

Dehydrated FHIR

Gregory McKay, Babylon



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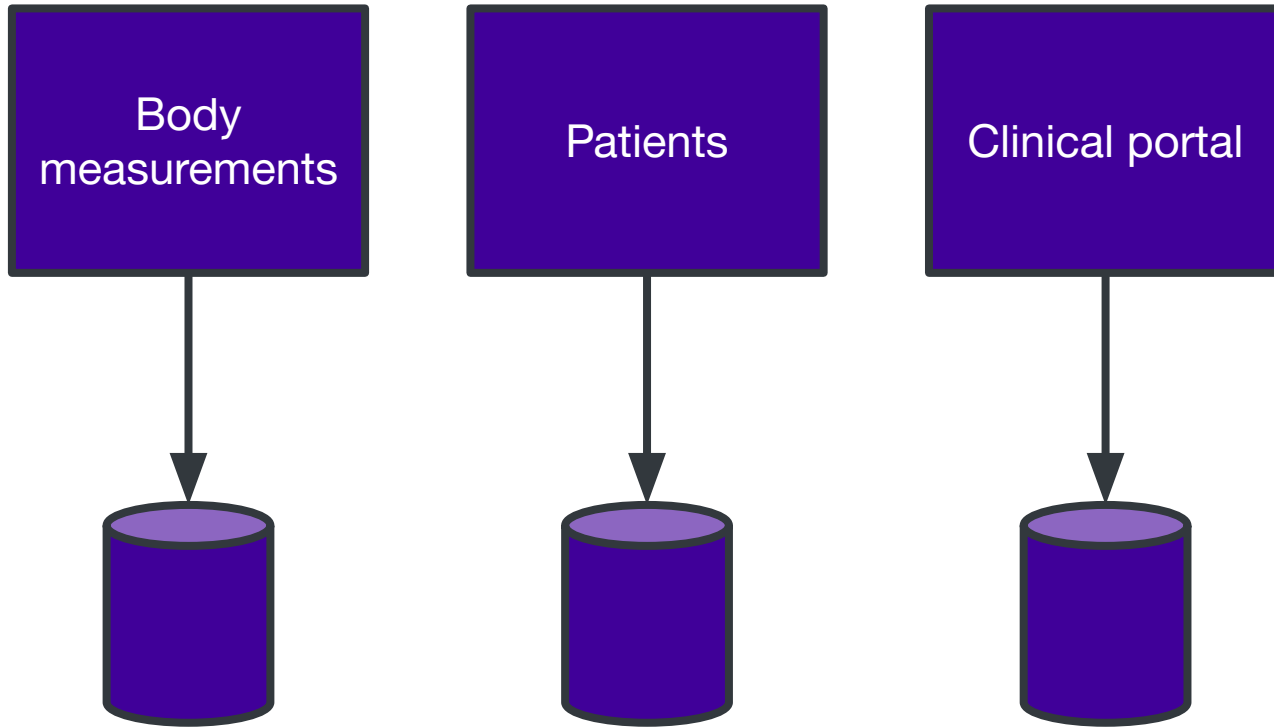
Dehydrated FHIR

Gregory McKay
Engineering Manager
Health Graph Modelling

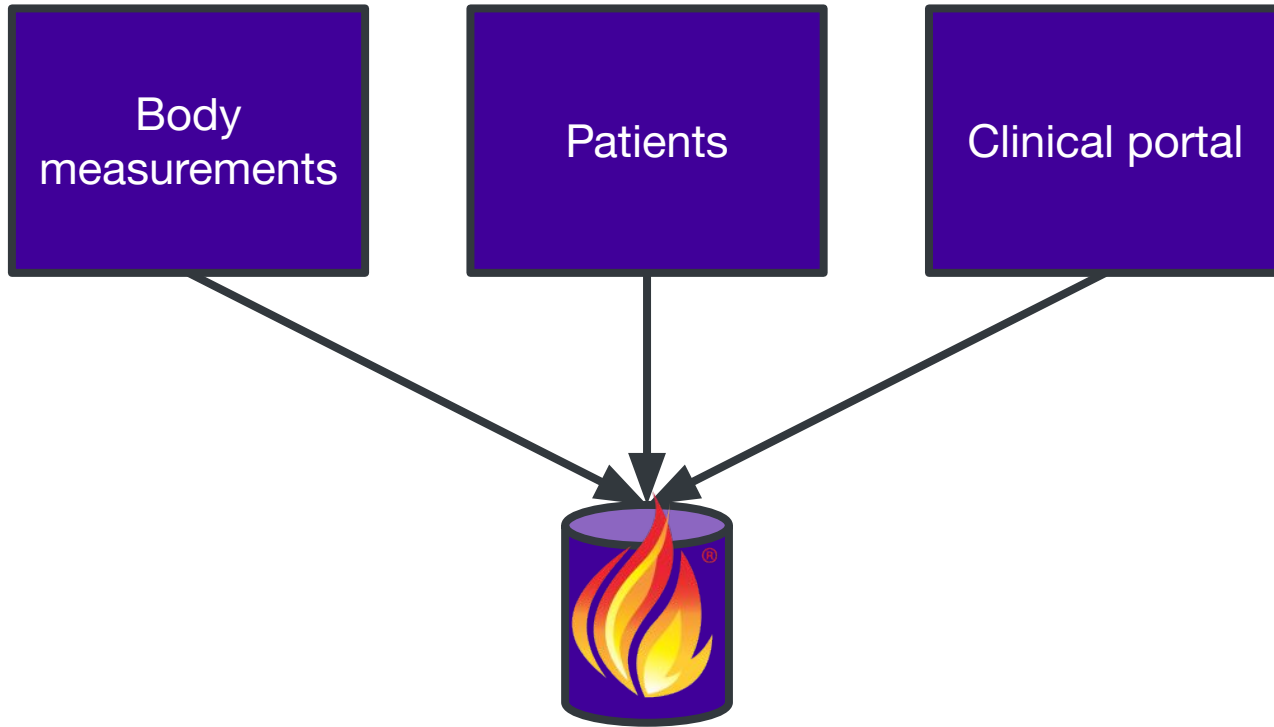


HL7[®] FHIR[®] DevDays

Siloed data



Unified data



Domain service data

```
{  
  "id" : "123456"  
  "type" : "Height",  
  "patient" : "7890000",  
  "date" : "2022-06-06",  
  "value" : 170,  
  "unit" : "cm"  
}
```



FHIR data

```
{
  "resourceType": "Observation",
  "id": "123456",
  "meta": { "profile": ["http://hl7.org/fhir/StructureDefinition/vitalsigns"] },
  "status": "final",
  "category": [ {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs",
        "display": "Vital Signs"
      }
    ],
    "text": "Vital Signs"
  } ],
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "8302-2",
        "display": "Body height"
      }
    ],
    "text": "Body height"
  },
  "subject": { "reference": "Patient/7890000" },
  "effectiveDateTime": "2022-06-06",
  "valueQuantity": {
    "value": 170,
    "unit": "cm",
    "system": "http://unitsofmeasure.org",
    "code": "cm"
  }
}
```



Mapping data

```
{  
  "id" : "123456"  
  "type" : "Height",  
  "patient" : "7890000",  
  "date" : "2022-06-06",  
  "value" : 170,  
  "unit" : "cm"  
}
```

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{  
  "resourceType": "Observation",  
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  "status": "final",  
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        "display": "Vital Signs"  
      }  
    ],  
    "text": "Vital Signs"  
  } ],  
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        "code": "8302-2",  
        "display": "Body height"  
      }  
    ],  
    "text": "Body height"  
  },  
  "subject": { "reference": "Patient/7890000" },  
  "effectiveDateTime": "2022-06-06",  
  "valueQuantity": {  
    "value": 170,  
    "unit": "cm",  
    "system": "http://unitsofmeasure.org",  
    "code": "cm"  
  }  
}
```



Mapping data

```
{  
  
}  
  
}
```

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"id" : "123456"  
"type" : "Height"  
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    "coding": [ {  
      "system": "http://terminology.hl7.org/CodeSystem/observation-category",  
      "code": "vital-signs",  
      "display": "Vital Signs"  
    } ],  
    "text": "Vital Signs"  
  } ],  
  "code": {  
    "coding": [ {  
      "system": "http://loinc.org",  
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      "display": "Body height"  
    } ],  
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  "subject": { "reference": "Patient/7890000" },  
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    "value": 170,  
    "unit": "cm",  
    "system": "http://unitsofmeasure.org",  
    "code": "cm"  
  }  
}
```



Template

BodyMeasure

id : string
type : BodyMeasureType
patient : string
date : date
value : decimal
unit : BodyMeasureUnit

```
{
  "resourceType": "Observation",
  "id": "{{{id}}}",
  "meta": { "profile": ["http://hl7.org/fhir/StructureDefinition/vitalsigns"] },
  "status": "final",
  "category": [ {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs",
        "display": "Vital Signs"
      }
    ],
    "text": "Vital Signs"
  } ],
  "code": "{{{type}}}",

  "subject": { "reference": "Patient/{{{patient}}}" },
  "effectiveDateTime": "{{{date}}}",
  "valueQuantity": {
    "value": "{{{value}}}",
    "unit": "{{{unit}}}",
    "system": "http://unitsofmeasure.org",
    "code": "{{{unit}}}"
  }
}
```



Template

BodyMeasure

id : string
type : **BodyMeasureType**
patient : string
date : date
value : decimal
unit : **BodyMeasureUnit**

```
{
  "resourceType": "Observation",
  "id": "{{id}}",
  "meta": { "profile": ["http://hl7.org/fhir/StructureDefinition/vitalsigns"] },
  "status": "final",
  "category": [ {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs",
        "display": "Vital Signs"
      }
    ],
    "text": "Vital Signs"
  } ],
  "code": "{{type}}",

  "subject": { "reference": "Patient/{{patient}}" },
  "effectiveDateTime": "{{date}}",
  "valueQuantity": {
    "value": "{{value}}",
    "unit": "{{unit}}",
    "system": "http://unitsofmeasure.org",
    "code": "{{unit}}"
  }
}
```



Enums

BodyMeasureUnit

values :

- value : "cm"
- name : "inch"
value : "[in_i]"
- value : "kg"

BodyMeasureType

values :

- name: "Height"
value :

```
{
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "8302-2",
      "display": "Body height"
    }
  ],
  "text": "Body height"
}
```



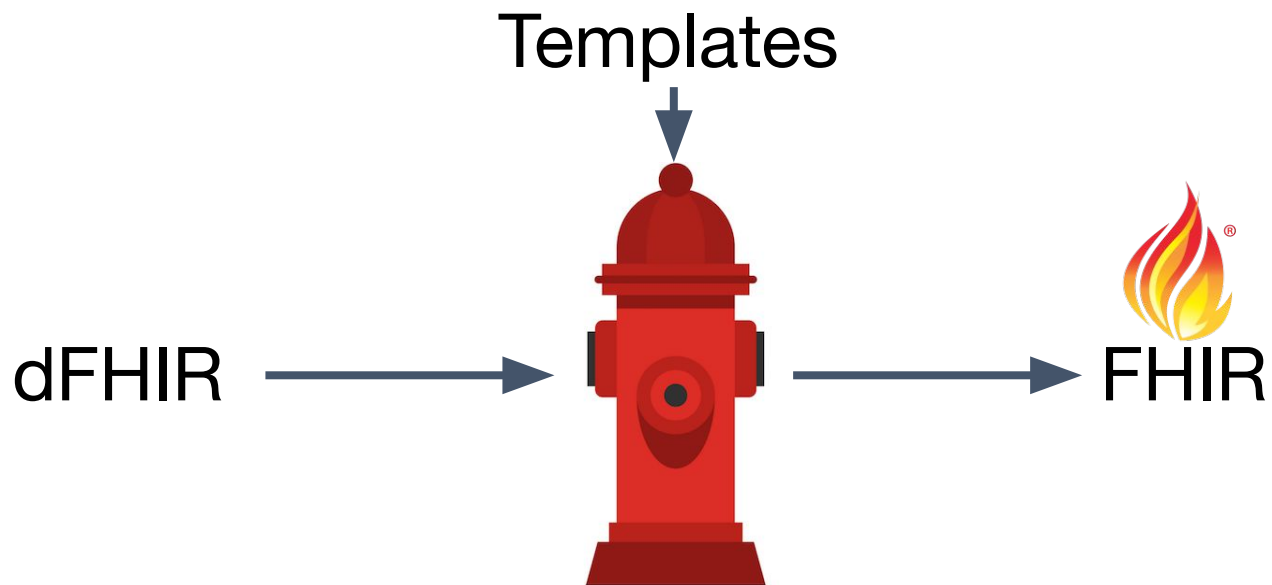
Repeated field

Repeated **category** : string

```
"category": [  
  {  
    "text": "{{category}}"  
  }  
]
```



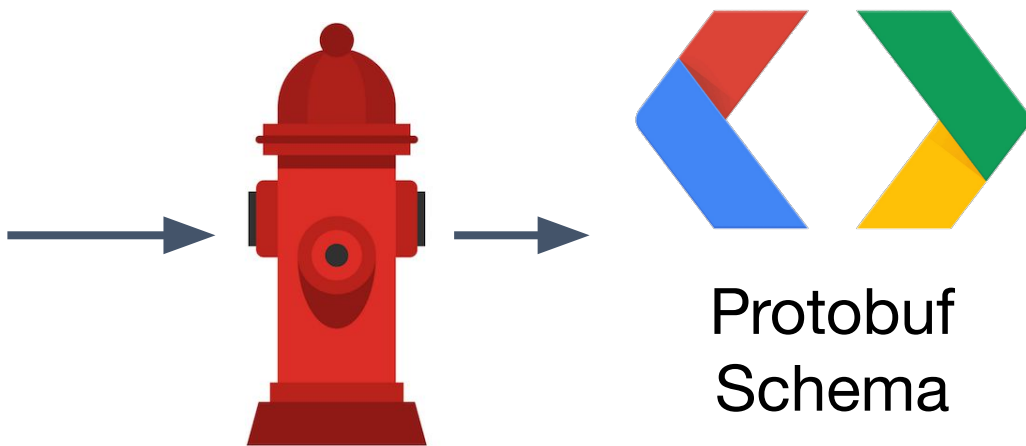
Hydration



Protobuf Generation

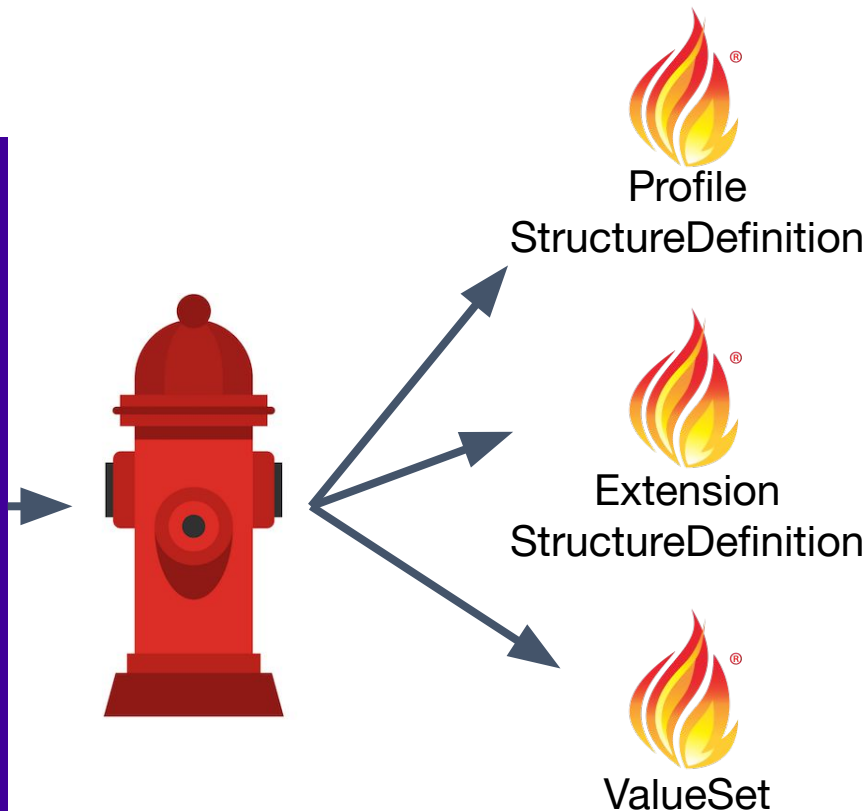
BodyMeasure

```
id      : string
type    : BodyMeasureType
patient : string
date    : date
value   : decimal
unit    : BodyMeasureUnit
```

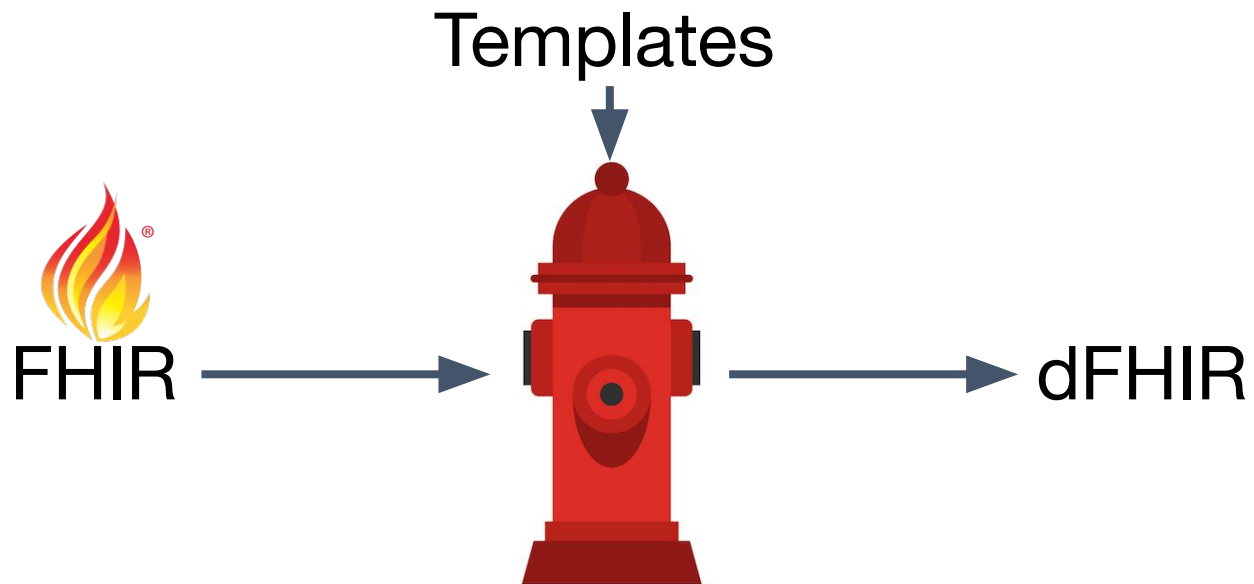


Profile Generation

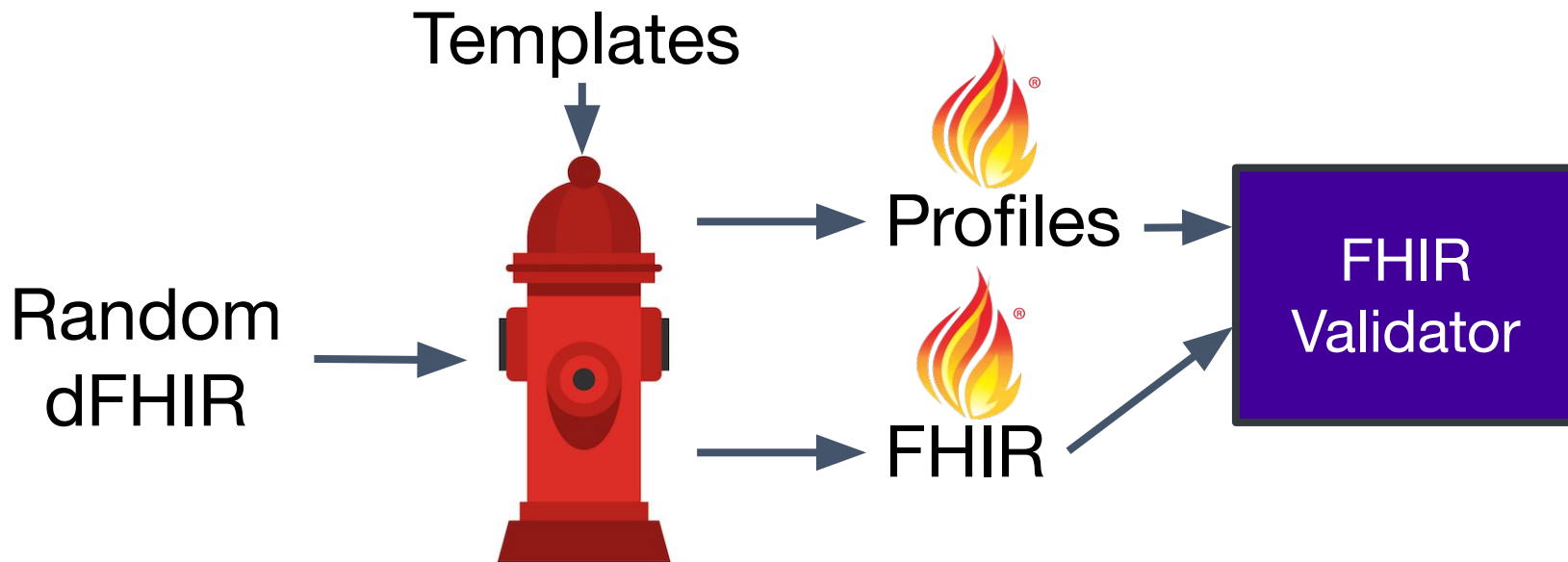
```
{
  "resourceType": "Observation",
  "id": "{{{id}}}",
  "meta": { "profile": [ ] },
  "status": "final",
  "category": [ {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation",
        "code": "vital-signs",
        "display": "Vital Signs"
      }
    ]
  } ],
  "text": "Vital Signs"
},
{
  "code": "{{{type}}}",
  "subject": { "reference": "Patient/{{{patient}}}" },
  "effectiveDateTime": "{{{date}}}",
  "valueQuantity": {
    "value": "{{{value}}}",
    "unit": "{{{unit}}}",
    "system": "http://unitsofmeasure.org",
    "code": "{{{unit}}}"
  }
}
}
```



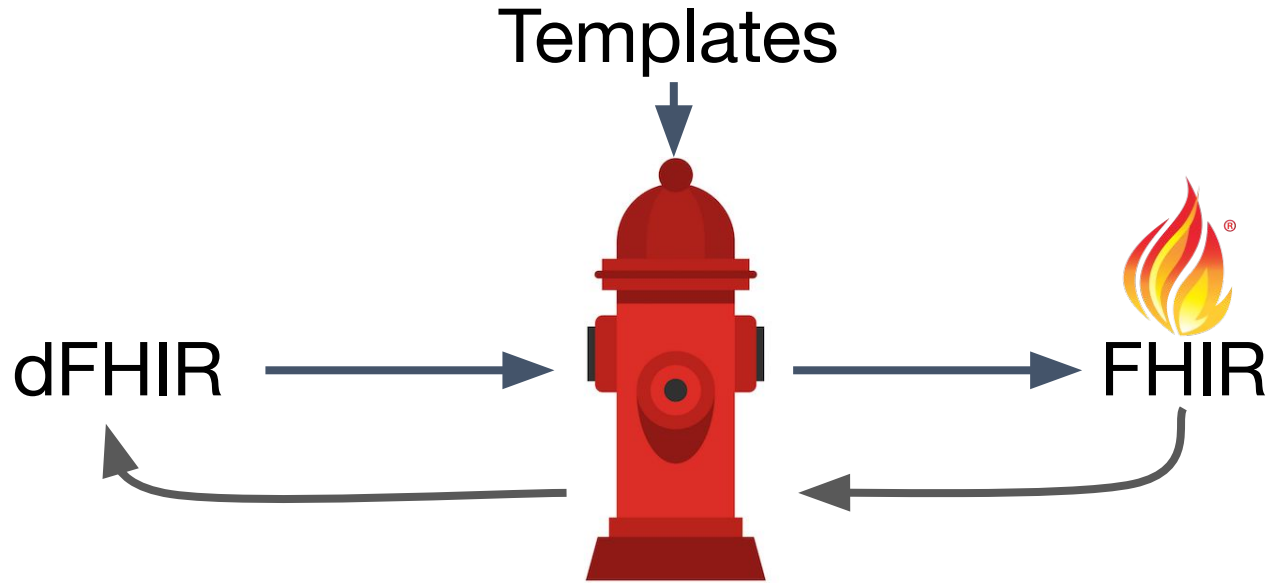
Dehydration



Testing



Testing



Hydrant

- Allows services to use a simpler format
- Still get interoperability benefits of FHIR
- Build FHIR mappings faster
- More details at modelling stage
- Less overhead and code for application owners
- FHIR Profiles, value sets, extensions for free
- Protobuf generation, code generation
- Stricter contracts at type level



Hydrant

Open source coming soon?

If interested please reach out
gregory.mckay@babylonhealth.com



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bring affordable and accessible healthcare
to every human on earth?

We're looking for
exceptional talent
across the technology organization.

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Thank you for listening!

gregory.mckay@babylonhealth.com



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