

# 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": {
```

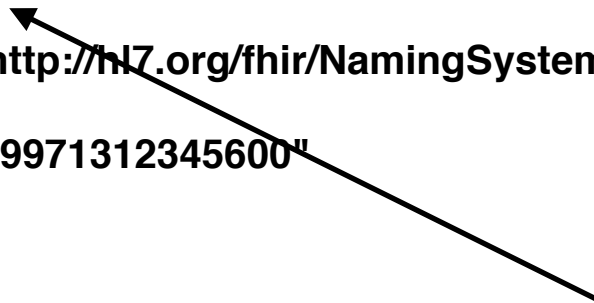
**predicate**



**object**



**object type**



# Literal TTL 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" ]**

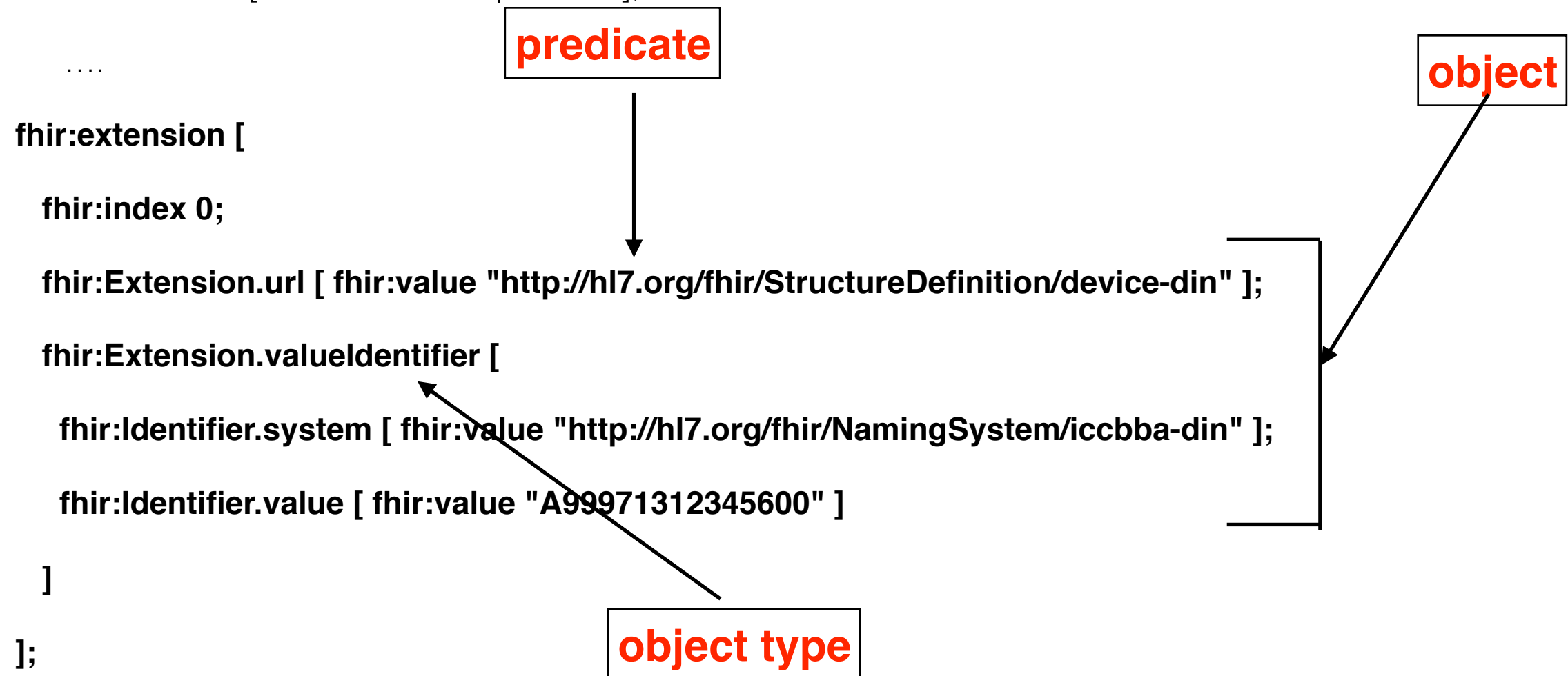
**]**

**];**

**predicate**

**object**

**object type**



# Ideal TTL Translation

<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

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" ]

]