OPEN BANKING

Levelling up availability and performance

Data collection framework for API availability and performance

October 2023

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Background and Objectives

On 17 April 2023 the Joint Regulatory Oversight Committee (JROC) published its Recommendations for the next phase of open banking in the UK (referred to as "the JROC report"). In it, the committee identified three priorities to deliver its vision:

- To establish a sustainable and competitive footing for the ongoing development of the open banking ecosystem so it can grow beyond the current functionalities and bring further benefits to end-users.
- To unlock the potential for open banking payments.
- To adopt a model that is scalable for future data sharing propositions.

To deliver this, the committee identified and set out a roadmap of 29 actions. This document is concerned with the first of these actions i.e., "Design a data collection framework [MI framework] for API availability and performance and submit to the Financial Conduct Authority (FCA) and Payment Systems Regulator (PSR) for approval."

This action rests under the theme of "Levelling up availability and performance" (paragraphs 4.7 - 4.15), and paragraph 4.7 sets out the overall objective:

> 4.7 The objective of the Committee is to develop an ecosystem where open banking API availability and performance is consistently high across all Account Servicing Payment Service Providers (ASPSPs). This will allow consumers and businesses to benefit further from high-performing, reliable services that enhance user experience and continue to build trust in the ecosystem. It means open banking services will be able to scale and grow.

We have based our proposals for the elements of the management information (MI) Framework on paragraph 4.10:

1. Setting out the target outcomes and benchmarks
2. Determining the scope of data collection
3. Frequency of collection
4. The data sets to be collected
5. The mechanism for reporting data
6. The analysis and dissemination of the findings to the wider ecosystem.

Process and governance of this framework

Paragraph 4.10 of the JROC report states that: "*The Committee asks that in the short-term, ecosystem participants, organised and coordinated by the relevant industry bodies and with the support of OBIE, proceed to define the metrics and benchmarks for availability and performance data collection, developing a data collection and reporting template for all ASPSPs and Third Party Providers (TPPs).*"

To that end, OBL established an Expert Advisory Group (EAG) with a range of stakeholders to ensure the framework reflects the views of the entire ecosystem. This document and accompanying templates (one for TPPs and one for ASPSPs) are the outcome of that work which has included two consultation periods and four EAG meetings as well as workshops with TPPs and ASPSPs.

1. Setting out the target outcomes and benchmarks

1.1 Objective

The overall objective of this framework is to ensure the ecosystem benefits from high-performing APIs with as little downtime as possible. This will allow consumers and businesses to benefit further from high-performing, reliable services that enhance user experience and continue to build trust in the ecosystem. It means open banking services will be able to scale and grow.

1.2 Principles

All ASPSPs are required by regulation to ensure that their dedicated interfaces have at least the same level of availability and performance as direct online interfaces. Further obligations have been placed on the CMA9 under the Retail Banking Market Investigation Order 2017 (the CMA Order) regarding availability and performance.

The EAG believes that the Levelling Up workstream should be designed to:

> a) ensure consistent expectations of all ASPSPs, i.e., both non-CMA9 ASPSPs as well as the CMA9, and
> b) improve performance and availability of the entire ecosystem to levels that encourage adoption by consumers and small businesses.

The overriding principle of the framework, therefore, is to treat all ASPSPs alike and require the same level of availability and performance of all, aiming to bring all ASPSPs in line with the most highly available and best performing ASPSPs. JROC, OBL and the Expert Advisory Group believe that "what is measured is managed" and by collecting, collating, and publishing performance and availability data, the ecosystem will improve over time.

1.3 Benchmarks

We recommend that benchmarks are designed to enable high levels of adoption by consumers and small businesses. Performance and availability benchmarks should be challenging and dynamic, reflecting the requirements of the full range of data sharing and payments use cases in the market. Additionally:

- The same requirements and expectations should be placed on all ASPSPs irrespective of whether they are CMA9 or non-CMA9 to achieve "levelling up".
- Where performance and availability of the online channel is above the OBL benchmark, ASPSPs must deliver that level of performance and availability for open banking APIs.

Current recommended OBL benchmarks, which are reviewed from time-to-time to ensure they facilitate use cases in the market, are:

- Availability (see here): quarterly uptime of 99.5% (downtime of 0.5%).
- Performance (see here): Payment Initiation Services (PIS), Account Information Services (AIS) and Card Based Payment Instrument Issuer (CBPII) Confirmation of Funds checks: an average Time to Last Byte (TTLB) of 750 milliseconds per endpoint response.

One further element of the framework regards conversion rates. There is no benchmark within the current Open Banking Standards, however, the Monitoring function looks at performance across the CMA9 and month-to-month changes in total consent success rates.

Rather than setting a benchmark, this framework will consider the data once collected and suggest a conversation held with any ASPSP more than 5% below the average of peers to understand potential root causes.

As data is collected and – as is hoped – performance and availability improve over time, these benchmarks should be revisited by OBL, or the Future Entity once established.

1.4 Monitoring and enforcement

The performance of the CMA9 is reviewed by the OBL Monitoring Function which reports to the Trustee. Paragraph 3.4 of the JROC report states that *"we expect the future entity to monitor and gather data on ecosystem performance"* and at 4.11 states "*OBIE, and the future entity when set up, will conduct data collection and share information with the FCA and the PSR*."

It is currently unclear exactly what future monitoring or enforcement will look like. However, it is assumed the Future Entity may conduct – in discussion with the FCA and PSR – activity like the monitoring OBL performs of the CMA9 today and extend this to all ASPSPs in the ecosystem.

The worst performing ASPSPs will naturally be the focus of any monitoring activity. The assumption is that as with the CMA9, whenever the benchmarks are missed or whenever there is significant month-on-month downturn the relevant ASPSP(s) should be asked to explain and investigate their relatively poor performance. To fully enforce this would require amendments to the Payment Services Regulations 2017 (PSRs). It is hoped that, in lieu of this, ASPSPs would voluntarily seek improvements to align with peers.

2. Determining the scope of data collection

The scope of data collection is taken to mean the organisations required to submit the data, as the scope of the data to be collected is set out later in the framework. Paragraph 4.10 of the JROC report states that OBL should develop "*a data collection and reporting template* ***for all ASPSPs and TPPs [our emphasis]***". We have confirmed with JROC that the focus of the reporting is the performance and availability of ASPSP APIs (i.e., TPPs provide data about ASPSP APIs, not their own APIs).

The intention of this framework is to ensure that we have a solution to data collection that can be achieved through voluntary participation. To enable this, we have prepared Phase 1 requirements and considered future enhancements. While all data is optional, the Phase 1 requirements are the *de minimis* for any meaningful reporting to be possible.

Given this represents new data collection requirements for non-CMA9 ASPSPs and all TPPs, we have designed a phased approach to the collection in terms of the depth and complexity of data. This is discussed further under Section 4.

We would emphasise the importance of obtaining TPP data with which to corroborate and challenge ASPSP data. Issues and concerns with self-reported data have been well noted in the past and building a full picture is deemed as an important outcome by JROC. For TPPs that rely on a Technical Service Provider (TSP), we would expect TPPs to request TSPs to submit the data on their behalf, or to collect the data from their TSP and provide it to OBL directly.

That said, we will take a pragmatic and phased approach to this exercise, starting with the collection of a core set of data from the largest ASPSPs outside the CMA9 and from willing TPPs and other ASPSPs on a best-efforts basis. We will allow a 'nil return' for ASPSPs that do not have any live integrations with TPPs i.e., have no API calls other than for testing purposes.

The CMA9 will not be required to complete and submit the attached template as current reporting to OBL already provides sufficient data. As part of the Future Entity work covered by the JROC report we expect there to be discussion of consolidating/merging these requests, subject to the CMA9's ongoing obligations under the CMA Order.

We note that the JROC report has an optional deliverable whereby "*if needed*" the FCA and PSR will consult on changes requiring reporting additional data for API availability and performance.

3. Frequency of collection

Several participants have expressed a desire for "real-time" and/or "high-frequency" data, particularly regarding API availability. However, to support regulators and policymakers, this framework has been designed to be collected monthly, as is currently the case for CMA9 reporting. Real-time data does not lend itself to considered analysis of performance and availability and presents significant reporting and collection issues.

By basing this framework on the existing CMA9 MI reporting, OBL will be in position to provide ecosystem-wide and individual participant monthly analytics, as well as compare different groups of ASPSPs, such as CMA9 and non-CMA9. This will allow us to identify possible outliers and allow OBL (or the Future Entity) and/or the FCA and PSR to initiate conversations with ASPSPs deemed to require improvement, with reference to the benchmarks set out above.

Regarding real-time data, it was put forward that there are independent suppliers live-in-market that can provide such a service. While these solutions are "off-the-shelf-ready", we see several practical issues:

1. Calls are often synthetic or unauthenticated and stop at the initial API gateway, meaning that the solution cannot provide an end-to-end result for a given API call.
2. Difficulties with data validation. Collecting data from all TPPs would provide a more accurate view and allow, for example, use-case-specific analysis.
3. Several practical issues such as:
    a. the cost burden (who will pay?);
    b. the Request for Proposal (RfP) process for obtaining such a service;
    c. contractual agreements between suppliers, OBL (or Future Entity), regulators and participants in the ecosystem; and
    d. full ecosystem coverage is likely to require several suppliers.

While this should be considered as a potential partial solution for the future, the issues with such an approach led us to reject it at this time.

4. The data sets to be collected

4.1 Existing reporting requirements

The JROC report provides guidance in paragraph 4.14 about the metrics to be collected:

> 4.14 Both the PSRs 2017 and CMA Order should be the starting point for the ecosystem to consider when designing the data collection and identifying the data sets and parameters set out above. Additional information available, such as conversion rates, to participants may also be used.

All ASPSPs are required to publish, each quarter, daily statistics on their website regarding dedicated interface(s) and are required to submit a REP020 submission. The REP020 template can be found here and asks for:

1) Availability statistics
   a. Uptime (%)
   b. Downtime (%)
2) Performance statistics
   a. Payment services user interface: response time (milliseconds (ms))
   b. Dedicated interface: AISP response (ms), PISP response (ms), CBPII/PISP Yes/No response (ms), error response rate (%)

Under the CMA Order, the CMA9 have broader requirements. The full reporting requirements can be found here. TPPs have no reporting obligations in terms of performance and availability data.

4.2 Phased data collection

In developing this framework, we have tried to strike a balance based on our experience in collecting and analysing the CMA9 MI between the REP020 template and CMA9 MI Standard. We see four phases to the expansion of the required data metrics over time and we will approach the data collection exercise as follows:

Phase 0: Existing data to provide a report to JROC by Q3 2023

The JROC report asks for the first data collection and analysis to be sent to the FCA and PSR by the end of Q3. To meet this deadline, the only possible data to use is what is already produced across the ecosystem, namely, REP020 submissions / quarterly reporting of daily statistics from all ASPSPs alongside the CMA9 MI provided to OBL under the CMA Order, and any MI produced by TPPs internally they are willing to share.

Gathering this will provide a basic initial understanding of the variability in terms of availability and performance across the ecosystem and allow limited comparisons of availability and response time, based on ASPSPs' own calculations. Guidance on exactly how to calculate availability and response time for REP020 is limited, so we cannot be certain all respondents are using the same basis, and therefore that we are making like for like comparisons. Data is a single number for each measure with no differentiation as to how different parts of the API-driven service might be performing.

Additionally, OBL does not currently have access to REP020 data so will rely on ASPSPs voluntarily providing it, and we understand there are concerns with data quality. As such, this may not be a comprehensive review of all ASPSPs.

Phase 1: Minimum requirement framework (with implementation date of January 2024)

To allow standardised reporting from ASPSPs and to enable TPP data to be used to corroborate ASPSP data, we have designed a Phase 1 template.

This has similar data to the REP020 requirements plus conversion rate data. Additionally, participants will be reporting against definitions prescribed by OBL so we can be certain we are comparing like for like, subject to the underlying data provided by ASPSPs being of good quality and accurate.

Additionally, endpoint granularity reporting allows us to differentiate by API Type and identify if/when only a small proportion of endpoints might be impacted.

We note, however, there is no guarantee of a significant number of submissions even of this limited data set based on feedback received during the development of this framework. OBL will need to assess the number and quality of submissions before reporting results to JROC.

The Phase 1 template for ASPSPs and TPP accompanies this document and the categories requested are as below, excluding minor details like reporting date, Brand IDs etc.:

For ASPSPs

Performance and availability

- API call volumes: successful and failed API calls, with failed split into business and technical failures
- Availability: planned downtime, unplanned downtime, uptime
- Response time: Total Time to First Byte (TTFB) and Total Time to Last Byte (TTLB).

Direct channel (for comparison)

- Channel availability: uptime (%)

Conversion rates

- Level of detail: authentication type (redirection, decoupled), API type, TPP channel, ASPSP Channel
- Authentication: consents requiring authentication, authentications attempted by Payment Services Users (PSUs), consents succeeded.

For TPPs

Performance and availability

- API call volumes: successful and failed API calls, with failed split into business and technical failures, API calls with no response.

Conversion rates

- Level of detail: API type and TPP channel
- Request status: request started (POST), consents requiring authentication, authentications succeeded, payments completed successfully.

Phase 2: Additional detail (with implementation date of H1 2024)

The Phase 1 data is designed to indicate at a high level any potential problems at any specific ASPSP and to facilitate monitoring of the ecosystem. The level of granularity within Phase 1 is not sufficient to understand the root causes of any problem, particularly regarding conversion rates which may be lower than expected for a variety of reasons.

As such Phase 2 introduces slightly more granularity for availability, response times and failed API calls where the reporting day is split into core and non-core hours. In Phase 2 we will also capture endpoint version numbers, as there is evidence that older endpoints perform worse than the latest. We also add a few more datapoints to Conversion rate to understand where and why consents are failing. It remains unclear, however, if regulation will be required to get this data or if participants will provide it voluntarily.

The Phase 2 template for ASPSPs and TPP accompanies this document and additions on the Phase 1 request are as follows:

Additions to Phase 1 for ASPSPs

- Core/non-core (performance and availability)
- Rejected API calls (performance and availability)
- Core/non-core (direct channel)
- Uptime (%) (direct channel)
- Authentication failed (conversion rates)
- Confirmations rejected (conversion rates)
- Authentications abandoned by PSU (conversion rates)
- Payments completed successfully (conversion rates).

Additions to Phase 1 for TPPs

- Report time (performance and availability)
- API calls generating 'rejection' status (performance and availability)
- TTFB and TTLB (performance and availability)
- Perceived downtime (performance and availability)
- ASPSP channel (conversion rates)
- Consents abandoned by PSU before redirection (conversion rates)
- Consents abandoned by TPP before redirection (expected to be polling) (conversion rates)
- Average journey completion time (conversion rates).

In terms of delivering this data, while we have requested participants to provide it by end H1 2024, it may be more efficient from a development point of view to produce both Phase 1 and Phase 2 data at the same time. We will of course accept Phase 2 submissions to accompany Phase 1 submissions in January 2024 if participants wish to provide it then.

Phase 3: Adding success outcomes, TPP metrics and data requirements arising from other workstreams (implementation date to be agreed)

The JROC report in paragraph 1.9 refers to several success criteria for JROC including number of users of open banking and the growth of the ecosystem. Other workstreams will also have additional data reporting requirements. Although these are not a 'levelling up' requirement, more information, such as use-case-specific user and participant numbers and payment values/volumes will be needed by JROC to assess the development and performance of open banking.

While not part of the formal CMA9 MI requirements, OBL has procured data on TPP volumetrics over the years to monitor growth of the ecosystem and on that basis proposes that both ASPSPs and TPPs produce the following:

- Users: total users (PIS, AIS, Variable Recurring Payments (VRPs), CBPII, total), new users (AIS, PIS, VRP, CBPII, first-time), total by channel (mobile, online, either), total users annualised, digital users annualised.
- TPP volumetrics: API calls, payment volumes, payment values.
- Forecasting: forecast volumes (to identify expected significant increase in API calls).

The purpose of Phase 3 is, therefore, to formalise reporting requirements from all JROC activity and to cover proposed – but not defined – Future Entity monitoring. Whilst we cannot be totally certain what that might be at this stage, it's likely to introduce the richer information that allows us to monitor and analyse the growth and evolution of the ecosystem, and provide service specific monitoring capabilities, where they are deemed necessary.

We expect that regulation may be required to procure this additional data given the complexity and sensitivity of producing it. This phase is unknown and may change significantly pending the design of the Future Entity. Phase 3 will also be tied with any API development and major platform build as described in Chapter 5 below.

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With all the above, OBL (or the Future Entity) will hold several workshops with the ecosystem to ensure common understanding of what is being requested and provide useful FAQs to ensure data is produced in a standardised manner. From our experience collecting CMA9 MI, we assume that it will take several rounds of producing the data for ASPSPs to provide high-quality submissions. This makes the TPP data even more important in terms of corroboration.

Please refer to the Appendix for expected delivery timelines.

5. The mechanism for reporting data

5.1 Options under consideration

OBL today receives MI submissions from nine institutions i.e., the CMA9 as per the CMA Order. Efforts have been made to automate collection and undertake quality assurance, but uptake has been limited, so generally MI is still delivered as comma-separated values (CSV) files via Secure File Transfer Protocol (SFTP), and sometimes as Excel templates, leading to lengthy processing times.

Based on our experience, there are broadly four options for the reporting collection mechanism to deliver this framework. We set these out below:

Method	Comments
JSON Payload via MI API	• Allows for participants to fully automate their data extraction and submission to OBL for analysis and reporting. • Participant costs will be associated with initial implementation (using existing certificates and platforms) and future upgrades; however, business as usual (BAU) burden will be minimal and should only require routine monitoring and intervention should APIs fail. • Provides a predictable, reliable, and controlled mechanism to receive data from participants, once development of APIs and participants are configured with correct data. • More flexible to allow for frequent data submissions. • This mechanism is already in use for Open Banking Directory participants to query the Technical Directory.
CSV* files via SFTP * *Requires best practice guidance to avoid issues associated with using Excel to generate CSVs.*	• Provides a fully or partially automated mechanism to extract data from participant systems and send to OBL for analysis and reporting. Participant costs will be associated with initial implementation (SFTP implementation and IP whitelisting) and future upgrades. • BAU burden will depend on extent of automation deployed to internal participant processes. • Provides a partially controlled mechanism to receive data from participants, once development of reporting templates and participants are configured with correct data. • As data quality cannot be assured/assumed in the same way as for APIs it is likely to require extensive validation and cleansing rules to be deployed on the OBL data lake before data can be consumed.

	Feedback is not instantaneous and will be sent after the above is completed. • Risk of corruption if bad data is not detected by these processes, particularly for those participants choosing to manually generate and send files.
CSV* files via direct Simple Storage Service s(S3) access ** Requires best practice guidance to avoid issues associated with using Excel to generate CSVs.*	• Provides a fully or partially automated mechanism to allow participants to provide data directly to OBL via the provision of dedicated credentials to specific S3 bucket for each participant. • Must be assessed from a security point of view. Would involve less manual overhead than email provision, and less development effort from both OBL and participants than SFTP. However, IP whitelisting will still be required, and a security threat model applied to ensure safety for sending and receiving of the data. • A manual authentication method would need to be agreed and maintained outside the practice used by the Open Banking Standard. • No automated submission and no validation of data on submission. This will lead to longer pre-validation cycles between OBL and participants.
CSV* files via email ** Requires best practice guidance to avoid issues associated with using Excel to generate CSVs.*	• Provides a manual means to send data to OBL data lake for analysis and reporting. BAU burden will depend on extent of automation deployed to internal participant processes. • Limited control of data quality and will require significant manual effort by OBL to review and upload the files received. However, there may be an opportunity to overlay some degree of automation. • Opens a new vector for bad actors to exploit as email is an open channel. This would need to be assessed from a security point of view both in terms of data and email. • Secure email channels would need to be configured and set up, IP whitelisting. • Possible data leakage due to the open nature of email communication.

5.2 OBL recommendation – tactical solution progressing to an API-based solution as part of the Future Entity

The CMA9 has been providing MI data to OBL for several years and, while the quality is relatively stable, the nature of submissions and manual requirement for quality assurance presents a monthly burden to OBL, which is not scalable to the entire ecosystem. Based on the proposed scope and the stated aim to collect data from all ecosystem participants, the number of monthly submissions could eventually surpass 300 templates.

It is simply not practical to offer any solution other than an API-based delivery mechanism without presenting a huge resource problem. This approach will help greatly with quality and error-free data input, through API standardisation, which in turn leads to both process and cost efficiency in collecting data.

While there will be an initial development and implementation requirement, an API solution will be secure, future-proof, flexible and – over time – cost-efficient. Ultimately, we operate in an API economy and most of the EAG supports this recommendation.

That said, based on feedback received during the development of this framework, it is unlikely a significant number of template submissions will be received in the first collection period (Phases 1 and 2).

Given this, and given the Future Entity discussions are ongoing, OBL does not propose to build an API solution and supporting platform at this time but strongly recommends it is budgeted for as part of the Future Entity.

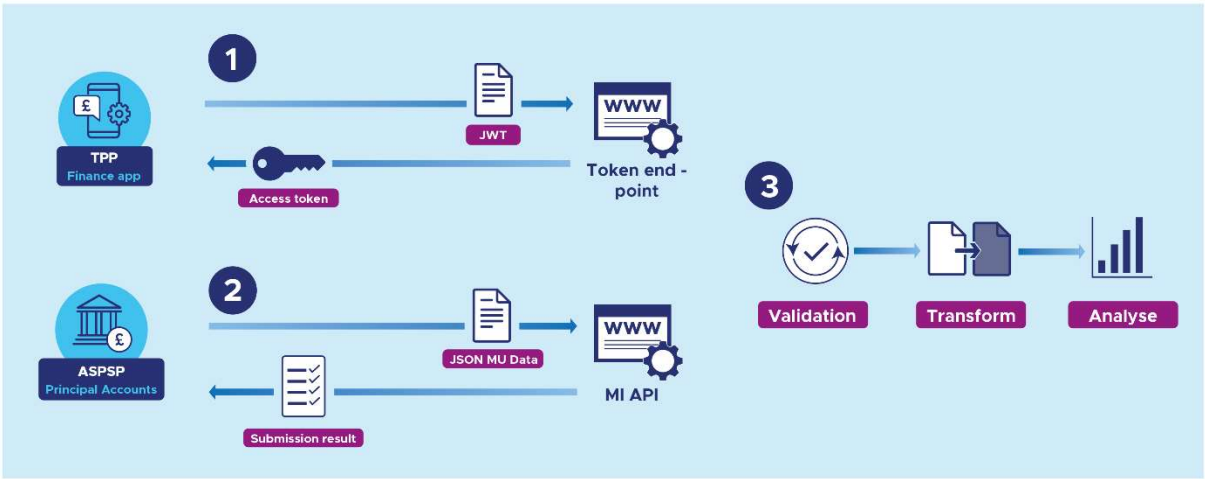
Therefore, for Phases 1 and 2, we will accept and expect that participants will initially provide data by other means, such as Excel or CSV, and emphasise that an API solution is the end goal, subject to an appropriate implementation timeline.

5.3 Implementation of the future API solution

APIs are currently used by all participants to query the Technical Directory for authorisation and current state when making open banking calls (AIS/PIS/ASPSP/CBPII). We propose to use the same implementation for API MI submissions.

The security measures already in place to secure the Technical Directory APIs will be applied to the MI APIs, making the submission of sensitive data secure. This is based on the FAPI implementation.

We have provided an overview of the proposed solution in the diagram below. The details of the underlying supporting infrastructure are still being designed and built.



1. Participants will identify and authenticate with OBL using the same mechanism as today for other Directory APIs, namely client credentials and access tokens. Each participant will request an MI scope to be added

to their account. OBL will look to automate this process for all participants.

2. Once an access token has been received, participants will use this to submit their MI data in line with the MI API specification (swagger specification), data will be validated against the specification and immediate feedback given (if not compliant) to allow for resubmission of the data.
3. Successful submission of data will be moved to OBL's back-end processing for analysis.

Building on the foundations of the existing MI REST API, an Open API Swagger file will be provided alongside an updated MI schema that reflects the underlying MI template attached to this document.

Endpoints will utilise the same security methods as the existing Directory API (FAPI). Participants will use existing OAuth client credentials with a new scope to submit returns. The Directory API specification will be updated to provide separate endpoints for TPPs and ASPSPs. Individual reporting endpoints will be provided for data which logically sits together.

As and when this solution is provided by the Future Entity, we will allow participants six months to develop this once live.

6. The analysis and dissemination of the findings

The JROC report states that: "*The OBIE, and the Future Entity when set up, will conduct data collection and share information with the FCA and the PSR.*" To level up the ecosystem, it is important – in line with the principle that "what is measured is managed" – to share certain information to encourage ASPSPs to improve performance and availability if required.

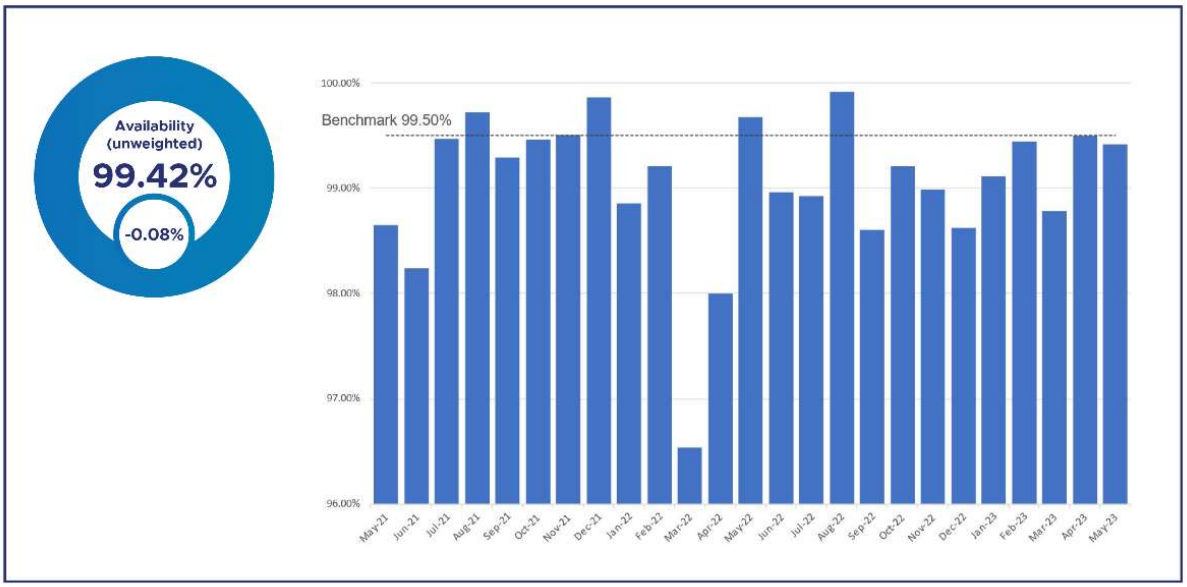
Publishing data

In terms of dissemination, to reflect the objective of "levelling up", once OBL is comfortable with the quality of data being provided it will seek to supplement the existing public reporting with non-CMA9 ASPSP data, subject to agreement. The current publicly available CMA9 reporting can be found here.

This includes both branded (i.e., identifiable) data and aggregated data where it is not possible to identify a particular ASPSP or ASPSP brand. We outline the types of analysis OBL proposes to produce below with the intention of publishing them on the OBL website. The depth of detail OBL can provide will of course depend on the number of template submissions OBL receives, particularly for any analysis to be done using TPP data.

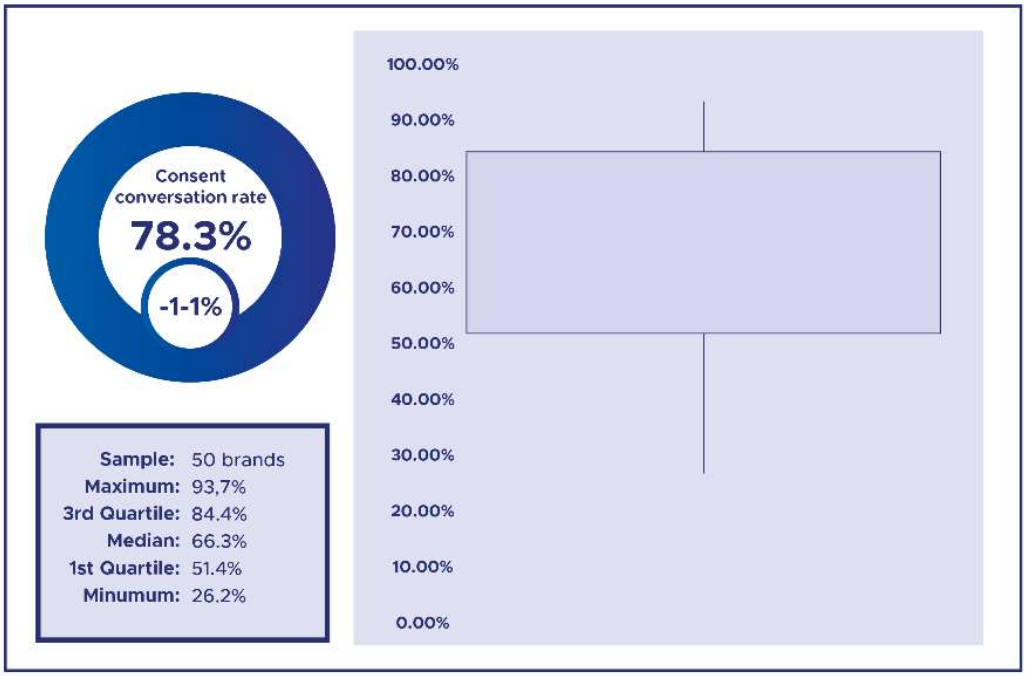
Performance histograms

These mirror what is produced for existing OBL and CMA9 forums at present and are aggregate data, suitable for the public domain.



Benchmarking

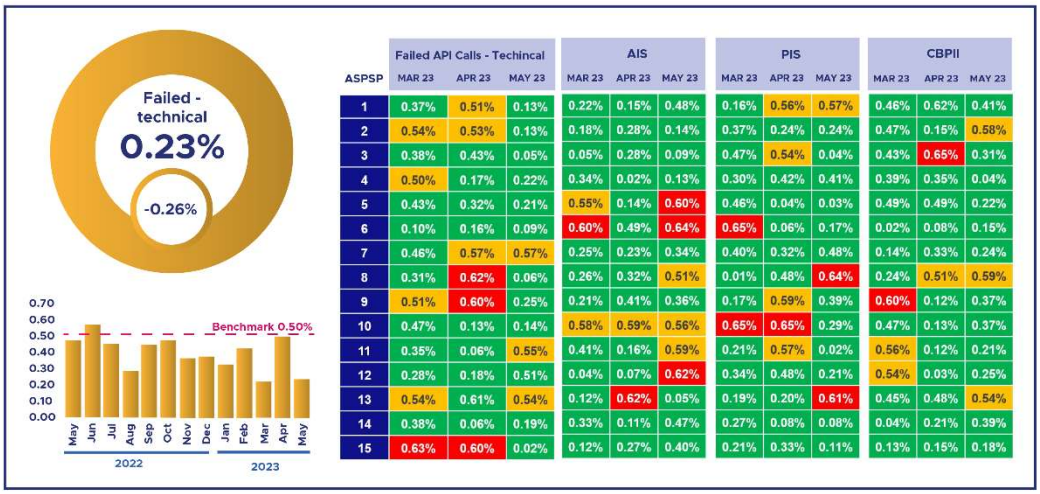
Assuming a sufficient sample size, this will be made available to allow ASPSPs/brands to benchmark themselves against performance quartiles.



Private data (for monitoring / regulators)

Performance summary

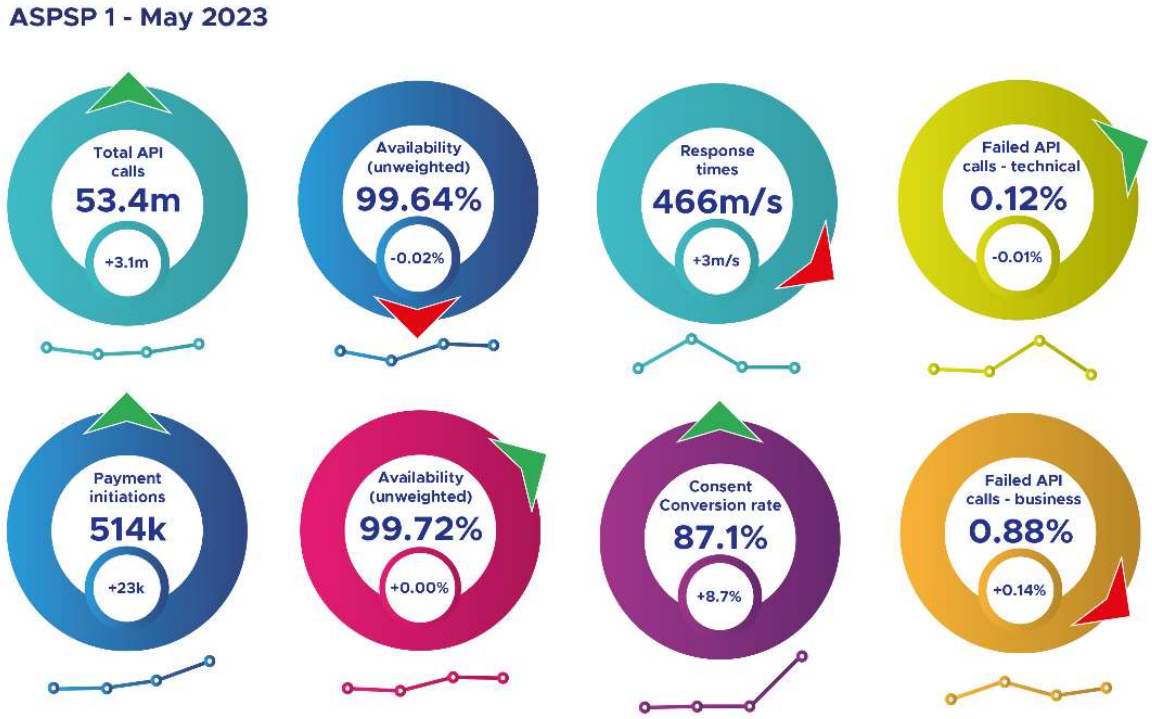
These mirror what we produce for the CMA today for the CMA9 and present an ASPSP (brands aggregated where applicable) view with RAG statuses for key performance measures.



ASPSP	Failed API Calls - Techincal			AIS			PIS			CBPII		
	MAR 23	APR 23	MAY 23	MAR 23	APR 23	MAY 23	MAR 23	APR 23	MAY 23	MAR 23	APR 23	MAY 23
1	0.37%	0.51%	0.13%	0.22%	0.15%	0.48%	0.16%	0.56%	0.57%	0.46%	0.62%	0.41%
2	0.54%	0.53%	0.13%	0.18%	0.28%	0.14%	0.37%	0.24%	0.24%	0.47%	0.15%	0.58%
3	0.38%	0.43%	0.05%	0.05%	0.28%	0.09%	0.47%	0.54%	0.04%	0.43%	0.65%	0.31%
4	0.50%	0.17%	0.22%	0.34%	0.02%	0.13%	0.30%	0.42%	0.41%	0.39%	0.35%	0.04%
5	0.43%	0.32%	0.21%	0.55%	0.14%	0.60%	0.46%	0.04%	0.03%	0.49%	0.49%	0.22%
6	0.10%	0.16%	0.09%	0.60%	0.49%	0.64%	0.65%	0.06%	0.17%	0.02%	0.08%	0.15%
7	0.46%	0.57%	0.57%	0.25%	0.23%	0.34%	0.40%	0.32%	0.48%	0.14%	0.33%	0.24%
8	0.31%	0.62%	0.06%	0.26%	0.32%	0.51%	0.01%	0.48%	0.64%	0.24%	0.51%	0.59%
9	0.51%	0.60%	0.25%	0.21%	0.41%	0.36%	0.17%	0.59%	0.39%	0.60%	0.12%	0.37%
10	0.47%	0.13%	0.14%	0.58%	0.59%	0.56%	0.65%	0.65%	0.29%	0.47%	0.13%	0.37%
11	0.35%	0.06%	0.55%	0.41%	0.16%	0.59%	0.21%	0.57%	0.02%	0.56%	0.12%	0.21%
12	0.28%	0.18%	0.51%	0.04%	0.07%	0.62%	0.34%	0.48%	0.21%	0.54%	0.03%	0.25%
13	0.54%	0.61%	0.54%	0.12%	0.62%	0.05%	0.19%	0.20%	0.61%	0.45%	0.48%	0.54%
14	0.38%	0.06%	0.19%	0.33%	0.11%	0.47%	0.27%	0.08%	0.08%	0.04%	0.21%	0.39%
15	0.63%	0.60%	0.02%	0.12%	0.27%	0.40%	0.21%	0.33%	0.11%	0.13%	0.15%	0.18%

Monitoring dashboard

This mimics the top-level dashboard for each ASPSP, used by the Monitoring Function, but similar could be shared with individual ASPSPs if required. This would be the top level of a much more interactive toolset, allowing drill-down into individual brands or performance metrics as necessary.



TPP dashboards

Additionally, a dashboard will be developed for each TPP that participates in monthly delivery of data. This will allow TPPs to understand and benchmark their own data against peers to ascertain if an issue with any ASPSP is one unique to them or common across the ecosystem.

Appendix: Expected delivery timelines

Category	Description	Jul	Aug	Sep	Oct	Nov	Dec	Jan '24	Feb '24	Mar 24	April '24	May '24	June '24	H2 204
OBL JROC activity	Finalise framework and data metrics													
	Phase 0 assessment													
	Build any requirements to collect Phase 1 data*													
	Monthly data collection and analysis (from Jan 24)													
	Phase 3 platform build (pending Future Entity)													
	First Phase 2 data collection and analysis													
Participant activity (ASPSP and TPP)	Phase 1 data build (ready by Jan 2024)													
	Finalise first Phase 1 submission													
	Phase 2 data build	Participants may wish to run this in parallel with Phase 1												
	Finalise first Phase 2 submission													
	Phase 3 data build (pending Future Entity)													

* Including data sharing agreements as required

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