BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA

RENTAS Modernisation
Focused Strategy Paper

Applicable to −
RENTAS Participants

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EXECUTIVE SUMMARY

This strategy paper articulates Bank Negara Malaysia's (BNM) plans to modernise the Real Time Electronic Transfer of Funds and Securities System (RENTAS), with the aim of futureproofing the infrastructure and significantly enhancing its resiliency, efficiency, and interoperability. By charting a clear trajectory for transformation, the strategy paper aims to accommodate the evolving needs of the payment landscape, ensuring that RENTAS remains robust, fit-for-purpose and capable of adapting to emerging challenges and opportunities.

The objectives of RENTAS modernisation align closely with the G20 Roadmap for Enhancing Cross-border Payments. In line with the G20 priorities, RENTAS modernisation aims to make domestic and cross-border transactions faster and more cost-effective. The adoption of international standards like ISO 20022 [1] improves interoperability with global financial infrastructures, facilitating smoother cross-border transactions.

In the future, we envisage that enhancements of existing functionalities in RENTAS will provide participants with value-added capabilities that increase the efficiency, vibrancy and stability of the payment ecosystem. The initiative seeks to develop a more robust and agile platform that can swiftly adapt to the rapidly evolving payment landscape. Figure 1 provides an overview of the envisioned future state of RENTAS:

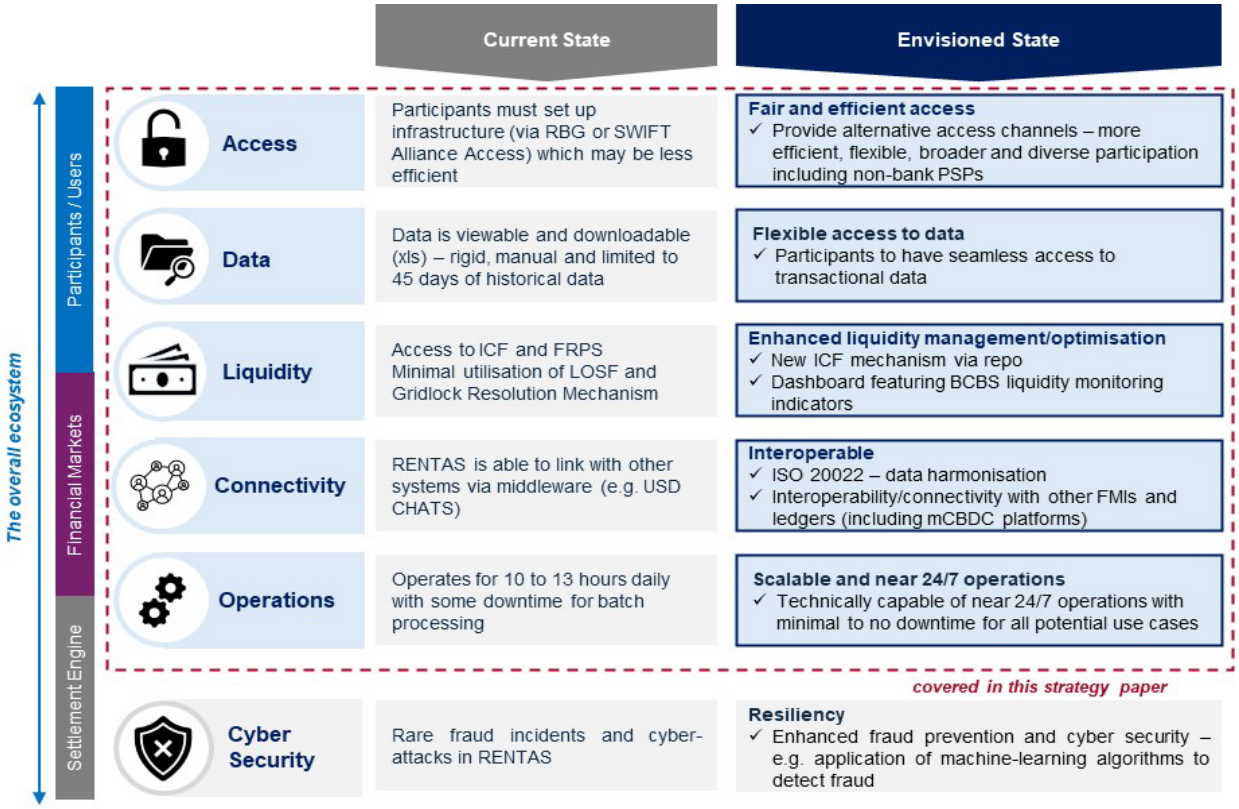

Figure 1: The envisioned future state of RENTAS

[1] RENTAS has adopted ISO 20022 messaging standards since June 2022.

[Note – Acronyms: BCBS = The Basel Committee on Banking Supervision of BNM for International Settlements (BIS); FMI = Financial Market Infrastructure; FRPS = Funding Facility for Retail Payments Settlement; ICF = Intraday Credit Facility; LOSF = Liquidity Optimisation Settlement Facility; mCBDC = multi-Central Bank Digital Currency; Repo = Repurchase Agreement; RBG = RENTAS Bank Gateway; PSP = Payment Services Provider; USD CHATS = US Dollar Clearing House Automated Transfer System (operated in Hong Kong)]

To meet the envisioned future state of RENTAS, BNM has sought feedback from industry participants via the Discussion Paper on RENTAS Modernisation Plans ('Discussion Paper') released in February 2024. Out of the four key initiatives outlined in the Discussion Paper, three key strategies will remain as the focus of this final paper, as follows:

1. **Near 24/7 operating hours:** Ensure the smooth roll-out of the near real-time settlement model for retail payments, while continuing to explore potential wholesale payment use cases for extended RENTAS operating hours and enabling near 24/7 system capability.

2. **Efficient and flexible access:** Explore the use of Application Programming Interface (API) connectivity to facilitate flexible RENTAS data retrieval while assessing potential expansion of RENTAS access to new participants and connectivity solutions for other FMIs and asset ledgers.

3. **Data provision and analytics capabilities:** Support industry efforts to strengthen intraday liquidity management via the provision of essential metrics and data for efficient monitoring.

Meanwhile, the fourth initiative from the Discussion Paper, i.e. to redesign the Liquidity Savings Mechanism (LSM), will be considered at a later stage given minimal market-wide liquidity issues being observed in the industry. The industry's suggestion to enhance fraud prevention and cyber security controls in RENTAS will also be considered and BNM will explore these areas in the future, building on existing risk management capabilities among financial institutions (FIs).

Further details on the key strategies are outlined in this paper. These strategies have taken into account feedback from the industry on the Discussion Paper as well as recent global and domestic market developments.

For any enquiries, FIs shall email to RENTASpolicy@bnm.gov.my.

Initiative 1: Near 24/7 operating hours

1.1 The Discussion Paper posited that existing RENTAS operating hours[2] are adequate to facilitate the needs of wholesale payments. Nonetheless, the use case for longer operating hours in RENTAS is considered more compelling for settlement of retail payments, in line with BNM's plan to transition to near real-time settlement (NRTS) for real-time retail payments systems (RT-RPS).

1.2 Feedback from FIs largely affirmed BNM's view that there is no immediate need to support 24/7 operations for wholesale payments. This is given that current RENTAS operating hours is already sufficient to perform necessary wholesale payment transactions, while the Real-time Retail Payments Platform (RPP) is also capable of handling large transactions of up to MYR 10 million.

1.3 Several FIs did suggest a few wholesale payment use cases that might benefit from extended or near 24/7 RENTAS operating hours, albeit not being of immediate importance. Of note, these included cross-border or off-market and non-MYR settlement to align with RTGS operating hours in other jurisdictions. Further, the potential extension of trading hours for capital market activities globally may also provide an impetus to pursue extended hours for RENTAS.

1.4 Several FIs also shared that a slight extension to current RENTAS operating hours could be beneficial for smoother settlement and better liquidity management. This is mainly to support ad hoc client needs for payments (e.g. government payment, refund of payment) that currently may come in after RENTAS is closed.

1.5 Notwithstanding the potential benefits, FIs highlighted that extending RENTAS operating hours, including to near 24/7, would have significant impact on resources and end-to-end systems.

a. To operationalise an extension of operating hours and ensure efficiency for wholesale payments, additional resources would be required, particularly for liquidity management at the treasury office and handling clients' credit payment requests at branches. Additionally, it will likely require resources for the FI's transaction banking function i.e. the back-end operations, to support longer working hours in view of the potential increase in transaction volume. Additional resources for IT support will also be necessary for real-time assistance of technical issues during the longer operating hours.

b. System readiness is also crucial to ensure smooth payment transactions during the extended hours. Enhancements would be required at FI's systems

[2] RENTAS currently operates for 13 hours (8:00 a.m. to 9:00 p.m.) on working days for settlement of wholesale and retail payments, and 10 hours (8:00 a.m. to 6:00 p.m.) on weekends and public holidays for settlement of RT-RPS i.e. RPP and Financial Process Exchange (FPX).

such as for the core banking and cash management systems. Further integration work would also be required with related payment systems or services, such as the payment gateway and middleware that bridge the different applications. Systems for end-processing will also need to be enhanced, including those for reconciliation and financial and regulatory reporting purposes.

1.6 Having considered the industry's feedback, BNM's planned approach for extending operating hours in RENTAS and moving towards near 24/7 operations is as follows:

a. *Immediate focus on retail payments settlement use case*

Considering the sustained strong growth in retail payments and prevailing concerns on credit and settlement risks underlying such payments, BNM is prioritising the implementation of the NRTS model for RT-RPS.[3] The roll-out will focus on transactions from the RPP and is targeted to be implemented by the third quarter (3Q) of 2025.

i. Upon implementation of the NRTS, the current collateralisation requirement for the RPP under the Deferred Net Settlement (DNS) model will be phased out. As the interim measure exposes RPP participants to residual risk in situations where the net debit exposure of retail payments transactions exceeds the amount of DNS collateral, BNM is transitioning to NRTS as a long-term solution to address credit and settlement risks in RT-RPS.

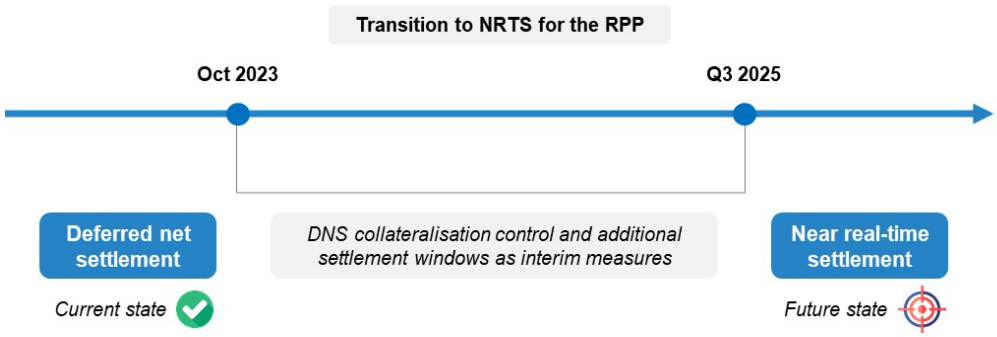

Figure 2: The transitioning of RPP settlement towards NRTS

ii. The transition to NRTS will mainly require system enhancements at BNM and Payments Network Malaysia Sdn. Bhd. (PayNet), with the

[3] Currently, the settlement for RT-RPS (i.e. DuitNow or RPP and FPX) is based on a deferred net basis. To mitigate the credit risk present in this settlement arrangement, the current interim measures are – (a) DNS collateralisation control i.e. requirement for retail payments participants to set aside a pre-determined amount of collateral to secure against RPP transactions to address settlement risk in the event of participant's insolvency; and (b) additional settlement windows on weekends and public holidays to minimise the net debit exposure of participants.

impact to participants expected to be limited. Further details on the new features applicable to NRTS will be made available to relevant participants in due course.

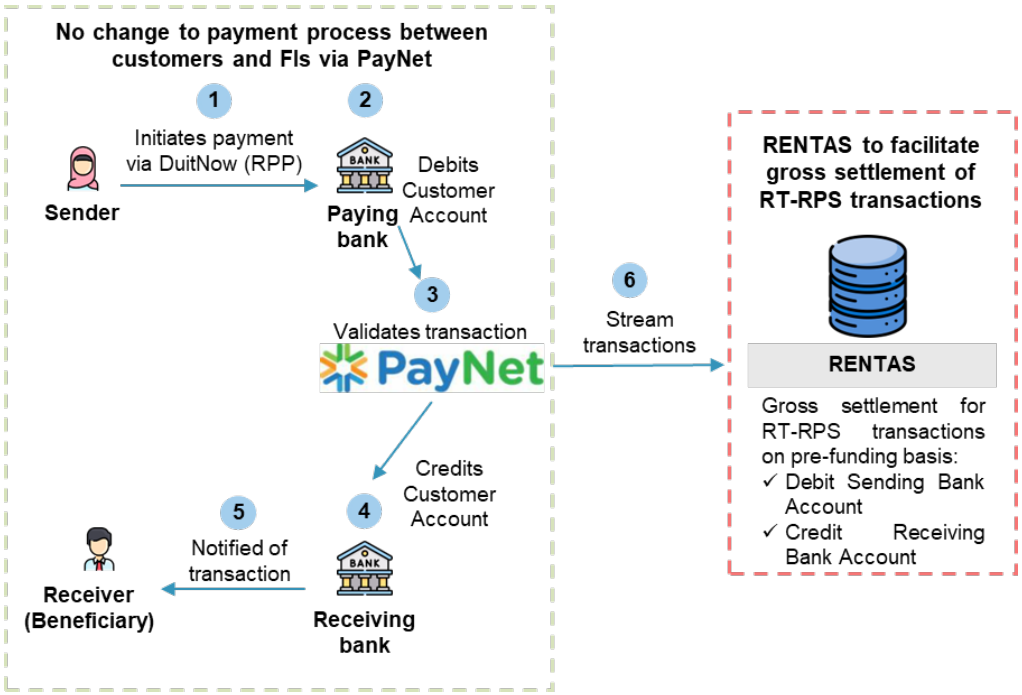

Figure 3: The future flow of settlement for RT-RPS

b. *Use case for wholesale payments to be driven by market needs*

Although the industry did not surface an immediate need for extended operating hours for wholesale payments use case, BNM will continue to closely monitor relevant global and domestic developments. This includes maintaining engagement with the industry and other relevant stakeholders to identify possible wholesale payments use cases to pursue. For instance, BNM could first consider a slight extension of operating hours to foster growth in the financial market if there is market demand.

c. *Infrastructure change to ensure RENTAS' technical capability in supporting near 24/7 operations*

i. While the current RENTAS capability may be sufficient for the immediate needs of BNM and participants, including for the NRTS, BNM will continue to consider necessary infrastructure enhancements to support near 24/7 operating capabilities.

ii. BNM will also closely monitor market developments to identify potential trigger points that may justify the need to accelerate such system enhancements (e.g. compelling use case for longer wholesale payments hours, further acceleration in the RPP transaction volume or BNM's participation in a mCBDC platform).

Initiative 2: Efficient and flexible access

2.1 FIs have indicated strong support for the development of connectivity solutions to support several key use cases:

a. *Enabling more flexible RENTAS data retrieval*

i. The industry shared potential benefits from capitalising on more flexible access to granular transactional data using API. Internally, such data will facilitate FIs' internal operations and risk management, including for the development of liquidity risk management systems (e.g. through built-in alerts of liquidity shortfall based on internal threshold).

ii. Easier access to RENTAS data would enable automation of internal processes (e.g. reconciliation, authorisation, etc.) and the development of analytical tools using artificial intelligence (AI) and machine learning for the monitoring of suspicious activities such as fraud and money laundering.

b. *Alternative access channel to RENTAS*

i. Presently, participants can connect to RENTAS system through two main channels namely the RBG and SWIFT Access, with RENTAS iLINK serving as a contingency channel. Majority of FIs view that the current access channels are working well and adequate to support current needs. Further, these channels have also been well-integrated with FIs' internal systems.

ii. However, FIs would be supportive of enabling an alternative access channel via API. This will reduce dependency on specific vendors used for the current access channels. Additionally, APIs are potentially a more cost-effective access channel, where its maintenance activities could be done collectively with other API applications for products, services and internal processes.

iii. With more flexible access channels to RENTAS, other prospective participants may also be able to have direct access to RENTAS to facilitate their payment and settlement activities, instead of leveraging a sponsor bank. Access via API connectivity can enable seamless

connectivity with related systems, which may facilitate real-time updates and automation of processes.

c. *Facilitating connections with other FMIs and ledgers*

The industry agreed that flexible connectivity can offer significant advantages for efficient cross-border payment services as payment systems become more interconnected (e.g. through multilateral and bilateral linkages). Furthermore, as financial systems become more tokenised, facilitating interoperability via API (or other suitable channels) could enhance RENTAS' preparedness in not only for integrating with these new systems but also in accepting new forms of settlement assets such as wholesale CBDC (wCBDC). Ongoing work by BNM on its wCBDC exploration will discover how the distributed ledger technology can be integrated with RENTAS. This work will also inform BNM on what it will take to facilitate connectivity between RENTAS and a future wCBDC system.

2.2 The industry's support is broadly aligned with BNM's objectives to foster innovation and competition among market participants. In this regard, BNM has identified the following plans for flexible access to RENTAS to promote greater interoperability, fair and efficient access, and to enhance operational efficiency in RENTAS:

a. *Immediate focus plan: Transactional data retrieval via API*

i. BNM plans to explore potential solutions to enable participants to gain seamless access to granular RENTAS-related data. This could enable retrieval of granular data for a longer period, given that the current RENTAS portal has limited capacity of historical data for retrieval.

ii. The solution should also support the development of FIs' own analytical tools for risk management and operational purposes. This will empower FIs to enhance their internal operational efficiency through their own analysis based on real-time data, while maintaining the highest standards for internal monitoring.

iii. These aspirations are aligned with potential plans shared by FIs to capitalise RENTAS transactional data. As BNM intensifies its efforts to facilitate a more efficient and flexible access to RENTAS data, the industry is expected to bolster its internal capacity to enable connectivity via API for data retrieval.

b. *More flexible access to RENTAS*

BNM will explore the potential for broadening participants' access to RENTAS to include a more diverse array of market players, such as non-bank e-money issuers and non-resident banks. These new participants would remain subject to set eligibility criteria to have direct access to RENTAS. BNM will assess whether existing access channels can support these new participants to have direct access to RENTAS, or if alternative access channels (e.g. using API connectivity) will need to be considered.

c. *Connecting RENTAS with other FMIs and ledgers*

API can also enable more seamless connectivity and interoperability between RENTAS with other FMIs and ledgers, including those enabled with emerging technologies (e.g. potential domestic wCBDC or mCBDC platforms and programmable platforms for tokenised assets transactions) in the future. Specifically, this connectivity is envisioned to ensure readiness of RENTAS to potentially support an ecosystem where settlement assets may comprise other forms of tokenised assets or wCBDCs. This would among others enable more efficient mobilisation of liquidity between the RTGS and such platforms. This is aligned with the BIS' vision for a unified ledger[4], where efficiencies and benefits in a tokenised system would require interoperability among various systems and ledgers in the economy via APIs.

2.3 Despite these considerations, BNM acknowledges the potential cyber security and operational risks that come with enabling more flexible access to RENTAS. BNM's existing policies, such as the requirements outlined in the Risk Management in Technology Policy Document (PD) and Business Continuity Management PD, provide the foundation to mitigate the risks. Meanwhile, broadening access to new participants will need to be assessed based on eligibility criteria and risk management standards outlined in relevant policies.

2.4 Recognising that the introduction of new connectivity solutions such as API, could pose additional risks, BNM will undertake an appropriate risk assessment prior to introducing such solutions and may consider additional measures to safeguard RENTAS. On this, FIs stressed on the importance of having proper firewalls and multi-layer access controls. Furthermore, business continuity plans will need to be enhanced to effectively manage and address any disruptions in systems and operations arising from API connectivity utilisation, to preserve the resilience and stability of the RENTAS network. BNM will engage with the

[4] BIS Annual Economic Report 2023 - Chapter III: Blueprint for the future monetary systems: improving the old, enabling the new.

industry where appropriate prior to the implementation of any new connectivity solutions.

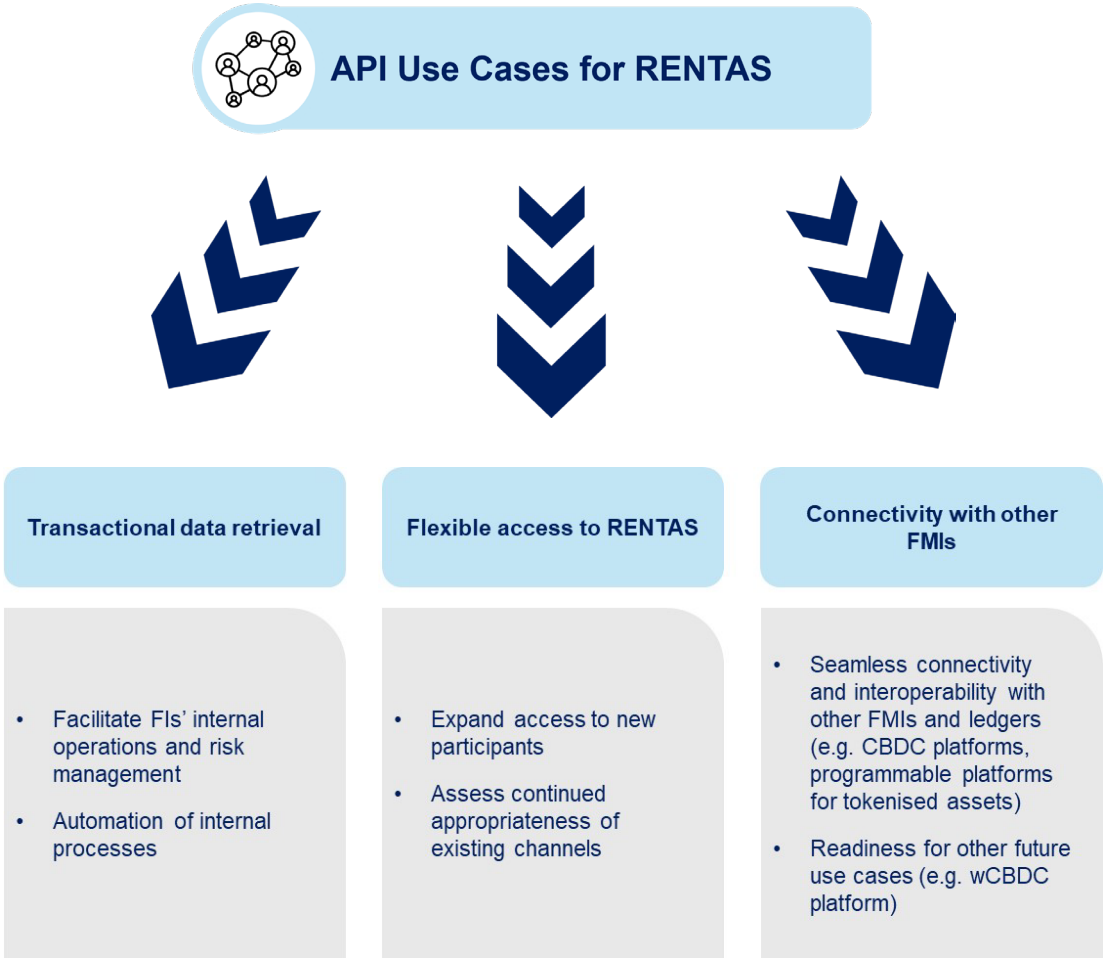

Figure 4: The use cases of flexible connectivity to RENTAS and its potential benefits

Initiative 3: Data provision and analytics capabilities

3.1 The industry strongly supported the proposed provision of intraday liquidity monitoring indicators[5] as specified in the BCBS paper on *Monitoring tools for intraday liquidity management*. This support is essentially driven by requirements for FIs to manage their intraday liquidity risk as stipulated in BNM's Liquidity Risk PD[6].

3.2 Easier access to these indicators is expected to enable RENTAS participants to more effectively monitor their intraday liquidity needs, enabling prompt

[5] The indicators readily available to participants in RENTAS are (i) daily maximum intraday liquidity usage; (ii) available intraday liquidity at the start of the business day; (iii) total payments sent/received in large value payment system (LVPS) i.e. RENTAS; (iv) time-specific obligations; and (v) intraday throughput. The indicators that are not available in RENTAS include (i) value of payments made on behalf of correspondent banking customers; and (ii) intraday credit lines extended to customers.

[6] Liquidity Risk PD issued on 15 October 2024 outlines several prudential requirements on managing intraday liquidity risk, including to ensure the smooth functioning of payments and settlements in RENTAS.

identification of potential liquidity shortfalls, therefore allowing more timely and well-informed actions. This will particularly benefit smaller and medium-sized FIs which may have limited capabilities and resources to develop their own liquidity management tools.

3.3 In addition to the BCBS indicators, FIs also provided suggestions on additional data points and other value-added features to accompany the proposed monitoring indicators. The additional data points included the provision of a time series of liquidity utilisation patterns (e.g. payments and ICF inflows and outflows) and counterparty-related information (e.g. Legal Entity Identifier (LEI), location, credit rating). Meanwhile, the value-added features suggested, included enabling new data formats (e.g. CSV and HTML) as well as providing alerts or pop-up messages when liquidity shortages are triggered based on specified thresholds and in anticipation of maturing securities in the collateral account.

3.4 Considering the criticality for intraday liquidity risk management, BNM has identified the following plan of action:

a. *Immediate focus to facilitate monitoring of the indicators*

i. Currently, FIs already have direct access to the majority of historical data needed to compute the indicators (e.g. minimum/maximum and average values of each indicator within a month) from multiple reports within the RENTAS portal. The only gap is the lack of historical data on the ICF utilisation which may hamper the monitoring process.

ii. Notwithstanding, this identified data gap will be addressed upon the implementation of the Intraday Repo [7] mechanism to replace the existing MYR ICF mechanism for RENTAS. With the implementation of the new mechanism, the historical data on ICF utilisation will be made available in the RENTAS portal.

iii. Pending the implementation of the new Intraday Repo mechanism, FIs that require data needed for the intraday liquidity monitoring may reach out to BNM for data provision.

b. *Explore enhanced intraday liquidity management tools*

The intraday liquidity indicators tools (e.g. Business intelligence (BI) tools) will facilitate timely monitoring and liquidity management on an ongoing basis as the indicators will be readily computed and compiled in a user-

[7] BNM expects to implement the revised MYR ICF latest by end-2027. The details of the revised MYR ICF for RENTAS are communicated directly to the relevant participants with access to ICF.

friendly platform. This will support small and medium FIs for better risk management of intraday liquidity. Relevant participants would be able to select and filter necessary RENTAS-related information for their analysis on specific period and transaction types for improved liquidity management.

Other future considerations

Redesigning of Liquidity Savings Mechanism (LSM)

4.1 The industry expressed support for plans to enhance the current RENTAS LSM i.e. the Gridlock Resolution Mechanism and Liquidity Optimisation Settlement Facility (LOSF). Participants agreed on the potential benefits in optimising liquidity usage and the need of LSM as part of preparation for potential crises.

4.2 Key feedback included suggestions on how to classify urgent and non-urgent transactions. They could take the form of time-based differentiation (e.g. payments scheduled to be settled within the hour will be classified as urgent), value-based thresholds (e.g. amounts larger than MYR 1 million is classified as urgent) and/or clients' request (e.g. payments agreed to be deferred can be classified as non-urgent). Other suggestions included the potential introduction of incentives (e.g. discounted fee or waiver) for FIs that utilise the LSM as well as enabling an automatic opt-in to the LSM, instead of the current manual opt-in for the LOSF.

4.3 Notwithstanding the potential benefits for enhancing the RENTAS LSM, BNM has established that the business case for an immediate review remains unclear. Currently, there are limited instances of industry-wide liquidity issues that justify immediate enhancements to the LSM. Further, transaction volumes in RENTAS remains relatively small compared to RTGS transactions in more advanced jurisdictions. With the current availability of ICF during working hours, FIs also have ready access to additional funding to support settlements in RENTAS, if needed.

4.4 Based on these considerations, the redesign of LSM will only be considered by BNM in a future stage of RENTAS modernisation. Nonetheless, BNM will continue to monitor market liquidity developments and conduct internal simulation exercises to identify the optimal liquidity flows and suitable algorithm combinations in preparation for a future redesign of the LSM in RENTAS. BNM will engage with the industry should there be further developments in this area.

Enhancing fraud prevention and cyber security controls in RENTAS

4.5 While planned RENTAS modernisation efforts will introduce enhanced capabilities and efficiencies within the system, it can also inadvertently introduce new security challenges that might expose RENTAS to unforeseen

vulnerabilities. Industry feedback also highlighted the importance of enhancing fraud prevention and cyber security controls within RENTAS, in anticipation of risks associated with the potential of extended RENTAS operating hours and adoption of more flexible connectivity solutions.

4.6 To mitigate the potential risks, the industry suggested applying machine-learning algorithms to detect unusual transactions and outliers, and enabling real-time early warning indicators to the participants, despite the rarity of such incidents in RENTAS. As efforts to modernise RENTAS progress, it is crucial to be vigilant of the potential risks that could make the system more vulnerable.

4.7 Although risks to fraud and cyber-incidents remain well-contained, the digital payment landscape is evolving rapidly. For BNM, bolstering the resilience of RENTAS against these threats remains a priority. As such, BNM will continue to adopt a proactive approach to safeguard RENTAS against the potential threats. This includes continually assessing the case for intensifying security enhancements if there is a need for the enhanced measures.

Next steps

5.1 In summary, BNM's immediate focus in relation to modernisation of RENTAS as part of the three key initiatives are as follows:

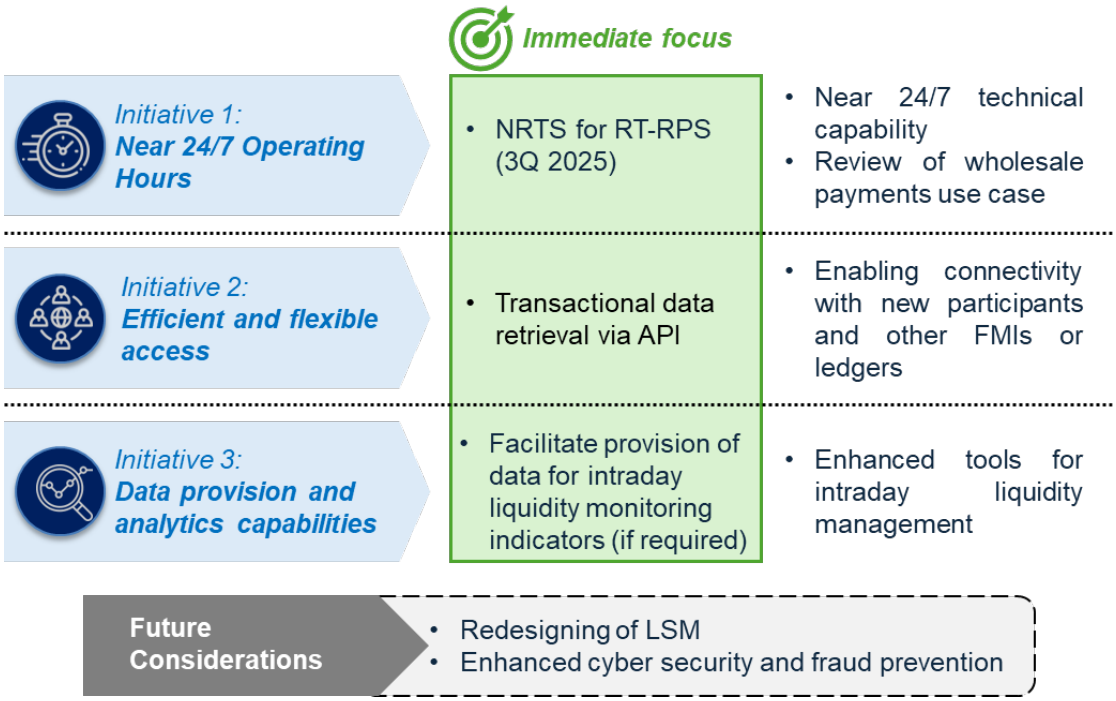

Figure 5: Key strategies and immediate focus for RENTAS modernisation

5.2 For specific strategies, BNM will engage with the industry on further details and the implementation timelines for these initiatives. This will include understanding potential challenges and issues as well as formulating solutions to address them.

5.3 More broadly, the industry's commitment will be critical as BNM pursues a multitude of initiatives to futureproof our FMIs. The work on modernising RENTAS in this paper has strong linkages with many other initiatives in BNM to strengthen the effectiveness and resiliency of payment systems, which will also require strong industry support. In addition to transitioning to NRTS for RT-RPS, ongoing projects (i.e. migration to ISO 20022 payment messages, domestic wCBDC exploration project and other exploratory projects by BISIH) will provide the building blocks towards futureproofing our FMI to support the needs of the financial sector and broader economy.