

MARKET OPERATOR SERVICES LIMITED (“MOSL” OR THE “COMPANY”)

Minutes of a meeting of the Technology Advisory Group to MOSL (the “TAG”) held by videoconference on 24 June 2021 at 1:00pm

Present:	John Davies (JD)	MOSL CIO and TAG Chair
	John Ellis (JE)	Wessex/ Water2Business
	Quentin Gallagher (QG)	Portsmouth Water
	Dhiraj Sood (DS)	South East Water
	Nathan Morgan (NM)	Waterscan
	Laura Allen (LA)	Business Stream
	Leila Smith (LS)	Severn Trent
	Amy Duffield (AD)	Wave
	Wesley Thomas (WT)	Anglian Water
	Joe Stepney (JS)	Thames Water
	Sean Brookfield (SB)	Waterplus
In attendance:	Andrew Johnson (AJ)	Company Secretary and General Counsel
	John Briggs (JB)	Chief Technology Officer
	Miles Robinson (MR)	Implementation Manager
	Luke Austin (LA)	Data Strategy and Governance Lead
	Liz D’Arcy (LD)	Head of Data Insight
	Ricardo Wissmann-Alves (RWA)	Head of IT Operations & Cyber
	Subhash Marti (SMA)	Lead Business Intelligence Analyst
	Katherine Moore (KM)	Data Engineer/Architect
Apologies:	Jacob Tompkins (JT)	Water Retail Company
	Darren Thresh (DT)	Yorkshire Water
	David Halliday (DH)	Business Stream
	Paul Williams (PW)	Everflow
	Paul Tate (PT)	Waterlevel
	Stuart Reid (SR)	Castle Water
	Stuart Mercer (SM)	Southern Water
	Matt Bennett (MB)	NWG

1 Introductions and Welcome

- 1.1 JD introduced the meeting and welcomed the members to this, the fourth TAG meeting.
- 1.2 JD summarised the agenda. This included a focus in the first half of the meeting on data insights and analytics, including the work on the new data analytics platform.
- 1.3 The second half of the meeting would include an update on Bilaterals, and some asks of the TAG members on implementation and future release management, finishing the meeting with a discussion on strategic metering, with input from TAG members on their technology programmes to support the availability of accurate and timely consumption data.

2 Data Insight and Analytics

Technology Improvement

- 2.1 KM introduced the data analytics platform which was a step on the road towards one of MOSL's business plan improvement programmes – delivering improved market data insight. The plan

included providing access to rich analytical tools, developing a modern data warehouse and enabling improved self-service reporting.

- 2.2 KM outlined the challenge of disparate data sources and non-standardised data which was slow to query. The solution had been to consolidate and standardise data into a data warehouse and then write to a data analytics platform for querying.
- 2.3 Phase 2 of this work commenced in March 2021. This had to overcome the problems posed by backdated transactions (and CMOS's bitemporal state model) which created a different status, for example on occupancy status, between the reporting period and the status as of 'Today'. The data analytics platform refresh had inconsistent timings, and no precedent for use of 'As At Dates'.
- 2.4 KM and SMa explained how this had been overcome through redesigning the tables, with new views as at Today and as at Month End, with new functions to identify the correct version for any data, and the implementation of Synapse as the Data Warehouse in place of the Data Analytics platform. Synapse could be queried directly.
- 2.5 Further steps includes reducing the data refresh time down to just two hours, with data appended daily using an 'upsert'¹. PowerBI also improved performance.
- 2.6 The next steps were outlined, which included Bilaterals' reporting developments and opportunities such as self-service, further dashboard development, retirement of the Jaspersoft reports and proof of concepts for OLAP cube, analytic services and machine learning.
- 2.7 JD summarised the work as a massive step forward. Removing Jaspersoft in particular would create a significant cost saving opportunity.
- 2.8 JE questioned the data sources and the funding. The data source was primarily CMOS, but with some external enrichment, and all the work so far had been funded from the Member approved MOSL budget in line with the Business Plan. The TAG members highlighted the importance of ensuring that any data sharing was properly managed and controlled, including data sharing agreements as applicable.

Analysis and Insight

- 2.9 LD moved the discussion onto the analysis and insight work, which was the key to understanding the issues, such as water efficiency measures. The discussion would include seeking TAG members' views on their priorities.
- 2.10 There had been low levels of meter reads due to the pandemic, however, the programme aimed to deliver via data enrichment, segmentation and visualisation, to support better data for water efficiency, data insight and the strategic metering review. LD had broken down the data insight challenges into four areas: consumption, context, carbon and customer.
- 2.11 Accurate meter readings were essential to the best view of consumption. The context of the data included the geographic variations and MOSL was therefore working with the Environment Agency and other organisations and groups on contextual data. Linking consumption to carbon emissions could create a fresh perspective on water usage. Finally, the customer was key, to work with customer bodies such as DfE, to produce water usage trends by customer.

¹ An upsert is an operation that inserts rows into a database table if they do not already exist, or updates them if they do

- 2.12 LD explained how MOSL was utilising the Azure analytics platform to create new PowerBI reports for Trading Parties to access via the MOSL portal. This would allow a move away from static reports which had to be copied to/from Sharepoint. The new metering dashboard would be launched in early July, followed by a water efficiency dashboard, showing consumption by water resource area.
- 2.13 TAG members complimented MOSL on the much-improved reports; the new dashboards were proving very useful. In terms of priorities, the carbon and water efficiency data was probably lower priority, given the current economic climate, however, some TAG members suggested the consumption data could be used to promote water efficiency initiatives. When new dashboards were being considered, it was recommended that MOSL consult with Trading Parties, some of whom may have similar reports already developed in-house. It was also suggested more could be done to increase awareness of the dashboards.
- 2.14 Several TAG members expressed interest in having access to the underlying data behind the dashboards. Access via an API, for example, would allow Trading Parties to access and download the data and work with it internally, including enriching it.
- 2.15 The TAG members discussed the metering dashboard, noting that there was division level SIC data for 70% of SPIDS. There was recognition of moving beyond this in terms of segmentation and also uniquely identifying premises. LA explained the focus was on UPRN and VOA for premises, although GIS was also important. Much of this data was owned by wholesalers and there was considerable legacy data from market opening that was in need of updating. This discussion served as a useful segue into data quality issues.

Data Quality

- 2.16 LA gave an update on the core market data improvement programme. There has been steady progress on UPRN completeness, with an increase of 10% over the last six months, although many wholesalers remained far below the target level of 80% UPRN completeness. Unfortunately, there had been no real improvement in VOA completion over the same period. Wholesalers were prioritising UPRN. QG raised the issue of the limited licence from VOA to access the local authority VOA reference. **(ACTION: JD/AJ - this would be discussed offline with MOSL who were also looking into the licence issues – 23 September 2021)**
- 2.17 There had also been little progress against GIS issues, and it was speculated that this might also have been because of the focus on UPRN completeness. There had been a steady increase in GIS coordinates flagged as being identical to UPRN or postcode coordinates. LD explained that the dashboards enabled Trading Parties to view the detail of the GIS issues and the underlying data could also now be downloaded.
- 2.18 The challenges of poor data quality were discussed alongside the work on centrally reviewing and cleansing poor quality data. Feedback from retailers had generally been that they did not wish to compete on data quality. The most conservative estimate of the cost of poor data quality to the market was £10m per annum and this did not cover the cost of lost opportunities. It was also recognised that Trading Parties continued to be challenged in terms of resources for their market obligations and the affordability of their separate work to improve data quality.

Q&A

- 2.19 The TAG members demonstrated support for and discussed the potential of a centralised platform which would permit Trading Parties to share data easily. It would make sense to canvass them as to which data sources would be the priority.

2.20 JD questioned if there was appetite to 'open-up' CMOS to allow wholesaler owned data field updates to be input, other than just by wholesalers, and then for wholesalers to have the option to accept these updates. There was some nervousness amongst TAG members about this, but they would gain some comfort if the rules could be clearly articulated in the MAC. Ideally some form of trial of the process, to gauge uptake, would be helpful.

2.21 It was broadly agreed amongst the TAG members present that there were many circular benefits from more widely sharing data, including retailer benefits such as more easily facilitated meter reads. There would need to be careful thought given to the arrangements for sharing data – not all of which was market data, as some had been obtained unilaterally by Trading Parties, sometimes incurring cost.

3 Bilaterals

3.1 MR introduced the section with an update on the implementation dashboard. Checkpoint 3(A) was nearing completion for all Trading Parties, with 3(B), on assurance testing, due for completion by 30 July 2021. Meter verification (the C1 process) would be ready in pre-production in mid-August with cutover to live and mandatory adoption from 22 September.

3.2 The web portal would be opened for access from 5 July, but MOSL would try and stagger the access. Checkpoint 3(B) would cover, in assurance testing, 71% of the total HVI test transactions, with the LVI scenarios ensuring users could login and carry out basic tasks in the Bilaterals Hub. Pre-production would use MOSL partner accounts, with CMOS accounts for production support and production.

3.3 JB gave a delivery and UAT update. The development, test, UAT and assurance environments were now all built, with production underway. There would be a new tenant for the production environment, which would use CMOS accounts via Active Directory. For ease of deployment, the infrastructure was being deployed as infrastructure-as-code using Terraform.

3.4 In terms of outstanding activities, this included supply point transfers, OPS, load testing, penetration testing (following best practice review) and disaster recovery testing.

3.5 Testing was to be using a 'shift-left' approach, i.e., test early and often. Selenium was being utilised for test automation in both HVI and LVI. Testing was now at sprint 23 and included 35 test scenarios for LVI. For HVI JB explained the key reasons for any testcase failures.

3.6 JB sought input from the TAG members on future release management. MOSL was currently working, under the Agile methodology, to two-week sprints. Some Trading Parties had given feedback that regular releases were impacting upon their resources, by having to keep their teams on standby. As such, JB asked for views on how often TAG members would like releases into pre-production and the period of time required from the release to pre-production through to when a release became mandatory in production. He reminded them that, currently, in CMOS, six months' notice was provided, with technical documents, and a period of a month for testing before release into production.

3.7 There was mixed feedback on the preferred process for future release management. Several TAG members used third parties, and would need to defer to them, for their preference. One TAG member expressed a preference for releases to be made available as soon as possible, but with at least a month to prepare for release into production. Another agreed with a month (two weeks

to build and two to test). Another suggested three months might be necessary as they would need to time to plan in advance.

- 3.8 JB thanked the TAG members for their feedback. He appreciated any further views including those from third parties and would investigate if an additional environment may be needed to manage the different appetites for future release management. **(ACTION: JB - 23 September 2021)**

4 Discussion to agree 23 September agenda and AOB

- 4.1 JD opened up the discussion on the agenda for the next meeting on 23 September. He proposed that this might focus on the work of the strategic metering review, in the form of a workshop to understand what work was already happening via Trading Parties, and also to facilitate contributions from meter technology companies.
- 4.2 Various TAG members expressed their support for getting smart meters rolled out into the market and of the need for agreed standards, for APIs and infrastructure. The meter technology itself could be independent, provided there were agreed standards for these to comply with. Ownership of meters was a further point of contention between Trading Parties that needed addressing.
- 4.3 JD would reach out to TAG members, via Martin Hall, MOSL's Market Improvement Lead for Metering Strategy. **(ACTION: JD – 23 September 2021)**

5 Close

- 5.1 There being no further business, JD thanked the TAG members for their time and their interest, and declared the meeting closed at 4.00pm.

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Chairman- Technology Advisory Group

Glossary

API: Application Programming Interface

AMR: Automatic Meter Reading

AWS – Amazon Web Services

CMOS – Central Market Operating System

GIS – Geographic Information System

HVI – High volume interface

LVI – Low volume interface

MAC – Market Arrangements Code

Members -The Trading Parties who are party to the MAC

MVI – Medium volume interface

NHH – Non-Household

OPS – Operational Performance Standards

Power BI – a business analytics service by Microsoft

UI – User Interface

Vacants – NHH premises reported as vacant on CMOS

VM – Virtual Machines

VOA – Valuation Office Agency references

Scrum – an Agile methodology

Settlement – the wholesaler/ retailer charging process operated under CMOS

SIC – Standard Industry Classification

SPIDs - Supply Point Identification number

TAG – Technology Advisory Group

UPRN - Unique Property Reference Numb

XSD - XML Schema Definition