



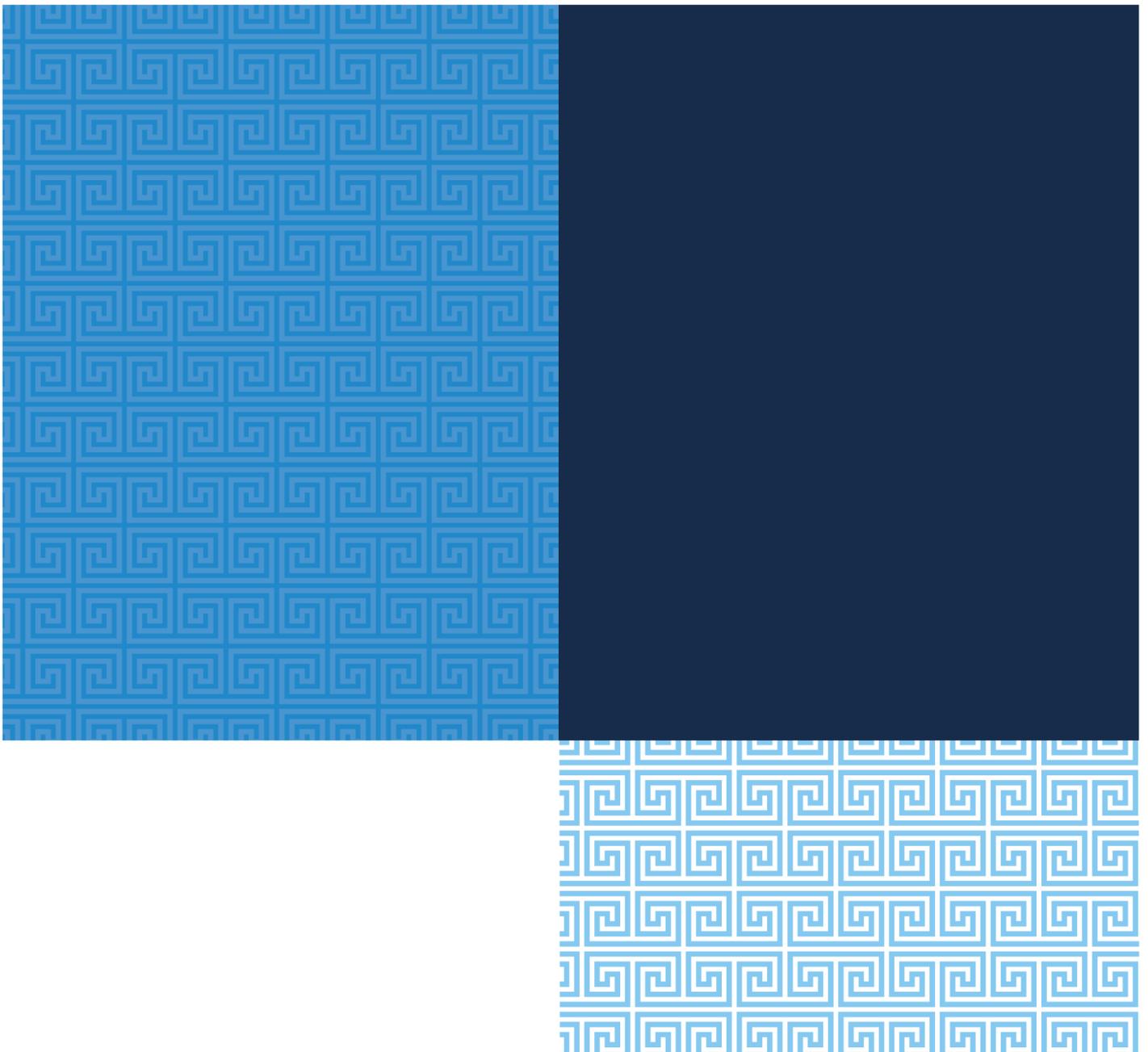
BANK OF ENGLAND

RTGS/CHAPS



# Real-Time Gross Settlement (RTGS) system and CHAPS Annual Report

July 2020



## Foreword

During the unprecedented situation of the Covid-19 pandemic our RTGS and CHAPS services have continued to work smoothly for all users. In the light of restrictions related to Covid-19, nearly all of the Bank's staff were working from home by late March – including those operating the RTGS system. And the transition to and continued state of remote working has been managed within our risk tolerance.

In common with many other organisations, we have had to reprioritise our work – taking into account new activities, delaying or scaling back some of the more discretionary items, and managing the reality of staff balancing work with difficult personal circumstances including, for some, caring responsibilities. We appreciate that our stakeholders are undergoing similar challenges.

Covid-19 has also driven changes in the use of these services. On 18 March 2020 a record £479bn was settled in CHAPS, while in April 2020 CHAPS volumes were 19% lower than the year before at a daily average of around 162,600. This compares with the year to end February 2020, with RTGS settling a daily average of £685bn of which £329bn was CHAPS; daily average CHAPS volumes were around 193,000. Our CHAPS data has been used within the wider Bank to support policy work – particularly to provide an early view on changes to spending in key retail sectors based on card receipts transferred to larger merchants via CHAPS. Within the broader payments landscape, there has also been a significant move from cash to electronic payment methods this year.

The challenging, and ongoing, circumstances during the course of the pandemic have really brought home to me how central our RTGS and CHAPS services are to the Bank's mission to promote the good of the people of the UK by maintaining monetary and financial stability. Our mission is supported by four themes for our delivery of RTGS and CHAPS, summarised below:

- **Safe and resilient:** Operational resilience of the live RTGS and CHAPS services will continue to be a key focus. In December 2019, the Bank's Financial Policy Committee set out a proposed impact tolerance for disruption to payments. RTGS has a vital role here – both as the infrastructure that underpins CHAPS settlement, and as the sterling settlement service provider to other Financial Market Infrastructures (FMIs) and payment service providers. In the event of operational disruption, there should be sufficient continuity of critical services to avoid a significant impact on the real economy. Looking ahead, we will consider our own compliance with the Bank's expectations for FMIs in this space.
- **Well run:** The RTGS/CHAPS Board, which I chair, continued to mature to the point we were comfortable to judge that our governance arrangements were 'observed' as part of our self-assessment against the Principles for Financial Market Infrastructures. We continue to benefit from four strong independent members who provide robust challenge.
- **Responsive:** In September 2019, the UK hosted SWIFT's annual SIBOS conference and a number of Bank staff were amongst the speakers. The theme of the conference was '*thriving in a hyper connected world*' and there was a big focus on global issues, cross border payments and the increasing demand for instant payments. Bank attendees were encouraged to see such widespread awareness and understanding about ISO messaging, from a range of perspectives. There was also an emphasis on customer focus and experience. The topics and issues raised at SIBOS, and ongoing international engagement, are valuable input to our business-as-usual

activities, particularly as we move into the next delivery-orientated phase of the RTGS Renewal Programme.

- **Renewed:** It has been another important year for the RTGS Renewal Programme. We continue to work to prepare ourselves and the industry for the introduction of the renewed RTGS service to support increased resilience, widened access, greater innovation, increased interoperability and improved user functionality. We published key documentation in December 2019 to help users to prepare for the UK's Common Credit Message, based on the ISO 20022 standard and the CHAPS-specific implementation. Throughout our multi-year Programme we will continue to listen to the demands of users, and prospective users, and to deliver value for money. We expect to shortly enter into contract with our Technology Delivery Partner as we embark on the next phase – build and test - and will place considerable focus on understanding industry readiness for the forthcoming changes.

This annual report is an important part of our commitment to transparency and accountability. Through this second report, we are sharing our strategic focus, and how we are working with industry to deliver effective RTGS and CHAPS services that provide value for money.



Dave Ramsden  
Deputy Governor for Markets and Banking  
14 July 2020

## Contents

<b>1. RTGS and CHAPS</b>	<b>5</b>
- Why are RTGS and CHAPS important?	5
- RTGS	5
- CHAPS	6
- Box 1. CHAPS all-time record days	7
<b>2. Our strategy for RTGS and CHAPS</b>	<b>8</b>
- Strategy development	8
- Key elements of our strategy	9
- Governance	9
- Box 2. Independent assurance	10
<b>3. Developments between March 2019 – February 2020</b>	<b>12</b>
- Operational resilience of RTGS and CHAPS	12
- Risk management	13
- Box 3. Principles for Financial Market Infrastructures self-assessment	14
- Horizon scanning	15
- Widening access	16
- Retail fraud	18
- Stakeholder engagement	18
- RTGS Renewal	19
<b>4. Our strategy for 2020-2021</b>	<b>22</b>
- Safe and resilient	22
- Well run	23
- Responsive	23
- Renewed	24
<b>Annex 1. RTGS and CHAPS statistics</b>	<b>26</b>
<b>Annex 2. Key speeches</b>	<b>27</b>

# 1. RTGS and CHAPS

## Why are RTGS and CHAPS important?

RTGS lies at the heart of every payment in the UK. Payments are essential to the efficient functioning of the UK economy, underlying core economic activity such as purchasing goods and services or paying salaries. Most payments are now made electronically, with banks and other financial institutions using accounts in RTGS to settle money owed to one another from the payment systems.

The RTGS and CHAPS services are systemically important to the UK and we have a target of **at least 99.95% operational availability**. An operational issue in RTGS and/or CHAPS could have a wide-ranging impact on the financial system and broader economy.

When the Bank provides settlement services to payment systems in RTGS, the Bank acts as a **settlement agent** and settlement occurs in **central bank money**. This delivers final and risk-free settlement and, since central bank money is the ultimate secure and liquid sterling asset, offers the lowest-risk way for financial institutions to meet their payment obligations.

Given the systemic importance of CHAPS to the UK the [Bank's Financial Market Infrastructure Directorate](#) (FMID) independently supervises the Bank's operation of the CHAPS payment system to the same standards applied to recognised payment systems, but on a non-statutory basis. The Bank's supervisory and operational areas have independent governance structures, reporting to different Deputy Governors.

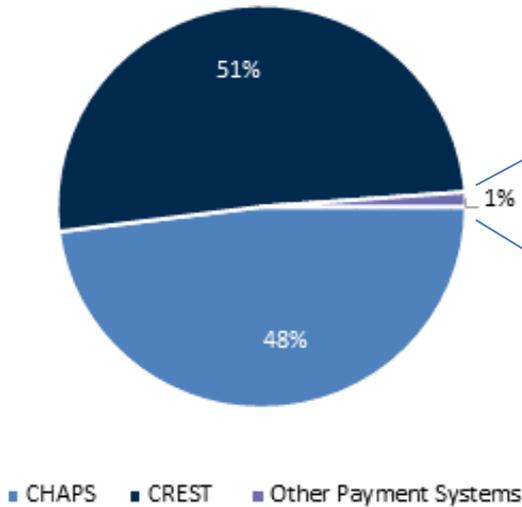
Further information on RTGS and CHAPS can be found on the Bank's [website](#), including: [A brief introduction to RTGS and CHAPS](#).

## RTGS

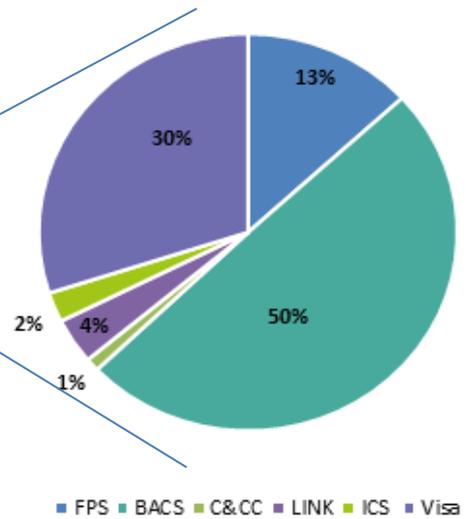
Through RTGS, the Bank provides settlement to direct participants of CHAPS, CREST, five retail payment systems (Bacs, Image Clearing System (ICS) for cheques, Faster Payments, LINK and Visa Europe) and the Bank's Note Circulation Scheme. RTGS is also the mechanism through which the Bank implements monetary policy decisions (reserves accounts are held within RTGS and remunerated at Bank Rate), and provides liquidity to the UK's financial system. The balance held in reserves accounts was £475bn at end-February 2020.

In the twelve months to end-February 2020, RTGS settled an average of **£685 billion** each working day, which is equivalent to just over the UK's GDP every three days. RTGS settled **£871 billion** on its peak value day in the period (31 January 2020). The vast majority of the value settled (99%) is from CHAPS and CREST (Chart 1). Of the retail systems – which we settle on a net basis - Bacs accounts for 50% (Chart 2).

**Chart 1:** Majority of value settled in RTGS is from CHAPS and CREST (March 2019 – February 2020)



**Chart 2:** Proportion of settlement value from other UK payment systems (March 2019 – February 2020)



## CHAPS

CHAPS is one of the largest high-value payment systems in the world and provides efficient, irrevocable sterling payments, free of settlement risk. From March 2019 to end-February 2020, CHAPS settled over **£83.3**

**Total value settled in CHAPS:**  
**£83,266,440,146,834**  
*(March 2019 – February 2020)*

**trillion** of payments, equating to an average of almost **£330 billion** each working day. The CHAPS system settles an average of almost **193,000** payments each day with an average payment value of **£1.7 million**.

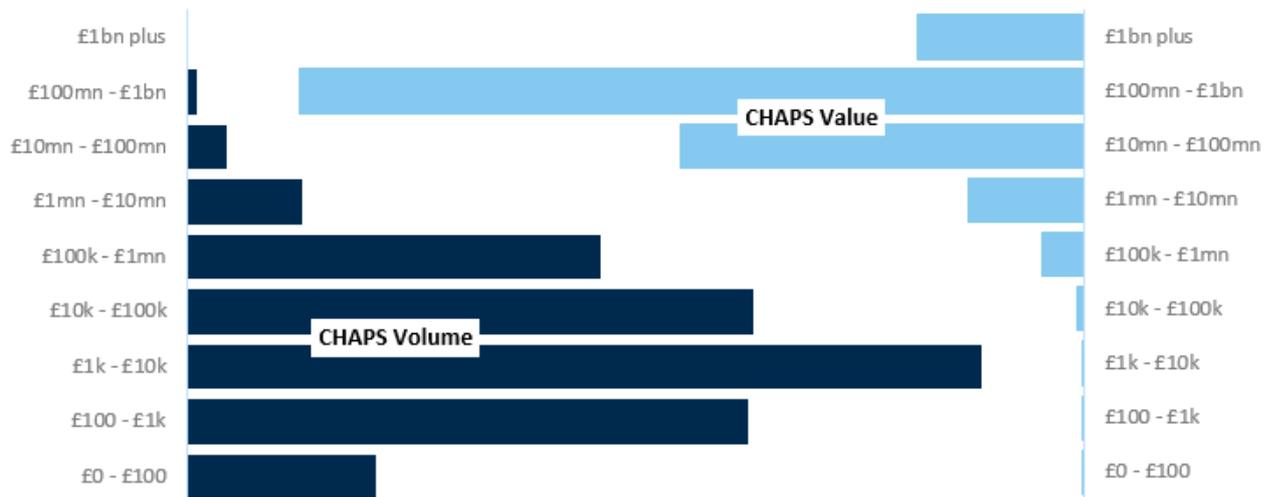
**Chart 3:** CHAPS annual values and volumes (calendar years 2010 – 2019)



In addition to high-value payments, CHAPS also processes a significant volume of low-value and retail payments. These are often time-sensitive or cross-border. While 97% of CHAPS payments by value are more than £1mn – with the single largest payment in 2019 in excess of £10bn – the

majority by volume is relatively low-value; 57% of CHAPS volumes are payments of less than £10,000 (Chart 4).

**Chart 4:** CHAPS payment band profile (March 2019 – February 2020)



**Box 1. CHAPS all-time record days**

Thursday 29 March 2018, the day before the four-day Easter holiday, and the last working day of the month and calendar quarter, saw a record volume of **320,034** payments, worth **£463 billion**. This exceeded the 11-year volume record by around **38,000** payments (13%).

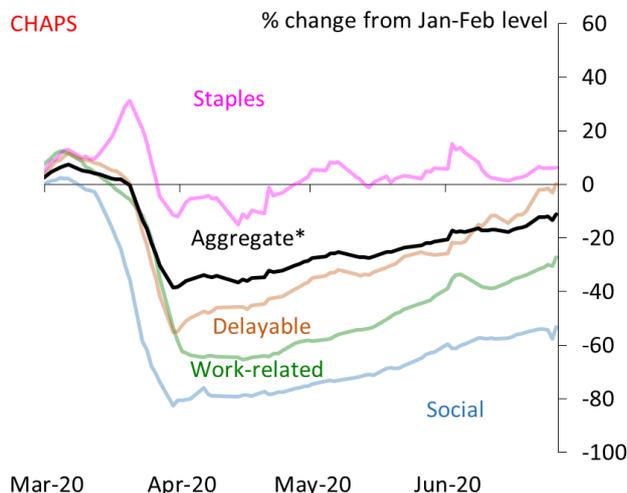
On 18 March 2020, a new **CHAPS value record** was set of **£479 billion**. This exceeded the previous record of £468bn by **£11 billion**. Both the previous and current value records were on quarterly maturity dates for futures, options and swaps.

**Figure 1. CHAPS values and volumes (March 2019 to February 2020)**

Average daily value  
£329.1 billion  
From an average daily volume of  
192,517 payments

Peak daily value of  
£455 billion  
Peak daily volume of  
314,777 payments

**Chart 5:** Fast indicators for UK spending from CHAPS data



CHAPS data is used within the wider Bank to support policy work – most recently to provide an early view on changes to spending in key retail sectors, in light of Covid-19, based on card receipts transferred to larger merchants via CHAPS.

Chart 5 is based on CHAPS payments that a sample of around 90 UK companies receive from their merchant acquirers on a daily basis. These payments reflect the sales that companies make through debit and credit card purchases, which are summed to estimate rolling seven-day revenues.

## 2. Our strategy for RTGS and CHAPS

The Bank of England's mission is to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. The provision of RTGS and CHAPS directly supports our mission in three ways:

- By offering settlement accounts to eligible institutions, RTGS plays a vital role in the functioning of the UK economy through supporting **safe and efficient settlement** of obligations in central bank money across a wide range of payment systems.
- Reserves held in reserves accounts in RTGS – under the Bank's [Sterling Monetary Framework](#) – are remunerated at **Bank Rate**. RTGS therefore acts as the platform through which monetary policy decisions are implemented.
- CHAPS provides a safe and efficient system for individual high-value and often **time-critical payments** to settle. The Bank also acts as **end-to-end risk manager** for CHAPS with the objective of **reducing risks to financial stability**.

We aim to provide each of these three services in a way that reflects: best-in-class standards of resilience; responsiveness to market developments and user needs; and value for money considerations. We also seek to draw on the full set of tools, information and resources available to the Bank.

### Strategy development

Our [RTGS/CHAPS Board](#) is responsible for setting the strategy for our management and operation of the RTGS and CHAPS services each year, consistent with the mission set out above. It is chaired by the Bank's Deputy Governor for Markets & Banking and operates within the Bank's wider governance structure.

Our strategy has evolved each year:

- In 2018/19 our focus was on '**integration**' following the transfer of responsibilities for CHAPS to the Bank in November 2017.
- For 2019/20, our focus was on '**consolidation**', including how we undertake end-to-end risk management for CHAPS and maturing our governance arrangements.
- For 2020/21, our focus is on '**augmentation**', with further maturity of our risk management arrangements, enhancing the CHAPS rulebook and seeking to maximise the financial stability benefits of CHAPS being part of the central bank.

In developing our strategy, the RTGS/CHAPS Board considers and agrees the strategic outcomes that should be our focus for the year ahead. These target outcomes are informed by consideration of relevant external developments through a structured horizon scanning process.

- Horizon scanning identifies and assesses potential changes to the banking and payments landscape as well as emerging risks to RTGS and CHAPS and therefore our strategy.
- This process is informed by consultation with internal and external experts across a range of topics reflecting the importance of understanding external views on RTGS and CHAPS to inform our strategy and supporting activities.
- External engagement covers financial institutions with direct and indirect access to CHAPS, and other RTGS users. We engage through bilateral discussions; our Strategic Advisory Forum; and in some cases with, and/or through, relevant trade associations.

- We also engage with other UK financial authorities, other central banks and private-sector operators of high-value payment systems.

## Key elements of our strategy

In delivering our agreed strategy, we aim to provide services that, in addition to being value for money, are based around four key themes:

- **Safe and resilient**, delivering global best practice in the face of evolving threats through use of the full set of tools and resources available to the Bank.
- **Well run**, providing efficient and cost effective services to users.
- **Responsive** to user voice and changes in the wider environment.
- **Renewed** to ensure that safe and resilient settlement in central bank money remains at the core of a rapidly changing payments landscape.

Our strategy for RTGS and CHAPS prioritises **safe and resilient** and **well run** as these are preconditions for the remaining themes of **responsive** and **renewed**. We have made significant progress on integrating the RTGS and CHAPS functions with each other and the wider Bank since 2017. Our RTGS/CHAPS Board therefore concluded that integration was no longer necessary to include as a separate strategic theme.

For 2020/21, delivering our strategic outcomes will require focus on:

- Service delivery including operating, and enhancing the resilience of, RTGS and CHAPS.
- Risk management including acting as an end-to-end risk manager for the CHAPS system.

We are also focussing on further enhancing collaboration across the teams that support the delivery of the RTGS and CHAPS services, and improving ways of working – including how this may change in light of Covid-19.

Our strategic outcomes also encompass medium term transformation such as reviewing our cost recovery arrangements; contributing to the review of access to the Bank's balance sheet and payments infrastructure; working with the wider payments industry to support UK payments capability; and ensuring secure communication in the renewed RTGS.

Ultimately, our current [RTGS Renewal Programme](#) will deliver a resilient, flexible and innovative system for the UK to meet the challenges posed by a rapidly changing landscape. Renewal will support competition and innovation in the wider banking and payments markets while ensuring – and enhancing – monetary and financial stability.

In section 3 of this Report, we set out how we advanced our strategy in the reporting year and in section 4 we set out how we will continue to do so going forward.

## Governance

We have dedicated, combined governance arrangements for RTGS and CHAPS where the RTGS/CHAPS Board provides strategic leadership. It is chaired by the Bank's Deputy Governor for Markets & Banking and is comprised of Bank executives and independent members. The RTGS/CHAPS Board operates within the Bank's wider governance structure, reporting to the Governor and the Bank's [Court of Directors](#).

As operator of CHAPS, the Bank is accountable for the end-to-end risk management of the CHAPS system and is responsible for setting the rules and technical standards. The RTGS/CHAPS Board supports this through the oversight of all risks that could impact the resilience of the payment system. In taking decisions on RTGS and CHAPS, the RTGS/CHAPS Board:

- first considers the Bank’s monetary and financial stability objectives, ensuring any decisions are consistent with the Bank’s overall mission;
- seeks to promote efficiency, innovation and competition in sterling payments, wherever that can be safely done without impairing financial stability; and
- subject to these other principles, considers how to provide services that are: simple to develop, operate, and use; flexible in response to changing demands; and provide value for money for the Bank and the wider market.

The RTGS/CHAPS Board’s responsibilities, including those of its Risk Committee, are published on the Bank’s [website](#). To support its responsibilities, it draws on a range of internal and external assurance (see Box 2). The RTGS/CHAPS Board takes appropriate input from RTGS and CHAPS users, including through the Strategic Advisory Forum and the RTGS Renewal Programme’s External Advisory Body (EAB).

To ensure the effective governance of the RTGS and CHAPS services, we undertake reviews of the Board’s effectiveness and implement improvements identified. A comprehensive review was completed in January 2019 and improvements implemented; and a follow-up review carried out later in 2019 assessed progress. As part of our 2019 self-assessment against the Principles for Financial Market Infrastructures, we judged that governance arrangements had matured to a point where we observed *Principle 2 – Governance*.

## Box 2. Independent assurance

The International Standard on Assurance Engagements (ISAE) 3402 is an internationally recognised auditing standard developed by the Internal Auditing and Assurance Standards Board. This standard is commonly used in relation to financial infrastructure provision and provides assurance on the design and operation of the control framework, processes and technology which supports the Bank’s delivery of RTGS and CHAPS.

The 2018/19 audit, completed by an external reviewer, concluded that the control environment had been designed and was operating so as to provide assurance that the Bank’s control objectives for RTGS were achieved. This conclusion was in line with previous years’ reports. There were 14 exceptions noted, none of which the external reviewer considered to have material impact.

The Bank’s full three year re-certification of ISO 27001 was successfully completed in June 2019. This certification is an internationally recognised standard for information system security management. Information security is also audited on a Bank-wide basis, as well as at a business area level specific to RTGS; a further audit will be completed in 2020.

The Bank also has executive governance arrangements in place for the RTGS and CHAPS services – based around our three risk domains of internal, supplier, and participant – with input from other parts of the Bank including technology and risk functions.

### *RTGS Renewal governance*

The RTGS/CHAPS Board works closely with the **RTGS Renewal Committee (RRC)**. RRC is the sub-committee of Court responsible for overseeing the delivery, overall scope and financial management of the **RTGS Renewal Programme**, including ensuring that the Programme delivers demonstrable value for money.

The RTGS/CHAPS Board is responsible for strategic decisions in managing the impact and risk to the live RTGS service from the Renewal Programme, including ensuring the live service and its participants are ready to transition to the new RTGS service. In addition, the RTGS/CHAPS Board oversees the Renewal Programme's engagement with the industry, including the industry's readiness to implement the changes required by the Programme.

The RTGS/CHAPS Board and the RRC are jointly responsible for the key decisions to transition to the new RTGS Service. Information flows and consultation requirements are in place between RRC and RTGS/CHAPS Board on matters that would impact each other's responsibilities.

The RTGS Renewal Programme also has a comprehensive executive governance structure, including a **Programme Board** and a number of underlying boards including those that focus on policy, technical and business service design, procurement and security.

### 3. Developments between March 2019 – February 2020

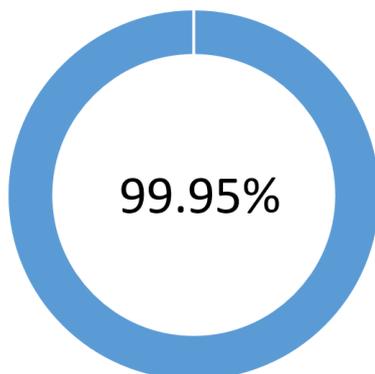
For 2019/20, our focus was on ‘**consolidation**’, including how we undertake end-to-end risk management for CHAPS and maturing our governance arrangements. Key outcomes and activities were focussed on:

- Service delivery including operating the live RTGS and CHAPS services, including supporting direct access to CHAPS and other payment systems that settle in RTGS; contributing to the Bank’s operational resilience agenda; and enhancing our end-to-end testing arrangements for our tertiary solution, MIRS, including with CHAPS Direct Participants (DPs).
- Risk management including acting as the end-to-end risk manager for the CHAPS system; starting to enhance the CHAPS Reference Manual with an initial focus on security requirements; and engaging with industry on retail fraud initiatives including Confirmation of Payee.
- Medium term transformation including reviewing access policy; engaging with the findings of the Bank’s Future of Finance report; exploring the feasibility of CHAPS acting as a contingency alternative to the retail systems; and progressing procurement and other activities to support the multi-year Renewal programme.

Further information on these activities is set out below.

#### Operational resilience of RTGS and CHAPS

**Figure 2.** RTGS availability 2019/20



The Bank has a strong focus on making its infrastructure as reliable as possible, targeting availability for at least 99.95% of its defined operating hours. RTGS availability in 2019/20 met our target of **99.95%** (Figure 2).

The development and regular testing of operational resilience remains an essential part of our strategy. In November 2019, the Bank completed – alongside Pay.UK and participants of CHAPS and Faster Payments – a desktop exercise to explore the impact of large scale re-routing of payments between CHAPS and Faster Payments. This helped us explore how a major operational incident affecting two large participants could be effectively managed across multiple organisations and

identified a number of actions to help us collectively further prepare.

To ensure that payments are settled safely and efficiently, the Bank continuously seeks to improve the resilience of the RTGS infrastructure against outages. In February 2014, the Bank introduced the [‘Market Infrastructure Resiliency Service’](#) (MIRS) as an additional contingency infrastructure that could be used in the event of a failure of the principal RTGS infrastructure. This robust tertiary solution helps to ensure that we can continue to provide CHAPS settlement to enable all critical CHAPS payments to complete by the end of the intended settlement date in the event our principal RTGS infrastructure is unavailable or loses integrity. MIRS can process a peak CHAPS settlement day in under three hours, once activated. MIRS also supports the continued settlement of CREST and the retail payment systems.

MIRS has consistently demonstrated its technical capability in a regular series of tests; in August 2019 we undertook a ‘live’ test of MIRS running on a working day with real payments. It highlighted improvements for CHAPS DPs in terms of how timely and accurate reconciliations of their account

balances can be completed. These issues are being worked through and CHAPS DPs will complete reconciliation tests as an interim milestone before we undertake a ‘live’ test again.

During 2019, we participated as the FMI in the FPC’s pilot cyber stress test based on the temporary unavailability of payments infrastructure, helping to ‘test the test’. This contributed to the FPC’s consideration of whether the proposed end of value date tolerance for the completion of all critical payments is appropriate from a financial stability point of view. As described above, MIRS contributes to the completion of payments within this timeframe. As part of the Renewal Programme, we are exploring how we could enhance resiliency in the event of a SWIFT outage through the development of a message network agnostic design for RTGS, providing a secure communication channel.

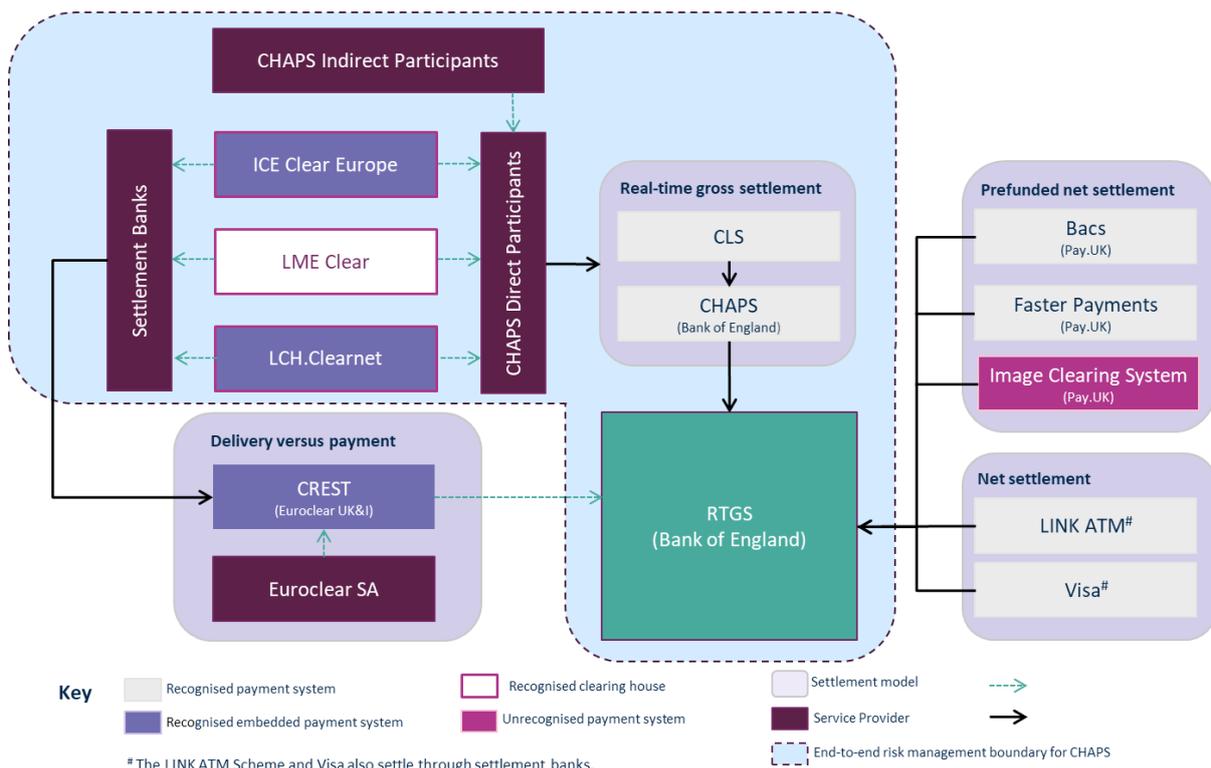
### Risk management

Under our integrated risk management approach we use a single, combined risk register for RTGS and CHAPS with common indicators and reporting procedures. This includes assessing both emerging and established risks specific to RTGS and CHAPS (in line with the Bank-wide risk management framework). We established a Risk and Control Self-Assessment process across our RTGS and CHAPS activities to help us identify and evaluate process risks and the effectiveness of supporting controls.

#### End-to-end risk management

As the end-to-end risk manager for the CHAPS system, we seek to ensure that the end-to-end flow of payments is safe, secure and stable. Establishing a single end-to-end risk manager was the key driver behind the move to the Bank becoming the CHAPS payment system operator alongside its existing responsibility for running the RTGS system. The risk management boundaries of CHAPS are shown in Figure 3 below.

Figure 3. CHAPS end-to-end risk management boundaries



The Bank does not seek – and is unable – to directly manage all risks across the end-to-end CHAPS system. Our approach is to assign responsibilities for risks according to where they can be managed most effectively. We therefore coordinate with the owners of these risks (such as CHAPS DPs and critical service providers such as SWIFT) to seek assurance that the payment system, taken as a whole, is operating within our risk tolerance, as set by the RTGS/CHAPS Board. We have sought to better understand and assess risks associated with the critical service providers and critical assets that support the end-to-end CHAPS system.

Each payment system operator has rules and requirements that must be met for the systems they operate. For CHAPS these are set out in the [CHAPS Reference Manual](#). The Bank undertakes assurance against the technical and operational requirements in particular before permitting access to CHAPS. A [list of CHAPS DPs](#) is available on the Bank’s website.

A particular risk management focus is the risk associated with financial institutions accessing CHAPS indirectly i.e. through a DP. This arrangement, known as tiering, introduces credit, liquidity and operational risk between direct and indirect participants. Under the CHAPS rules, the Bank has the right to withdraw consent to a ‘tiered relationship’ under specific criteria if there are insufficient mitigating circumstances to address the risks. For example, if an indirect participant’s values exceed more than 2% of overall CHAPS values, the Bank has a presumption that it will move to direct access.

We continue to enhance relationships within the wider Bank, including the Prudential Regulation Authority (PRA), to enable two-way information sharing to help increase mutual understanding of the risks to CHAPS and potential actions to mitigate such risks. As well as the PRA, we work with the Financial Conduct Authority (FCA) and Payment Systems Regulator (PSR), who supervise CHAPS participants and have a shared interest in a well-functioning payment system, to seek their input and support for risk reduction measures. These relationships are particularly important where a firm is seeking to join CHAPS; has an operational incident; or otherwise poses risks to the CHAPS system through its actions. We also work closely with the FCA before granting access to RTGS to individual, FCA-authorised, non-bank payment service providers.

### **Box 3. Principles for Financial Market Infrastructures self-assessment**

The Bank, as the operator of RTGS and CHAPS, published a self-assessment against the Principles for Financial Market Infrastructures (PFMIs) in December 2019. The PFMIs are internationally agreed standards published by the Bank for International Settlements’ Committee on Payments and Market Infrastructures (CPMI) and the International Organisation of Securities Commissions (IOSCO). Of the 24 principles, 17 were relevant to RTGS and/or CHAPS. The Bank self-assessed as observing 16 and broadly observing the remaining principle on risk management. Since the previous self-assessment (published in December 2018), considerable progress had been made across both governance and risk management.

- On governance, we judged that there had been evidence of consistent and effective functioning over time, leading us to change our self-assessed rating from broadly observed to observed.
- On risk management, our self-assessed rating of broadly observed reflects the need for further embedding and maturity of risk management tools created as part of transformation following the transfer of CHAPS to the Bank.

We completed the self-assessment as operator of RTGS and CHAPS, not in the Bank’s capacity as supervisor of financial market infrastructures.

We also encourage DPs to voice their views and any concerns that might pose risk to RTGS and CHAPS through our various strategic and operational channels such as the Strategic Advisory Forum, the CHAPS Security Forum, and the CHAPS Participant Engagement Forum.

### *Cyber risks to RTGS and CHAPS*

There is an increased cyber threat to the stability of FMI. It is therefore important that the Bank continues to develop the resilience of RTGS and CHAPS to risks posed by cyber.

We have an agreed cyber strategy for CHAPS, and refreshed security requirements have recently been published as part of the CHAPS Reference Manual, including enhancements to the supporting assurance approach developed. The requirements are aligned with the comprehensive principles of the National Institute of Standards and Technology's (NIST) Cybersecurity Framework: identify, protect, detect, response and recover. It is best practice for FMIs to align with such leading standards in order to reflect industry best practice.

As part of the development and implementation of the security requirements, we engaged relevant experts both within and outside the Bank including the National Cyber Security Centre (NCSC), peer central banks, and other external security experts. Our enhancements to the assurance approach bring clarity to expectations and greater proportionality. During the development we have maintained regular engagement with DPs through our CHAPS Participant Engagement Forum, its Assurance and Rulebook Working Group and the CHAPS Security Forum.

More broadly, cyber risk is actively discussed with DPs through the CHAPS Security Forum, directly drawing on input from DPs. A representative from the NCSC also attends RTGS/CHAPS Board and its Risk Committee meetings, providing independent expertise and advice.

From an RTGS perspective our cyber strategy seeks to ensure we have the right level of governance and risk management around RTGS people, processes and technology. Cyber defence around the RTGS infrastructure as a whole consists of multiple layers, each intended to detect and defeat different types of threat. These defences are continuously monitored, reviewed and updated. We engage regularly with the central functions in the Bank which operate these defences including the Bank's Chief Information Security Officer. The Board and executive participate in a range of cyber scenarios each year to reflect, in particular, on our recovery and response capabilities.

### **Horizon scanning**

Horizon scanning helps us to holistically understand emerging developments in the payments landscape and to assess potential risks to, and opportunities for, RTGS and CHAPS. We draw on a network of subject matter experts across the Bank, as well as external input, gathering and analysing information on developments and emerging risks that may be relevant to our strategy for RTGS and CHAPS. We consult the Strategy Advisory Forum on developments, and our regular meetings with DPs are a valuable source of information.

The results of this process, including any priority developments and proposed actions, are reported to the RTGS/CHAPS Board at least twice a year. In 2019/20, we explored the concentration of cloud and other service providers; cross-border payments; and commercial bank money netting services.

## Widening access

In order to hold an account in RTGS, an organisation must meet the relevant eligibility criteria.

- Banks, building societies, certain broker dealers and central counterparties may hold reserves accounts – subject to meeting the criteria for the [Sterling Monetary Framework \(SMF\)](#). Where an institution is eligible for a reserves account, this will also act as its settlement account.
- Some types of organisations – other FMIs, including payment system operators, and authorised non-bank payment service providers – are not eligible for a reserves account but may hold a settlement account, subject to meeting the criteria under the Bank’s [Settlement Account Policy](#).

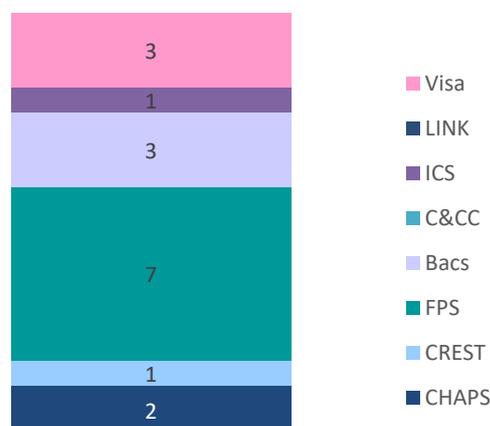
Holding an account in RTGS that can be used for settlement is a requirement for direct access to certain payment systems, including CHAPS, Bacs, Faster Payments and the Image Clearing System.

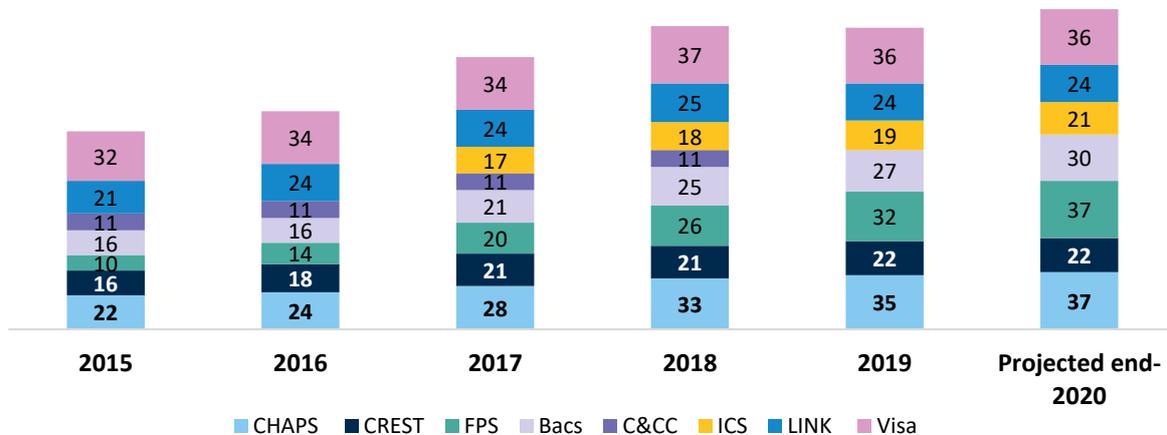
Wider access to settlement in central bank money can help to contribute to financial stability by reducing the concentrated operational reliance on a small number of banks and the credit exposures between DPs and large IPs. Wider access, subject to where we can safely do so without impairing financial stability, can also enable a more innovative and competitive market in payments.

One way we sought to safely widen access was our extension of access to RTGS for non-bank payment service providers. We continue to work closely with the FCA within an agreed [framework](#). Before we permit non-bank payment service providers to settle in RTGS, each must demonstrate its operational capacity to participate in and efficiently settle in RTGS. Each must also undergo a supervisory assessment by the FCA to assess compliance with existing regulatory requirements and satisfy the FCA that feedback has been addressed. Non-bank payment service providers with an account in RTGS will be subject to ongoing, strengthened supervisory oversight by the FCA to assess their continuing compliance.

In the reporting period, there were two new CHAPS DPs (Euroclear Bank and TSB) and one new CREST settlement bank. We added new settlement participants for the retail payment systems: five for Faster Payments; three for Bacs; three for Visa; and two for the Image Clearing System (Chart 6). Two of these were non-bank payment service providers. There are now more than 70 organisations using RTGS to settle directly in one or more payment systems. In July 2019 we suspended a non-bank payment service provider, ipagoo LLP, from CHAPS and settlement account access in RTGS, in the light of the FCA requiring it to cease undertaking regulated activities.

**Chart 6:** New settlement participants for payment systems (March 2019 – February 2020)



**Chart 7:** Settlement participants per payment system per calendar year since 2015

### *Enabling resilience, innovation and competition*

In March 2019, we updated our access criteria to permit firms to hold an additional settlement account in circumstances where there would otherwise be material technical and regulatory impediments to using a single settlement account to support further competition and innovation.

In its response to the June 2019 [Future of Finance](#) report, the Bank committed to enhancing the payments system for the digital age to support a more resilient, innovative and competitive payments system for households and businesses in the UK. This includes providing appropriate public infrastructure that enables competition to thrive and the private sector to create products that support wider choice for consumers.

In November 2019, the Bank published a [Call for Evidence](#) to gather views on the appropriate level of access to our balance sheet and payments infrastructure to better understand any barriers to access and how these could be addressed to improve the range of payment related services it offers to new and innovative business models. One area being explored is the lack of overnight deposit facilities offered to non-bank payment service providers who are eligible for a settlement account in RTGS. Today, this is limited to funds required for their settlement obligations, including prefunding arrangements where relevant. A formal consultation on the appropriate levels of access to the Bank's payments infrastructure and balance sheet is planned.

Another priority area for action under the Future of Finance report is for the Bank to partner with other central banks to explore how high value payment systems could support settlement in different currencies, empowering private-sector innovations in cross-border finance. Enhancements to cross-border payments are currently being taken forward under the auspices of the [G20 initiative](#). The Bank is also championing the Legal Entity Identifier (LEI) as a globally recognised and unique identifier for all businesses in the UK, including integrating the LEI into the renewed RTGS service and mandating its use in CHAPS payment messages.

The Bank published a [discussion paper](#) in March 2020 on Central Bank Digital Currencies. The Bank has also been exploring how it could offer novel settlement models to innovative payments systems backed by Bank reserves. Both of these developments are relevant to our operation of RTGS and CHAPS given each would impact the payments and settlement landscape.

As the operator of CHAPS, we are also exploring how to facilitate greater resilience and adoption of cloud technology by CHAPS DPs, subject to appropriate safeguards.

## Retail fraud

Authorised Push Payment (APP) scams continue to increase in the UK. In 2019, UK Finance members reported 122,437 cases of APP scams (185,449 payments), with gross losses of £456mn of which £166mn was reimbursed. While CHAPS was the least common payment method used (only 0.7% of APP scam payments), nevertheless the high-value nature of CHAPS means it was used in 7% of the value of these scams (£30mn).

Retail fraud can have a material impact on its victims, particularly for CHAPS where the amounts can be significant for the victim. The Bank stands ready to engage with CHAPS DPs where it is able to assist with innovative ways to combat retail fraud. Two examples are described below.

- Confirmation of Payee is an account name-checking service that helps to make sure payments are not sent to the wrong account. It helps customers and businesses make payments safely by checking the name on an account before a new payment is set up.
- We are working with a number of CHAPS DPs and Vocalink on a Proof of Concept to put CHAPS data through Vocalink's financial crime analytics to better understand the pattern of fraudulent CHAPS payments (and identify likely frauds which can then be tackled).

## Stakeholder engagement

CHAPS and RTGS have a large and diverse population of stakeholders with different interests. We are committed to giving appropriate voice and transparency to these users in how we govern CHAPS and RTGS and provide the most appropriate service now and in the future. Communication includes two-way engagement for us to seek views from users, and to respond to them. In addition to bilateral discussions, we have a number of different fora through which to collect views and to share information.

For strategic input on CHAPS, the Bank has a **Strategic Advisory Forum**. It is chaired by an independent member of the RTGS/ CHAPS Board and meets four or five times a year. This is a small focused group to discuss, and provide feedback and advice on, the strategic direction of CHAPS, including the underpinning RTGS service.

The Forum has discussed and provided advice to the Bank on a number of key topics such as: the role of CHAPS in the payments landscape; horizon scanning; fraud in payments; management of risks to the end-to-end CHAPS system; and the Renewal Programme.

We meet with senior representatives from CHAPS DPs regularly to discuss developments in the payments landscape. At an operational level this is achieved through the operationally-focused **CHAPS Participant Engagement Forum** and a number of focussed working groups.

More broadly, we engage with other central banks and private-sector operators of high-value payment systems. Topics include our respective ISO 20022 migrations and standardisation, cross-border payments, operational resilience and wholesale fraud.

In September 2019, the UK hosted SWIFT's annual SIBOS conference which provided the Bank team with further opportunities for enhanced engagement with central bank peers and speaking at panel

sessions. ISO 20022 was a significant focus for much of the conference, allowing attendees including the Bank to engage in helpful discussions and key learnings from other central banks.

We also communicate our messages through conference speeches (see Annex 2), articles, and publications such as consultations and this Annual Report. Victoria Cleland, the Executive Director for Banking, Payments and Innovation, delivered a number of speeches in 2019/20 including a speech at PayExpo in October 2019 to highlight the work of the Bank to enhance operational resilience of RTGS and CHAPS. She also co-authored an article with the Chair of the Global Legal Entity Identifier Foundation on the value of the Legal Entity Identifier for the payments industry.

## RTGS Renewal

The RTGS infrastructure – which lies at the heart of UK payments – is over 20 years old and, despite its strong operational record, needs to be modernised and developed to meet the industry’s future needs. A core objective of the Renewal Programme is to continue to protect the resilience and safety of the UK’s payment infrastructure whilst also supporting competition and innovation in the financial services industry. We want to support new ways of doing business and serving society’s payment needs.

The renewed RTGS service is being delivered through a multi-year programme of work, which has been designed to be an open and collaborative effort with extensive stakeholder engagement at all stages. The Programme is being run by a dedicated team at the Bank, separate from day-to-day operations, to ensure staff can continue to focus on the effective delivery of the current service. However, where appropriate, the Renewal Programme draws upon subject matter experts from within the Bank.

In February 2019 the Bank published a contract notice in the Official Journal of the European Union (OJEU) inviting potential Technology Delivery Partners (TDPs) to express their interest. Following a rigorous and competitive dialogue process, the chosen TDP is due to be announced in late summer 2020. Once the TDP is in place, we will start building the renewed service, starting with deliverables centred on participant data channels.

The renewed RTGS will deliver a range of new features and capabilities and the Bank’s vision for the renewed RTGS is organised around five key features (Figure 4).

**Figure 4.** Our RTGS Vision



### *External engagement on Renewal*

The Renewal Programme undertakes significant external engagement, including through Renewal's External Advisory Body (EAB) representing a broad range of interests, from current RTGS participants, prospective participants, Pay.UK, PSR and trade associations. EAB members provide a cross-section of views and challenge to the Programme.

In early 2020, the Programme hosted an all industry briefing which focused on ISO 20022. This included updates on the change in our migration approach, the use of enhanced data messages, testing and work to ensure participant readiness. At the event the Bank launched three new working groups for the RTGS Renewal Programme – a **Transition** Working Group, a Renewal **Testing** Working Group and a **Programme Managers** Working Group.

The Programme held a Chief Information Officer forum which met in early 2020. One of the topics discussed was message network agnostic design for the renewed RTGS service. We expect that RTGS will - from the outset – continue to use SWIFT as the provider of message services. But we will also design the renewed RTGS to be 'message network agnostic' – to be capable of sending and receiving payment messages from multiple sources and interfacing with multiple messaging networks.

The Programme regularly convenes **thematic workshops** to gain external input on policy or design choices. Key topics have included: transitioning to the new RTGS service; innovative proposals such as synchronisation; and the transition to ISO 20022 messaging. The Programme continues to use bilaterals, working groups and the EAB to engage with CHAPS DPs, and provides regular updates to the wider payments industry through its bi-monthly newsletter.

### *Messaging standards*

As part of the response to the ISO 20022 consultation published in November 2018, the Bank confirmed its intention to make Legal Entity Identifiers (LEIs) – a globally standardised tool for uniquely identifying a legal entity – a mandatory component of payment messages between financial institutions. Expected benefits of LEI adoption include: increased efficiency, competition and productivity; better risk management and fraud detection; improved financial reporting and the potential building block for future innovation. Beyond integrating the LEI in the Bank's new RTGS service and mandating its use in payment messages, we also committed in our response to the Future of Finance report to champion the LEI for all businesses in the UK. Wider adoption of LEI and enhanced payments data available in CHAPS will help to support UK-wide and international efforts to tackle financial and other economic crime.

In December 2019 we published the final 'like-for-like' message set for the introductory phase of the ISO 20022 CHAPS migration. This documentation includes additional information on our migration approach and updates on the use of enhanced data messages, testing and approach to participant readiness.

In early 2020, the Bank launched on the SWIFT MyStandards Readiness Portal to enable users to begin testing their CHAPS payment messages against the published schema. The RTGS Renewal Programme is looking to publish final enhanced ISO 20022 message schema for CHAPS in September 2020. Earlier in July, we published an Industry Review, inviting final comments on the draft of the enhanced schema. The Bank and Pay.UK jointly operate a Standards Advisory Panel to support us in

the implementation of payment standards by providing expertise on industry preferences and implications.

### *Interoperability with retail payments*

Pay.UK is working to build a New Payments Architecture for retail payments. There are synergies between this and the RTGS Renewal Programme and, while we operate independently from Pay.UK, we are working closely to ensure that we coordinate where there are benefits in doing so, and where this will best support the payments industry.

In addition, we worked with the industry, including Pay.UK, to explore a potential contingency solution for allowing batches of critical retail payments to settle directly in RTGS, while ensuring critical wholesale payments are not impacted. This solution could help meet the FPC's proposed impact tolerance for retail payments in the unlikely event of a major outage. In the reporting period, we focused on external engagement to understand the technical feasibility of the steps participants and users might need to undertake to achieve this solution.

## 4. Our strategy for 2020-2021

The key ‘**augmentation**’ activities for each theme of the 2020/21 strategy (safe and resilient, well run, responsive, renewed) are set out below. These are supported by a number of strategic outcomes based on service delivery, risk management, and medium term transformation.

In common with other organisations, we have reviewed our strategy in response to the Covid-19 pandemic. We have had to undertake additional activities, in particular transitioning to remote working – including for our most critical operational functions - and supporting our staff through a challenging environment. Key to this has been ensuring we maintain the appropriate controls in place to continue smooth operation of RTGS and CHAPS.

While our strategy, and activities supporting it, have not fundamentally changed in response to Covid-19, we have had to review timings in order to resource additional activities and reflect new ways of working. As part of this we are also liaising with our stakeholders – especially CHAPS DPs – to understand their capacity to engage in and implement change.

### Safe and resilient

The resilience of the CHAPS system is about more than just the central RTGS infrastructure or management of the CHAPS DPs in isolation. Weaknesses in security or operations at any point in the payment chain could threaten stability and trust in the whole system. It is vital to have a holistic view of CHAPS as a network through which financial or operational risk can be transmitted. We can take this holistic view as end-to-end risk manager of CHAPS, drawing on the tools and resources available to the Bank to manage risks.



Following on from our participation in the FPC’s pilot cyber stress test in summer 2019 based on the temporary unavailability of payments infrastructure, we will continue to enhance our approach to operational resilience. We will undertake a second ‘live’ test of MIRS, our tertiary solution, with CHAPS DPs processing live payments through it. MIRS is key to our ability to meet the FPC’s proposed impact tolerance to complete critical payments by the end of day. The timing of the test will depend on when we judge it appropriate to resume preparations with CHAPS DPs given the challenges of delivering the training and testing while their staff and ours continue to work from home due to Covid-19. We will also consider what further arrangements we may need to put into place to ensure compliance with the proposals set out in the Bank’s December 2019 consultation on improving the operational resilience of FMIs to protect the wider financial sector and UK economy.

To improve cyber resilience of CHAPS DPs, we have recently published a new set of enhanced security requirements in the CHAPS Reference Manual aligned to NIST’s Cybersecurity Framework. The focus for 2020/21 will be on starting to undertake assurance against the new security requirements.

Following on from the enhanced security requirements, and additional controls around service providers, we have embarked on a broader refresh of the CHAPS Reference Manual and supporting documents. This will allow us to take a more proportionate and streamlined approach to setting requirements, and how we undertake assurance against them, while maintaining an effective risk

and control framework for the end-to-end CHAPS system. As with the security requirements, we will seek to align with domestic and international standards where possible.

In addition, we are working to move closer to permitting CHAPS DPs to use cloud service providers for CHAPS-related activities, following the completion of a risk assessment and supervisory non-objection, provided this can be done in a safe and controlled way and without detriment to the end-to-end CHAPS system. This will enable the potential resilience-enhancing benefits outlined in the Future of Finance report. We will update the Service Provider requirements in the CHAPS Reference Manual to align with the PRA Supervisory Statement on Outsourcing to ensure appropriate controls are in place for outsourcing, including to cloud service providers.

## Well run

We will continue to deliver safe and reliable day-to-day operations, including considering any changes that are required to support the transition to the renewed RTGS service as well as to safely retire the current RTGS infrastructure.



With industry, we are reviewing potential contingency responses in the form of changes to hours that RTGS is available for settlement in the unlikely event that there is a severe level of absence amongst the staff who operate RTGS. We place a high emphasis on demonstrating value for money for the Bank and its users in terms of the services we provide, in both the current and future RTGS infrastructures. For example, this includes analysing options for, and seeking external input on, the tariff structure in the new RTGS service to ensure the recovery of our costs continues to be fairly distributed across users of the system, taking into account the range of service provided, and that we meet our future objectives to fully recover costs.

Continuous improvement of the RTGS and CHAPS services is necessary and we will continue to develop our medium term strategy for RTGS and CHAPS. We work to ensure that the effective governance of the service continues through adherence to relevant governance good practice and periodic reviews of the Board's effectiveness, implementing identified improvements.

## Responsive

Understanding the needs of RTGS and CHAPS users in light of current and future changes in the wider payments landscape is essential in providing a robust and resilient service. We give appropriate weight to those views and requirements gathered and feed them into our decision making, including input to Board-level discussion.



Engagement also ensures we are alert to changing trends in payments and settlement landscape – at a general level, and building up a better picture of the plans of CHAPS DPs and other FMIs in particular (and how they may be impacted by the current environment). We continue to enhance our horizon scanning and emerging risk function, drawing on broader sources of internal and external expertise including on potential longer term threats such as quantum computing.

We support this through a broad programme of engagement with external stakeholders. During the year we expect to consider further evolution of the Strategic Advisory Forum and Renewal's External Advisory Body as we progress with the RTGS Renewal Programme.

We will also actively continue to engage domestically and internationally with our counterparts operating other RTGS and high-value payment systems on topics including ISO 20022 and cross-border payments.

In common with other organisations, we are considering how to adapt to the challenges presented by Covid-19. Large conferences which are a target audience for speeches may not resume for some time in person, while SWIFT have announced that SIBOS 2020 will be virtual.

### *On-boarding to RTGS and CHAPS*

More broadly, we have considered the availability of on-boarding slots for RTGS from 2020 through to 2023 given the preparatory work for the renewed RTGS system. For the retail payment systems, we expect to be able to provide around fifteen slots for new settlement participants in the prefunded payment systems, and five for the retail systems that do not use the prefunding arrangements in RTGS.

For CHAPS, we expect no more than three on-boarding slots to be used in 2020/21. For 2021, we expect to make four slots available in total between January and May. For 2022, we expect to be able to make a small number of slots available between April and August. For 2021 and 2022, these slots are concentrated in a smaller window than normal given the need for a functionality change freeze, including CHAPS on-boarding, to provide a stable version of the system for testing to support the ISO 20022 and broader RTGS Renewal changes.

We expect limited interest, however, for the CHAPS slots in 2022 given the proximity to the renewed RTGS platform in 2023. On-boarding into the current RTGS system towards the end of its life would lead to the on-boarding firm needing to undertake additional changes and testing in short succession.

## **Renewed**

The renewed RTGS service will need to be able to respond to the changing structure of the financial system and facilitate simpler and quicker access to services, ensuring that safe and resilient settlement in central bank money remains at the core of a rapidly changing payments landscape. We will continue to contribute to the Bank's wider review of access to the Bank's payments infrastructure and balance sheet.



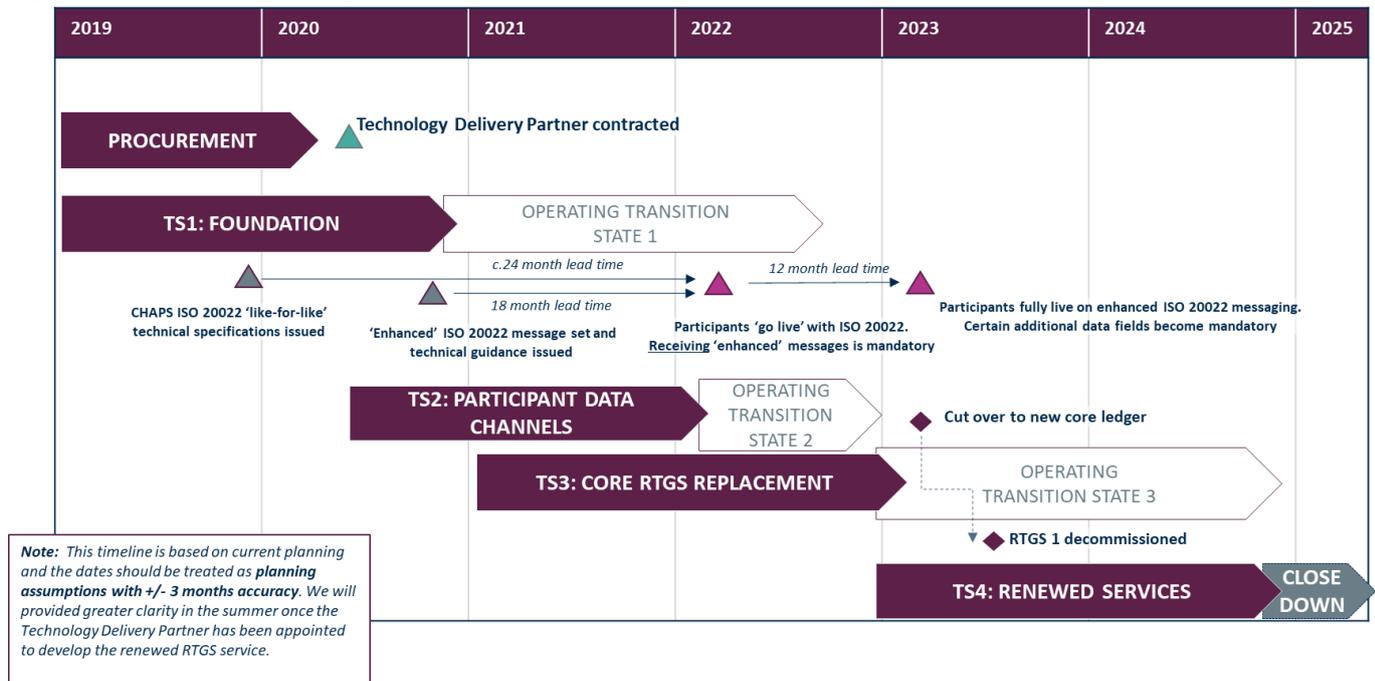
The renewed RTGS will also need to meet user demand for simpler and more highly resilient payment pathways as well as building capacity and flexibility to interface with new payment technologies as adoption increases. Importantly, it will need to achieve this whilst demonstrating clear value for money.

We expect to appoint a TDP in late summer 2020. This will be an important milestone and moves us closer to delivering the renewed RTGS system. We are considering how best to ensure an

appropriate level of industry readiness to safely move to the new ISO 20022 message standard for CHAPS and, in due course, the new core ledger for the RTGS infrastructure.

We will finalise and publish the specification and technical market guidance for enhanced ISO 20022 messages by September 2020. The implementation of ISO 20022 in the UK will continue to be a key focus of our stakeholder engagement activity. In March 2020, SWIFT announced that it would delay migration of its correspondent banking network to ISO 20022 by one year to end-2022. The ECB recently announced that its Governing Council will shortly consider an industry recommendation to extend their timeline similarly. Industry feedback suggests the Bank should continue to migrate to ISO 20022 in Spring 2022, however, there may be a case for only using the ‘like-for-like’ schema until early 2023, when participants would cut over to full enhanced messaging with additional mandatory data fields as planned. We will confirm whether we will change the scope of the Spring 2022 migration to ISO 20022 to reflect this feedback in due course. We will nevertheless continue work to finalise and publish the enhanced ISO 20022 messages in September 2020.

**Figure 5. RTGS Renewal Programme Timeline**



N.B. The scope of part of the Spring 2022 milestone (‘Receiving “enhanced” messages is mandatory’) is currently under review.

## Annex 1. RTGS and CHAPS statistics

Table A.1 RTGS availability

Service availability	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20
RTGS infrastructure for 'urgent' CHAPS settlement	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99.93%
RTGS infrastructure for 'non-urgent' CHAPS settlement	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ability of RTGS and the RTGS-CREST link to support settlement in CREST	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99.57%	100%
Delays to net settlement of retail payment systems (minutes)	13	0	0	0	0	0	0	0	0	0	0	0
RTGS Enquiry Link	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table A.2 Daily average RTGS settlement values and values March 2019 – February 2020

CHAPS values (£mn)	£329,116
<i>CHAPS volumes</i>	<i>193,000</i>
CREST DvP values (£mn)	£348,201
<i>CREST DvP volumes</i>	<i>11,906</i>
FPS net values (£mn)	£1,048
Bacs net values (£mn)	£3,953
C&CC net values (£mn)	£169
LINK net values (£mn)	£296
Cheque imaging net values (£mn)	£193
Visa Europe net values (£mn)	£2,383
<b>Total values (£mn)</b>	<b>£685,359</b>

Table A.3 CHAPS gross monthly values and volumes

	Volume (000s)	Value (£mn)
Mar-19	4,038	£7,078,590
Apr-19	4,075	£6,751,232
May-19	4,177	£6,727,583
Jun-19	3,787	£6,576,622
Jul-19	4,421	£7,687,907
Aug-19	3,998	£6,620,462
Sep-19	4,037	£7,156,873
Oct-19	4,348	£7,525,731
Nov-19	3,982	£6,671,290
Dec-19	4,037	£6,885,965
Jan-20	4,099	£7,226,089
Feb-20	3,708	£6,358,096

## Annex 2. Key speeches

Speech Title	Speaker	Date	Link
<b>A platform for innovation</b>	Mark Carney	29 April 2019	<a href="https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-innovate-finance-global-summit-2019">https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-innovate-finance-global-summit-2019</a>
<b>Embracing FinTech</b>	Dave Ramsden	30 April 2019	<a href="https://www.bankofengland.co.uk/speech/2019/dave-ramsdens-speech-at-innovate-finance-global-summit-2019">https://www.bankofengland.co.uk/speech/2019/dave-ramsdens-speech-at-innovate-finance-global-summit-2019</a>
<b>Resilience and innovation in post-trade</b>	Dave Ramsden	8 May 2019	<a href="https://www.bankofengland.co.uk/speech/2019/dave-ramsdens-afme-12th-annual-european-post-trade-conference">https://www.bankofengland.co.uk/speech/2019/dave-ramsdens-afme-12th-annual-european-post-trade-conference</a>
<b>Operational resilience – a progress report</b>	Nick Strange	14 May 2019	<a href="https://www.bankofengland.co.uk/speech/2019/nick-strange-operational-risk-europe-conference">https://www.bankofengland.co.uk/speech/2019/nick-strange-operational-risk-europe-conference</a>
<b>Payments: diversity matters</b>	Victoria Cleland	5 June 2019	<a href="https://www.bankofengland.co.uk/speech/2019/victoria-cleland-keynote-speech-at-european-women-payments-network-annual-event">https://www.bankofengland.co.uk/speech/2019/victoria-cleland-keynote-speech-at-european-women-payments-network-annual-event</a>
<b>Enable, empower, ensure: a new finance for the new economy</b>	Mark Carney	20 June 2019	<a href="https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-the-mansion-house-bankers-and-merchants-dinner">https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-the-mansion-house-bankers-and-merchants-dinner</a>
<b>Payments: A platform for innovation</b>	Victoria Cleland	24 September 2019	<a href="https://www.bankofengland.co.uk/speech/2019/victoria-cleland-panellist-session-on-the-uk-payments-community-at-sibos-conference">https://www.bankofengland.co.uk/speech/2019/victoria-cleland-panellist-session-on-the-uk-payments-community-at-sibos-conference</a>
<b>Enhancing resilience in payments</b>	Victoria Cleland	8 October 2019	<a href="https://www.bankofengland.co.uk/speech/2019/victoria-cleland-speech-at-payexpo">https://www.bankofengland.co.uk/speech/2019/victoria-cleland-speech-at-payexpo</a>
<b>Openness and integration – the new finance and new economy in a global context</b>	Dave Ramsden	29 October 2019	<a href="https://www.bankofengland.co.uk/speech/2019/dave-ramsdens-bund-summit-shanghai">https://www.bankofengland.co.uk/speech/2019/dave-ramsdens-bund-summit-shanghai</a>
<b>Après Benoît le deluge?</b>	Mark Carney	17 December 2019	<a href="https://www.bankofengland.co.uk/speech/2019/mark-carney-remarks-at-the-ecb-farewell-board-dinner-for-benoit-coeure">https://www.bankofengland.co.uk/speech/2019/mark-carney-remarks-at-the-ecb-farewell-board-dinner-for-benoit-coeure</a>
<b>Responding to leaps in payments: from unbundling to stablecoins</b>	Christina Segal-Knowles	23 January 2020	<a href="https://www.bankofengland.co.uk/speech/2020/christina-segal-knowles-speech-at-a-westminster-business-forum">https://www.bankofengland.co.uk/speech/2020/christina-segal-knowles-speech-at-a-westminster-business-forum</a>