



BANK OF ENGLAND

# Bank of England's RTGS and CHAPS services: Service Description

December 2018

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This document is an extract of the service description section and relevant annexes from the Bank's full public disclosure and self-assessment against the *Principles for Financial Market Infrastructures* for the RTGS and CHAPS services. Page and footnote numbering has been kept consistent with the longer document for ease of reference.

The Bank's full public disclosure and self-assessment can be found on the Bank's website, <https://www.bankofengland.co.uk/payment-and-settlement>

## IV. Service description

### General background of RTGS and CHAPS services

- IV.1 The Real-Time Gross Settlement (RTGS) infrastructure is owned and operated by the Bank of England (the 'Bank'). It is an accounting system that allows institutions to hold cash at the Bank, and settle obligations to each other. 'Central bank money' (for sterling, primarily the money held in accounts at the Bank) is the ultimate secure and liquid asset, and therefore offers the lowest-risk way for financial institutions to meet their payment obligations.
- IV.2 The Bank is also the operator of CHAPS. CHAPS is a sterling same-day payments system that is used to settle high-value wholesale payments as well as time-critical, lower-value payments. The core infrastructure for the real-time settlement of CHAPS payments, in central bank money, is the Bank's RTGS infrastructure.
- IV.3 The Bank's mission is to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. The Bank's delivery of the RTGS and CHAPS services primarily supports the Bank's mission in three ways:
- Holding of reserves balances in accounts in RTGS to eligible institutions (as defined in the Sterling Monetary Framework). These facilitate the transmission of monetary policy (as balances are remunerated at Bank Rate, as set by the Monetary Policy Committee). They also provide those institutions with access to central bank money to help manage their liquidity risks.
  - Provision of reserves, settlement and prefunding accounts to eligible institutions (as defined under the Bank's Settlement Account Policy). These can be used to settle the obligations arising from payments and securities transactions made by banks<sup>16</sup> and other institutions' participation in sterling payment and settlement systems.
  - Provision of the CHAPS service, the UK's main payment system for settlement of high value and time-critical payments. This service eliminates settlement risk between CHAPS Direct Participants. The Bank acts as the end-to-end systemic risk manager for CHAPS with the objective of reducing risks to financial stability.
- IV.4 The Bank, through its operation of RTGS and CHAPS, also seeks to promote efficiency, innovation and competition in sterling payments, wherever that can be safely done without impairing stability.

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<sup>16</sup> Unless stated otherwise, references to banks include building societies.

### *Overview of the RTGS and CHAPS services*

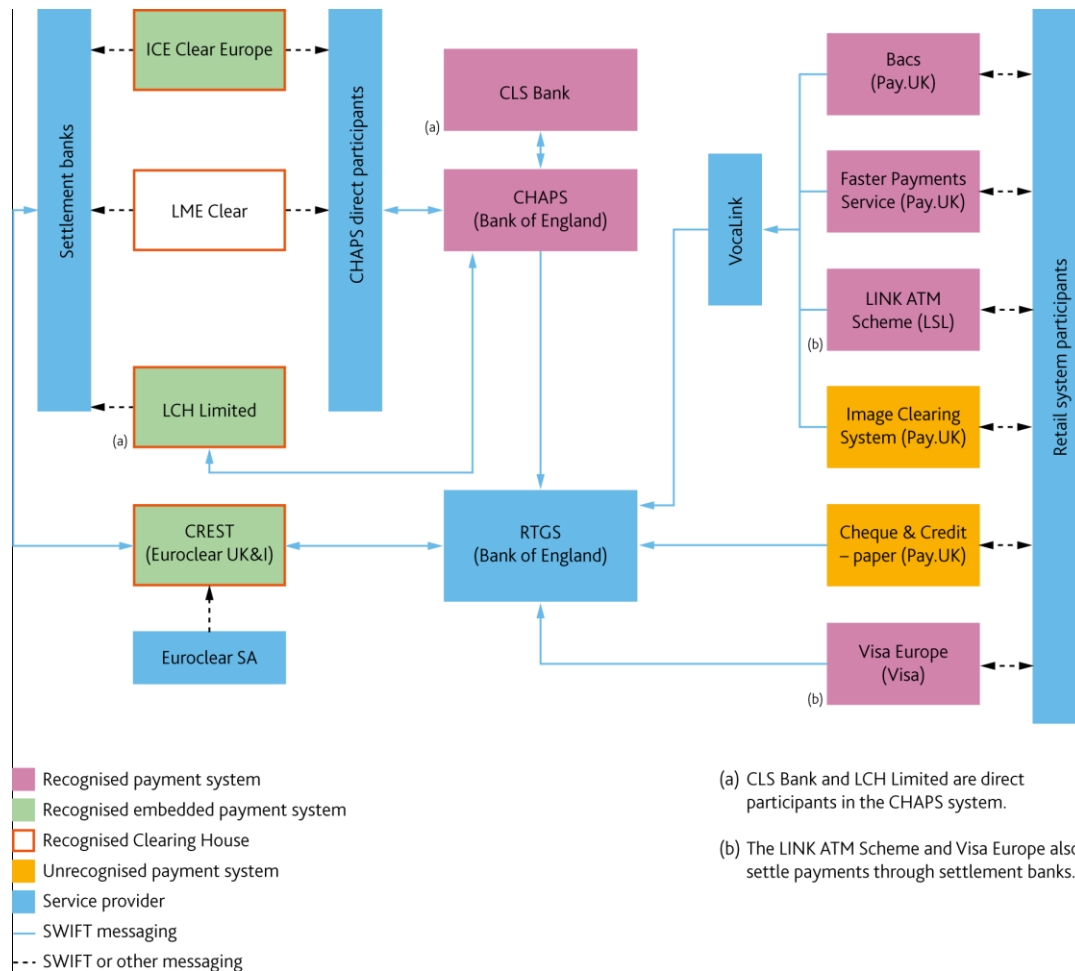
- IV.5 Institutions have accounts in RTGS so they can:
- participate in the Bank's reserves scheme, under the Sterling Monetary Framework (SMF), which supports delivery of the Bank's monetary policy decisions); and/or
  - settle obligations in any of the payment systems for which the Bank acts as settlement agent.
- IV.6 The Bank provides sterling settlement services for eight payment systems: Bacs, CHAPS, Cheque & Credit (paper and the Image Clearing System), CREST, Faster Payments, LINK and Visa. Around sixty institutions use their accounts in RTGS to settle in one or more payment systems.
- IV.7 A number of other FMIs use direct or indirect access to CHAPS to complete the respective payment obligations. CLS Bank and LCH Limited are Direct Participants in CHAPS for this purpose. Central counterparties and some of their clearing members have relationships with various banks to access CHAPS indirectly.
- IV.8 Account holders in RTGS communicate with the RTGS infrastructure via SWIFT. Figure 1 provides a simplified illustration of some of the interlinkages between RTGS, CHAPS, settling participants and other FMIs.

### *Real-time gross settlement*

- IV.9 The RTGS service forms an integral part of two systemically important payment systems: CHAPS and the payment arrangements embedded within CREST.
- IV.10 The Bank is the operator of CHAPS, the UK's high-value payment system. Individual CHAPS settlement instructions are routed via the SWIFT network to RTGS and settled across the sending and receiving CHAPS Direct Participants' accounts. Transactions settled using CHAPS include wholesale financial market, corporate, housing, government and financial market infrastructure transactions.
- IV.11 Through its provision of the CHAPS service, the Bank is responsible for managing the CHAPS system's governance and rulebook and, as a central component of its responsibilities, managing risks across the end-to-end CHAPS system.
- IV.12 The UK's securities settlement system (CREST) is operated and managed by Euroclear UK & Ireland (EUI). CREST settles UK securities such as gilts, equities and money market instruments in sterling, euro and US dollars. The Bank provides settlement for sterling

obligations. CREST functions on a Delivery versus Payment (DvP) basis with settlement risk eliminated as transactions between CREST settlement banks are settled with finality in real-time against segregated liquidity. The Bank also holds sterling prefunding to support CREST US dollar settlement arrangements.

**Figure 1: Interlinkages between RTGS, CHAPS and Financial Market Infrastructures**



### Deferred net settlement

IV.13 Accounts in RTGS are also used to settle the sterling net obligations arising from customer transactions for six retail payment systems. Each retail system settles on a multilateral, deferred net basis:

- Bacs: The UK's automated clearing house, processing Direct Debits (utility bills, subscriptions) and Direct Credits (salaries, pensions, benefits) across a three day cycle with net settlement taking place once a business day in RTGS.

- Cheque & Credit: Net settlement of cheques and paper credits<sup>17</sup> takes place once a business day in RTGS. The clearing system operates on a three day cycle.
- The cheque-based Image Clearing System: Net settlement of cheques and paper credits based on an exchange of images, rather than paper, take places once a business day in RTGS. The clearing system operates on a two day cycle.
- Faster Payments: Faster Payments provides near real-time payments 24/7 and is used for standing orders, internet and telephone banking payments. Faster Payments settles net, three times every business day in RTGS.
- LINK: The UK's ATM network settles in 24 hour cycles; cycles that take place over the weekend and on public holidays all settle on a net basis on the following business day in RTGS.
- Visa: One of the card systems (for Visa debit, credit and prepaid cards) which settles in 24 hour cycles. Cycles that take place over the weekend and on public holidays all settle on a net basis on the following business day in RTGS.

IV.14 The Bank provides additional services in relation to Bacs, Faster Payments, Cheque & Credit and the Image Clearing System to help reduce, or eliminate credit risk between the direct settlement participants.

- For Bacs, Faster Payments and the Image Clearing System, direct settlement participants hold cash in special accounts to cover the maximum possible net debit positions they could reach (this is known as 'prefunding'). If a direct settlement participant defaults, the cash set aside can be used to complete settlement for the relevant system.
- For Cheque & Credit, the Bank manages a pool of collateral provided by direct settlement participants to cover a failure or significant delay in settling by one or more direct settlement participants.

IV.15 Figure 2 provides a simplified illustration of how accounts in RTGS are grouped and used. The illustration is for a participant which settles in the payment systems which settle across RTGS. CHAPS and the retail systems all settle from an account holder's primary reserves/settlement account. Cash for Bacs, Faster Payments and the Image Clearing System prefunding is held in separate accounts but forms part of an eligible institution's overall reserves balance, if applicable. CREST settlement is through a distinct account with liquidity moved to and from the primary reserves/settlement account each day.

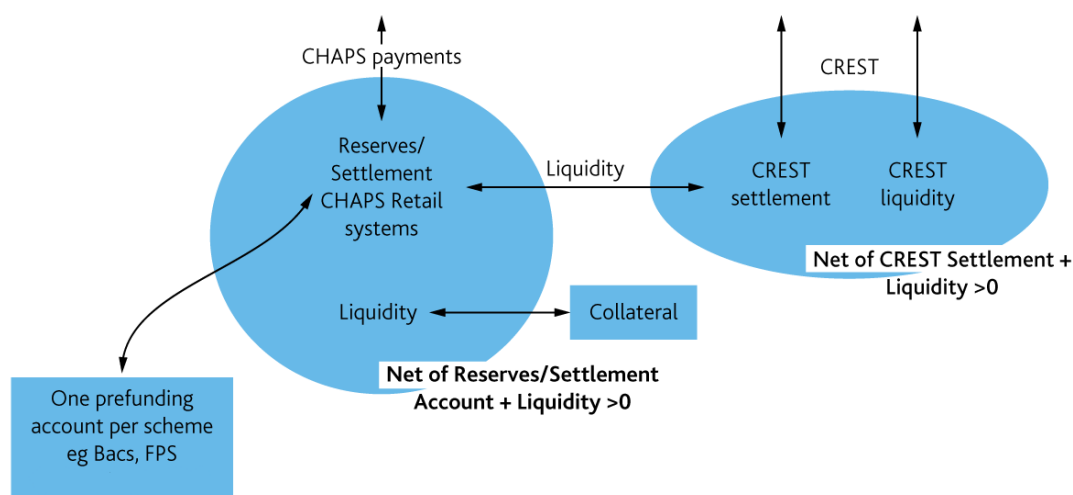
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<sup>17</sup> The paper cheque & credit clearings are expected to be retired in 2019, following the completion of migration of cheques and credits to the Image Clearing System.

IV.16 For non-bank payment service providers, accounts must also be designated as either 'own funds' or 'client funds' given the legislative requirements for safeguarding of client funds. The account structure in RTGS has been designed to support the 'segregation method' where client funds are kept separately to those funds held by the relevant non-bank payment service provide in their own name.

IV.17 Further information on the different settlement models is set out in paragraphs IV.69 – IV.96.

**Figure 2: Typical hierarchy of accounts in RTGS**



IV.18 An expanded explanation of the Bank's RTGS service has been published in the Bank's Quarterly Bulletin series.<sup>18</sup>

*Key RTGS and CHAPS statistics*

RTGS and CHAPS volume and value statistics

**Table 1: Average daily RTGS and CHAPS settlement volumes and values**

	2013	2014	2015	2016	2017
CHAPS values (£mn)	£277,229	£268,615	£270,400	£298,710	£333,661
CHAPS volumes	138,245	144,353	148,412	154,006	165,285
CREST DvP values (£mn)	£303,717	£274,257	£240,480	£220,970	£270,129
CREST DvP volumes	8,388	9,050	9,391	10,883	12,063
Faster Payments net values (£mn)	£586	£606	£663	£677	£775
Bacs net values (£mn)	£3,071	£3,122	£3,159	£3,193	£3,321
Cheque & Credit net values (£mn)	£211	£196	£190	£156	£137
LINK net values (£mn)	£249	£271	£294	£315	£324
Visa net values (£mn)	£1,144	£1,149	£1,425	£1,531	£1,776

Notes:

- All data are daily averages of transactions settled within the RTGS system.

<sup>18</sup> See <https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2012/the-boes-real-time-gross-settlement-infrastructure.pdf>.



- CREST DvP activity in RTGS is measured by the debits applied to CREST settlement accounts at the end of each CREST settlement cycle, not the total volume or value of transactions in CREST itself.
- Retail payment system values represent the net value of each system's settlement across RTGS. Net settlement for retail payment systems takes place within defined clearing cycles at specific points during the RTGS operating day. Therefore, no volume data are available.
- Visa began settling its sterling net obligations across RTGS in November 2013.
- The cheque-based Image Clearing System started settling in RTGS from end-October 2017. The values in 2017 were negligible.

### Participants

IV.19 At 30 September 2018, there were:

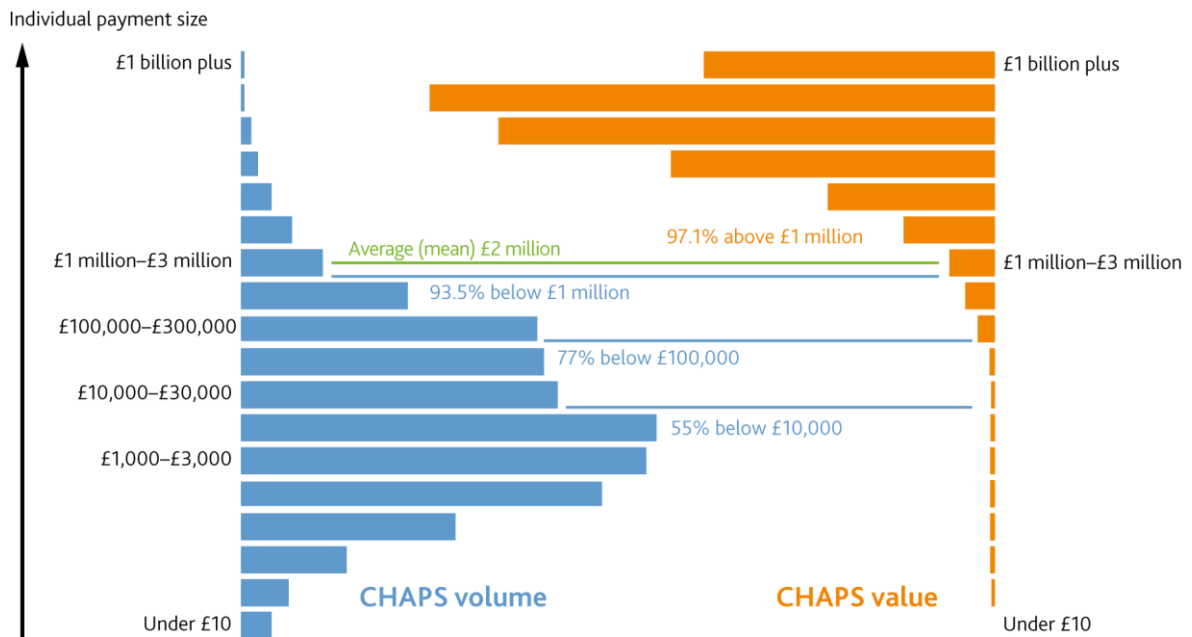
- 33 CHAPS Direct Participants;
- 21 CREST settlement banks;
- around 200 reserves account holders; and
- around half a dozen settlement account holders.

### CHAPS trends

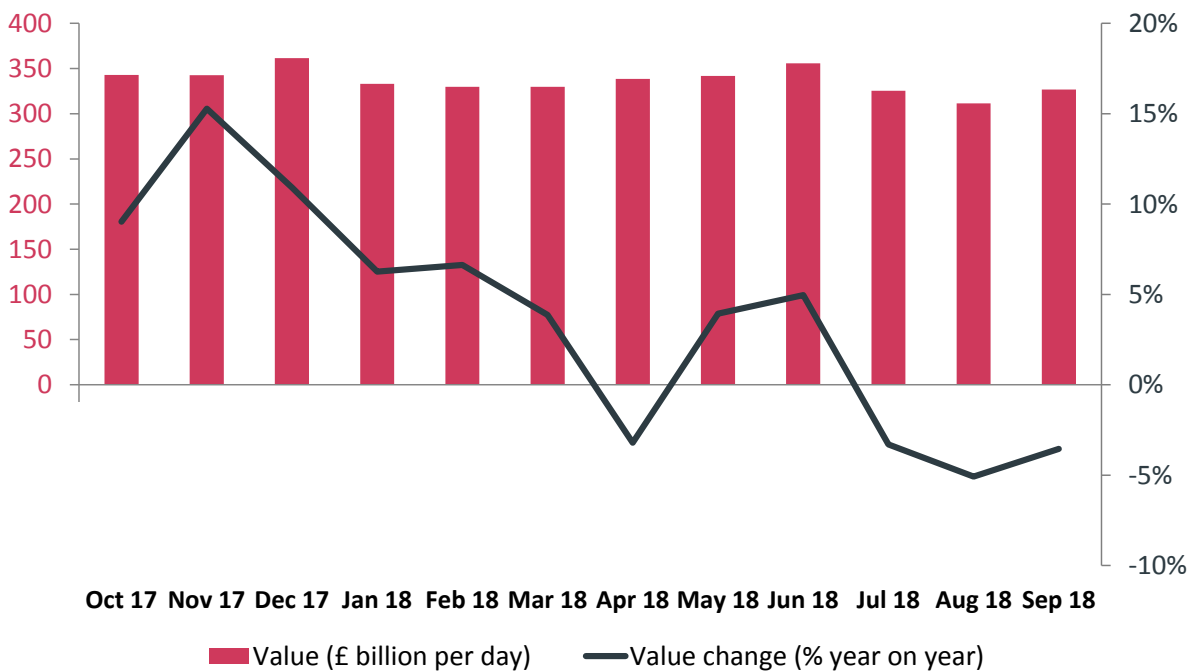
IV.20 CHAPS payments represent around 0.5% of UK total payment volumes, but 93% of sterling payment values (excluding internal payments). In 2017, CHAPS volumes grew by 6.9% to a new record of 41.7million, and CHAPS values grew by 11.3% to a new record of £84.1 trillion. Part of this increase is due to structural reform, which saw the Barclays and HSBC banking groups each join CHAPS for a second time to reflect the separation between their core, ring-fenced bank and other activities.

IV.21 Typically, around 75% of CHAPS by value relates to wholesale financial market transactions, while around the same proportion by volume relates to low-value, retail transactions. Peak days in CHAPS tend to be end-quarters, and can be particularly high around the end of March. The record value day in CHAPS, as of end-September 2018, is £468 billion on 20 December 2017. For volume, the record day is 29 March 2018 – with 320,034 – CHAPS payments worth £463 billion. This was the last working day of the quarter and the day before the Easter bank holiday weekend.

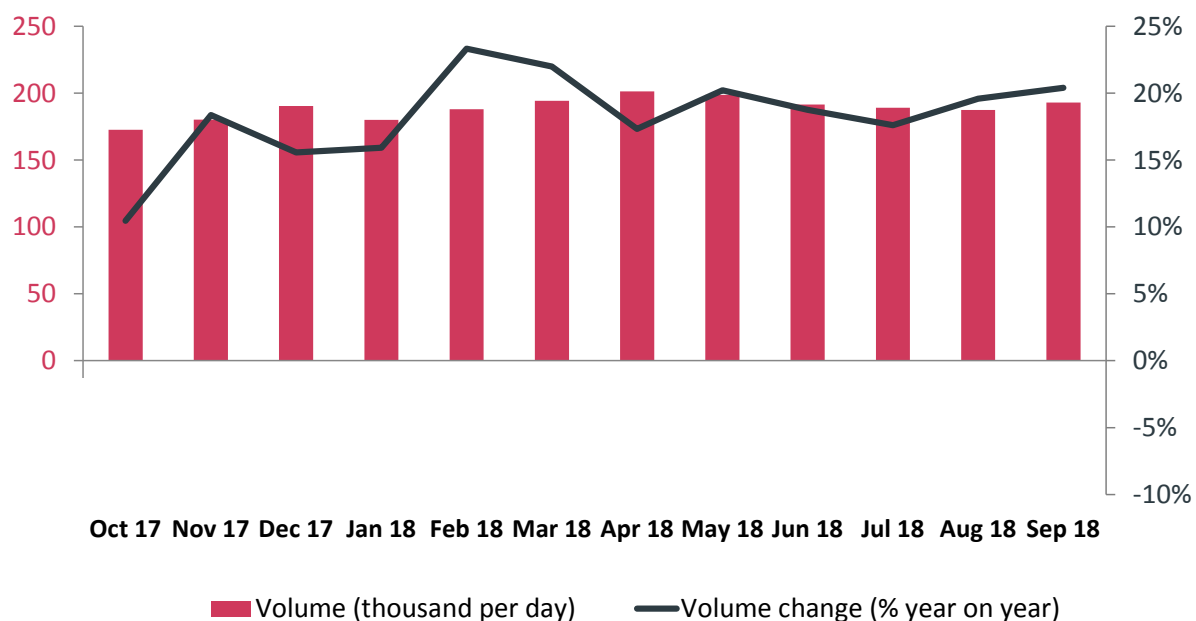
**Figure 3: CHAPS volume and value profile 2017**



**Figure 4: CHAPS values for the previous 12 months up to September 2018**



**Figure 5: CHAPS volumes for the previous 12 months up to September 2018**



Stock of Reserves

IV.22 As at end-February 2018, 86% of the Bank’s total consolidated balance sheet liabilities was held within the RTGS system, in the form of the banking systems’ reserves (£492bn on 28 February 2018).

Liquidity provision

IV.23 The settlement of CHAPS and CREST on a real-time gross basis means CHAPS Direct Participants and CREST settlement banks must have the ability to source intra-day liquidity from the Bank to supplement reserves if needed to fund outgoing payments, where eligible to participate in the SMF. On average in 2017, the Bank’s balance sheet increased by £48.4bn intra-day, of which £18.7bn of was provided for CHAPS intra-day liquidity and £29.7bn automatically generated via the auto-collateralised repo facility within CREST.

*Overview of operational stability and resilience*

IV.24 As the final record of sterling transfers, the operational stability and resilience of the RTGS system is of paramount importance to the Bank:

- Changes to RTGS are carefully considered and tested – the Bank engages on potential changes with the systems that settle in RTGS and relevant directly-settling participants of those systems.
- RTGS operates on fault-tolerant computer hardware which is replicated on a second site; and with the business operation also conducted on a split site basis.
- The Bank also has the option of using a third site and alternative technology in the form of SWIFT's 'Market Infrastructure Resiliency Service' (MIRS). MIRS is an additional contingency infrastructure that could be used in the event of a failure of its principal RTGS infrastructure. MIRS ensures that CHAPS payments continue to settle in the event of a disruption without resorting to a deferred net settlement model. It also facilitates the net settlement of CREST and the retail payment systems.

**Table 2: Availability of RTGS Service in 2017<sup>19</sup>**

<b>Service Availability</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
RTGS infrastructure for 'urgent' CHAPS settlement (%)	100	100	99.76	100	100	100	100	100	100	100	100	100
RTGS infrastructure for 'non-urgent' CHAPS settlement (%)	100	100	99.64	100	100	100	100	99.62	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 interbank 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	99.67	100	100	100	100	100	100

<sup>19</sup> Historic data are published on the Bank's website. See <https://www.bankofengland.co.uk/payment-and-settlement/payment-and-settlement-statistics>

**Table 3: Availability of RTGS Service in 2018**

<b>Service Availability</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>
RTGS infrastructure for 'urgent' CHAPS settlement (%)	100	99.88	100	100	100	100	100	100	100
RTGS infrastructure for 'non-urgent' CHAPS settlement (%)	100	99.87	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
Delays to net interbank settlement of retail payment systems (minutes)	0	0	0	0	0	0	0	0	0
RTGS Enquiry Link (%)	100	100	100	100	100	100	100	100	100

### *Costs*

- IV.25 The Bank operates the RTGS and CHAPS services with a public objective to recover its costs fully over the medium term – typically a four year rolling horizon. Costs are recovered from those who use the RTGS and CHAPS service. Tariffs are set annually in accordance with principles agreed, and published, with relevant users to align income with budgeted cost. There are separate tariffs for CHAPS settlement, CREST DvP settlement, and each of the retail schemes. There is also a tariff for the CHAPS 'scheme' reflecting the additional costs of the Bank being the operator of CHAPS.
- IV.26 There are a range of other costs for CHAPS Direct Participants. This includes one-off set-up costs, such as the cost of developing the necessary hardware, software and processes, and establishing sufficient expertise amongst staff. Ongoing costs may include the opportunity costs of providing collateral or holding liquid assets; maintenance of the necessary hardware and software; and staffing costs. Costs due to third parties typically include VocaLink charges for provision of the Extended Industry Sort Code Directory, SWIFT fees for CHAPS payment and advice messages, and regulatory fees including those to the Payment Systems Regulator.
- IV.27 The costs of RTGS renewal will be recovered through the tariff, once the new core ledger has been implemented. As in the past, the Bank will amortise these costs, but the scale of the programme means that the period of which costs are amortised is likely to be somewhat longer than usual.

*Recent developments*

**Table 4: Major developments in RTGS and CHAPS in the last ten years:**

<b>Date</b>	<b>Development</b>
<b>May 2008</b>	Automated net settlement introduced, enabling operators of retail payment systems to deliver settlement data to RTGS via SWIFT.
<b>Sep 2010</b>	Full FIN Copy Service implemented, copying the full CHAPS payment data to the RTGS Processor. This was a pre-requisite for business intelligence services.
<b>Jan 2012</b>	A business intelligence service for RTGS data (RTBI) became available to CHAPS Direct Participants, assisting them in meeting their regulatory reporting requirements.
<b>Apr 2012</b>	Tiering criteria introduced for CHAPS that sets out measures beyond which there is a presumption that an institution should move to direct access to reduce risk.
<b>Apr 2013</b>	Introduction of Liquidity Saving Mechanism (LSM) into RTGS, which identifies CHAPS payments to settle simultaneously to reduce use of intra-day liquidity.
<b>May 2013</b>	CHAPS Co (the previous operator of CHAPS) appointed its first independent chair to enhance the oversight and challenge to its operation of the CHAPS system.
<b>Feb 2014</b>	Introduction of Market Infrastructure Resiliency Service (MIRS) as a contingency RTGS infrastructure in the event of a failure of the principal RTGS infrastructure.
<b>Oct 2014</b>	Introduction of a new collateral management system that uses a collateral pooling model to manage the collateral for official operations and for intra-day liquidity.
<b>Nov 2014</b>	Extension of the eligibility criteria for membership of the reserves scheme to include central counterparties and broker dealers.
<b>Jan 2015</b>	CHAPS Co removed the 2% minimum contribution from Direct Participants, reducing costs of direct access for those with lower volumes.
<b>Mar 2015</b>	The RTGS Strategy Board was reconstituted from March 2015, in response to a recommendation made in Deloitte's independent review into the 2014 RTGS outage.
<b>Sep 2015</b>	Introduction of prefunding for Bacs and Faster Payments to address the settlement risk as a result of a build-up of obligations in the deferred net settlement systems.
<b>Jun 2016</b>	The Bank extended the RTGS settlement day by one hour and forty minutes, with similar extensions implemented by the operators of the CHAPS and CREST systems.
<b>Feb 2017</b>	The revised CHAPS Reference Manual was fully adopted, covering a set of Rules, Requirements and Procedures for the CHAPS system.
<b>May 2017</b>	In its RTGS Blueprint, the Bank announced a number of significant policy changes and the intention to renew the RTGS service.
<b>Jul 2017</b>	The Bank announced that non-bank payment service providers became eligible to apply for a settlement account in RTGS.
<b>Nov 2017</b>	Responsibility for CHAPS transferred to the Bank, and a combined RTGS/CHAPS Board was set up to govern delivery of RTGS and CHAPS.

## **General organisation of the RTGS and CHAPS Services**

### *Bank-wide governance and risk management*

- IV.28 The Bank's governing body is its Board of Directors, known as the Court. The framework for governance and accountability is set by the Bank of England Act 1998, with some modifications made by the Banking Act 2009 and the Financial Services Act 2012. The Court is responsible for managing the Bank's affairs, other than the formulation of monetary policy which is the responsibility of the Monetary Policy Committee, the stability of the financial systems of the United Kingdom, which is the responsibility of the Financial Policy Committee and prudential regulation and supervision of banks, building societies, credit unions, insurers and major investment firms, which is the responsibility of the Prudential Regulation Committee (PRC).
- IV.29 The RTGS Renewal Committee is a sub-committee of Court responsible for overseeing the delivery of the RTGS renewal programme, and for making key decisions on the overall scope of the programme, the procurement and spending, within the overall budget envelope agreed by Court. It has six members, two external members from each of Court and the RTGS/CHAPS Board, as well the Deputy Governor for Markets & Banking and the Bank's Chief Operating Officer.
- IV.30 The executive management of the Bank lies with the Governors and Executive Directors. Court delegates the day-to-day management of the Bank to the Governor and through him to other members of the executive. But it reserves to itself a number of key decisions. These 'matters reserved to Court' are reviewed annually and are published on the Bank's website.<sup>20</sup> The Governors serve as the Bank's top level executive team, and are responsible, in conjunction with the Bank's policy committees, for overseeing the fulfilment of the Bank's mission. Each Deputy Governor is assigned functional responsibility for a particular aspect of the Bank's work. The Executive Directors' Committee is accountable to Governors, the PRC (where applicable) and ultimately to Court.

### *RTGS- and CHAPS-specific governance and risk management*

- IV.31 The Bank's Deputy Governor for Markets and Banking has overall responsibility for the Bank's payment services operations, including the implementation of strategic changes, and the day-to-day- operation of, the RTGS and CHAPS services, under the Bank's internal

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<sup>20</sup> <https://www.bankofengland.co.uk/-/media/boe/files/about/legislation/matters-reserved-to-court.pdf>

application of the Senior Managers Regime.<sup>21</sup> The Executive Director for Banking, Payments and Financial Resilience oversees the operation and strategic development of the Bank's provision of payment system services, including the RTGS and CHAPS services. The Head of Market Services Division runs the RTGS and CHAPS services on a day-to-day basis.

IV.32 The Bank has dedicated, combined governance arrangements for the RTGS and CHAPS services with codified roles, compositions and reporting lines. Ultimately, the RTGS and CHAPS governance arrangements are accountable to the Governor, and through him, to the Bank's Court, the responsibilities for which are set out in legislation.

*Key committees for the RTGS and CHAPS services*

IV.33 The RTGS/CHAPS Board provides strategic leadership for the RTGS infrastructure and the CHAPS payment system. The Board operates within the Bank's wider governance structure, reporting to the Governor and Court. The Board supports the delivery of the Bank's mission to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. It also seeks to promote efficiency, innovation and competition in sterling payments, wherever that can be safely done without impairing stability.

IV.34 The RTGS/CHAPS Board is chaired by the Deputy Governor for Markets and Banking. Members of the Board include four external appointees in order to provide additional challenge, broader experience and insight into the Bank's decision-making. Executive members include those with responsibility for the operation of the RTGS and CHAPS services as well as the Bank's Executive Directors for Technology and Markets. Non-member Board attendees are drawn from supporting functions across the Bank, including legal, risk and audit functions.

IV.35 The Board is responsible for, in the context of the RTGS and CHAPS services, setting strategic aims, setting risk tolerances, reviewing the risk management frameworks and overseeing the risk profiles and risk mitigation, reviewing the audit programme and reviewing business continuity and crisis management.

IV.36 The Board has delegated the monitoring of the RTGS and CHAPS risk management framework, risk tolerance and risk profiles to the RTGS/CHAPS Board Risk Committee. The Risk Committee has five members – two external, and three executives members.

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<sup>21</sup> See <https://www.bankofengland.co.uk/-/media/boe/files/payments/smr.pdf>



- IV.37 The career experience of the external members can raise the possibility that individuals may have commercial interests which could give rise to a potential conflict. The Board has robust procedures in place to manage such conflicts to ensure the integrity and impartiality of the Board's decision-making.
- IV.38 The Bank also has a number of executive committees as part of the RTGS/CHAPS governance arrangements. This includes committees on risk, change and operations and input from other parts of the Bank including technology and risk functions. The RTGS Renewal programme has a parallel executive governance structure.

#### *Stakeholder engagement*

- IV.39 As operator of the RTGS and CHAPS services, the Bank has two-way engagement with CHAPS Direct Participants to seek views from them and to respond to their needs/interests, The Bank engages both through one-on-one meetings, and a range of forums, in some cases drawing in views from outside the Direct Participant population as well. Topics covered in multilateral forums include strategic matters, operations, technical change and testing. Thematic forums may also be held periodically on risk, security and liquidity.
- IV.40 The Bank also hosts a CHAPS Strategic Advisory Forum, which is a small, focussed and senior group to discuss, and provide feedback and advice on, the strategic direction of CHAPS with the Bank. It is chaired by one of the external members of the RTGS/CHAPS Board. Members are drawn from banks, other financial institutions, payment service providers and end-users.
- IV.41 The Bank also engages regularly with the operators of CREST and the retail systems that settle in RTGS in respect of the settlement services provided. This includes on the allocation of on-boarding slots for new participants to their systems, technical change, and the prefunding service for certain retail systems.
- IV.42 The RTGS Renewal programme has a dedicated set of arrangements for stakeholder engagement, including a senior External Advisory Body and Standards Advisory Panel. There are also a number of thematic and supporting working groups covering topics including transition as well as data and interoperability for ISO 20022 messaging.
- IV.43 The External Advisory Body represents a broad range of interests including CHAPS Direct Participants, Pay.UK, and a number of trade associations. The Standards Advisory Panel,

jointly run with Pay.UK, will provide senior input on the implementation of ISO 20022 for CHAPS and Pay.UK's retail systems, as well as other relevant payments standards.

#### *Legal framework*

- IV.44 The Bank articulates the legal basis for its activities in legal documents that are made readily available to relevant stakeholders. The documents are governed by, and enforceable under English Law. Figure 6 sets out a summary of the legal arrangements in relation to RTGS and CHAPS.
- IV.45 For RTGS this includes: RTGS Account Mandate Terms and Conditions; multilateral agreements between the Bank, payment system operators and directly-settling participant(s) (typically owned by the operator, for example, the prefunding arrangements for Bacs and Faster Payments); and bilateral agreements with the payment system operators.
- IV.46 Specifically for CHAPS, each CHAPS Direct Participant also enters into a CHAPS Participation Agreement and undertakes to comply with the CHAPS rules, CHAPS Reference Manual and other relevant documents.
- IV.47 In addition to the above, where an institution wishes to participate in the Bank's Sterling Monetary Framework (which has its own eligibility criteria) and have a reserves account, it is required to sign up to the Sterling Monetary Framework Terms & Conditions which govern, amongst other things, the provision of collateral to cover any RTGS exposures.

#### *Access criteria*

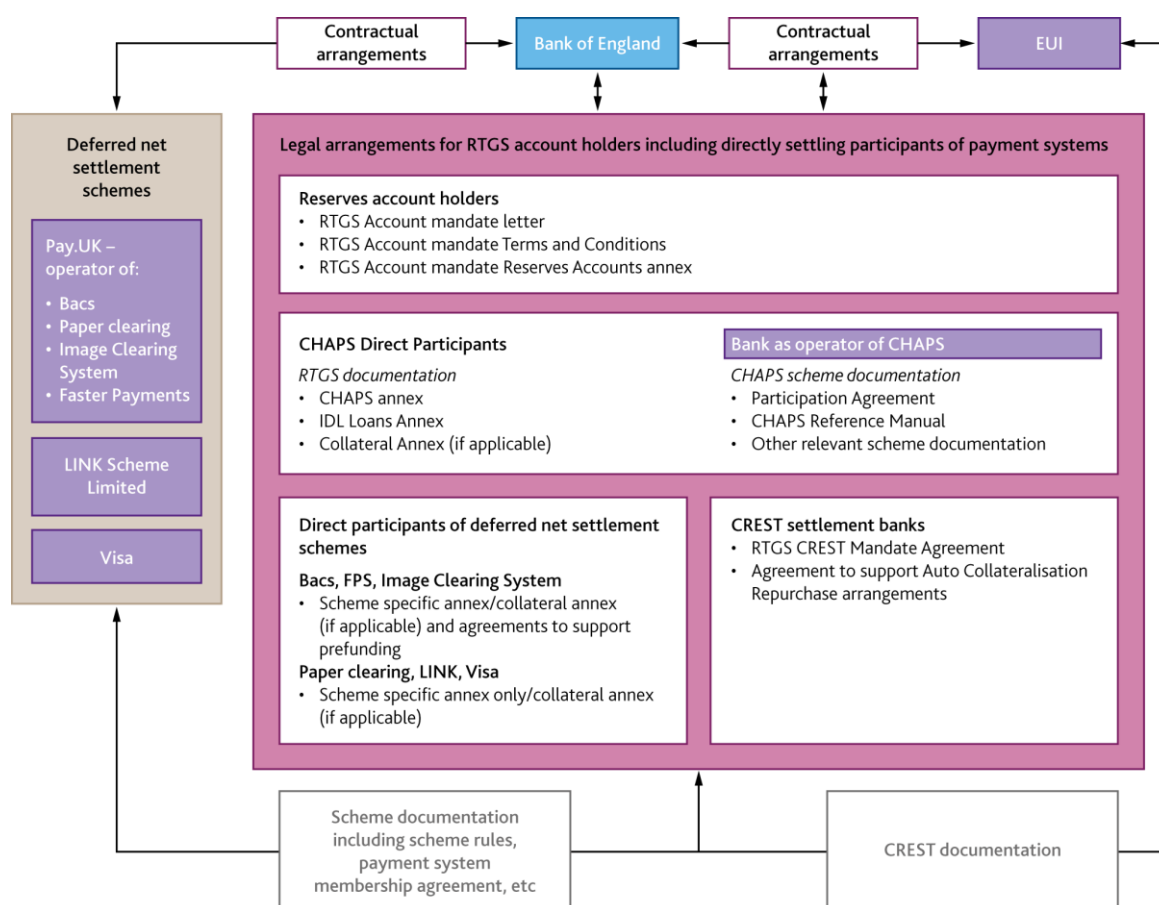
- IV.48 To be eligible for direct access to CHAPS, an organisation must hold a reserves or settlement account at the Bank; be a participant within the definition set out in the Financial Markets and Insolvency (Settlement Finality) Regulations 1999; satisfy various security and resilience arrangements through a standard attestation process; and comply with the CHAPS Reference Manual. Applicants outside England & Wales must also provide information about company status and settlement finality through a legal opinion.
- IV.49 Access to reserves accounts is governed under the Sterling Monetary Framework's Red Book. Eligibility for settlement accounts and services are set out in the Bank's Settlement Account Policy. Institutions eligible for access to settlement accounts include banks, building societies, broker-dealers, CCPs, other Financial Market Infrastructures, and authorised non-bank payment service providers (electronic money institutions and payment institutions). In

some cases, access is only possible for institutions that also participate in the Sterling Monetary Framework. Non-bank payment service providers require a non-objection from the Financial Conduct Authority following a supervisory assessment before being granted access to a settlement account by the Bank.

IV.50 Applicants for settlement accounts must also be, or apply, to be a settlement participant in one of the payment systems that settles across accounts in RTGS. Institutions must also have the operational capacity to participate in and efficiently settle transactions in RTGS.

IV.51 The legal documentation also sets out the steps that the Bank would take in non-routine events, including disablement and termination of accounts. The Bank has ultimate discretion to make unilateral changes if necessary for the UK’s financial stability. As part of the central bank, the Bank, as operator of RTGS and CHAPS, works closely with other parts of the Bank in the event that an RTGS account holder is subject to resolution.

**Figure 6: Legal documentation framework for services provided to payment system operators and their directly-settling participants**



*Regulatory framework*

- IV.52 The Bank's management and operation of the RTGS service does not fall under any regulatory, supervisory or oversight framework for FMIs. It is, however, subject to the Bank's internal governance arrangements.
- IV.53 The Bank's management and operation of CHAPS is subject to arms-length supervision, on a non-statutory basis, to the same standards applied to other systemically important payment systems that have been recognised.<sup>22</sup> The Bank's supervisory and operational areas sit in separate directorates, which report into different Deputy Governors. The Bank's supervisory role is undertaken by the Bank's Financial Market Infrastructure Directorate. This directorate undertakes an annual assessment of CHAPS against the Bank's supervisory risk framework and assessing proposed material changes to business models or risk profiles to ensure that such changes do not increase risks to financial stability. There are also periodic reporting requirements and a programme of regulatory supervisory meetings and core assurance reviews. Both functions provide regular updates to the Bank's Financial Policy Committee.
- IV.54 The CHAPS system continues to be designated for settlement finality purposes by the Bank, as the relevant designating authority under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999.
- IV.55 Many of the payment system operators and other FMIs in the UK that directly or indirectly use the RTGS Service are subject to statutory supervision by the Bank's Financial Market Infrastructure Directorate.
- IV.56 In the UK, the Payment Systems Regulator has objectives to promote competition, innovation and the interests of service-users in relation to payment systems. The CHAPS system continues to be designated under the Financial Services (Banking Reform) Act 2013. While the Payment Systems Regulator's regulatory powers do not apply to the Bank as either the operator of, or infrastructure provider to, the CHAPS system, the Payment Systems Regulator has regulatory powers over payment service providers who participant in the CHAPS system. The Payment Systems Regulator is also one of the UK's sectoral competition regulators, having concurrent competition powers with the Competition and Markets Authority.

### **System design and operations**

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<sup>22</sup> In November 2017, the CHAPS system was de-recognised as a recognised payment system under the Banking Act 2009.

- IV.57 The main technical features of the RTGS service are the RTGS processor and the Enquiry Link service.
- IV.58 The RTGS processor (or central system) is host to all the accounts held in RTGS and carries out all the postings made to those accounts. All payment messages pass through a validation process on reaching the RTGS processor, where the RTGS processor checks that the payment is valid and that it is not a duplicate.
- IV.59 The RTGS processor also has:
- an interface with the SWIFT network to receive settlement instructions (and send confirmations);
  - a link to the CREST system, to support the real-time DvP settlement process; and
  - an interface with the Bank’s collateral system, to enable accounts to be credited with intra-day liquidity secured by collateral.
- IV.60 All account holders have access to the browser-based Enquiry Link service which is operated by the Bank. This enables account holders to monitor activity on, and receive information about, their account(s) in the RTGS processor, and in certain circumstances to transfer funds between accounts. Payment system operators that use cash prefunding also have access through the Enquiry Link.
- IV.61 The key components of the CHAPS system are: SWIFT Fin Copy messaging which connects the CHAPS Direct Participants and the Bank; the necessary interfaces for the CHAPS Direct Participants and the Bank to connect to SWIFT; the Bank’s RTGS processor which holds accounts for each CHAPS Direct Participant; and the browser-based Enquiry Link service.
- IV.62 Within the RTGS processor is a central scheduler through which all CHAPS settlement instructions have to pass before actual settlement. CHAPS Direct Participants use the central scheduler for queue management. This includes controlling the rate and order in which their instructions proceed to settlement, and distinguishing between urgent and non-urgent CHAPS payments. CHAPS Direct Participants use the Enquiry Link to manage their accounts, including for queue management.
- IV.63 More broadly, CHAPS Direct Participants maintain their own infrastructure to manage the accounts and other services they provide to their customers. End-users and indirect participants can initiate CHAPS payments through a number of channels, including the

SWIFT FIN network, online banking products, branch networks, and written instructions/fax messages.

*Reserves and settlement accounts*<sup>23</sup>

- IV.64 Reserves accounts in RTGS are effectively sterling current accounts for Sterling Monetary Framework participants. As the balances constitute a form of central bank money, they are among the safest assets a financial institution can hold. They are the ultimate means of payment between financial institutions. Whenever payments are made between the accounts of customers at different financial institutions, they are ultimately settled by transferring central bank money (reserves) between the reserves accounts of those banks.
- IV.65 Reserves balances can be varied freely to meet day-to-day liquidity needs, for example, to accommodate unexpected end-of-day payment flows. In this way, reserves balances can be used as a liquidity buffer. The funds held in reserves accounts are considered liquid assets for the purpose of the PRA's liquidity requirements. All reserves account balances earn Bank Rate.
- IV.66 Settlement accounts exist in the context of payment system membership. The same account may be used to settle the obligations from several payment systems, and may also be used for non-settlement purposes. An institution only holds a settlement account at the Bank where it is a member of one or more payment systems for which the Bank acts as Settlement Service Provider. Eligible institutions wishing to become direct participants in a payment system may apply for membership of that system, including CHAPS, simultaneously with their application for an account at the Bank.
- IV.67 For banks, building societies, CCPs and designated investment firms ('broker-dealers'), reserves accounts are also used as settlement accounts.
- IV.68 Some institutions, such as certain financial market infrastructures and non-bank payment service providers (NBPSPs), may be eligible for a settlement account but not a reserves account under the Sterling Monetary Framework. The eligible criteria for settlement accounts are set out in the Bank's Settlement Account Policy. The Bank extended the option of direct access to NBPSPs to enable broader access to sterling payment systems. This means that

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<sup>23</sup> The special, segregated, accounts used for prefunding in Bacs, Faster Payments and the cheque-based Image Clearing System are subject to different arrangements, see IV.95-IV.96.

electronic money institutions and payment institutions authorised by the FCA<sup>24</sup> are now eligible to apply for settlement accounts with the Bank. They are not, however, eligible to participate in SMF and do not have access to reserves accounts or intraday liquidity. As they do not hold reserves accounts, settlement account balances are not remunerated.<sup>25</sup>

NBPSPs are also eligible for direct access to CHAPS.

### *Typical lifecycle of the transaction process*

#### CHAPS settlement

- IV.69 The Bank provides same-day settlement for CHAPS payments made between 6:00 and 18:00 (with the ability to extend to 20:00 in contingency).<sup>26</sup> Settlement can occur at any point during this period but is subject to constraints controlled by the relevant account holders, such as available liquidity, and subject to account holders' exposure limits. CHAPS Direct Participants settle their own and indirect participants' CHAPS payments across accounts in RTGS.
- IV.70 Individual CHAPS payment instructions are routed via the SWIFT network to the RTGS system and settled across the sending and receiving CHAPS Direct Participants' settlement accounts. The message from the sending bank is stored within SWIFT FIN Copy while a full copy of the message is sent to the Bank for settlement. Once the payment is settled in RTGS with finality (sending bank's account debited, receiving bank's account credited), a confirmed is returned to SWIFT and the full payment message is then forwarded on to the receiving bank who then processes the payment as required in its own systems. Figure 7 illustrates this process.
- IV.71 Each CHAPS Direct Participant provides liquidity to support the timely settlement of CHAPS payments in RTGS. Liquidity is primarily provided by holding balances on a reserves/settlement account, and can be supplemented through the provision of intra-day liquidity where eligible to receive.

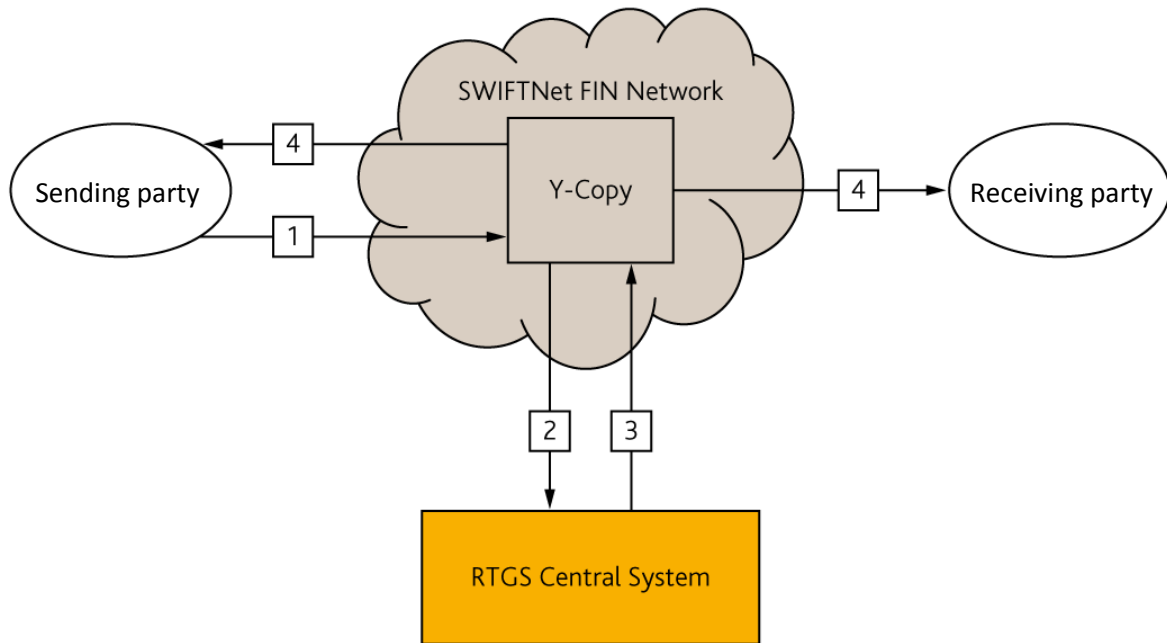
#### **Figure 7: CHAPS settlement**

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<sup>24</sup> As defined in the Electronic Money Regulations 2011 and the Payment Services Regulations 2009 respectively. For further information on non-Bank PSPs see page 12 of the Blueprint <https://www.bankofengland.co.uk/-/media/boe/files/payments/a-blueprint-for-a-new-rtgs-service-for-the-uk.pdf>

<sup>25</sup> Any overnight balances on prefunding accounts will be remunerated.

<sup>26</sup> The end-of-day was 16:20 until 17 June 2016.



- 1 Payment instruction
- 2 Settlement request (full payment message)
- 3 Settlement confirmation
- 4 Payment/sender notification

IV.72 Since mid-April 2013, the Bank has provided a Liquidity Saving Mechanism (LSM) within RTGS. This LSM contains the central scheduler that enables the CHAPS Direct Participants to manage their payment flows centrally. In particular, they can decide whether CHAPS payments should settle via 'urgent' or 'non-urgent' streams. RTGS settles urgent CHAPS payments one at a time and in much the same way as it has since RTGS was first introduced. However, every few minutes the LSM suspends urgent payment processing and switches to a 'matching cycle' that, through the use of algorithms, matches and then simultaneously settles batches of offsetting non-urgent payments. Offsetting payments still settle gross from a legal standpoint but the simultaneous nature of the settlement means that banks economise on the use of liquidity.

#### CHAPS payment system management

IV.73 The CHAPS system is governed by rules, requirements and procedures which collectively set out the obligations and requirements that a CHAPS Direct Participant must meet, and continue to comply with. These are contained in the CHAPS Reference Manual, the CHAPS Operational Reference Manual and the CHAPS Technical Reference Manual.



- IV.74 The Bank operates a 'trust and verify' approach which requires CHAPS Direct Participants to self-certify that they adhere to the relevant obligations and requirements. This is supported by additional participant assurance where the Bank seeks evidence of compliance, under a risk-based approach, with a 'consequence management' framework to manage non-compliances.
- IV.75 The CHAPS rules, as set out in the CHAPS Reference Manual, describe the key obligations for Direct Participants that help the Bank to identify, monitor, measure and/or manage material risks to the CHAPS system or the wider payments and financial eco- system as well as matters that have a significant effect on the efficiency or effectiveness of the CHAPS system.
- IV.76 The rules include: access criteria that institutions must meet, and continue to comply with, in order to access CHAPS directly; definitions for the point of entry, irrevocability and finality for CHAPS payment messages; and obligations and requirements in relation to events of default, voluntary withdrawal from the CHAPS system, as well as the arrangements for suspension or exclusion from the CHAPS system as deemed necessary by the Bank.
- IV.77 The principal function of the CHAPS participation requirements is to provide more granular detail underneath the CHAPS rules so that, taken collectively with the rules, the requirements can support the Bank in maintaining the security, integrity and reputation of the CHAPS system. The CHAPS procedures describe key elements of the CHAPS system's design and operations as well as describing certain key risks and controls.
- IV.78 Given the significance that tiering and throughput play in helping the Bank to monitor, manage and mitigate system and other risk, a review process, as outlined in the CHAPS Reference Manual, is available to current and prospective CHAPS Direct Participants should they wish to challenge a decision made by the Bank in these respects. Additionally, the Bank undertakes to seek input from CHAPS Direct Participants when making significant changes to the CHAPS Reference Manual.
- IV.79 The Bank defines a small number of categories to help to differentiate, in an objective manner, the inherent risks that CHAPS Direct Participants pose to the CHAPS system and wider financial stability. Categorisation is risk-based and takes into account factors including values, volumes and the type of institution. There are currently four categories: Category 0 is for central banks; and Categories 1 – 3 are for all other types of participants. The

participation requirements of less systemic CHAPS Direct Participants are less onerous, in places, to reflect the lower risk posed to the CHAPS system.

IV.80 Key areas of risk covered by the CHAPS Reference Manual are:

- Tiering: Under the CHAPS rules, the Bank may withdraw consent for a direct participant to provide access to CHAPS for an indirect participant if the indirect participant's average daily payment activities exceed either (i) 2% of the average total CHAPS payment activity, by value, or (ii) 40% of the average daily value of its direct participant's own payments. The Bank takes into account whether there are sufficient mitigating circumstances to address the financial and operational risks. One medium term mitigant is for the relevant indirect participant to move to accessing the CHAPS system directly.
- Throughput: Under the CHAPS throughput criteria, certain CHAPS Direct Participants are expected to settle 50% of payments, by value, by 12pm; 75% by 3pm; and 90% by 5pm. The rule seeks to ensure that payments should not be unnecessarily delayed in order for gain a disproportionate liquidity advantage. Submitting payments in a timely manner also mitigates operational risks associated with outages towards the end of the settlement day.
- Operational risk: Various expectations to reduce operational risk including for larger participants to maintain appropriately resilient and security arrangements including through management of third party service providers, and maintaining a tertiary solution for access to the CHAPS system.

IV.81 The Bank undertakes assurance against the obligations and requirements that Direct Participants are subject to under the CHAPS Reference Manual. All CHAPS Direct Participants must submit a self-certification of compliance annually. In addition, the Bank asks a series of questions based around the obligations set out in the CHAPS Reference Manual. The questions are risk-based and may vary between Direct Participants based on historic performance and the risks posed to the CHAPS system. The Bank also feeds in other information from verification activities such as site visits, as well as post-incident reviews.

IV.82 In addition to the self-certification and assurance activities, the Bank also collects a number of performance metrics. These include, for example, measures in relation to incidents, participation in testing, and whether any applicable throughput criteria are met.

- IV.83 The Bank's consequence management framework for the CHAPS system defines a number of actions that the Bank can take if a CHAPS Direct Participant's fails to comply with the relevant obligations and requirements. The Bank's response will depend on the level and severity of the associated risk. Where remediation is required, the 'service improvement plan' will be agreed with the relevant Direct Participant. Ultimately, the Bank may suspend or exclude a CHAPS Direct Participant from the CHAPS system in the event that the CHAPS Direct Participant threatens security, integrity or reputation of the CHAPS system.
- IV.84 The Bank works with CHAPS Direct Participants using standard incident and problem management processes. The Bank seeks to understand the root cause of any incidents and to drive down risk, and the likelihood of incidents, through sharing learnings from incidents. The Bank maintains a number of incident guides and playbooks, with a structured approach to communicating with CHAPS Direct Participants in the event of incidents.

#### DvP settlement for CREST

- IV.85 CREST is the UK's securities settlement system, operated by Euroclear UK & Ireland, which since November 2001 has provided real-time cash against securities settlement (referred to as 'Delivery versus Payment' or DvP) for its members. The CREST system settles securities transactions in a series of very high-frequency cycles through the day; after each cycle the Bank's RTGS system is advised of the debits and credits to be made to the CREST settlement banks' accounts in central bank money as a result of the settlement activity performed by CREST in that cycle.
- IV.86 The accounts in RTGS used for CREST settlement hold zero balances overnight; CREST settlement banks transfer funds each morning from their primary reserves/settlement account into their CREST account, and at the end of the CREST day, balances are automatically swept back up to the primary reserves/settlement account.
- IV.87 The settlement instructions to CREST settlement banks' accounts are underpinned by irrevocable and unconditional undertakings by the Bank to debit the paying CREST settlement bank in RTGS and credit the payee CREST settlement bank in RTGS.<sup>27</sup> In the unlikely event that a CREST software error creates an overdraft in RTGS, CREST settlement is suspended while the overdrawn account holder covers the overdraft. If it is

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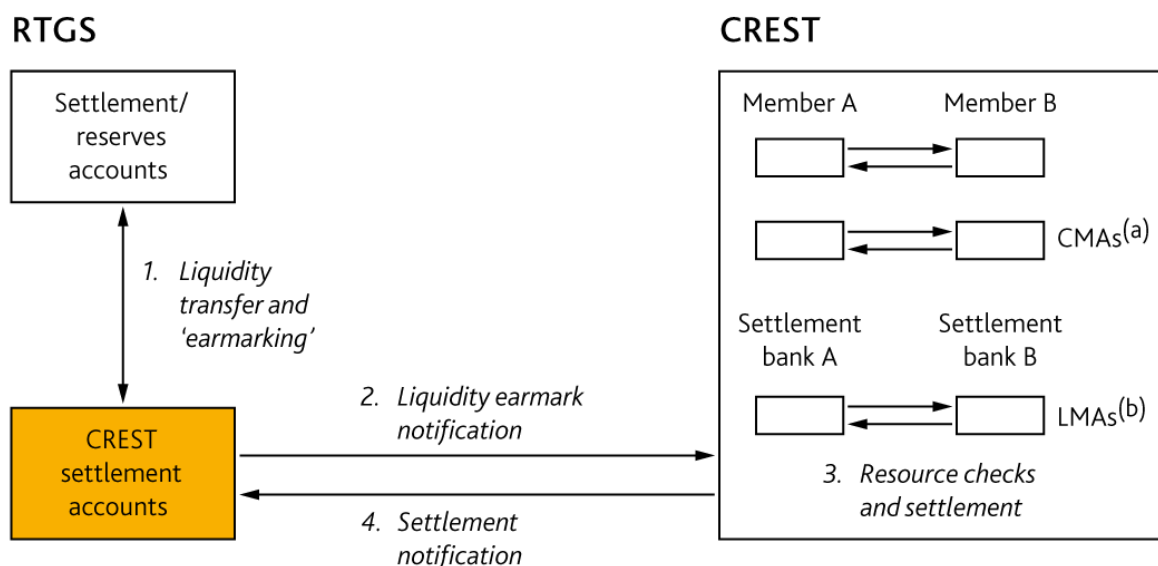
<sup>27</sup> See Chapter 6 of EUJ's CREST Reference manual for further information: [https://my.euroclear.com/dam/EUJ/Legal information/CREST-Reference-Manual.pdf](https://my.euroclear.com/dam/EUJ/Legal%20information/CREST-Reference-Manual.pdf) (click 'Access as a guest').

unable, the Bank may invoke the Operational Error Lending Scheme (OELS) to ensure that any credit risk incurred from such an error is mitigated. Under OELS, account holders that are prematurely enriched due to an operational error may temporarily lend an equivalent amount of liquidity back to the 'overdrawn' CREST settlement bank on an unsecured intra-day basis.

IV.88 There are several thousand CREST members, all with securities and cash accounts in the CREST system. Every CREST member must have a banking relationship with one or more CREST settlement banks. This relationship is reflected in the members' Cash Memorandum Accounts (CMAs) within CREST – against which all cash payments and receipts in respect of securities-related transactions are posted. Settlement banks set secured and unsecured credit caps to the CMAs of the CREST members that they represent, and which the CREST system operates on the settlement banks' behalf through the CREST business day.

IV.89 CREST settlement accounts in RTGS have zero balances overnight. Before the start of CREST settlement each morning (and the sending of the first liquidity 'earmark' to CREST), settlement banks transfer funds to their CREST settlement accounts. During the day (between settlement cycles), settlement banks can add to or reduce the balance on their CREST settlement accounts. At the end of the CREST day, balances are automatically swept back up to the primary reserves/settlement account. Figure 5 illustrates this process.

### **Figure 8: CREST settlement**



- (a) Cash Memorandum Accounts.
- (b) Liquidity Memorandum Accounts.

IV.90 As with CHAPS transfers, the Bank supports the real-time settlement process in CREST through the provision of intra-day liquidity to the CREST settlement banks; and again this is provided via an intra-day repo (under a procedure known as auto-collateralisation, which is carried out on the Bank's behalf by the CREST system).

#### Intra-day liquidity

IV.91 The Bank operates a collateral pooling model to support its official operations, which includes intra-day liquidity. Under this model, each SMF Participant maintains a collateral pool of securities within the Bank's collateral management system, which is used by the Bank to collateralise its current exposures.

IV.92 Intra-day liquidity is generated when there is excess eligible collateral in a member's main collateral pool. At the start of each Business Day, the Bank will credit the SMF Participant's liquidity account within the Payment Minimum Balance Group to the value of the excess eligible collateral available in the SMF Participant's main collateral pool; up to the 'intraday liquidity cap' set by each participant. At the end of each business day the Bank will debit the SMF Participant's Payment Minimum Balance Group of the intra-day liquidity amount, and the value of the excess collateral compared to exposures in the collateral pool will increase accordingly. During the operational day the value of the intra-day liquidity loan can be varied by the SMF Participant adjusting the value of excess eligible collateral in their main collateral pool.

#### Deferred net settlement

- IV.93 The RTGS Service provides same-day settlement on the value date for systems where multilateral net interbank obligations are settled on a deferred basis relative to the clearing of bilateral gross payments. These deferred settlements are scheduled at fixed points during the RTGS day, but may settle later than planned if there are operational delays or an account holder due to be debited lacks funds. The Bank supports multiple settlements per day per system – for example, Faster Payments currently settles three times per business day.
- IV.94 Each deferred net settlement system determines its own access criteria as well as the number and duration of settlement cycles:
- For Bacs, CHAPS, Cheque & Credit (paper and imaging), CREST and Faster Payments their Direct Participants (settlement bank in the case of CREST) must, under their respective access criteria, hold an account in RTGS which can be used for settlement.
  - For the LINK and Visa systems, a Direct Participant requires access to an account held in RTGS which can be used for settlement. Institutions ineligible for an account in RTGS may use the services of one of the other Direct Participants to settle their obligations arising from the payment system.
- IV.95 The operator of Bacs, Faster Payments and the cheque-based Image Clearing System require Direct Participants to prefund their maximum net settlement exposures. This involves a separate prefunding account<sup>28</sup> in RTGS for each directly-settling participant in Bacs, Faster Payments and the cheque-based Image Clearing System. Each prefunding account is linked to the relevant account holders' primary settlement account. Account balances in the prefunding account must always be greater than, or equal to, the size of a participant's 'cap' value (the maximum net debit position they are allowed to incur) in the relevant payment system.
- IV.96 Balances held in prefunding accounts that are in excess of the minima required to prefund deferred net settlement payment systems are withdrawable at times of stress. The 'minima required' refers to payments that are irrevocable but not yet settled. The caps set in Bacs, FPS, and the cheque-based Image Clearing System can be lowered to the 'minima required' at the request of the firm (and therefore the associated minimum balances set on the relevant prefunding account(s)).

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<sup>28</sup> Prefunding accounts may be Reserves Collateralisation Accounts (for SMF participants), Settlement Collateralisation Accounts (typically for PRA-authorized institutions who do not hold a reserves account) or Completion Funds Accounts (for non-bank payment service providers).

**Table 5: Summary of RTGS daily timetable**

<b>RTGS, CHAPS and Net Settlement Events</b>	<b>Time</b>	<b>CREST Event</b>	<b>Time</b>
Transfers between own accounts and Enquiry Link access enabled; and Notes Circulation Scheme settlement	<b>05:15</b>		
Start of CHAPS settlement	<b>06:00</b>	Start of Delivery vs. Payment (DvP)/Free of Payment (FOP) <sup>29</sup> settlement	<b>06:00</b>
Hourly CLS pay-in and/or pay-out deadlines	<b>07:00 to 11:00</b>		
Faster Payments settlement	<b>07:05</b>		
Bacs settlement	<b>09:30</b>		
Cheque & Credit settlements (up to six settlements between 10:40 and 11:10)	<b>10:40</b>		
LINK settlement	<b>11:00</b>		
CHAPS 50% Throughput Target	<b>12:00</b>		
Faster Payments settlement	<b>13:05</b>		
Visa settlement	<b>14:00</b>		
		End of equity and gilt DvP settlement	<b>14:55</b>
CHAPS 75% Throughput Target	<b>15:00</b>	Start of Delivery By Value (DBV) settlement <sup>30</sup>	<b>15:00</b>
Image Clearing System settlement	<b>16:30</b>		
Faster Payments settlement	<b>17:05</b>		
CHAPS 90% Throughput Target	<b>90%</b>		
		End of DBV settlement	<b>17:30</b>
End of CHAPS settlement for customer payments (MT103)	<b>17:40</b>		
End of CHAPS settlement for interbank payments (MT202)	<b>18:00</b>	End of FOP settlement	<b>18:00</b>
Notes Circulation Scheme settlement	<b>18:30</b>		
Latest end of contingency extension	<b>20:00</b>	Latest end of contingency extension	<b>19:30</b>

<sup>29</sup> FOP refers to free of payment, a delivery of securities which is not linked to a corresponding transfer of funds.

<sup>30</sup> DBV refers to Delivery-by-Value, whereby a member may borrow or lend cash against collateral in CREST for an agreed term. The system selects and delivers an agreed value of collateral securities meeting pre-determined criteria against cash from the account of the cash borrower to the account of the cash lender and reverses the transaction at the end of the agreed term.

## RTGS Renewal Programme

- IV.97 On 9 May 2017, the Bank published a Blueprint for RTGS renewal.<sup>31</sup> The Bank is designing the renewed RTGS to deliver a resilient, flexible and innovative sterling payment system for the United Kingdom to meet the challenges posed by a rapidly changing landscape. This followed a significant phase of stakeholder engagement and consultation. The renewed RTGS service is being delivered through a multi-year programme of work, and has designed the programme to be an open and collaborative effort with extensive stakeholder engagement at all stages.
- IV.98 The renewed RTGS will deliver a range of new features and capabilities. This 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.
- IV.99 The Bank's vision for the renewed RTGS is organised around five key features:
- Higher resilience: The Bank will further strengthen the resilience of RTGS and flexibility to respond to emerging threats, including through enhanced contingency messaging channels.
  - Broader access: The Bank will facilitate greater access to central bank money settlement for institutions and infrastructures. The Bank has already announced extended access for non-bank payment service providers. Further changes will target streamlining testing, connectivity and on-boarding as well as reducing the cost of access. In the medium term, the Bank will also require institutions above a certain value threshold to access CHAPS directly.
  - Wider interoperability: The Bank will promote harmonisation and convergence with critical domestic and international payment systems. The Bank will adopt ISO 20022 messaging, facilitate synchronisation with other infrastructures, and promote alternative processing arrangements for time-critical retail payments.
  - Improved user functionality: The Bank will support emerging user needs in a changing payment environment. Enhancements include near 24x7 technological capability, use of Application Programme Interface (API), and other tools to track and manage payments.
  - End-to-end risk management: Responsibility for the management and operation of the CHAPS system transferred to the Bank in November 2017. The Bank continues to enhance its approach to management risks in CHAPS. As the systemic risk manager for CHAPS, the Bank seeks to manage risks to the end-to-end flow of payments.

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<sup>31</sup> <https://www.bankofengland.co.uk/paper/2017/a-blueprint-for-a-new-rtgs-service-for-the-uk>



## **Annex 1 – Key documents relating to the RTGS and CHAPS services**

### Legal documentation

#### *Published documents:*

- RTGS/CHAPS fees: <https://www.bankofengland.co.uk/-/media/boe/files/payments/rtgstariffs.pdf>
- RTGS Settlement Account Policy: <https://www.bankofengland.co.uk/-/media/boe/files/payments/boesettlementaccounts.pdf>
- RTGS Terms & Conditions, including annexes: <https://www.bankofengland.co.uk/-/media/boe/files/payments/rtgs-mandate-and-annexes.zip>
- CHAPS Reference Manual: <https://www.bankofengland.co.uk/-/media/boe/files/payments/chaps/chaps-reference-manual.pdf>
- CHAPS Technical requirements: <https://www.bankofengland.co.uk/-/media/boe/files/payments/chaps/chaps-technical-requirements.pdf>

#### *Documents shared with current and prospective account holders and payment system operators:*

- Bespoke agreements with payment system operators
- Additional documentation for CREST settlement banks
- RTGS Reference Manual

## Annex 2 – Useful links

### General information relating to RTGS and CHAPS

- Background on RTGS/CHAPS including governance, risk management, and services provided: <https://www.bankofengland.co.uk/payment-and-settlement>
- Dedicated page for the CHAPS service: <https://www.bankofengland.co.uk/payment-and-settlement/chaps>
- Volume, value, and availability statistics for RTGS/CHAPS: <https://www.bankofengland.co.uk/payment-and-settlement/payment-and-settlement-statistics>

### Quarterly Bulletin articles

- [Enhancing the resilience of the Bank of England’s Real-Time Gross Settlement infrastructure](#)
- [The Bank of England’s Real-Time Gross Settlement Infrastructure](#)
- [How has the Liquidity Saving Mechanism reduced banks’ intraday liquidity costs in CHAPS?](#)

### General information relating to the Sterling Monetary Framework

- [Sterling Monetary Framework](#)
- [Sterling Monetary Framework – The Red Book](#)
- [Reserves Accounts in RTGS – Quick reference guide](#)

### General information relating to the Bank and related functions

- [Bank of England Annual Reports and Accounts](#)
- [Bank of England governance](#)
- [Bank’s application of the Senior Managers Regime](#)
- [FMI Supervision Annual Report 2018](#)

### Websites of the payment system operators

- [Pay.UK](#) – operator of Bacs, Cheque & Credit (imaging and paper), and Faster Payments
  - [Bacs](#)
  - [Cheque & Credit](#)
  - [Faster Payments](#)
- [CLS](#)
- [Euroclear UK & Ireland](#)

- [LINK](#)
- [Visa Europe](#)

#### Principles for financial market infrastructures publications

- [Principles for financial market infrastructures](#)
- [Principles for FMIs: Disclosure framework and assessment methodology](#)
- [Application of the Principles for financial market infrastructures to central bank FMIs](#)

#### RTGS Renewal Programme

- RTGS Renewal Programme, including the Blueprint:  
<https://www.bankofengland.co.uk/payment-and-settlement/rtgs-renewal-programme>
- RTGS Renewal Programme News: <https://www.bankofengland.co.uk/payment-and-settlement/rtgs-renewal-programme/rtgs-renewal-programme-news-events-and-milestones>
- ISO 20022, a new messaging standard for UK payments:  
<https://www.bankofengland.co.uk/payment-and-settlement/rtgs-renewal-programme/consultation-on-a-new-messaging-standard-for-uk-payments-iso20022>

## Annex 3 – Glossary

**Auto-Collateralising Repo (ACR)** – For the purpose of transactions settling in CREST, the repurchase agreement (repo) automatically generated by the CREST system between a CREST Settlement Bank’s repo member account and/or its linked member account and the Bank. It delivers collateral to the Bank against which liquidity is provided by the Bank in the event of that CREST Settlement Bank would otherwise have insufficient liquidity available in CREST to settle a transaction. The Bank’s agreements with each CREST Settlement Bank cover the generation and use of ACRs.

**Automated Liquidity Transfer (ALT)** – An automated movement of liquidity between different accounts, in RTGS. Certain ALTs are executed at the start of day as a means of putting liquidity into a CHAPS Settlement account. Enquiry Link also offers a facility, which transfers liquidity between a settlement bank’s CHAPS and CREST accounts intra-day, when balances reach certain pre-specified parameters.

**Bank or Bank of England** – The Governor and Company of the Bank of England.

**Bacs** - The Direct Debit and Bacs Direct Credit payment schemes, generally used to pay salaries, settle invoices from suppliers and for direct debits. Bacs Payment Schemes Limited became a wholly owned subsidiary of Pay.UK in 2018.

**Central Bank Money** – The liabilities of the central bank, either in the form of banknotes, or reserves that are held by financial institutions at the Bank. Central bank money is close to risk-free: the risk of the Bank defaulting is the lowest of any agent in the economy.

**Central Counterparty (CCP)** – A financial market infrastructure (FMI) set up to act as an intermediary between trading counterparties to clear and settle trades. Importantly, a CCP becomes the buyer to every seller and the seller to every buyer. A CCP effectively guarantee the obligations to transfer cash or assets under a contract agreed between two counterparties. If one party fails, the other is protected as the CCP assumes the position of the defaulting party. Ultimately, resulting exposures to CCPs are protected by the default management procedures and resources of the CCP.

**Central Scheduler** - A logical process within the RTGS processor which allows CHAPS Direct Participants to manage their liquidity and control when CHAPS settlement requests are submitted for settlement. Once in the Central Scheduler, payments can be ‘matched’ via LSM, or cancelled by the sending CHAPS Direct Participant.

**Central Securities Depository (CSD)** - An FMI that holds records of individual securities and operates a Securities Settlement System, allowing transfer of ownership between parties through a book entry, rather than the transfer of physical certificates.

**CHAPS** - CHAPS is the sterling same-day payment system operated by the Bank, used to settle high-value wholesale payments, as well as time-critical, lower-value payments.

**CHAPS Strategic Advisory Forum** – The Strategic Advisory Forum is an advisory body which aims to support an ongoing and effective two-way dialogue between the RTGS/CHAPS Board, the executive responsible for CHAPS, and a representative set of senior and experienced users of the CHAPS service.

**Cheque & Credit Clearing (C&CC)** - A retail payment scheme for the clearing of cheques through the physical transfer of the paper instrument. The scheme settles on a DNS basis in RTGS, with completion of settlement supported by a liquidity funding and collateralisation agreement in the event that a participant defaults. It is currently being replaced by the Image Clearing System. The scheme is operated by the Cheque & Credit Clearing Company Limited, which became a subsidiary of Pay.UK in 2018.

**CPMI-IOSCO** - Committee on Payments and Market Infrastructures (CPMI) and the International Organisation of Securities Commissions (IOSCO). Both institutions are recognised by the Financial Stability Board (FSB) as standards-setting bodies, and work in collaboration to agree and publish the PFMI.

**CRD (Cash Ratio Deposit)** - Non-interest bearing deposits that both banks and building societies (known in this context as 'eligible institutions') are required to place with the Bank of England in accordance with the Bank of England Act 1998.

**Continuous Linked Settlement (CLS)** - A settlement service based in New York that provides global FX settlement in major currencies, including sterling. For sterling operations, CLS is a CHAPS settlement bank, enabling CLS participants to use CHAPS to fund net sterling requirements arising in CLS. Settlement takes place during the defined window when all real time gross settlement systems in the CLS settlement currency jurisdictions are open and able to make and receive payments.

**CREST** – The securities settlement system operated by Euroclear UK & Ireland Limited to facilitate the transfer of gilts, eligible debt, equity securities and other uncertified securities.

**Custodian bank** - A custodian bank is responsible for the safeguarding and upkeep of their customer's securities. The Bank uses custodian banks abroad as sub-custodians in order to facilitate collateral links.

**Direct Participants (DP)** - Direct participants are those banks, building societies and other PSPs that access one of the UK payment systems (such as CHAPS, Faster Payment or Bacs) directly.

**Deferred Net Settlement (DNS) Payment System** – A payment system where the obligations between participants are settled by calculating the sum of the payments made, minus the sum of the payments received, by each participant, over a defined period. This is opposed to settling each payment individually, and on a gross basis, like CHAPS. Settlement in RTGS takes place after the individual customer payments are cleared and exchanged.

**Delivery versus Payment (DvP)** – A mechanism to ensure that an asset is transferred if and only if the payment for the transfer of the asset is made at the same time.

**End-to-End Systemic Risk Manager** – The Bank is the systemic risk manager for the CHAPS system. At a high level, a systemic risk manager identifies, assesses, manages and responds to the full range of risks arising at all points in the system, looking at the system as a single entity.

**Enquiry Link** – The system that allows RTGS account holders and certain other organisations to interrogate balance and other information and to perform certain other functions.

**Euroclear UK and Ireland Ltd (EUI)** – The organisation that owns and operates the CREST system; part of the Euroclear group.

**Faster Payments (FPS)** – The UK retail scheme used for sending payments in near real-time. FPS is generally used for mobile or internet payments and for standing orders payments. Faster Payments Scheme Limited became a wholly owned subsidiary of Pay.UK in 2018.

**Financial Conduct Authority (FCA)** – The FCA is responsible for the conduct regulation of a wide range of financial institutions. Banks are dual regulated by the PRA and the FCA for prudential and conduct purposes respectively. For certain firms, such as non-bank payment service providers, the firm is solo-regulated by the FCA for prudential and conduct regulation.

**Financial Markets and Insolvency (Settlement Finality) Regulations 1999** –The Regulations provide designated payment and settlement systems with certain protections against the normal operation of insolvency law, in order to reduce the likelihood of disruption to financial stability.

**Image Clearing System (ICS)** – A retail payment scheme for the processing and clearing of cheque images. It is operated by the Cheque & Credit Clearing Company Limited, which became a subsidiary of Pay.UK in 2018. Unlike the paper system, ICS is a prefunded DNS system. ICS will ultimately replace the existing paper system (Cheque & Credit Clearing)

**Indirect Participant** – A bank, building society or other PSP that accesses a payment system through another institution. Typically this institution is one of the Direct Participants of the relevant system.

**Intra-day liquidity** – Liquidity provided to certain CHAPS Direct Participants and CREST Settlement Banks to help ensure that they are able to make sterling payments, in addition to drawing on their reserves balances. The liquidity must be repaid before the end of the day.

**ISAE 3402** – The International Standard on Assurance Engagements (ISAE) 3402 replaces SAS 70 (the Statement on Auditing Standards No. 70), which defined the standards an auditor must employ in order to assess the contracted internal controls of a service organisation.

**ISO 20022 messaging standard** – ISO20022 is a globally-agreed and managed method for creating financial messaging standards. It will enrich the data carried in payments messages, improve compatibility across technology platforms and create opportunities for collaboration and innovation.

**Level A collateral** – Level A collateral is a subset of the highest rated sovereign debt, with low credit, liquidity and market risk. A fuller definition is published in the Bank's Red Book, and a list of eligible collateral is provided on the Bank's website.

**LINK** - LINK is the retail payment system that supports the UK's cash machine network. It settles on a DNS basis in RTGS.

**Liquidity Saving Mechanism (LSM)** – Functionality within the RTGS Processor which matches pairs or groups of CHAPS Payments, settling them in batches simultaneously to

offset their liquidity needs against one another. CHAPS Direct Participants use the Central Scheduler to manage their payment flows within the RTGS Processor and the Matching Process employs algorithms to attempt to offset the queued payments.

**Market Infrastructure Resiliency Service (MIRS)** – A contingency payment settlement service provided by SWIFT that offers a market infrastructure operational resilience in the event of unavailability of its RTGS system. Once activated, MIRS calculates accurate balances for all RTGS accounts and provides final settlement in central bank money.

**Matching Cycle** - A single running of the LSM Matching Process.

**MT103** – SWIFT message type for single customer credit transfers.

**MT202** – SWIFT message type for general financial institution transfers.

**Market Services Division (MSD)** – The division within the Bank of England which supports the operation of the CHAPS and RTGS services.

**Non-Bank Payment Service Provider (NBPSP or Non-Bank PSP)**. The term used to describe two categories of regulated institutions that are not banks but specialise in providing payment services: E-Money Institutions and Payment Institutions.

**New Payments Architecture (NPA)** - The New Payments Architecture, under the governance of Pay.UK, will renew the technical infrastructure support the processing of Bacs and FPS retail payments and associated payment services

**Non-CHAPS transfers** – Non-CHAPS transfers as real-time gross transfers of funds within RTGS but outside the scope of the CHAPS scheme. These are largely to support the functioning and administration of the RTGS system itself, and include the transfers account holders may make between their own accounts within RTGS, and interest credited to reserves accounts. A full list is set out in the RTGS Reference Manual.

**Note Circulation Scheme (NCS)** – The scheme operated by the Bank which governs the distribution, processing and storage of banknotes issued by the Bank. Payments associated the Bank's [Note Circulation Scheme](#) (NCS), such as purchases of banknotes by participants from the Bank are settled via RTGS.

**Operational Error Lending Scheme (OELS)** – Part of the error handling procedures for DvP transactions in CREST. OELS governing how the Bank and EUI may request CREST settlement banks, that are prematurely enriched due to an operational error, to temporarily lend an equivalent amount of liquidity back to the 'overdrawn' bank, on an unsecured intra-day basis.

**Pay.UK** - The consolidated entity responsible for the operation of four of the UK's retail payment systems via its operating subsidiaries– Bacs, Faster Payments, Cheque & Credit and the Image Clearing System. Pay.UK was previously known as the New Payment System Operator (NPSO).

**Payment Minimum Balance Group** – A group of accounts in RTGS all held by the same account holder. The prime account within the group is the Payment Settlement Account (which may be the Reserves Account) across which all CHAPS payments are settled. Other accounts within the group are liquidity accounts. The prime account within the group may go

overdrawn intra-day providing it is supported by funds on the Liquidity Accounts, i.e. the Minimum Balance Group as a whole may not go overdrawn.

**Payment Service Provider (PSP)** - Any institution that provides payment services by way of business, such as banks, building societies, E-Money Institutions, and Payment Institutions.

**Payment Systems Regulator (PSR)** – The independent economic regulator of payment systems in the UK. The PSR has objectives to ensure payment systems develop and are operated in the interests of consumers, whilst promoting competition and innovation.

**Point of Irrevocability** – The stage of a payment transaction specified in the payment system's rulebook at which the payment has passed the point where it can be revoked by the payment initiator. It is defined separately for each payment system and is linked but not always equivalent to the point of finality.

**Prefunding Account** – A segregated account held at the Bank of England used for prefunding. There are three types of Collateralisation Account:

- Reserves Collateralisation Accounts (RCAs) for members of the SMF already holding a reserves account;
- Settlement Collateralisation Accounts (SCAs) for institutions ineligible for SMF membership settling using their own funds; and
- Completion Funds Account (CFAs) for institutions ineligible for SMF membership settling using their clients' funds.

Each settlement participant of a prefunded system has a separate prefunding account for each payment system. The Minimum Balance on each prefunding account is maintained by the operator of the relevant payment system to correspond to the net debit cap in the payment system, and a balance equal to or in excess of the net debit cap must remain in place at all times. The balance on an RCA forms part of an institution's total reserves account balance. All prefunding accounts (RCAs, SCAs and CFAs) are remunerated at the same rate as reserves accounts (i.e. Bank Rate).

**Prefunding** – A model for collateralising Deferred Net Settlement Payment Systems that uses cash balances to eliminate settlement risk between direct settling members. Each settlement participant always has the necessary resources set aside in an RCA, SCA or CFA to meet their maximum possible settlement obligation. Prefunding is currently used within Bacs, Faster Payments and the Image Clearing System.

**Principles of Financial Market Infrastructure (PFMIs)** - The PFMIs are internationally agreed standards published by the Committee on Payments and Market Infrastructures (CPMI) and the International Organisation of Securities Commissions (IOSCO). They are part of a set of standards that the international community considers essential to strengthening and preserving financial stability.

**Risk Management Framework** - The Risk Management framework outlines the system of risk management for the Bank's delivery of RTGS and CHAPS. The framework is intended to ensure that risks are identified, assessed, monitored, reported and controlled appropriately when the Bank deliver the RTGS and CHAPS systems in line with the agreed business aims.



**Real-Time Gross Settlement (RTGS)** – The accounting arrangements established for the settlement in real-time of sterling payments across settlement accounts maintained in the RTGS System.

**Red Book** – The document which explains the framework for the Bank's operations in the sterling money markets – the Sterling Monetary Framework. The Red Book is periodically updated to reflect changes to the Bank's operations.

**Reserves Account** – An account held at the Bank of England for the purpose of the Bank's reserves account facility under the Sterling Monetary Framework, as described in the Red Book.

**RTGS/CHAPS Board** – The RTGS/CHAPS Board (the Board) provides strategic leadership for the RTGS infrastructure and CHAPS payment system. The Board operates within the Bank's wider governance structure, reporting to the Governor and Court.

**RTGS/CHAPS Board Risk Committee** – The RTGS/CHAPS Board Risk Committee has delegated responsibility (from the Board) for monitoring of the CHAPS and RTGS risk management framework risk tolerances and risk profiles.

**RTGS Reference Manual** – A manual describing the RTGS facility provided by the Bank for account holders in accordance with and subject to any limitations contained in their mandate agreement. It also contains the operating procedures describing intra-day liquidity advances between the Bank and relevant account holders.

**RTGS Renewal Programme**- In 2017, the Bank published a Blueprint for renewing the UK's RTGS infrastructure. The multi-year Programme will deliver a resilient, flexible and innovative sterling payment infrastructure for the United Kingdom to meet the challenges posed by a rapidly changing landscape.

**RTGS Terms & Conditions** – A document that all RTGS account holders are required to sign up to, detailing the legal basis for the Bank's operation of RTGS, and the rights and obligations of the Bank and account holders in the provision and use of this service.

**Settlement Service Provider Agreement** – The Settlement Service Provider Agreement is an agreement between the Bank of England and each Deferred Net Settlement Payment System operator that governs the relationship between the Bank, as settlement service provider, and each operator.

**Settlement Account** –Term used for a reserves account used to settle obligations in a payment system which settles across RTGS. Or where the institution is ineligible for a reserves account, an account held in RTGS for the purpose of settling obligations in a payment system which settles across RTGS.

**Sterling Monetary Framework (SMF)** – The framework for the Bank's operations in sterling money markets. The operations are designed to implement the Monetary Policy Committee's decisions in order to meet the inflation target and reduce the cost of disruption to the critical financial services, including liquidity and payment services, supplied by SMF participants to the UK economy. The framework is explained in the Red Book (see above)

**SWIFT (Society for Worldwide Interbank Financial Telecommunication)** - SWIFT is a global member-owned cooperative that provides secure financial messaging services.

**Throughput** – Throughput refers to the proportion of a day's payments that has been made by a particular time.

**Tiering** - Where indirect participants access a payment system through another institution.

**Vocalink** – Vocalink is an infrastructure provider that currently provides the clearing infrastructure for the Bacs, FPS, ICS and LINK payment systems.

**Visa** - A retail payment scheme settled on a deferred net basis in RTGS. Visa facilitates electronic fund transfers via cards.