ELEXON

Issue Report

Issue 95 'Assessing the continued use of TIBCO service as a source of data for market participants'

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About This Document

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- Have 5 mins? Read section 1
- Have 15 mins? Read sections 1 and 4
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- *You can find the definitions of the terms and acronyms used in this document in the BSC Glossary*

This document is the Issue 95 Group's Report to the BSC Panel. Elexon will table this report at the Panel's meeting on 12 January 2023.

There are three parts to this document:

- This is the main document. It provides details of the Issue Group's discussions and proposed solutions to the highlighted issue and contains details of the Workgroup's membership.
- Attachment A contains the Issue 95 Proposal Form
- Attachment B contains the Issue 95 Options Paper

1. Summary

Background

Elexon is modernising its technology and building a cloud based solution for BSC Agent systems as part of Elexon Kinnect. The initial focus has been on three BSC Agents:

- Central Registration Agent (CRA);
- Settlement Administration Agent (SAA); and
- the Balancing Mechanism Reporting Agent (BMRA) which operates the Balancing Mechanism Reporting Service (BMRS).

The Kinnect Insights Solution is being implemented to replace the BMRS and over the next 18 months it will continue to migrate data across to the new platform. The Insights Solution will provide three endpoints for accessing data: a website for interactive users, RESTful APIs and a real-time data subscription service, referred to as Insights Realtime Information Service (IRIS).

What is TIBCO?

The TIBCO software provides the mechanism for automated publication of BMRA data.

What is the Issue?

Elexon's data strategy is to unify data structures across all its endpoints and ease onboarding for all our users through open source protocols, avoiding proprietary licensed software to reduce both central and BSC Parties cost.

While Elexon has continued to maintain TIBCO for the current subscribers, the service can no longer be sustained efficiently and economically .The current TIBCO set-up is based upon "on premise" communications hardware and is not readily supported by cloud based architecture, therefore it would add significant complexity to migrate this to Kinnect in its current form. In addition to this, the legacy architecture will run out of support unless a significant technical upgrade is carried out. As such, there is no zero-change option.

The current TIBCO service is built on legacy systems and provides BMRS data close to real-time. Customers receiving TIBCO data require both a High Grade line and a TIBCO license. These requirements have long been recognised as a potential barrier for new entrants, particularly the lead time, costs and bandwidth restrictions of the High Grade line. Since 2014, the current BMRS has offered a Data Push Service (DPS) as a cost effective alternative to TIBCO and consequentially there have been no new TIBCO subscriptions since this date. The overall number of TIBCO users has also decreased by over 50%, leaving around 20 organisations with active subscriptions.

While Elexon has continued to maintain TIBCO for the current subscribers, the service can no longer be sustained efficiently and economically (further detail in section 2). The current TIBCO set-up is based upon "on premise" communications hardware and is not readily supported by cloud based architecture, therefore it would add significant complexity to migrate this to Kinnect in its current form. In addition to this, the legacy architecture will run out of support unless a significant technical upgrade is carried out.

Recognising the effort in maintaining current implementation and the Elexon drive to optimise costs for industry with a cloud based architecture, Issue 95 'Assessing the

What are RESTful APIs?

A RESTful API is an interface that two computer systems use to exchange information securely over the internet.

continued use of TIBCO service as a source of data for market participants'[1] was raised to assess the continued use of TIBCO and High Grade requirements for BMRS data.

Conclusions

The Issue 95 group agree that a BSC Modification should be raised to explore removal of the obligations to provide BMRA data via the High Grade line in the BSC.

2. Background

What's the issue?

Elexon raised Issue 95 on 17 June 2021 to establish the future of the TIBCO messaging service with the migration of BMRS as part of Elexon's transformation programme. Therefore, this Issue impacts all current users of TIBCO.

The Balancing Mechanism Reporting Service (BMRS) was implemented after New Electricity Trading Arrangements (NETA) go live in 2001 to provide the GB electricity industry with operational data relating to the Balancing and Settlement Arrangements. Since inception, the Balancing and Settlement Code (BSC) has made provision for publication of BMRS data to participants via multiple methods including a High Grade leased line as well as the public internet (Low Grade Service). When using the High Grade line, BMRS users can subscribe to a licensed software product, TIBCO Rendezvous, which provides a mechanism to publish BMRS data.

Elexon is building a new Solution for BMRS and needs to understand views from BSC Parties to improve value with regards to data publications. As part of this modernisation of systems and processes, Elexon believes it is now important to re-examine the requirements of BSC Parties and BMRS users in relation to the longevity and current implementation of the BSC obligations with respect to TIBCO.

The following issues with continued TIBCO usage have been identified:

- The current implementation (e.g. file formats, publication and outage recovery) do not align with current data best practices e.g data structure.
- The ongoing operational support costs including maintenance is paid by BSC Parties collectively through Elexon's operational costs yet the service is used by only a few participants.
- The BMRS already provides RESTful APIs and the DPS, which since 2014 have resulted in a significant reduction in the number of TIBCO licenses.
- The BSC should be technology agnostic and avoid requirements for the use of specific vendors or software providers within its obligations.
- The operating system currently underpinning TIBCO is incompatible with the latest version of TIBCO and needs a significant upgrade.

Due to the high licensing costs and network requirements of the TIBCO software, it was seen as a barrier to entry for some participants and in 2013 Elexon engaged users to seek

[1] https://www.elexon.co.uk/smg-issue/issue-95/

their views[2]. While existing High Grade users concluded that TIBCO should remain, Elexon developed an alternative offering, the Data Push Service (DPS) to provide an alternative to TIBCO.

The DPS provides the same content as the TIBCO service but in the form of XML messages delivered over the public internet using open source technology. Users can integrate DPS into their systems using a variety of well-supported protocols and programming languages.

In 2020, the user base of the DPS surpassed that of the TIBCO service threefold and has continued to grow. There are now approximately 120 active DPS subscribers and a number of long-established industry participants are now benefiting from this open and cost effective solution for real-time data publication.

In the Issue 95 Proposal Form, Elexon suggested that the following questions form a 'terms of reference' for the Issue Group to aid the flow of discussion.

- How is TIBCO currently used by market participants and to what extent?
- What would the implications of discontinuing TIBCO be?
- What would the implications of continuing to use TIBCO be? Are there any associated opportunity costs to its continued support?
- Is there merit in supporting a High Grade service in the future?
- If deemed appropriate, what would be the best approach to phase out TIBCO service?

The BMRS Change Board (BCB) endorsed the progression of this Issue at their meeting on 23 March 2021.

[2] https://www.elexon.co.uk/wp-content/uploads/2013/12/221_13_Delivering_a_modern_Balancing_Mechanism_Reporting_Service_v1.0.pdf

3. Issue Group's Discussions

Issue 95 Workgroup meetings were held on 16 February 2022 and 30 November 2022. In between the 1st and 2nd meetings, Elexon developed the Issue 95 Options Paper which captured feedback and developed a series of options for the future of TIBCO for the group to consider, providing greater detail on their costs, impacts and implications for the future. The Options Paper can be found in full detail in Attachment B.

Issue 95 Terms of Reference Discussions

1. Overview of TIBCO messaging service and discussion of background to Issue 95

In order to better understand how these requirements are laid out in the BSC and how that could interact with development of eventual solutions, Elexon explained that Section V 'Reporting' sets out high-level obligations in the BSC, with further requirements for the High Grade Service in the Communications Requirements document. Elexon highlighted that TIBCO is a software vendor but is named specifically in the BSC, raising the question of whether the Code should be more technology agnostic to avoid dependence on specific technologies in the future.

The Issue group noted TIBCO has not evolved greatly since inception 20 years ago, is limited in the service it provides and that Elexon developed an alternative offering, the Data Push Service (DPS), to provide an alternative to TIBCO. The DPS provides the same content as the TIBCO service but in the form of Extensible Markup Language (XML) messages delivered over the public internet using open source technology. In 2020, the user base of the DPS surpassed that of the TIBCO service threefold and has continued to grow.

The legacy state of TIBCO is no longer compatible with the new Insights Solution and Elexon clarified that, due to existing infrastructure running out of support, there is no 'zero change' option for industry. In the case that market participants still desire TIBCO in as close to its current format as possible, newer version of TIBCO would need to be installed on to the new operating system, ported from legacy systems, leading to impacts and considerable costs for users regardless of the appetite for change. Having noted these circumstances, Elexon raised Issue 95 to explore user's appetite for change and consider best practices for data standards in considering modern solutions for the future of TIBCO.

Elexon recognise the importance of trying to get data across efficiently and deliver trusted BMRS data to customers' trading functions as fast as possible. Elexon also wished to highlight the central support costs associated with maintaining TIBCO and potentially porting it to a new system.

Issue group members recognised Elexon's difficult position regarding the modernisation of its systems, in that it needs to keep everything running smoothly for existing users while also wanting to flexible and accessible for new participants. A key consideration for Elexon is that all aforementioned mentioned services are funded by industry, classed as central system costs, with costs mutualised via across the industry. As things stand, modernisation costs for TIBCO would be in part paid by non-TIBCO users.

One member challenged Elexon that the approach described in the Issue 95 Proposal Form seemed to suggest a predetermined outcome to decommission TIBCO, rather than an equal handling of the neutral impact assessment of each option. Elexon responded that it was not the case that a predetermined outcome had been developed. The Issue 95 group had been

raised by Elexon because, while Elexon have an initial view on what might be best in long term interests of the industry, Elexon need to verify whether this is correct and what the industry appetite for change might be. It is no secret that Elexon is rebuilding the Balancing Mechanism Reporting Service (BMRS) and while it is migrating to a new platform there will be a large cost to implementing TIBCO on the new platform, so there will be an impact on industry in every eventuality. The outcome of Issue 95 will be taken extremely seriously and Elexon highlighted the extra effort it had gone to get the maximum number of TIBCO users to participate in these discussions ahead of any BSC Modification being raised.

2. How is TIBCO currently used by market participants and to what extent?

Elexon sought feedback from group members on how BMRS data via TIBCO feeds into their organisations' commercial decision-making systems, looking to understand the features and characteristics that lead some market participants to pay a premium for it.

It was noted that the TIBCO subscriber count is declining, but understanding its value for existing users would help to assess whether to install a ported TIBCO on the cloud or whether to make any changes based on industry appetite and feedback from Issue 95.

Elexon also noted the important distinction to be made in separating the requirements for Elexon to send (and industry participants to receive) real time data from the current implementation of TIBCO.

Feedback clarified that TIBCO is currently used by market participants to access real time data linked to changes in the UK industry that allows users to react to these changes.

Additionally, some users use BMRA Data Archive and DPS information to supplement TIBCO Relay and provide a failsafe for outages or other gaps in data to increase resilience and create redundancy. One member stated that they currently use BMRA Data Archive because DPS inherited the same flat file format and, for them, any transition away from TIBCO would need to address the Archive. Ideally, this member would want the Archive in a similar sort of form as is currently offered. This member described wanting all forms and sources of data as possible, as it all has some value across the business due to a diverse customer base of traders, risk analysts and others who all have differing requirements. The members acknowledged that this specific usage had been borne from their experience and stated that increased transparency around these issues with TIBCO and configurations would be useful for new entrants.

A member who is a current user of TIBCO described their experience that, since implementing TIBCO about 10 years ago, they had found it to be robust and stable, with issues limited to the physical line rather than the software. However, they would be open to a new method, if that method is as fast and stable as TIBCO.

The same member reported that they have less problems with TIBCO than they do with DPS and that, while they understood that TIBCO is expensive and can be difficult to implement they would prefer to keep TIBCO until we get something more reliable than it.

Elexon clarified that the DPS is actively monitored, managed and had been recently upgraded, but that full re-architecture would not be possible due to stability issues so improvements were currently limited to 'quick wins'. Elexon send circulars to industry when DPS is down, but asked the group whether there was anything else they would like Elexon to do to better support industry. Increased transparency was highlighted, with members noting that the kind of frank and open discussion demonstrated under Issue 95 offered benefits when compared to just adding detail to the BMRS API and Data Push User Guide document.

Interaction with XML data was highlighted as a common source of problems on the current platform and Elexon agreed, noting that this would be a key area to address with the new

platform, closing the gap between raw data received from TIBCO to the transformed data received via the API.

One member recalled some examples of where TIBCO had been slower than DPS and agreed to try and find these to share with Elexon and the Issue group.

Respondents highlighted how they still consider TIBCO to be 'fit for purpose', acknowledging that the license fee and implementation costs do represent a potential barrier to entry for new participants but describing this as a largely one-off installation cost (with a small TIBCO support fee) that pays for itself.

Respondents also highlighted the importance of speed and reliability in any future solutions. Issue Group members reported that parties want information as fast as possible, and need a reliable service that pushes data to them, so that their internal systems can read the information and use it to populate systems used for commercial decision-making.

Ultimately, the group agree that a business case for making any change to the TIBCO system must take into account both short and long term costs for industry and Elexon alongside factoring in guarantees on the continued (but ideally improved) stability and speed. It was agreed that the push of data, the speed of data and the reliability of that service are key considerations that would need to be justified for the viability of any future solutions.

3. What would the implications of discontinuing TIBCO be?

Subject to there being a solution that meets requirements on speed, reliability, availability and push of data, Elexon sought feedback on what the implications of discontinuing TIBCO would be.

Feedback highlighted the importance of ensuring a method of providing data that is as resilient and as fast as current methods, in order to allow swift decision making to take place.

Several comments emphasised the need for any alternative to provide access to past messages in TIBCO's consistent format, describing their organisation's dependencies on the BMRA Data Archive.

Elexon reaffirmed to the group that, should TIBCO be discontinued, an alternative to DPS without the identified stability issues would be developed and made available.

Highlighting the complexity of the data involved, one member described the idea of replacing TIBCO with APIs as likely to be very complicated, as the volume of information passed back and forth, 'chatter', related to API requested data will be significant.

Members emphasised the importance of establishing the size of any potential change and likely implementation timeframes, as maintaining the overall business service for organisations currently using TIBCO should be a key consideration.

Elexon agreed, noting it is important to understand the potential cost of initial implementation and ongoing costs, but also the scope of potential savings for parties. Over the last 2 years, minor upgrades to TIBCO had cost BSC Parties 70K (admittedly not a huge cost once mutualised) but any upgrade of TIBCO onto the new operating system would cost much, much more due to the complexity of resolving compatibility issues between the two architectures.

Members described various impacts associated with the potential need to migrate to a new solution. One member described a likely impact of 12 months to code a replacement interface and then a significant period of parallel running to gain confidence in an

alternative. Another member described several magnitudes of impact depending on the size of change: a repoint of the source data that would be relatively low impact if the data structure and content are maintained, a new ingestion capability if the data content is the same but structure is different, or a re-write of ingestion, data repositories and 20 years of built up models if the data structures fundamentally change.

Of course, any change resulting from decommissioning of TIBCO would also incur costs for its current users. One member estimated a cost of between £200-300K to move to a new system, and noted that were this cost to be multiplied by the number of current TIBCO users (believed to be around 20), then that could affect the benefits case for this approach. Members stressed that it would create a need to reengineer downstream systems (beyond just TIBCO) that could increase costs further and Elexon agreed, noting that TIBCO was implemented 20 years ago and is embedded in customers' systems, so any assessment must take this into account and avoid naïve assumptions about the simplicity of such a task.

On the subject of data formats, respondents were mixed on the use of a flat file structure versus an API. One member stated their preference for a flat file structure, describing it programmatically more reassuring (and easier to iterate over) to implement against than an API which would have to be continually and frequently called in order to have confidence that all historic data is collected. This member was in favour of the flat file approach, currently used by both European Network of Transmission System Operators for Electricity (ENTSO-E) and Elexon, as a 'single source of truth' that users can select desired data from.

Another member echoed these sentiments, arguing that flat files are easier to handle and manage than APIs, which require a greater degree of usage (having to run thousands of messages which takes time) versus a flat file which provides stability and integrity to capture in a resilient and robust way. It was also noted that replacing TIBCO with APIs would be complicated, due to the complicated data relating to the energy industry. It was noted that the current APIs do not allow users to choose the time, just the date, so querying intraday creates a massive data set and extra load for BMRS. Elexon responded to this point to state that in next iteration of its Insight solution, APIs have much more flexibility in terms of publish time (e.g. for demand forecast) and new APIs allow querying by publish time.

One member stated how useful they find BMRA Data Archive to be as a level of redundancy that, if all else fails (in case the network fails) allows access to crucial information and how Elexon would face resistance to ceasing this service, due to it being useful in the processing of data. Elexon explained that, should TIBCO be discontinued, a similar but more modern service would be offered but that it would be unlikely be BMRA Data Archive in its current form, pointing out that the Archive has gaps in the information it provides (e.g. important REMIT messages) so there would be an opportunity to fill in these gaps via a new system. The archive had been put in place to get around limitations in the TIBCO recovery of data, but as it evolved organisations use it for other things (which is important to recognise). Elexon questioned how user friendly, accessible and transparent it is for new entrants to the market to make sense of the BMRA Data Archive, stating that is can be quite hostile and difficult to understand for new users. This was generally noted, but a member emphasised that if TIBCO is discontinued and a new solution put in place, it would provide comfort and reassurance to know that BMRA Data Archive is still running in the background to provide an ultimate failsafe and level of redundancy.

It was also noted that the reputational damage to Elexon of discontinuing TIBCO and replacing it with a less robust solution would be significant.

4. What would the implications of continuing to use TIBCO be?

Elexon sought feedback on what the implications of continuing TIBCO (i.e. porting TIBCO over to the new architecture) would be, encouraging members to consider the challenges offered by new data coming in, the prevalence of more complex structures and concerns around bandwidth limitation.

One piece of feedback stated that this member's organisation only rely on the BMRA Data Archive and are happy that TIBCO shares the message content with the DPS solution. If this format changes, this organisation would need to spend time adapting. Elexon responded that the content is the same but format is different. The DPS XML payload is like other XML files and, if you were to have that same file accessible in XML format, Elexon posited that that this would be better than retrieving the raw file and trying to convert it back to XML or another format. Elexon challenged members to consider that an archive from the DPS solution is better for industry. The member who had left this feedback responded that their belief is that they rely on the Archive but get the messages in the TIBCO formats, which then matches what they get via the push API. They found this to be quite convenient, so adapting to a different format than the archive is perfectly possible but would need work to adapt and test the new formats within their systems.

Another piece of feedback highlighted that from the perspective of a user, TIBCO incurs very little additional costs once up and running. Adding a new message structure, whether in TIBCO, BMRS DPS format or a new format is similar in terms of operational cost as the main costs are incurred in the downstream business.

One member stated that TIBCO meets their organisation's current needs very well. They do not have a bandwidth issue and therefore they saw value in new data flows to be made available via TIBCO as well. This member stated that this would keep "Industry Integration" in a single place.

Another member noted that licensing costs associated with TIBCO can be significant for smaller players in the market at £118.5k.

Elexon noted a gradual decline in subscribers who are increasingly switching to new methods and that further Industry costs would be incurred by either maintaining TIBCO or moving TIBCO over to the new platform.

Elexon thanked the group for their feedback, noting that on principle industry money is used to maintain TIBCO so these kind of discussions are incredible valuable to help clarify what is of value to industry.

In the 2nd Meeting Elexon revisited these challenges, confirming with the group that the issues with the current set-up are:

- On-premise infrastructure is inefficient and costly to maintain
- The requirement for a high-grade line presents a barrier to new users
- It is unscalable - restricting new data being added to the platform
- It suffers unplanned outages - industry need something more reliable
- It requires customer licences, leading to more costs for users
- The data structures are inconsistent with Data Push and API, and this should be simplified

5. Are there merits in supporting a High Grade service in the future?

Elexon clarified that TIBCO is just the software, whereas High Grade is a service for interested parties to receive a dedicated physical line to receive BMRS data among other things. Given the distinction between the two, Elexon wished to better understand how industry uses the High Grade service and whether it should be considered under the scope of Issue 95.

Elexon also clarified that TIBCO Archive is only over the Low Grade option, as this is via the Elexon Portal.

Elexon noted that there are many options but because this concerns public data, it would be wise not to overcomplicate the solution and it would be a question of scope whether to consider the future of the High Grade Line or whether to avoid looking at any changes to this particular service.

In the hypothetical absence of a High Grade line, Elexon challenged the group to consider whether it would be practical to send DPS messages over something like a VPN to give a degree of security and protected bandwidth (The High Grade bandwidth is limited compared to broadband). Under a potential alternative method, counterparties could use a VPN connection to central systems that would provide a greater degree of protection, security and bandwidth for DPS messages, as opposed to regular, public internet that may have traffic limitations.

Feedback from group members clarified how the High Grade service is currently used, in that it is used to carry TIBCO Messages and Data Flows from Elexon Agents to BSC Parties if they opt to use the High Grade line.

It was noted that the cost of High Grade is not insignificant (£6k per annum) so if TIBCO can be pushed over public internet then this would offer cost savings. Several members noted cost savings associated with decommissioning of the High Grade service, saving this annual 6K, plus the install cost. It was noted that parties would still have to pay the TIBCO Rendezvous license (about £15-16K per core) but view this as a one off cost with roughly £500 per year in support costs. A member noted the large upfront cost for the High Grade line but argued that this has paid for itself in terms of reliability and its combination set up with TIBCO Push had proved very useful for them by providing redundancy so that, in case one service fails over, they would experience no reduction of service for users.

The BMRS data received over a High Grade line is public so some members were ambivalent to the specifics on the basis that there is resilience in whatever method is chosen as an alternative method to TIBCO High Grade. One member suggested that users could, potentially, use a VPN connection to Elexon and then have an SFTP endpoint secured with keys which the Elexon high grade service can push to. Elexon presented an option that goes even further: using an API with different security mechanisms on top of that. One member stated that some organisations trade on Nordpool EPEX exchanges on public internet, and that underlying messaging protocols use (Apache AMQ) and secure this with client side certificates over public internet with end-to-ends fully encrypted.

A member responded that the use of FTP is more the issue, as malicious actors without file access are able to put in rogue files and cause difficulty should they choose to do so.

One member reported that their cyber security teams like the fact that Energy Contract Volume Notification Agent (ECVNA) activity is down a private line and stated that any change would have to be fully impacted, but that the cyber team would be unlikely to accept the FTP protocols that we use for High Grade line over public internet – in fact it would probably be strongly resisted. The member stated that because of this they couldn't imagine a quick alternative to the status quo for big players, and that couldn't see the High Grade line being decommissioned without significant change to ECVNA. Elexon agreed with this ECVNA impact, noting this would present a host of challenges and implications but emphasising that it is good to capture the discussions around this point as Elexon be looking at redeveloping ECVNA within the next couple of years and these requirements and discussions gleaned from Issue 95 will be useful, with comments from the group to be fed through to this workstream.

Regarding bandwidth limitations with the High Grade line, a member found it reassuring to know the capacity received versus public internet that can be affecting by competing with other internet traffic and subject to dips during times of peak usage. Another member described their preference with real-time data being sent over assured transport methods.

Elexon clarified their intention in looking at all options via Issue 95 and stated that it was clear that the High Grade service should not be altered or interfered with, on the basis that is embedded in central systems and other Elexon data. However, Elexon wished to understand whether, if porting TIBCO over to the new platform, decoupling TIBCO from the High Grade service would be viable and whether sending BMRA data over the internet (Low Grade service) would be acceptable.

Whether receiving public data over High Grade or Low Data, a member responded that this wouldn't matter as long as it featured security to stop miscellaneous, misleading data coming through that would send their traders off in the wrong direction.

Given the feedback expressed during the meeting, Elexon noted that this reaffirmed the need to build an extremely reliable next generation of DPS, which will happen regardless of outcomes for TIBCO. Members offered additional feedback, stating that some redundancy would be useful, for example using multiple pipes to reduce points of failure in case one falls over. Elexon responded that it will aim to incorporate multiple instances for new DPS to build in redundancy to the system.

A member noted that for companies which engage with BM trading, the availability of BM data is critical to operations. Therefore this member would be unhappy to go forward if BM data is only made available via public internet as this data is critical to trading and shouldn't be at risk from cyber-attack or denial of service attacks. Noting that BM data secures a balanced system and that BM feedback is vital to BM trading, the member pointed out that delivery of a balanced system would be at risk if availability was also at risk, so availability of BM data should be guaranteed.

At the close of this discussion, having considered the spectrum of services, from TIBCO High Grade to Low Grade, Elexon reaffirmed that High Grade service will not be subject to any scope for change for the reasons given. It was recognised that the High Grade service isn't for every provider and can be a barrier for the smaller counterparties, so scaled alternatives are valid however there isn't a one size fits all option to take forward at this stage. At the point that the data is fully transformed to allow the alternatives described by group members these discussions can be revisited, and feedback from Issue 95 can be fed through to considering High Grade beyond just the BMRA obligations.

6. If deemed appropriate, what would be the best approach to phase out TIBCO service?

Elexon asked for member feedback on what would it require to be deemed appropriate to decommission TIBCO, but also what timescales industry would require and other considerations for potentially phasing this service out.

In general, themes of appropriate notice, parallel testing and crossover periods resonated throughout the comments received.

Members wished for an archive facility to be provided and sufficient time allowed to test in parallel.

A member highlighted the need to ensure there is a reliable replacement then allow sufficient time for organisations to make the transition to the new system. This was described as a number of years, highlighting that Elexon will have to build the replacement, be open with the industry about its performance (regarding uptimes and availability), give organisations time to implement a solution and also allow sufficient time for users to get comfortable with the new system.

Issue group discussions on the Issue 95 Options Paper

Following feedback on the Issue 95 Terms of Reference, Elexon produced an Options Paper document for the group that described and expanded on the various options for the future of TIBCO. The Options Paper document can be found as Attachment B to this paper.

Option 1 - Raise a BSC modification to remove obligations to provide BMRS data via the High Grade line using TIBCO

This involves removing obligations for Elexon to provide BMRS data via the High Grade service using TIBCO. This will explicitly uncouple BMRS from 'Grades of Service' from BSC Section V, URS and BMRS Service Description, This will not affect provision of other central system data via the High Grade service, only BMRS.

This Modification allows Elexon the flexibility to assess, develop and test viable alternatives to TIBCO, subject to industry having confidence in the speed, reliability, resilience of the new service. The existing API, DPS and TIBCO users will need to migrate to the new platform, using the new APIs and IRIS. Elexon has extended TIBCO support until December 2023 therefore the service could be decommissioned before this date to avoid incurring significant additional costs.

Note: users are encouraged to adopt the new platform earlier, as the TIBCO service can no longer provide a complete data set.

The new solution will have a lower central infrastructure cost and the new service will be free without the proprietary software licensed cost and leased lines of the status quo.

Non Functional comparison

	TIBCO (High-Grade)	DPS (Low-Grade)	IRIS
Cost (Industry	🔴	🔴	🟢
Cost (User)	🟡	🟢	🟢
Scalability	🔴	🔴	🟢
Message Durability	🔴	🟢	🟢
Latency	🟢	🟡	🟢
Uptime	🟡	🔴	🟢

- Maximum message size (IRIS): 100MB
- Median time to publish: 3.5 seconds
- Fully managed cloud infrastructure
- Durability: 99.9% uptime

A full comparison of the functional and non-functional capabilities is shown in the Options Paper in Attachment B.

Workgroup discussions on Option 1

At the 2nd Issue 95 Workgroup, Elexon highlighted to the group the accelerated development of an alternative to TIBCO for the new Insights platform and showed the

prototype for IRIS, which has been designed and engineered to address issues with DPS and TIBCO.

Elexon also repeated their concerns over the scalability, stability, data consistency and costs associated with the current TIBCO set up.

Noting that the current TIBCO setup is running out of support and there is no zero-change option on the table, Elexon invited the group to consider recommending that a BSC Modification be raised to remove the BSC requirement to publish via TIBCO, thereby freeing up Elexon to develop and implement more modern and robust solutions that provide the same data to better standards (noting that TIBCO will continue to be used until at least December 2023 as support for the system has already been agreed).

The options paper also highlighted the high central operational costs for maintaining TIBCO which is funded mainly through funding shares rather than user pays. A member noted that given the solution has been there for years and is no longer economical nor efficient to maintain with severe scaling limitations, and only a few users benefits from it, the right thing to do would be to remove the TIBCO and adopt the new offerings which so far is more resilient and provides improved functionality to TIBCO.

The group noted the benefits that IRIS seems to offer vs TIBCO and accept that the current iteration of TIBCO has its limitations and drawbacks. In principle, the group are happy to recommend to the BSC Panel that a Modification be raised to continue the work of Issue 95 and develop a BSC solution for removing the obligation for the BMRA to provide TIBCO reporting.

One member questioned what the criteria for any eventual “pulling of the plug” for TIBCO would be. Elexon clarified that its Insights User Group, the BSC Panel and the BCB would all help to inform Elexon and ultimately provide checks and balances for any potential time to decommission the service.

The group believe there are sufficient grounds to raise a BSC Modification to explore the removal of the obligation for Elexon to provide TIBCO data. In principle, the group were provisionally comfortable with the replacement of TIBCO with a viable alternative that meets the industry’s needs for reliability and speed of service but note that this will be assessed at a later date, with further cost benefit information to be sourced to present the case for industry at the appropriate time.

Other options considered

Upgrading TIBCO and legacy on premise infrastructure

Elexon investigated an option which would upgrade the TIBCO software on legacy system to enable the continued support of TIBCO. The current timescales is beyond 2023, therefore the whole purpose of maintaining the legacy system will be to provide TIBCO data via the High Grade Line. This would result in significant operational cost to maintain and operate TIBCO. This option does not represent a ‘no change option’, TIBCO version will need to be upgraded as well as underlying constraints with future datasets.

Elexon believe in providing improved user experiences when accessing our data and reducing costs for all parties in doing so; maintaining a solution only available to a few users is not viable.

Implementing TIBCO on Insights Cloud platform

Elexon also investigated the possibility of porting TIBCO to the Insights Solution platform using cloud technology. Implementation, aligned to modern data standards, would mean replicating IRIS using proprietary software. This option was dismissed as it is equally disruptive, increases the number of endpoints as well as central costs and BSC Parties costs.

4. Conclusions

The Issue 95 group recommend that a BSC Modification be raised to decouple the BMRA from the obligation to provide BMRS data via the High Grade line (TIBCO reporting) identified within Section V (although noting a thorough assessment of other impacted BSC documents will be needed as part of the Modification process).

If this Modification were to be progressed and approved, Elexon will not be required by the BSC to provide data via the High Grade Service and can offer the same data via more modern, scalable and resilient data endpoints. This will also reduce significant operational costs to BSC Parties for a service that had a declining user base and effectively closed for business for new users, while maintaining robust governance around data publication methods.

The Issue 95 group's recommendation to raise a Modification to uncouple BMRA from the obligation to provide BMRS data via the High Grade line facilitates further work to develop, assess and communicate viable alternatives at the appropriate time. Notwithstanding the further work to be done in this regard, in principle the group were provisionally comfortable with the replacement of TIBCO with a viable alternative that meets the industry's needs for reliability and speed of service, on the basis that TIBCO no longer seems economical nor efficient to maintain, with only a few users benefiting from its current operational state.

Appendix 1: Issue Group Membership

Issue Group membership and attendance

Issue 95 Group Attendance			
Name	**Organisation**	**16 Feb 2022**	**30 Nov 2022**
Elliott Harper	Elexon *(Chair)*	✓	✓
Ivar Macsween	Elexon *(Lead Analyst)*	✓	✓
Mark De Souza Wilson	Elexon *(Design Authority)*	✓	✓
Zaahir Ghanty	Elexon *(Subject Matter Expert)*	✓	✓
Paul Coates	RWE	✓	✓
Adam Rawbridge	RWE	✓	X
Andrew Colley	SSE	X	✓
Dave Richardson	Drax	✓	✓
Phil Hewitt	Enapsys	✓	X
Andrew Scott	Engie	✓	X
Mark Collyer	Smartest Energy	✓	✓
Michelle Stevens	National Grid	✓	X
Kenneth Doyle	National Grid	✓	X
Helen Stack	Centrica	✓	X
Leonidas Spiliopoulos	SP Trading	✓	X
Deon Dell-Robertson	SP Trading	✓	X
Owain Griffiths	Engie	✓	✓
Alice Taylor	National Grid	✓	✓