PSF Strategy development

Business Case Evaluation
Assumptions, Costs and Benefits across solutions: Preliminary results

November 2016

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Disclaimer

It is recognised that the Business Case Evaluation exercise presented in this document is based on the information available during the Strategy phase of work. It will be revisited and refined during the next phase of the Forum's work, when standards definition, detailed design and detailed implementation planning are conducted. Therefore this BCE has been conducted in order to inform the decisions of the Forum at this stage, and should not be considered final.

Methodology

Non solution-specific scenarios, principles and assumptions

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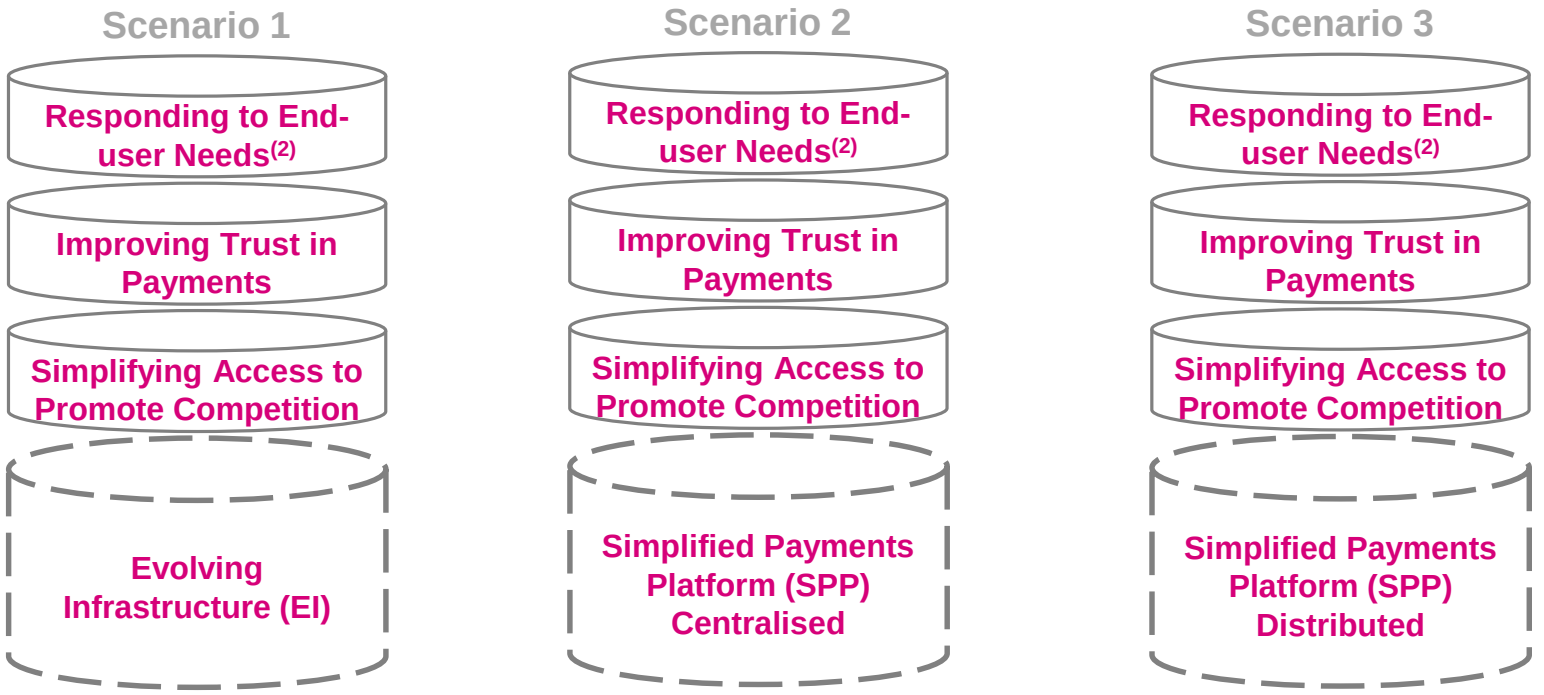
Infrastructure scenarios(1)



- There is a Solution-by-Solution Business Case Evaluation ("BCE") as well as a Scenario-by-Scenario BCE
- The Individual Solution BCE cannot be summed to derive an aggregated view as there will be some double counting; the Scenario BCE provides the non-double counted aggregate view
- Each Scenario is considered as mutually exclusive from a BCE perspective

Notes: (1) Please note that the graphical representation of scenarios and stacked solution groups does not have any sequencing or timing implications; (2) Includes Allocated Responding to End-user Needs Data Framework Costs (APIs) – see cost allocation slide for explanation

Cost principles

- Unless otherwise stated, all cost figures have been determined through discussion of the Forum WGs
- Modelling one-off and ongoing costs – ongoing costs will recur annually – this excludes the Design-Build-Implementation (DBI) period
- In addition to having one-off and ongoing costs, costs will either be fixed or variable. That is, some component costs will vary with the rate of adoption, while some will be incurred in its entirety irrespective of rate of adoption
- Costs for businesses will be included for Responding to End-user Needs solutions and this will vary with the level of adoption
- We are adopting a fully allocated cost approach where Responding to End-user Needs data framework costs (APIs) are allocated across all three Responding to End-user Needs solutions and the SPP/Evolving Infrastructure costs are allocated across seven solutions (see costing approach slide)
- For this reason, Responding to End-user Needs data framework costs (APIs) do not have benefits allocated to them but its costs have been allocated across the Responding to End-user Needs solutions

Cost assumptions (non solution-specific)

- Unless otherwise stated, all cost figures have been determined through discussion of the Forum WGs
- There are 9 larger PSPs corresponding to the 9 main banking institutions operating in the UK
- There are 400 PSPs other than the larger PSPs (assumption based on Bacs model built by University of Bristol, except for the KYC data sharing solution, where only 100 PSPs serving businesses are considered)
- To the extent that all one-off costs will be incurred in the first three years (subject to take up), costs will be incurred in consistent proportions based on the solutions design, build and implementation ("DBI") timeline agreed upon by the Forum (see p.6)
- Rule of thumb – Central costs 5% - 10% - Non-central costs 90% - 95%. However, there will be some exceptions
- In estimating costs for businesses, micro businesses' costs of IT have been excluded; for consistency their potential benefits are also excluded(2). Micro businesses are:
  - -Businesses with 0-9 employees
  - -85% of the UK business population by number of businesses
  - -Businesses that account for 18% of UK turnover
- Annual ongoing costs is between 5%-20% of one-off costs where applicable

Note: (1) Please note that micro businesses still get benefits as end-users, the excluded benefits relate to benefits that will accrue to their customers for RTP and benefits they would have derived from making certain infrastructure investment such as SPP and Enhanced data

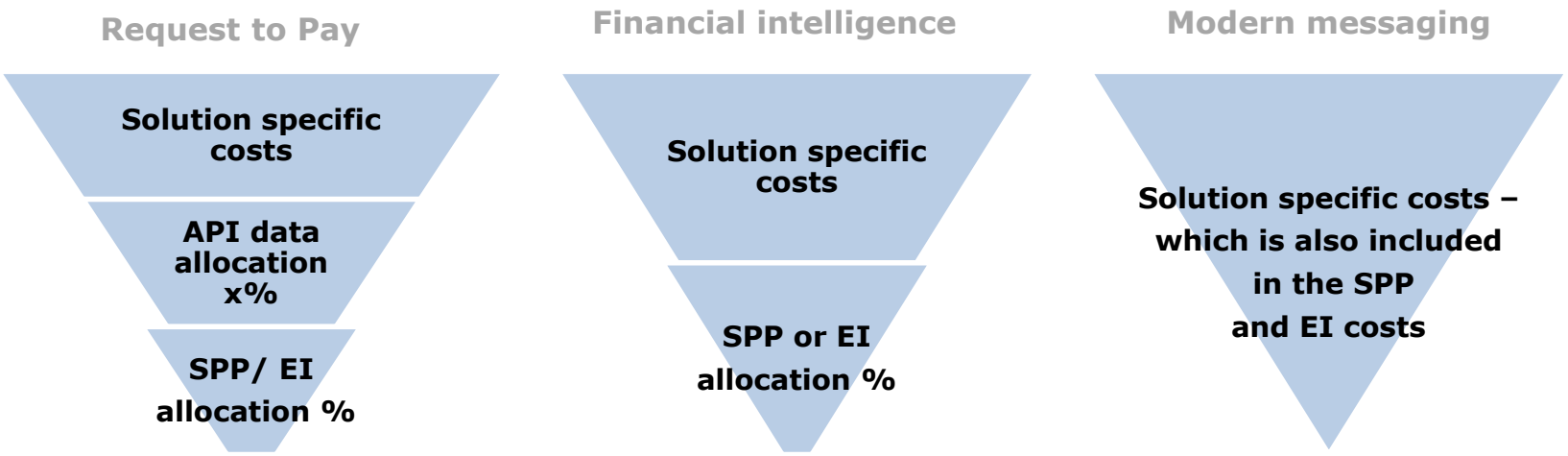
Solutions DBI timeline

Solution	Start date	Number of months for design/build	Number of months for implementation	DBI end-date	Benefits start date
Request to Pay	01-Jan-17	12	12	31-Dec-18	01-Jan-19
Assurance data	01-Jan-17	6	6	31-Dec-17	01-Jan-18
Enhanced data	01-Jan-17	12	18	30-Jun-19	01-Jul-19
Customer awareness	01-Jan-17	6	18	31-Dec-18	01-Jan-19
ID&V guidelines	01-Jan-17	12	12	31-Dec-18	01-Jan-19
Payment transaction data sharing	01-Jan-17	12	18	30-Jun-19	01-Jul-19
Financial crime intelligence sharing	01-Jan-17	12	24	31-Dec-19	01-Jan-20
Trusted KYC data sharing	01-Jul-17	12	24	30-Jun-20	01-Jul-20
Enhancement of sanctions data quality	01-Jan-17	12	12	31-Dec-18	01-Jan-19
Establishing a single PSO governance entity	01-Jan-17	-	12	31-Dec-17	01-Jan-18
Common message standards	01-Jan-17	12	6	30-Jun-18	01-Jul-18
Indirect access liability models	01-Oct-16	6	15	30-Jun-18	01-Jul-18
SPP and overlay services	01-Jan-17	18	30	31-Dec-20	01-Jan-21
End-user and open access APIs	01-Jan-17	12	-	31-Dec-17	01-Jan-18

Note: This timeline is assumed for modelling purposes. As such and due to modelling constraints, it may not exactly mirror the more sophisticated timeline agreed by the Forum for solutions including second-generation development under SPP. Second-generation development timelines are not included in the model; solution DBI costs are assumed to be incurred on one cycle.

Costing approach

- Each solution will have its own specific costs (one-off and ongoing)
- In addition to the solution-specific costs, each Solution will have infrastructure costs allocated to it – this includes Responding to End-user Needs data framework costs (APIs) for the Responding to End-user Needs solutions and payment infrastructure costs (i.e. SPP or EI costs) for relevant Solutions requiring infrastructure upgrade or changes (see next slide)
- When estimating the BCE for each individual solution, 79% of SPP/EI incremental costs will be allocated to solutions and 21% will remain unallocated for potential future overlay services, recognising future benefits that will come with the new infrastructure have not been quantified. When assessing aggregated view at scenario level all infrastructure costs are included. This allocation does not relate to PSP internal costs of running current infrastructure, a cost that is replicated in the Evolving Infrastructure and SPP scenarios.
- In addition, costs incurred in infrastructure management fees as well as in scheme governance and operations are deemed unallocable to any particular solution.
- Three examples of costing approach:



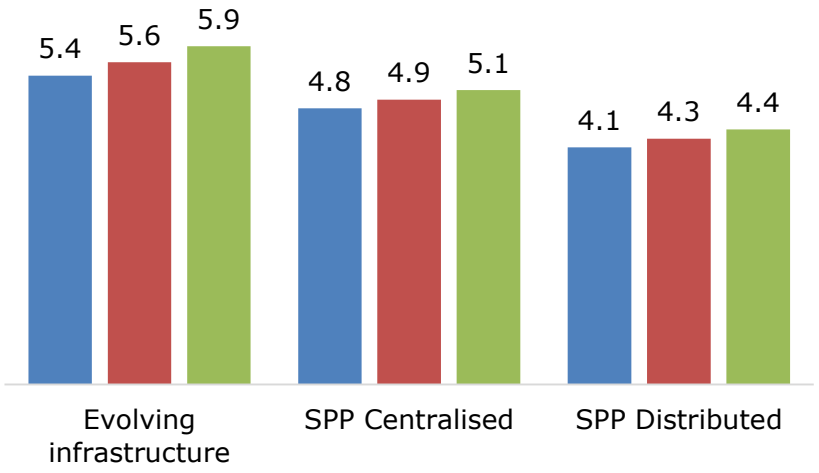
Costing allocation

Solution	Responding to End-user Needs Data framework	SPP/ EI incremental costs
Request to Pay	40.0%	7.0%
Enhanced Data	40.0%	21.0%
Assurance Data	20.0%	3.5%
Modern Messaging	-	35.0%
Data Sharing/ Analytics	-	7.5%
Financial Intelligence	-	5.0%
Unallocated	-	21.0%

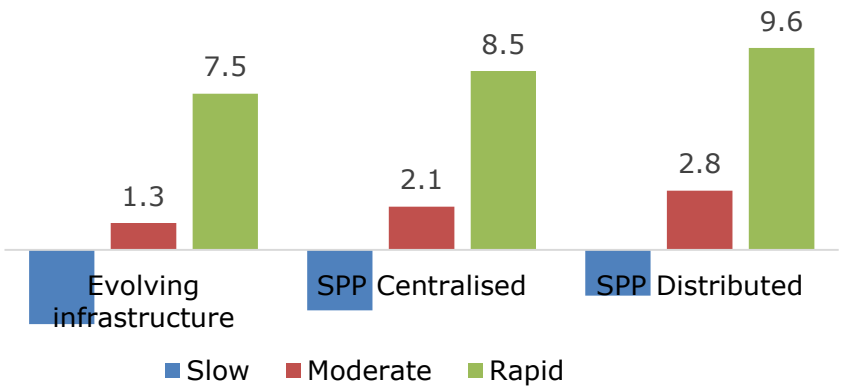
- This allocation is based on a consensus from Working Group members
- This fully allocated cost approach has been adopted because a view has been taken that in order to estimate the true costs of solutions, all costs required to be incurred for the solutions to generate benefits should be included

All solutions - Indicative BCE results

Aggregate costs (all, discounted £bn)



Net benefits (all, discounted £bn)(1)



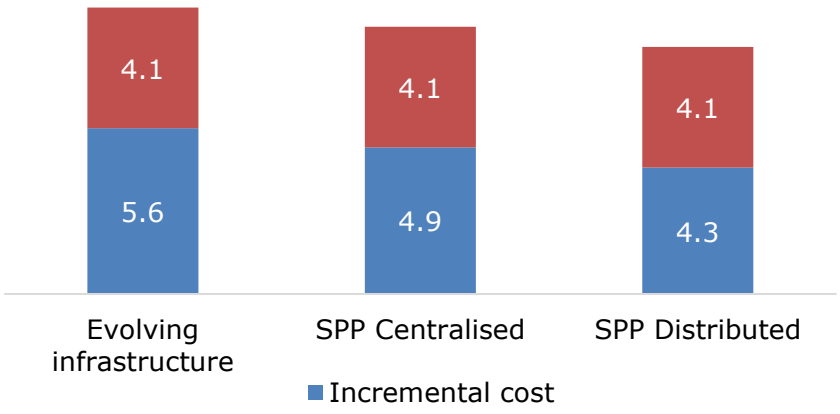
- These values represent aggregate scenarios with all solutions implemented under three adoption rates (slow, moderate and rapid). This excludes sometimes significant, yet unquantifiable benefits and only considers incremental costs and benefits.
- The incremental costs are both fixed and variable, based on adoption rate.
- Under both moderate and rapid adoption the implementation of all the scenarios have a positive Net Present Value (NPV).
- Implementing the solutions on either of the SPP scenarios has a higher NPV than the evolving infrastructure scenario.
- The adoption rate has a strong effect on the scale of benefits across all of the scenarios.
- When the timescale is extended further all adoption rates are boosted giving all scenarios positive NPV.

Note: (1) Recognising that under the SPP scenarios future benefits linked to simplification, competition and innovation as set out in the PSF Strategy & Objectives are anticipated to be significantly higher e.g. Potential of full enhanced data, reduced complexity and costs significant market changes (ring fencing, divestment, ...)

“Fully-inclusive” costs v. “incremental” costs

- The scope of our work included a Business Case Evaluation of the Forum’s solutions package within three infrastructure environments: Evolving current infrastructure (“EI”), Centralised Simplified Payments Platform (“SPP C”) and Distributed Simplified Payments Platform (“SPP D”).
- This led us to perform a cost-benefit analysis, where we assessed only the incremental costs required from the industry to generate the incremental benefits brought about by the Forum’s solutions package. The fully-inclusive costs of the scenarios are acknowledged but only the incremental costs are considered in modelling net benefits.
- The chart below provides a view of the estimated fully-inclusive costs and incremental costs in the three scenarios, assuming a moderate take-up of solutions. Only “incremental costs” are considered when costs are assessed against benefits. This is to be consistent with the evaluation of incremental benefits resulting from solutions.

Fully-inclusive and incremental costs (discounted £bn)



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Responding to End-user Needs

Assumptions, indicative costs and benefits

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Request to Pay - Assumptions

Cost and benefit assumptions are based on publicly available sources or discussions and agreement of the appropriate Forum members

Reduction in charges for rejected DD payments

- Charges that are borne by consumers of bounced back payments per annum: £200m

Reduction in cost of processing C2B and B2B cheque payments

- Cost to businesses to process a cheque transaction: £1.01
- Cost to businesses to process an e-payment transaction: £0.33
- Number of C2B and B2B transactions: 73m in Year 1

Reduction in administrative costs to chase late payments

- Administrative cost to businesses for late payment per annum: £18.8m
- Calculation for the administrative cost is as follows:
  - Administrative cost to SMEs for late payments per annum: £10.8bn
  - Factor applied to scale up for inclusion of large businesses: 2.1 (resulting in £23.0bn)
  - Factor applied to remove government proportion: 0.3% (of £23.0m resulting in £69m)
  - A further benefit reduction assumption of 10% has been applied to capture the probability that even when adopted, the solution will not always be used in the appropriate manner capable of addressing detriments

Solution take-up scenarios – Post-DBI

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Request to Pay - Indicative costs

Cost item	Behaviour	Units	One-off (Aggregate £k)	Ongoing (Aggregate £k)	Source
Central costs on agreement, processes; service definition	Fixed	1	10,000	2,000	HS WG/Forum Paper
Central database build	Fixed	1	10,000	500	Ibid.
Larger PSPs	Fixed	9	100,000	10,000	Ibid.
Agency costs	Variable	400	11,111	1,111	Ibid.
Corporate	Variable	1	100,000	10,000	Ibid.
Allocated Responding to End-user Needs data framework costs @40%	-	-	39,333	4,533	Ibid.
Note: The variables costs are based on 100% take up, which is NOT what we have assumed					

Assumptions

- Responding to End-user Needs Data Framework is Not provided by PSD2/Open Banking
- 40% of Responding to End-user Needs Data Framework has been allocated to Request to Pay
- 7% of SPP/Evolving Infrastructure has been allocated to Request to Pay
- Central and larger PSP costs will not vary with level of adoption whilst smaller PSP costs will

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Request to Pay - Benefits (EI)

Evolving Infrastructure

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(340.7)	(366.7)	(388.6)
Gross benefit 1 – Reduction in charges for rejected DD payments	27.1	78.8	127.1
Gross benefit 2 - Reduction in cost of processing C2B and B2B cheque payment	5.4	15.8	25.5
Gross benefit 3 - Reduction in administrative costs to chase late payments	179.3	521.4	841.0
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	211.8	616.1	993.7
Net quantifiable benefit	(128.9)	249.4	605.1
Cost-Benefit Ratio (“GQB”/”C”)	0.6	1.7	2.6

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Request to Pay - Benefits (SPP C)

SPP Centralised

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(343.2)	(363.0)	(380.2)
Gross benefit 1 – Reduction in charges for rejected DD payments	27.1	78.8	127.1
Gross benefit 2 - Reduction in cost of processing C2B and B2B cheque payment	5.4	15.8	25.5
Gross benefit 3 - Reduction in administrative costs to chase late payments	179.3	521.4	841.0
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	211.8	616.1	993.7
Net quantifiable benefit	(131.4)	253.1	613.5
Cost-Benefit Ratio (“GQB”/”C”)	0.6	1.7	2.6

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Request to Pay - Benefits (SPP D)

SPP Distributed

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(343.2)	(363.0)	(380.2)
Gross benefit 1 – Reduction in charges for rejected DD payments	27.1	78.8	127.1
Gross benefit 2 - Reduction in cost of processing C2B and B2B cheque payment	5.4	15.8	25.5
Gross benefit 3 - Reduction in administrative costs to chase late payments	179.3	521.4	841.0
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	211.8	616.1	993.7
Net quantifiable benefit	(131.4)	253.1	613.5
Cost-Benefit Ratio (“GQB”/”C”)	0.6	1.7	2.6

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Sources - Request to Pay

Item	Assumption	Source
Annual charges borne by consumers for bounced payments	£200m p.a.	Financial Times
Processing cost of a cheque transaction to a business	£1.01	2015 AFP, Payments Cost Benchmarking Survey, Receiving paper checks figure $1.51 (converted into sterling using 1.5 exchange rate)
Processing cost of an e-payment to a business	£0.33	2015 AFP, Payments Cost Benchmarking Survey, Initiating and receiving ACH transactions Credit median cost: $0.26—$0.50 (converted into sterling using 1.5 exchange rate)
Number of C2B and B2B transactions	73m in Year 1	Payments UK
Administrative cost to SMEs for late payments per annum	£10.8bn	CCH daily

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Enhanced Data - Assumptions

Reduced administrative costs to verify/reconcile payments

- Administrative cost to businesses to process an e-payment transaction: £0.33 (as above)
- Variable % of cost to businesses to process an e-payment transaction with enhanced data: 50% less than without enhanced data (i.e. £0.17)

Increase e-invoice take up hence cost reduction private sector

- Administrative cost to businesses to process a paper-based invoice: £3.44
- Administrative cost to businesses to process an e-invoice: £1.72

Responding to End-user Needs take-up rates are the same cross 3-solutions, so adoption rate assumptions similar to Request to Pay

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Enhanced Data - Indicative costs

Cost item	Behaviour	Units	One-off (Aggregate £k)	Ongoing (Aggregate £k)	Source
Central efforts on standards	Fixed	1	5,000	500	HS WG
Changes to Bacs and FP on reference field (1)	Fixed	1	25,000	2,500	HS WG
New image clearing system	Fixed	1	5,000	250	HS WG
Channels modification by industry not provided by PSD2	Fixed	9	50,000	5,000	HS WG
Migration costs for businesses	Fixed	1	50,000	-	HS WG
Allocated Responding to End-user Needs data framework costs @40%			39,333	4,533	HS WG
Note: Variable costs are based on 100% take up, which is NOT what we have assumed					

Assumptions

- Responding to End-user Needs Data Framework is Not provided by PSD2/Open Banking
- 40% of Responding to End-user Needs Data Framework has been allocated to Enhanced Data
- 21% of SPP/Evolving Infrastructure has been allocated to Enhanced Data
- Central and larger PSP costs will not vary with level of adoption whilst smaller PSP costs will

Note: (1) These costs will not be incurred if a new Simplified Payments Platform is built

Enhanced Data - Benefits (EI)

Evolving Infrastructure

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(306.0)	(351.2)	(387.3)
Gross benefit 1 - Reduced administrative costs to verify/ reconcile payments	53.4	156.6	252.6
Gross benefit 2 - Increase e-invoice take up hence cost reduction private sector	173.4	509.0	820.9
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	226.8	665.6	1,073.5
Net quantifiable benefit	(79.2)	314.4	686.2
Cost-Benefit Ratio (“GQB”/”C”)	0.7	1.9	2.8

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Enhanced Data - Benefits (SPP C)

SPP Centralised

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(307.1)	(333.5)	(355.5)
Gross benefit 1 - Reduced administrative costs to verify/ reconcile payments	53.4	156.6	252.6
Gross benefit 2 - Increase e-invoice take up hence cost reduction private sector	173.4	509.0	820.9
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	226.8	665.6	1,073.5
Net quantifiable benefit	(80.3)	332.1	718.1
Cost-Benefit Ratio (“GQB”/”C”)	0.7	2.0	3.0

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Enhanced Data - Benefits (SPP D)

SPP Distributed

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(307.1)	(333.5)	(355.5)
Gross benefit 1 - Reduced administrative costs to verify/ reconcile payments	53.4	156.6	252.6
Gross benefit 2 - Increase e-invoice take up hence cost reduction private sector	173.4	509.0	820.9
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	226.8	665.6	1,073.5
Net quantifiable benefit	(80.3)	332.1	718.1
Cost-Benefit Ratio (“GQB”/”C”)	0.7	2.0	3.0

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Sources - Enhanced data

Item	Assumption	Source
Administrative cost to businesses to process an e-payment transaction	£0.33	2015 AFP, Payments Cost Benchmarking Survey, Initiating and receiving ACH transactions Credit median cost: $0.26—$0.50 (converted into sterling using 1.5 exchange rate)
Variable % of cost to businesses to process an e-payment transaction with enhanced data	50% less than without enhanced data (i.e. £0.17)	E-invoice as a proxy - Electronic invoicing document, Stephen McPartland, Parliamentary Committee (50% reduction)
Value of fraud and error per annum	£2.12bn	Department for Work and Pensions
Administrative cost to businesses to process a paper-based invoice	£3.44	Electronic invoicing document, Stephen McPartland, Parliamentary Committee (converted into sterling)
Administrative cost to businesses to process an e-invoice	£1.72	Electronic invoicing document, Stephen McPartland, Parliamentary Committee (converted into sterling)

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Assurance Data - Assumptions

Reduction in charges for rejected DD payments

- Charges that are borne by consumers of bounced back payments per annum: £200m

Reduction in cost of processing C2B and B2B cheque payments

- Cost to businesses to process a cheque transaction: £1.01
- Cost to businesses to process an e-payment transaction: £0.33
- Number of C2B and B2B transactions: 73m in Year 1

Reduction in administrative costs to chase late payments

- Administrative cost to businesses for late payment per annum: £18.8m
- Calculation for the administrative cost is as follows:
  - Administrative cost to SMEs for late payments per annum: £10.8bn
  - Factor applied to scale up for inclusion of large businesses: 2.1 (resulting in £23.0bn)
  - Factor applied to remove government proportion: 0.3% (of £23.0m resulting in £69m)
  - A further benefit reduction assumption of 10% has been applied to capture the probability that even when adopted, the solution will not solve 100% saving

- Responding to End-user Needs take-up rates are the same cross 3-solutions, so adoption rate assumptions similar to Request to Pay

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Assurance Data - Indicative costs

Cost item	Behaviour	Units	One-off (Aggregate £k)	Ongoing (£k per unit)	Source
Functionality for real time payee confirmation	Fixed	1	100,000	10,000	HS WG
Banks cost to clean data and upload customer info	Fixed	1	25,000	-	HS WG
Back-end assurance	Fixed	1	20,000	2,000	HS WG
Agency cost to clean data and upload customer info	Variable	400	2,777	-	HS WG
Agency back end assurance	Variable	400	2,222	222	HS WG
Allocated Responding to End-user Needs data framework costs @20%	-	-	19,667	2,266	HS WG
Variable costs are based on 100% take up, which is NOT what we have assumed					

Assumptions

- Responding to End-user Needs Data Framework is not provided by PSD2/Open Banking
- 20% of Responding to End-user Needs Data Framework has been allocated to Assurance Data
- 4% of SPP/Evolving Infrastructure has been allocated to Assurance Data
- Central and larger PSP costs will not vary with level of adoption whilst smaller PSP costs will

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Assurance Data - Benefits (EI)

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(277.9)	(285.3)	(291.3)
Gross benefit 1 - Reduction in administrative costs to address misdirected payments	7.9	23.0	37.1
Gross benefit 2 - Reduced cash losses due to misdirected payments	73.7	215.7	347.8
Gross benefit 3 - Reduction in invoice fraud	370.5	1,084.8	1,749.7
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	452.0	1,323.5	2,134.6
Net quantifiable benefit	174.1	1,038.2	1,843.3
Cost-Benefit Ratio (“GQB”/”C”)	1.6	4.6	7.3

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Assurance Data - Benefits (SPP C)

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(279.1)	(283.5)	(287.1)
Gross benefit 1 - Reduction in administrative costs to address misdirected payments	7.9	23.0	37.1
Gross benefit 2 - Reduced cash losses due to misdirected payments	73.7	215.7	347.8
Gross benefit 3 - Reduction in invoice fraud	370.5	1,084.8	1,749.7
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	452.0	1,323.5	2,134.6
Net quantifiable benefit	172.9	1,040.0	1,847.5
Cost-Benefit Ratio (“GQB”/”C”)	1.6	4.7	7.4

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%
Rapid	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%

Assurance Data - Benefits (SPP D)

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(279.1)	(283.5)	(287.1)
Gross benefit 1 - Reduction in administrative costs to address misdirected payments	7.9	23.0	37.1
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Other quantifiable benefits	-	-	-
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Net quantifiable benefit	172.9	1,040.0	1,847.5
Cost-Benefit Ratio (“GQB”/”C”)	1.6	4.7	7.4

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%	4.6%
Moderate	0.0%	3.1%	3.8%	4.6%	5.6%	6.8%	8.3%	10.1%	12.3%	15.0%
Rapid	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%	24.2%

Sources - Assurance data

Item	Assumption	Source
Total value of misdirected payments per annum	£2.5bn	Telegraph article - "The pitfall lurking in your online banking – that sets up strangers as approved payees"
Average value of a faster payment transaction	£820	Calculated from Faster payments statistics
Number of misdirected payments per annum	3m	Ibid.
Administrative cost to businesses per misdirected payment	£17.50	Defaqto & GoCompare - taking the average of the 135 accounts measured, Guardian also says approximately £25
Percentage of misdirected payments irrecoverable	20	Working Groups assumption
Total value of invoice fraud per annum (SMEs)	£9.0bn	Tungsten Networks, 2016
Scaling factor for total annual invoice fraud	213%	Working Groups assumption

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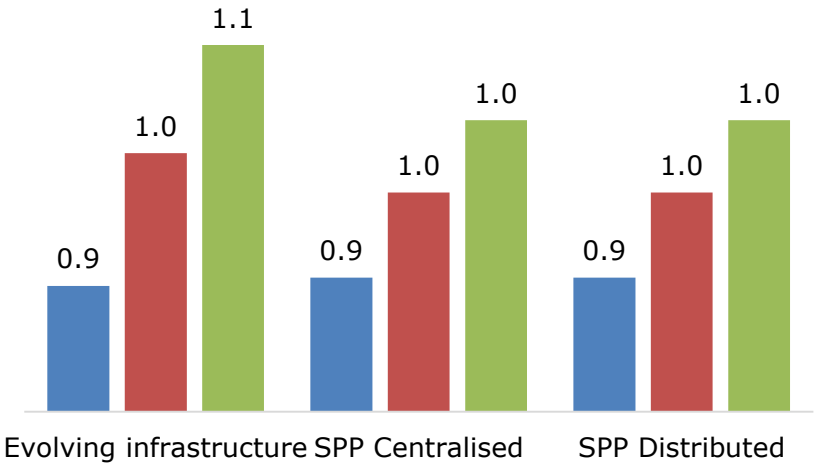
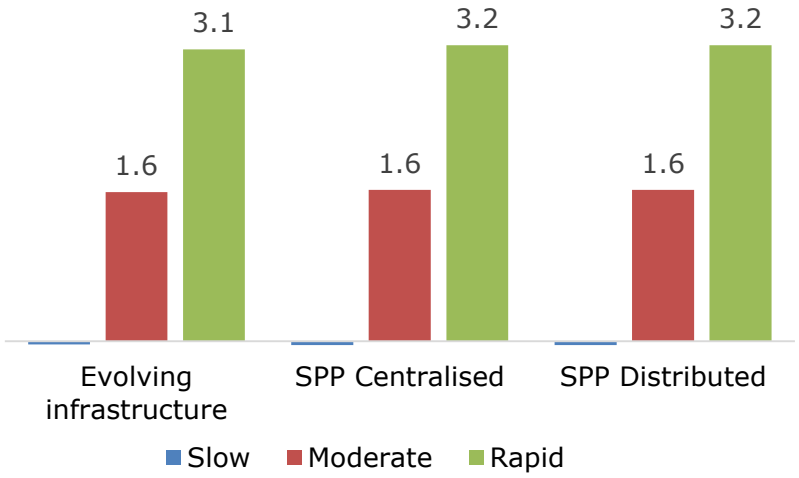
Responding to End-user Needs - Indicative summary of results

Aggregate costs (EUN), discounted £bn



Net benefits (EUN), discounted £bn



- All Responding to End-user Needs solutions have been allocated a portion of API costs
- All Responding to End-user Needs solutions have been allocated a portion of SPP/EI costs
- Adoption rates are an important driver of scale of costs and benefits
- Under all adoption scenarios assessed, building the solutions on SPP provides a better outcome from a quantitative perspective

Improving Trust in Payments

Assumptions, costs and benefits

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High-level benefit assumptions

Fraud targeted by Improving Trust in Payments solutions package amounts to c. £15bn annually

Typology	Economic losses	Source
Invoice fraud	£ 9.0bn p.a.	Tungsten Networks, 2016
Identity theft	£ 5.4bn p.a.	Experian-PKF, 2016
Individual payment fraud	£ 0.5bn p.a.	Experian-PKF, 2016
• Plastic card fraud	£ 450m p.a.	Ibid.
• Online banking fraud	£ 41m p.a.	Ibid.
• Cheque fraud	£28m p.a.	Ibid.
• Telephone banking fraud	£12m p.a.	Ibid.
Total	£14.9bn p.a.	

- 14% of annual invoice fraud does not go through the payment system
- Based on inputs by the FCDS working group, the Improving Trust in Payments solutions package could reduce targeted fraud by up to 40% over 10 years, assuming 100% take-up of solutions
- Benefits associated with a reduction in targeted fraud are currently distributed across solutions based on their respective costs
- Evolving state and SPP infrastructure costs are allocated to 2 solutions:
  - Payment transaction data and analytics: 8%
  - Financial intelligence: 5%

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Other solution-specific assumptions

Other assumptions

Data point	Assumption	Main source
Total PSP operating costs in 2015 (proxy)	£ 65.6bn p.a.	5 large bank's operating costs / Market share
Proportion of PSPs operating costs associated with:		
• Investigating, managing and settling payment fraud	0.2%	Medium-sized institution – FCDS WG
• Opening account and managing KYC processes	0.2%	Medium-sized institution – FCDS WG
Estimated reduction in payment fraud and other financial crime due to Improving Trust in Payments solutions package (and associated cost/losses) assuming 100% take-up of relevant solutions	40%	FCDS WG solution definition spreadsheet
Split for cross-solution benefits (financial crime reduction and associated costs)	Proportional to solution cost	Working Groups assumption

Moderate take-up of solutions (including DBI period)

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Customer awareness	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
ID&V guidelines	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Payment transaction data sharing	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Financial crime intelligence sharing	0.0%	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%
Trusted KYC data sharing	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Enhancement of sanctions data quality	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Solution costs - Evolving Infrastructure (1/3)

Improving Trust in Payments: Customer Awareness and Education Campaigns

Components	Behaviour	Units	One-off costs (Aggregate £k)	Ongoing costs (Aggregate £k)(1)
Project management co-ordination to create and agree messages	Fixed	1	-	2,000

Improving Trust in Payments: Guidelines for Identity Verification, Authentication and Risk Assessment

Components	Behaviour	Units	One-off costs (Aggregate £k)	Ongoing costs (Aggregate £k)(1)
Central costs to write standards	Fixed	1	5,000	5,000
Central costs to publish standards	Fixed	1	10,000	1,000
Large bank costs	Fixed	9	900,000	90,000
Smaller PSPs	Variable	400	100,000	10,000

Note: (1) Annual

Solution costs - Evolving Infrastructure (2/3)

Improving Trust in Payments: Payment transaction data sharing and analytics

Components	Behaviour	Units	One-off costs (Aggregate £k)	Ongoing costs (Aggregate £k)(1)
Central infrastructure	Fixed	1	30,000	3,000
Legal framework for data sharing	Fixed	1	1,500	150
Integration - large banks	Fixed	9	90,000	9,000
Integration - smaller PSPs	Variable	400	20,000	2,000

Improving Trust in Payments: Financial crime intelligence sharing

Components	Behaviour	Units	One-off costs (Aggregate £k)	Ongoing costs (Aggregate £k)(1)
Central infrastructure	Fixed	1	10,000	1,000
Larger banks costs	Fixed	9	90,000	9,000
Smaller PSP costs	Variable	400	30,000	3,000
Legal framework	Fixed	1	1,500	150

Note: (1) Annual

Solution costs - Evolving Infrastructure (3/3)

Improving Trust in Payments: Trusted KYC data sharing

Components	Behaviour	Units	One-off costs (Aggregate £k)	Ongoing costs (Aggregate £k)(1)
Central infrastructure	Fixed	1	50,000	5,000
Larger banks costs	Fixed	9	90,000	9,000
Smaller PSP costs	Variable	100	5,000	500

Improving Trust in Payments: Enhancing sanctions data quality

Components	Behaviour	Units	One-off costs (Aggregate £k)	Ongoing costs (Aggregate £k)(1)
Large banks costs	Fixed	9	1,350	135
Smaller PSP costs	Variable	400	6,000	600
Costs of modifying sanctions list	Fixed	1	1,000	100

Note: (1) Annual

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Customer education and awareness campaigns

Take-up rates (including DBI period)

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Rapid	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%	51.0%

Evolving Infrastructure - Cost-benefit summary

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(17.2)	(17.2)	(17.2)
Gross benefit 1 - Reduction in financial crime	1.2	30.4	182.7
Gross benefit 2 – Reduction in PSP’s operating costs due to financial crime	0.2	5.4	31.6
Gross benefit 3 – Money not spent by police/CPS	0.0	0.0	0.1
Aggregate gross quantifiable benefit (“GQB”)	1.4	35.8	214.4
Net quantifiable benefit	(15.8)	18.6	197.2
Cost-Benefit Ratio (“GQB”/”C”)	0.1	2.1	12.5

Guidelines for Identity Verification, Authentication and Risk Assessment

Take-up rates (including DBI period)

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Rapid	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%	51.0%

Evolving Infrastructure - Cost-benefit summary

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(1,512.9)	(1,537.2)	(1,581.5)
Gross benefit 1 - Reduction in PSP’s operating costs due to financial crime	0.9	4.3	9.2
Gross benefit 2 – Reduction in financial crime	481.3	2,262.5	4,804.9
Gross benefit 3 – Money not spent by police/CPS	0.6	2.9	6.1
Aggregate gross quantifiable benefit (“GQB”)	482.8	2,269.7	4,820.3
Net quantifiable benefit	(1,030.1)	732.5	3,238.7
Cost-Benefit Ratio (“GQB”/”C”)	0.3	1.5	3.0

Payment transaction data sharing and analytics

Take-up rates (including DBI period)

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Rapid	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%	51.0%

Evolving Infrastructure - Cost-benefit summary

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(250.2)	(269.5)	(289.8)
Gross benefit 1 - Reduction in financial crime	103.7	517.0	1,129.8
Gross benefit 2 – Reduction in PSP’s operating costs due to financial crime	8.9	42.2	89.1
Gross benefit 3 – Money not spent by police/CPS	1.9	8.8	18.7
Other quantifiable benefits	0.6	2.9	6.2
Aggregate gross quantifiable benefit (“GQB”)	115.2	571.0	1,243.8
Net quantifiable benefit	(134.9)	301.6	954.0
Cost-Benefit Ratio (“GQB”/”C”)	0.5	2.1	4.3

Financial crime intelligence sharing

Take-up rates (including DBI period)

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%
Moderate	0.0%	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%
Rapid	0.0%	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%

Evolving Infrastructure - Cost-benefit summary

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(188.6)	(205.4)	(226.2)
Gross benefit 1 - Reduction in PSP’s operating costs due to financial crime	0.1	0.7	1.6
Gross benefit 2 - Reduction in financial crime	47.7	237.2	504.2
Gross benefit 3 - Money not spent by police/CPS	0.5	2.2	4.4
Aggregate gross quantifiable benefit (“GQB”)	48.3	240.1	510.1
Net quantifiable benefit	(140.3)	34.7	283.9
Cost-Benefit Ratio (“GQB”/”C”)	0.3	1.2	2.3

Trusted KYC data sharing

Take-up rates (including DBI period)

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Rapid	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%	51.0%

Evolving Infrastructure - Cost-benefit summary

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(213.2)	(214.4)	(216.6)
Gross benefit 1 - Reduction in financial crime	63.8	298.9	635.7
Gross benefit 2 - Reduction in PSP’s operating costs due to financial crime	2.6	12.4	26.7
Gross benefit 3 - Money not spent by police/CPS	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	66.4	311.2	662.5
Net quantifiable benefit	(146.8)	96.9	445.9
Cost-Benefit Ratio (“GQB”/”C”)	0.3	1.5	3.1

Summary of all Improving Trust in Payments solutions - Slow

Evolving Infrastructure - Summary of all Improving Trust in Payments solutions

Discounted £m over 10 years	Customer Awareness	ID&V guidelines	Payment Data sharing	Financial Crime Intelligence Sharing	KYC data sharing
Incremental cost (“C”)	(17.2)	(1,512.9)	(250.2)	(188.6)	(213.2)
Gross benefit 1 - Reduction in financial crime	1.2	481.3	103.7	47.7	63.8
Gross benefit 2 – Reduction in PSP’s operating costs due to financial crime	0.2	0.9	8.9	0.1	2.6
Gross benefit 3 – Money not spent by police/CPS	0.0	0.6	1.9	0.5	-
Other quantifiable benefits	-	-	0.6	-	-
Aggregate gross quantifiable benefit (“GQB”)	1.4	482.8	115.2	48.3	66.4
Net quantifiable benefit	(15.8)	(1,030.1)	(134.9)	(140.3)	(146.8)
Cost-Benefit Ratio (“GQB”/”C”)	0.1	0.3	0.5	0.3	0.3

Summary of all Improving Trust in Payments solutions - Moderate

Evolving Infrastructure - Summary of all Improving Trust in Payments solutions

Discounted £m over 10 years	Customer Awareness	ID&V guidelines	Payment Data sharing	Financial Crime Intelligence Sharing	KYC data sharing
Incremental cost (“C”)	(17.2)	(1,537.2)	(269.5)	(205.4)	(214.4)
Gross benefit 1 - Reduction in financial crime	30.4	2,262.5	517.0	0.7	298.9
Gross benefit 2 – Reduction in PSP’s operating costs due to financial crime	5.4	4.3	42.2	237.2	12.4
Gross benefit 3 – Money not spent by police/CPS	0.0	2.9	8.8	2.2	-
Other quantifiable benefits	-	-	2.9	-	-
Aggregate gross quantifiable benefit (“GQB”)	35.8	2,269.7	571.0	240.1	311.2
Net quantifiable benefit	18.6	732.5	301.6	34.7	96.9
Cost-Benefit Ratio (“GQB”/”C”)	2.1	1.5	2.1	1.2	1.5

Summary of all Improving Trust in Payments solutions - Rapid

Evolving Infrastructure - Summary of all Improving Trust in Payments solutions

Discounted £m over 10 years	Customer Awareness	ID&V guidelines	Payment Data sharing	Financial Crime Intelligence Sharing	KYC data sharing
Incremental cost (“C”)	(17.2)	(1,581.5)	(289.8)	(226.2)	(216.6)
Gross benefit 1 - Reduction in financial crime	182.7	9.2	1,129.8	1.6	635.7
Gross benefit 2 – Reduction in PSP’s operating costs due to financial crime	31.6	4,804.9	89.1	504.2	26.7
Gross benefit 3 – Money not spent by police/CPS	0.1	6.1	18.7	4.4	-
Other quantifiable benefits	-	-	6.2	-	-
Aggregate gross quantifiable benefit (“GQB”)	214.4	4,820.3	1,243.8	510.1	662.5
Net quantifiable benefit	197.2	3,238.7	954.0	283.9	445.9
Cost-Benefit Ratio (“GQB”/”C”)	12.5	3.0	4.3	2.3	3.1

Sources - Improving Trust in Payments

Item	Assumption	Source
Invoice fraud	£ 9.0bn p.a.	Tungsten Networks, 2016
Identity theft	£ 5.4bn p.a.	Experian-PKF, 2016
Individual payment fraud	£ 0.5bn p.a.	Experian-PKF, 2016
Plastic card fraud	£ 450m p.a.	Ibid.
Online banking fraud	£ 41m p.a.	Ibid.
Cheque fraud	£28m p.a.	Ibid.
Telephone banking fraud	£12m p.a.	Ibid.
Total PSP operating costs in 2015 (proxy)	£ 65.6bn p.a.	5 large bank's operating costs / Market share
Proportion of PSPs operating costs associated with		
Investigating, managing and settling payment fraud	0.2%	Medium-sized institution – FCDS WG
Opening account and managing KYC processes	0.2%	Medium-sized institution – FCDS WG
Estimated reduction in payment fraud and other financial crime due to Improving Trust in Payments solutions package (and associated cost/losses) assuming 100% take-up of relevant solutions	40%	FCDS WG
Split for cross-solution benefits (financial crime reduction and associated costs)	Proportional to solution cost	Working Groups assumption

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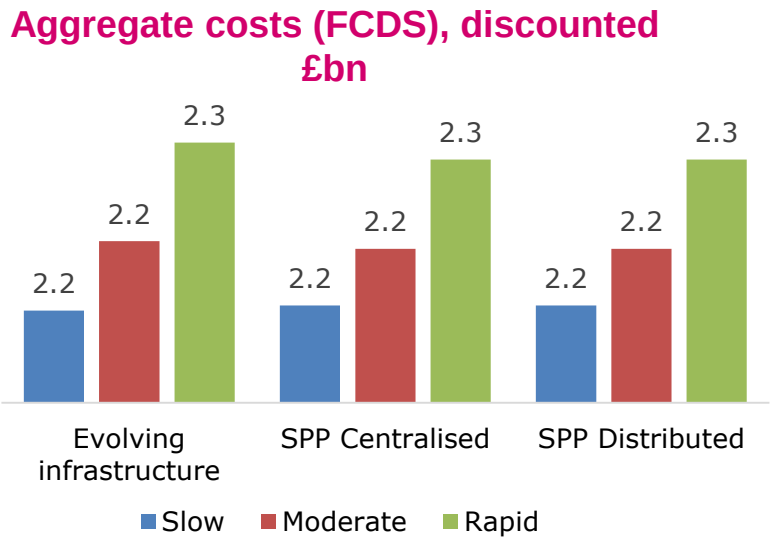
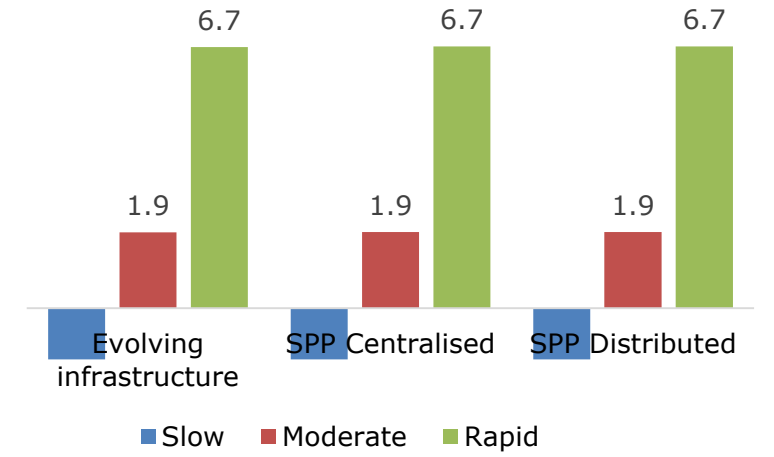
Improving Trust in Payments - Indicative summary of results





- The annual amount of financial losses linked to fraud and financial crime and addressable by the solutions package is estimated at £14.9bn
- We have assumed that 14% of annual invoice fraud does not go through the payment system
- A 100% take-up could reduce addressable fraud and associated losses by up to 40%
- Individual solution benefits are allocated proportionally to their respective costs
- Irrespective of the infrastructure context, but excluding a slow take-up, the solutions package could bring up to c. £6.7bn of net benefits over 10 years assuming a rapid take-up (90% by year 10)

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Simplifying Access to Promote Competition

Assumptions, costs and benefits

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PSO governance consolidation

Benefits

- We assume that three PSOs (Bacs, C&CCC and FPS) are going to merge their governance structures. Governance costs are therefore going to be reduced by 66%
- Based on their annual reports, their respective annual governance costs were in the region of £0.3m to £0.4m in 2015
- Based on conversations with a middle-sized PSP, for each individual scheme, scheme accreditation costs are assumed to be £17.5k and between £1 and £2m for systems costs
- We assume that one new PSP would join the 3 schemes every year over ten years

Costs

- The merger of governance structures would not lead to dismissals, but simply to the non-renewal of employment contracts for redundant scheme directors
- We have assumed that a consultancy contract of £400k would be required to establish and publish new unified procedures

Modern messaging standards

Benefits

- The quantifiable benefit of this solution mainly revolves around the variable fee paid to Vocalink for each transaction
- Based on responses to the PSR questionnaire, we assume an average variable fee for FPS and Bacs messages in the region of £0.02 per transaction. This is a weighted average of PSO-specific variable fees provided by respondents to the PSR questionnaire. Sailesh and Otto have indicated much higher fees (c. £0.20 per transaction)
- Based on Europe Economics work, we believe they could be reduced by up to 25% once ISO 20022 is adopted
- Overall, the quantitative business case for this solution is challenging, which should not mask the potentially highly significant, yet non-quantifiable benefits to arise

Costs

- Our cost assumptions are based on Europe Economics/ PSR interim findings
- Europe Economics has calculated one-off and ongoing ISO 20022 XML cost breakdown per annual transaction for both PSPs and PSUs for SEPA Credit Transfer (SCT) and SDD
- We have multiplied these costs by the number of relevant annual UK transactions (excluding cheques and CHAPS)

Other solution-specific assumptions

Data point	Assumption	Main source
Self-accreditation costs for scheme registration (annual, per PSP)	£17.5k	Medium-sized bank
Transition costs towards scheme membership (inclusive of IT and project management)		
• Bacs	£1,500k	Medium-sized bank
• C&CCC	£1000k	Ibid.
• Faster Payments	£2000k	Ibid.
Governance costs (p.a.)		
• Bacs	£337,070k	Annual report – Note to the Accounts (Directors remuneration)
• C&CCC	£0.4m	Annual report
• Faster Payments	£0.4m	Annual report

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Solution costs - Evolving Infrastructure

Simplifying Access to Promote Competition: Establishing a single PSO governance entity

Components	Behaviour	Units	One-off costs (£m)	Ongoing costs (£m)
Design of new common membership processes/forms	Fixed	1	0.4	-

Simplifying Access to Promote Competition: Moving the UK to Modern Payment Message Standards

Based on cost per annual transaction (source: Europe Economics)

Components	Behaviour	Units	One-off costs (£k)	Ongoing costs (£K)
Systems analysis	Variable	n/a	To be disclosed(1)	To be disclosed(1)
Systems costs	Variable	n/a	To be disclosed(1)	To be disclosed(1)
Internal change costs	Variable	n/a	To be disclosed(1)	To be disclosed(1)
External costs	Variable	n/a	To be disclosed(1)	To be disclosed(1)

Note: (1) When final numbers obtained from the Europe Economics study on SEPA are released by the PSR

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Establishing a single PSO governance entity

Evolving Infrastructure - Cost-benefit summary

Discounted £m over 10 years	
Incremental Cost (“C”)	(0.4)
Gross benefit – PSO costs	21.6
Gross benefit – PSP operating costs	22.8
Other quantifiable benefits	-
Aggregate gross quantifiable benefit (“GQB”)	44.1
Net quantifiable benefit	43.7
Cost-Benefit Ratio (“GQB”/”C”)	112.0

Moving the UK to modern payment message standards (Evolving infrastructure)

Take-up rates

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Rapid	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%	51.0%

Evolving Infrastructure - Cost-benefit summary (excl. non-quantifiable benefits)

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(544.0)	(596.7)	(695.4)
Lower messaging costs	9.2	43.7	92.5
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	9.2	43.7	92.5
Net quantifiable benefit	(534.8)	(553.1)	(602.9)
Cost-Benefit Ratio (“GQB”/”C”)	0.0	0.1	0.1

Moving the UK to modern payment message standards (SPP centralised)

Take-up rates

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Rapid	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%	51.0%

SPP centralised - Cost-benefit summary (excl. non-quantifiable benefits)

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(78.9)	(107.5)	(130.9)
Lower messaging costs	9.2	43.7	92.5
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	9.2	43.7	92.5
Net quantifiable benefit	(69.6)	(63.8)	(38.4)
Cost-Benefit Ratio (“GQB”/”C”)	0.1	0.4	0.7

Moving the UK to modern payment message standards (SPP distributed)

Take-up rates

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Slow	0.0%	0.0%	1.2%	1.4%	1.7%	2.0%	2.4%	2.8%	3.3%	3.9%
Moderate	0.0%	0.0%	5.0%	6.1%	7.4%	9.0%	11.0%	13.4%	16.3%	19.9%
Rapid	0.0%	0.0%	7.0%	9.3%	12.3%	16.4%	21.8%	28.9%	38.4%	51.0%

SPP distributed - Cost-benefit summary

Discounted £m over 10 years	Slow	Moderate	Rapid
Incremental cost (“C”)	(78.9)	(107.5)	(130.9)
Lower messaging costs	9.2	43.7	92.5
Other quantifiable benefits	-	-	-
Aggregate gross quantifiable benefit (“GQB”)	9.2	43.7	92.5
Net quantifiable benefit	(69.6)	(63.8)	(38.4)
Cost-Benefit Ratio (“GQB”/”C”)	0.1	0.4	0.7

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Sources - Simplifying Access to Promote Competition

Item	Assumption	Source
Self-accreditation costs for scheme registration (annual, per PSP)	£17.5k	Medium-sized bank
Transition costs towards scheme membership (inclusive of IT and project management)		
Bacs	£1,500k	Medium-sized bank
C&CCC	£1000k	Ibid.
Faster Payments	£2000k	Ibid.
Governance costs (p.a.)		
Bacs	£337,070k	Annual report – Note to the Accounts (Directors remuneration)
C&CCC	£0.4m	Annual report
Faster Payments	£0.4m	Annual report

Summary of all Simplifying Access to Promote Competition solutions - Slow

Evolving infrastructure - Summary of all Simplifying Access to Promote Competition quantifiable solutions

Discounted £m over 10 years	Single PSO governance entity	Modern Payment Message Standards
Incremental cost (“C”)	(0.4)	(544.0)
Gross benefit – PSO costs	21.6	-
Gross benefit – PSP operating costs	22.8	9.2
Other quantifiable benefits	-	-
Aggregate gross quantifiable benefit (“GQB”)	44.1	9.2
Net quantifiable benefit	43.7	(534.8)
Cost-Benefit Ratio (“GQB”/”C”)	112.0	0.0

Summary of all Simplifying Access to Promote Competition solutions - Moderate

Evolving infrastructure - Summary of all Simplifying Access to Promote Competition quantifiable solutions

Discounted £m over 10 years	Single PSO governance entity	Modern Payment Message Standards
Incremental cost (“C”)	(0.4)	(596.7)
Gross benefit – PSO costs	21.6	-
Gross benefit – PSP operating costs	22.8	43.7
Other quantifiable benefits	-	-
Aggregate gross quantifiable benefit (“GQB”)	44.1	43.7
Net quantifiable benefit	43.7	(553.1)
Cost-Benefit Ratio (“GQB”/”C”)	112.0	0.1

Summary of all Simplifying Access to Promote Competition solutions - Rapid

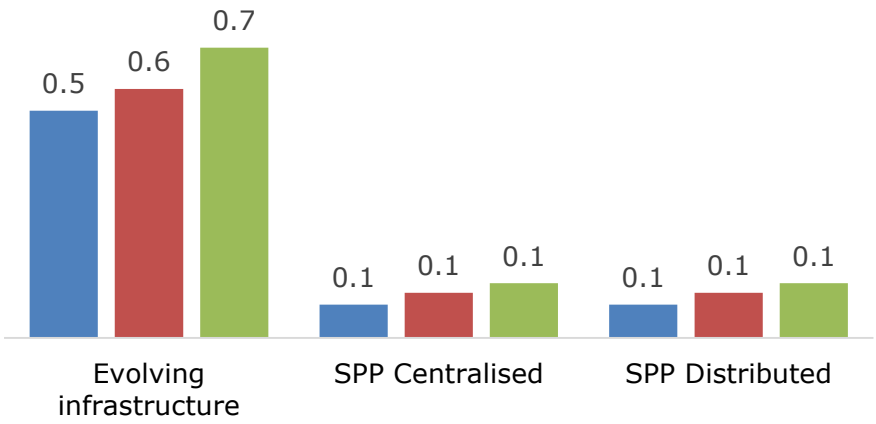
Evolving infrastructure - Summary of all Simplifying Access to Promote Competition quantifiable solutions

Discounted £m over 10 years	Single PSO governance entity	Modern Payment Message Standards
Incremental cost (“C”)	(0.4)	(695.4)
Gross benefit – PSO costs	21.6	-
Gross benefit – PSP operating costs	22.8	92.5
Other quantifiable benefits	-	-
Aggregate gross quantifiable benefit (“GQB”)	44.1	92.5
Net quantifiable benefit	43.7	(602.9)
Cost-Benefit Ratio (“GQB”/”C”)	112.0	0.1

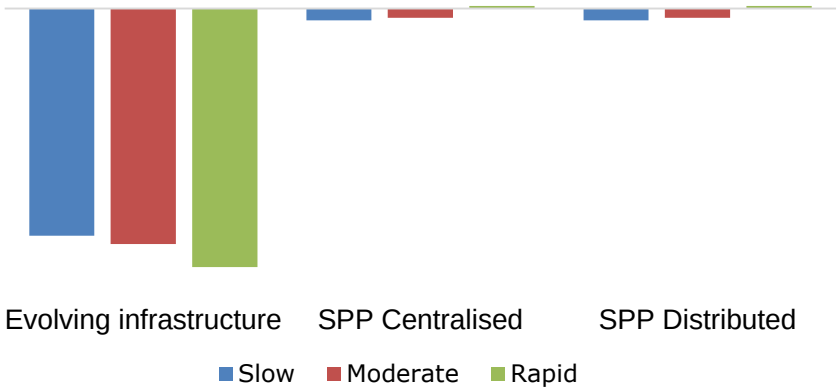
Contents

Simplifying Access to Promote Competition - Indicative summary of results

Aggregate incremental costs, discounted £bn



Net quantifiable benefits, discounted £bn



- A significant number of identified benefits for Simplifying Access to Promote Competition solutions cannot be quantified in a robust manner, which somewhat distorts the numerical picture.
- Among all Simplifying Access to Promote Competition solutions, only three were in scope, and only two had relatively significant quantifiable benefits. Only these two are taken into account in the graphs.
- Our analysis shows that moving the UK to ISO 20022 payment messaging standard is expensive in the current evolving payment infrastructure and would only bring limited quantifiable benefits, hence a negative project NPV.
- However, this transaction to ISO 20022 is much more affordable as part of an overall infrastructure reshuffle.

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Simplified Payment Platform/ Evolving Infrastructure

Indicative costs

SPP Assumptions (1)

Reduction in costs to PSPs re maintenance of multiple schemes

- Average cost to maintain multiple schemes £25.7m
  - Annual cost to maintain Bacs: £12.9m
  - Annual cost to maintain C&CCC: £23.9m
  - Annual cost to maintain faster payments: £39.9m

Reduction in transaction payment costs to Vocalink

SEPA study gives a maximum figure in the range of 25% and not 90%

- Current cost per transaction: 20p – Responses to PSP/PSO cost questionnaire averages out at 0.02p (Bacs/FPS) and not 20p
- New cost per transaction: 2p

Reduction in cost of resilience

- Current cost of resilience per annum: £100m
- Assume 90% saving

Reduction in acquisition and demerger costs

- Current: £50m
- Assume 90% saving

Current infrastructure decommissioning costs

- Current: £50m spread equally over year 7 and 8 of the project

Parallel infrastructure running costs

- 20% of infrastructure running cost estimate based on PSR questionnaire responses
- £94.5m p.a. over year 7 to 10

Note: (1) Developed my Horizon Scanning Working Group

Evolving Infrastructure

Cost item	Behaviour	Units	Unit cost (£k)	One-off (£k)	Ongoing (£k)
PSP costs (Large)					
API Gateway (for registry)	Fixed	9		-	
Micro services overlay platform	Fixed	9	3,000		-
Private cloud infrastructure	Fixed	9	5,000	112,500	11,250
Integration (channels, accounting & reporting)	Fixed	9	15,000	337,500	
UK PSP costs (Small)					
API Gateway (for registry)	Variable	400		-	
Micro services overlay platform	Variable	400	100		-
Private cloud infrastructure *(2.5 times)*	Variable	400	100	100,000	10,000
Integration (channels, accounting & reporting) *(2.5 times)*	Variable	400	250	250,000	
Central costs					
Registry	Fixed	1	250		-
Implementation entity -Spec, Governance, Delivery	Fixed	1	20,000	20,000	2,000
Reference implementation (Sand box, testing etc.)	Fixed	1			15,000
Final implementation	Fixed	1	50,000	50,000	10,000
Governance Body (ongoing)	Fixed	1	1,000		1,000
PSO Operations	Fixed	1	76,949		76,949
Scheme payments/Infrastructure management fee (VL - B and F only)	Fixed	1	105,000		105,000

SPP - Centralised

Cost item	Behaviour	Units	Unit cost (£k)	One-off (£k)	Ongoing (£k)
PSP costs (Large)					
API Gateway (for registry)	Fixed	9			
Micro services overlay platform	Fixed	9	3,000	27,000	2,700
SPP Platform (Private cloud infrastructure)	Fixed	9	5,000	45,000	4,500
Integration (channels, accounting & reporting)	Fixed	9	15,000	135,000	
UK PSP costs (Small)					
API Gateway (for registry)	Variable	400			
Micro services overlay platform	Variable	400	100	40,000	4,000
SPP Platform (Private cloud infrastructure)	Variable	400	100	40,000	4,000
Integration (channels, accounting & reporting)	Variable	400	250	100,000	
Central costs					
Registry	Fixed	1	250	250	50
Implementation entity -Spec, Governance, Delivery	Fixed	1	20,000	20,000	2,000
Reference implementation (Sand box, testing etc.)	Fixed	1			5,000
Final implementation	Fixed	1			-
Governance Body (ongoing)	Fixed	1	1,000		1,000
PSO Operations	Fixed	1	25,650		25,650
Scheme payments/Infrastructure management fee (VL - B and F only)	Fixed	1	105,000		105,000
Decommissioning costs	Fixed	1	50,000	50,000	
Parallel running costs	Fixed	1	94,426		94,426

SPP - Distributed

Cost item	Behaviour	Units	Unit cost (£k)	One-off (£k)	Ongoing (£k)
PSP costs (Large)					
API Gateway (for registry)	Fixed	9			
Micro services overlay platform	Fixed	9	3,000	27,000	2,700
SPP Platform (Private cloud infrastructure)	Fixed	9	5,000	45,000	4,500
Integration (channels, accounting & reporting)	Fixed	9	15,000	135,000	
UK PSP costs (Small)					
API Gateway (for registry)	Variable	400			
Micro services overlay platform	Variable	400	100	40,000	4,000
SPP Platform (Private cloud infrastructure)	Variable	400	100	40,000	4,000
Integration (channels, accounting & reporting)	Variable	400	250	100,000	
Central costs					
Registry	Fixed	1	250	250	50
Implementation entity -Spec, Governance, Delivery	Fixed	1	20,000	20,000	2,000
Reference implementation (Sand box, testing etc.)	Fixed	1			5,000
Final implementation	Fixed	1			-
Governance Body (ongoing)	Fixed	1	1,000		1,000
PSO Operations	Fixed	1	25,650		25,650
Scheme payments/Infrastructure management fee (VL - B and F only)	Fixed	1	26,250		26,250
Decommissioning costs	Fixed	1	50,000	50,000	
Parallel running costs	Fixed	1	94,426		94,426

Sources - A New Architecture for Payments

Item	Assumption	Source
Average cost to maintain multiple schemes	£25.7m	HS Working Group
Annual cost to maintain BACS	£12.9m	Bacs annual Report
Annual cost to maintain C&CCC	£23.9m	HS Working Group
Annual cost to maintain faster payments	£39.9m	FPS Annual report
Current cost of resilience per annum	£100m	HS Working Group
New cost of resilience per annum	£90m	HS Working Group
Current acquisition and de merger costs	£50m	HS Working Group
New acquisition and de merger costs	90% saving	HS Working Group
Current infrastructure decommissioning cost	£50m	HS Working Group
Parallel infrastructure running costs	£94.5m p.a. over year 7 to 10.	HS Working Group and responses to PSR questionnaire