Transforms Workshop
Prepared by: Sufyan Patel
Date: 12/11/2021

A workshop took place to discuss how healthcare interoperability could continue regardless of the version of FHIR. Few points were presented which would be the core components in delivering a solution to transforming FHIR messages.

Four options were presented which included the usage of mapping files, a central service to transform messages, software libraries and guidance. It was evident during the workshop that these options would collectively form the key components into a final solution. Instead of selecting one or a combination of two options, the general mood was to develop a solution that would incorporate most if not all options.

A transform solution would ideally be created for each service with the necessary due diligence having taken place by the service regarding the viability of the version upgrade and taking into consideration the complexity of the transforms.

In the initial phase of this work, the transform service will focus primarily on converting messages from FHIR STU3 to R4, and vice versa.

Mappings

Any transformation solution would require the definition of base rules which would come in the form of mapping resources. These would form the key rules as to how the data can be transformed. The FHIR mapping language is one method of creating a set of maps between the versions, but the complexity of the language and its interpretation could prove to be a barrier for implementers. A useful method to display the maps would be to use a spreadsheet format or a format that is easily understood/implemented.

Who would create the mappings?

- Eventually the mappings would be developed by the centre to ensure that they are all created in a consistent manner. They would also be assured by making sure the solution has implemented the maps through software testing and will make sure that the result meets the expected outcome.

Where will the mappings be located?

- It is envisaged that the mappings would be published on an open platform which would allow stakeholders to download and view the source files.

What will the mappings be mapped to?

- For services that use the CareConnect profiles they would be mapped to the UK Core profiles. As the latter was developed on the former, the likelihood of major changes would be a minimum.
What would happen if an element does not have an exact match?

- It is extremely important that all messages are transformed as close as possible to the source message to reduce any clinical risk. All elements in the mappings would be mapped to either the exact element or a closest alternative. If the element has been re-named, then the mapping will be made to the newly named element. If there are no alternatives for an element, then an extension would be sought to be developed as part of the profile.

Will maps be provided HLv2?

- Currently the transform service would be converting messages between FHIR versions STU3 and R4. Once a stable FHIR solution has been developed then transformation between other standards would be investigated.

How can we use logical models to aid this process?

- Logical models can provide key data that requires transforming and they would form an integral part in developing the maps.

Central Service

A central service would be developed by the centre to implement the transformations for each programme. The service would be hosted in a central location where payload transactions would be posted to be converted to the required format.

It is envisaged that each programme would contribute to the development of their own transformation solution by providing input to the creation of the mapping files. This solution would be hosted in the central location, but the endpoint address would be unique for each programme. All NHS internal programmes would be sought to use the central service as a transformation solution and any services provided by the suppliers would be encouraged to use the libraries (see section C).

A central service would provide a solution using the same development method and therefore all payloads would be handled in a similar manner. All mapping restrictions would also be handled in a safe and similar fashion.

How will the central service be developed?

- It is important that the development of the transformation service be produced openly to encourage input from interested stakeholders. It is envisaged that the transformation component would be produced by NHS Digital using existing FHIR libraries.
Software libraries

The software libraries would be in effect a ‘take-away’ transformation component of the central service. The libraries would be developed by NHS Digital, and the generic transformation layer would be available for download. The location at this moment has not been decided but it will be available on an open platform.

How would the suppliers use these libraries?

- Anyone wishing to use the libraries for services not covered by the central service would need to download the libraries and develop the source code to include the resource maps required.

What language will the libraries be developed in?

- This depends on how the transform service is developed. If the HAPI FHIR libraries are used, then it will be likely that the output would be Java files.

Going forward

With the draft release of FHIR R5, it is becoming increasingly apparent that programmes would consider new developments using the latest version of FHIR.

A transform engine would provide a solution that would allow services to gradually migrate to later versions of FHIR without compromising the quality of care. Once a service has fully migrated, then the transform capability for that service would be deprecated.

There is a current pilot work looking at transforming medication data from STU3 to R4 for the Interoperable Medicines programme. Although this specific piece of work is focusing on a small number of FHIR resources, the approach and process of creating the transforms could be key in developing one for other programmes.

Other programmes are considering using transforms to convert payloads from STU3 to R4 and discussions are ongoing to adopt a way forward.