



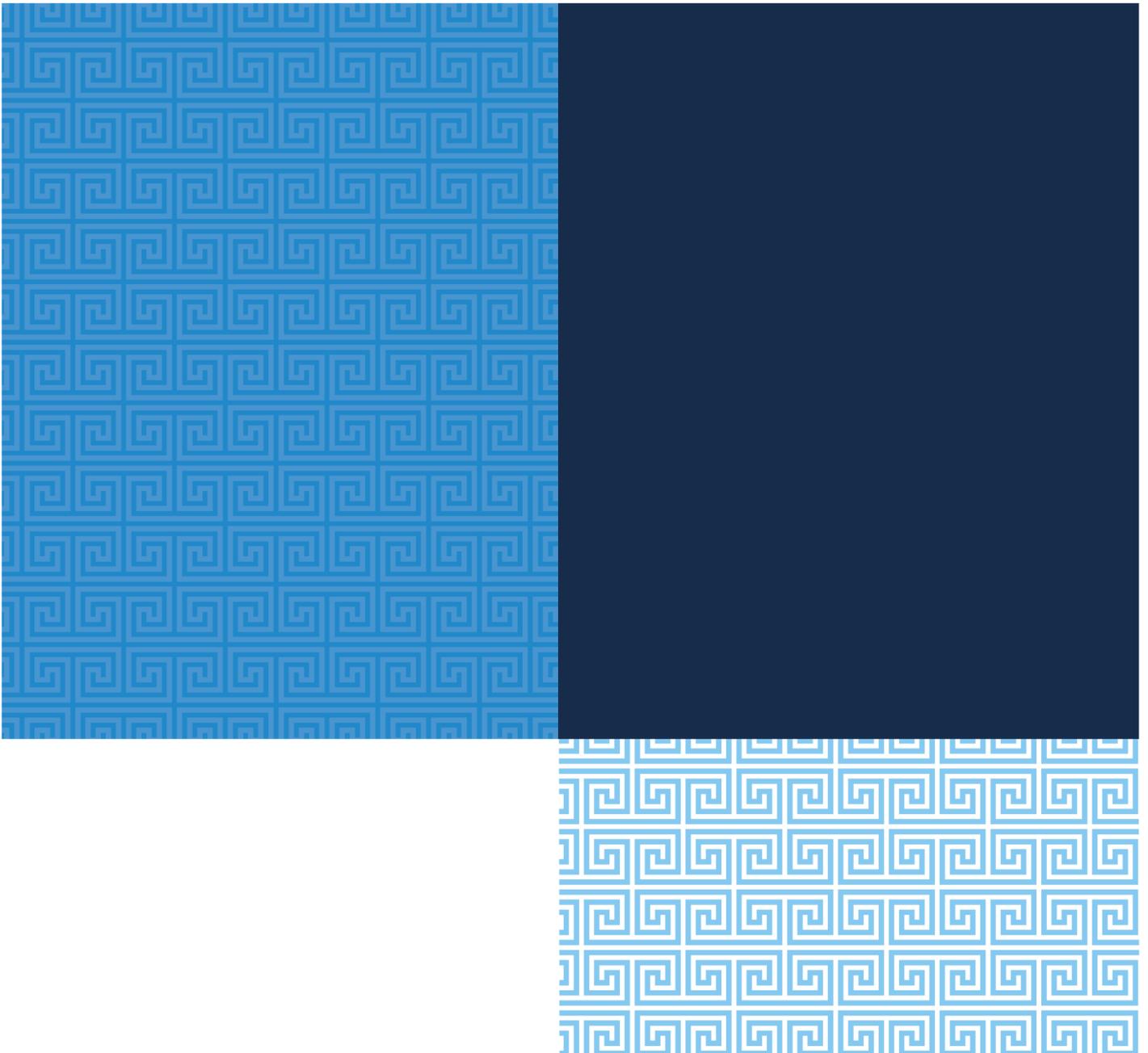
BANK OF ENGLAND

RTGS/CHAPS



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

August 2019



## Foreword

Payments are essential to the efficient functioning of the UK economy. They are used by the vast majority of us every day: from buying a coffee through to major purchases, receiving your salary, paying your regular bills, and withdrawing cash from cash machines. Most payments in the UK are now made electronically and are settled through payment systems.

The Bank of England has operated the Real-Time Gross Settlement (RTGS) system – the heart of the UK payments system – since its introduction in 1996. Crucially, RTGS is also how the Bank implements monetary policy decisions and provides liquidity to the UK's financial system. Responsibility for CHAPS – the UK's high value payment system – transferred to the Bank in November 2017. Almost 192,000 CHAPS payments are settled on average each working day, with a typical value of around £330bn. When adding other types of settlement, the daily average settled in RTGS increases to over £650bn. Our combined delivery of RTGS and CHAPS contributes to the Bank's mission to promote the good of the people of the UK by maintaining monetary and financial stability.

The Bank's July 2019 [Financial Stability Report](#) noted that the payments industry is currently a focal point for innovation, with new ways of payment for goods and services emerging. The recent publication of the [Future of Finance Report](#), and the [Bank's response](#), highlighted the benefits – for resilience, for competition, for users – of innovation. As the Bank's response to the report outlined, we will continue to transform how we provide our key payments infrastructure to support a resilient, innovative and competitive financial system for the UK, in line with our mission.

Bringing CHAPS in-house was an important step towards being able to effectively manage risk across the end-to-end CHAPS system, benefiting financial stability. We have made good progress on this since 2017, but there is still more work to be done to enhance and fully embed this responsibility in order to thoroughly realise the financial stability benefits of the change.

Our RTGS Renewal Programme will deliver additional, transformative, change for RTGS and CHAPS over the coming years. At the heart of these changes is increased resilience. But we want to go further and use this opportunity to promote innovation, to widen access, increase interoperability, improve user functionality and strengthen end-to-end risk management. Throughout our multi-year Programme we will continue to listen to the demands of users and prospective users, and to deliver value for money.

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



Dave Ramsden  
Deputy Governor for Markets and Banking  
1 August 2019

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# 1. RTGS and CHAPS

## Why are RTGS and CHAPS important?

This Report covers November 2017, when responsibility for CHAPS transferred to the Bank of England ('the Bank'), to February 2019, the end of the Bank's financial year. It focuses on our strategy for the Real-Time Gross Settlement (RTGS) system and CHAPS, how we delivered this strategy, and the main strategic focus for the current year. Subsequent annual reports will be aligned to the Bank's financial year (March to February).

RTGS lies at the heart of every payment in the UK. Payments are essential to the efficient functioning of the UK economy, lying behind 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 within RTGS to settle money owed to each other through the payment systems.

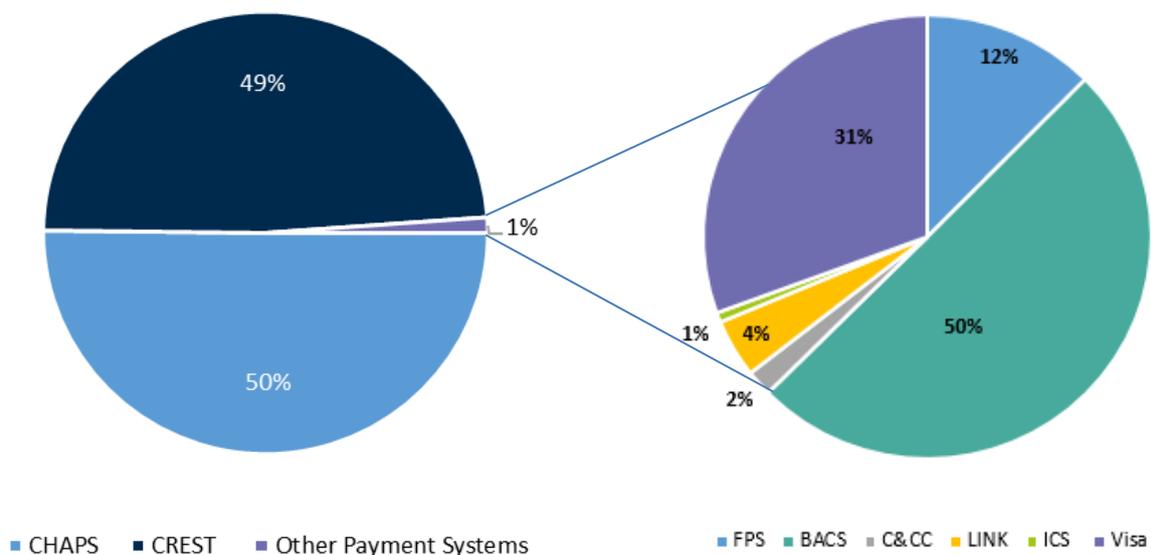
When the Bank provides settlement services to payment systems in RTGS, the Bank acts as a **settlement agent** and settlement occurs in **central bank money**. This delivers final and risk-free settlement, and offers the lowest-risk way for financial institutions to meet their payment obligations since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

Through RTGS, the Bank provides settlement to direct participants of CHAPS, CREST, six retail payment systems (Bacs, Cheque & Credit (both paper-based and the Image Clearing System [ICS]), 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 being remunerated at Bank Rate), and provides liquidity to the UK's financial system.

In the twelve months to end-February 2019, RTGS settled an average of **£656 billion** each working day and **£826 billion** on its busiest day (28 September 2018). The vast majority of the value settled (99%) is from CHAPS and CREST (Chart 1). Of the six retail systems, Bacs accounts for 50% (Chart 2).

**Chart 1:** Majority of value settled in RTGS is from CHAPS and CREST (March 2018 – February 2019)

**Chart 2:** Proportion of settlement from other UK payment systems (March 2018 – February 2019)



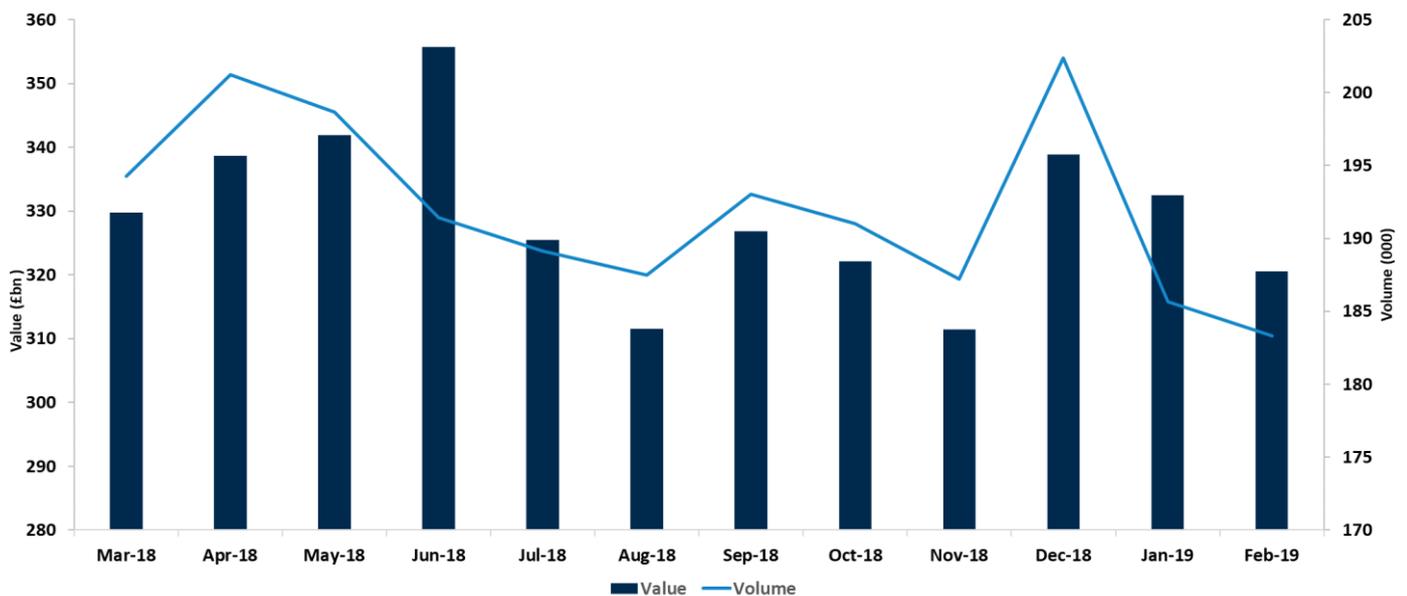
## CHAPS

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 2018 to end-February 2019, CHAPS settled over **£83.3**

**trillion** of payments, equating to an average of almost **£330 billion** each working day, or equivalent to the **annual GDP of the UK every six working days**. The CHAPS system settles an average of **192 thousand** payments each day with an average payment value of **£1.7 million** (Annex 1).

**Total value settled in CHAPS:**  
**£83,319,354,895,378**  
*(March 2018 – February 2019)*

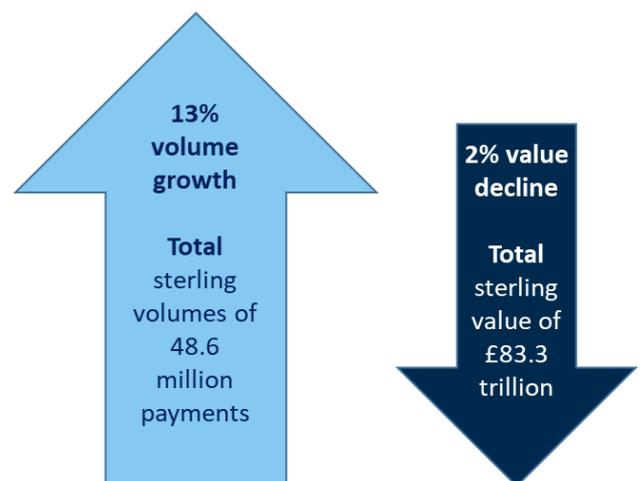
**Chart 3:** CHAPS daily average values and volumes, by month



Overall, the value of sterling processed in CHAPS increased significantly from mid-2015, and from 2016 it surpassed levels last seen during the 2008 financial crisis (Annex 1). Most of the value (72% in the period) was due to wholesale financial transactions. Total value declined slightly by 2% year-on-year (Figure 1).

**Structural Reform** required large UK banks to separate the provision of core retail services from wholesale and risk-taking activities within their banking groups by 1 January 2019. This separation was one cause of a high increase in CHAPS payment volumes from Q4 2017 onwards. Some of this increase in CHAPS volumes was temporary – reflecting the need to redirect payments still sent to old account details – and is falling away month-on-month. However, some of this increase is expected to be permanent.

**Figure 1.** Total CHAPS values and volumes (March 2018 – February 2019)



### 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 beat the 11-year volume record by around **38 thousand** payments (13%).

Ongoing steady growth in CHAPS volumes continues to exceed migration to alternative methods of payment. The **all-time peak value day** was on 20 December 2017, when **£468 billion** was settled in CHAPS.

### Figure 2. CHAPS values and volumes (March 2018 to February 2019)

Average daily value  
£329.3 billion  
From an average daily volume of  
191,898 payments  
Peak daily value of  
£466 billion  
Peak daily volume of  
320,034 payments

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

## Bringing CHAPS into the Bank of England

Whilst the Bank has provided the RTGS infrastructure since 1996, the CHAPS 'scheme' was previously managed and operated by CHAPS Clearing Company Ltd. This private company's activities included ownership of the CHAPS Reference Manual (which sets out who can be a [Direct Participant](#) (DP) and what requirements they must meet) and the supporting governance and risk management framework.

In the [Blueprint for a new RTGS service](#) published in May 2017, the Bank set out a clear high-level statement of how the new RTGS service should look and a roadmap for how it would be delivered. As part of this, the Bank concluded that, to underpin financial stability and respond to the growing range and diversity of threats to payment systems, CHAPS should move to the global norm for high-value payment systems of a 'direct delivery' model. This is where the central bank is both infrastructure provider and payment system operator. The Bank's decision to make this change followed public consultation, which concluded that financial stability would be enhanced. Given the role of RTGS as critical infrastructure, the Bank is better placed to mitigate risks and this would benefit both the central system and the DPs. This conclusion was informed and endorsed by the Financial Policy Committee (FPC) and met a recommendation made by the International Monetary Fund (IMF).

On **13 November 2017**, the Bank became the **operator of CHAPS**, setting the rules and technical standards for the CHAPS system and acting as end-to-end risk manager. The Bank now operates RTGS and CHAPS with combined operations, risk and analytical teams, all sitting under an integrated and strengthened set of governance and risk management arrangements.

## Supervision of CHAPS

As a result of the Bank becoming the CHAPS payment system operator, CHAPS was de-recognised under the Banking Act 2009. However, the [Bank's Financial Market Infrastructure Directorate](#) (FMID) continues to independently supervise 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.

## 2. Our strategy for RTGS and CHAPS

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, undermining public confidence in the safety, soundness, and reliability of the Bank's operations.

Provision of RTGS and CHAPS directly supports the Bank's mission to promote the good of the people of the United Kingdom by maintaining monetary and financial stability 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 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 transactions** to settle. The Bank also acts as **end-to-end risk manager** for CHAPS with the objective of **reducing risks to financial stability**.

### Key elements of our strategy

We aim to provide services that, in addition to being value for money, are:

- **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.
- **Integrated** RTGS and CHAPS function, including across the wider Bank.
- **Renewed** to ensure that safe and resilient settlement in central bank money remains at the core of a rapidly changing UK payments landscape.

Our strategy for RTGS and CHAPS prioritises **safe and resilient** and **well run** – these are preconditions for the remaining elements of: **responsive, integrated and renewed**. In section 3 of this Report, we set out how we have advanced our strategy and in section 4 we set out how we will continue to do so.

It is essential for the Bank to understand external views on RTGS and CHAPS to inform our strategy and supporting activities. We undertake a range of **layered engagement and communication** with the users of RTGS and CHAPS. This covers financial institutions with direct and indirect access to CHAPS, other RTGS users, and end-users such as corporates. We engage on multiple levels and topics including strategy, service delivery and development, risk management and operations, allowing all stakeholders input. A major topic for engagement is our renewal of RTGS.

As well as strengthening business as usual operations, the [RTGS Renewal Programme](#) will deliver a resilient, flexible and innovative sterling payment 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.

## Governance

We have developed 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 and 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.
- 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 are published on the Bank's [website](#).

### Box 2. Contribution to Financial Stability

The Bank's [Financial Policy Committee](#) (FPC) identifies, monitors and takes action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system.

Maintaining the financial and operational resilience of the CHAPS system is a key priority for the Bank. Disruption to CHAPS can threaten UK financial stability if critical payments are not made on the intended value date.

The direct delivery of CHAPS allows the Bank to provide the FPC with more comprehensive information on financial stability risks arising from CHAPS, since it allows the Bank to carry out end-to-end management of potential threats to CHAPS. The risk tolerance for the CHAPS system is also within the Bank's overall risk tolerance.

FMID, as supervisor of CHAPS, has completed its first full risk assessment and specified particular actions for the Bank, as operator of CHAPS. Supervisors observed that while the CHAPS function has been integrated into the Bank, the process of realising the full financial stability benefits of direct delivery is at a relatively early stage.

Looking ahead, areas of focus include: (a) further developing the Bank's capability to perform end-to-end risk management using the full range of tools at its disposal to reduce risk; and (b) delivering the next stages of the RTGS Renewal Programme. There is also a programme of work to help transform overall risk management capability, including delivering fully strengthened cyber strategy capabilities.

The RTGS/CHAPS Board works closely with the **RTGS Renewal Committee**, 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 oversees the Renewal Programme's engagement with the industry, including the industry's readiness to implement the changes required by the Programme. It also advises the RTGS Renewal Committee on any implications for the scope of the Programme that arise from industry engagement.

The Bank operates a number of **executive committees** as part of the RTGS/CHAPS governance arrangements. These include committees on risk, change and operations with input from other parts of the Bank including technology and risk functions. The RTGS Renewal Programme also has a comprehensive executive governance structure. The RTGS/CHAPS Board takes appropriate input from RTGS and CHAPS users, including through the CHAPS Strategic Advisory Forum (SAF) and the Renewal Programme's External Advisory Body (EAB).

### 3. Developments between November 2017 – February 2019

We have been undertaking a series of activities to realise the benefits of moving CHAPS in-house and to further improve the RTGS and CHAPS services, including:

- Integrating operations, risk and analytical teams to support the delivery of the day-to-day operations and increase the operational resilience of RTGS and CHAPS.
- Developing a framework for managing end-to-end risk across the CHAPS system, and an integrated incident management framework spanning RTGS and CHAPS.
- Working with the wider Bank, including prudential supervisors, risk specialists and cyber security experts, to draw on the depth and breadth of internal and external resources available to the Bank to inform our operation and risk management of CHAPS.
- Implementing a structured horizon scanning process to identify developments in the payment landscape.
- Safely delivering RTGS on-boarding and change programme activities, including extending access to [Non-Bank Payment Service Providers](#) (NBPSPs).
- Creating an external engagement, strategy and governance 'hub' to support the Bank's operation of RTGS and CHAPS.

The RTGS Renewal Programme has reached a number of key milestones through the period. Significant progress has been made including: agreeing the scope of delivery; designing the high-level technology architecture; assessing the high-level impact of the renewed service on current processes and procedures; and importantly, considering how we will introduce the new RTGS system without disrupting day-to-day running of RTGS given its critical importance to the UK economy.

The process for procuring a **Technology Delivery Partner** to work with the Bank on the design and build of the new RTGS commenced in February 2019. The Bank published a contract notice in the Official Journal of the European Union (OJEU) inviting potential bidders to express interest. The chosen Technology Delivery Partner is expected to be announced in May 2020.

#### Operational resilience of RTGS and CHAPS

**Figure 3.** RTGS availability since bringing CHAPS in-house



The Bank seeks to make its infrastructure as reliable as possible, targeting availability for at least 99.95% of its defined operating hours. RTGS availability since CHAPS came into the Bank was **99.99%** (Figure 3) showing that the operation of the CHAPS system has been integrated within the Bank with no degradation of service.

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. Further testing will take place in 2019-20. We have also completed a review with the Bank's Technology directorate to identify potential single points of failure for RTGS.

The development and regular testing of operational resilience remains an essential part of our strategy. An example of this are the bi-yearly SIMEX exercises through which we can test the

coordinated response of the Bank as well as the financial institutions that use RTGS and CHAPS. SIMEX18 was based on sector coordination in the event of an operationally paralysed Globally Systemic Bank by a cyber-attack which compromised integrity and then availability. We also participate in regular, internal exercises which simulate an operational issue with RTGS and/or CHAPS. These exercises increase staff familiarity with the incident framework as well as identifying learnings with other parts of the Bank including the [Prudential Regulation Authority](#) (PRA), Press Office and the [Markets Directorate](#).

The Bank's overarching framework for crisis and incident management is applied to RTGS and CHAPS and the risk tolerances for the RTGS and CHAPS services are aligned with Bank-wide risk tolerances. Since responsibility for CHAPS transferred to the Bank, the combined RTGS and CHAPS operations have also been subject to Bank-wide business continuity planning.

Looking ahead to RTGS Renewal and the New (retail) Payments Architecture, we are working with [Pay.UK](#) to explore **potential capabilities for RTGS/CHAPS to act as a contingency for the retail systems** (and vice versa). During 2019 we are running a series of industry workshops to explore a number of different scenarios and associated options for improving resilience.

### 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 2018. 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 15, unchanged from 2017. The Bank self-assessed as 'broadly observing' *Principle 2: Governance* and *Principle 3: Framework for the comprehensive management of risks*. While new governance and risk management arrangements were in place following the transfer of responsibility for CHAPS to the Bank, the Bank felt that further time was needed to reach a more considered assessment of the combined arrangements, including seeing them operating over a number of governance cycles.

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

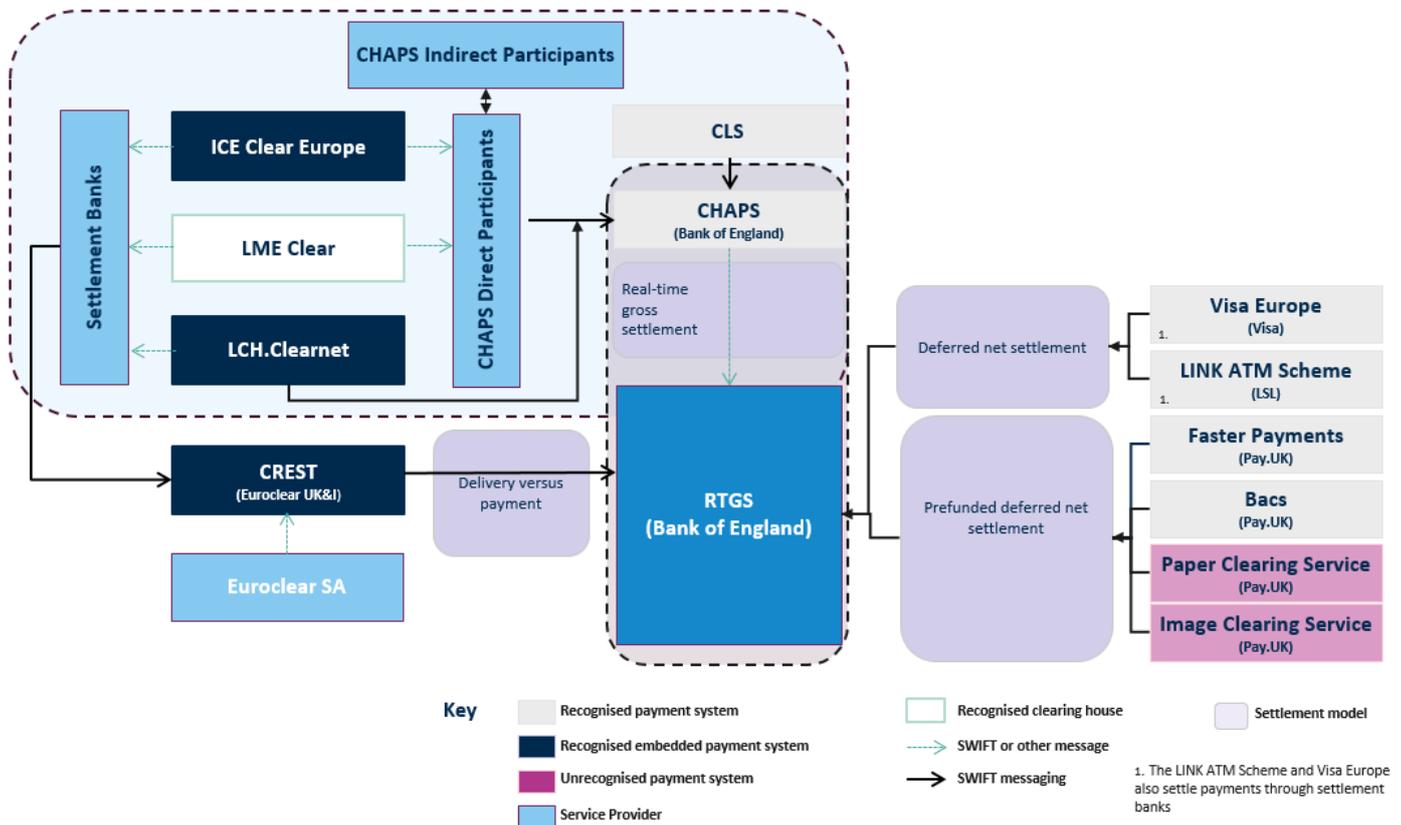
## Risk management

As the risk manager for the CHAPS system, we seek to ensure that end-to-end flow of payments is safe, secure and stable. We have developed an end-to-end risk management framework and policies, seeking to make use of the full set of tools and resources available to the Bank to identify, assess, control, monitor and report risks appropriately as they emerge.

The Bank does not seek – and is unable – to directly manage all risks across the RTGS and CHAPS eco-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 DPs and Critical Service Providers) to seek assurance that the payment system, taken as a whole, is operating within our risk tolerance, as set by the RTGS/CHAPS Board.

The end-to-end risk management for CHAPS encompasses risks that may arise from: the Bank's delivery of its functions as the operator of RTGS and CHAPS, the roles of relevant service providers such as SWIFT, the CHAPS DPs, and other parts of the broader system including significant indirect participants (IPs) and Financial Market Infrastructures (FMIs). The risk-management boundaries of CHAPS are shown below in figure 4.

**Figure 4.** CHAPS end-to-end risk management boundaries



A risk management focus is the financial 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 the IPs and DPs. 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 IP's values exceed more than 2% of overall CHAPS values, the Bank has a presumption that it will move to direct access.

We also work with colleagues in the PRA, [Financial Conduct Authority](#) (FCA) and [Payment Systems Regulator](#) (PSR) who regulate CHAPS participants and have a shared interest in a well-functioning payment system to seek their input and support for risk reduction measures. We encourage DPs to voice their views and concerns that might pose risk to RTGS/CHAPS through our various strategic and operational channels such as SAF, the CHAPS Security Forum, and the CHAPS Technical & Operations Committee (TOC).

The integrated risk management approach for RTGS and CHAPS means the Bank uses a single, combined risk register with common indicators and reporting procedures. This includes assessing both emerging risks and established risks specific to CHAPS and RTGS (in line with the Bank-wide risk management framework).

Integration has resulted in a single incident management process for both RTGS and CHAPS. An enhanced post-incident management approach for DPs has also been established, which includes working closely with PRA supervisors and undertaking thematic analysis on incidents. Further strengthening of the CHAPS rulebook as a result of this analysis will be implemented in 2019.

## Cyber risks to RTGS and CHAPS

Cyber risk is a potential and growing threat to the stability of FMIs. It is therefore important that the Bank continues to develop the resilience of RTGS and CHAPS to risks posed by cyber.

We have conducted a maturity assessment on how the Bank manages cyber risk for RTGS and CHAPS to identify what needs to be done and to establish the basis for assessing future progress. This assessment, along with input from industry experts and the [National Cyber Security Centre \(NCSC\)](#), supports our cyber strategy being embedded in the end-to-end risk management framework for CHAPS. In 2019, this strategy is being strengthened with a dedicated chapter on cyber security in the CHAPS Reference Manual. We are able to draw on the expertise available to the Bank to directly inform our approach, and to share that expertise with users, to improve the resilience of the system as a whole.

The Bank's internal policies are complemented by a variety of international and domestic standards such as CPMI's work on fraud in wholesale payments (Box 5). Cyber risk was highlighted as a priority by SAF and is actively discussed with DPs through the CHAPS Security Forum, directly drawing on proportionate input from DPs. A representative from the NCSC also attends RTGS/CHAPS Board meetings, providing independent expertise and advice.

From an RTGS perspective the cyber risk management strategy will ensure we have the right levels of governance and risk management around RTGS people, processes and technology. Additionally, at a Bank-wide level, work is being undertaken to monitor, detect and prevent cyber incidents including those that might present a risk to RTGS. Cyber defence around the RTGS infrastructure as a whole therefore consists of multiple layers, each intended to detect and defeat different types of threat. These defences are continuously monitored, reviewed and updated.

## Horizon scanning

Horizon scanning helps us to holistically understand emerging developments in the payments landscape and to assess potential risks or opportunities to RTGS and CHAPS. The horizon scanning process draws on a network of subject matter experts across the Bank gathering and analysing information (including from external sources) on developments that may be relevant to our strategy for RTGS and CHAPS.

The results of this process, including any priority developments and proposed actions, are reported to the RTGS/CHAPS Board twice a year. As part of RTGS and CHAPS horizon scanning, we consult SAF; our regular meetings with DPs are also a valuable source of information.

### Box 4. 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 2017/18 audit, completed by Deloitte, 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 16 exceptions noted, none of which Deloitte considered to have material impact.

In 2016 RTGS achieved – and has since maintained – an ISO 27001 certification, 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.

### Widening access

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

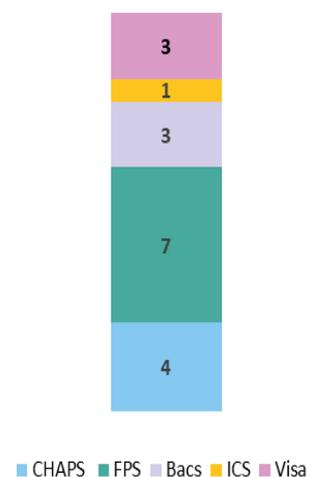
- Banks, building societies, certain broker dealers and central counterparties may hold reserves accounts – subject to meeting the criteria for access set out for the [Sterling Monetary Framework \(SMF\)](#). Where an institution is eligible for a reserves account, this will also act as their settlement account.
- Some types of organisations – other FMIs, including payment system operators, and authorised Non-Bank Payment Service Providers (NBSPs) – are not eligible for a reserves account under the SMF but may hold a settlement account, subject to meeting the criteria in the Bank's [Settlement Account Policy](#).

Holding an account that can be used for settlement is a requirement for direct access to certain payment systems, including CHAPS, Bacs and Faster Payments. Indirect access can be achieved by making payments via one or more of the DPs, known as agency or correspondent banking, without holding an account within RTGS; LINK and Visa permit what is otherwise full membership of their system but indirect settlement.

Each payment system operator has rules and requirements that must be met for the systems they operate. The Bank sets these out in the [CHAPS Reference Manual](#) in its role as the CHAPS payment system operator. The Bank undertakes assurance against the technical and operational requirements in particular before permitting access to CHAPS.

In the reporting period, there were four new CHAPS DPs. We also added new participants for the retail payment systems: seven for Faster Payments (FPS); three for Bacs; three for Visa; and one for the new Image Clearing System (ICS) (Chart 4). Several of these were NBSPs.

**Chart 4:** New participants of payment systems March 2018 – February 2019



Wider access to settlement in central bank money contributes to financial stability by reducing the concentrated operational reliance on a small number of banks and the credit exposures between DPs and large IPs. It also enables a more innovative and competitive market in payments. In response to recommendations made in the Future of Finance Report, the Bank will consult in 2020 on the appropriate level of access to the Bank's payment infrastructure and balance sheet, including necessary safeguards.

In July 2017, we announced the opening up of RTGS settlement accounts to **NBPSPs** authorised by the FCA.

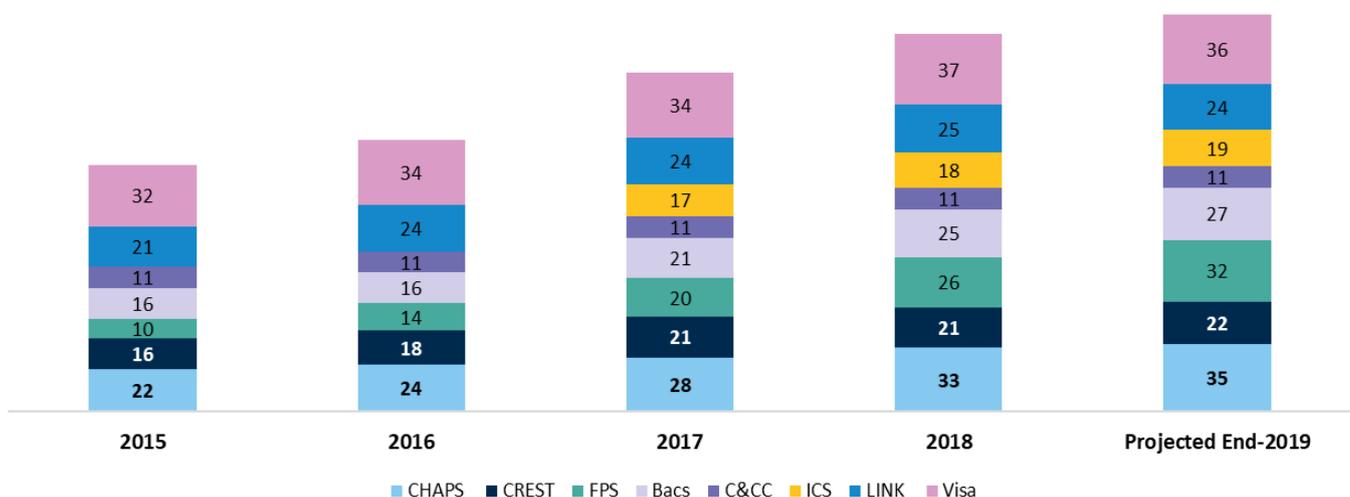
- This was a key enabler for NBPSPs to become eligible for direct access to UK payment systems that settle in RTGS.
- Direct access allows NBPSPs to reduce their operational dependence on the banks they compete with and, over the longer term, helps to create a more diverse payments sector with fewer single points of failure.
- Around half a dozen NBPSPs now hold settlement accounts in RTGS, the first accounts having opened in Spring 2018.

In recent years, we have **reduced the cost of access** to RTGS as this could be prohibitive to both prospective and existing participants. For example, we now permit third-party aggregators to provide technical connectivity to RTGS for smaller CHAPS DPs, reducing the upfront costs of direct access without reducing overall resilience.

From 1987 to 2016 the number of CHAPS DPs rose from 14 to 24. As at the end of the reporting period, in February 2019, there were 33 CHAPS DPs with several thousand IPs. A [list of CHAPS DPs](#) is available on the Bank's website.

There are now around 70 organisations using RTGS to settle directly in one or more payment systems. The Bank's changes to widen access to NBPSPs, together with Structural Reform, the authorisation of new challenger banks, and the introduction of ICS, has driven much of this increase.

**Chart 5: Settlement participants per payment system per calendar year since 2015**



## Stakeholder engagement

Bringing CHAPS in-house has further simplified how we can propose, design and deliver changes. We now have more opportunities to engage with – and listen to – DPs, as well as IPs and end-users.

The Bank set up **SAF** which is chaired by an independent member of the RTGS/ CHAPS Board and meets at least four times a year. This is a small focused group to discuss, and provide feedback and advice on, the strategic direction of CHAPS. The Forum's fourteen external members are senior, experienced executives with a good understanding of the broad interests of their sector. The members are drawn from banks, other financial institutions, payment service providers (PSPs) and end-users.

The Forum has discussed and provided advice to the Bank on a number of key topics since its inception. These include (but are not limited to): the Bank's external engagement strategy, the role of CHAPS in the payments landscape, horizon scanning, fraud in payments, the Renewal Programme, and RTGS cost recovery.

For the Bank to seek input on cyber security matters relevant to the CHAPS system, we have set up the **CHAPS Security Forum**. This acts as a network for sharing appropriate cyber-related information between DPs, including best practice and lessons learnt, to support enhanced cyber resilience across the CHAPS community and to reduce the impact and likelihood of cyber threats to financial stability, including retail and wholesale payments fraud.

We appreciate, however, that there is 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. Communication includes two-way engagement for us to seek views from, and respond to, users. This is achieved through the operationally-focussed **TOC**, various working groups and engagement with the senior representatives from CHAPS DPs.

In some instances, we will engage through other organisations, such as trade associations, to effectively reach a wider population. We also engage regularly with Pay.UK, [UK Finance](#) and the PSR as well as other central banks.

## RTGS Renewal

[Renewing the RTGS service](#) is necessary because the way payments are made has changed dramatically in recent years, reflecting changes in the needs of households and companies, changes in technology, and an evolving regulatory landscape. A core objective in 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, and the Programme 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.

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 below:

**Figure 5.** Our RTGS Vision



The next major phase of the Renewal Programme will see continuation of work with external stakeholders (including current and prospective users of RTGS) to advance the design of the new service, and prepare for its implementation. This includes work to procure a Technology Delivery Partner. Where possible, we will deliver early benefits and improvements.

In addition to the RTGS Renewal Programme, Pay.UK is working to build a New Payments Architecture for retail payments. There are synergies between these programmes 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.

The Renewal Programme also undertakes significant external engagement through the EAB representing a broad range of interests, from current RTGS participants, prospective participants, Pay.UK, PSR and trade associations. Members of the EAB provide a cross-section of views and challenge to the Programme. 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 costs and benefits of the Renewal Programme.

In collaboration with Pay.UK and PSR, in Summer 2018 the Bank undertook a [consultation](#) on the adoption of the [ISO 20022 messaging standard](#) in the UK. This consultation proposed the creation of a Standards Advisory Panel (SAP) to support the Bank and Pay.UK in the implementation of payment standards by providing expertise on industry preferences and implications. This Panel is now established with an independent chair. The Panel's immediate focus is ISO 20022, but it will also advise on other new payments standards for the UK, such as those for financial [APIs \(Application Programming Interface\)](#).

As part of the response to the ISO 20022 consultation, the Bank announced 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.

## 4. Our strategy for 2019-2020

CHAPS is now well integrated within the Bank, although we must continue to build upon the progress made since November 2017. The key activities under each element of our strategy over the next year are:

### 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 perspective as end-to-end risk manager of CHAPS and draw on the tools and resources available to the Bank to manage risk. This is particularly important given the increased sophistication of risks faced by the broader payments system including, for example, a cyber-attack.



We will continue to take a pro-active approach to cyber risk and clearly allocate responsibility for mitigating it. We are implementing an enhanced cyber security strategy (including for individual CHAPS participant risk). This includes working with both internal and external cyber experts and engaging with stakeholders through the CHAPS Security Forum. In 2019 we will also strengthen the CHAPS Reference Manual through the introduction of a dedicated chapter focussed on security. Cyber risk management will feature strongly in the renewed RTGS with security design principles already embedded in the high-level design to deliver strong IT security and cyber resilience.

The Bank is also assessing on the potential use of CHAPS and Pay.UK's retail systems as contingency for each other, and engaging with stakeholders on this through a working group under SAF. The Bank is working closely with Pay.UK to consider what capacity and capabilities should be built into the renewed RTGS infrastructure as well as Pay.UK's New Payments Architecture.

### Well run

As well as continuing to deliver reliable day-to-day operations, we recognise that constant improvement of the RTGS and CHAPS services is necessary and we will continue to develop the 2019/20 and medium term-strategy for RTGS and CHAPS. We will also ensure that the effective governance of the service continues. In line with international best practice, we undertook a review of the effectiveness of the RTGS/CHAPS Board a year after it was set up and are implementing identified improvements.



We also place a high emphasis on delivering demonstrable value for money for the Bank and its users in terms of the services we provide, both in the current and future RTGS infrastructures. For example, this includes analysing options for the tariff structure in the new RTGS service to ensure cost is fairly distributed across users of the system.

## Box 5. Fraud in payment systems

There are two principal types of fraud that can occur in payments: authorised fraud and unauthorised fraud. The Bank takes a holistic and coordinated view of the risk that fraud may pose to confidence in, and the reputation of, the end-to-end CHAPS system. We are assessing the role the Bank can play in mitigating the risks of both authorised and unauthorised fraud in the CHAPS ecosystem.

**Authorised Fraud** is where a customer unknowingly consents or is deceived into making a payment. This is predominantly observed in retail payments with a current spotlight on ‘authorised push payment fraud’ (APP scams) where an account holder is deceived into making (pushing) a payment to an account controlled by a fraudster. APP scams can occur across FPS, Bacs and CHAPS – the UK’s primary push payment systems. [UK Finance’s fraud statistics](#) for APP scams reported 652 APP frauds, with a value of £26mn, being successfully executed using CHAPS in 2018.

While CHAPS APP fraud volumes are less than 1% of FPS APP fraud volumes, the average value per fraud in CHAPS is almost £40,000 compared to approximately £2,000 in FPS. Given the relatively small values involved in APP fraud, it is unlikely that APP fraud would cause a systemic impact to CHAPS, unless values increased significantly. Nonetheless, it could present a reputational risk and potential loss of confidence in CHAPS.

We will be considering our role in helping combat retail fraud through CHAPS in 2019, including in respect of [Confirmation of Payee](#). We will also consider what more the Bank can do to support existing industry fraud prevention initiatives, such as UK Finance’s [‘Take Five’](#) campaign.

**Unauthorised Fraud** is where a technical weakness in end-point security can lead to breaches of the system and a financial loss. Unauthorised fraud within payment systems has become increasingly sophisticated. CPMI has published [guidance](#) aimed at reducing wholesale payments fraud and looks to encourage best practice in this area.

As the operator of the CHAPS payment system, we have assessed our current control measures and participant assurance processes against the elements set out in the CPMI guidance, which we currently observe or broadly observe. We have undertaken a number of actions including: seeking to gain a better understanding of fraud metrics for CHAPS payments and setting up the CHAPS Security Forum. We have also established criteria on which to identify indirect participants (IPs) that perform systemically important activities that could impact the smooth end-to-end flow of CHAPS payments.

We continue to work with CHAPS direct participants (DPs) to understand their systemic risks and those posed by systemically important indirect participants, identifying ways in which such risks can be mitigated. We will also engage with other operators of high-value payment systems to understand what actions are being taken to address wholesale payments fraud globally.

## Responsive

Understanding the needs of RTGS and CHAPS users and the changes in the wider environment is essential in providing a robust and resilient service. Our strategy ensures there is an effective two-way mechanism to seek and respond to views and requirements of the diverse range of stakeholders, participants, customers and end-users. We then give the appropriate weight to those views and requirements in our decision making, including input to Board-level discussion.



It also ensures we are alert to changing trends in payments and securities markets, facilitating efficiency, innovation and competition consistent with the Bank's monetary and financial stability objectives. This includes delivering routine on-boarding activities – including for NBPSPs – as well as maintaining and improving the current RTGS and CHAPS services, and facilitating more efficient and cost effective user processes, ahead of RTGS Renewal.

To achieve this we will continue our programme of engagement with external stakeholders (such as users of the system) through SAF, EAB, TOC, roundtables, bilateral meetings and other mechanisms. A key focus for stakeholder input in the future will be on the implementation of ISO 20022 in the UK as well as financial APIs via the SAP. Another example of engagement is the working groups exploring the role of CHAPS as a contingency system for retail payment systems. EAB and various thematic engagement activities will continue to provide advice on implementing the renewed RTGS service and how migration to the new service may impact on day-to-day operations, required planning periods and constraints. We will also actively engage domestically and internationally with our counterparts operating other RTGS and high-value payment systems, including at SIBOS 2019 in London.

## Integrated

Whilst direct delivery of CHAPS has already brought a number of key benefits, we will continue to enhance the integration of CHAPS activity into the wider work of the Bank. This includes cyber and prudential supervision work where we will further embed two way information sharing and coordination and build upon expertise across the Bank. It also includes improving post-incident management processes and our ongoing work on thematic analysis of incidents. Additionally, we will continue to mature the integration of the risk management function, and coordination with the Bank's risk directorate, resulting in a harmonised risk framework.



## Renewed

The renewed RTGS service will need 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. It 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. Further information on the functionality of the new RTGS service can be found on the Bank's [website](#).



## Annex 1. RTGS and CHAPS statistics

Table A.1 RTGS availability

	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
RTGS infrastructure for 'urgent' CHAPS settlement	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
RTGS infrastructure for 'non-urgent' CHAPS settlement	100%	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%	100%	100%
Delays to net settlement of retail payment systems (minutes)	0	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%

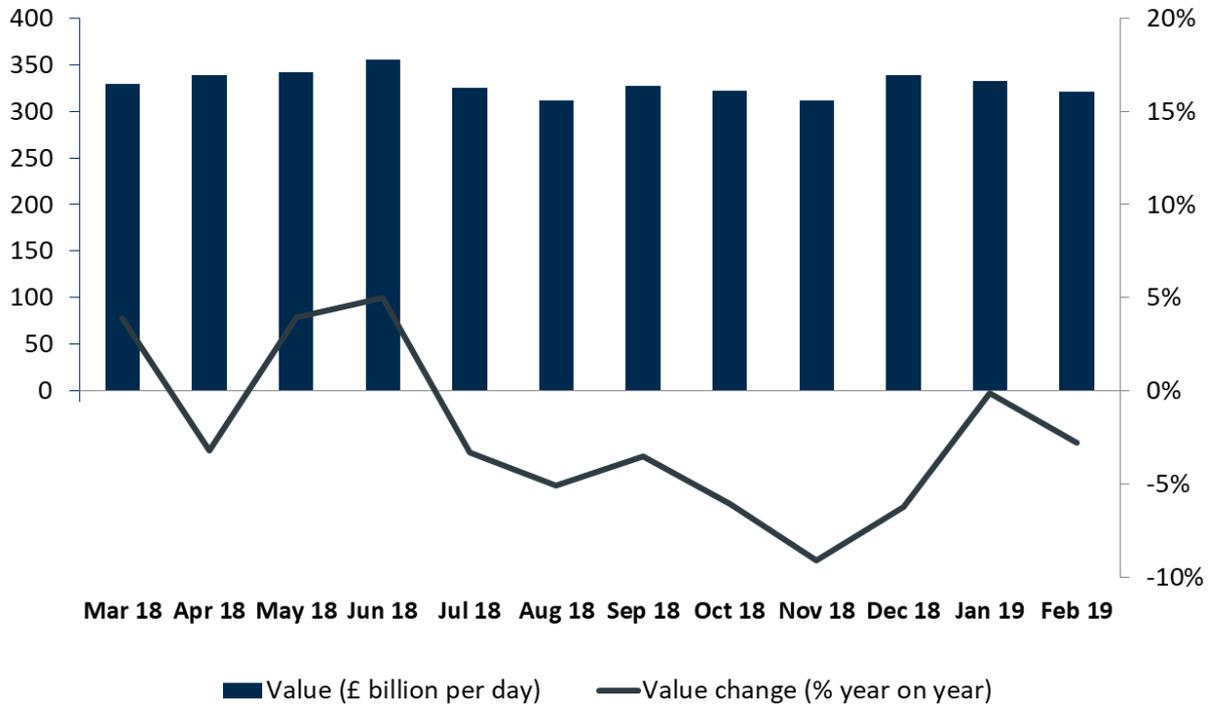
Table A.2 Daily average RTGS settlement values and volumes

	Mar 2018 – Feb 2019
CHAPS values (£mn)	£329,326
CHAPS volumes	191,898
CREST DvP values (£mn)	£319,557
CREST DvP volumes	11,958
FPS net values (£mn)	£922
Bacs net values (£mn)	£3,715
C&CC net values (£mn)	£140
LINK net values (£mn)	£315
Cheque imaging net values (£mn)	£52
Visa Europe net values (£mn)	£2,264
<b>Total (£mn)</b>	<b>£656,291</b>

Table A.3 CHAPS gross monthly values and volumes

	Volume of items (000s)	Value of Items (£mn)
Mar-18	4,080	£6,924,193
Apr-18	4,025	£6,773,453
May-18	4,172	£7,179,250
Jun-18	4,020	£7,470,870
Jul-18	4,161	£7,159,368
Aug-18	4,125	£6,853,592
Sep-18	3,861	£6,536,887
Oct-18	4,393	£7,407,570
Nov-18	4,118	£6,851,383
Dec-18	3,845	£6,438,335
Jan-19	4,085	£7,314,330
Feb-19	3,666	£6,410,123

**Chart A.1 CHAPS daily average values, including yearly trend (March 2018 – February 2019)**



**Chart A.2 CHAPS daily average volumes, including yearly trend (March 2018 – February 2019)**

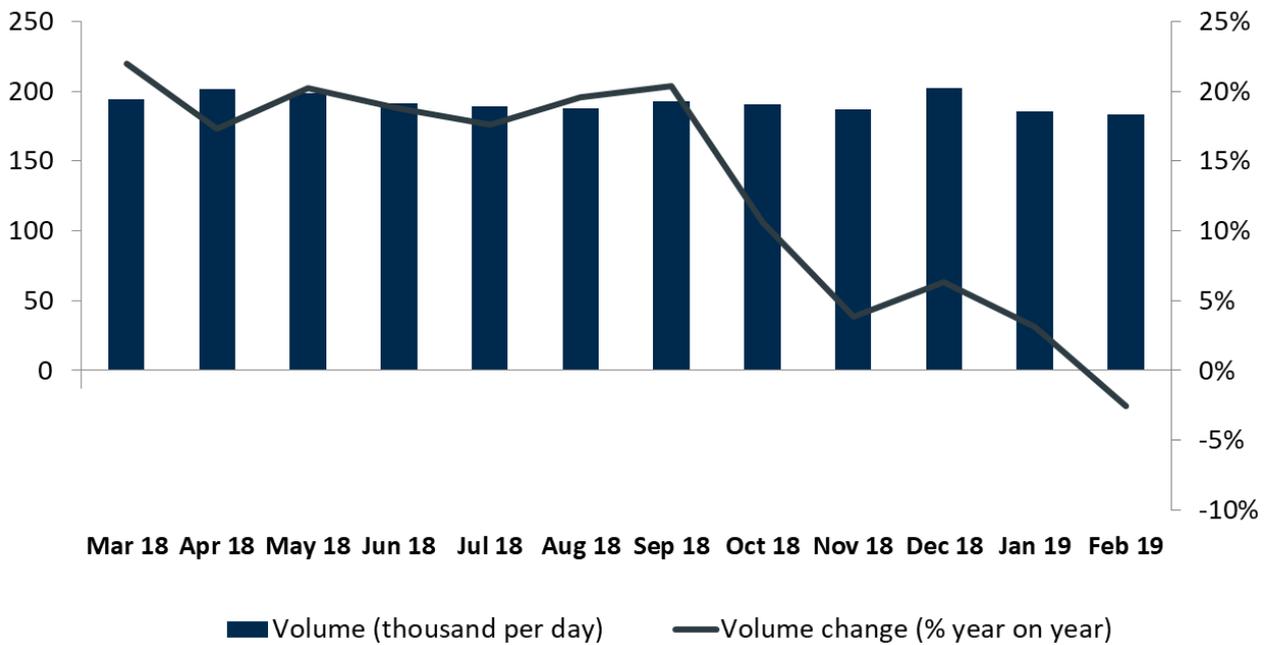


Chart A.3 CHAPS payment band profile (March 2018 – February 2019)

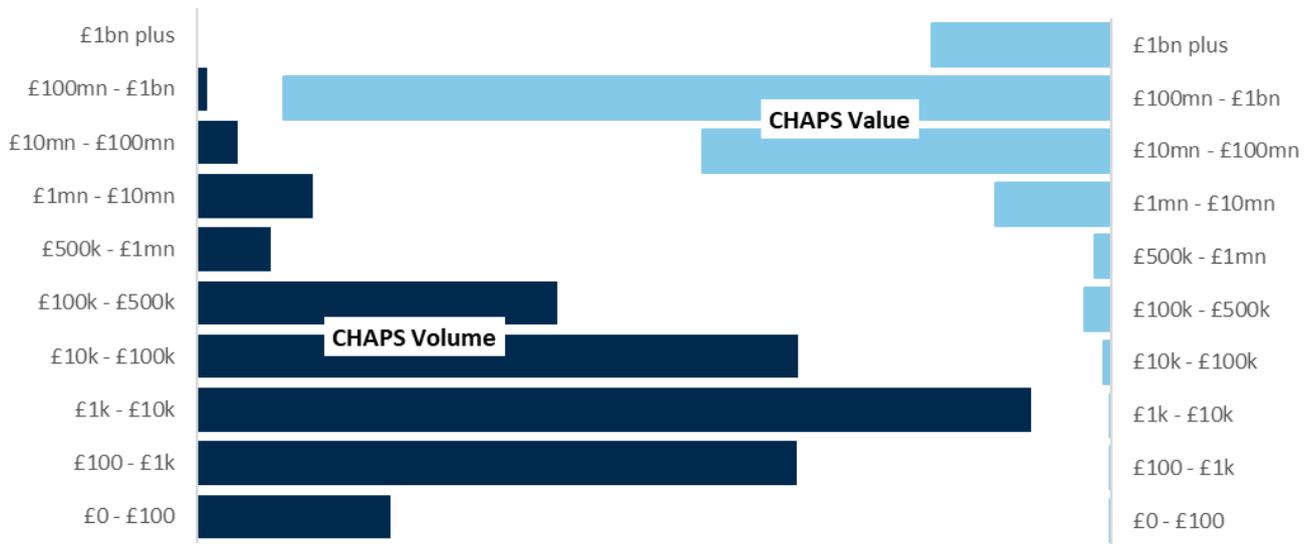
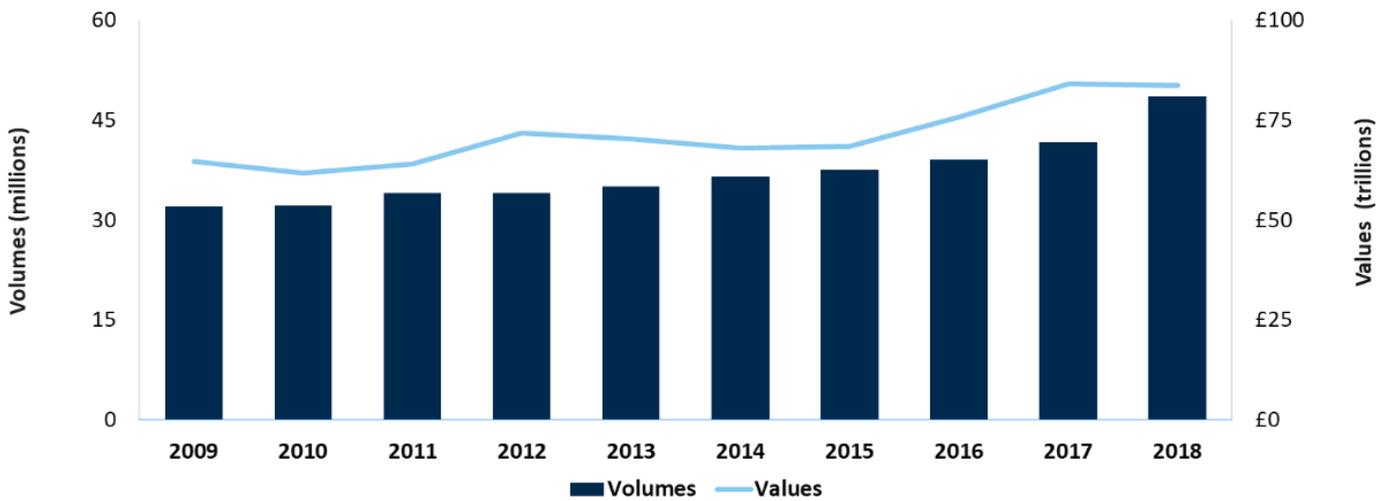


Chart A.4 CHAPS gross values and volumes trends (calendar years 2009 – 2018)



## Annex 2. Key speeches

Speech Title	Speaker	Date	Link
Looking out for our money	John Cunliffe	26/02/2018	<a href="https://www.bankofengland.co.uk/speech/2018/jon-cunliffe-warwick-university">https://www.bankofengland.co.uk/speech/2018/jon-cunliffe-warwick-university</a>
The Future of Money	Mark Carney	02/03/2018	<a href="https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-to-the-inaugural-scottish-economics-conference">https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-to-the-inaugural-scottish-economics-conference</a>
The Bank of England – Open to FinTech	Dave Ramsden	22/03/2018	<a href="https://www.bankofengland.co.uk/speech/2018/dave-ramsdens-speech-hmtes-international-fintech-conference">https://www.bankofengland.co.uk/speech/2018/dave-ramsdens-speech-hmtes-international-fintech-conference</a>
New Economy, New Finance, New Bank	Mark Carney	21/06/2018	<a href="https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-at-the-lord-mayors-bankers-and-merchants-dinner-mansion-house">https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-at-the-lord-mayors-bankers-and-merchants-dinner-mansion-house</a>
The journey to best in class payments	David Bailey	28/06/2018	<a href="https://www.bankofengland.co.uk/speech/2018/david-bailey-keynote-seminar-at-westminster-business-forum">https://www.bankofengland.co.uk/speech/2018/david-bailey-keynote-seminar-at-westminster-business-forum</a>
RTGS: Enabling the next generation of payments	Victoria Cleland	27/09/2018	<a href="https://www.bankofengland.co.uk/speech/2018/victoria-cleland-technology-and-innovation-risk-summit">https://www.bankofengland.co.uk/speech/2018/victoria-cleland-technology-and-innovation-risk-summit</a>
Transforming our payments infrastructure	Victoria Cleland	27/11/2018	<a href="https://www.bankofengland.co.uk/speech/2018/victoria-cleland-speech-at-payments-international-london">https://www.bankofengland.co.uk/speech/2018/victoria-cleland-speech-at-payments-international-london</a>
Setting standards	Dave Ramsden	06/12/2018	<a href="https://www.bankofengland.co.uk/speech/2018/dave-ramsdens-remarks-at-iso-20022-conference">https://www.bankofengland.co.uk/speech/2018/dave-ramsdens-remarks-at-iso-20022-conference</a>
Embracing fintech	Dave Ramsden	30/04/2019	<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>
Payments: diversity matters	Victoria Cleland	05/06/2019	<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>
Enable, empower, ensure: a new finance for the new economy	Mark Carney	20/06/2019	<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>