

FHIR Extension in RDF

Extension in JSON

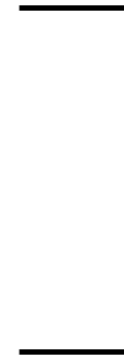
```
{  
  "resourceType": "Device",  
  "id": "example-udi2",  
  ...  
  "extension": [  
    {  
      "url": "http://hl7.org/fhir/StructureDefinition/device-din",  
      "valueIdentifier": {  
        "system": "http://hl7.org/fhir/NamingSystem/iccbba-din",  
        "value": "A99971312345600"  
      }  
    }  
  ],  
  "udiCarrier": {
```

predicate



object type

object



Literal RDF Translation

<http://hl7.org/fhir/Deviceexample-udi2> a fhir:Device;

fhir:nodeRole fhir:treeRoot;

fhir:Resource.id [fhir:value "example-udi2"];

....

fhir:extension [

fhir:index 0;

fhir:Extension.url [fhir:value "http://hl7.org/fhir/StructureDefinition/device-din"];

fhir:Extension.valueIdentifier [

fhir:Identifier.system [fhir:value "http://hl7.org/fhir/NamingSystem/iccbba-din"];

fhir:Identifier.value [fhir:value "A99971312345600"]

]

];

predicate

object

object type

<http://hl7-fhir.github.io/device-example-udi2.ttl.html>

Suggested RDF Translation

fhir:Resource.id [fhir:value "example-udi2"];

<http://hl7.org/fhir/StructureDefinition/device-din> [

a fhir:Extension;

difference between extension and core

a fhir:Identifier;

necessary if extension definition isn't present

fhir:index 0;

fhir:Identifier.system [fhir:value "http://hl7.org/fhir/NamingSystem/iccbba-din"];

fhir:Identifier.value [fhir:value "A99971312345600"]

];

Ideal TTL Translation

- Requires validators to recognize any predicate whose target is `rdf:type fhir:Extension`.
- Requires an optional type-arc on every data-type

Alternative 1

```
fhir:extension [
```

```
  fhir:index 0;
```

```
  <http://hl7.org/fhir/StructureDefinition/device-din> [
```

```
    a fhir:Identifier; still needed because when external typing not available
```

```
    fhir:Identifier.system [ fhir:value "http://hl7.org/fhir/NamingSystem/iccbba-  
din" ];
```

```
    fhir:Identifier.value [ fhir:value "A99971312345600" ]
```

```
  ]
```

```
]
```

Alternative

- Requires different code for extensions vs. root nodes
- Value access is common

Alternative 2

```
fhir:extension [
```

```
  fhir:index 0;
```

```
  <http://hl7.org/fhir/StructureDefinition/device-din> [
```

```
    fhir:Extension.valueIdentifier [
```

```
      fhir:Identifier.system [ fhir:value "http://hl7.org/fhir/NamingSystem/iccbba-din" ];
```

```
      fhir:Identifier.value [ fhir:value "A99971312345600" ]
```

```
    ]
```

```
  ]
```

```
]
```


Alternative 2

- Minimal change
- Minimal gain — special processing required for extensions. Code has alternative paths — “core” and “extension”

Modifiers JSON

```
"valueQuantity": {
```

```
  "value": 1,
```

```
  "comparator": "<=",
```

```
  "unit": "U"
```

```
},
```

knowledge of schema required to know that !(value=1)

Modifiers

TTL

fhir:Observation.valueQuantity [

fhir:Quantity.value [fhir:value "1"^^xsd:decimal];

fhir:Quantity.comparator [fhir:value "<="];

fhir:Quantity.unit [fhir:value "U"]

];

same issue – non-monotonic(!)

Modifiers

TTL option 1

fhir:Observation.valueQuantity [

fhir:Quantity.comparator [

fhir:Quantity.value [fhir:value "1"^^xsd:decimal];

fhir:value [fhir:value "<="];

fhir:Quantity.unit [fhir:value "U"]

]

Modifiers

TTL option 2

```
fhir:Observation.valueQuantity_comparator_mod [
```

```
  fhir:Quantity.value [ fhir:value "1"^^xsd:decimal ];
```

```
  fhir:Quantity.comparator [ fhir:value "<=" ];
```

```
  fhir:Quantity.unit [ fhir:value "U" ]
```

```
];
```

same issue – non-monotonic(!)