

## FHIRcast

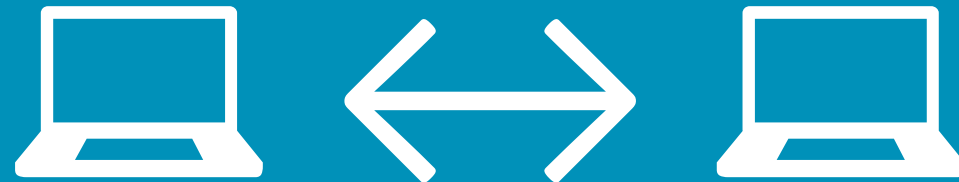
Leo Bergnéhr (@lbergnehr), Sectra

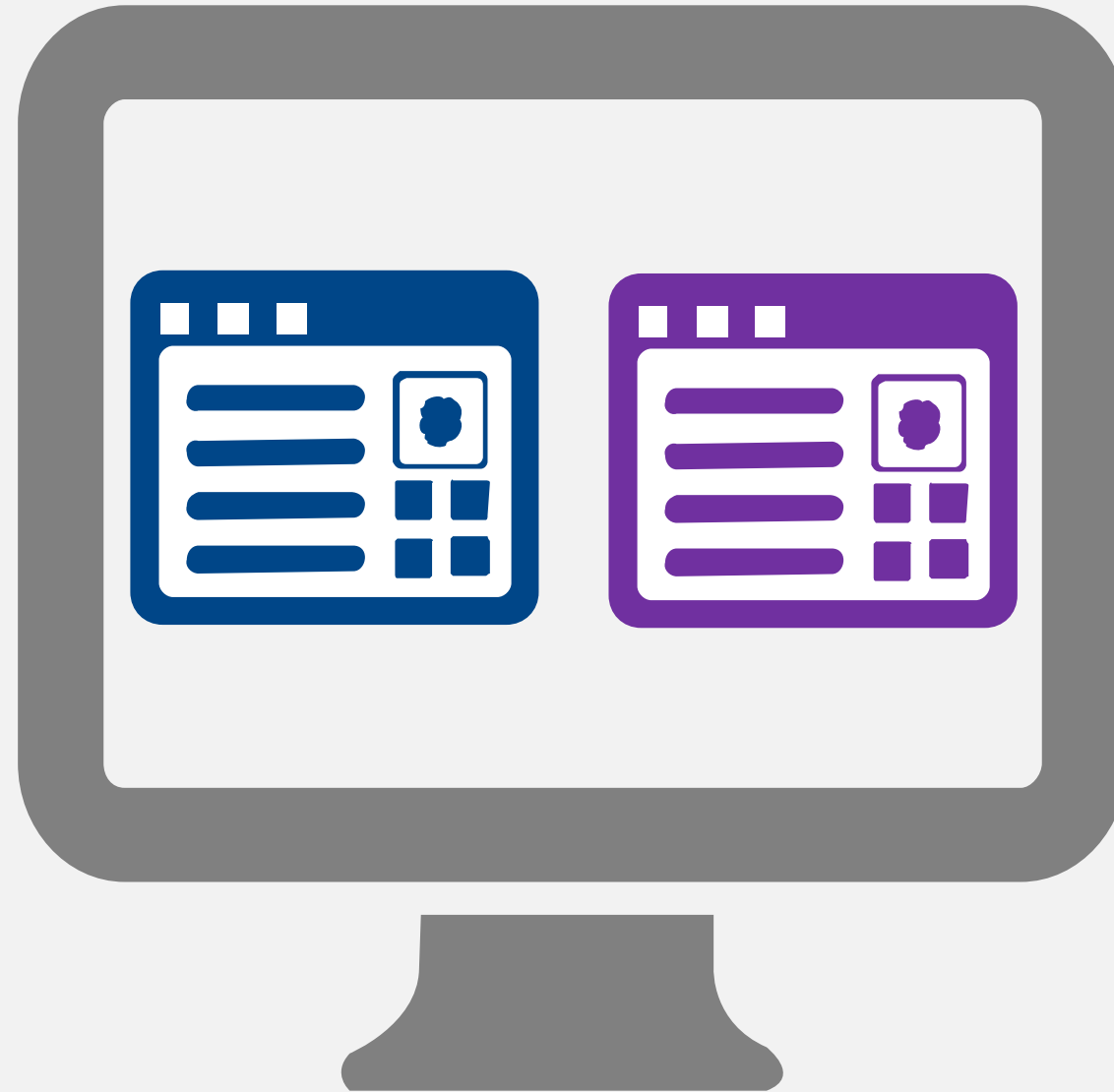


Amsterdam, 14-16 November | @HL7 @FirelyTeam | #fhirdevdays18 | [www.fhirdevdays.com](http://www.fhirdevdays.com)

# \$ whoami

# Context Synchronization









# FHIRcast

Modern, simple app context sync



\*<https://github.com/fhircast/docs/issues/20>

# FHIRcast

- Built on open standards

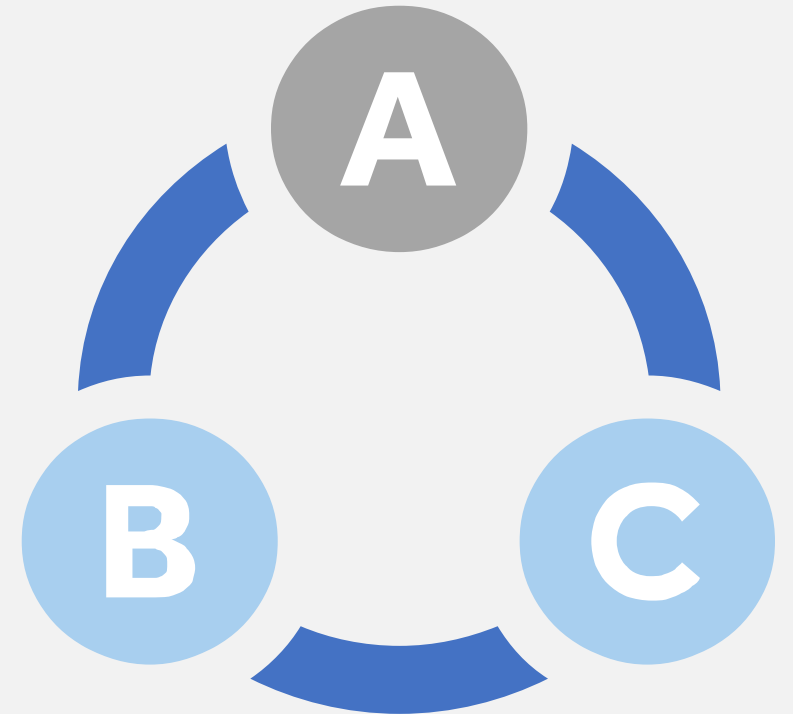


The logo for the World Wide Web Consortium (W3C). It features the letters 'W3C' in a stylized font. The 'W' and '3' are blue, and the 'C' is black. The 'W' and '3' are connected at the top, and the 'C' is positioned to the right of the '3'.



# FHIRcast

- Built on open standards
- Decentralized

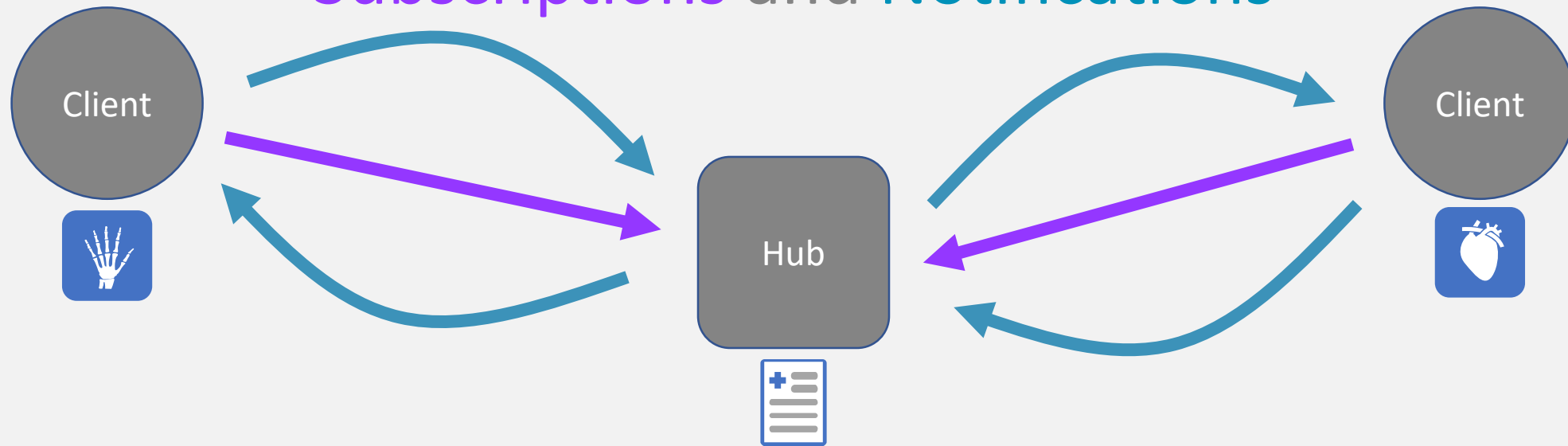



## FHIRcast

- Built on open standards
- Decentralized
- FHIR infrastructure for auth and data model



# Subscriptions and Notifications



 Application server of healthcare IT system

 Application server of healthcare IT system (or thin client\*)

\* Not yet in spec.

Hub

# Subscription



## Subscription

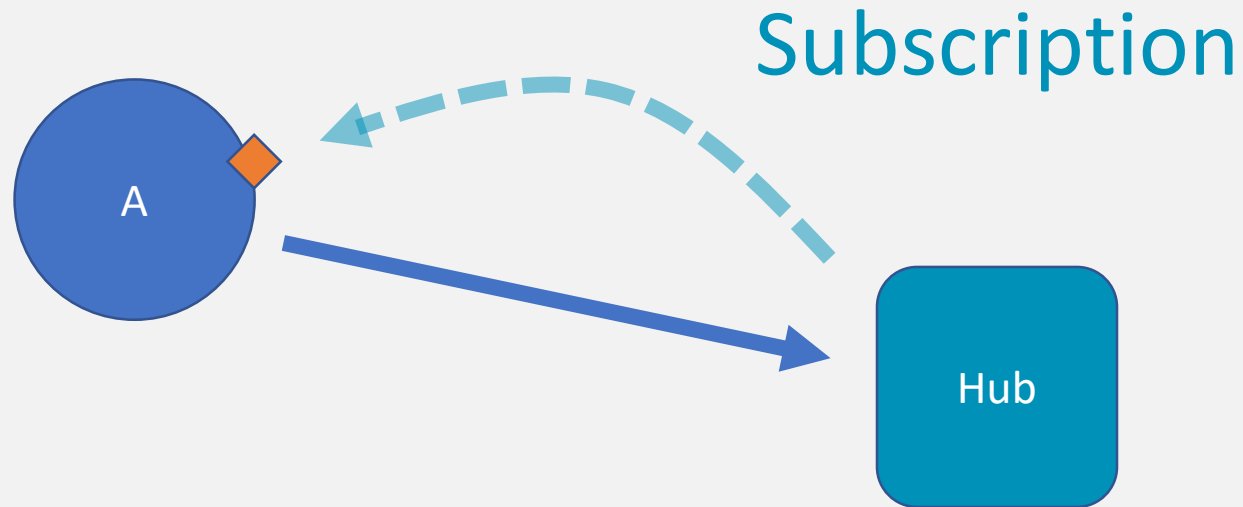


POST /api/hub HTTP/1.1

Host: hub.example.com

Content-Type: application/x-www-form-urlencoded

```
hub.callback=https%3A%2F%2Fapp.example.com%2Fsession%2Fcallback%2Fv7tfwuk17a&hub.mode=subscribe&hub.topic=https%3A%2F%2Fhub.example.com%2F7jaa86kgdudewiaq0wtu&hub.secret=shhh-this-is-a-secret&hub.events=patient-open-chart,patient-close-chart
```



POST /api/hub HTTP/1.1

Host: hub.example.com

Content-Type: application/x-www-form-urlencoded

**hub.callback**=https%3A%2F%2Fapp.example.com%2Fsession%2Fcallback%2Fv7tfwuk17a&hub.mode=subscribe&hub.topic=https%3A%2F%2Fhub.example.com%2F7jaa86kgdudewiaq0wtu&hub.secret=shhh-this-is-a-secret&hub.events=open-patient-chart,close-patient-chart

# Subscription



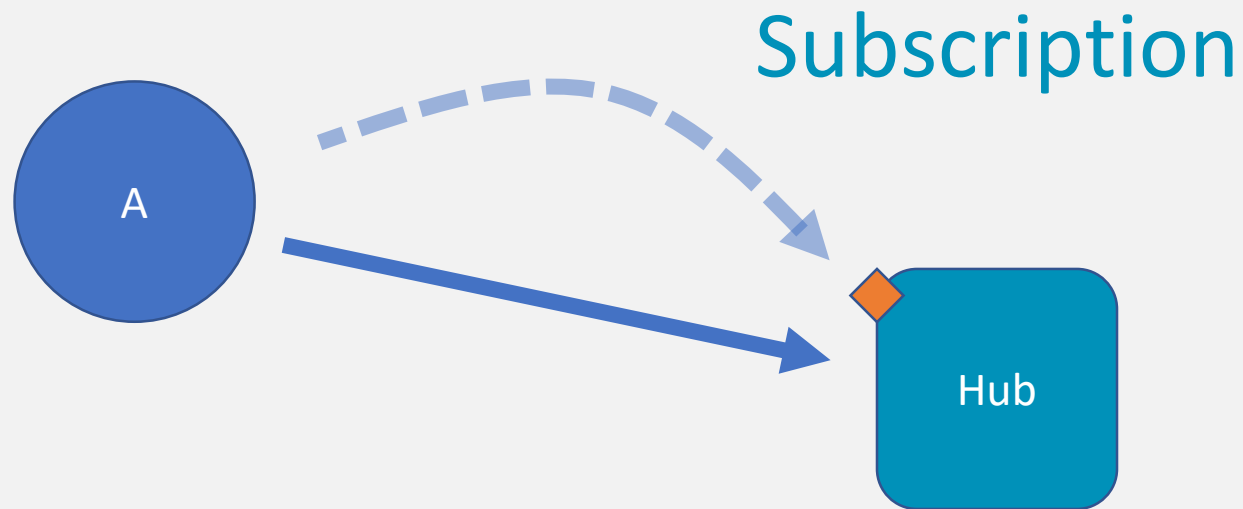
POST /api/hub HTTP/1.1

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Content-Type: application/x-www-form-urlencoded

hub.callback=https%3A%2F%2Fapp.example.com%2Fsession%2Fcallback%2Fv7tfwuk17a&hub.mode=subscribe&hub.topic=https%3A%2F%2Fhub.example.com%2F7jaa86kgdudewiaq0wtu&hub.secret=shhh-this-is-a-secret&hub.events=open-patient-chart,close-patient-chart





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# Subscription



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## Subscription



open-patient-chart  
 switch-patient-chart  
 close-patient-chart  
 ...

POST /api/hub HTTP/1.1  
 Host: hub.example.com  
 Content-Type: application/x-www-form-urlencoded

hub.callback=https%3A%2F%2Fapp.example.com%2Fsession%2Fcallback%2Fv7tfwuk17a&hub.mode=subscribe&hub.topic=https%3A%2F%2Fhub.example.com%2F7jaa86kgdudewiaq0wtu&hub.secret=shhh-this-is-a-secret&hub.events=open-patient-chart,close-patient-chart

## Subscription validation



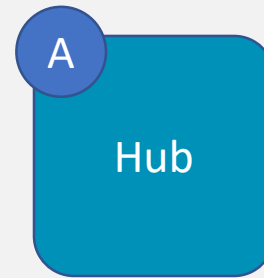
GET /session/callback/v7tfwuk17a?hub.challenge=meu3we944ix80ox &...  
Host: app.example.com

## Subscription validation

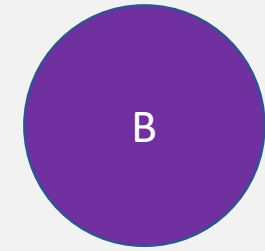
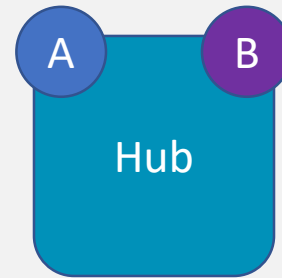


GET /session/callback/v7tfwuk17a?hub.challenge=meu3we944ix80ox &...  
Host: app.example.com

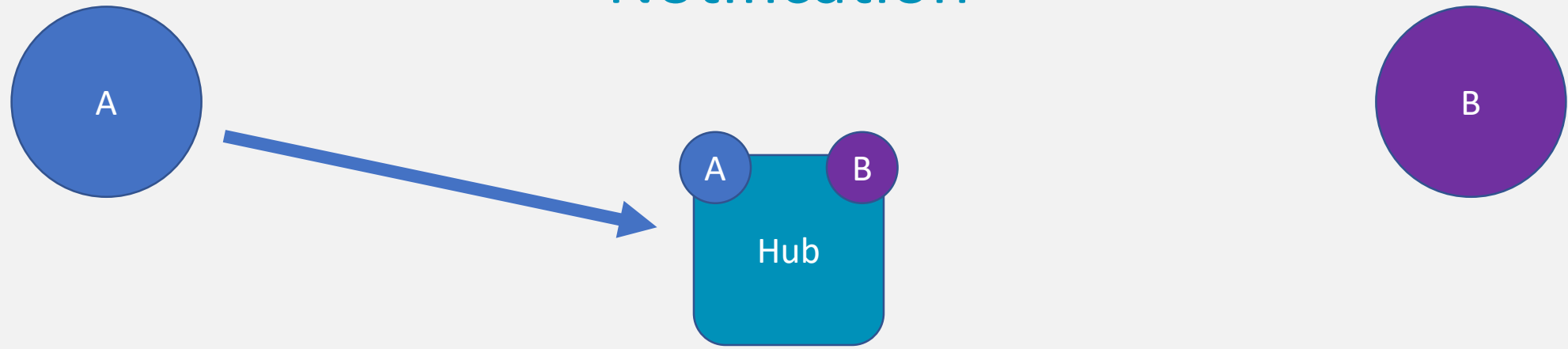
# Subscription validation



# Notification

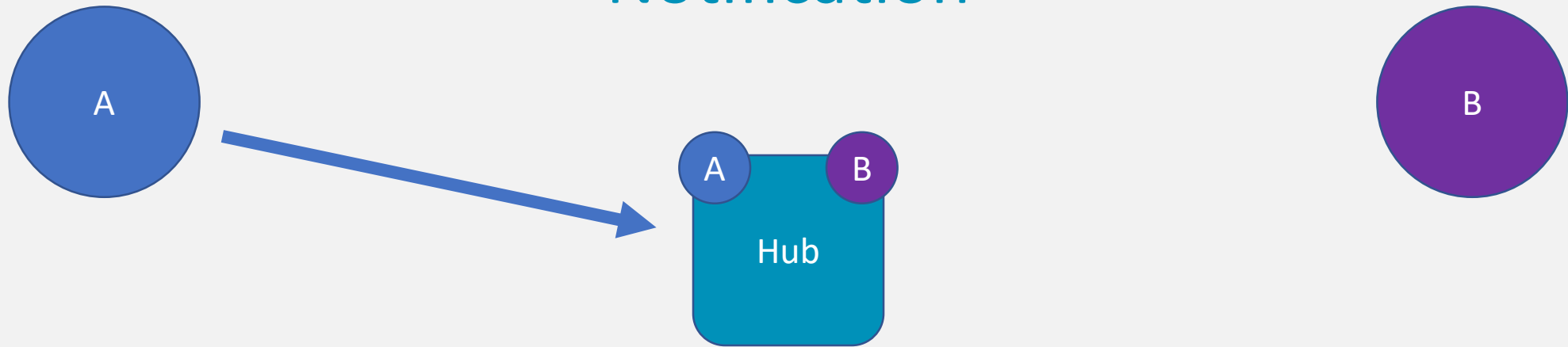


# Notification





## Notification



POST /api/hub/7jaa86kgdudewiaq0wtu HTTP/1.1  
Host: hub.example.com  
Content-Type: application/json

JSON

## Notification *JSON*

```
{
  "timestamp": "2018-01-08T01:40:05.14",
  "id": "wYXStHqxFAQyHFELh",
  "event": {
    "hub.topic": "https://hub.example.com/7jaa86kgdudewiaq0wtu",
    "hub.event": "open-patient-chart",
    "context": [
      {
        "key": "patient",
        "resource": {...}
      }
    ]
  }
}
```

## Notification *JSON*

```
{
  "timestamp": "2018-01-08T01:40:05.14",
  "id": "wYXStHqxFAQyHFELh",
  "event": {
    "hub.topic": "https://hub.example.com/7jaa86kgdudewiaq0wtu",
    "hub.event": "open-patient-chart",
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    "context": [
      {
        "key": "patient",
        "resource": {...}
      }
    ]
  }
}
```

## Notification *JSON*

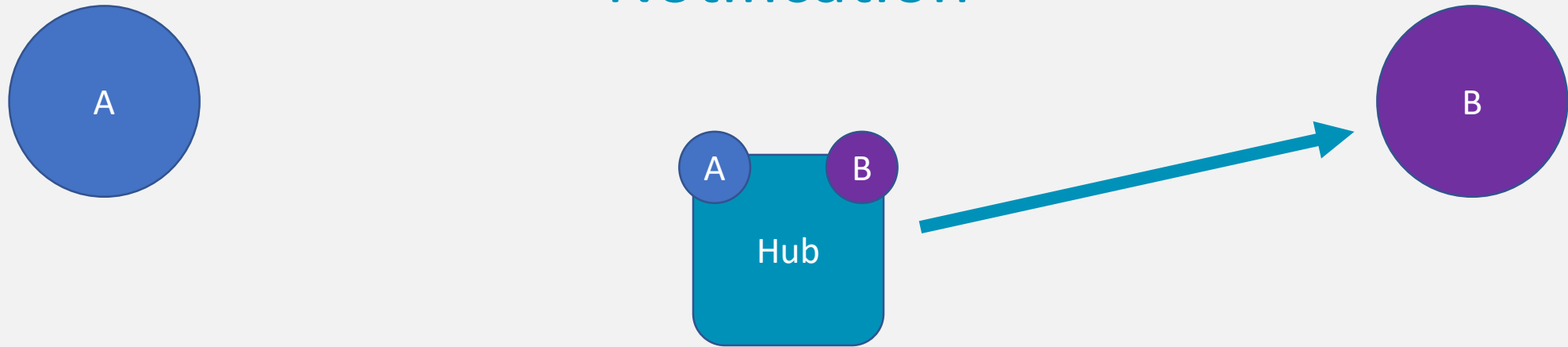
```

{
  "timestamp": "2018-01-08T01:40:05.14",
  "id": "wYXStHqxFAQyHFELh",
  "event": {
    "hub.topic": "https://hub.example.com/7jaa86kgdudewiaq0wtu",
    "hub.event": "open-patient-chart",
    "context": [
      {
        "key": "patient",
        "resource": { }
      }
    ]
  }
}
  
```





## Notification



POST /session/callback/v7tfwuk17a HTTP/1.1

Host: second\_app.example.com

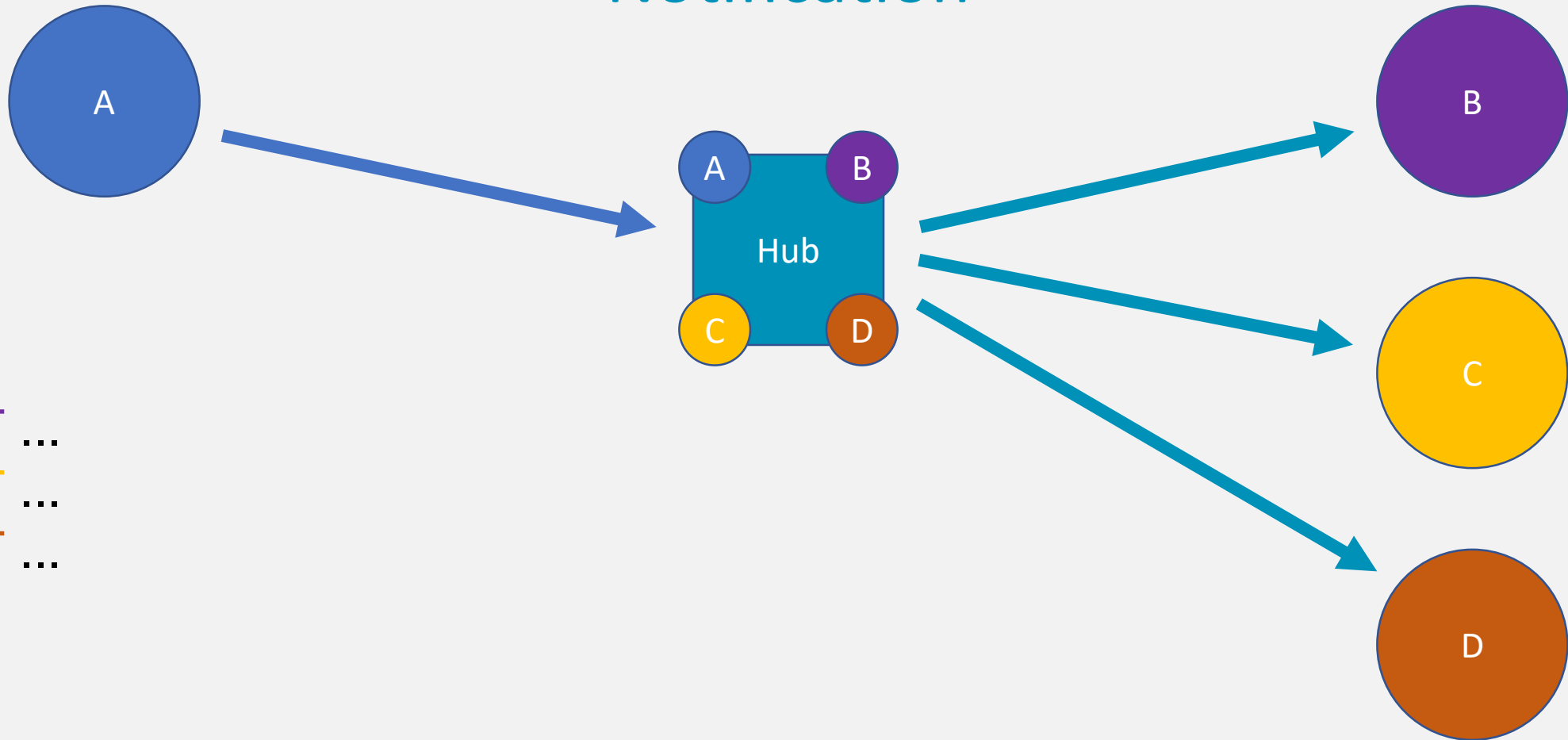
Content-Type: application/json

**X-Hub-Signature:**

sha256=dce85dc8dfde2426079063ad413268ac72dcf845f9f923193285e693be6ff  
3ae

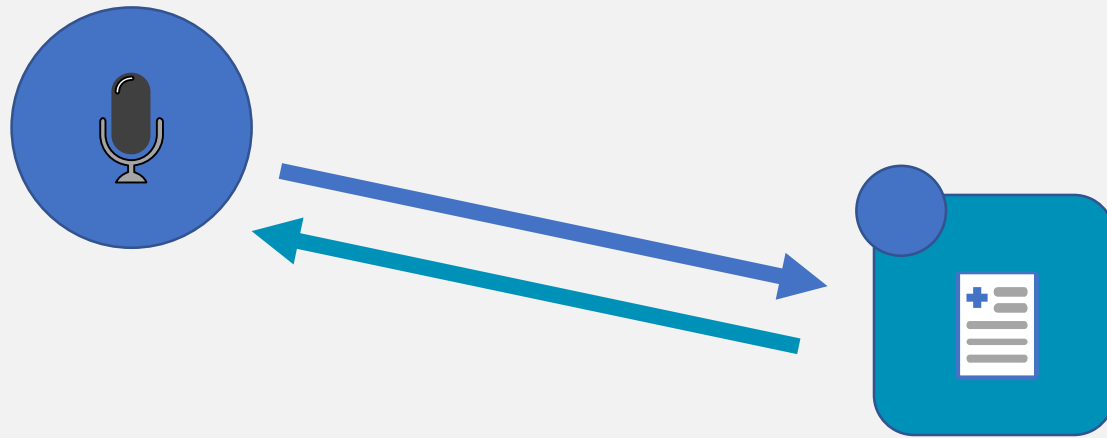
JSON

# Notification



POST ...  
POST ...  
POST ...

# Notification



# Sandboxes

# FHIRcast Sandboxes

- Open Source sandboxes
  - [github.com/fhircast/sandbox](https://github.com/fhircast/sandbox)
  - [github.com/fhircast/sandbox.js](https://github.com/fhircast/sandbox.js)



## Demo

### Linux/macOS

```
git clone https://github.com/fhircast/sandbox.git  
cd sandbox && \  
    (dotnet build FHIRcastSandbox.sln) && \  
    (dotnet run --project Hub &) && \  
    (dotnet run --project WebSubClient &)
```

### Windows (PowerShell)

```
git clone https://github.com/fhircast/sandbox.git  
cd sandbox  
dotnet run --project Hub  
# New window  
dotnet run --project WebSubClient
```

Get involved 

## Get involved

- Read the spec
  - <http://fhircast.org>
- Download, test, contribute to the sandboxes
  - <https://github.com/fhircast/sandbox>
  - <https://github.com/fhircast/sandbox.js>
- Log issues, participate via GitHub
  - <https://github.com/fhircast/docs>
- Ask questions, learn, chat
  - <https://chat.fhir.org/#narrow/stream/118-FHIRcast>





# Thank you!

ORGANIZED BY



PARTNERS



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