**Issues when transforming from R4 back to STU3**

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| Issue | Mitigation |
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| R4 resources have more elements than STU3 resources | For example, Procedure in R4 offered additional options for performed[x] (The date(time)/period over which the procedure was performed). Whereas in STU3 the allowable elements were performedDateTime & PerformedPeriod, this has been expanded to include performedString, performedAge & performedRange.  The obvious solution would be to create a “back-port” for STU3 extension to hold these additional values. However, back-port extensions that are not necessarily coded to by a recipient have the following issues   * They may not be supported by the recipient * They will be undocumented in CareConnect * They may contain important information that cannot (or should not) be ignored * If extensions are used, they can only be used at extension points. This means that some back-port extensions will be “in-context” within the resource (additional references, SNOMED description id for example, whereas when no extension point is available the extension will appear at the resource level) |
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| R4 data type definition changes (e.g. Reference) | For example, the Reference data type has an added element in R4 (reference.type). If this element is entered in a R4 instance, it’s value will have to reside in an extension in the STU3 equivalent. |
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| R4 to STU3 not supported by code libraries | ?????? |
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| Additional data types in R4 | There are numerous data types added for R4 (not all impact the CareConnect profiles) – for example MoneyQuantity, SubstanceAmount, canonical. These (other than canonical) tend to be complex data types. These are used on new elements and resource types not yet expressed in CareConnect.  Where new data types are found to be used (and are impactful to a transform), they will have to become complex extensions in the lower version of FHIR |
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| R4 has additional resource types not supported in STU3 | By definition, new resource types in R4 will not have a CareConnect equivalent (as the resource type wasn’t in existence in STU3). |
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| STU3 resources have been split over multiple R4 resource definitions | For example, the STU3 Medication resource contained a concept of “package” (Details about packaged medications). This has now been split out from R4 Medication into a new resource MedicinalProductPackaged. If a R4 Medication is being transformed to an STU3 equivalent, there may be complex rules around the processing of several R4 resources to re-create a STU3 version, without data loss. |
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| R4 supports required values not supported by STU3 required values | For example, Appointment.status has 2 additional values in R4 – “checked-in | waitlist”. Appointment.status is a Required valueSet in both STU3 and R4 (which means that you can only use the values presented). Is the R4 resource to be transforfmed to STU3 contains any of the new values, they will either have to be mapped to a STU3 value (not idea), put into an extension (but a value for Appointment.status will still have to be selected) |
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| R4 supports additional Reference targets | This is a common issue, and commonly PractitionerRole has been added as a R4 target. We can support the addition of Reference targets through extensions (this has already done for PractitionerRole <https://fhir.nhs.uk/STU3/StructureDefinition/Extension-PractitionerRole-Reference-1>)  Of more concern is when the additional reference targets in R4 references resource types that don’t exist in CareConnect |
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