DERIVATIVES SERVICE BUREAU

TECHNOLOGY ADVISORY COMMITTEE

4 March 2020

MEMBER FINAL V01

Agenda

- **Governance**
  - Competition Law Reminder
  - 2020 Meeting Schedule
  - TAC Charter

- **New Topics**
  - Ubuntu
  - UAT Environment Usage
  - AUP Metrics
  - Strike Price

- **Existing Topics**
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  - Dynamic Enumerations Update
  - UPI Update
  - DR Testing Update
  - CISO Update
  - ISIN Usage Analysis Update

- **AOB**

- **Appendices**
  - TAC Members
  - Meeting Schedule
  - Bulletin Board Items
  - Annual Checklists
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Governance I of V - Competition Law Reminder I of II

The purpose of this protocol is to remind attendees of Derivatives Service Bureau (DSB) Limited ("DSB") Technology Advisory Committee, that all discussions at such meetings are subject to the application of EU, UK and other applicable national competition law ("Competition Law").

Individual attendees are responsible for observing the requirements of Competition Law and should make themselves familiar with their legal obligations and their own organization policies.

The DSB is committed to compliance with Competition Law and advises that TAC participants follow the guidance set out below in order to ensure that all meetings remain in compliance with Competition Law.

1. A meeting agenda will be circulated in advance of a meeting. Any objections to, or potential concerns about, the proposed agenda in relation to Competition Law compliance should be raised prior to the meeting if practicable

2. Attendees must stick to the prepared agenda during the meeting and avoid discussion about other topics

3. Attendees must not seek, discuss, communicate or exchange any commercially or other business sensitive information about their organization or relating to competitors (whether before, during or after meetings). This includes, for example, any non-public information relating to prices, costs, revenues, business plans/marketing activities, individual terms and conditions, risk appetite or any other information which is likely to reduce strategic uncertainty in the market (i.e. which might result in less intensive competition than would normally occur)

4. Attendees must not reach any sort of agreement or understanding that is unlawful due to competition law (e.g. unlawful horizontal agreement, unlawful vertical agreement)

Governance II of V - Competition Law Reminder II of II

5. The TAC Secretariat will take minutes of the meeting, and supply these to each attendee in due course.

6. If the Chair considers that a discussion at the meeting may be inappropriate from a Competition Law perspective, he or she shall raise an objection and promptly bring that part of the discussion to an end. If another attendee, or the DDO, is concerned about a discussion from a Competition Law perspective, he or she shall bring it to the attention of the Chair, who will promptly bring that part of the discussion to an end. If other attendees attempt to continue that discussion, the Chair shall bring the meeting to an end. Every attendee is allowed to immediately leave the meeting in such situations. All such situations must be properly recorded in the minutes.

7. The minutes of the meeting must subsequently be read and approved by the attendees. If any matter discussed is not recorded in the minutes, or is recorded incorrectly, any attendee may raise an objection in writing and request an amendment.

8. Similar principles should be observed for any group email exchanges or other online group discussions operated by DSB, including those pertaining to TAC matters.

We remind attendees that breaching Competition Law has serious potential consequences for them as individuals and their organizations. Such consequences may include heavy fines, liability to pay compensation to affected individuals and businesses and, in certain cases, the imposition of criminal penalties, director disqualification orders and disciplinary action.

Governance III of V - TAC 2020 Meeting Schedule

2020 TAC Meeting Schedule Update

The Chair has proposed that we formalise the TAC meeting schedule to include the two additional industry consultation meetings as part of the standard set of meetings. The two TAC industry consultation meetings have taken place for the last two years, however, in response to feedback received, we are currently reviewing the approach to the 2020 industry consultation process. As a result, we cannot schedule any additional TAC meetings associated with the consultation process at this time.

We therefore propose to approach the members on this matter via the TAC Bulletin Board as soon as more details are available.

TAC Charter
The TAC's Charter[1] reaches the end of its 2-year tenure on the 27th June 2020. The Charter states:

(10) Duration
The TAC will continue until two years from the date of the first meeting, unless the DSB Board directs that the TAC terminate on an earlier date.

(11) Termination
The TAC shall terminate two years from the date of the first meeting, unless the charter is renewed by the DSB Board.

The Chair indicated in the last TAC meeting that he anticipates the committee to continue, and has requested a review of the current charter. A bulletin board topic[2] was created on the 14th October requesting member feedback.

The aim of this review is to ensure that the current charter is appropriate. If there are any proposed areas to be changed then those items can be discussed.

Any changes to the existing charter along with a renewal request will need to be presented to the DSB Board no later than the meeting scheduled for the end of May.

[1]https://www.anna-dsb.com/download/technology-advisory-committee-charter/
[2]https://www.anna-dsb.com/bulletin-board/tac-forum/tac-charter-review/#post-185

TAC Charter Changes

The following changes are proposed:

- Points 10 and 11 will need to reflect that the Charter is being renewed, we therefore propose the following alternative text:

  (10) Duration
  The TAC will continue until two years from the date of renewal, unless the DSB Board directs that the TAC terminate on an earlier date.
  (11) Termination
  The TAC shall terminate two years from the date of renewal, unless the charter is renewed by the DSB Board.

- Point 12 will need to include the following text making reference to adherence to the Competition Law Protocol – the Charter will also include an Appendix 1 which will including the wording noted on slides 3 & 4 of this pack.

  All participants and contributors to the TAC are expected to adhere to the provisions of the Competition Law Protocol (see Appendix 1).

Other points for discussion:
- Membership:
  - Length of service – should there be a mandated turnover of some portion of the membership to foster evolving industry involvement?
  - Attendance – should the charter allow the DSB to replace members e.g. in the case of non attendance?
- Should we introduce a quorum?

New Topics – Ubuntu I of II

Background

The DSB servers have Amazon Linux 1 installed as the operating system which was due to go to end of life on June 30th 2020, however, this has recently been extended to December 31st 2020. After this point in time no further security patches will be released for this operating system.

The issue impacts the entire DSB server estate across all environments covering around 500 virtual servers.

Proposal

The DSB has opted to replace Amazon Linux 1 with **Ubuntu 18.4 Long Term Support (LTS)**.

Why Ubuntu?

- Ubuntu is the leading cloud guest Operating System
- Supports release upgrades between LTS versions i.e. Ubuntu 18.04 to 20.04
- LTS release every two years with frequent updates
- Modern software stack
- Provides future in place upgrades to take place

Why not Amazon Linux 2?

Amazon Linux 2 and CentOS were not selected primarily due to lack of support to upgrade from one major version to another. RHEL and SLES were considered but deemed too expensive. We did not look at other Debian alternatives with Ubuntu being Debian based.

Server Migration Approach:

New parallel servers will be built and these will be switched over during the implementation weekend(s).
The timetable for switchover will be determined once the approach is agreed.

In terms of the deployment to the DSB server estate the DSB will follow a two phased approach, the phases are:

A. **ISIN Engine Stack** (~400 Servers)
B. **ToTV, MIS and File Download** (~100 Servers)

To mitigate risk, the larger phase A will be broken out into a number of stages, with stages being aligned to the key functional server groups. Each stage will follow a standard deployment process which will run through the different DSB environments:

Dev, Staging, UAT, UAT2 and Production

We will seek to undertake a load test with industry engagement for a period of 6 to 8 weeks at the relevant time in the process

TAC Question: Are the TAC Members happy with the proposed approach?

Notes: The smaller phase B is expected to be a much simpler phase than the larger Phase A
                The OS migration will be linked to the Software Version Upgrade process (see slide 13)

New Topics – UAT Environment Usage

Background

In the March 2019 meeting, the TAC recommended the provision of a second "as-production" UAT environment which was provided on the 15th July 2019 having received approval from the DSB Board. There was a follow up action recorded from this meeting for the DSB to investigate what UAT environment metrics can be provided.

Investigation Findings

Both the DSB's UAT and UAT2 environments are supported by their own dedicated MIS analytics systems. This provides the opportunity to present metrics per environment but also allows for comparisons to be drawn. Some sample graphs have been shown opposite, with some key attributes listed below for consideration:

- User Numbers
- Aggregate or average user activity
- Performance metrics (ISIN Creations, Searches, Latency etc.)

TAC Questions:

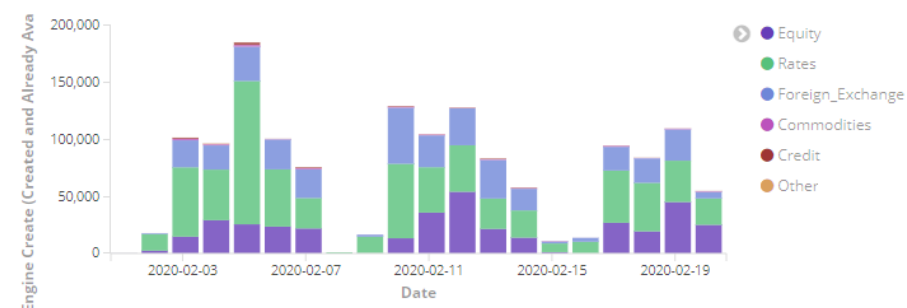*Does the TAC wish to proceed further with this topic?*

If so:

- What would be the purpose of publishing these metrics?
- What information should be made available?
- What is the preferred delivery mechanism?
- What is the required frequency?
- When would this be required by?

All API Create Requests Filter By Asset Class
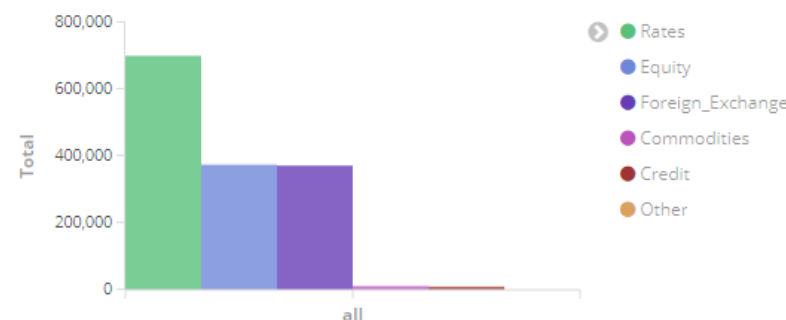
ISR-312 - Asset Class Histogram

New Topics – AUP Metrics

Background

In the August 2019 meeting, the TAC reviewed a two-part question regarding proactive Acceptable Use Policy monitoring. The TAC agreed with the DSB's recommendation not to proceed further with the item, however, there was an outstanding question from a TAC member who asked if it was possible to see how often the thresholds are breached.

The graph opposite shows the 2019 AUP breaches each month. The AUP figures are broken out into:

- Invalid message breaches
- Create message breaches
- Search messages breaches
- Total legal entities breaching

On average there are 9 breaches per month across an average of 8 distinct legal entities. Invalid messages account for 63% of all breaches.
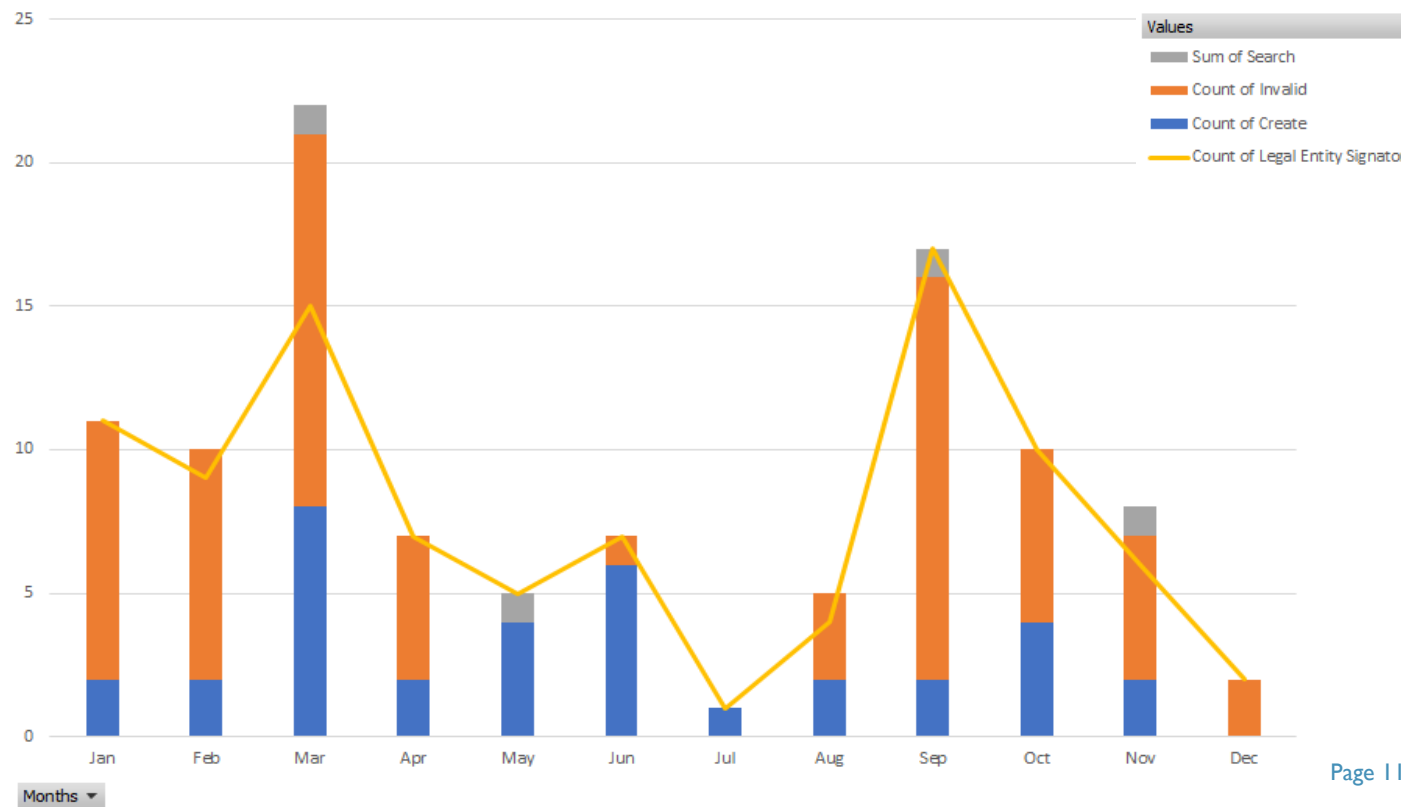
New Topics – Strike Price

Background

A paper has been sent out to the TAC members detailing the technical challenges associated with a request from the Product Committee in relation to the implementation of the strike price type for Equity Options. The DSB's current technical implementation of the strike price amount does not meet the decimal precision stated in the ESMA requirements. The DSB are therefore looking to the TAC members for guidance based on their own technical implementations of the strike price. Please note that this issue is expected to apply to the price multiplier attribute too.

TAC Questions:

- Do the members technical implementations for strike price support the maximum DECIMAL (18/17) representation as detailed in the ESMA Reporting Instructions FiRDS Reference Data System paper[3]?
- Have the members implemented the strike price value in their systems using standard native datatypes which support the size/scale requested, or has a bespoke solution been required?
- Do the members systems restrict percentage and yield strike price values to DECIMAL (11/10) as per the ESMA paper[3]?
- Do the members see any issues if the DSB restrict percentage and yield strike price values to DECIMAL (11/10) as per the ESMA paper[3]?
- The ESMA requirements do not describe exponential numbers as a supported input/output format, however the DSB's current implementation will accept/return these. Do the members systems accept/support exponential notation and do the members see any issues if the DSB no longer accept/return this format?

[3]https://www.esma.europa.eu/sites/default/files/library/esma65-11-1193_firds_reference_data_reporting_instructions_v2.1.pdf

Existing Topics – Software Version Update

Background

The TAC reviewed the DSB's software version levels in the October 2019 TAC meeting. On further review the DSB recommends taking forward four software components, three of which are past end of life and one is approaching end of life. This approach ensures the Apache related software components are reviewed at the same time. The four software components can be seen below:

Software	DSB Version	Released	End of Life	Target Version	Released
Apache Solr	6.4.2	07/03/2017	Past	8.4.1	13/01/2020
MongoDB	3.4.7	08/08/2017	Past	4.2.2	09/12/2019
Apache KafKa	0.10.1.1	22/12/2016	Past	2.4.0	16/12/2019
Apache Zookeeper	3.4.9	03/09/2016	N/A	3.5.6	18/10/2019

Approach

To streamline the releases, the DSB is planning to include the software upgrades along with the OS migration. The OS migration plan will still be implemented as-is with exception of using the target software version listed above. The software upgrade approach will be factored into the OS migration stages.

Note: Having approached CNRI regarding these proposed changes, CNRI have advised that software upgrades will be required for both Cordra and FiPro. CNRI plan to add support for these versions by May 2020.

Existing Topics – Dynamic Enumerations Update

Update:
The DSB presented an update on the status of the Dynamic Enumerations project to the Product Committee on Tuesday 14th January 2020. The update included feedback from the discussions on this topic held with the TAC in Q4 2019.

The DSB has committed to an initial delivery of the three most volatile enumerations requested by the PC by the end of Q2 2020 (the DSB expects these to be available in UAT from mid-April).

The initial release will be optional for users to adopt. It will allow users to assess the changes made, particularly around the external reference to the enumeration files (currently the $ref command has only been used to reference sections within the current JSON template). This is the change that the TAC advised may require changes to end user software. This will also allow users to familiarise themselves with the locations and structure of the new product templates and supporting files.

The DSB will maintain these two versions of the product templates in parallel for the foreseeable future.

However, the DSB will take forward the TAC's recommendation and schedule one or more further deliveries which will extend the solution out to all enumerations. Once all enumerations have been migrated the DSB will trigger a notification period of 12 months to return to a single version of product templates – this being the normalised version of the templates.

Existing Topics – UPI Update I of II

In October 2019, the FSB published a report on the governance arrangements for the UPI[4]. This report outlines the components of the governance arrangements including designation of the Legal Entity Identifier Regulatory Oversight Committee (LEI ROC) as the single International Governance Body (IGB) for LEI, UTI, UPI and CDE, as well as the UPI international data standard being set within the framework of ISO. With regards to implementation timelines, the FSB has recommended that regulators undertake the necessary actions to implement the UPI Technical Guidance in their jurisdictions no later than the third quarter 2022.

The DSB has commenced dialogue with the FSB working group on UTI and UPI governance (GUUG) whilst the LEI ROC makes the appropriate adjustments to its existing governance (e.g. governance structures and decision making rules) to make it fit for purpose for UTI, UPI and CDE governance. The DSB will continue to engage with the authorities, the ISO standard development[5] process, industry participants within the DSB Product Committee[5] and Technology Advisory Committee[6], and the broader user community as UPI implementation plans develop.

The DSB will communicate details relating to the availability of UPI codes, including implementation timing as the discussions above progress. The DSB also expects to seek industry feedback on a range of aspects as matters progress. We encourage industry to subscribe to DSB updates[7] or visit the DSB website[8] for further information.

[4]https://www.fsb.org/wp-content/uploads/P091019.pdf
[5]https://www.anna-dsb.com/product-committee/
[6]https://www.anna-dsb.com/technology-advisory-committee/
[7]https://www.anna-dsb.com/#Subscribe
[8]https://www.anna-dsb.com/

Existing Topics – UPI Update II of II

TAC Strategy Subcommittee :
The TAC Strategy Subcommittee (SSC) concluded 2019 with the delivery of an interim version of the DSB UPI Strategic Requirements Report, the report was shared with the full TAC membership on the 5th December 2019. The report was also shared with the GUUG who requested sight of this during a meeting with the DSB in November. The report was also shared with the DSB Board in January 2020. There are currently no further meetings scheduled for the TAC SSC, but the DSB will advise the TAC SSC members as and when that situation changes.

TAC Forum:
The GUUG have asked the DSB to extend the role of the two existing industry forums, the PC and TAC, to include matters relating to the UPI. While this request is currently under review it is anticipated that the membership of the TAC would be extended to include additional representatives from the jurisdictions in scope of the UPI. Also, as some of the additional members will be in Asia it has been requested to structure the meeting to focus on UPI matters first, moving on to ISIN matter later in the meeting. The assumption here is that those interested in the ISIN will also be interested in the UPI, however, this may not be the case for those interested in the UPI.

DSB Activities:
There are two key activities that the DSB is undertaking with respect to the UPI project:

- Firstly, the DSB continues to engage with the GUUG while the LEI ROC makes the necessary adjustments.
- Secondly, the DSB has started work on an initial draft of the Terms of Reference document for the UPI project

Existing Topics – DR Testing Update

Recap:

The DSB is working in conjunction with the TAC to undertake a multi-phased approach to DR testing. The initial focus is concentrating on the UAT environment. The two initial phases focused on connectivity testing to the UAT DR environment prior to an actual UAT failover test in phase 3.

Testing Update:
- Phases 1 & 2 have completed
- 4 Clients Engaged with 3 completing Phases 1& 2
- Internet Connectivity (TLS/SSL) has been proven
- VPN and BT Radianz remain untested

Connection	Total	Engaged	Phase 1	Phase 2	Notes
Internet (TLS/SSL)	46	3 (6.5%)	3	3	100% Passed
BT Radianz	18	1 (5.6%)	0	0	Pending
VPN	15	0 (0.0%)	0	0	Not tested
Total:	79	4 (5.1%)	3	3	

Next Steps:
- Before scheduling a date for Phase 3, the DSB recommends that we complete testing of at least one client for each connectivity type
  - Proceed with the BT Radianz client to complete the phase 1 & 2 testing
  - Identify one or more UAT VPN clients and arrange phase 1 & 2 testing
- Review the proposed duration of Phase 3 with the TAC – currently 8 weeks
- Agree the Phase 3 testing dates with the TAC on completion of BT Radianz / VPN testing

- *Does the TAC Agree with this approach?*

ToTV Checkpoint:
- In October 2019 the DSB advised the TAC that the ToTV service had not been configured in the contingency site (US)
- Given concerns over Brexit, the TAC were concerned about the lack of availability of the ToTV service for extended periods
- The TAC requested that the Q1 TAC meeting contain a checkpoint in relation to the arrangements for the ToTV service
- *TAC Question: What does the TAC think the next steps on this should be?*

Existing Topics – CISO Update I of II

Terms of Reference Update
The DSB has drafted the Terms of Reference documents for both Secure SDLC and ISO27001. These documents were uploaded to the TAC Bulletin Board on Thursday 6th February 2020. A communique was also sent to the TAC members advising them of the two posts and to garner any amendments or questions ahead of the TAC meeting in March.

At the time of writing, no feedback has been received, but we appreciate that this may change as we approach the feedback deadline. We will use this opportunity in the meeting to discuss any feedback received to hopefully resolve any outstanding questions in relation to the two ToR's with a view to finalising the two documents.
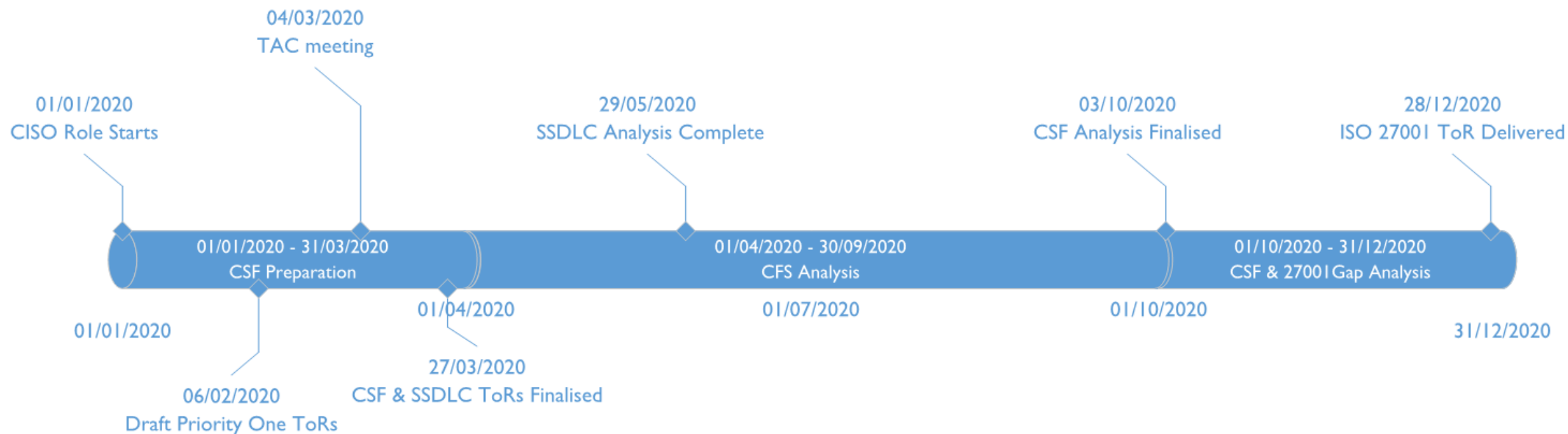
Information Security Analyst Update
The dedicated DSB Information Security Analyst started on the 14th February and has begun working on the Secure SDLC and ISO27001 analysis.

Delivery Timeline Update
The delivery timeline slide presented at the last TAC meeting in October has been updated, the changes can be seen on the next slide.

2020 Revised Delivery Timeline:

04/03/2020
TAC meeting

01/01/2020
CISO Role Starts

29/05/2020
SSDLC Analysis Complete

03/10/2020
CSF Analysis Finalised

28/12/2020
ISO 27001 ToR Delivered

01/01/2020 - 31/03/2020
CSF Preparation

01/04/2020 - 30/09/2020
CFS Analysis

01/10/2020 - 31/12/2020
CSF & 27001 Gap Analysis

01/01/2020

01/04/2020

01/07/2020

01/10/2020

31/12/2020

06/02/2020
Draft Priority One ToRs

27/03/2020
CSF & SSDLC ToRs Finalised

Any questions?

Existing Topics – ISIN Usage Analysis Update

Background:

In March the TAC agreed to continue the ISIN Usage Analysis discussion via the Bulletin Board. A topic was created and the members were invited to provided any further feedback. The topic proposed an initial implementation of three of the seven items originally identified as follows:

#	Description	Notes	Filename
i	# of ISIN creates per product template	Shows creation trend for the total number of ISIN's created month-by-month since October 2017.	DSBISINCreationTrend.csv
		Shows the number of ISINs created from October 2017 to the last month by product template	DSBISINCreatedByProduct.csv
iii	# of ISIN searches across all product templates (search by metadata)	Shows the number of ISIN searches across all product templates	DSBISINSearchesByMetadata.csv
vii	# of ISINs submitted to FIRDS per product template	Number of ISINs submitted to FIRDS from 2018 to the date of the report per product template	

Update:

The DSB has completed development of the first three file extracts listed above available, we are currently working with technical support to schedule the publication to the file download area. A new "report" folder will be introduced into the file download area, the three ISIN related files will be placed within an "isin" subfolder.

The final entry above (vii) is dependent on FiRDS data which is not available in the OTC ISIN Engine. A separate service has been introduced to report against FiRDS data, starting with a report of EZ reconciliation breaks. Any files generated as part of this reporting stream will be placed in the "report/firds" folder.

AOB

- TAC information: https://www.anna-dsb.com/technology-advisory-committee/

Appendices

- A - TAC Members

- B - 2020 Meeting Schedule

- C – TAC Bulletin Board Items

- D – Annual Checklists

- E - Actions

Appendix A - TAC Committee Members

Institution	Category	First Name	Last Name	Position / Title
Citigroup	SI	Souvik	Deb	VP, Regulatory Reform
Credit Suisse	SI	Prem	Ananthakrishnan	IT
HSBC	SI	James	Cowie	GFI Regulatory Reporting Manager
JP Morgan	SI	Nadav	Krispin	VP, Software Engineering
Lloyds Bank	SI	Stephen	Pond	FI E-Trading & Rates Pricing Dev Manager
Morgan Stanley	SI	Shari	Lines	Financial Instrument Ref Data Architect
Rabobank	SI	James	Brown	Delivery Manager, IT Systems
SEB	SI	Henrik	Martensson	Markets CTO Office
Standard Chartered Bank	SI	Andrew	Poulter	Sabre Development Manager
State Street Bank	SI	Kimberly	Cohen	MD - Business Technology Solutions
UBS	SI	Tony	Chau	IB CTO for Regulatory Initiatives
BGC Partners	TV	Jimmy	Chen	Development Manager
Bloomberg LP	TV	Chris	Pulsifer	Software Development Manager
Nex	TV	Ziv	Yankowitz	VP - Research and Development
State Street FX Connect	TV	Rajkamal	Roka	Head of FX Regulatory Product
Thomson Reuters MTF	TV	Zintis	Rullis	Senior Technical Specialist
Tradeweb	TV	Elodie	Cany	Director, Technology Product Development
Asset Control	Other Industry	Martijn	Groot	VP - Product Management
Simplitium	Other Industry	Aanya	Madhani	Head of Product Development
SIX Group Services AG	Other Industry	Michele	Vuerich	Head of Input Systems / Director
SmartStream	Other Industry	Rocky	Martinez	CTO
Thomson Reuters Data	Other Industry	David	Bull	Head of FI Content Management
BVI	Other Industry	Felix	Ertl	VP, Legal
EFAMA	Other Industry	Vincent	Dessard	Senior Policy Advisor
FIX	Other Industry	Lisa	Taikitsadaporn	FIX Global Technical Committee
Investment Association	Other Industry	David	Broadway	Investment Operations Lead
ISDA	Other Industry	Karel	Engelen	Senior Director
Independent Expert	Other Industry	Jim	Northey	ex officio as ISO TC 68 Chair Elect

Observers

Organisation	Name	Position / Title
CFTC	Robert Stowsky	IT Specialist
ESMA	Olga Petrenko	Senior Officer, Markets
FCA	Paul Everson	Senior Associate – Market Oversight
JSDA	Eiichiro Fukase	General Manager

DSB Sponsor: Marc Honegger
                       DSB Board Member

Chair: David Broadway
                       Investment Association

Designated DSB Officer: Sassan Danesh
                          DSB Management Team

DSB Secretariat: Andy Hughes
                       DSB Management Team

                       Yuval Cohen
                       DSB Technical Architect

Appendix B - TAC Meeting Schedule

The following shows the TAC meeting dates & times:

Wednesday 4th March 2020   1pm GMT (1pm UTC, 2pm CET, 8am EST)

Future meetings tbc

Appendix C – TAC Bulletin Board Items

The following table details the active TAC Bulletin Board topics:

Created	Title	Posts	Link
08/11/2019	DSB Penetration Testing Level of Detail	1	https://www.anna-dsb.com/bulletin-board/tac-forum/dsb-penetration-testing-level-of-detail/
16/09/2019	Dynamic Enumerations – Alternative Product Template Formats	15	https://www.anna-dsb.com/bulletin-board/tac-forum/dynamic-enumerations-alternative-product-template-formats/
14/10/2019	TAC Charter Review	3	https://www.anna-dsb.com/bulletin-board/tac-forum/tac-charter-review/
06/02/2020	CISO ISO27001 ToR Review	1	https://www.anna-dsb.com/bulletin-board/tac-forum/cisco-iso27001-terms-of-reference-for-review/
06/02/2020	CISO Secure SDLC ToR Review	1	https://www.anna-dsb.com/bulletin-board/tac-forum/cisco-secure-sdlc-terms-of-reference-for-review/
18/02/2020	End of Day File Reconciliation Best Practice	2	https://www.anna-dsb.com/bulletin-board/tac-forum/dsb-end-of-day-files-reconciliation-best-practice/
26/02/2020	DSB ISIN Strike Price Precisions	1	https://www.anna-dsb.com/bulletin-board/tac-forum/dsb-isin-strike-price-precisions/

Appendix D – Annual Checklists

The following table details the items which will be checked on an annual basis:

Appendix	Item	Last Review	Next Review	Comments
D1	Software Version Levels	09/10/2019	Q4 2020	Items being progressed in 2020 (slide 27)
D2	Penetration Testing	09/10/2019	Q4 2020	2019 Pen Test completed, report received
D3	Disaster Recovery Testing	n/a	n/a	Approach currently under review

Appendix D1 - Software Version Levels

The DSB's software version policy is to remain within one major version of the latest version in industry. This is to ensure that we remain current particularly in relation to security updates. The key versions are as follows:

Software	DSB Version	Released	End of Life	Latest Version	Released
Amazon Linux	AMI 2017.03	19/07/2017	31/12/2020	Ubuntu 18.04 LTS	23/04/2018
MongoDB	3.4.7	08/08/2017	Past	4.2.2	09/12/2019
Apache Solr	6.4.2	07/03/2017	Past	8.4.1	13/01/2020
Apache Zookeeper	3.4.9	03/09/2016	N/A	3.5.6	18/10/2019
Apache KafKa	0.10.1.1	22/12/2016	N/A	2.4.0	16/10/2019
NGINX	1.12.1	11/07/2017	N/A	1.17.8	21/01/2020
OpenJDK	1.8 181-b13	17/07/2018	Jun 2023	1.8. 222-b10 (AWS Linux)	
Elastic Search	6.7.0	26/03/2019	26/09/2020	7.5.1	19/12/2019
QuickFIXJ	2.1.0	03/08/2018	N/A	2.1.1	10/01/2019
Tomcat	8.5.37	Dec 2018	N/A	8.5.49	21/11/2019

Note: *All upgrades are anticipated to be transparent (i.e. backwardly compatible) to the DSB user base*

Appendix D2 – Penetration Testing Update

2019 (GDS Test Dec 2018)
- 7 Jira's reported in October - 2 outstanding issues have been resolved
- 3 UAT items are still outstanding - dependency on an external vendor software release (delayed)
- 3 items - no action was required

2020 (AON Test Dec 2019)
- Test completed as planned in December
- Report received in January 2020, currently being analysed

Reminder
- A bulletin board topic has been created to capture TAC members feedback about the appropriate level of PenTest reporting – the article can be accessed here[9] – we are looking for member feedback to discuss during the Q4 TAC meeting.

Appendix D3 – Disaster Recovery Testing

The DSB is currently working with the TAC to undertake a production DR test. The TAC has requested that a test is undertaken in UAT prior to undertaking a test in production. Once completed this slide will reflect the DR testing history.

Appendix E – TAC Actions

Ref	Action	Update	Slides	Target	Status
1903-001	DSB to add a section to the TAC agenda for annual checklists2	Pack updated – propose to close	2, 26	04/03/2020	Propose to close
1903-002	DSB to investigate what UAT environment usage metrics can be provided	Update provided in Q1 2020 TAC Meeting – propose to close	10	04/03/2020	Propose to close
1903-003	DSB to document best practice which is to reconcile against the end of day files	Document uploaded to the bulletin board, track via BB & propose to close.	n/a	04/03/2020	Propose to close
1908-001	DSB to provide some metrics around the number of times AUP thresholds are breached	Update to be provided in Q1 2020 TAC Meeting – propose to close	11	04/03/2020	Propose to close
1910-001	DSB to provide plans for software version changes	Update to be provided in the Q1 2020 TAC Meeting	27	04/03/2020	Open
1910-002	DSB to provide a progress update regarding ISIN Analysis	Update to be provided in the Q1 2020 TAC Meeting – propose to close	20	04/03/2020	Propose to close
1910-003	DSB to use Q1 2020 TAC as a checkpoint for discussion regarding ToTV DR capability	Propose to close – item included in DR discussion	17	04/03/2020	Propose to close
1910-004	DSB to include TAC Charter in Q1 2020 Agenda	Propose to close – agenda item included	6, 7	04/03/2020	Propose to close
1910-005	TAC Members to provide feedback on the level of detail provided re: Penetration Testing	BB topic created and members emailed 8/11	n/a	Q4 2020	Open