



# Showcase

## A oneM2M-based Continua Compliant Healthcare System

# A OneM2M-based Continua System

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- Lamprey Networks
- InterDigital/Convida
- Personal Connected Health Alliance/Continua



# Presentation Coverage

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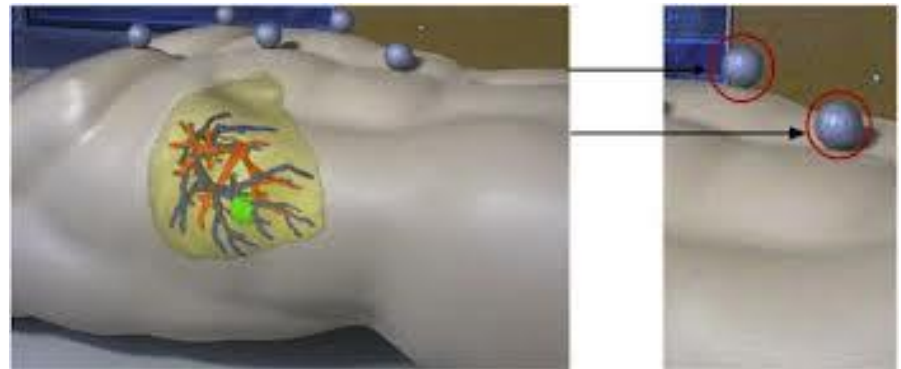
- Continua Healthcare Systems
  - Value proposition
- The demonstration
  - The “what” and some significant “hows” of the Continua oneM2M Healthcare system
- Future Directions
  - Integrating oneM2m into Continua remote management

# Open Consumer Centric Healthcare

- An Architecture for Remote Care with standardized interfaces



- “Semantic interoperability” – understanding the health data

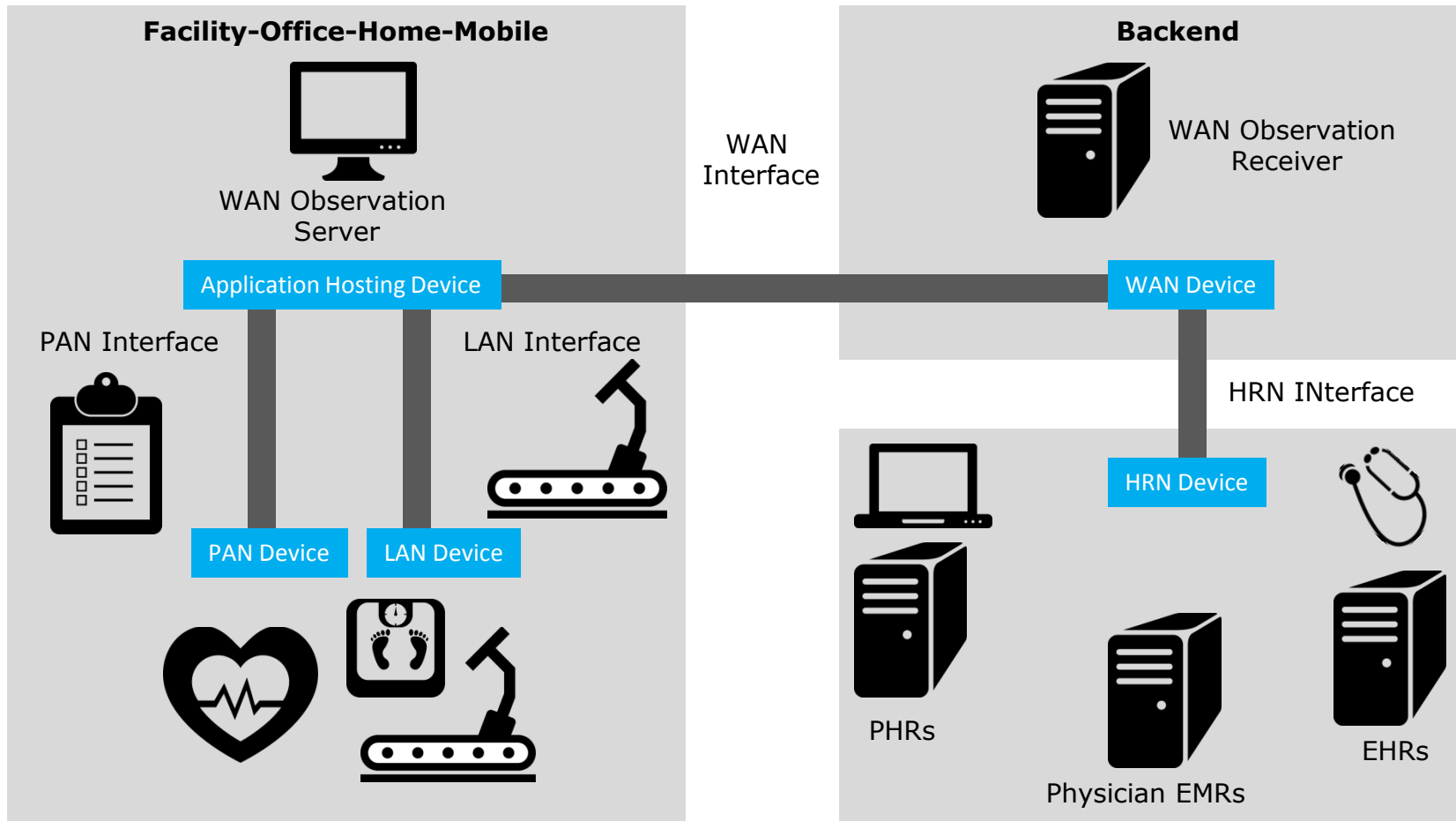


# Architecture with standard Interfaces

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- Control moves from the provider to the consumer
    - “locked in” no more – integrators vs. system provider
    - Staged evolution
  - Providers can specialize in specific components
    - Reduces barrier to entry – more competition, lower costs
    - Reuse of common components – lower costs
  - Basis for interoperability (“Plug and Play”)
    - Creates choice
    - Enhances innovation
    - Drives down cost through reuse
    - Works in conjunction with architecture
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# Continua/PCHA Architecture



# Standardized Health Data

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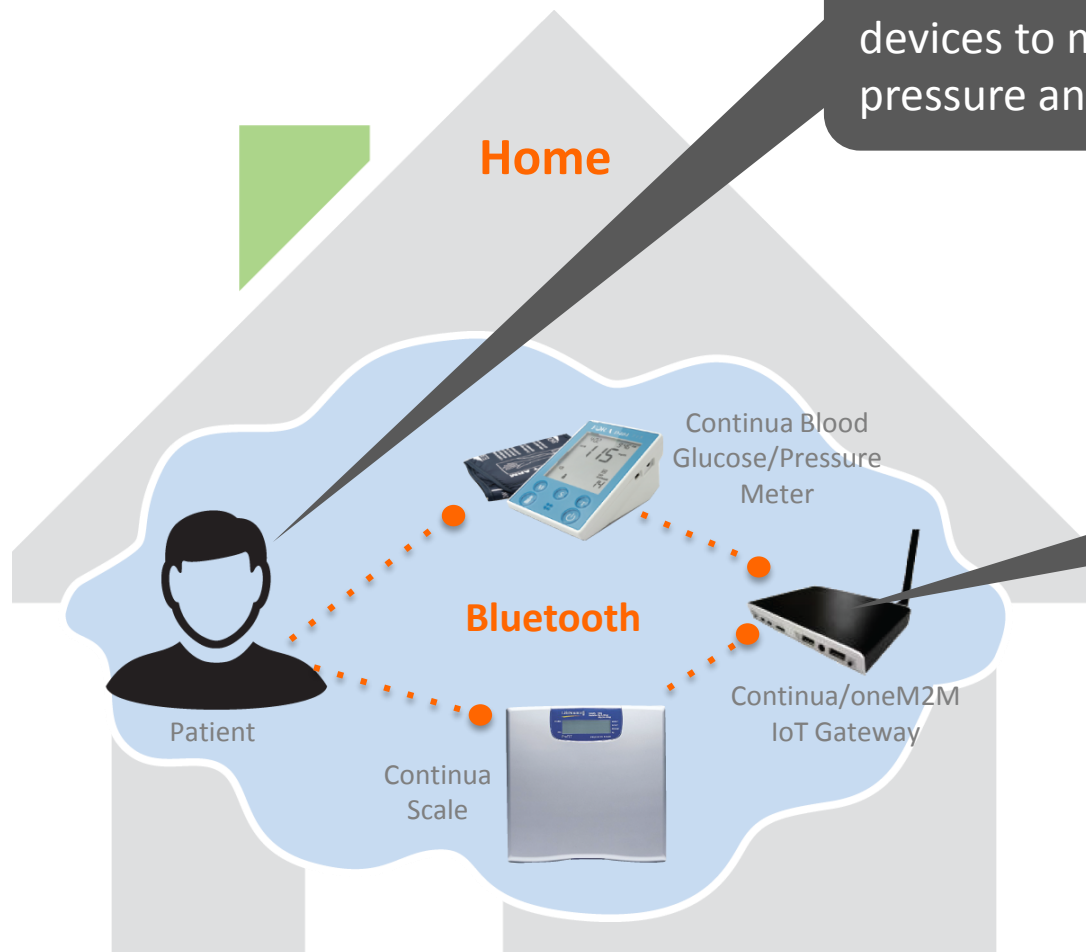
- Understanding Data (“semantic interoperability”)
  - Proper supporting information
    - The measurement by itself is often not sufficient
    - The validity of the timestamp
  - Data needs to be understood by the wider downstream ecosystem – both machines and humans
  - Hidden “lock in” of proprietary systems
    - Cost of conversion associated with data representation on new system
    - Difficulty of integrating new devices in system
    - FDA implications



# Continua/oneM2M Remote Healthcare Solution



Patient uses **Continua** certified eHealth devices to measure weight, blood pressure and glucose levels

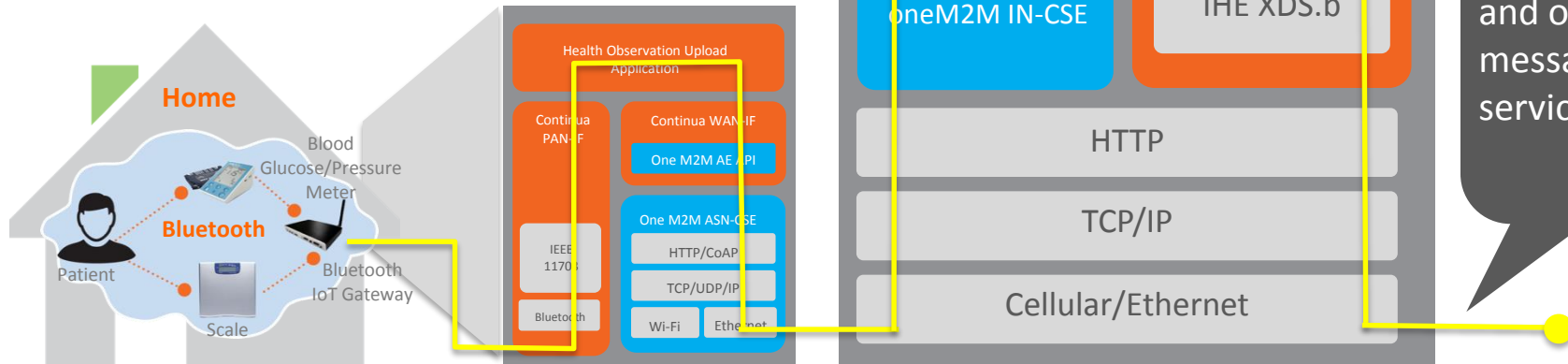




# Continua/oneM2M Remote Healthcare Monitoring Solution

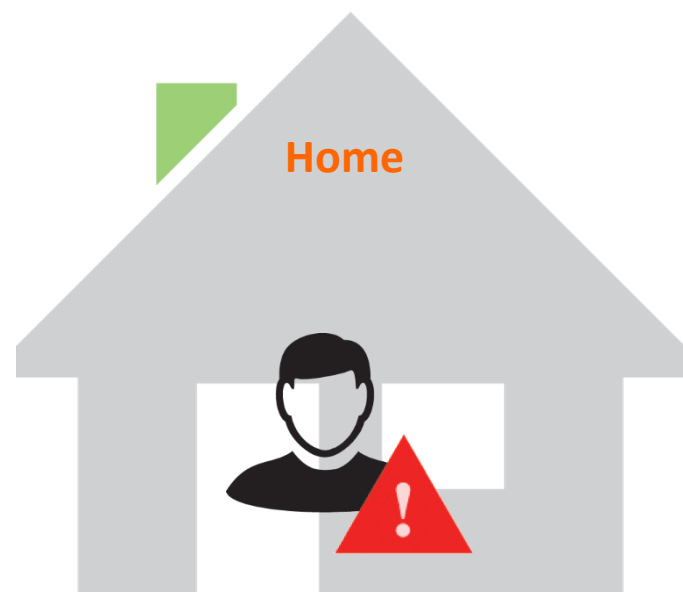


Health observations are uploaded to Cloud using **Continua** and **oneM2M** standardized messaging and services



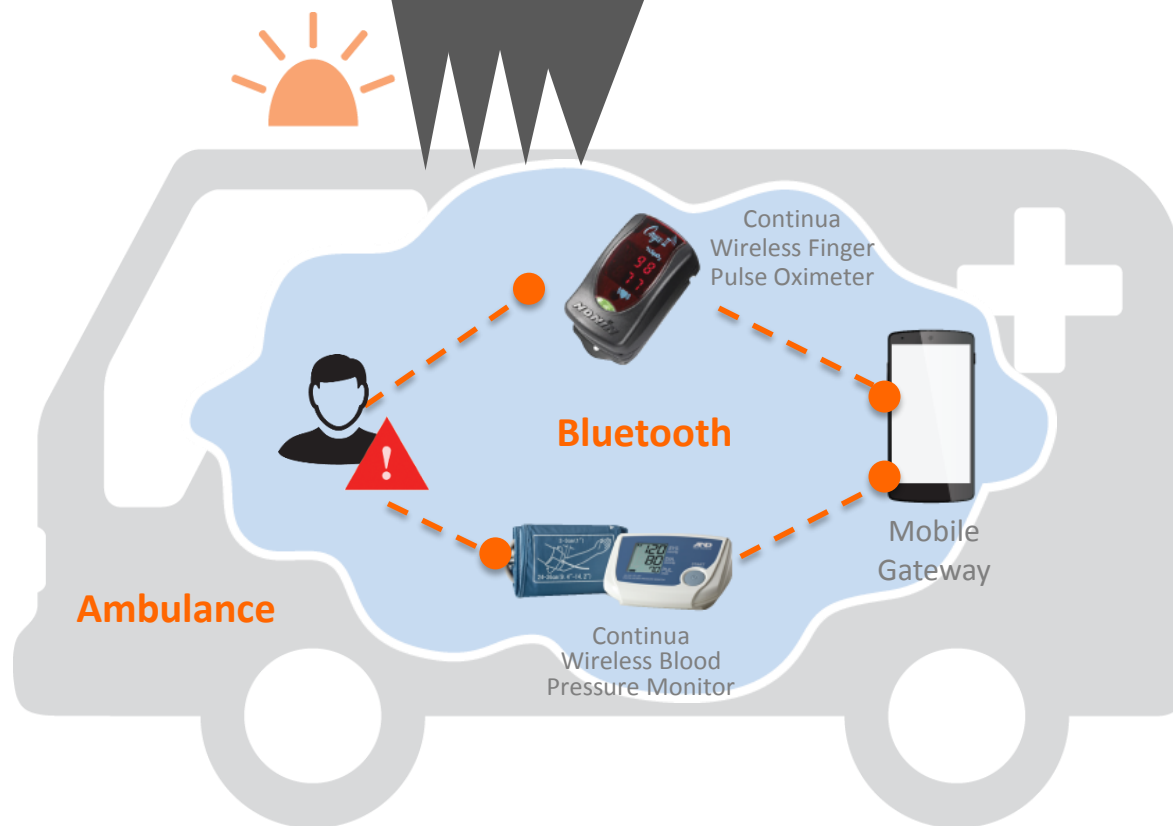
Health observations are delivered to Independent Living Service using **Continua** representation and oneM2M messaging and services

# Continua/oneM2M Remote Healthcare Monitoring Solution



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Health observations are uploaded to ambulance's IoT Gateway via **Continua** Standardized messaging and services.



# Continua/oneM2M Remote Healthcare Monitoring Solution

Hospital Emergency Arrival app processes observations and monitors patient's vitals while in route to hospital

Hospital Emergency Arrival App

HealthLink Exchange

HL7 v3 / IHE XDS.b

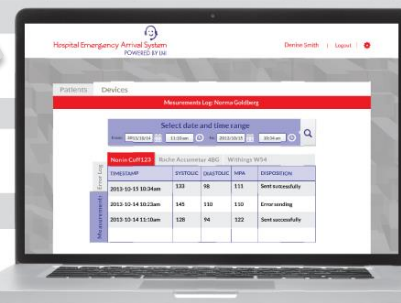
HTTP

TCP/IP

Ethernet/Wi-Fi



Hospital



Hospital Emergency Arrival System

Cloud



amazon  
webservices™

HealthLink Exchange

Continua  
WAN-IF

Continua  
HRN-IF

oneM2M AE API

HL7 v3

oneM2M IN-CSE

IHE XDS.b

HTTP

TCP/IP

Cellular/Ethernet



INTERDIGITAL



Bluetooth Wireless  
Finger Pulse Oximeter

Bluetooth

Phone

Ambulance

Bluetooth Wireless  
Blood Pressure  
Monitor

Health Observation Upload  
Application

Continua  
PAN-IF

Continua WAN-IF

One M2M AE API

IEEE  
11703

One M2M ASN-CSE

HTTP/CoAP

TCP/UDP/IP

Wi-Fi

Ethernet

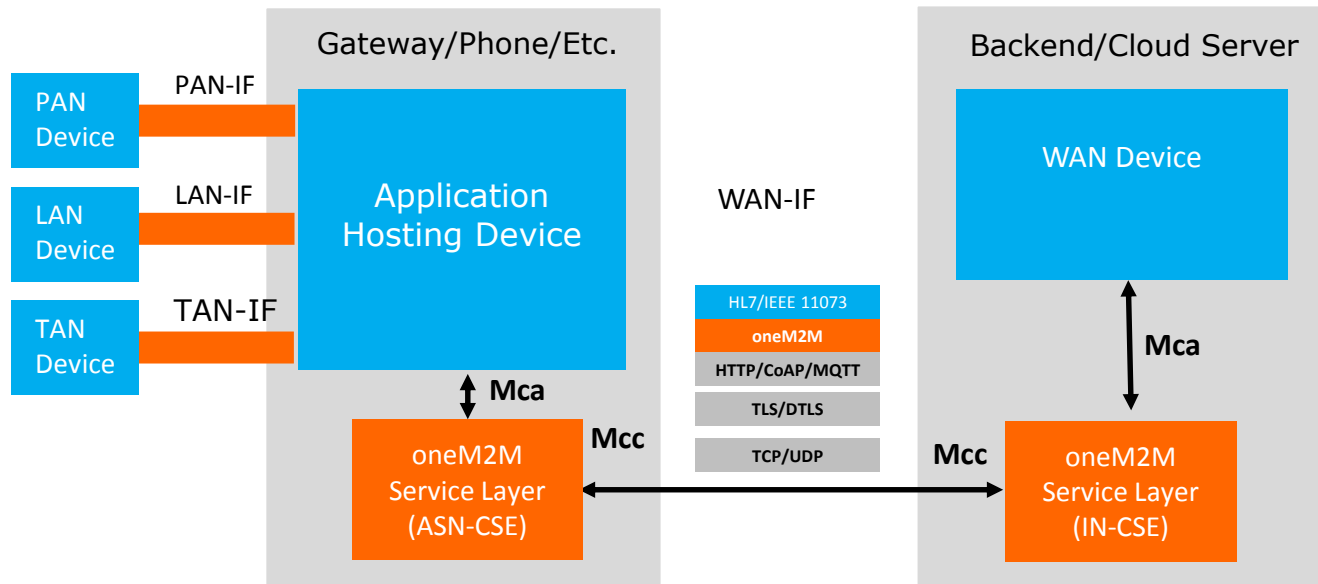
Cellular

radisys

LTE Core  
Network  
Emulator

eNodeB  
Platform

# Near term → *oneM2M over WAN I/F*

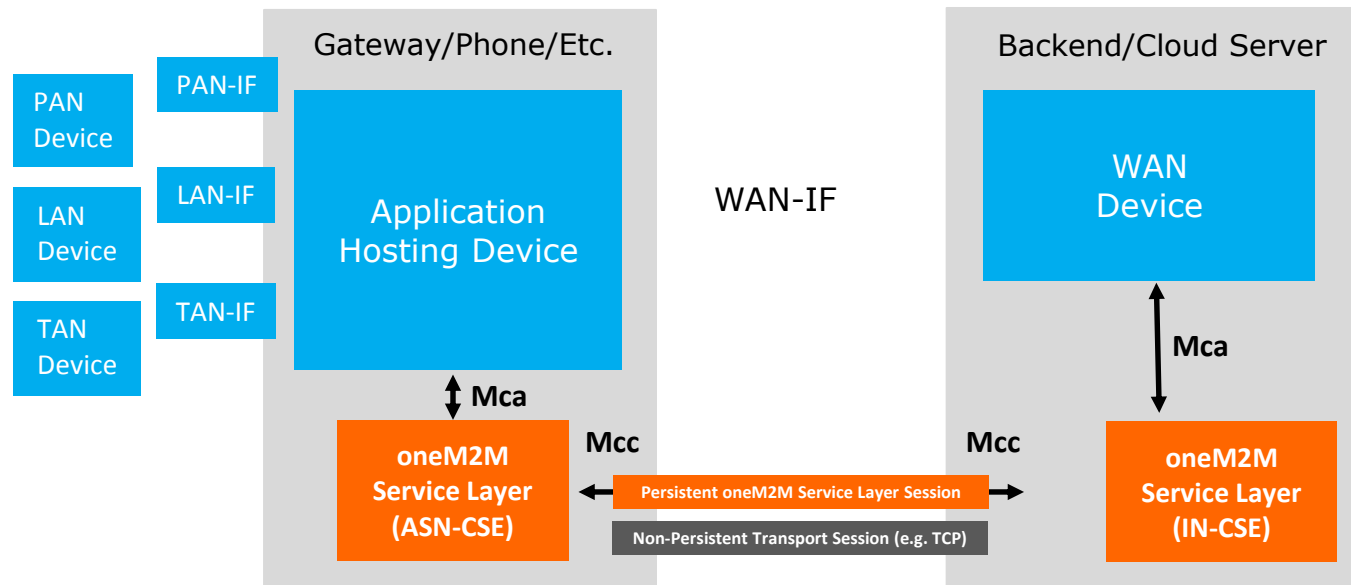


## Examples of value-add oneM2M features currently leveraged:

### *Efficient RESTful oneM2M Interfaces and APIs:*

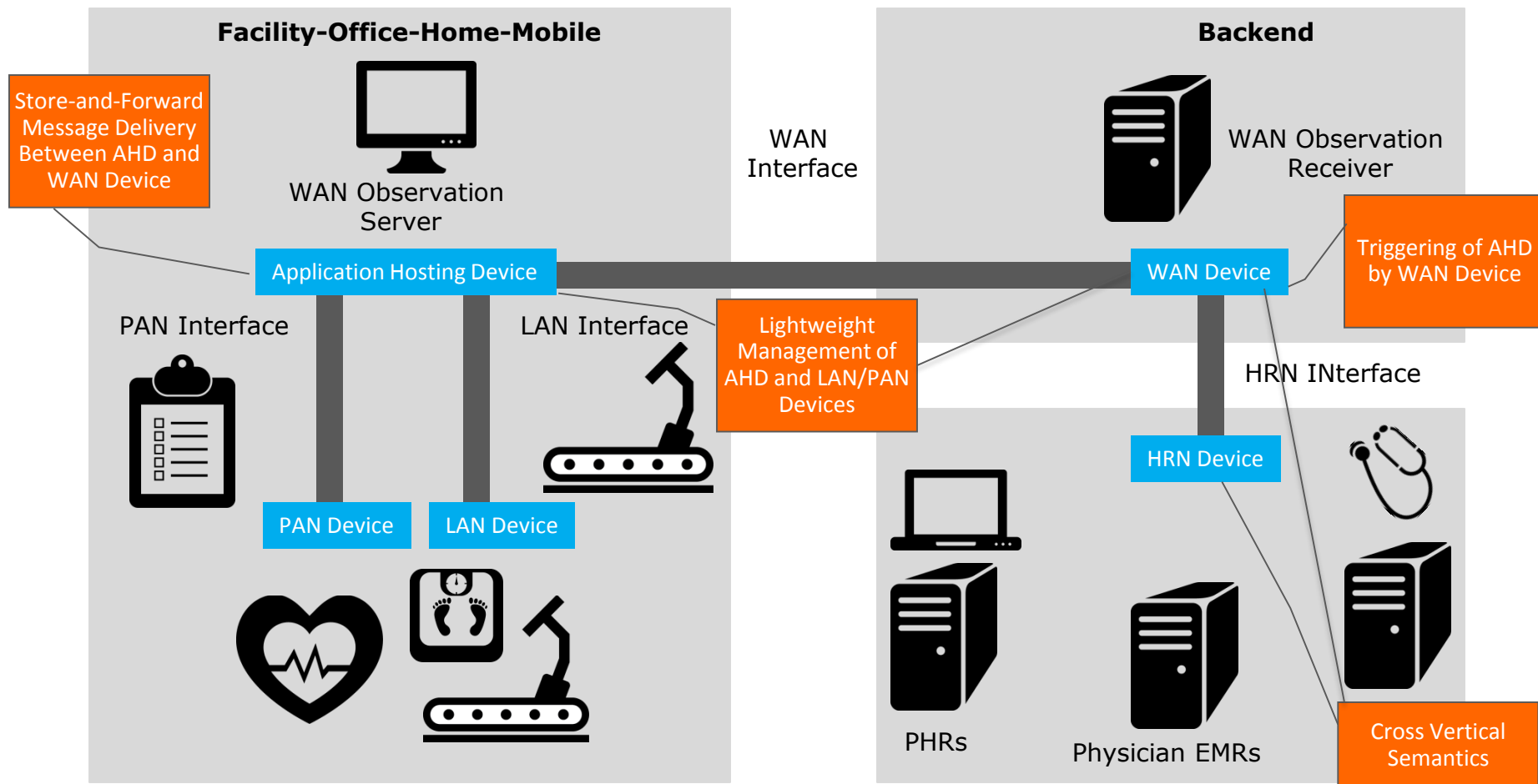
- oneM2M resources
  - AE, remoteCSE, container, contentInstance, and subscription
- oneM2M primitives/procedures
  - AE and CSE registration - Persistent Session between AHD and WAN Device
  - Container/ContentInstance CRUD operations
  - Subscription/Notifications
  - pointOfAccess proxying between ASN-CSE and IN-CSE over Mcc reference point

# E.g. Persistent Session between AHD and WAN Device



oneM2M Service layer hosted on AHD registers to service layer hosted on WAN Device. This registration persists independently of underlying transport session being setup and torn-down.

# Longer Term Picture



# E.g: Device Management

