**Health & Social Care Information Centre**

**Invitation To Quote**

**Title: FHIR Validation Tooling**

**Reference: HCON00439b**

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# INSTRUCTION TO BIDDERS

## About these Instructions

These instructions provide Contractors with the information necessary to produce and submit a Tender which may be evaluated and subsequently used to form a Contract. They are designed to ensure that all tenders are given equal and fair consideration. Therefore it is important that you provide all of the information requested in the format specified.

## 1.2 General Tender Information

Bidders should note that the Health & Social Care Information Centre (HSCIC) reserve the right to hold clarification meetings / presentations with a reduced number of bidders short listed following HSCIC’s evaluation team scoring.

Bidders (you) are to complete all sections of this document. Any assumptions or caveats, etc. to the pricing, delivery timescales or any other aspect of your offer should also be stated.

You should indicate in your bid any competitive advantage or additional added value services that you can provide were HSCIC to award the whole requirement on a solus basis (inclusive of any further discount).

HSCIC does not guarantee to award any contract as a result of this competition and also reserves the right to make an award against only part of your bid or to make multiple awards.

## Process Time Table

Project deadlines and milestones are as follows:

Tender responses due by Wednesday 18th May 2016; 17:00

Appointment of supplier w/c 30 May 2016

## 

## Accompanying Documents

Your Tender must be submitted in accordance with the following document:

* Instructions to Bidders
* Requirement

Your Tender response must be accompanied by:

* A signed copy of the Canvassing Certificate (as per Appendix 1), confirming that the Bidder/Contractor has not canvassed any member or official of the Authority
* A signed copy of the Certificate of Non-Collusive Tendering (as per Appendix 2) confirming that the Bidder/Contractor has not engaged in collusive tendering
* If the Bidder/Contractor is a subsidiary company, a parent company guarantee bond or other form of security may be required by the Authority on completion of contract documentation

All documents requiring a signature must be signed:

* Where the Bidder is an individual, by that individual
* Where the Bidder is a partnership, by two duly authorised partners
* Where the Bidder is a company, by two directors or by a director and the secretary of the company, such persons being duly authorised for that purpose
* Where the Bidder is a consortium of two or more organisations, by duly authorised representatives of each consortium member

Please ensure that you read and follow these instructions, as failure to comply with them may invalidate your tender.

Contractors should electronically sign, date and complete their Tender, inserting their responses in the appropriate places. Contractors must **NOT** amend any of the existing text in any way.

## Decline to Tender

Should you decline our Invitation To Tender (ITT) this will not prohibit your participation in future tenders.

## Tender Submission

You are requested to submit your bid electronically via email to procmail@hscic.gov.uk by Wednesday 18th May 2016; 17:00 as follows:

**Bids must be headed:**

**Tender Ref:** HCON00439b

**and addressed to:**

Katie Warner

Commercial Delivery

Health & Social Care Information Centre

Please ensure that your bid is submitted as defined above. Note that for the purposes of this tender any other method of delivery is not acceptable and may invalidate your tender.

It is the Contractor's responsibility to ensure that tender documents are received in full no later than the tender deadline as specified. Health & Social Care Information Centre (HSCIC), hereinafter referred to as “The Authority”, cannot be held responsible for the content of any responses that may be lost.

**Tenders should be submitted in English and in MS Word using no less than font size 12pt.**

## Enquiries

All enquiries relating to the subject matter of this ITT must be submitted via email to [**procmail@hscic.gov.uk**](mailto:procmail@hscic.gov.uk) **only**.

Responses to **ALL** questions / queries will be sent via email from [**procmail@hscic.gov.uk**](mailto:ict.businesslink@nhs.net) **only**.

We aim to respond to all queries / questions raised within 2 working days of receipt.

Contractors should note that this document has been prepared in good faith but does not purport to be a comprehensive statement of all matters relevant to the requirement. The Authority and its advisers do not accept any liability or responsibility for its adequacy, accuracy or completeness, nor do they make any representation or warranty, expressed or implied, with respect to the information it contains.

## Conditions Applying to the Tender

### Variant Bids

Bidders must provide a tender which is fully compliant with any specified mandatory or minimum requirements. Bidders may submit an alternative bid, but this must be clearly marked as such and must clearly demonstrate added value. If you have innovative ideas which enhance quality and/or reduce cost then these would be welcome and should be addressed in a separate paper at the end of the tender and referred to in the covering letter of your response. The Authority will certainly consider, but may or may not be able to take up innovative ideas.

### Tender Documents

Your tender must be submitted in the format out-lined and be delivered by the deadline stipulated.

All responses will be treated as Commercial-in-Confidence.

You are advised that your response may be reproduced and that no further indication or request for permission will be made. Such reproduction will be solely in connection with this procurement exercise.

We will acknowledge receipt of all tenders received, following the deadline date.

Contractors must demonstrate an ability to provide, administer and manage the requirement in accordance with current and known future legislation, codes of practice, best practice and other guidelines and to the standards, or exceed the standard, and requirements identified in the requirement and proposed contract documentation.

Prices and rates quoted must be fixed and firm for the stipulated period unless price breaks are agreed. All submitted tender prices and rates must be in pounds sterling and exclusive of Value Added Tax.

Tender responses must include details of delivery timescales for the product(s) or solution(s) requested within the Invitation to Tender.

### Incomplete Tenders

Tenders may be rejected if you do not provide all the information that is requested in this ITT. It is in your interest to ensure that the tender is checked thoroughly before it is submitted. All decisions to reject tenders following receipt of incomplete tenders will be at the discretion of the Authority.

### Acceptance of Tenders

By issuing this ITT the Authority is not bound in any way and does not have to accept the lowest value of any tender.

Receipt of this ITT does not in any way imply the existence of a commitment or contract. No Tender will be deemed to have been formally accepted until the Contractor has received a formal acceptance in writing.

Contractors must clearly state which services are to be provided from in-house resources and any that are to be subcontracted.

### Period for Which Tenders will Remain Valid

Unless otherwise stated by the Contractor, tenders shall remain valid for **90** days from the closing date for the receipt of tenders.

### Copyright

Contractors should note that copyright in this ITT rests with the Authority and its contents should be treated as Commercial in Confidence.

Reproduction of this document, either whole or in part, is forbidden except with the express permission of the Authority.

### Amendments to the ITT Documents

The Authority reserves the right to amend the enclosed ITT documents at any time prior to the deadline for receipt of tenders. Any such amendment will be numbered, dated and issued Katie Warner. Where amendments are significant, the Authority may, at its discretion, extend the deadline for receipt of tenders.

Bidders must not alter the format or content of the enclosed ITT documents in any way.

### Inducements

Offering an inducement of any kind relating to obtaining this or any other agreements with the Authority will disqualify your tender from being considered and may constitute a criminal offence.

### Costs and Expenses

You will not be entitled to claim from the Authority any costs or expenses incurred during the tender process whether or not your tender is successful. Such costs to include costs incurred in the preparation and submission of your tender and any additional costs that you may incur if the Authority modifies or amends the tender requirements including the Statement of Requirements.

### Confidentiality

Operating equitable tendering procedures relies on complete confidentiality of costing structures and any other information that may have a direct bearing on the tender outcome. It is therefore mandatory that such information is not disclosed to any third party before the contract is awarded and Contractors are notified.

It is also mandatory that no discussion, canvassing or soliciting of the Authority staff takes place, which may be deemed to have a bearing on the construction of a tender response.

Any breach of this confidentiality may render the tender invalid, except where essential information to cover the requirements of either insurance companies/brokers or financial planning requirements is requested by the Authority, prior to the official tendering process being carried out.

All information supplied by the Authority to you must be treated in confidence and not disclosed to third parties except insofar as this is necessary to obtain sureties or quotations for the purpose of submitting the tender. All information supplied by you to the Authority will similarly be treated in confidence except for the disclosure of such information with regard to the outcome or the procurement process.

### Evaluation

The tender process will be conducted so as to ensure that tenders are evaluated fairly and equally. Any contract awarded will be awarded on the basis of the offer which is the most economically advantageous from the point of view of the Authority. You may formally request a debriefing from the Authority if you are not successful in acquiring the contract award.

### Contracts

Any Contract awarded will be subject to HSCIC terms and conditions as stated in the attached document.

The Authority reserves the right to amend the draft contract during this exercise. Contractors will be required to signify agreement in principle to the final Contract determined by the Authority.

In addition, the Authority reserves the right to cancel this tender exercise without the need for explanation where circumstances arise that would make this necessary.

The Authority expressly reserves the right:

(i)  Not to award any contract as a result of the current procurement process; and

(ii)  To make any changes which it may see fit to the content or structure of the procurement process.

### Canvassing

Any Contractor who;

* Directly or indirectly attempts to obtain information from any member, employee, agent or contractor of the Authority concerning the process leading to the award of the Contractor; or
* Directly or indirectly attempts to obtain information from any member, employee, agent or contractor of the Authority concerning any other Contractor or proposed Contractor; or
* Directly or indirectly canvasses any member, employee, agent or contractor of the Authority concerning the award of the contract; may to be disqualified from the tender process by the Authority.

### Transparency

The parties acknowledge that, except for any information which is exempt from disclosure in accordance with the provisions of the FOIA, the content of this Contract is not Confidential Information. The Authority shall be responsible for determining in its absolute discretion whether any of the content of the Contract is exempt from disclosure in accordance with the provisions of the FOIA. Notwithstanding any other term of this Contract, the Contractor hereby gives his consent for the Authority to publish the Contract in its entirety, (but with any information which is exempt from disclosure in accordance with the provisions of the FOIA redacted) including from time to time agreed changes to the contract, to the general public.

The Authority may consult with the Contractor to inform its decision regarding any redactions but the Authority shall have the final decision in its absolute discretion.

The Contractor shall assist and cooperate with the Authority to enable the Authority to publish this Contract.

# Requirement

Please could you provide a quote and lead time for the support contract, as detailed below,using the above reference number.   
All bids must be attached within an email to [procmail@hscic.gov.uk](mailto:procmail@hscic.gov.uk)

Please apply any NHS discounts applicable to this vendor and/or these products.   
Any award decision will be made based on the most economically advantageous bid within specification.

## Background

The Health and Social Care Information Centre is a ground-breaking data, information and technology resource for the health and care system and plays a fundamental role in driving better care, better services and better outcomes for patients.

We collect, analyse and publish national data and statistical information. We deliver national IT systems and services to support the health and care system. HSCIC creates implementation guides using the HL7 FHIR standard. A component part of the implementation guides are the FHIR “profiles”.

FHIR “profiles” are essentially a series of constraints based on a use case to ensure that a FHIR resource is populated so as to meet the business rules required for the system it is being created for.

HSCIC have chosen to use the “Forge” tool from Furore as a means to create the profiles, these are created as FHIR “Structure Definitions” with a “snapshot” populated for of each of the elements within the resource.

The profiles together with XML examples of the resources that comply to the profiles and other definitional assets are consumed by the HSCIC publishing software to create an Implementation Guide.

Currently there is no automated software for validating the instances against profiles.

The HSCIC FHIR publishing software has been developed in house using C# a .NET technology from Microsoft.

## Current State

HSCIC is committed to the delivery of technical standards using the International FHIR standards delivered by HL7. HSCIC implementation guides using FHIR standards are in development for multiple programmes of work with many more on their way.

The Implementation Guides contain exemplar XML and/or JSON files based on the profiles contained within the Implementation Guides.

Currently a manual process is used to ensure that the example files created are compliant with the constraint rules defined within the FHIR profiles.

* Software tooling is required to undertake this process as:
* the manual process is complex and prone to human error
* the complexity of the profiles means that the checking process is complicated and time consuming
* the iterative agile manner of development necessitates that profiles and examples are changed frequently

## Future State

A validation capability is required within the publishing tooling and potentially within other tool chains within the HSCIC. In order to allow the independent development of the publishing tool, the validation tool and other HSCIC tools the validation tooling is envisaged to be delivered as a software library as opposed to a standalone application.

Currently HSCIC FHIR tools make use of the C# API open source project available on GitHub (<https://github.com/ewoutkramer/fhir-net-api>).

The requirements for the validation capability are expected to evolve over time and be consumed by other applications that may be developed internally or externally from HSCIC. As such the delivery of this capability is itself expected to be made available on GitHub as an open source project with a permissive license.

## Requirements:

### Fitness for Purpose – Technical/Interface Requirements

|  |  |  |
| --- | --- | --- |
| TT01 | MUST | The validation software must be made available as an open source project on GitHub with a permissive licence allowing other parties to branch and enhance the software |
| TT02 | MUST | The validation software must be developed using C# so as to allow easy integration into HSCIC’s existing toolset |
| TT03 | MUST | The code must allow configuration of the location(s) on the local file system where profiles and value sets are located. These should be located by their canonical URL (not their filenames). |
| TT04 | MUST | The code must allow configuration of the URL (http or https, with optional port number) as to where the profiles and value sets are located. These should be located by their canonical URL. |
| TT05 | MUST | The results of the validation must be available as a list with sufficient detail to identify the cause of the validation error. The use of “Error Numbers” is encouraged. |

### Fitness for Purpose – Functional Requirements (Single Resource)

|  |  |  |
| --- | --- | --- |
| TS01 | MUST | The validation must be able to function on either XML or JSON examples. |
| TS02 | MUST | The validation software must ensure that the examples are valid according to the XML Schema and Schematron supplied as part of the FHIR standard, |
| TS03 | MUST | The validation of the example must be for each of the profiles listed within the “Meta.Profile” |
| TS04 | MUST | Examples with no profiles stated within “Meta.Profile” must be logged in to the validation report. |
| TS05 | MUST | Validation must ensure that the example is compliant with any Slicing definitions. |
| TS06 | MUST | Validation must ensure that the example is compliant with the “Min” and “Max” definitions for each element. |
| TS06 | MUST | Validation must ensure that the example is compliant with the “type” definition for each element. |
| TS06a | MUST | Where a type has a profile URI supplied, validation must ensure the example confirms to the profile identified by this URI. |
| TS06b | MUST | Where a type is a reference and the aggregation mode is marked as “Contained” then the contained resource should be present and should be validated. |
| TS06c | MUST | Where a type is a reference and the aggregation mode is marked as “Bundled” then see additional[*requirements for Bundled Resources*](#_Functional_Requirements_(Bundled) |
| TS07 | MUST | Validation must ensure that the example is compliant with any “fixed” definitions for each element. |
| TS08 | COULD | Validation must ensure that the example is compliant with any “pattern” definitions for each element. |
| TS09 | MUST | Validation must ensure that the example is compliant with any “Min Value” or “Max Value” definitions (for relevant data types). |
| TS10 | MUST | Validation must ensure that the example is compliant with any “Max Length” definitions (for relevant data types). |
| TS11 | MUST | Validation must ensure that the example is compliant with bindings as per “[Functional Requirements (Bindings)”](#_Functional_Requirements_(Bindings)). |
| TS12 | MUST | Validation must ensure that the example is compliant with constraints defined as part of the base resource definition. |
| TS13 | COULD | Validation could ensure that the example is compliant with additional constraints defined as part of the profile definition. |
| TS15 | MUST | Validation must ensure that the example is compliant with any “Extensions” or “Modifier Extensions” definitions defined within the profile. |
| TS16 | MUST | If “Extensions” or “Modifier Extensions” cannot be located then this should be reported as an error. |

### Fitness for Purpose – Functional Requirements (Bindings)

|  |  |  |
| --- | --- | --- |
| BB01 | MUST | Binding validation must take into consideration the “Binding Strength” |
| BB02 | INFO | Where bindings relate to a “ValueSet” resource, the resource will always be an in-line code system (no expansion processing is required) |
| BB03 | MUST | Where bindings relate to a “ValueSet” resource and the resource cannot be located, this should be reported as an error. |
| BB04 | MUST | Where bindings relate to a “URI” a suitable future extension point should be placed in the code for future enhancement. |

### Fitness for Purpose – Functional Requirements (Bundled Resource)

|  |  |  |
| --- | --- | --- |
| TB01 | MUST | TS01, TS02, TS03, TS04 and TS05 must equally apply to the Bundle resource itself. |
| TB02 | MUST | Each resource entry in the Bundled collection must be validated as per the TS\*\* set of requirements. |
| TB03 | MUST | When the Bundle represents a “Message” (e.g. Entry#1 is a MessageHeader) is should not contain any “orphan” resources. Every resource (with the exception of the MessageHeader) should be referenced by another resource within the Bundle. |
| TB04 | MUST | The validation process must have a mechanism to override the aggregation mode for references (when used in Bundles) forcing all references to be “Bundled”. |

### Fitness for Purpose – Functional Requirements (Documentation & Examples)

|  |  |  |
| --- | --- | --- |
| EX01 | MUST | Minimal documentation is required; this may be in the form of examples. |
| EX02 | MUST | Example code must be provided showing how to use the code library from a standalone C# console application. |
| EX03 | MUST | Documentation should provide a list of error codes and their meaning. |

## Delivery

### Delivery

The software should be delivered in phases containing at least the following:

* An overview detailing the technical approach/design to be adopted together with a delivery plan for all phases.
* A stated number of technical code deliverables, with details of the functionality delivered in each release.
* A number of example C# Console applications demonstrating the use of the code.

When bidding against this work it should be clearly identified what the payment schedule against these phases is intended to be.

## Lifecycle Costs

### Lifecycle Costs

The Authority will be evaluating the proposed solution on fitness for purpose and value for money. As such, costs for the following should be outlined as a minimum:

* Implementation Costs
* Any On-going Costs

# Responses

Please could you provide responses to the below. All bids must be emailed to [procmail@hscic.gov.uk](mailto:procmail@hscic.gov.uk) as per above.

## Fitness for purpose including quality

### Fitness for purpose – Technical/Interface Requirements

Please demonstrate that you can deliver to the outlined contract requirements detailed above:

|  |
| --- |
| Response: |

### Fitness for purpose – Functional Requirements (Single Source)

Please demonstrate that you can deliver to the outlined contract requirements detailed above:

|  |
| --- |
| Response: |

### Fitness for purpose – Functional Requirements (Bindings)

Please demonstrate that you can deliver to the outlined contract requirements detailed above:

|  |
| --- |
| Response: |

### Fitness for purpose – Functional Requirements (Bundled Resource)

Please demonstrate that you can deliver to the outlined contract requirements detailed above:

|  |
| --- |
| Response: |

### Fitness for purpose – Functional Requirements (Documentation & Examples)

Please demonstrate that you can deliver to the outlined contract requirements detailed above:

|  |
| --- |
| Response: |

## Delivery

### Delivery

Please demonstrate that you can deliver to the outlined contract requirements detailed above:

|  |
| --- |
| Response: |

## Lifecycle costs

### Lifecycle Costs

Please outline lifecycle costs below, but not limited to:

* Implementation Costs
* Any On-going Costs

|  |
| --- |
| Response: |

# Evaluation Criteria

Any award decision will be made based on the most economically advantageous bid using the following weightings:

| **Requirement** | **Requirement Heading** | **Requirement Category** | **Requirement Title** | **% of Category** | **Category Weight** | **% of overall score** |
| --- | --- | --- | --- | --- | --- | --- |
| **2.4.1** | **Fitness for Purpose** | **Technical/Interface** | **Technical/Interface** | **20%** | **12%** | **60%** |
| **2.4.2** | **Fitness for Purpose** | **Functional** | **Single Resource** | **20%** | **12%** |
| **2.4.3** | **Fitness for Purpose** | **Functional** | **Bindings** | **20%** | **12%** |
| **2.4.4** | **Fitness for Purpose** | **Functional** | **Bundled Resource** | **20%** | **12%** |
| **2.4.5** | **Fitness for Purpose** | **Functional** | **Documentation & Examples** | **20%** | **12%** |
| **2.4.6** | **Delivery** | **Delivery** | **Delivery** | **100%** | **20%** | **20%** |
| **2.4.7** | **Lifecycle Costs** | **Lifecycle Costs** | **Lifecycle Costs** | **100%** | **20%** | **20%** |

## APPENDIX 1

**Canvassing Certificate**

We hereby certify that we have not canvassed any member, employee, agent or contractor of the Authority in connection with the award of the contract for the Deliverables or any other proposed contract for the Deliverables and that no person employed by us or acting on our behalf has done any such act.

We further hereby undertake that we will not in the future canvass or solicit any member, employee, agent or contactor of the Authority in connection with the award of the contract for the Deliverables or any proposed contract for the Deliverables and that no person employed by us or acting on my/our behalf will do any such act.

Signed: Signed:

Position: Position:

For and on behalf of: For and on behalf of:

Dated: Dated:

## APPENDIX 2

**Certificate of Non-Collusive Tendering**

The essence of the tendering process is that the Authority shall receive bona fide competitive tenders from all Tenderers. We, the undersigned, hereby certify that this is a bona fide tender and we have not;

1. entered into any agreement with any other person with the aim of preventing tenders being made or as to the fixing or adjusting of the amount of any tender or the conditions on which any tender is made; or
2. informed any other person, other than the person calling for this tender, of the amount or the approximate amount of our tender except where the disclosure, in confidence, of the approximate amount of our tender was necessary to obtain quotations necessary for the preparation of our tender, for insurance purposes, for performance bonds and/or parent company guarantees or for professional advice required for the preparation of our tender; or
3. caused or induced any person to enter into such an agreement as is mentioned in paragraph (1) above or to inform us of the amount or the approximate amount of any rival tender for the Deliverables; or
4. committed any offence under the Prevention of Corruption Acts 1889 to 1916; or
5. offered or agreed to pay or give any sum of money, inducement or valuable consideration directly or indirectly to any person for doing or having done or causing or having caused to be done in relation to any other tender or proposed tender for the Deliverables any act or omission; or
6. canvassed any person referred to in paragraph 1 above in connection with the Deliverables.

We also undertake that we shall not procure the doing of any of the acts mentioned in paragraphs 1 to 6 above before the hour and date specified for the return of the tender nor shall we do so:

(1) before the contract award is announced; or

(2) in the event of our tender being accepted or our being appointed preferred bidder, prior to completion of a contract between us and the Authority.

In this certificate, the word “person” includes any person, body or association, corporate or unincorporated and “agreement” includes any arrangement whether formal or informal and whether legally binding or not.

We acknowledge that if we have acted or act in contravention of this Certificate of Non-Collusive Tendering then the Authority shall be entitled to reject our tender, or after award of any contract pursuant to this process that contract may be rescinded, and that if such rejection or rescission occurs we will indemnify the Authority against all loss and expense arising out of or in connection with such rejection or rescission.

Signed: Signed:

Position: Position:

For and on behalf of: For and on behalf of:

Dated: Dated:

***Appendix 3***

**HSCIC Terms and Conditions**

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