DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF SCIENCE
AARHUS UNIVERSITY

30/11/2009

ARCHITECTURE SERVICE DISCOVERY

JEPPE BRØNSTED
POST DOC, PHD

KRAV TIL ARKITEKTUR

- Funktionalitet
  - Apparater skal kunne kommunikere på en fornuftig måde
- Forretningsmæssige krav
  - Producenter skal selv bestemme hvad de vil åbne op for
  - Eksisterende end-devices skal kunne fungere uden at skulle ændres
- Krav til kvaliteter (arkitekturegenskaber)
  - Modificerbarhed
    - Det skal være let at tilføje nye subsystemer og end-devices efter deployment - uden at påvirke kørende system
  - Brugbarhed
    - Systemet skal være anvendeligt af forskellige kategorier af brugere
  - Skalerbarhed
    - 100er af samtidige enheder
    - Skal kunne implementeres på resourcebegrænsede systemer

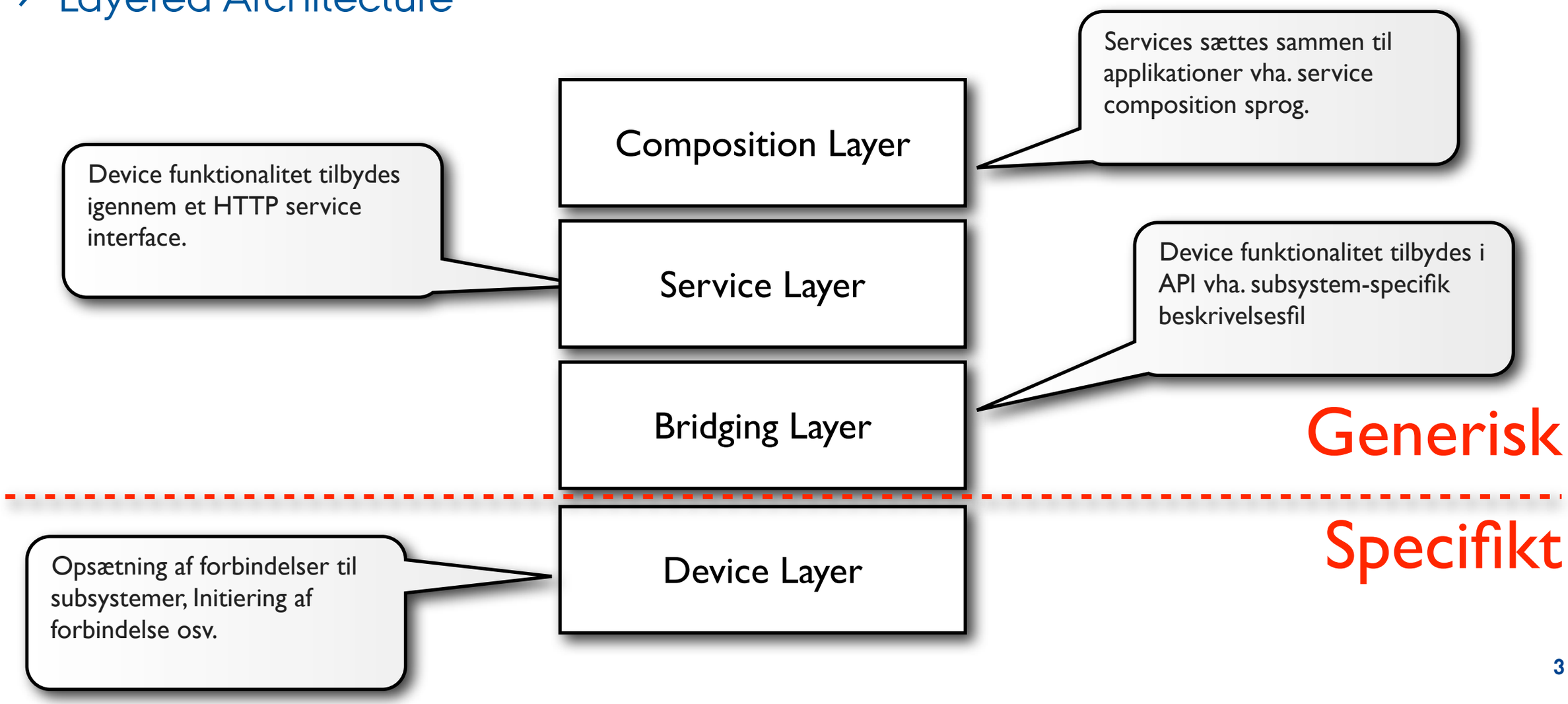
DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF SCIENCE
AARHUS UNIVERSITY

JEPPE BRØNSTED
POST DOC, PHD

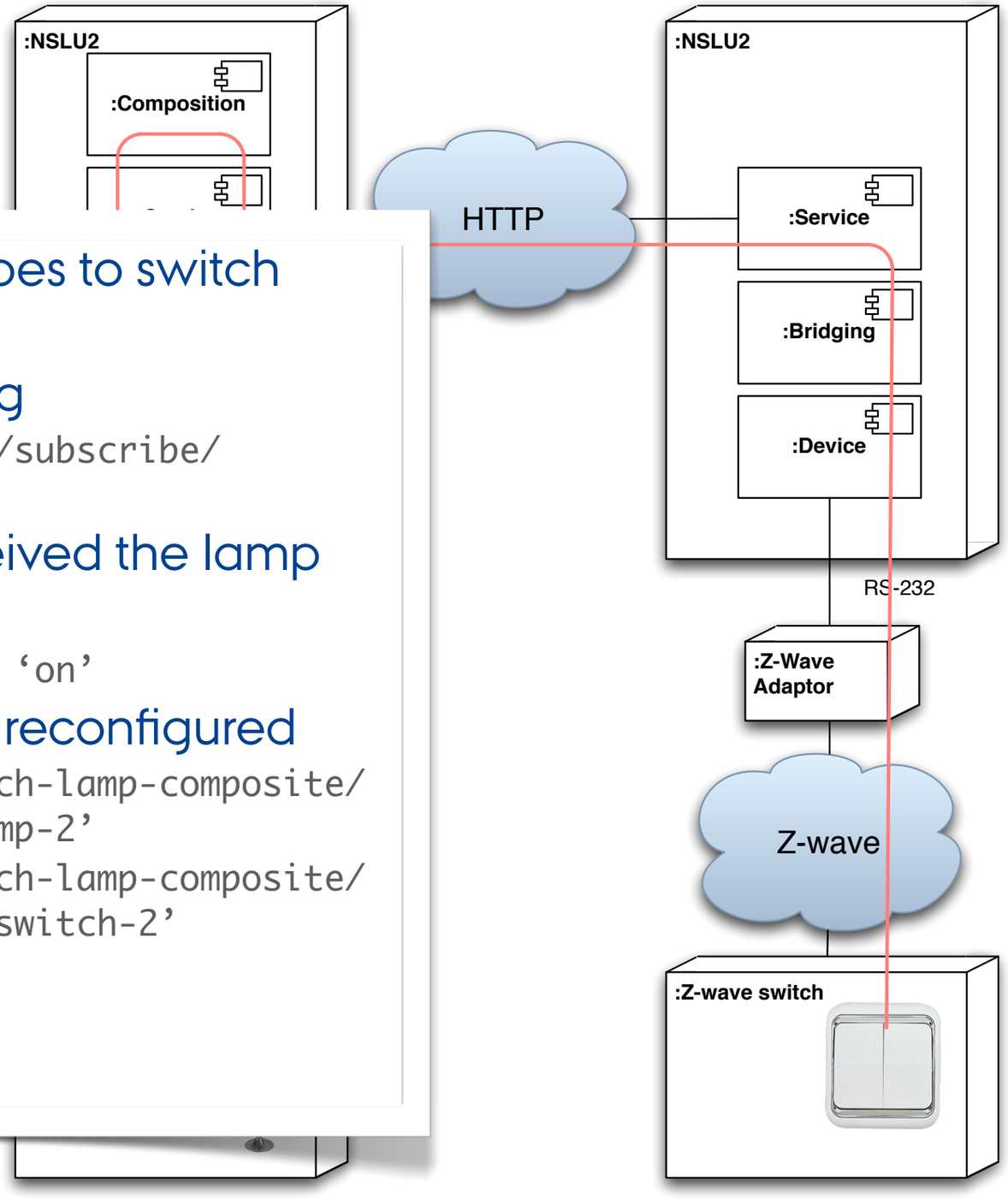
30/11/2009

MODULE VIEW

› Layered Architecture

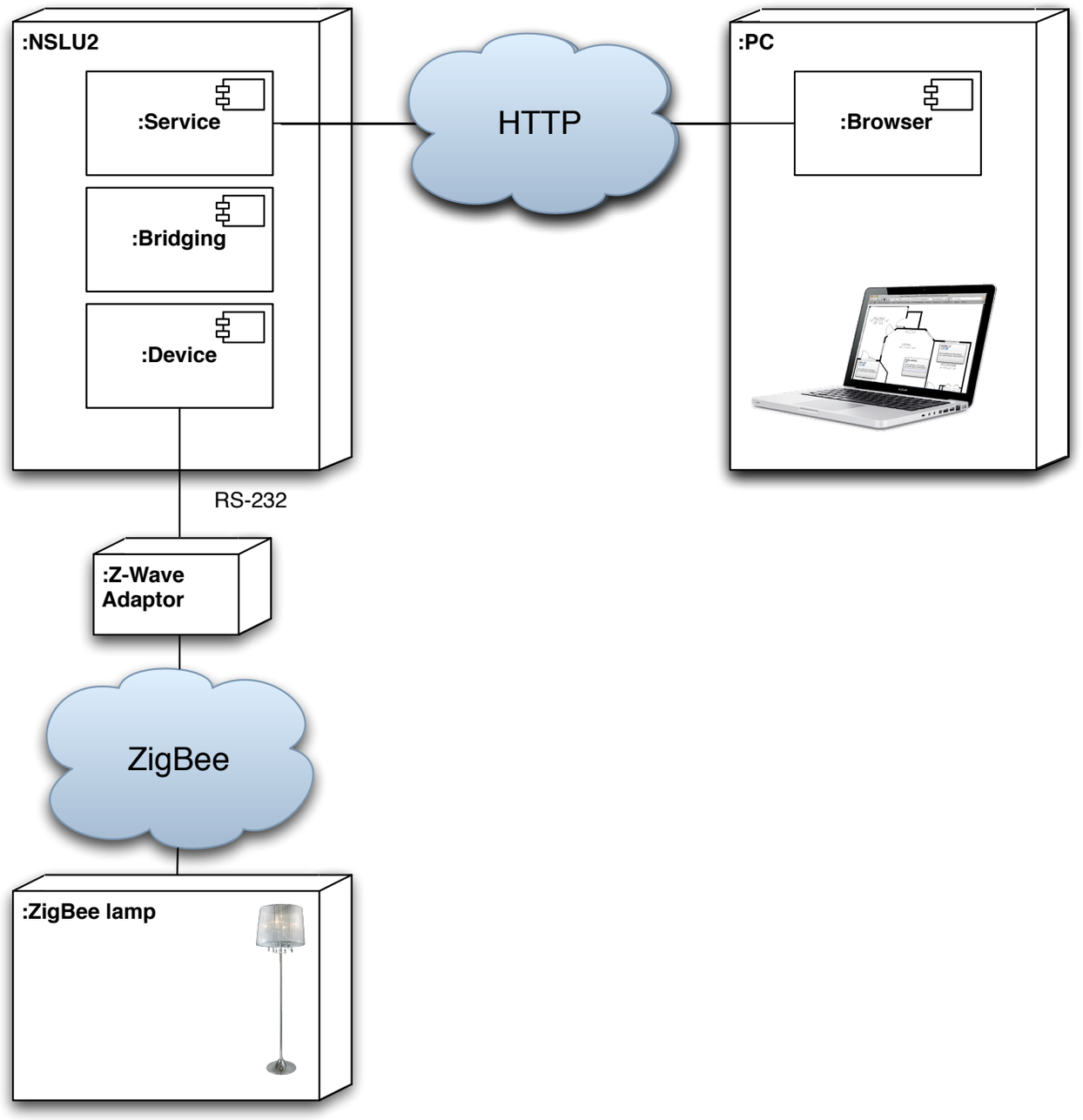


- Composite subscribes to switch events
- Use HTTP-streaming
  - `GET subscriptions/subscribe/services/switch`
- When event is received the lamp state is toggled
  - `PUT services/lamp 'on'`
- Composite can be reconfigured
  - `PUT services/switch-lamp-composite/lamp 'services/lamp-2'`
  - `PUT services/switch-lamp-composite/switch 'services/switch-2'`



SAMPLE DEPLOYMENT

JEPPE BRØNSTED
POST DOC, PHD



SAMPLE DEPLOYMENT

DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF SCIENCE
AARHUS UNIVERSITY

JEPPE BRØNSTED
POST DOC, PHD

HVORDAN SER SYSTEMET UD FOR FORSKELLIGE KATEGORIER AF BRUGERE?

- Slutbruger (brug)
  - Oplever systemet gennem hjemmets apparater (lamper, kontakter, vægpaneler osv.)
- Slutbruger (konfigurering/installation)
  - Tilgår systemet gennem brugergrænseflade (PC, web, mobil, el. lign.)
- End-device udvikler
  - Behøver ikke vide at homeport eksisterer
- Controller/composition udvikler
  - Tilgår services via HTTP/REST. Bruger service discovery mekanismer
- Gatewayudvikler
  - Er ansvarlig for at tilbyde subsystem device funktionalitet gennem HTTP/REST interface (skal være subsystemsekspert)
    - Baseret på standard biblioteker og beskrivelsesfiler

JEPPE BRØNSTED
POST DOC, PHD

SERVICE DISCOVERY

- Requirements
  - Should make it possible to
    - Find service URLs
    - Find composite URLs
    - Make static information about services available
  - Should fit into framework (based om HTTP)
- **Candidate design**:
- Elected service registry
  - A node stores information about other nodes
  - Can be queried for information (by using HTTP)
  - Information structured hierarchically
    - Nodes, services, serviceinformation
  - Standard cache mechanisms used to increase performance
- Bonjour for bootstrapping (finding service registry)
  - Decentralised (mdns)
  - Standardised
  - Open source libraries available (works on prototyping platform)
  - Works with browser
  - Supported by default on Linux, OS X, package available for Windows