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# 

1. **SCOPE OF REQUIREMENT**

## The new ETS (Energy Trading System) **must** provide (i.e. Mandatory, the (MVP) Minimum Viable Product):

## 1.1.1 The ETS must be delivered as a cloud based Software as a Service (SaaS) as per <https://www.gov.uk/guidance/government-cloud-first-policy> and accessible via modern W3C compliant web-based browsers such as Edge, Chrome, and Safari.

## 1.1.2 The ETS Supplier must supply login accounts to access the procured service to all members of the CCS (Crown Commercial Service) Trading and Risk teams, relevant support personnel and as notified by the Authority.

## 1.1.3 The new ETS must meet all current IT security requirements for IT systems, specifically Cyber Essentials.

1.1.4 The ETS must comply with Technical Specifications as set out in Appendix A.

## 1.1.5 The ETS must receive free and regular software updates as part of the core product.

## 1.1.6 The ETS must be able to support loading of historic demand data and trades from April 2008 onwards for gas and power. Sample trades and demands are provided in Attachment 10 Supplementary Information.

## 1.1.7 The ETS will be able to record UK Gas and Power trades transacted by CCS:

## Gas Products:

* + - * 1. UK Gas Seasons
        2. UK Gas Quarters
        3. UK Gas Months
        4. UK Gas Weeks
        5. UK Gas Weekends
        6. UK Gas Days
        7. UK Gas Balance of Month
        8. UK Gas Balance of Week
        9. UK Gas Shape Trade
      1. Electricity Products:
         1. UK Power Base Seasons (Gregorian and EFA)
         2. UK Power Base Quarters (Gregorian and EFA)
         3. UK Power Base Months (Gregorian and EFA)
         4. UK Power Base Weeks
         5. UK Power Base Weekends
         6. UK Power Base Days
         7. UK Power Peak Seasons (Gregorian and EFA)
         8. UK Power Peak Quarters (Gregorian and EFA)
         9. UK Power Peak Months (Gregorian and EFA)
         10. UK Power Peak Weeks
         11. UK Power Peak Weekends
         12. UK Power Peak Days
         13. UK EFA Products
         14. UK Half Hourly shape;

## 1.1.8 The ETS must allow CCS to customise Baskets (Trade Books) for gas and power to allow trades to be allocated to different strategies. The first basket begins in April 2008 and continues indefinitely.

## 1.1.9 The ETS must be capable of loading power and gas power curves. Gas curves should be loadable at daily granularity and power curves at a minimum of half hourly granularity. Curves must support data from April 2008 and continues ad infinitum.

## 1.1.10 The ETS must allow CCS to modify purchasing requirements for Baskets (for power at half hourly granularity and gas on daily granularity) i.e. Basket demand profiles may change.

## 1.1.11 The ETS must allow user access controls to restrict functionality for users based either on job role or at a user level. Three core user types are expected. See Attachment 10 Supplementary Information for user access control example privileges.

## 1.1.12 The ETS must include comprehensive audit functionality (i.e. the ability to see who entered, edited or amended trades, and other relevant data).

1.1.13 The ETS must automatically update positions for the affected baskets when:

* + - 1. A new trade is entered;
      2. An existing trade is modified;
      3. A new power or gas curve is loaded or to reflect 1.2.1.

## 1.1.14 The ETS must support autoloads via SFTP (Secure File Transfer Protocol) or suitable alternative to allow weather corrected demands and updated curves to be loaded efficiently.

## 1.1.15 The ETS Supplier must make available a test and development (T&D) environment at the Authority’s request should it be required.

## 1.1.16 The ETS system must allow the ability to import customised data into Microsoft Excel and/ or Power BI (at CCS offices) to allow analysis and custom position report creation.

## The ETS **must** within 3 months of the contract start date:

## 1.2.1 Support price updates from brokers which CCS has contracted with. CCS may elect to use delayed or live price feeds for these brokers.

* + - 1. CCS use Joule[[1]](#footnote-1) to aggregate prices provided by the following brokers:
         1. ICAP <https://www.icap.com/>
         2. Griffin <https://griffinmarkets.com/>
         3. Prebon <https://www.tullettprebon.com/>
         4. Spectron <https://www.marexspectron.com/>
         5. GFI <http://www.gfigroup.co.uk/>
      2. Suppliers may load prices into the system via direct access to brokers or via Joule if permissible. The Supplier should determine the most appropriate route.
    1. Support delayed and end of day price updates from ICE[[2]](#footnote-2).
    2. Provide Risk Reporting via a reporting interface;

1.2.3.1 CCS recognise that risk reporting can encompass a variety of different methods and variations of VaR[[3]](#footnote-3) calculation. CCS has provided a risk reporting overview of how it works in Attachment 10 Supplementary Information.

## The ETS should provide a rich, capable and fully customisable reporting suite allowing:

## 1.3.1 Creation of custom position reports for viewing positions of baskets at seasonal, base/peak (electricity), monthly and daily level.

## 1.3.2 Creation of pre-defined reports for import into CCS systems.

## 1.3.3 Analysis tools to assist with trading and risk management i.e. Stress Testing, Monte Carlo[[4]](#footnote-4) simulation.

## 1.3.4 Bespoke report creation for users to allow access to all data in Excel format.

## 1.3.5 Enable interbook trades.

## 1.3.6 Be capable of applicable regulatory reporting if required.

## 1.3.7 Support the entry of Power Purchase Agreements (PPA).

## 1.4 The ETS **will** provide:

## 1.4.1 [*any additional services available as per bidder’s response to AQA3*, *if no additional services are offered then this will state Not applicable*].

# THE REQUIREMENT

## **List of Functionality**

## 2.1.1 Please see MOSCOW document in Attachment 10 Supplementary Information for a detailed (but not exhaustive) list of functionality expected within the ETS.

## **Scope of requirement**

## Bidders are required to provide details on the system they can offer to meet the scope of the requirement.

## **System Functionality**

### 2.3.1 The base system functionality is of a centralised Energy Trading System accessible to specialist trading, risk and support staff.

### 2.3.2 The system should provide, but is not limited to provision of the following aspects:

#### A centralised energy trading system allowing:

##### Trade entry for UK Gas and Power.

##### Multiple CCS baskets for gas or power.

##### Differing levels of access for CCS users.

#### Automated loading of data via secure FTP.

#### Data export function to excel and PowerBI.

* + - 1. Position Reports for baskets;

##### Simple energy reports.

#### There must be a capable reporting suite allowing:

##### Creation of customised MI reports.

##### Creation of customised Risk reports.

##### Creation of customised position reports.

##### Basic Analysis tools.

##### Export of raw and process data into common formats.

### 2.3.3 The ETS should be the same as and provide the same functionality as was shown in the Demonstration in response to Attachment 2b Award Questionnaire question AQC1 and the component part listed as required within that Demonstration.

## **System Integration**

### 2.4.1 The system must provide API-based integration capabilities; specifically either a RESTful web service, with data presented in a JSON (preferred) or XML format or a SOAP-based API with data in an XML format. The ability to export data in CSV format is also desirable.

## **Training**

### 2.5.1 Training on the new ETS must be supplied for 2 Risk Staff, 5 Traders and 2 IT users within CCS and further training material must be made available for CCS users.

2.5.2 The Supplier will provide training and any support required as detailed in tender response [*insert bidder’s response to AQB1*].

## **Data Ownership**

### 2.6.1 CCS data in your system will remain the property of CCS and will not be used elsewhere.

## **Data Transfer**

### 2.7.1 The process for CCS to transfer its data to another Supplier is detailed as follows [*insert bidder’s response to AQB1*].

## **Data Security and Destruction**

### 2.8.1 The Supplier will securely destroy CCS data after termination/expiry of the Contract subject to 2.7.1.

## **Data Standards**

### 2.9.1 UK Government recommends an open approach to data, including the use of common data standards such as the Open Data Standards, and prefers exchange of data via an **Application Programming Interface (**API). All components SHOULD offer web APIs supporting RESTful JSON interfaces in accordance with CCS architectural decisions https://[github.com/Crown-Commercial-Service/CCS-Architecture-Decision-Records/tree/master/doc/adr](http://github.com/Crown-Commercial-Service/CCS-Architecture-Decision-Records/tree/master/doc/adr)

## 

## **2.10 Security Objectives and Outcomes**

### 2.10.1 The Supplier shall deliver the service in accordance with the HMG Security Policy Framework<https://www.gov.uk/government/publications/security-policy-framework>.

### 2.10.2 The Supplier shall implement security architecture that considers all of the technology, people and processes relating to the service. The security architecture shall be designed to achieve the following security goals:

### make an initial compromise of the system difficult;

### limit the impact of any compromise;

### make disruption of the system difficult; and

### make detection of a compromise easy.

2.10.3 All personnel working with government information should have sufficient security clearance commensurate to the service provided in alignment to best industry practice.

## **2.11 Testing**

### 2.11.1 CCS may conduct MVP testing on any product after award of the Contract to ensure the ETS is fit for purpose.

### 2.11.2 Failure to meet MVP criteria may result in withdrawal of award with no recourse.

**3. KEY MILESTONES AND DELIVERABLES**

## 3.1 The following Contract milestones/deliverables shall apply:

|  |  |  |
| --- | --- | --- |
| Milestone/Deliverable | Description | Anticipated timeframeor Delivery Date |
| 1 | Transfer of information, testing & on-boarding process complete | 07/10/2019 - 15/11/2019 |
| 2 | Payment of set-up costs | On satisfactory delivery of the functioning system, to a pre-agreed standard as agreed by the parties to the previously agreed deadline. |

**4. CONTINUES IMPROVEMENT/CHANGES TO ETS**

### 4.1 The Supplier will be expected to continually improve the way in which the required services are to be delivered throughout the Contract duration.

### 4.2 The Supplier should present new ways of working to the Authority during quarterly Contract review meetings.

### 4.3 Changes to the way in which the services are to be delivered must be brought to the Authority’s attention and agreed prior to any changes being implemented.

**5. STAFF AND CUSTOMER SERVICE**

## 5.1 The Supplier shall provide [*insert bidder’s response to AQB2*]:

* standard customer support service hours included in the core product, which must at a minimum provide cover for UK work days from 09:00-17:00 GMT.
* what the standard support service comprises of
* what your technical support does and does not cover in the core product, and if this is limited in any way (i.e. x hours a month)
* details and costs for any enhanced technical support available

### 5.2 The Supplier shall provide a sufficient level of resource throughout the duration of the Contract in order to consistently deliver a quality service.

### 5.3 The Supplier’s staff working on the Contract shall have the relevant qualifications and experience to deliver the Contract to the required standard.

### 5.4 The Supplier shall ensure that staff understand the Authority’s vision and objectives and will provide excellent customer service to the Authority throughout the duration of the Contract.

# 

1. **SERVICE LEVELS AND PERFORMANCE**

### 6.1 CCS will measure the quality of the Supplier’s delivery by:

### 6.1.1 The below minimum service levels, in addition to any further KPIs and/or SLAs which are provided by the Supplier in order to ensure the proper administration of the Contract.

|  |  |  |  |
| --- | --- | --- | --- |
| KPI/SLA | Service Area | KPI/SLA description | Target |
| 1 | Delivery Time-scale | Deliver acceptable functioning system by deadline date | System functionality will be signed off by CCS Project Manager on the date agreed between the Authority and the Supplier during the Award Stage |
| 2 | System Uptime | System is available for CCS and Suppliers | 99.9% during working hours **8:00-18:00** |
| 3 | System functionality | System faults fixed within an acceptable timescale | Critical faults - fixed within 4hrs from reporting of problemMajor faults - 24 hrsMinor faults - 5 working days unless otherwise agreed between the parties |
| 4 | Service Helpdesk | Access to helpdesk during working hours for CCS users, with nominated escalation point. CCS Working hours are 09:00-17:00 GMT. | Query response within 2 hoursQuery resolution within 24hrs |
| 5 | Continuous Improvement | Proactive engagement from Supplier to improve the functioning of the system for CCS | Supplier to present improvements at performance review meetings to be held monthly unless agreed otherwise between the parties |

### 6.2 The service levels will be reviewed at regular Contract Performance Review meetings. The Supplier will be expected to bring reports on their performance against the agreed SLAs/KPIs.

### 6.3 Underperformance against the service levels may result in the need for a performance improvement plan, to be developed by the Supplier to ensure service levels are achieved in future.

### 6.4 Performance will be managed in line with the Contract, however consistent underperformance against the service levels and a failure of the Supplier to implement an appropriate improvement plan will form grounds for termination.

### 6.5 Supplier will provide enhanced technical support as specified in response to question AQA4 and is detailed as follows [*any enhanced services available as per bidder’s response to AQA4; if no additional services are offered then this will state Not applicable*].

**7. PRICE**

### 7.1 The pricing solution must take into account the different products detailed within this Specification and the prices will be included in Attachment 12 Contract [*bidder’s Attachment 9 Pricing Matrix will* form *this response*].

**8. PAYMENT AND INVOICING**

### 8.1 Payment will be split into set-up costs, annual running costs of the core system, and annual running costs of optional functionality.

### 8.2 Payment for set-up of the system will be made following satisfactory delivery of the functioning system, to a pre-agreed standard as agreed by the parties.

### 8.3 Payment for further development work will be based on satisfactorily completing the development to a standard agreed by the parties at the time of commissioning the development work.

### 8.4 The Supplier will invoice quarterly for one quarter of the annual fee, the invoice to be raised not more than thirty (30) days before the end of the quarterly service period.

### 8.5 Before payment can be considered, each invoice must include a breakdown of work completed and the associated costs.

### 8.6 Invoices should be submitted to:

## [**supplierinvoices@crowncommercial.gov.uk**](mailto:supplierinvoices@crowncommercial.gov.uk)

## **FAO Supplier Invoices**

## **Crown Commercial Services**

## **9th Floor, The Capital Building**

## **Old Hall Street**

## **Liverpool**

## **L3 9PP**

**9. ACCOUNT/CONTRACT MANAGEMENT**

### 9.1 Suppliers are required to provide details of their approach to account management specifically relating to this Contract and its service provision. Suppliers are required to provide an account manager along with a nominated deputy who will act in their absence.

### 9.2 The account manager (or their deputy in times of absence) is required to meet with the CCS Contract manager on a regular basis at a time and location that has been agreed in advance of the meeting.

### 9.3 Suppliers are required to provide details, along with copies of any relevant internal policies, specific to the delivery of the services within this Contract for AQB3:

### 9.3.1 Business continuity disaster plan (BCDR) – to cover all types of incidents to ensure continued provision of service. [*Response to* *AQB3a from the successful bidder to be included here*]

### 9.3.2 Complaints and escalations process. [*Response to AQB3b* *from the successful bidder to be included here*]

### 9.4 All meetings between the Supplier and CCS will take place at CCS offices, located in Liverpool and London, or via webex/conference call at the Authority’s discretion.

### 9.5 Attendance at Contract Review meetings shall be at the Supplier’s own expense.

**10. LOCATION**

### 10.1 Although the Services will be delivered as a Cloud-based solution available at various sites, for the purposes of the Contract the location of the Services will be carried out at The Capital Building, Old Hall St, Liverpool L3 9PP.

Appendix A -Technical Specification

|  |  |  |
| --- | --- | --- |
| **Reference** | **Theme** | **Requirement** |
| |  | | --- | | Energy Trading System |  |  |  |  | | --- | --- | --- | | Info | **data** includes:  Gas Trade Products:   * UK Gas Seasons * UK Gas Quarters * UK Gas Months * UK Gas Weeks * UK Gas Weekends * UK Gas Days * UK Gas Balance of Month * UK Gas Balance of Week * UK Gas Shape Trade;   Electricity Trade Products   * UK Power Base Seasons (Gregorian and EFA) * UK Power Base Quarters (Gregorian and EFA) * UK Power Base Months (Gregorian and EFA) * UK Power Base Weeks * UK Power Base Weekends * UK Power Base Days * UK Power Peak Seasons (Gregorian and EFA) * UK Power Peak Quarters (Gregorian and EFA) * UK Power Peak Months (Gregorian and EFA) * UK Power Peak Weeks * UK Power Peak Weekends * UK Power Peak Days * UK EFA Products * UK Half Hourly shape;   UK Power Curve   * Half Hourly price curves   UK Gas Curve   * Daily Gas curves   Demands   * Half hourly power demand data * Monthly Baseload Demand data * Monthly Peak demand data * Daily gas data   User Information   * User name, job title   Basket Information   * Commodity * Name * Delivery Period |  | | | |
| 01 | Tech Spec | The data MUST be made available by an API using standard web protocols such as JSON REST |

|  |  |  |
| --- | --- | --- |
| **Reference** | **Theme** | **Requirement** |
| User Registration and Access Control | | |
| Infor | Tech Spec | All users of the ETS will be authenticated by secure login. |
| 02 | Tech Spec | The ETS could support SAML2 and/or OpenID Connect identity assertions.. |

|  |  |  |
| --- | --- | --- |
| **Reference** | **Theme** | **Requirement** |
| Agreement Records and Party Records | | |
| 01 | Tech Spec | Supplier SHOULD refer to and update Authority summary details of agreements and parties in SalesForce via APIs using standard web protocols such as JSON REST. Interface details will be agreed later.  Data export / import processes SHOULD be considered as a fallback if API mechanisms can’t be built on those processes. |

|  |  |  |
| --- | --- | --- |
| **Reference** | **Theme** | **Requirement** |
| Document store | | |
| 01 | Tech Spec | The Authority stores documents in Google Drive. Amazon S3 also will also be used for application document storage. Supplier SHOULD read and write data to the document stores via relevant web APIs. |
| **Reference** | **Theme** | **Requirement** |
| Strategic Alignment | | |
| 02 | Tech Spec | All components SHOULD offer web APIs supporting RESTful JSON interfaces.  Messaging MAY be by email but all auditable interactions SHOULD be by secured web interfaces to be agreed. |
| **Reference** | **Theme** | **Requirement** |
| Technical quality requirements | | |
| 01 | Tech Spec | ETS should comply with the CCS overarching Copy Sourcing Services Design. |
| 02 | Tech Spec | ETS and Supplier MUST demonstrably conform to UK Government standards:   |  |  | | --- | --- | | Technology Code of Practice | https://www.gov.uk/government/publications/technology-code-of-practice/technology-code-of-practice | | Cloud Security Principles | https://www.ncsc.gov.uk/guidance/implementing-cloud-security-principles | | Security Design Principles for Digital Services | https://www.ncsc.gov.uk/guidance/security-design-principles-digital-services-main | | security standards defined within the Authority’s Digital and Technology Strategy are incorporated into the service delivery. | https://intranet.crowncommercial.gov.uk/task/digital-and-technology-strategy-2018-21/ | | HMG Minimum Cyber Security Standard. | https://www.gov.uk/government/publications/the-minimum-cyber-security-standard | | Coherence with the National Cyber Security Centre (NCSC) Cloud Security Principles. | https://www.ncsc.gov.uk/collection/cloud-security?curPage=/collection/cloud-security/implementing-the-cloud-security-principles | | Software Delivery Life cycle is undertaken securely through the application of the NCSC Secure Development and Deployment Guidance. | https://www.ncsc.gov.uk/collection/developers-collection?curPage=/collection/developers-collection/principles | | Undertake an IT Security Penetration Test prior to a service being commissioned and annually thereafter.  The IT Security Penetration scope shall be agreed by the Authority and shall address the five security controls underpinning the Cyber Essentials Scheme. | . https://www.ncsc.gov.uk/guidance/penetration-testing | |

|  |  |  |
| --- | --- | --- |
| **Reference** | **Theme** | **Requirement** |
| Availability requirements | | |
| 01 | Tech Spec | **Total availability**: the solution MUST be available during working hours 0800 to 1800 with 99.9% availability. |
| 02 | Tech Spec | **Maintenance and core hours**: planned maintenance MUST occur outside core hours of 8am to 6pm Monday to Friday UK time. |
|  |  | **Recovery Time Objective**: Services MUST be restored after unintentional outage within 4 hours of any one incident and also no more than 30 minutes beyond any underlying cloud operator outage, whichever is smaller. There must be an aggregate annual total of no more than .1% outage (8 hours 45.6 minutes). Exceeding these outages will incur service credits. |
|  |  | **Recovery Point Objective**: Each web page SHOULD automatically save significant page content where javascript is available to avoid data loss. Once web transactions have been made, there MUST NOT be more than 5 minutes of work lost. |
|  |  | **Response time**: 95% of requests to *core pages/actions* respond within 1 second. 95% of agreed *non core pages/actions* respond within 1 minute.  For clarity - The Supplier and Authority to agree on core and non-core pages, but broad expectation is that all workflow data entry activities are core, whereas document generating, analysis and reporting actions are non-core. Responses which exceed the required responsiveness should be logged. A performance report should be provided to the Authority. Where performance goals are not met the provider must design and enact a remediation plan and service credits may apply. Even when performance goals are met if non performing pages are impacting user performance, for example pages taking excessive time even where 95% are within time, a performance plan should be put in place to mitigate the impact. |
|  |  | **Disaster recovery**: Supplier shall have a system recovery mode in case of total loss of cloud region within two days, which will be activated if the Authority agrees the cloud service provider will not restore service within an acceptable time frame. |
|  |  | **Repeated failure of underlying cloud service provider**: if cloud service provider breaches 99.9% availability within a year the Authority may require the Supplier to plan to migrate to another cloud service provider. |

|  |  |  |
| --- | --- | --- |
| **Reference** | **Theme** | **Requirement** |
| Confidentiality, integrity and data protection | | |
| 01 | Tech Spec | The Supplier shall provide the Authority with a statement of the physical location where data will be stored, processed and managed.  The Supplier shall only be permitted to off-shore elements outside the UK where that aspect of the service is delivered from one of the following locations:   * A country within the EEA; * A country where the European Commission has made a positive finding with regard to the adequacy of their regulatory Data Protection controls; or * A supplier who has Privacy Shield certification. |
| 02 | Tech Spec | Data MUST be processed and stored in accordance with the Data Protection Act 2018 and thus General Data Protection Regulations (GDPR) regulations. |
|  | Tech Spec | At the Authority’s request, data processing and storage MUST be moved to UK public cloud residency within six months of activation of request at solution providers cost. |
|  |  | All personal data SHOULD be synchronised via APIs to allow coordination with the authority’s identity records. Personally identifiable fields must be marked and available for reporting and management according to GDPR regulations |
|  |  | All data MUST be handled in line with Cloud Security Principles as above.  Specifically measures must be taken to protect against   1. Leaking of commercially sensitive bid data prior to publishing 2. Malicious or accidental modification of any commercial data, whether published or not |
|  |  | The Supplier shall provide to the Authority details of the information assurance risks identified through the security assurance process four (4) weeks prior to the first live User of the Contract and on an annual basis thereafter. |
|  |  | The Supplier shall provide a Security Assurance Statement to the Authority prior to delivery of the Services and annually updated thereafter. |
|  |  | The Supplier shall provide evidence to the Authority on an on-going basis of the effective operation of the security controls and agree with the Authority the scope of an Operational Security Report template within twelve (12) weeks of Contract Award. The Report shall be provided to the Authority on a quarterly basis. |
|  |  | The Supplier shall produce a Security Incident Management Plan within six (6) weeks of Contract award.  The Security Incident Management Plan shall provide a categorisation scheme against which all security incidents shall be classified. The Plan shall detail how the Supplier will manage security incidents and shall detail the methods of communication to the Authority and Contracting Authorities (including any out-of-band methods) and the how the Supplier will address any detected information disclosure. |
|  |  | The Supplier shall provide a Cyber Essentials certificate for the Solution that is  issued by an NCSC approved certification body or a Supplier’s corporate Cyber Essential certificate issued by an NCSC approved certification body  if it can be demonstrated that the Solution is within its scope. |
|  |  | The Supplier shall ensure that any Subcontractors who will  have access or process to Contracting Authority data or shall be assured under a suitably scoped certificate which is issued under the Cyber Essentials Scheme.  The Supplier shall confirm this provision is in place before the Supplier or the relevant Sub-contractor shall be permitted to store, process or access OFFICIAL data provided by the Contracting Authority.  Any exceptions to the flow-down of the certification requirements to third party suppliers and Subcontractors shall be agreed with the Authority. |
|  |  | The Supplier shall provide the Authority with evidence of renewal of Cyber Essential certification by the date recommended by the certification authority over the duration of the contract. |

|  |  |  |
| --- | --- | --- |
| **Reference** | **Theme** | **Requirement** |
| Updates | | |
| 01 | Tech Spec | **Patches**: The service MUST be updated to provide security and bug fixes in the shortest reasonable time not impacting availability requirements. Such patches MUST be thoroughly tested prior to release. Rollback options MUST be available. The Authority MUST be informed of system changes at the time of release. Any non trivial risk on a patch SHOULD be notified to the Authority two days prior to release and contingency plans should be in place. |
|  |  | The Supplier shall ensure that all COTS hardware and software used to deliver the service shall be under mainstream vendor support during the duration of the Contract. |
| 02 | Tech Spec | **Functional impact**: Small functional service updates may be made at any time so long as the usability of the updates is obvious, is a small change and has been user tested with users from the Authority or similar organisations. Such changes should be self evident and not require formal training. Larger changes that may not be obvious MUST be notified to the Authority at least seven days before release and should have been user tested with the authority. A/B testing modes are preferred in this case so that functional changes can be released to small agreed subsets of Authority staff for user testing. |
| 03 |  | **Technical interfaces**: APIs **should** distinguish between minor and major versions, in line with semantic versioning standards such as https://semver.org. Minor version changes should be backwards compatible. Major version changes **should** be offered in parallel and older versions should not be retired until providing the Authority with at least three months notice. |

1. <https://www.trayport.com/uk/products2/joule> [↑](#footnote-ref-1)
2. <https://www.theice.com/index> [↑](#footnote-ref-2)
3. Value at Risk <https://en.wikipedia.org/wiki/Value_at_risk> [↑](#footnote-ref-3)
4. <https://en.wikipedia.org/wiki/Monte_Carlo_method> [↑](#footnote-ref-4)