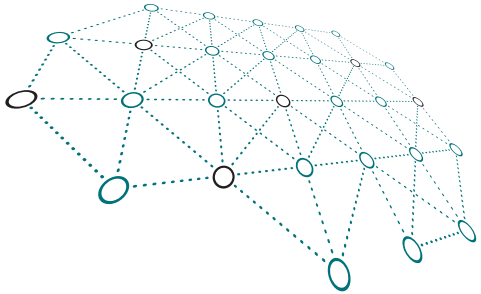


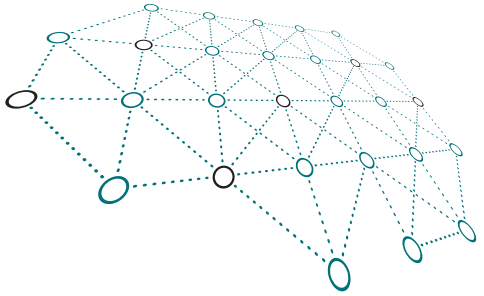
4S

OpenTele3

Michael Christensen
Chef Softwarearkitekt, Alexandra Instituttet,
Koordinator for Softwaregruppen i 4S

STIFTELSEN FOR SOFTWAREBASEREDE SUNDHEDSSERVICES

Vision

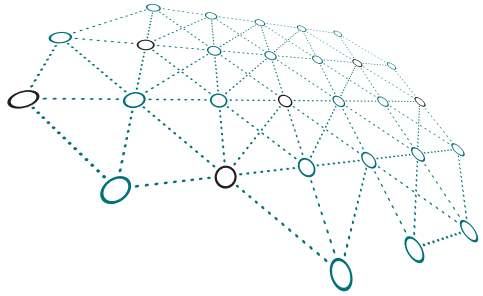


Muliggøre udvikling af
bedre og mere effektive løsninger
til brugerne

via

en opsplitning af OpenTele i
løstkoblede komponenter og services

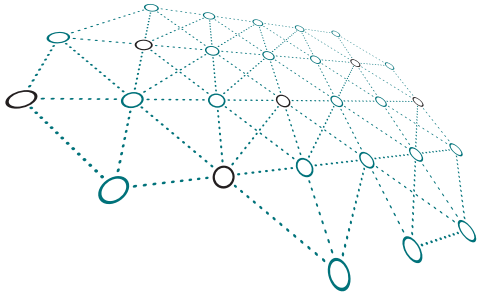
Mål



- Uafhængighed
  - flere samtidige leverandører og løbende udrulning
- Individuel tilpasning
  - skræddersy løsning efter behov
- Genbrug
  - modularisering
- Veldefinerede snitflader
  - fokus på internationale og anerkendte standarder
- Indkapsling af kritisk funktionalitet
  - certificering og kvalitetssikring

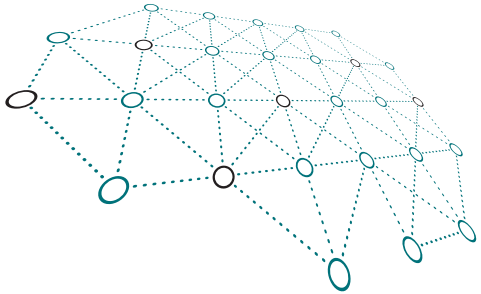
+ målrettet skalerbarhed

Udgangspunkter



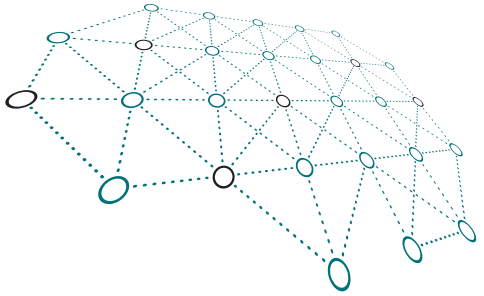
- Rodfæstet i involvering af interessenter
  - erfaringer, behov, planer, …
- Referencearkitekturer og Continua
- Idéer om
  - arkitektur baseret på microservices
  - anvendelse af HL7 FHIR

Spørgsmålene



- Hvad er kernekomponenterne?
- Hvad kan håndteres eksternt og hvad kan deles?
- Hvad er principper og retningslinjer for:
  - Serviceinfrastruktur?
  - Kommunikationsstandarder og indholdsformater?

Microservices



- Small, and doing one thing well: Microservices are independent services and its boundaries are aligned with boundaries of the business domain.
- Autonomous: A microservice is a separate entity and can be deployed in isolation without requiring data consumers to change.

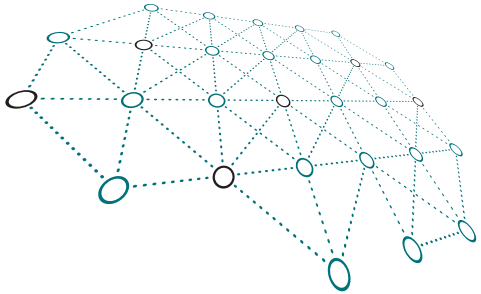
[Newman]

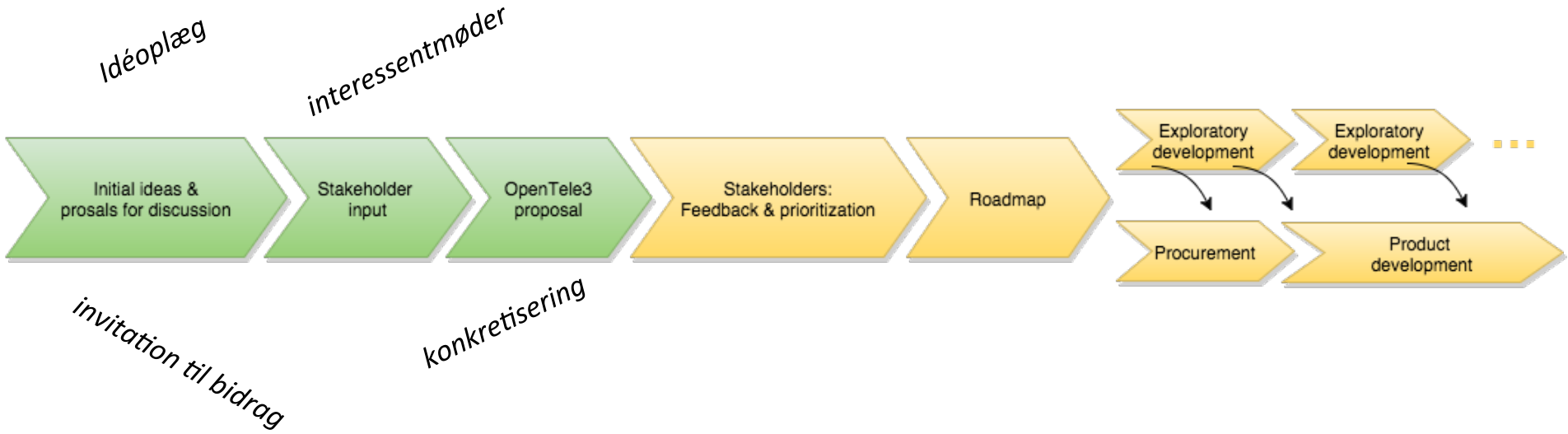
HL7 FHIR

- FHIR® – Fast Healthcare Interoperability Resources
  - Næste generation standard framework fra HL7
  - Kombinerer bedste egenskaber fra HL7 v2, v3 og CDA
  - Benytter de nye web standarder
  - Fokus på implementerbarhed

- FHIR løsninger:
  - bygger på modulære enheder kaldet ressourcer (patient, CarePlan, Appointment, …)
  - er anvendelige i mange forskellige kontekster (mobil apps, cloud kommunikation, EPJ-baseret datadeling, server kommunikation i store sundheds-it systemer, …)

Processen



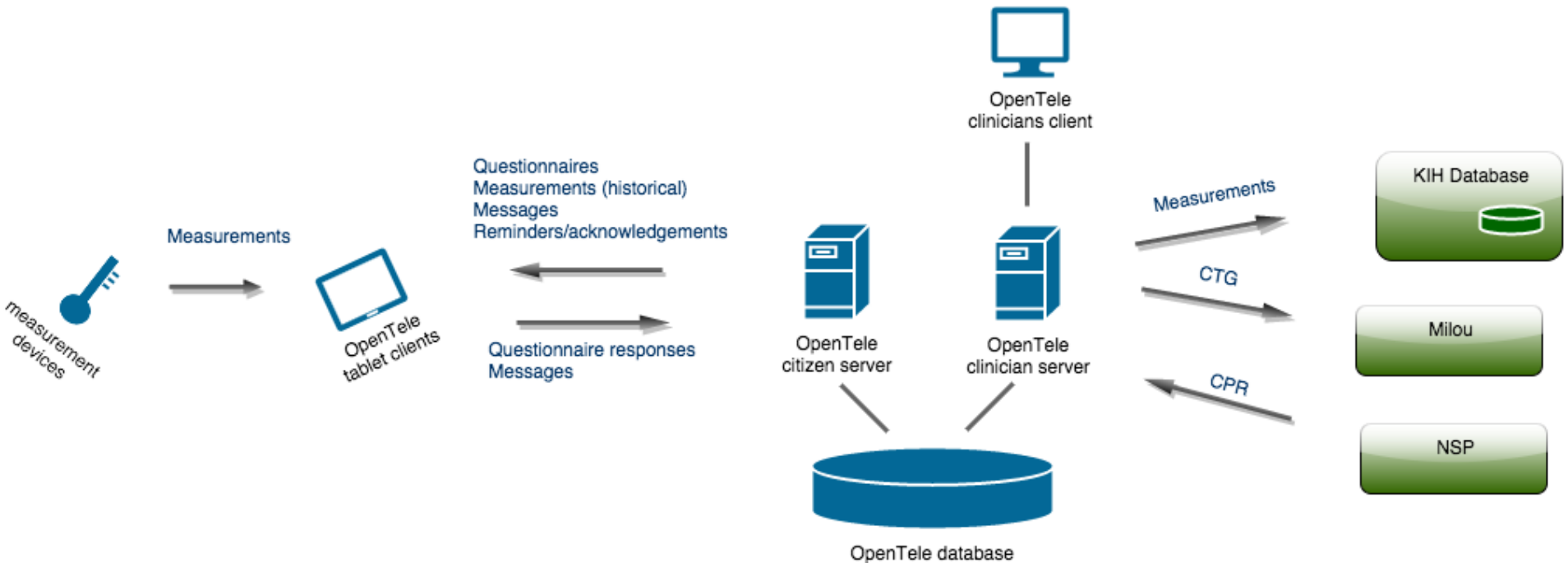

Idéoplæg
interessentmøder
Initial ideas & prosals for discussion
Stakeholder input
OpenTele3 proposal
Stakeholders: Feedback & prioritization
Roadmap
Exploratory development
Exploratory development
Procurement
Product development
invitation til bidrag
konkretisering

Input fra interessenter

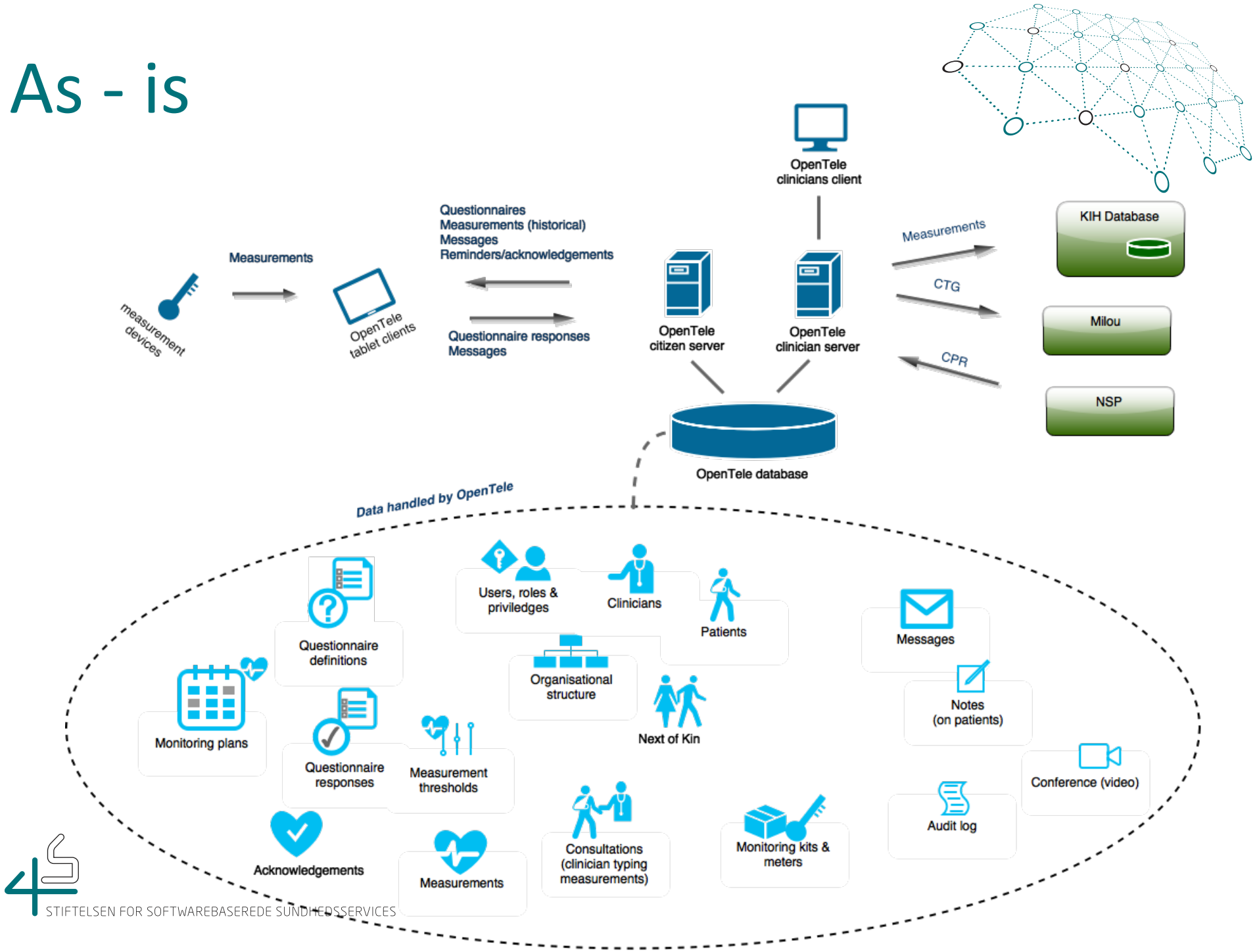
- InTeleCare4U
- Silverbullet
- NNIT
- IBM
- NextStep Citizen
- Region Hovedstaden
- Region Midtjylland
- Region Nordjylland
- National Sundheds-IT
- MedCom

STIFTELSEN FOR SOFTWAREBASEREDE SUNDHEDSSERVICES

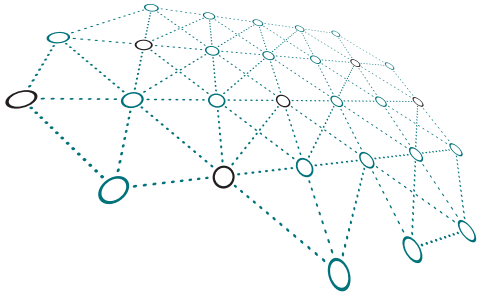
As - is


measurement devices
Measurements
OpenTele tablet clients
Questionnaires
Measurements (historical)
Messages
Reminders/acknowledgements
Questionnaire responses
Messages
OpenTele clinicians client
OpenTele citizen server
OpenTele clinician server
OpenTele database
Measurements
CTG
CPR
KIH Database
Milou
NSP

As - is

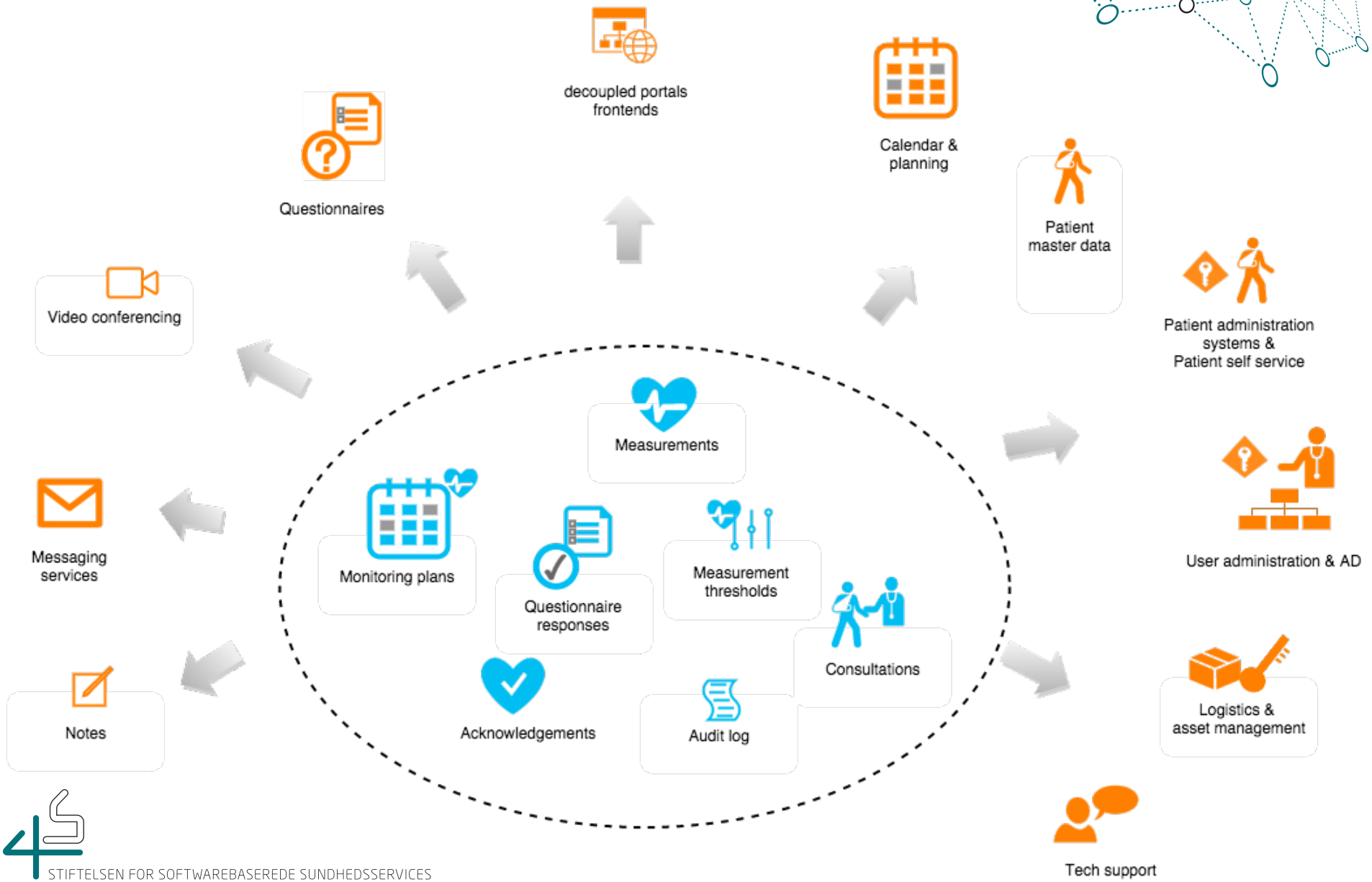

OpenTele clinicians client
Questionnaires
Measurements (historical)
Messages
Reminders/acknowledgements
Measurements
measurement devices
OpenTele tablet clients
Questionnaire responses
Messages
OpenTele citizen server
OpenTele clinician server
Measurements
CTG
CPR
KIH Database
Milou
NSP
OpenTele database
Data handled by OpenTele
Users, roles & priviledges
Clinicians
Patients
Questionnaire definitions
Organisational structure
Next of Kin
Messages
Notes (on patients)
Monitoring plans
Questionnaire responses
Measurement thresholds
Conference (video)
Audit log
Acknowledgements
Measurements
Consultations (clinician typing measurements)
Monitoring kits & meters

OpenTele3

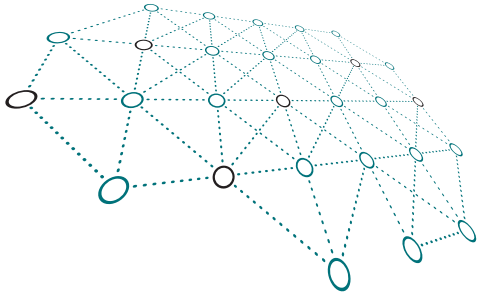


Kernekomponenter
&
strategiske fokusområder

Komponenter og fokusområder



Strategiske fokusområder



- *Klinikergrænseflader*
- *Spørgeskemaer*
- *Kommunikation*
  - *Messaging, videokonference, noter, patient fora, e-learning*
- *Kalendere og planlægning*
- *Administration, selfbetjening og master data*
- *Logistik, asset management og tech support*

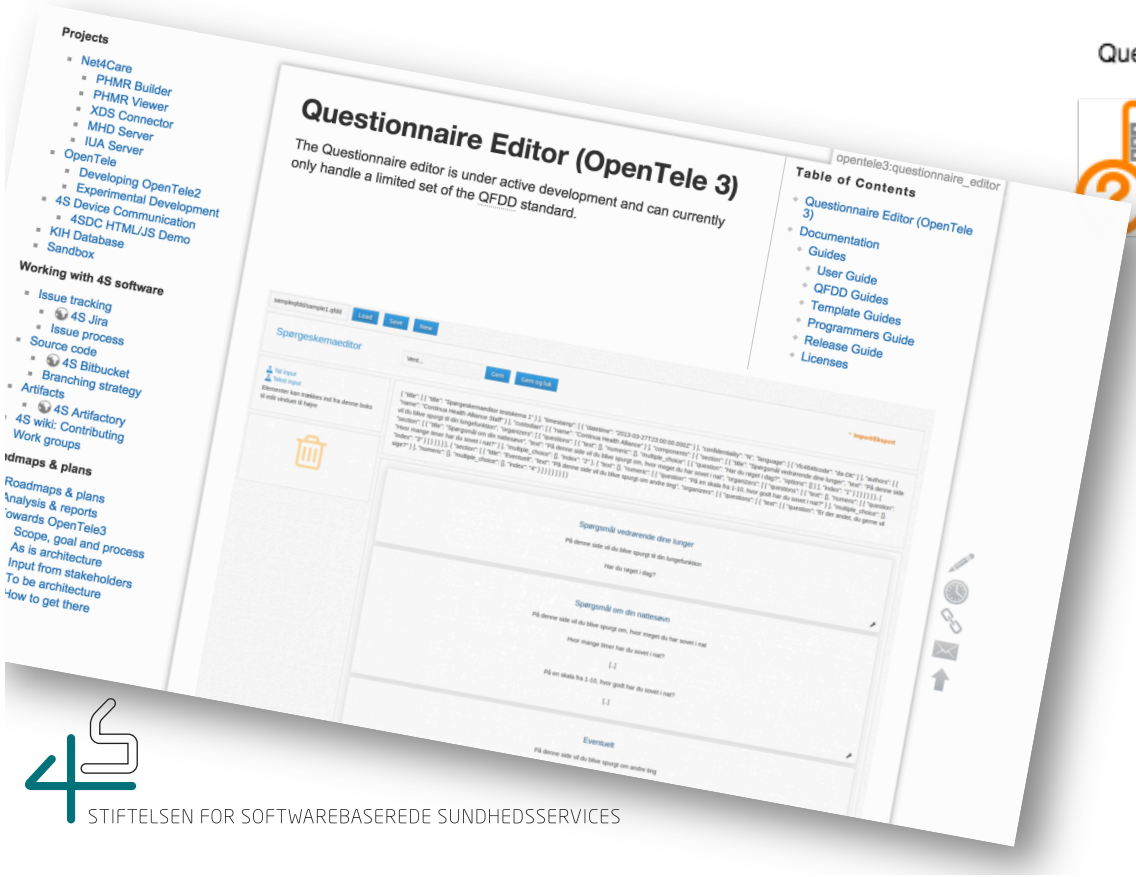
+

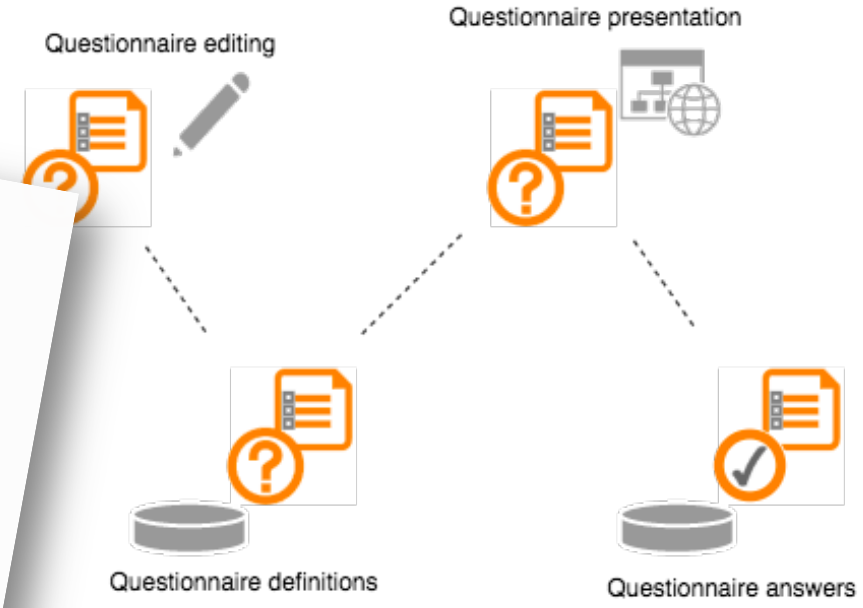
Standarder!

Ex: Spørgeskemaer

Input fra interessenterne:

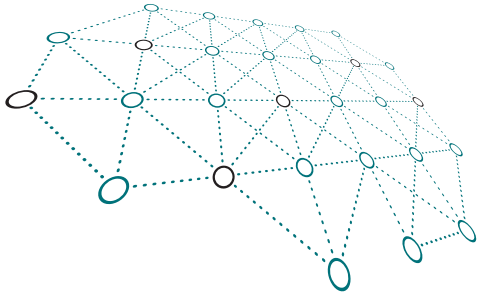
- Questionnaire Editor as a separate component
- Support for HL7 questionnaire standards
- Generic questionnaire presentation component





STIFTELSEN FOR SOFTWAREBASEREDE SUNDHEDSSERVICES

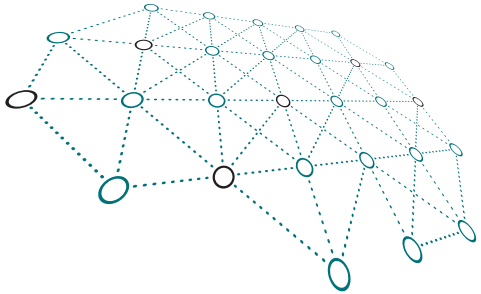
OpenTele3



Principper

STIFTELSEN FOR SOFTWAREBASEREDE SUNDHEDSSERVICES

Generelle principper

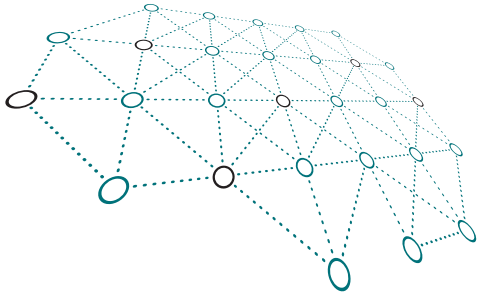


1. Work towards a microservice architectural style

2. Use international standards for communication and content formats

3. Aim for cross-platform support and low platform dependence

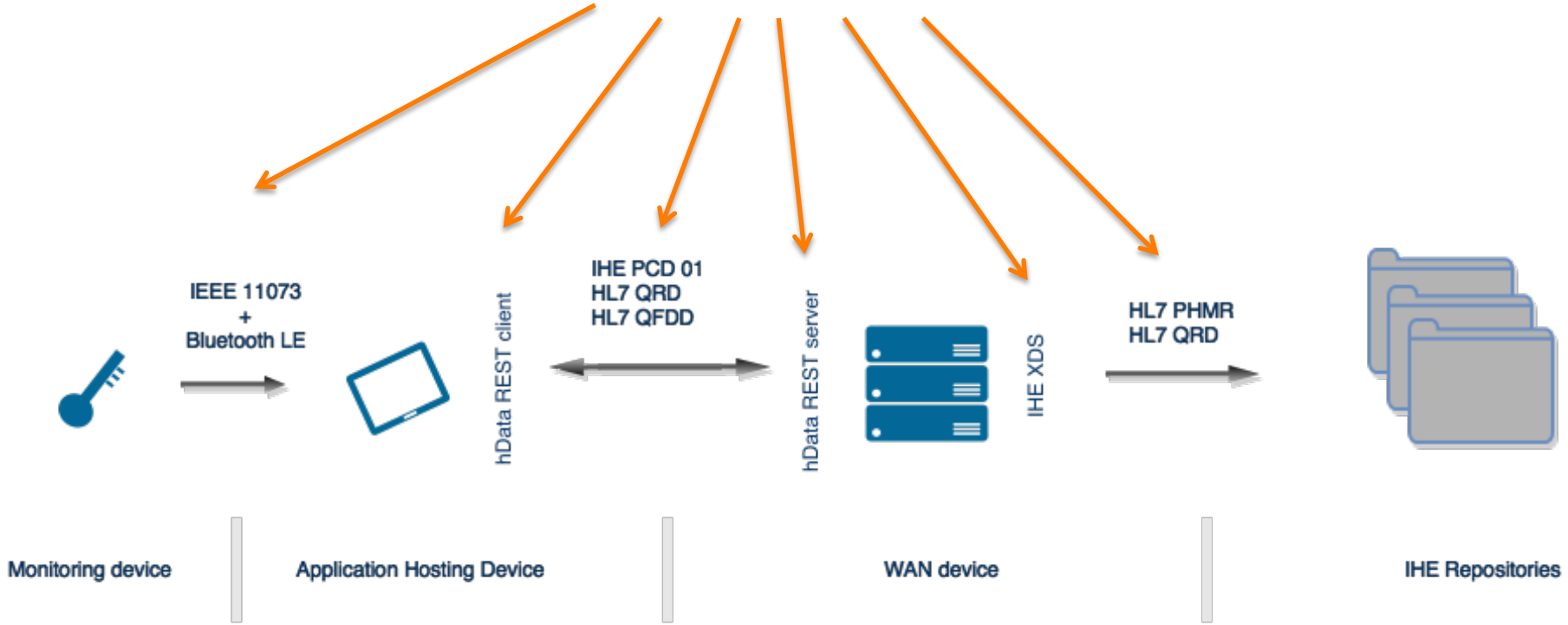
Specifikke principper



1. Does the national eHealth reference architectures say anything?
2. Does the Continua Design Guidelines say anything?
3. Does HL7 FHIR say anything?
4. If service handles any kind of resource, support a RESTful interface based on hData

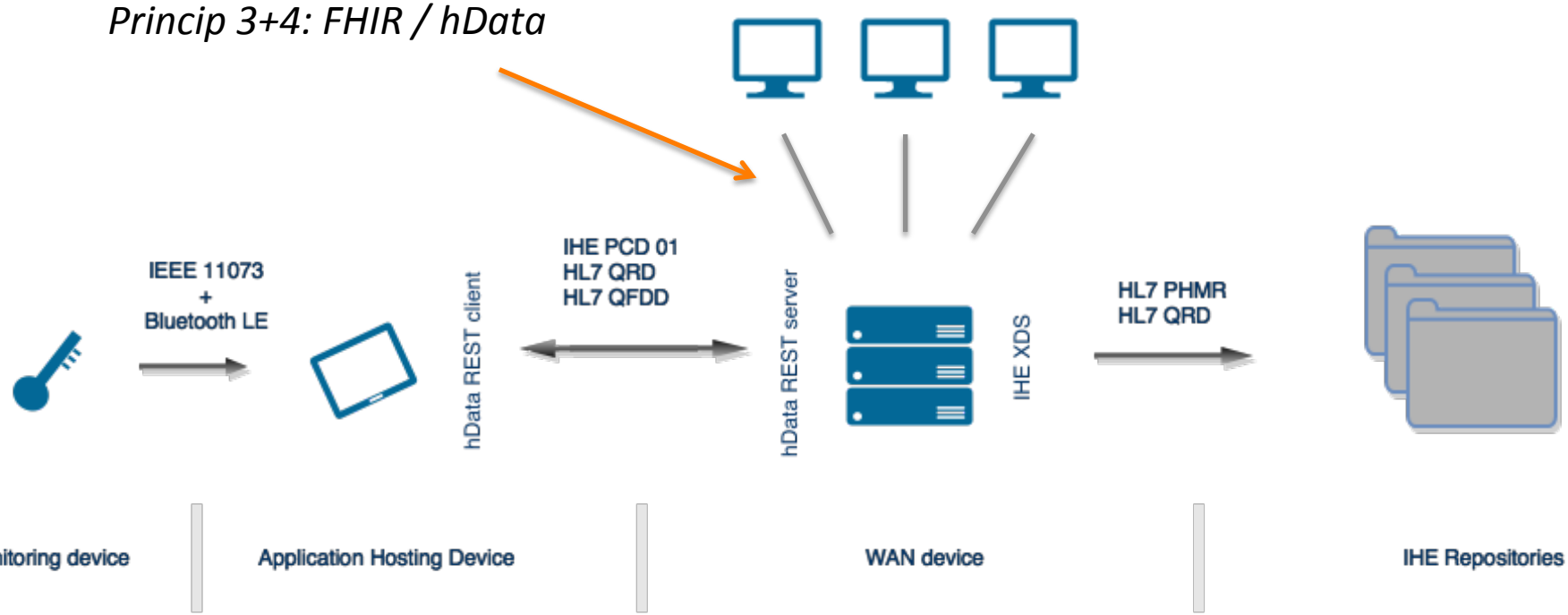
Standarder og principper

Princip 1+2: Referencearkitekturer + Continua

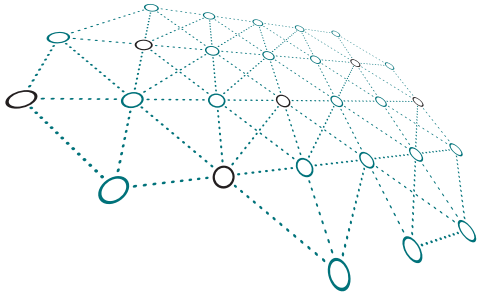


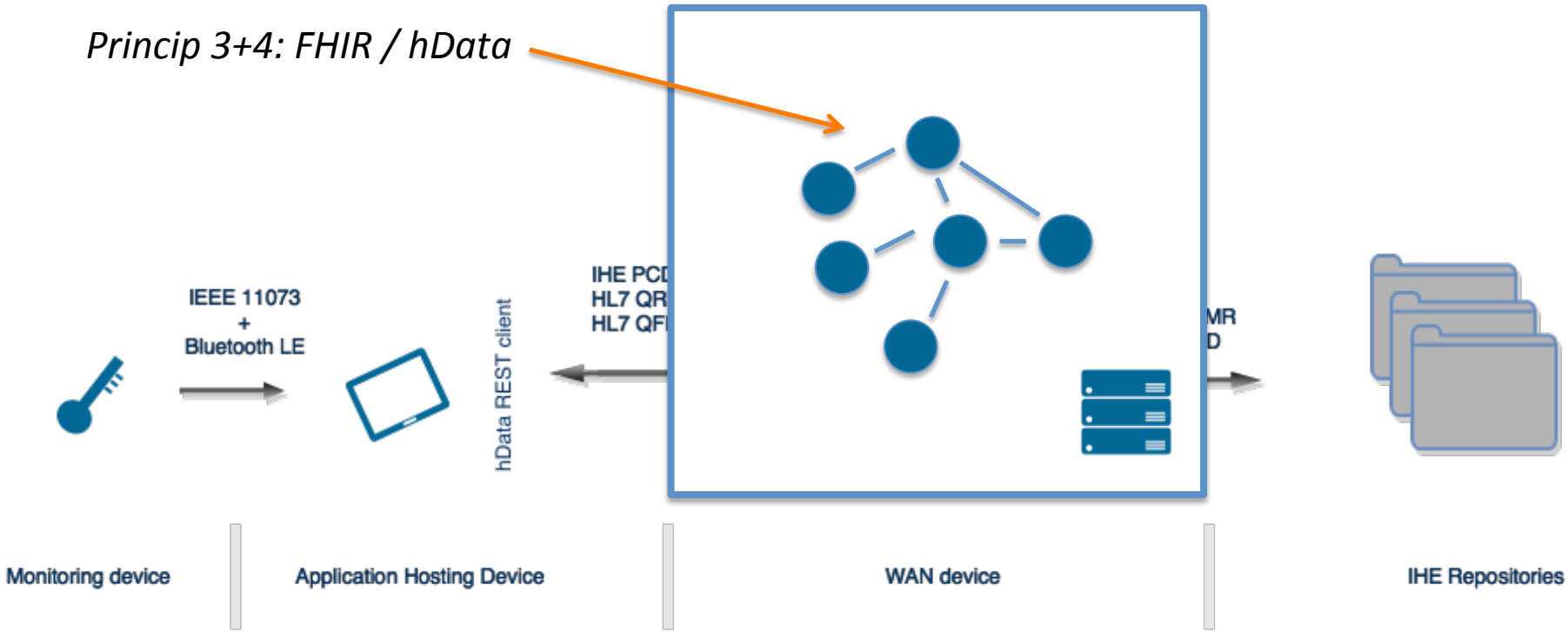
Standarder og principper

Princip 3+4: FHIR / hData



Standarder og principper

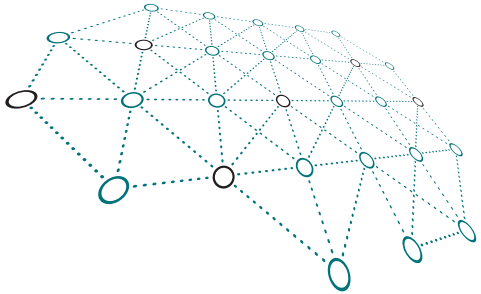


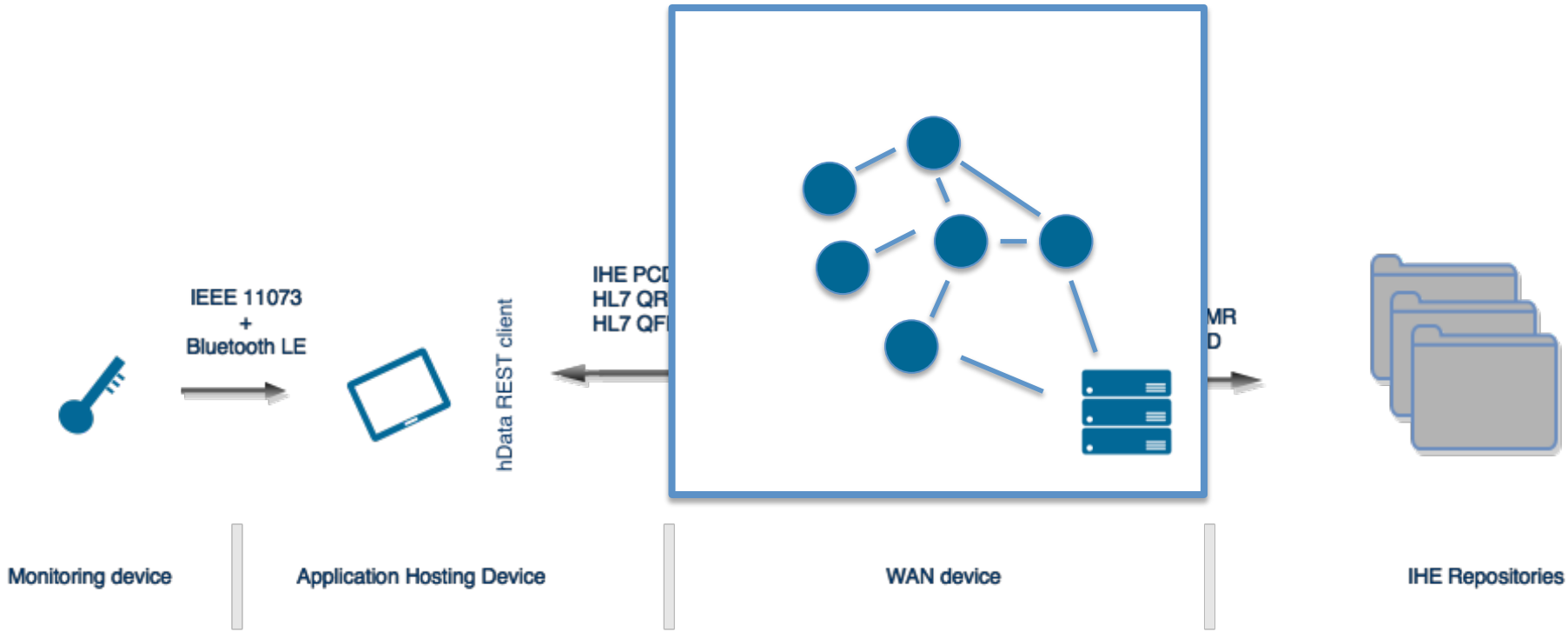


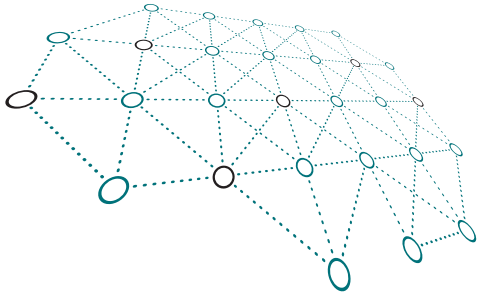
Services


Authentication and Identity
Transport
HTTP
core telemedical services
FHIR REST / hData REST
4S data service: Read, Update, Locate Service
Transformational service
non-standard / propriatary communication
Legacy system

Fra OpenTele2 til 3

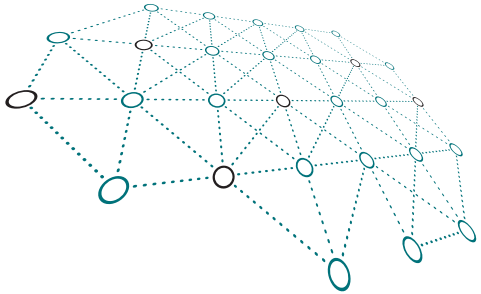






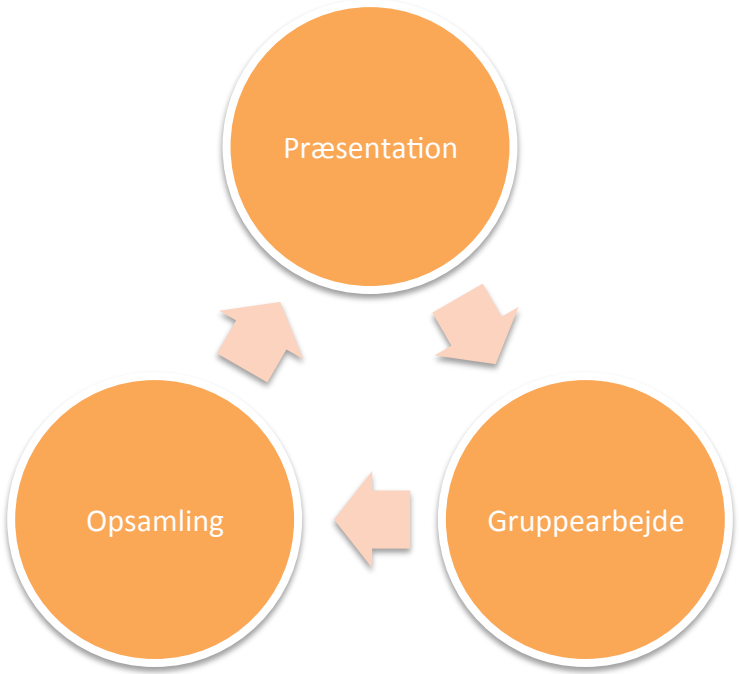
DIALOG OM GOVERNANCE

Dialog om governance

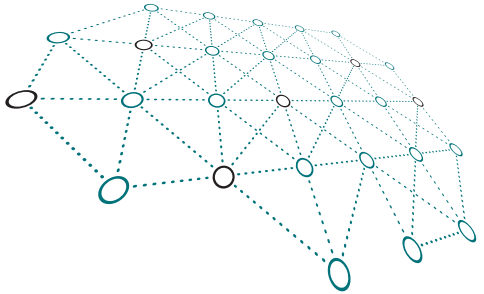


Tre runder:

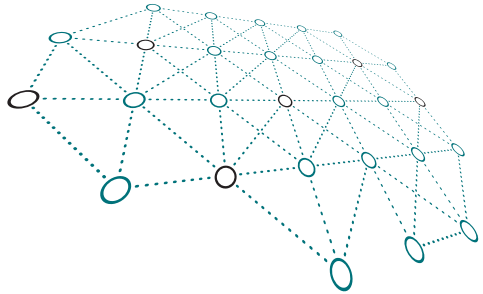
1. Styring af arkitektur og koordinering af udvikling
2. Kvalitetssikring
3. Kontrakter



Cases



- Ny klient:
  - *Udvikling af en klient til iPad*
- Spørgeskemaer:
  - *Understøttelse af standarder*
  - *Spørgeskemaeditor som separat modul*
- Bug:
  - *Det rapporteres, at de blodtrykstal som klinikerne ser ikke stemmer overens med borgernes målinger*



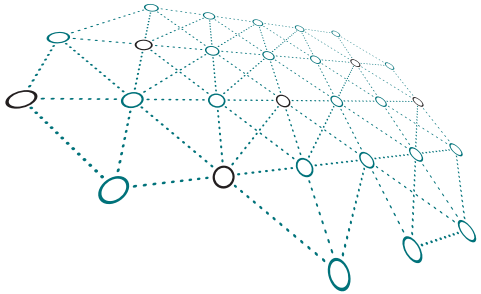
STYRING AF ARKITEKTUR OG KOORDINERING AF UDVIKLING

OpenTele3 eksemplet

- Principles and guidelines
- Key services & components
- Standards for communication and content

1. Stakeholders feedback and proposals for prioritisation.
2. Feedback, prioritisation and concrete plans are consolidated into a roadmap.
3. Roadmap realisation broken into two parts:
    1. The most concrete parts can go directly to procurement and product realisation
    2. Less concrete parts benefit from cycles of exploratory development feeding into procurements and product development processes.

Roadmap



- Et værktøj til planlægning og koordinering
- Hvad sker på kort og lang sigt og hvad er rammerne?

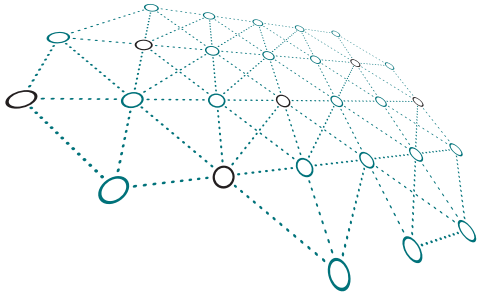
Bør være

- Fleksibelt og åbent nok til at rumme exploratorive og agile udviklingsprocesser
- Konkret og afgrænsende nok til at fungere som en ramme for planlægning

Kan f.eks. indeholde

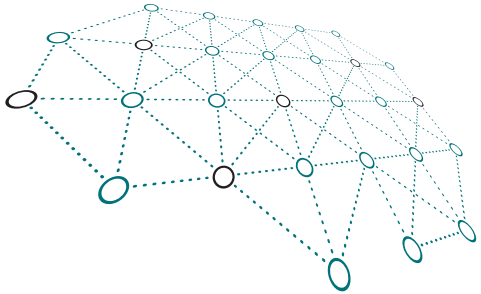
- Use cases, scenarer og overordnede krav
- Strategiske og kritiske fokusområder
- Konteksten for fokusområderne (legacy, standarder, tech.drivers,…).
- Overordnede muligheder og alternativer indenfor fokusområderne
- Anbefalinger med overordnet timing / tidsramme

4S Softwaregruppen

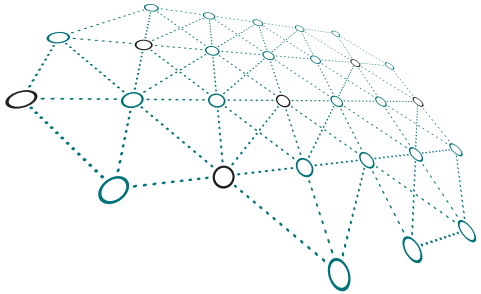


- Ønsker oversigt over:
  - Hvad *er* lavet
  - Hvad er *på vej*
  - Hvad er *"boblerne"*
    - og hvem er interesserede?
- Beskrivelse af idé/komponent:
  - hvad er det?
  - hvorfor er det en god idé?
  - hvilke afhængigheder er der?

Styring af arkitektur og koordinering af udvikling



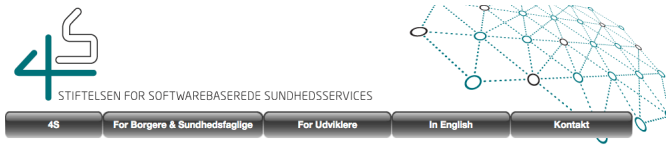
- Dit firma er ved at sælge udviklingen af ny komponent til en region. Regionen siger du bør inddrage 4S fra starten. Hvordan kommunikerer i om løsningsdesign?
- En kommune kontakter 4S og vil gerne have udviklet en iPad klient. 4S vil gerne diskutere designidéer. Hvordan deltager dit firma i diskussionen.

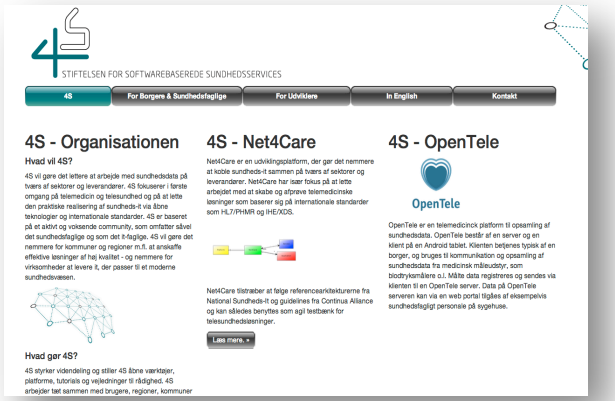


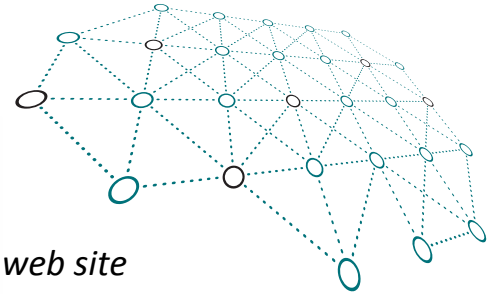
4S VÆRKTØJER OG HJEMMESIDE

Værktøjer

Online fora



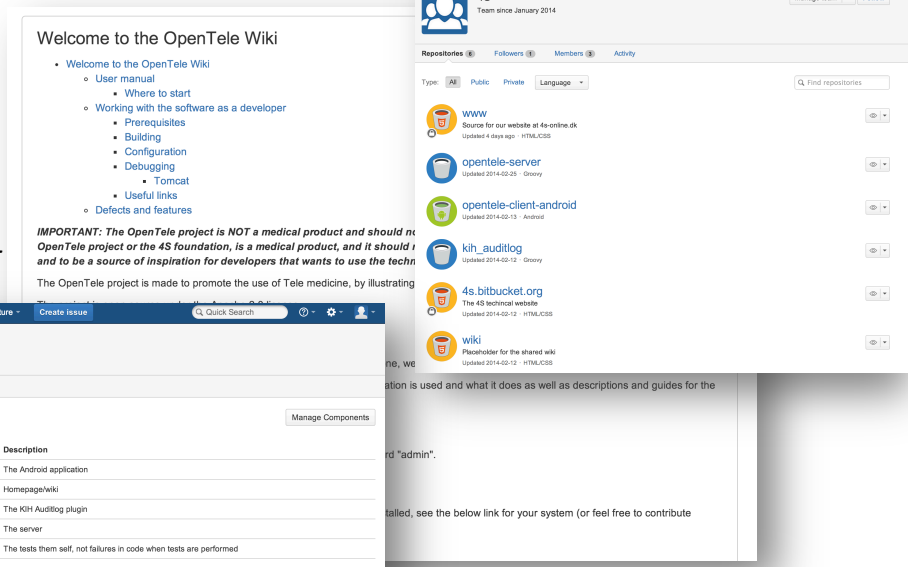




web site

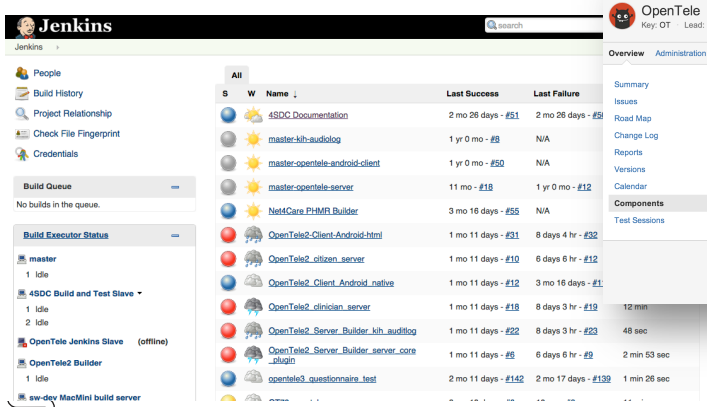
Jira

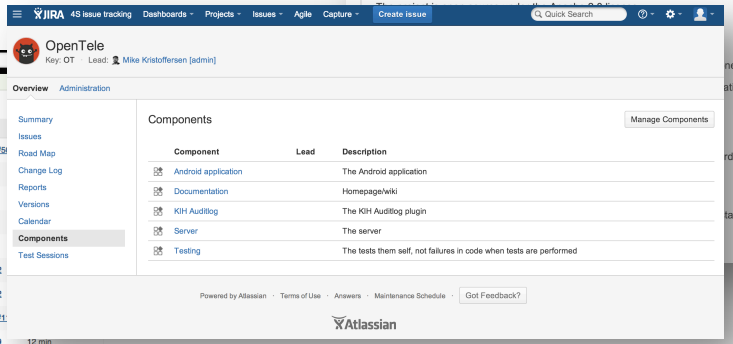
wiki



git + Bitbucket

Jenkins





+ LinkedIn grupper ("4S" og "OpenTele")