FHIR Fasade

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Norsk helsenett

https://fire.ly/products/fhir-facade/

FHIR FACADE

Open up legacy systems to the FHIR ecosystem with ease

FHIR Facade speaks FHIR in the front-end and talks directly to your native data in the back-end.

Build a FHIR Facade

https://hapifhir.io/hapi-fhir/docs/server_plain/

5.0 HAPI FHIR Server Introduction

HAPI FHIR provides several mechanisms for building FHIR servers. The appropriate choice depends on the specifics of what you are trying to accomplish.

Plain Server / Facade

The HAPI FHIR Plain Server (often referred to as a Facade) is an implementation of a FHIR server against an arbitrary backend that you provide.

In this mode, you write code that handles resource storage and retrieval logic, and HAPI FHIR takes care of:

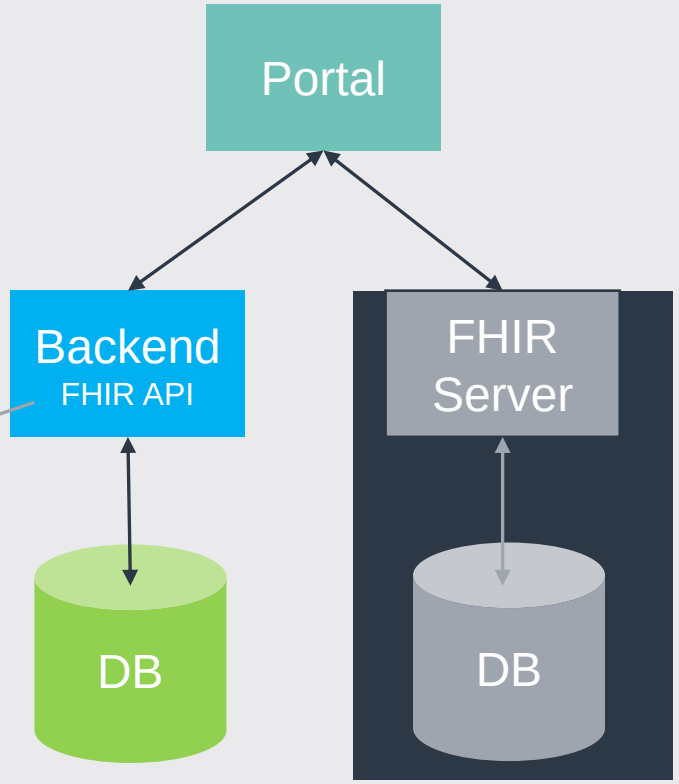
- HTTP Processing
- Parsing / Serialization
- FHIR REST semantics

This module was originally created at University Health Network (UHN) as a mechanism for placing a common FHIR layer on top of a series of existing data sources, including an EMR, an enterprise patient scheduling system, and a series of clinical data repositories. All of these systems existed long before FHIR was adopted at UHN and HAPI FHIR was created to make the process of adopting FHIR easier.

This module has been used by many organizations to successfully create FHIR servers in a variety of use cases, including:

- **Hospitals:** Adding a FHIR data access layer to Existing Enterprise Data Warehouses and Clinical Data Repositories
- **Vendors:** Integration into existing products in order to add FHIR capabilities
- **Researchers:** Aggregate data collection and reporting platforms

FASADE VS SERVER



FHIR facade:
Custom
implementasjon
av FHIR

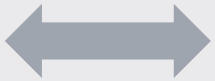
Selv ved bruk av et FHIR lib, må du:

- Implementere alle aktuelle metoder
- Mappe til/fra FHIR for alle aktuelle profiler
- Lagre data i databasen i intern datamodell

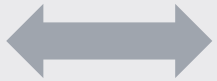
FHIR RESTful API
http://hl7.org/fhir/http.html

Instance Level Interactions	
read	Read the current state of the resource
vread	Read the state of a specific version of the resource
update	Update an existing resource by its id (or create it if it is new)
patch	Update an existing resource by posting a set of changes to it
delete	Delete a resource
history	Retrieve the change history for a particular resource
Type Level Interactions	
create	Create a new resource with a server assigned id
search	Search the resource type based on some filter criteria
history	Retrieve the change history for a particular resource type
Whole System Interactions	
capabilities	Get a capability statement for the system
batch/transaction	Update, create or delete a set of resources in a single interaction
history	Retrieve the change history for all resources
search	Search across all resource types based on some filter criteria

FHIR JSON STRUCTUR



KJ Java objekter

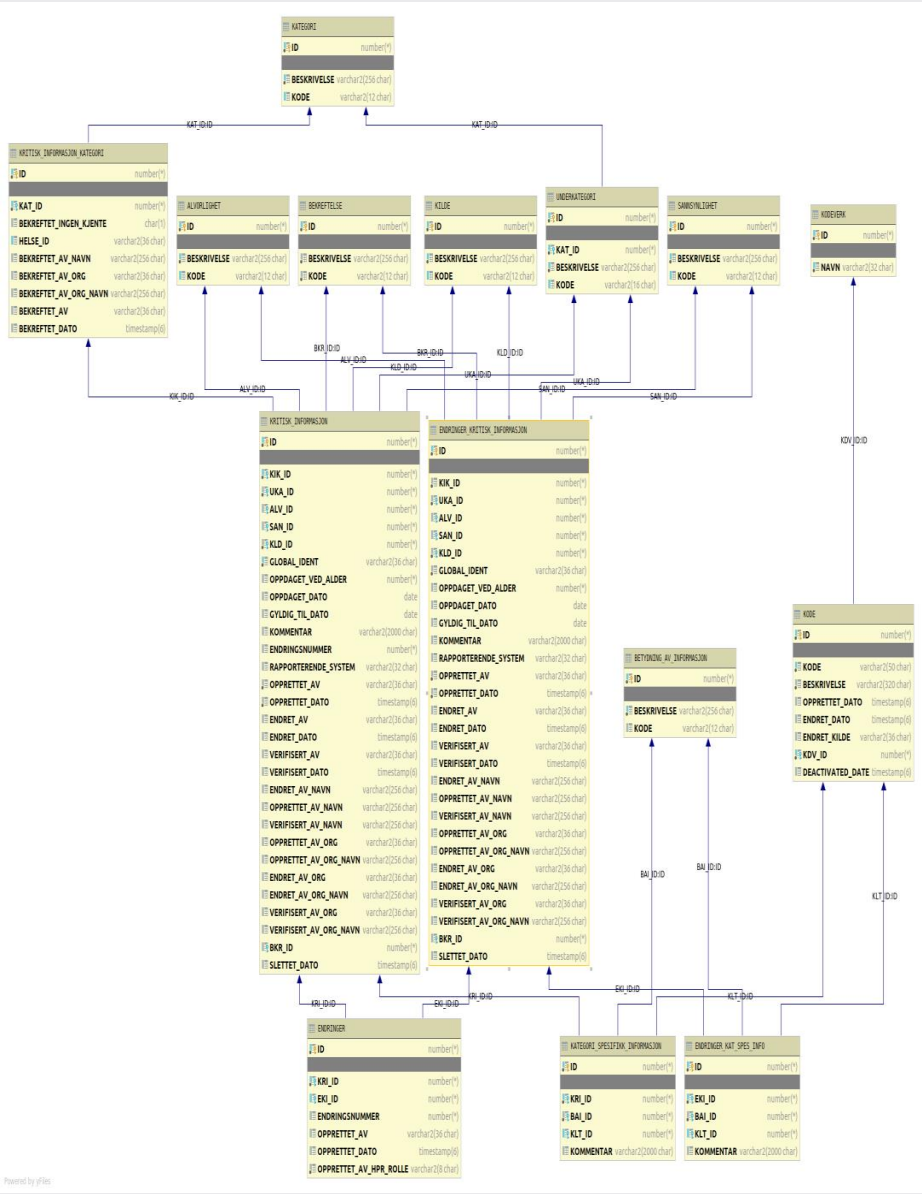


KJ database modell

https://simplifier.net/kjernejournalr4

```
{   "resourceType": "AllergyIntolerance",
    "meta": {
        "profile": [
            "http://nhn.no/kj/fhir/StructureDefinition/KjAllergyIntolerance"        ]},
    "extension": [{
            "url": "http://nhn.no/kj/fhir/StructureDefinition/KjSourceOfInformation",
            "valueCoding": {
                "system": "http://nhn.no/kj/fhir/CodeSystem/SourceOfInformation",
                "code": "3",
                "display": "Pasientens egne opplysninger"}      }   ],
    "clinicalStatus": {
        "coding": [
            {"system": "http://terminology.hl7.org/CodeSystem/allergyintolerance-clinical",
                "code": "active",
                "display": "Active" }]},
    "category": ["food"],
    "criticality": "high",
    "code": {"coding": [
            {"system": "http://nhn.no/kj/fhir/CodeSystem/OtherAllergen",
                "code": "15",
                "display": "Annen viktig allergi"}]},
    "patient": {"reference": "Patient/12345678" },
    "onsetAge": {
        "value": 5,
        "system": "http://unitsofmeasure.org",  },
    "recordedDate": "2020-07-29T17:02:02+02:00",
    "recorder": {"reference": "#1"  },
    "reaction": [       {
            "manifestation": [              {
                    "coding": [ {
                            "system": "http://nhn.no/kj/fhir/CodeSystem/TypeOfReaction",
                            "code": "5",
                            "display": "Astma"} ]}] }   ]
}
```

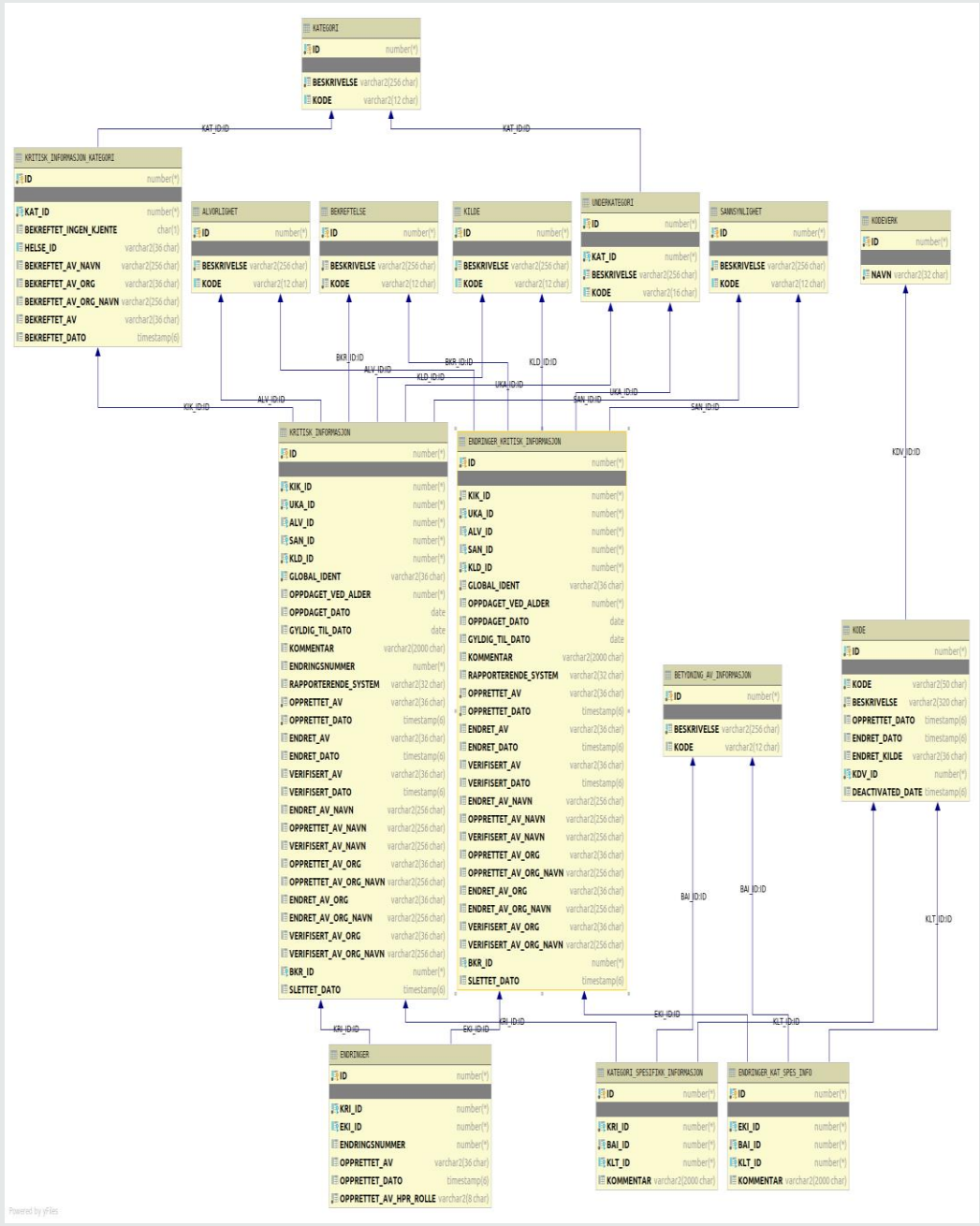
```
public class CriticalInformation {
    private List<SpecialInformation> specialInformationList;
    private AdministrativeCode subCategory;
    private AdministrativeCode probability;
    private AdministrativeCode confirmation;
    private AdministrativeCode criticality;
    private AdministrativeCode source;
    private String pseudonym;
    private Integer discoveredAge;
    private LocalDate discoveredDate;
    private LocalDate abatementDate;
    private String comment;
    private Instant createdDate;
    private UserRole createdBy;
    private Instant changedDate;
    private UserRole changeBy;
    private Instant verifiedDate;
    private UserRole verifiedBy;
    private LocalDate validUntilDate;
    private Instant deletedDate;
    private Integer versionId;
    private String globalIdent;
    private List<Endringer> changeList;
}
```



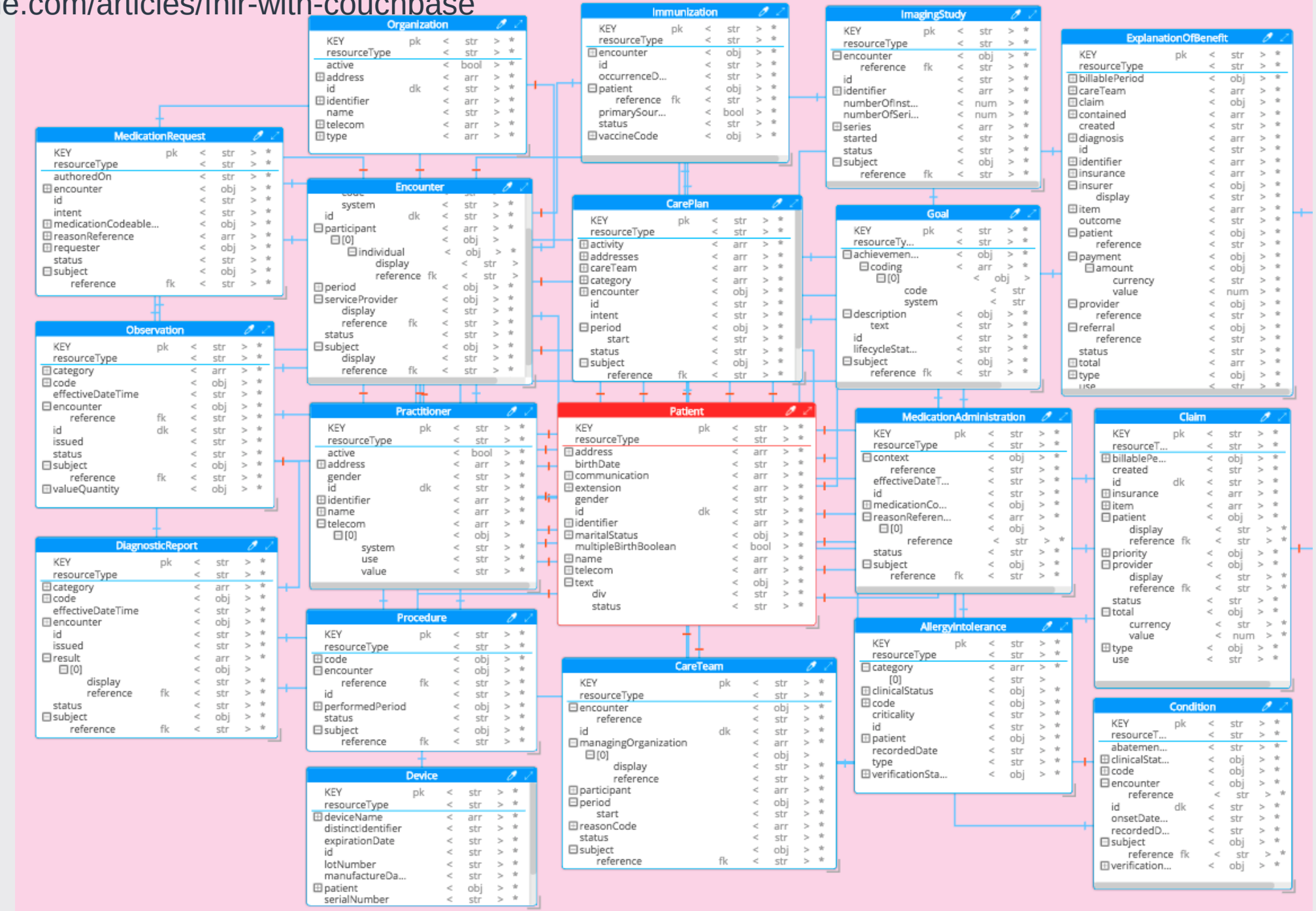
FHIR JSON STRUCTUR

AllergyIntolerance			0..*	AllergyIntolerance
extension			0..*	Extension
identifier	S	Σ	0..*	Identifier
clinicalStatus	S	Σ ?!	0..1	CodeableConcept Binding
verificationStatus	S	Σ ?!	1..1	CodeableConcept Binding
type		Σ	0..1	code Binding
category	S	Σ	1..1	code Binding
criticality	S	Σ	1..1	code Binding
code	S	Σ	1..1	CodeableConcept
patient	S	Σ	1..1	Reference(no-basis-Patient)
encounter			0..1	Reference(Encounter)
onset[x]	S		0..1	
recordedDate	S		1..1	dateTime
recorder	S		1..1	Reference(KjPractitionerRole)
asserter		Σ	0..1	Reference(Patient| RelatedPerson| Practitioner|...
lastOccurrence			0..1	dateTime
note	S		0..1	Annotation
reaction	S		1..1	BackboneElement
substance			0..1	CodeableConcept
manifestation	S		1..1	CodeableConcept Binding
coding		Σ	0..*	Coding
TypeOfReaction	S	Σ	1..1	Coding Binding
text		Σ	0..1	string
description			0..1	string
onset			0..1	dateTime
severity			0..1	code Binding
exposureRoute			0..1	CodeableConcept
note			0..*	Annotation

KJ database modell



https://dzone.com/articles/fhir-with-couchbase



NÅR EGNER DET SEG Å BRUKE EN FHIR FASADE?

- Du har et enkelt API du ønsker å eksponere som et FHIR Rest API
- Du har eksisterende data som er en del av et legacy system og som du ikke ønsker å flytte inn i en FHIR server
- Du trenger mer fleksibilitet og kontroll (ikke en svartboks). Kan gjøre endringer i koden

  (NB! Må passe på FHIR standard følges)

HVA ER ULEMPEN VED Å BRUKE EN FHIR FASADE?

- Du må implementere alle aktuelle metoder (read, create, …)
- Det vil være «standard» metoder som ikke vil bli implementert (patch, search, …)
- Betydelig mapping til/fra FHIR for alle aktuelle profiler
- Det er krevende å lagre FHIR data i en intern relasjonsdatabase
  - FHIR informasjonsmodell er kompleks!
- Mer krevende å selv håndtere forskjellige profil versjoner (R4, R5)?
- Krever større innsats for å støtte en ny profil