

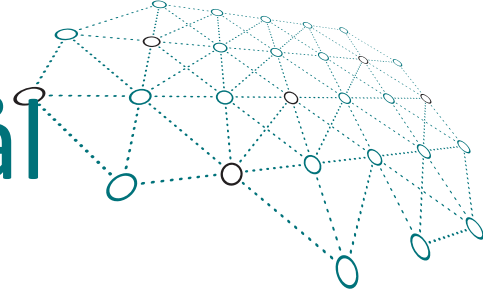
# OpenTele3 forprojekt

## Proof of Concept og konkretisering

Michael Christensen  
Koordinator for Softwaregruppen i 4S

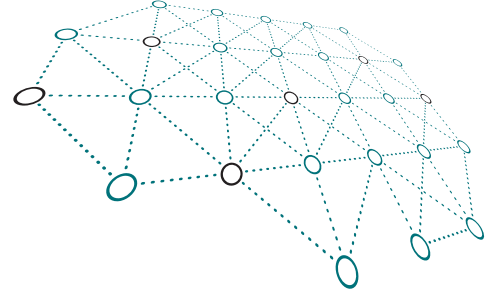
Chef Softwarearkitekt ved Health IT, Alexandra Institutet

# Forprojekt: Overordnede mål



- Input til udbud
  - Vurdering af det samlede omfang af opgaven
  - Beslutningsgrundlag mht. OT1, OT2, OT3
  - Kørende prototyper, som leverandører kan anvende til eksperimenter
- 
- *Periode: November 2016 – januar 2017*
  - *Finansieret af Region Midtjylland*

# OpenTele3 strategiske mål



Effektiv understøtte:

- Open source flerleverandørstrategi
- Sammenhængen med projekt Modning af Telemedicinsk Infrastruktur (MaTIS)
- Det tværsektorielle samspil mellem regioner, kommuner og øvrige sundhedsaktører
- Forbedrede muligheder ift. CE-mærkning og kvalitetssikring

# Forprojekt: Konkrete leverancer



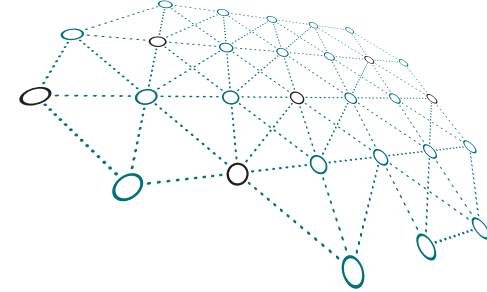
## Prototyper:

- Prototype af serviceplatform for microservice infrastruktur for telemedicin
- Prototyper af udvalgte microservices, som understøtter en specifik telemedicinsk case

## Dokumenter:

- Oplæg til krav til serviceplatform for microservice infrastruktur
- Minimumssæt af microservices, som er nødvendige for at understøtte et basalt telemedicin setup.
- Oplæg til roadmap for udvikling af platform og services

# Udgangspunktet

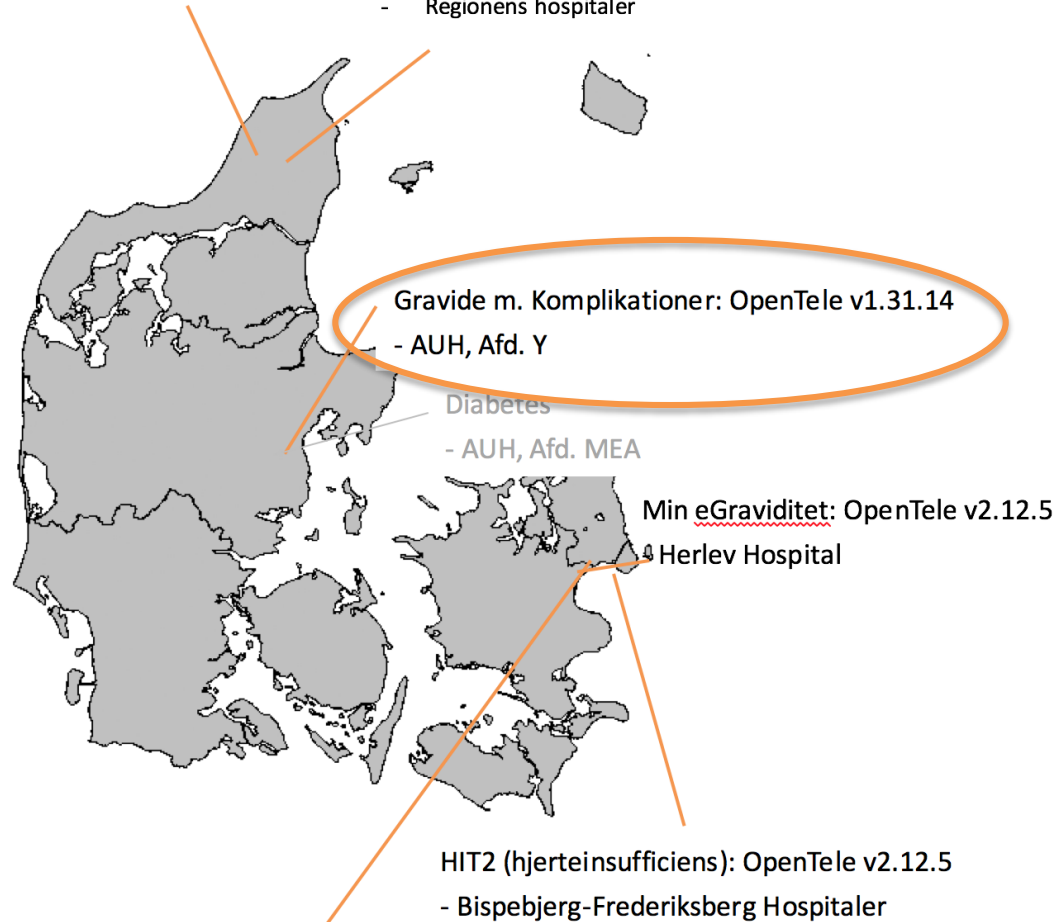


## TeleCare Nord Hjertesvigt

- De nordjyske kommuner
- Regionens hospitaler
- PLO Nordjylland

## TeleCare Nord KOL: OpenTele v1.29.2

- De nordjyske kommuner
- Regionens hospitaler



Gravide m. Komplikationer: OpenTele v1.31.14

- AUH, Afd. Y

Diabetes

- AUH, Afd. MEA

Min eGraviditet: OpenTele v2.12.5

Herlev Hospital

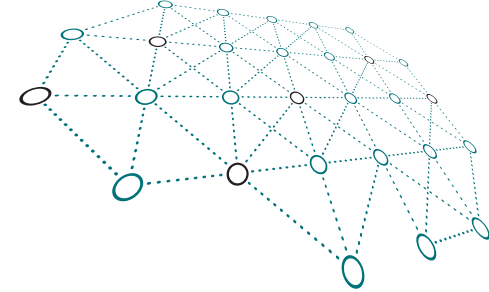
HIT2 (hjertheinsufficiens): OpenTele v2.12.5

- Bispebjerg-Frederiksberg Hospitaler

## NetKOL: OpenTele v1.21.3

- Hvidovre, Herlev, Amager og Bispebjerg Hospitaler
- Ballerup, Brøndby, Gladsaxe, Hvidovre, Rødovre, Egedal

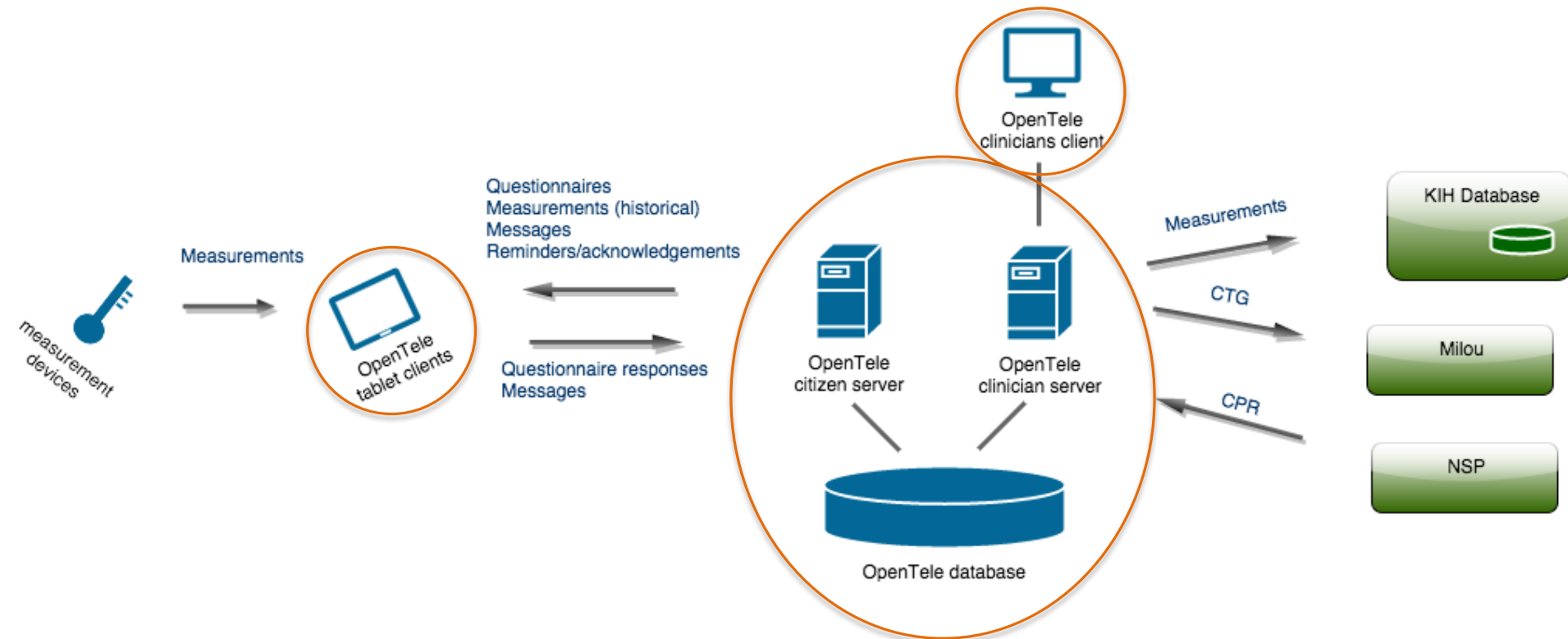
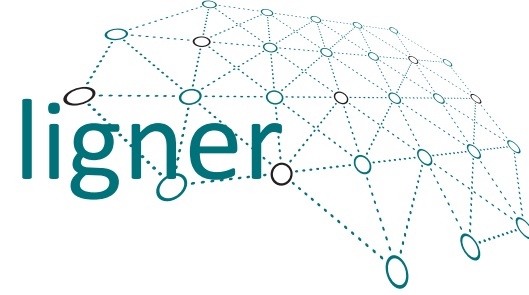
# OpenTele er...



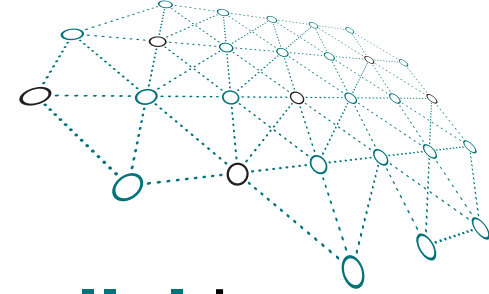
- Et værktøj til:

- At opsamle målinger af fysiologiske parametre ved borgerne
- At opsamle svar fra borgerne til spørgsmål (Går det bedre?)
- At støtte kommunikationen mellem borger og behandler
- At give borgeren overblik over udvikling i deres helbred
- At give behandler overblik over udvikling i borgerens helbred
- At støtte behandleren i overvågning af og kommunikation med flere borgere

# I dag: Monolit eller det der ligner



# OpenTele3: Vision



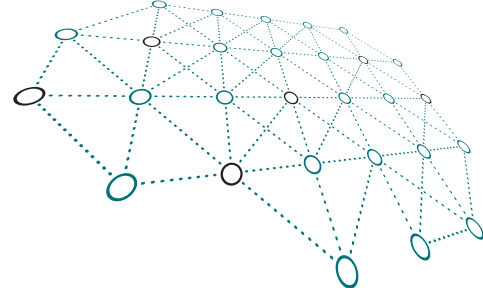
Muliggøre at **flere leverandører i parallel** kan udvikle **bedre** og mere **effektive** løsninger til **brugerne**

*via*

en **opsplitning** af OpenTele i **løstkoblede** komponenter og services

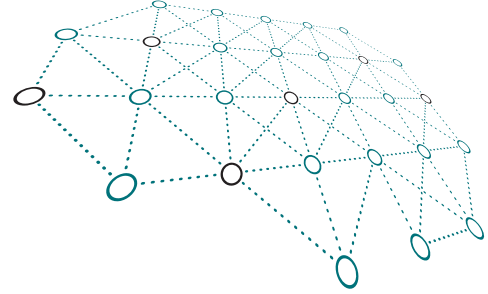


# OpenTele3: Mål



- **Uafhængighed**
  - Løbende og mere uafhængig udrulning
- **Individuel tilpasning**
  - skræddersy løsning efter behov
- **Genbrug**
  - øget modularisering
- **Veldefinerede snitflader**
  - veldefinerede, standardiserede snitflader og formater
- **Indkapsling af kritisk funktionalitet**
  - certificering og kvalitetssikring
- **Måltrettet skalerbarhed**
  - Individuel skalering via små enheder

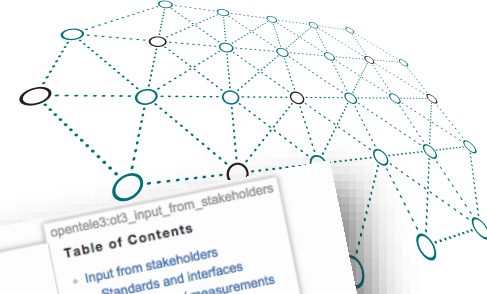
# OpenTele3: Afsæt



- Rodfæstet i involvering af interessenter
  - erfaringer, behov, planer, ...
- Referencearkitekturer og Continua
- Grundidéer om
  - arkitektur baseret på microservices
  - anvendelse af HL7 FHIR

# Input fra interessenter

- InTeleCare4U
- Silverbullet
- NNIT
- IBM
- NextStep Citizen
- Region Hovedstaden
- Region Midtjylland
- Region Nordjylland
- National Sundheds-IT
- MedCom



opentele3:rol3\_input\_from\_stakeholders

## Table of Contents

- Input from stakeholders
- Standards and interfaces
- Observations / measurements
- Devices
- Frontend / UI
- Questionnaires
- Communication
- Planning
- User, patient administration / information

## Input from stakeholders

This page is part of the **OpenTele 3** architectural design efforts. When we initiated these efforts 4S invited all interested parties to participate and contribute to the formation of a OpenTele 3.0 software architecture. Public as well as private parties have been included in this process and so far it has taken the form of a series of meetings where 4S representatives have conducted meetings with individual stakeholders. This page represents a condensed and loosely categorised summary of output from these meetings.

So far we have conducted meetings with representatives from:

- InTeleCare4U [I4U]
- Silverbullet [SB]
- NNIT [NNIT]
- IBM [IBM]
- NextStep Citizen [NSC]
- Region Hovedstaden [RH]
- Region Midtjylland [RM]
- Region Nordjylland [RN]
- National Sundheds-IT [NSI]
- MedCom [MedCom]

The sequence of the topics is not intended to suggest a prioritisation. In square brackets we have tried to capture which stakeholders explicitly made a point about which issues. This does not mean that other stakeholders may not also have touched on an issue or have the wish to prioritise it.

## Standards and interfaces

- OpenTele should produce documents for XDS [RH]
- OpenTele WAN interface should conform with Continua Design Guidelines [RH]
- OpenTele client/server communication (WAN-IF) should conform with standards and guidelines specified by Continua Design Guidelines.
- Use HL7 FHIR outside Danish reference architectures [RH, NSC, MedCom, RM]
- Where Danish reference architectures and/or Continua doesn't say anything experiment with using FHIR where possible
- Integration with Danish National Service Platform [RN]
- Further integrate with services like Behandlingsrelation and Samtykke where and when appropriate

## Observations / measurements

- Observations - searching and subscribing [RH]
- Need to continuously save incoming data in easily/fast searchable format
- Should have a standard for subscribing to incoming measurements
- Observation assessment - as a separate service/component [MedCom, RM, RN]
- Should isolate (safety) critical components
- Healthcare professionals should not need to look at normal data - i.e. data within set thresholds
- Support for patients seeing own measurements [RH]

## Devices

- Asset management - managing measurement kits/devices [RH, RN]

Projects

- Net4Care
  - PHMR Builder
  - PHMR Viewer
  - XDS Connector
  - MHD Server
  - IUA Server
- OpenTele
  - Developing OpenTele2
  - Experimental Development
  - 4S Device Communication
  - 4SDC HTML/JS Demo
  - KIH Database
  - Sandbox

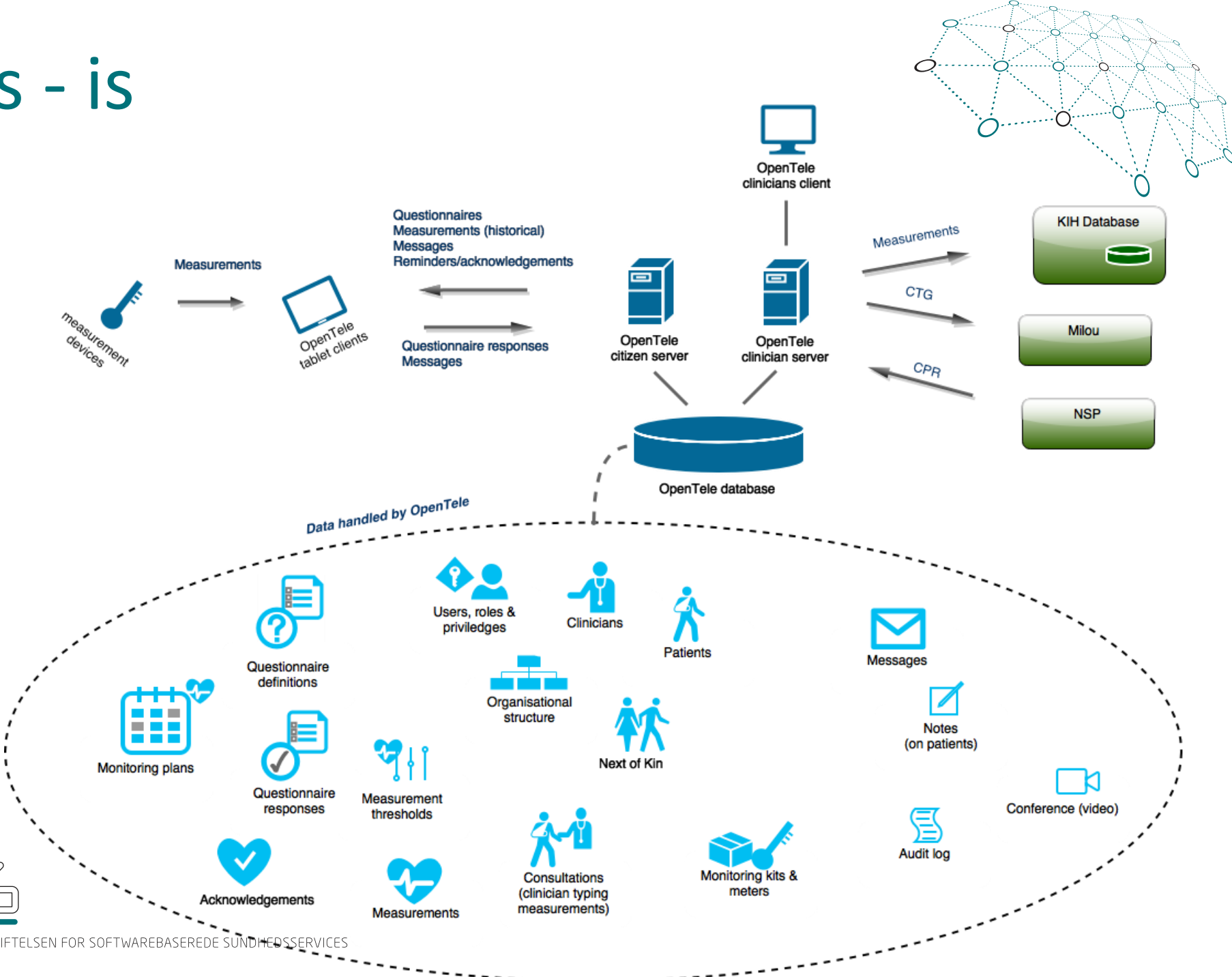
Working with 4S software

- Issue tracking
  - 4S Jira
  - Issue process
- Source code
  - 4S Bitbucket
  - Branching strategy
- Artifacts
  - 4S Artifacts
  - 4S wiki: Contributing
  - Work groups

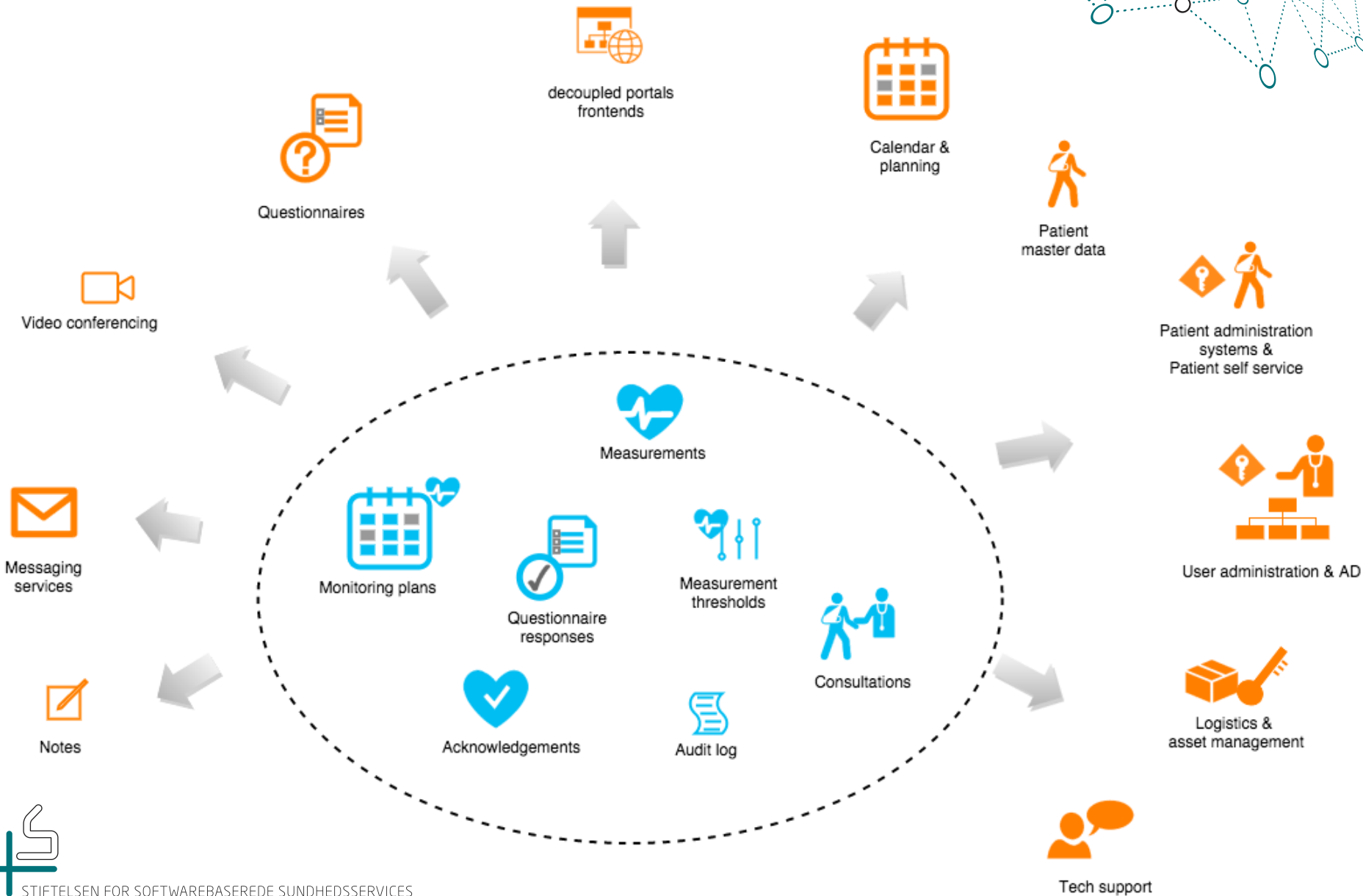
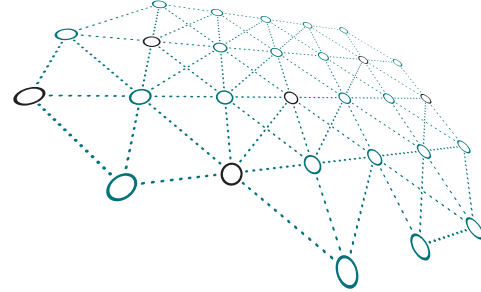
Roadmaps & plans

- Roadmaps & plans
- Analysis & reports
- Towards OpenTele3
  - Scope, goal and process
  - As is architecture
  - Input from stakeholders
  - To be architecture
  - How to get there

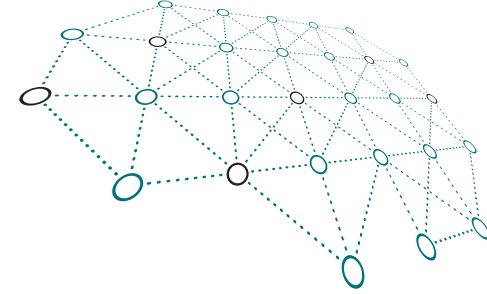
# As - is



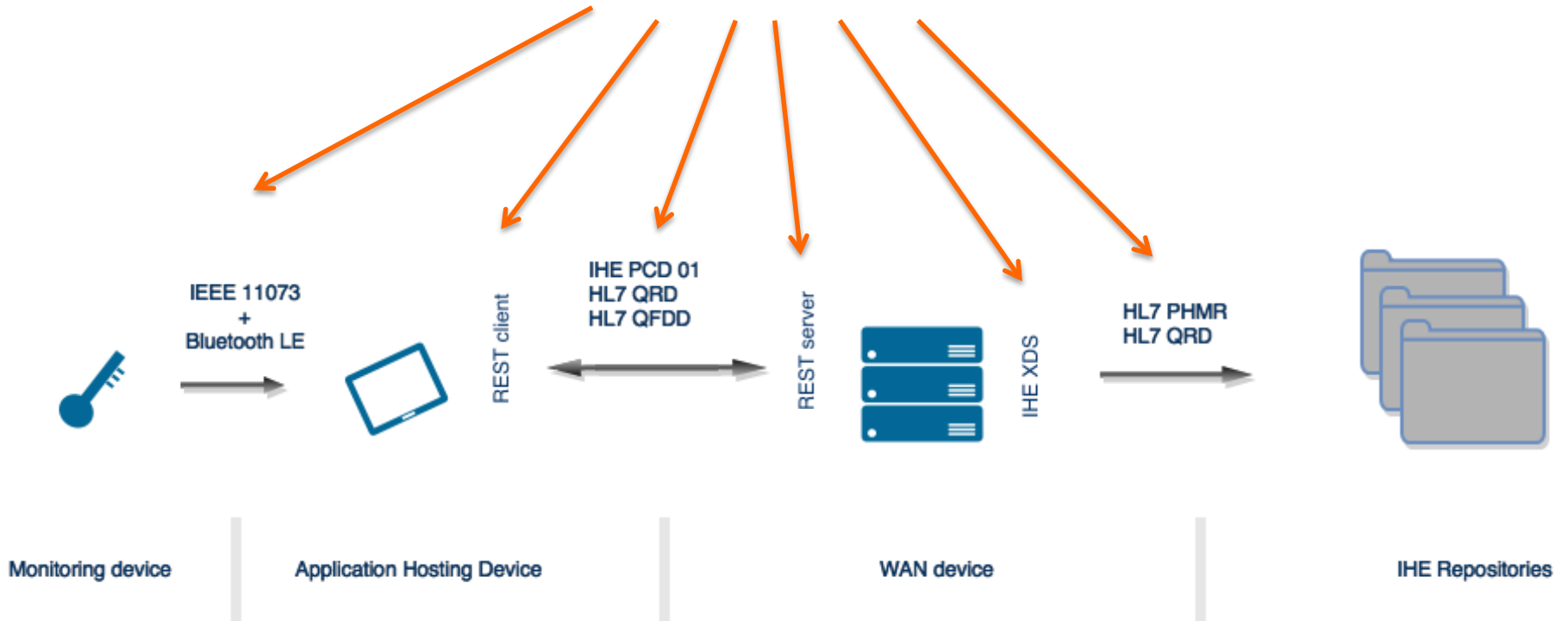
# OT3 komponenter og fokusområder



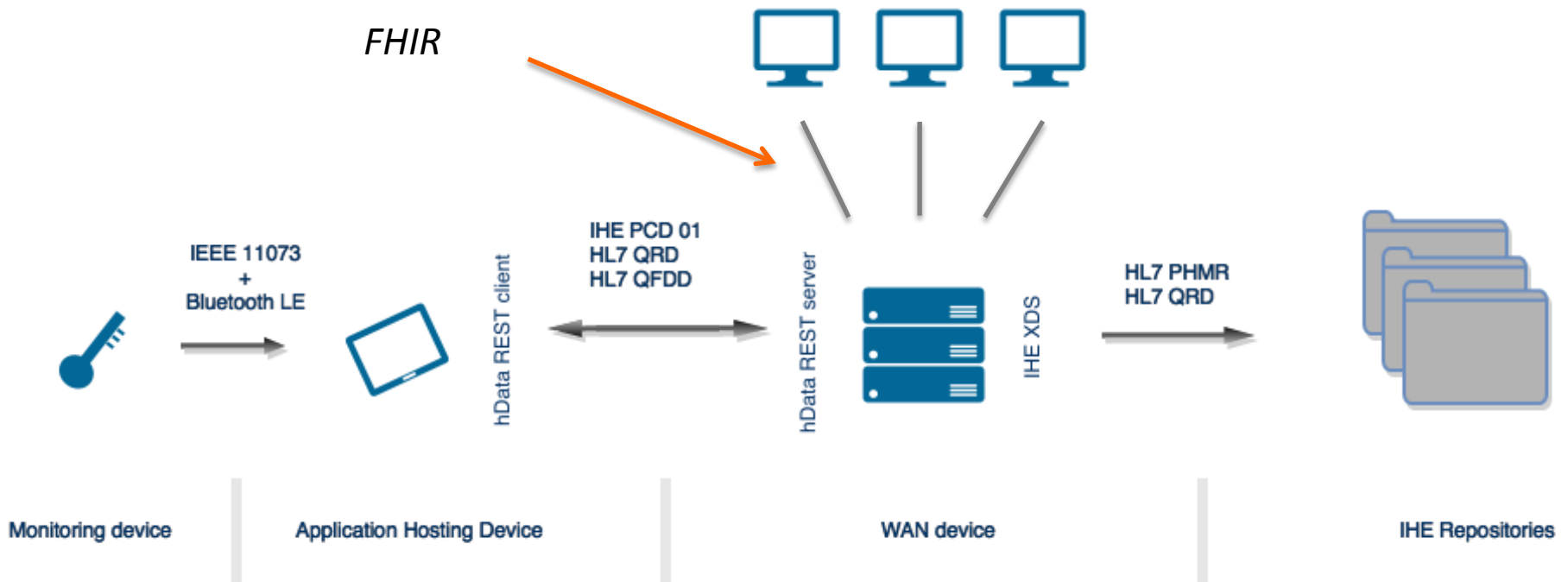
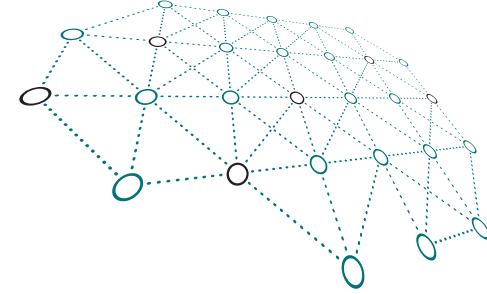
# Standarder og principper



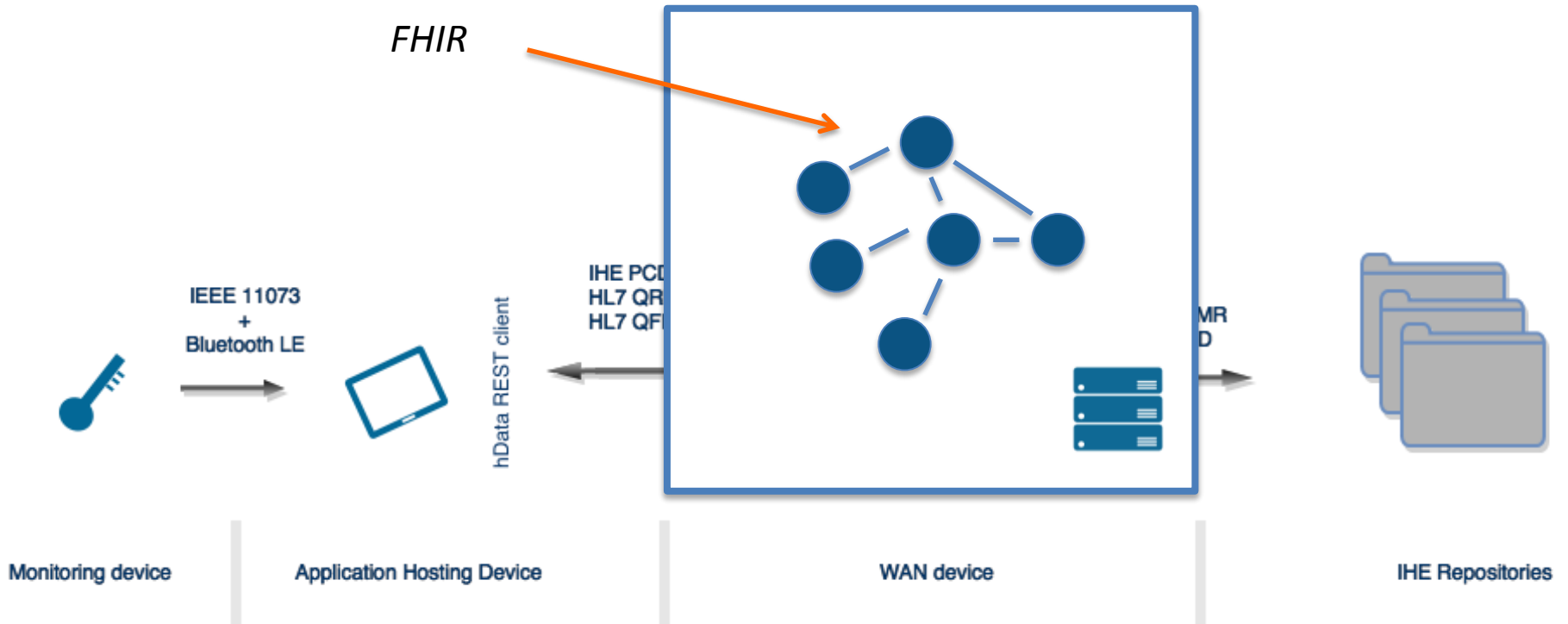
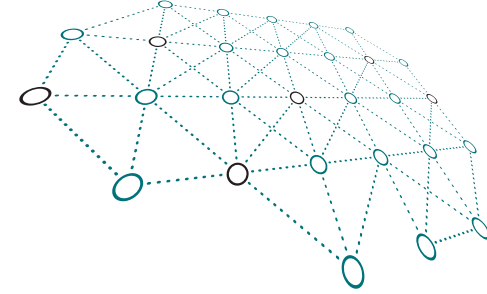
## Referencearkitekturer + Continua



# Standarder og principper

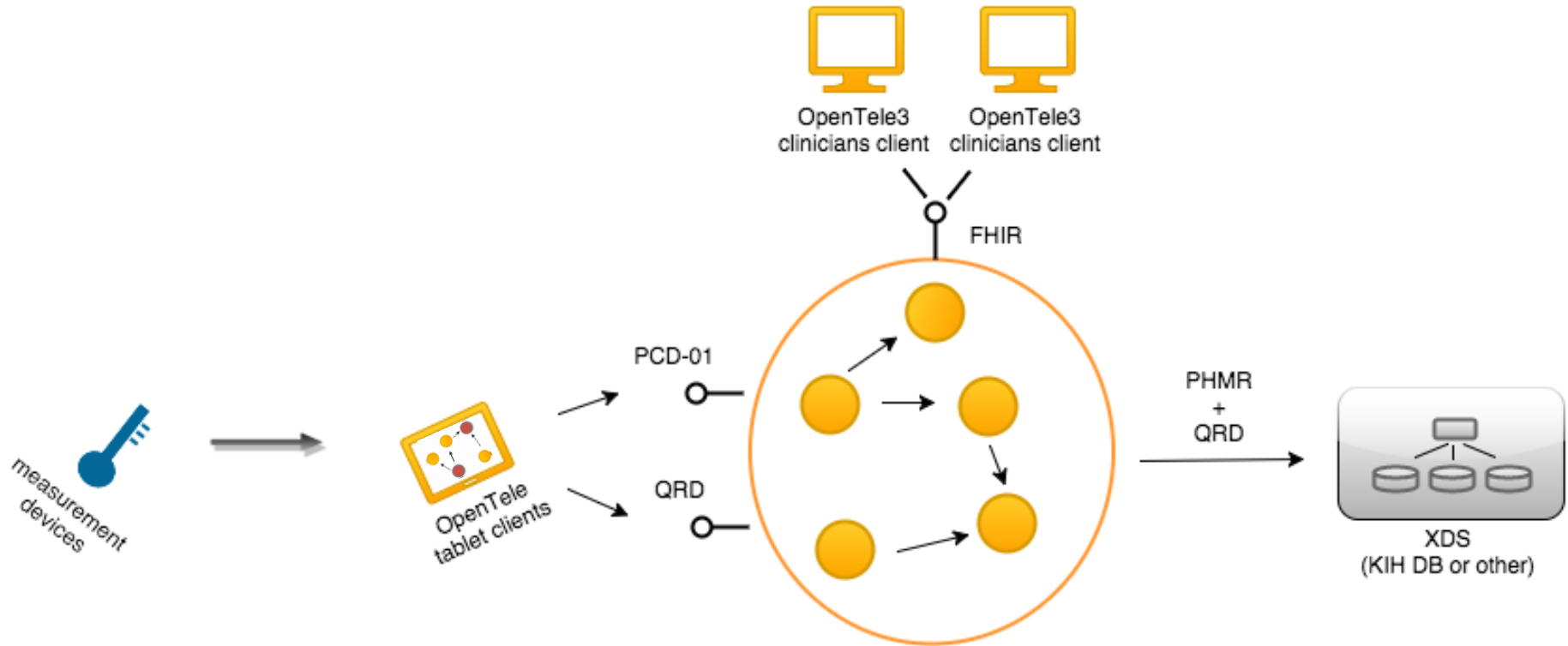
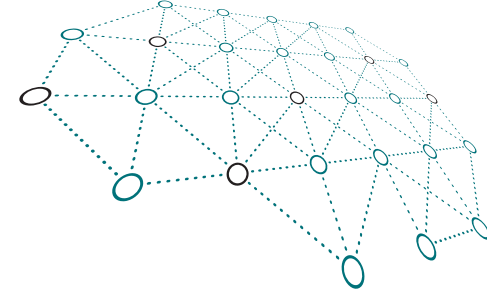


# Standarder og principper

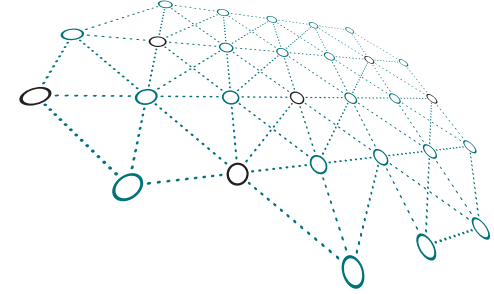




# OT 3 fuldt migreret

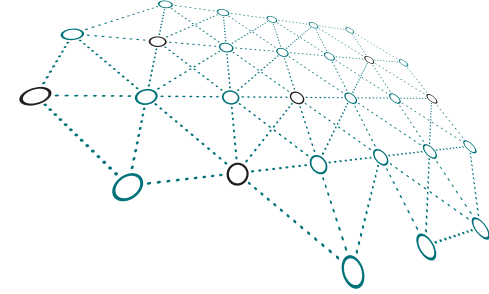


# Forprojekt leverancer #1



- **PoC OpenTele3 basisinfrastruktur og services**
  - Prototypeversion af serviceplatform for microservice infrastruktur
  - Prototypeversioner af udvalgte microservices. Fokus på microservices der understøtter opsamling af måledata og spørgeskemaer.
- **Krav til serviceplatform for microservice infrastruktur**
  - Messaging: Hvordan håndteres kommunikation mellem services?
  - Discovery: Hvordan opdages og annonceres services på netværket?
  - Orkestrering: Hvordan koordineres og idriftsættes services og grupper af sammenhængende services.
  - Sikkerhedsmekanismer: Hvordan understøttes autentifikation, autorisation og kryptering?

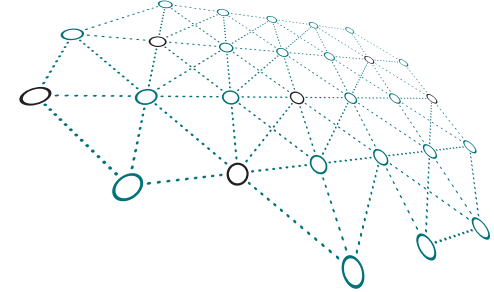
# Forprojekt leverancer #2



- **Specifikation af minimumssæt af microservices**, som er nødvendige for at understøtte et basalt telemedicin setup.
- **Oplæg til roadmap for udvikling af OpenTele3 i landsdelsprogrammerne**
  - Tekniske forudsætninger,
  - Estimeret omfang af udviklingsopgaven,
  - Risikovurdering for den tekniske gennemførelse.

# Næste 4S workshop

## 31. januar 2017



- Workshop med 4S leverandørforum på basis af PoC'ens konklusioner
- HL7 FHIR:
  - Rapport fra FHIR Developer Days 2016
  - FHIR i Danmark