current and expected volume and value of large-value and time-critical payments;
- the development initiatives for securities and other financial markets that could spur the demand for large-value payment settlement services;
- the likelihood of systemic risk arising from settlement of large-value payments in the existing settlement system;[3]
- the cost of modifying the existing system to settle both retail payments and large-value or time-critical payments in separate streams relative to the cost of a specialised large-value payment system;
- the nature and cost of the related infrastructure services and credit facilities provided by the central bank in alternative large-value systems; and
- the importance of a large-value system for entry into cross-border trade and financial arrangements and organisations.

The technology costs for installing a basic large-value payment system may not be prohibitive for many network operators. The more significant costs can arise from the required technology and

[3] There are a variety of methods to measure liquidity, credit and systemic risks in a payment system. More simple ones are backward-looking measures of loss exposure in absolute or relative terms rather than forward-looking measures of probable loss. More sophisticated measures of systemic risk utilise "simulation models" of the payment settlement infrastructure that consider the patterns of bilateral payment flows among network participants as well as their liquidity and credit loss exposures relative to their liquidity and capital positions.

procedural changes within the internal systems of network participants and the less visible costs of developing and implementing the institutional reforms needed in the national payment system.

(ii) Choose an infrastructure appropriate for payment needs

The development of the large-value payment system need not always involve substantial changes in the current arrangements. Existing facilities and service technologies may, in some cases, be adapted to the specific requirements for the safe and efficient settlement of large-value payments, including those related to monetary policy transactions. For example, this might involve development of a multi-stream clearing and settlement system with at least one of the streams dedicated to large-value and time-critical payments. However, if the large-value system were developed within an existing infrastructure, it would need to have separate rules and risk mitigation controls designed specifically for safe and efficient settlement of such payments.

A realistic analysis might, however, indicate the need for a separate specialised large-value payment system. This may reflect the development of innovative and cost-effective technologies for clearing and settling payments safely. The 2005 (forthcoming) CPSS report entitled New developments in large-value payment systems describes various designs for specialised large-value payment systems. It examines different types of real-time gross settlement systems and other types of large-value payment systems that combine real-time settlement of individual payments with deferred net interbank settlement transfers. Some of these systems even offer multiple settlement streams, each involving some form of real time gross or net interbank settlement transfers.

The financial risk containment in all of these systems is largely based on the legal definitions of: (i) individual payment finality in real time; (ii) the finality of interbank settlement; (iii) the novation of gross into net obligations for deferred interbank settlement; and (iv) collateral security for credit, liquidity provision, loss-sharing and settlement guarantees. Operational risk containment is based on sound business continuity arrangements in accordance with emerging international "best practices" regarding backup facilities, maximum recovery times, physical site security, information security and cyber-security. Mechanisms, such as queuing algorithms or netting arrangements, are interoperable with the risk containment mechanisms and compatible with their legal basis.

All the systems described in the CPSS report on large-value payment systems can be fully compliant with the CPSS Core Principles for Systemically Important Payment Systems (CPSIPS (2001)), which is a critical requirement for the design of any large-value payment system.

(iii) Central bank contributions

The central bank will need to contribute substantially to the development of a large-value payment system. For example, in terms of its operational role, the central bank should, at a minimum, develop its own facilities to provide: (i) deposit accounts to use as the settlement asset between participating institutions in the large-value settlement network; (ii) intraday and overnight settlement credit to network participants; and (iii) expertise on the design of risk control and risk management procedures for the system. Typically, its operational role in large-value payment systems is even more extensive. Central banks could own, or operate, a large-value payment system. Often, it is the country's only specialised large-value payment system but, in some cases, the central bank's system competes with privately operated systems.

Central banks choose to own and operate a large-value payment system for various reasons. In some cases, the design of the system - a real-time gross settlement system, for example - can be easily integrated with the central bank's internal systems for operating and managing the settlement and credit accounts that the network participants hold with it. It may also be efficient for specifically preferred monetary policy implementation procedures if the central bank operates the large-value payment system. Indeed, whether or not the central bank operates the system, all its monetary policy transactions and other interbank transactions, as well as the large-value and bulk payments of government agencies, should settle over any existing safe and efficient large-value system. Finally, because of the systemic importance of a large-value payment system to the financial system generally, the central bank may choose to operate a large-value system directly to better ensure and enforce compliance of network participants with the rules and procedures for network safety and efficiency.

Whether a large-value payment system is privately run or owned and operated by the central bank, the central bank should oversee it. The central bank's oversight of a large-value payment system should utilise accepted international standards for the design and operation of these systems, such as the CPSS Core Principles and OECD Governance Standards. In doing so, a central bank could oversee:

- the legal, technical, procedural and organisational design of the large-value system in reference to the CPSIPS;
- the infrastructure service arrangements including: (i) the terms for access to settlement facilities; (ii) the principal features of the account and credit facilities; (iii) service levels for settlement network participants; and possibly (iv) the network pricing policies and methodologies; and
- the system's compliance with accepted international technical standards for secure communications (ie SWIFT standards) and identification (BIC, IBAN, ISIN).

In designing and reforming a large-value payment system, even one that it might not own or operate, the central bank can also perform effectively as a catalyst for necessary action by other organisations and authorities. For example, it could facilitate consultation with:

- banking organisations, to help identify and assess their specific needs and preferences for different cost-saving and risk mitigation features for a large-value system;
- IT experts and service providers, to develop the specific IT solutions for the clearing and settlement network in the system;
- legal experts and relevant regulatory agencies, to formulate a sound legal and regulatory framework for a large-value payment system; and
- securities authorities and organisations, to help integrate the large-value payment and securities system infrastructures to facilitate safe and efficient payment for financial transactions.

The central bank might also use the large-value system to facilitate the development of interbank credit and money markets. It could do so by: (i) issuing and trading short-term credit instruments on behalf of the government or its own account; (ii) using these credit instruments to implement monetary policy through market transactions; and (iii) effectively disseminating interbank market information for transactions between market participants.

Guideline 13: Securities – plan securities and payment systems together: *coordinate the development of the infrastructures for securities and large-value payments.*

Explanation: Large-value payment systems and securities settlement systems interact with one another. For example, to settle their upcoming payment obligations efficiently and with minimum settlement risk, the participants in a payment settlement infrastructure may need to borrow central bank funds either from the central bank itself or from other participants. In many cases, such credit extensions are collateralised, which requires securities settlement systems that are able to transfer collateral quickly and with finality. For effective delivery versus payment in securities settlement, the cash leg of the securities transaction must settle with finality. In order for the interactions between the large-value payment system and the securities settlement system to be efficient and safe, both systems should be capable of executing transactions in a timely, secure manner.

The complexity of the infrastructure arrangements for securities systems can, however, create unique challenges for the immediate, secure and final transfer of securities. For example, these arrangements can involve separate organisations for the provision of the securities transaction, registration, custody, depository, clearing and settlement services. Even so, securities settlement should be developed in full compliance with the CPSS-IOSCO Recommendations for Securities Settlement Systems and for Central Counterparties.

Box 18 outlines the basic aspects of the securities infrastructure relevant to the payment system.

Box 18

Infrastructure for the securities system

Trading systems

- Retail trading systems link customers to dealers through a variety of dedicated telecommunication systems for order placement and confirmation and link the dealers involved in the customer trades through a variety of centralised and decentralised transaction systems. They are accessible only to participating dealers and now usually involve electronic trading and trade administration systems.
- Wholesale trading systems are designed for large-volume-and-value inter-dealer transactions, often for their own accounts. The most basic systems are telephone or computer-based and screen-based broker systems.
- Other systems, sometimes called alternative trading systems, feature quote-driven, electronic order-book and trade matching systems. Retail systems directly accessible to individual customers display customer trade bid-ask quotes and volumes and the bilateral trades are entered and confirmed through internet-based connections to the network's central facility. Similar systems are also used for inter-dealer trades.

Registration and custody

- Securities registration is a service provided to a securities issuer, for each security issued, to record the identity of securities owners and their positions for the purposes of distributing entitlements (interest and dividend payments; rights, warrants and options) to holders. Securities registrars may also issue the physical or electronic securities certificates to the registered holders or their registered agents (ie brokers, investment dealers or custodians acting as nominee holders).
- Securities custody is a service provided to securities holders (owners and collateral holders) or their agents to manage their securities inventory accounts and to provide physical or book-entry transfer services related to these holdings. Custody banks also provide securities account administration services to their clients.
- Banks providing custody services may also provide payment-related services to their customers.

Securities depositories

- A securities depository is an institution that holds securities for its members, which generally include custody banks and agents, brokers, investment dealers and investment fund managers. Each member may have securities accounts with the institution.
- Different securities depositories generally have correspondent accounts directly with one another, or through a common custody bank, to facilitate inter-institution delivery through book-entry transfers.
- All inter-member transfers are usually book-entry transfers (ie no physical delivery), and the securities issued may not only be immobilised within the depository but might also be "dematerialised" - issued in book-entry form rather than physical form by the issuer and its registrar.

Securities settlement system

- A securities settlement system (SSS) provides securities clearing and settlement services to its members. Settlement members may include the central bank, commercial and custody banks, brokers, investment dealers and managers. The settlement members hold securities accounts, and possibly a cash/collateral account, with the institution operating the securities settlement system or its settlement agent.
- Securities clearing and settlement involves the calculation of the mutual obligations of the transacting members for securities and cash delivery arising from confirmed trades in various securities. The securities may be settled on an individual transaction (trade-by-trade) basis or on a net basis for each security with corresponding debits in the transacting members' securities and cash/collateral account in the system. The transfer of the securities obligations is against cash payment (now usually on a delivery-versus-payment basis) on settlement date.
- In some systems, an entity called a central counterparty (CCP) becomes the legal counterparty for all settlement members in some types of system trades. The CCP typically holds a cash settlement account at the settlement agent – the system's settlement bank, often the central bank. It receives funds from settlement members delivering cash and pays out funds to those delivering securities on settlement day.

Implementation: Although the development of the securities system and large-value payment system might preferably coincide, limited resources might well force intensive development of only one of the two. Since large-value systems are critical to a broader range of transactions than just those involving traded securities, notably interbank loans and monetary policy transactions, the initial focus for reform and development has generally been the large-value payment system. Even so, with the knowledge that securities system reforms will need to follow, the development of the large-value payment infrastructure and that of the core securities infrastructure need to be planned with each other in mind. Since the general guidance is focused on the development of the national payment system, the focus for the implementation strategies for this particular guideline is primarily on what a large-value payment system would require from the development of securities infrastructures to facilitate large-value payment settlement safely and efficiently.

(i) Promote secure interoperability of core securities infrastructures

The efficiency, reliability and safety of operations in registration and custody arrangements are as important to the large-value payment system as to the securities clearing and settlement system. In some arrangements, the participant's securities and cash accounts are held in different systems - the securities account in a securities settlement system and the cash accounts in a large-value payment system. To permit delivery versus payment, which reduces the settlement risk exposure of participants in a securities transaction, the information technologies for the large-value payment system and the securities settlement system need to be highly interoperable. Securities delivery occurs only if cash payment occurs.

If the various securities infrastructure services are provided by separate organisations, initiatives to improve efficiency might therefore include:

- information technologies for book-entry securities transfer rather than a physical delivery, to facilitate efficient delivery versus payment and straight through processing, which can reduce processing errors;
- standardisation and interoperability of their information and communication technologies; or
- possibly centralisation of some services, such as securities depository, clearing, settlement and central counterparty services.

Effective integration or centralisation of various services may help reduce those aspects of operating risk related to coordination over disparate systems but could also increase the concentration of financial and operating risk into a unified technology platform or a single operating entity. Consequently, the greater the degree of interoperability among core infrastructures for securities and large-value payment systems, the more important are the resiliency features and business continuity arrangements for the infrastructure development programmes.

(ii) Design securities settlement system for efficient and safe settlement of payments leg

There are a number of designs for securities settlement systems that could be integrated with large-value payment systems. In some securities settlement systems, the participant holds both securities and a cash account. Delivery versus payment is simple in such a system for individual transactions but, without legal and financial protection for final settlement, the cash leg of settlement for individual transactions may be more risky than in a system where cash settlement is in central bank funds. Typically, the cash accounts in these systems are funded and defunded through payment transfers settled over large-value payment systems. Securities settlement systems that do not provide participants with a cash account need to be highly integrated with a large-value payment system that can readily access the participant's settlement account to ensure securities settlement on a delivery versus payment basis.

As with large-value payment systems, there are various designs for securities settlement systems that balance efficiency and safety differently within the system. Which design is most suitable for a country depends again on its financial system needs and capabilities, the organisation of other securities infrastructure arrangements and, to some extent, the design of its large-value payment system. All would need to provide some form of delivery versus payment and finality of securities and payment settlement. Certain designs might also involve a variety of risk management procedures such as: (i) net debit caps and bilateral credit limits; (ii) legally sound collateralisation of settlement obligations with appropriate margins on securities collateral; and (iii) loss allocation mechanisms and settlement guarantees. More elaborate systems could include real-time information on participants' securities and cash settlement positions, which helps participants manage their securities and cash positions intraday and operators assess the availability of funds and securities for transaction settlement.

Whatever design of a securities settlement system would best meet the country's financial system needs and capabilities, it should be developed to be fully compliant with the CPSS-IOSCO Recommendations for Securities Settlement Systems and Central Counterparties.

(iii) Institutional arrangements need to facilitate cash settlement of securities transactions

The legal framework for a securities system should be a priority for institutional reform. It needs to be as sound as that for a large-value payment system, and the two need to be mutually consistent and supportive. A sound legal framework for book-entry securities transfers and registrations should be quickly established along with the legal basis for securities issuance, custody, pledging and transfer and settlement of securities transactions. Just as for the large-value payment system, a sound legal basis for securities settlement involves: (i) securities settlement finality; (ii) netting and contract novation; (iii) enforceable risk controls, collateral rights, and loss-sharing arrangements; (iv) enforceable securities settlement rules and agreements; and (v) book entry holding and transfer of securities, which might also involve the dematerialisation of securities.

With respect to relevant service market arrangements for a securities system, the legal, regulatory and policy frameworks for access to core securities and large-value payment infrastructures by common participants need to be coordinated early in the reform process. Contractual arrangements between the service providers in the relevant securities and large-value payment infrastructures and the service users should also be reviewed for legal soundness and functional consistency. Legal and regulatory barriers to access and effective service provision to common participants in the securities and large-value payment systems can counteract the efficiency and risk gains from technical and procedural reforms to integrate them.

(iv) Central bank contributions

The central bank might either develop and operate, or be a significant force in helping the private sector develop and operate a securities system that can interact efficiently and safely with a large-value payment system. At a minimum, it should be an active collaborator and adviser in the development of the securities clearing and settlement infrastructure and promote necessary reform in the legal and regulatory regime for the securities system. Focusing initially on government securities can be useful in supporting the future use of the securities infrastructure for corporate issues.

Even if it does not operate securities infrastructures, the central bank would need to participate in them and provide services to them. In particular, it should: (i) use the services of the relevant core securities infrastructures for its own transactions; (ii) act as settlement bank in the securities settlement system; and, where appropriate (iii) provide credit facilities to financial institutions for securities settlement purposes.

As an overseer in the payment, clearing and settlement system, the central bank should formulate an oversight policy for securities settlement with principal focus on system-wide risk control and allocation. It could also establish an accord with securities regulators regarding the oversight of the core securities settlement systems, central counterparty processes, and securities depositories.

Guideline 14: Retail, large value and securities – coordinate settlement: *coordinate settlement processes for the core systems to effectively manage the interrelated liquidity needs and settlement risks among them.*

Explanation: As the infrastructure for retail payment, securities settlement and large-value payment systems develops, the country's principal financial institutions generally become participants in them all. Settlement in one system can, therefore, affect the safety and efficiency of settlement in the others. The institutions typically coordinate and integrate the settlement processes in the core infrastructures to better manage liquidity and settlement risks and costs. For example, individual retail payments are generally batched and usually netted for cost-efficient deferred interbank settlement. Even so, the value of batched retail payments is typically quite large and can be settled between banks as large-value, time-critical payment obligations. Similarly, interbank payment obligations arising from securities and foreign exchange transactions can also be efficiently and securely settled using a large-value payment system.

The effective coordination and inter-linking of the settlement processes for these systems can improve overall cost-efficiency in interbank transfers. Participants in these systems can realise lower liquidity management and operating costs and achieve settlement finality in central bank money. However, it also can increase (i) the interdependency among the systems; (ii) cross-system operational risk; and (iii) the potential for spill-over of intraday spikes in liquidity requirements related to unpredictable payment flows in one of the systems. The potential cross-system risks – the legal, operational, financial and systemic risks - need to be monitored and well managed. This would involve appropriate infrastructure designs, resiliency programmes and business continuity plans, so that systemic risk and cross-system contagion could be minimised.

Implementation: The two principal issues in implementing this guideline are coordinating settlement schedules and processes and managing the cross-system risks.

(i) Coordinate settlement schedules and processes

The appropriate coordination of designated times during the day for the settlement of the retail payments, securities and CLS systems using the large-value payment system depends to a large extent on the operating hours of liquidity markets and the intraday availability of funds. Participants in the large-value payment system need to have sufficient time to fund their intraday settlement requirements smoothly. For example, CLS settlement times are largely predetermined by its around-the-clock operation for around-the-world currency settlement. Securities systems often need to settle late into the day to accommodate same day money market transactions and collateral transfers for intraday credit in large-value settlement systems. Consequently, retail payment settlement may need to be early enough in the day to permit easy access to financing and opportunity for liquidity repositioning for participants. This suggests that:

- settlement times for various systems need to be carefully scheduled, especially when all settle over the large-value payment system;
- operating rules and procedures for the various systems need to be closely coordinated and, if possible, designed to facilitate straight-through-processing of payment instructions; and,
- operating hours for the various systems and for liquidity markets need to be adjusted to facilitate the coordination of the individual settlement processes.

The reforms in the operating conventions and procedures for liquidity markets will likely need to rely on the institutional mechanisms developed for market coordination, transparency and access.

(ii) Manage the cross-system risk

At the very least, the strategies for managing cross-system risk would need to include:

- agreement on communications standards and formats, preferably through the adoption of recognised international standards;
- cost-effective, speedy and reliable communication links among inter-related systems;
- agreements among the inter-linked systems regarding the allocation of legal and financial risks associated with spill over losses from disruption in one of the systems;
- procedures to deal coherently within the outage of primary facilities in each system, typically involving backup arrangements, and of full system outages, such as emergency use of retail payment systems; and
- procedures to deal with breakdowns in the internal computer systems of the major participants, which break their communications' connectivity to the securities custody, clearing and settlement system, large-value payment system and possibly even the retail payment systems.

In addition, the coordination of business continuity plans of all players involved could be organised. For example, this could involve testing of business continuity and contingency arrangements. In these tests, participating institutions fall back onto their backup facilities with the aim of assessing the adequacy of their recovery and resumption arrangements.

Figure 4 illustrates core infrastructure integration with an example from France.

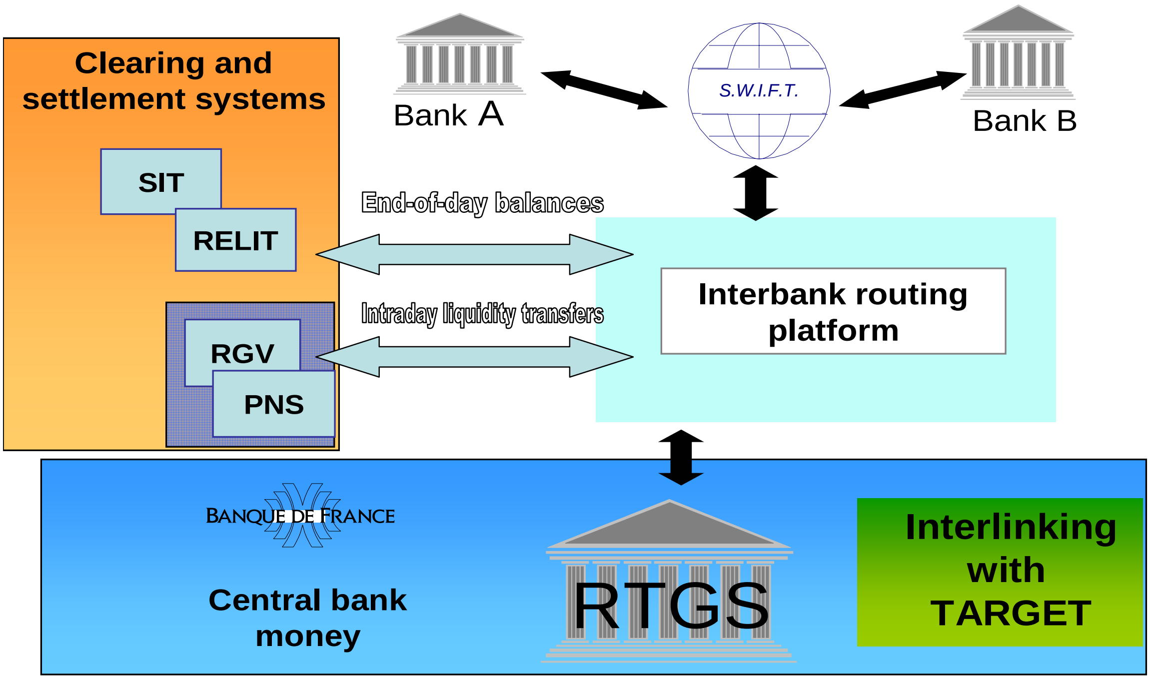
Figure 4

Country example: integration of infrastructure in France

Infrastructure integration

The French payment system architecture is currently comprised of four interbank settlement systems, all of them SIPS, each specialised according to the type and value of payment orders exchanged.

- Large-value payment transactions are settled either via the TBF (Transfert Banque de France) real-time gross settlement system, which is the French component of the European system TARGET, or via PNS (Paris Net Settlement), the real-time net settlement system. Both systems are accessed through a single platform operated by the CRI (Centrale des Règlements Interbancaires), the Centre for Interbank Funds Transfers.
- One single retail payment system exists for all retail payments (cheques, credit transfers under EUR 800,000, direct debits).
- There is a securities settlement system with two channels: one revocable (RELIT) for retail transactions and one irrevocable for monetary policy operations and large-value transactions, mainly on fixed income securities (RGV).



Integrated liquidity and collateral management

Operating days and operating hours are coordinated by means of a time schedule with clearing deadlines and ancillary systems settlement windows.

In addition, a real-time bridge exists between the main payment and securities systems (RGV, TBF and PNS) that involves common use of central bank money allowing the irrevocable transfer of liquidity between these systems without constraint, at any time of the day;

Coordinated contingency procedures

A Financial Crisis Steering Committee, comprised of representatives from the payment and securities settlement systems, ensures that**:**

- all systems have adequate, and overall consistent, contingency procedures; and
- industry-wide simultaneous migration to back-up sites is regularly tested**.**

(iii) *Central bank contributions*

The responsibility for implementation of this guideline would rest primarily with the infrastructure owners, operators and participants, of which the central bank may only be one. However, the central bank needs to accommodate the needs of the system for settlement using central bank services. The central bank could contribute, then, by coordinating its own procedures with those of the other core infrastructures and by providing expertise and advice on the integration initiatives. This could imply even greater flexibility in its existing operating procedures and hours of operation and in its willingness to adopt new service technologies and procedures to facilitate new settlement arrangements in the core infrastructures.

The central bank should also facilitate the discussions and actions among the various infrastructure systems involved in coordinated settlement arrangements. Its principal focus could be the development of a coherent, system-wide strategy for managing integration and operational risk across the core infrastructures.

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Annexes

Annex 1: Guideline statements

Annex 2: Case study Sri Lanka

Annex 3: Elements of a stocktaking exercise

Annex 4: Legal framework and model laws on payments

Annex 5: Glossary

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Annex 1:
Guideline statements

A. Banking system

Guideline 1: Keep the central bank at the centre: *due to its overall responsibility for a sound currency, the central bank has a central role in the development of the use of money as an effective means of payment.*

Guideline 2: Promote the role of a sound banking system: *payment accounts, instruments and services available to end users are mainly provided by banks, which compete individually but often need to act cooperatively as a system.*

B. Planning

Guideline 3: Recognise complexity: *planning should be based on a comprehensive understanding of all the core elements of the system and the principal factors influencing its development.*

Guideline 4: Focus on needs: *identify, and be guided by, the payment needs of all users in the system and by the capabilities of the economy.*

Guideline 5: Set clear priorities: *plan and prioritise payment system development strategically.*

Guideline 6: Implementation is key: *ensure effective implementation of the strategic plan.*

C. Institutional framework

Guideline 7: Promote market development: *the expansion and strengthening of market arrangements is a key aspect of the evolution of the payment system.*

Guideline 8: Involve relevant stakeholders: *encourage the development of effective consultation among relevant stakeholders in the payment system.*

Guideline 9: Cooperate with other authorities: *effective payment system oversight by the central bank requires collaborative arrangements with other authorities.*

Guideline 10: Promote legal certainty: *develop a transparent, comprehensive and sound legal framework for the system.*

D. Infrastructure

Guideline 11: Retail – give more choice to more people: *extend the coverage and choice of non-cash payment instruments and services available to end users by expanding and improving infrastructures.*

Guideline 12: Large value – business case leads, technology follows: *develop a large-value payment system based primarily on the needs of financial markets and the growth in time-critical interbank payments.*

Guideline 13: Securities – plan securities and payment systems together: *coordinate the development of the infrastructures for securities and large-value payments.*

Guideline 14: Retail, large value and securities – coordinate settlement: *coordinate settlement processes for the core systems to effectively manage the interrelated liquidity needs and settlement risks among them.*

Annex 2:
Case study-Sri Lanka

The modernisation of the central bank and its impact on payment system development in Sri Lanka

1. Introduction

The ever increasing complexities in financial systems, the new thinking on economic policies and the role of a central bank in a changing world gave rise to the need for central banks the world over to change and enhance their capacity to perform effectively in their respective economies. Having realised these needs, the Central Bank of Sri Lanka (CBSL) embarked on a modernisation programme in late 2000 to transform itself into a modern central bank and enhance its capabilities to meet challenges.

The modernisation process, which was launched in 2001, was expected to create a lean, modernised and efficient central bank by focusing on its core objectives and functions, upgrading its systems, procedures and governance systems, enhancing the capabilities of employees and establishing a core financial system infrastructure to satisfy the needs of an evolving economy in a manner that would strike a balance among different objectives, such as reducing operational costs, increasing efficiency, ensuring safety and reducing credit, liquidity and systemic risks. As an efficient central bank is crucial to establishing a competitive and prudently managed financial sector, the modernisation of the CBSL also formed an important part of the financial sector reforms of the country. Reforming the payment system was a critical component in the modernisation plan of the CBSL.

2. Changes to the core objectives

Under the modernisation programme, the CBSL redefined its objectives and adopted two new core objectives, viz: (a) economic and price stability; and (b) financial system stability with a view to encouraging and promoting the development of the productive resources of Sri Lanka through an amendment to the Monetary Law Act (MLA) which was effected in December 2002.

Along with the adoption of new core objectives, several other organisational and managerial reforms were undertaken by the Bank, including the development of infrastructure and payment system reforms and devolution of non-core functions, eg the retail cheque clearing process.

3. High-value and systemically important payment system and legislative amendments

To reduce settlement risks involved in the systemically important high-value payment system to facilitate the settlement of securities in line with emerging best practices and to develop the government debt securities market, in 2001 the CBSL initiated action to introduce an integrated Real-Time Gross Settlement (RTGS) / Scriptless Securities Settlement (SSS) System.

The introduction of the RTGS/SSS System required several amendments to legislation, such as the MLA (the governing law of the CBSL), the Local Treasury Bills Ordinance (LTBO) and the Registered Stocks and Securities Ordinance (RSSO).

Prior to December 2002, the CBSL provided settlement facilities for transfer of funds among commercial banks and primary dealers through the current accounts maintained by such institutions with the CBSL. Given the need to introduce the RTGS/SSS System to effect high-value transactions and settlement on a real-time basis, amendments were introduced to the MLA to achieve the following:

- establish the system and provide for respective rights and responsibilities;
- enable the provision of intraday liquidity by the CBSL against collateral to ensure smooth functioning of the RTGS/SSS System;
- provide for finality and irrevocability of transactions;
- grant validity and enforceability to electronic records and transactions;
- outsource functions relating to payments and settlements; and
- grant protection to transactions effected in these systems from insolvency.

The RTGS System went live on 8 September 2003, and it has facilitated value transfers and reduced risks in high-value and time-critical payments. The Payments and Settlements Department (PSD), established in 2002, was assigned the responsibility of operating the RTGS/SSS System.

The government securities market has been functioning by issuing treasury bills and treasury bonds in paper form, which required endorsement and delivery to transfer ownership each time a bill/bond was traded. The paper certificates had to be endorsed by the holders and be countersigned by a primary dealer or a bank, thereafter requiring physical transportation to several places. At maturity, the payment of interest and redemption were effected manually after physical verification of each bill/bond. This involved a cumbersome administrative procedure, which has inhibited the development of the primary as well as the secondary markets for government securities. Moreover, the securities had to be printed on security paper and kept securely under a custodian. The primary dealers performed the custodian role for a fee. Yet, there was no guarantee that securities would not be lost, misplaced or misused. The process was inefficient and increased transaction costs to primary dealers and investors and also kept foreign investors from investing in government securities.

To facilitate the introduction of the Scriptless Securities Settlement System, the CBSL amended the LTBO and the RSSO. Amendments to these two Ordinances were passed in parliament in late 2003, and they enabled the CBSL to issue, record, transfer, settle and redeem scriptless (paperless) securities electronically by way of book entry and to maintain securities accounts for primary dealers and their customers (beneficial owners). When transactions take place in scriptless securities, they are transferred to and from the respective holder's account in the central depository, which is maintained by the central bank, as a component of the SSS System. When securities are traded, such trades are matched and instantaneous payment of money effected through the RTGS System on a DVP basis. The RTGS/SSS integrated system went live on 3 February 2004. Under the SSS System, all primary dealers maintain accounts in the central depository system for themselves and for their customers as well. Thus, the CBSL is the registry and the central depository for all the government securities, which record legal ownership of securities. The system also enables the dematerialisation of existing paper securities and their conversion into book-entry form. The system satisfies the delivery-versus-payment principle, where securities are delivered to investors against the payment of money. The system, as a whole, has reduced the risks involved in paper-based treasury bill/bond settlement and made value transfers and trades much faster, secure and efficient. The SSS System supports the entire life cycle of the security from issue through to its final redemption and has the capacity to calculate and effect interest and maturity payments as well.

4. Devolution of non-core functions

As part of the devolution of non-core functions, among others, the CBSL outsourced the operations of the retail payment system largely effected through cheques (the second most systemically important payment system). Accordingly, the Sri Lanka Automated Clearing House, which had been operated by a division in the Information Technology Department of the CBSL since 1988, was divested in April 2002 to LankaClear (Pvt) Limited - an organisation jointly owned by the CBSL and commercial banks. The objective of this divestiture was to improve the efficiency of the clearing and electronic funds transfer system operated by the Clearing House through new management, technology and cost-efficient solutions. Since the outsourcing, LankaClear has performed very well and has reduced the cost of its services and clearing times as well as increased efficiency.

The CBSL is still concerned by some of the inefficiencies and risks involved in the retail and low-value cheque clearing process relating to regional and outstation cheques, which are cleared on t+3 to t+7.

The central bank and LankaClear have jointly initiated action to introduce a cheque imaging system to eliminate risks and improve efficiency. This initiative requires amendments to the Bills of Exchange Ordinance and the Evidence Ordinance to enable electronic presentment of cheques and admission of electronic evidence. The CBSL has made arrangements to enact a separate payments and settlement law, which would govern payment transactions and securities settlement and is expected to be passed by parliament during 2005.

5. Focus on supervisory role

The Monetary Law Act Amendment of 2002 has authorised the CBSL to be responsible for the administration, supervision and regulation of the monetary, financial and payment systems of Sri Lanka, including the oversight of the payment systems. Having introduced a robust and efficient payment and settlement system and outsourced some of the operational responsibilities relating to the payment systems, the CBSL is now focusing on its task of payment system oversight. Currently, as the overseer, the Bank wishes to ensure smooth, safe and efficient operations in all payment and settlement systems, maintain customer confidence, and protect the transmission channels and value transfer instruments relating to monetary policy. Given the need to attain the financial systems/stability objective of which payments form a critical component, the CBSL relies on rules, regulations, laws, directives, guidelines and, informally, moral suasion in overseeing the payment systems.

The rules and regulations for oversight activities are framed on the oversight standards announced by the BIS by way of 10 core principles and by the International Organization of Securities Commissions (IOSCO) for securities settlement. Accordingly, the oversight methods include off-site surveillance of different payment systems, and payment instruments through collection of statistics and conducting regular discussions with system operators and participants.

The PSD oversees the domestic clearing of rupee cheques and the US dollar cheque clearing process operated by LankaClear. The on-site responsibility of overseeing the activities lies with a unit of the Bank Supervision Department (BSD) to ensure that the RTGS/SSS System owned and operated by the CBSL complies with the rules and regulations. The CBSL has also published rules and procedures for governing the market, and a “Red Book” for Sri Lanka in cooperation with the BIS, which sets out the country’s current payment and settlement arrangements.

Annex 3:
Elements of a stocktaking exercise

This annex provides a general overview of the elements relevant to a stocktaking exercise. Not all the elements are relevant in all cases.

1. Payment instruments and media

- Currency
- Cheque payments and other paper instruments (eg money orders, bank drafts)
- Automated credit and debit transfers
- Payment cards (credit, debit and stored value)
- Other

2. Payment system infrastructure

Infrastructure arrangements

- Transaction systems
  - Proprietary bank systems (branches, ATMs, e-banking)
  - Shared network systems (EFTPOS, ATMs, e-payment)
- Clearing and settlement systems (central bank and privately operated)
  - Retail payment clearing and settlement
  - Large-value payment settlement systems

Key properties

- Participants in the system
- Types of transactions handled
- Operations and operating rules of the transfer system
- Backup solutions
- Settlement procedures
- Credit and liquidity risk
- Pricing policies

Key non-financial infrastructure arrangements

- Telecommunications
- Transportation (road, rail, air and maritime)
- Energy (electrical, oil, gas, coal)

3. Institutional aspects

- The various roles of financial and non-financial institutions providing payment services
  - Central bank (eg settlement facilities and services, user needs, oversight)
  - Commercial banks
  - Building societies
  - Post office
  - Credit card companies
  - Other non-financial payment- or payment-related service providers (eg SWIFT, third-party consolidators, third-party payment processors, IT network service providers)
- Network and service market interconnections
  - Common participation
  - Service or contractual links - direct or through third-party providers
- The role of other private sector and public sector bodies
  - Council of bankers
  - Clearing house operators
  - Payment associations
  - SWIFT users association
  - Treasury operators forum
  - Association of Bank Card Issuers
- Legal and regulatory framework
  - Principal payment legislation and regulations

4. Use of the payment system for financial transactions

Overview of financial (interbank credit, forex money market and securities) transactions

- Trading systems for securities transactions
  - Securities (stock and bond) exchanges
  - Futures and derivatives exchanges
  - Over-the-counter and automated trading systems
- Clearing and settlement systems for securities transactions
  - Securities depositories
  - Registration and custody arrangements
  - Securities settlement systems
- Key properties
  - Participants in the system
  - Types of transactions handled
  - Operations and operating rules of the systems
  - Backup solutions

- Settlement procedures
- Credit and liquidity risk
- Pricing policies

Infrastructure systems for cross-currency and cross-border payment and financial transactions

- Transaction, clearing and settlement for international retail and large-value transactions
- Key properties
  - Participants in the system
  - Types of transactions handled
  - Operations and operating rules of the systems
  - Backup solutions
  - Settlement procedures
  - Credit and liquidity risk
  - Pricing policies

5. Recent developments affecting the payment system

- Establishment of payment system governance and consultative arrangements
- National and regional development initiatives with respect to transaction, clearing and settlement infrastructure arrangements and service markets for retail and large-value payment and securities systems
- Legal and regulatory reforms affecting the payment and securities systems

6. Statistical data on the payment system

- Where available, utilise data to provide information on trends and developments in key elements of the national payment system that can help direct and support effective reforms

Annex 4:
Legal framework and model laws on payments

1. Legal framework for payment instruments

Currency laws to:

- establish official currency issued or backed by the central bank;
- regulate the acceptance of currency for payment with regard to denominations relative to transaction value and eligible transactions (ie legal tender laws); and
- prohibit and penalise counterfeiting of the official currency and money laundering, and authorise monitoring and reporting of suspicious payments.

All of these aspects are better governed by legislation than by contract.

Cheque (negotiable instrument) laws to:

- govern the issuance, acceptance and negotiation of cheques (may initially be governed by common law or contract but should eventually be governed by legislation);
- determine the rights and obligations of payers and payees in situations of fraud as part of the criminal code or the cheque law; and
- enable electronic cheque presentment, truncation and imaging (because of the need to modernise existing law, legislation is usually the preferable mechanism).

Credit transfer laws to:

- authorise paper-based credit transfers and electronic wire transfers; and
- govern such aspects as finality of payment, misdirected payments, payment fraud, and availability of funds to client (may be governed by contract and common law to some extent but legislation is desirable).

Card instrument laws to:

- govern the rights and obligations of the issuer, cardholder and merchant if not covered by existing contract law.

May be left entirely to contract and common law or subjected to legislation to govern some aspects of the relationships (such as consumer protection).

Electronic payments and commerce laws to:

- govern the issuance and use of e-money; and
- ensure the legal discharge of payment obligations through settlement by e-money if not covered under currency laws.

Would ordinarily require legislation, since existing laws do not usually cover e-money.

Example laws:

- Uniform Commercial Code: Article 4A (United States re automated funds transfers)
- EU Directive 97/5/EC on cross-border credit transfers
- Currency Act, Canada (re official currency)
- Bills of Exchange Act (Canada, United Kingdom re: cheques)
- Check 21 Act (United States re electronic cheques)

2. Legal framework for settlement of payment obligations

Netting and novation laws, preferably through specific rather than contract law, to:

- permit payment netting and ensure that the net amounts are enforceable against unwinds, especially in insolvency situations (preferably through legislation rather than contract or common law);
- govern netting and unwind procedures, and define the rights and obligations of participants in the netting scheme (through either contract or legislation); and
- protect the settlement account at the central bank or commercial banks from stays of execution ("freezes") upon the insolvency of a participant in a payment system.

Where novation is used, laws ensuring the legal enforceability of novation (preferably through legislation).

Settlement laws, preferably through legislation rather than contracts, to:

- establish settlement finality;
- establish payment finality and irrevocability except under specified conditions; and
- protect the risk-free settlement facility at the central bank from being frozen or attached by creditors of institutions holding the settlement accounts.

Example laws:

- Payments Clearing and Settlement Act (Canada)
- United States UCC Article 4A and Federal Reserve Regulation J
- EU Directive 98/26/EC on settlement finality in payment and securities settlement systems

3. Legal framework for collateral and credit

Credit laws to:

- govern creditor-debtor relationships in commercial transactions.

May be established by common law, contract law, civil codes or specific legislation (eg usury laws, banking statutes, creditor-debtor statutes).

Pledging and collateral laws to:

- create and enforce rights in collateral security, preferably through legislation of specific or general application, rather than through contract or common law; and
- establish priority ranking among various secured and unsecured claims in the same assets in situations of default or insolvency (requires legislation of specific or general application).

Example laws:

- Uniform Commercial Code: Article 9 (United States)
- EU Directive 2002/47/EC on financial collateral arrangements
- 1997 OHADA Uniform Law on Security Rights
- 1994 EBRD Model Law on Secured Transactions
- UNCITRAL Legislative Guide on Secured Transactions
- Cape Town Convention on International Interests in Mobile Equipment

4. Legal framework for payment network organisation and participation

Laws (legislation, regulation or contracts) governing:

- organisation (ie as a legal entity) and corporate governance of the operator of the system or network;
- the mutual rights and obligations of participants and operators in respect of the network (eg liability, indemnity and confidentiality);
- network participation;
- network operations (hours, fees, sanctions, delivery of items, formats, etc);
- default by participants or central counterparties;
- operational and financial risk controls and business continuity; and
- financial loss sharing.

Example laws:

- system rules governing CHIPS, Fedwire, CHAPS, Clearstream and other clearing and settlement systems
- master repo agreements (International Securities Dealers Association)

5. Legal framework for securities settlement systems

In addition to the types of laws mentioned in (2), (3) and (4) above:

- legislation to support the immobilisation, ownership, transfer and pledging of securities (or interests in securities) in book-entry form in a securities depository or other securities intermediaries;
- legislation to support the issuance, ownership and transfer of "dematerialised" or "non-certificated" securities embodied in electronic media rather than paper; and
- legislation or contracts that validate the underlying transactions in securities, such as financial derivatives, repurchase agreements, securities loans and other transactions with regard to custody, transfer and pledge of the underlying securities.

Example laws:

- United States UCC Revised Article 8
- UNIDROIT Study Group on Harmonisation of Substantive Law Rules Regarding Indirectly Held Securities
- Canadian Securities Administrators Uniform Securities Transfer Act (draft)

6. Conflict of laws

- Rules for determining which jurisdiction's laws will apply to various cross-border aspects of payment systems (eg foreign participants, cross-border payments, cross-border collateral, foreign securities).
- Contractual or common law choice of law rules may suffice but legislation may be preferable.

Example rules:

- UCC Revised Article 8.

International conventions:

- Hague Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary

7. International legal standards relevant to payment systems

Laws on the criminal use of currency:

- FATF Forty Recommendations (to counter money laundering)
- FATF Special Recommendations on Terrorist Financing
- United Nations International Convention for the Suppression of Financing of Terrorism

Laws on contracts:

- UNIDROIT Principles of International Commercial Contracts
- Commission on European Contract Law: Principles of European Contract Law
- ISDA master agreements for interest rate swaps, currency swaps, commodity derivatives and other swaps and derivatives transactions
- Bond Market Association model contracts

Laws on payment instruments:

- UNCITRAL Convention on International Bills of Exchange and Promissory Notes
- UNCITRAL Convention on International Credit Transfers
- UNCITRAL Model Law on Electronic Commerce (addressing issues of authorisation, signature and evidence in electronic commercial transactions)
- EU Directive 97/5/EC on cross-border credit transfers
- EU Directive 2000/31/EC on electronic commerce
- EU Directive 99/93/EC on community framework for electronic signatures

Laws on clearing and settlement:

- EU Directive 98/26/EC on settlement finality in payment and securities settlement systems
- UNIDROIT Study Group on Harmonisation of Substantive Law Rules Regarding Indirectly Held Securities

Laws on collateral security:

- Cape Town Convention on International Interests in Mobile Equipment
- EU Directive 2002/47/EC on financial collateral arrangements
- 1997 OHADA Uniform Law on Security Rights
- 1994 EBRD Model Law on Secured Transactions
- 2002 Model Inter-American Law on Secured Transactions
- UNCITRAL legislative guide on secured transactions

Rules on conflict of law:

- Hague Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary

Annex 5:
Glossary

Term	Definition
access	the right of or opportunity for an institution to use the services of a particular payment system to settle payments on its own account or for customers.
automated clearing house (ACH)	an electronic clearing system in which payment orders are exchanged among financial institutions, primarily via magnetic media or telecommunications networks, and handled by a data processing centre. See also *clearing/clearance*.
automated teller machine (ATM)	an electromechanical device that permits authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services, such as balance enquiries, transfer of funds or acceptance of deposits. ATMs may be operated either online with real-time access to an authorisation database or offline.
bank	any financial institution that accepts deposits and provides credit directly to end users as its principal business function. This would include both privately owned institutions and state-owned banks.
batch	the transmission or processing of a group of payment orders and/or securities transfer instructions as a set at discrete intervals of time.
business continuity	a payment system's arrangements which aim to ensure that it meets agreed service levels even if one or more components of the system fail or if it is affected by an abnormal external event. Include both preventative measures and arrangements to deal with contingencies.
central bank credit (liquidity) facility	a standing credit facility that can be drawn upon by certain designated account holders (eg banks) at the central bank. In some cases the facility can be used automatically on the initiative of the account holder, while in other cases the central bank may retain some degree of discretion. The loans typically take the form either of advances or overdrafts on an account holder's current account which may be secured by a pledge of securities (also known as lombard loans in some European countries), or of traditional rediscounting of bills.
central counterparty (CCP)	an entity that is the buyer to every seller and seller to every buyer of a specified set of contracts, eg those executed on a particular exchange or exchanges.
central securities depository (CSD)	a facility (or an institution) for holding securities, which enables securities transactions to be processed by book entry. Physical securities may be immobilised by the depository or securities may be dematerialised (ie so that they exist only as electronic records). In addition to safekeeping, a CSD may incorporate comparison, clearing and settlement functions.
clearing/clearance	the process of transmitting, reconciling and, in some cases, confirming payment orders or security transfer instructions prior to settlement, possibly including the netting of instructions and the establishment of final positions for settlement. Sometimes the term is used (imprecisely) to include settlement.

collateral	an asset or third-party commitment that is accepted by the collateral taker to secure an obligation of the collateral provider vis-à-vis the collateral taker.
confirmation	a process whereby a market participant notifies its counterparties or customers of the details of a trade and, typically, allows them time to affirm or to question the trade.
continuous linked settlement (CLS)	an arrangement for settlement of foreign exchange transactions.
correspondent banking	an arrangement under which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks. Such arrangements may also be known as agency relationships in some domestic contexts. In international banking, balances held for a foreign respondent bank may be used to settle foreign exchange transactions. Reciprocal correspondent banking relationships may involve the use of so-called nostro and vostro accounts to settle foreign exchange transactions.
counterparty	the opposite party to a financial transaction such as a securities trade or swap agreement.
credit risk	the risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. In exchange-for-value systems, the risk is generally defined to include replacement cost risk and principal risk.
custody	the safekeeping and administration of securities and financial instruments on behalf of others.
deferred net settlement system	a system that effects the settlement of obligations or transfers between or among counterparties on a net basis at some later time.
delivery versus payment	a link between a securities transfer system and a funds transfer system that ensures that delivery occurs if, and only if, payment occurs.
dematerialisation	the elimination of physical certificates or documents of title which represent ownership of securities so that securities exist only as accounting records.
depository	an agent with the primary role of recording securities either physically or electronically and keeping records of the ownership of these securities.
end user	a customer of a financial institution that provides it with payment instruments and services to facilitate the completion of a commercial or financial transaction.
finality	irrevocable and unconditional.
financial risk	the risk of financial loss to an entity arising from the realisation of one or more types of payment system risks.
gross settlement system	a transfer system in which the settlement of funds or securities transfer instructions occurs individually (on an instruction-by-instruction basis).
immobilisation	placement of physical certificates for securities and financial instruments in a central securities depository so that subsequent transfers can be made by book entry, that is, by debits from and credits to holders' accounts at the depository.
interbank funds transfer system	a funds transfer system in which most (or all) direct participants are financial institutions, particularly banks and other credit institutions.

interoperability	a situation in which payment instruments belonging to a given scheme may be used in systems installed by other schemes. Interoperability requires technical compatibility between systems, but can only take effect where commercial agreements have been concluded between the schemes concerned.
intraday credit	credit extended for a period of less than one business day; in a credit transfer system with end-of-day final settlement, daylight credit is tacitly extended by a receiving institution if it accepts and acts on a payment order even though it will not receive final funds until the end of the business day. Also called daylight overdraft, daylight exposure and daylight credit.
intraday liquidity	funds which can be accessed during the business day, usually to enable financial institutions to make payments in real time.
large-value payment	payment, generally involving a very large amount, which is mainly exchanged between banks or between participants in the financial markets and usually requires urgent and timely settlement.
large-value payment system	a system through which large-value and high-priority funds transfers are made between participants in the system for their own account or on behalf of their customers. Although, as a rule, no minimum value is set for the payments they carry, the average size of payments passed through such systems is usually relatively large. Large-value funds transfer systems are sometimes known as wholesale funds transfer systems.
legal risk	the risk of loss because of the unexpected application of a law or regulation or because a contract cannot be enforced.
liquidity risk	the risk that a counterparty (or participant in a settlement system) will not settle an obligation for full value when due. Liquidity risk does not imply that a counterparty or participant is insolvent since it may be able to settle the required debit obligations at some unspecified time thereafter.
loss-sharing (or loss allocation) agreement	an agreement among participants in a clearing or settlement system regarding the allocation of any losses arising from the default of a participant in the system or of the system itself.
market arrangements	include all the procedures, conventions, regulations, and contracts governing the payment service relationships and transactions between the service providers and users.
national payment system	the entire matrix of institutional and infrastructure arrangements and processes in a country for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities.
net settlement system	a settlement system in which final settlement of transfer instructions occurs on a net basis at one or more discrete, specified times during the processing day.
netting	an agreed offsetting of positions or obligations by trading partners or participants. The netting reduces a large number of individual positions or obligations to a smaller number of obligations or positions.
network operations	include all the processes and arrangements related to the functioning of a network (such as those related to hours, fees, sanctions, delivery of items, and formats).
novation	the replacement of existing obligations by new obligations between the existing or substitute parties that satisfactorily and legally discharges the original obligation.

operational risk	the risk that deficiencies in information systems or internal controls could result in unexpected losses.
oversight	central bank oversight of payment and settlement systems is a function whereby the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, inducing change.
payment	the payer's transfer of a monetary claim on a party acceptable to the payee. Typically, monetary claims take the form of banknotes or deposit balances held at a financial institution or at a central bank.
payment infrastructure arrangements	arrangements involving network facilities, technologies and procedures for accessing and transacting instruments and for processing, clearing and settling related payments.
payment infrastructure services	services provided through infrastructure arrangements for accessing and transacting payment instruments and for processing, clearing and settling the related payments.
payment institutional arrangements	include the market arrangements for payment instruments and services, the legal and regulatory framework for market organisation and conduct, and mechanisms for consultation and coordination among stakeholders in the national payment system.
payment order (instruction)	an order or message requesting the transfer of funds (in the form of a monetary claim on a party) to the order of the payee. The order may relate either to a credit transfer or to a debit transfer. Also called payment instruction.
payment service market	conventions, regulations and contractual arrangements for production and pricing of payment instruments and services and their delivery from payment service providers to users. Particular markets are characterised by their specific institutional arrangements, market practices, service providers and users, and factors influencing the demand for and supply of that specific service.
payment system	a set of instruments, banking procedures and, typically, interbank funds transfer systems that ensure the circulation of money.
principal risk	the risk that the seller of a security delivers a security but does not receive payment or that the buyer of a security makes payment but does not receive delivery. In this event, the full principal value of the securities or funds transferred is at risk.
real time transfer	the transmission, processing and settlement of a funds or securities transfer instruction on an individual basis at the time that it is initiated.
retail payment infrastructure	transaction, clearing and interbank funds transfer systems that handle large volumes of relatively low-value payments initiated through payment instruments such as cheques, credit transfers, direct debits, and payment cards.
retail payment	mainly a consumer payment of relatively low value and urgency.
securities infrastructure arrangements	arrangements for the trading, registration, custody and safekeeping of securities and for the confirmation, clearance and settlement of securities transactions.
securities system	the entire matrix of institutional and infrastructure arrangements and processes for issuing and administering securities liabilities, administering and safekeeping holdings of securities issues, and for initiating, confirming, matching, transferring and settling securities transactions.

settlement	an act that discharges obligations in respect of funds or securities transfers between two or more parties.
settlement risk	general term used to designate the risk that settlement in a transfer system will not take place as expected. This risk may comprise both credit risk and liquidity risk.
stakeholder	in a payment system, stakeholders are those parties whose interests are affected by the operation of the system.
straight through processing (STP)	the completion of pre-settlement and settlement processes based on trade data that are manually entered only once into an automated system.
strategic planning	a strategic approach in planning payment system development is an approach which requires all involved parties to focus on the future and sketch a desired situation (vision). It includes a holistic view of the payment system.
systemic risk	the risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a transfer system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.
systemically important payment system	a payment system is systemically important where, if the system were insufficiently protected against risk, disruption within it could trigger or transmit further disruptions amongst participants or systemic disruptions in the financial area more widely.
tiering arrangement	an arrangement which may exist in a funds or securities transfer system whereby participants in one category require the services of participants in another category to exchange and/or settle their transactions.
transfer	operationally, the sending (or movement) of funds or securities or of a right relating to funds or securities from one party to another party by: (i) conveyance of physical instruments/money; (ii) accounting entries on the books of a financial intermediary; or (iii) accounting entries processed through a funds and/or securities transfer system. The act of transfer affects the legal rights of the transferor, transferee and possibly third parties in relation to the money balance, security or other financial instrument being transferred.
unwind	a procedure followed in certain clearing and settlement systems in which transfers of securities or funds are settled on a net basis, at the end of the processing cycle, with all transfers provisional until all participants have discharged their settlement obligations. If a participant fails to settle, some or all of the provisional transfers involving that participant are deleted from the system and the settlement obligations from the remaining transfers are then recalculated. Such a procedure has the effect of transferring liquidity pressures and possibly losses from the failure to settle to other participants, and may, in an extreme case, result in significant and unpredictable systemic risks. Also called settlement unwind.
user	payment system users are entities, comprised of both participants in infrastructure networks (user participants) and their customers in end user markets (end users), that acquire and use various payment services.

user participant	participant in an infrastructure arrangement that acquires infrastructure services in order to provide other related services to end users.

Annex 6:
Members of the CPSS

This report was produced by the Committee on Payment and Settlement Systems, whose members are listed below.

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Significant contributions were also made by the participants in the CPSS/SADC Payments Conference.