Intro to Continua and FHIR Demo
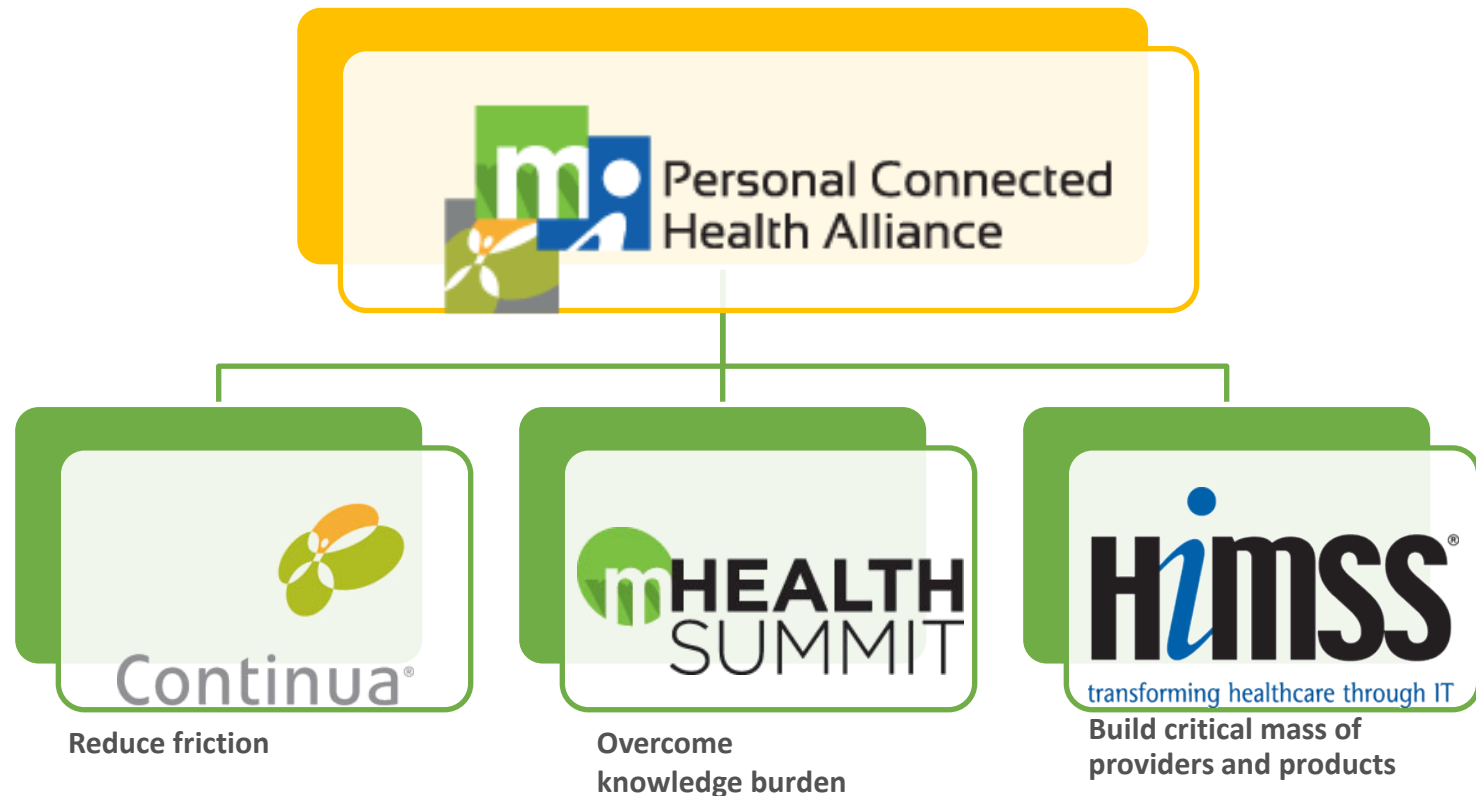
Brian Reinhold

Martin Rosner

Personal Connected Health Alliance

A collaboration between Continua, mHealthSummit and HIMSS

Empowering individuals to better manage their health.

Outline

Quick intro to Continua/PCHA

FHIR Demo

What is the Personal Connected Health Alliance (PCHA)?

Reduce friction

Overcome knowledge burden

Build critical mass of providers and products

- PCHA is a first-of-its-kind collaboration between Continua, mHealth Summit and HIMSS, focused on engaging consumers with their health.

- Mission - Making health and wellness a convenient part of daily life through personal connected health technologies.

**PHILIPS**

Continua End-to-End Architecture
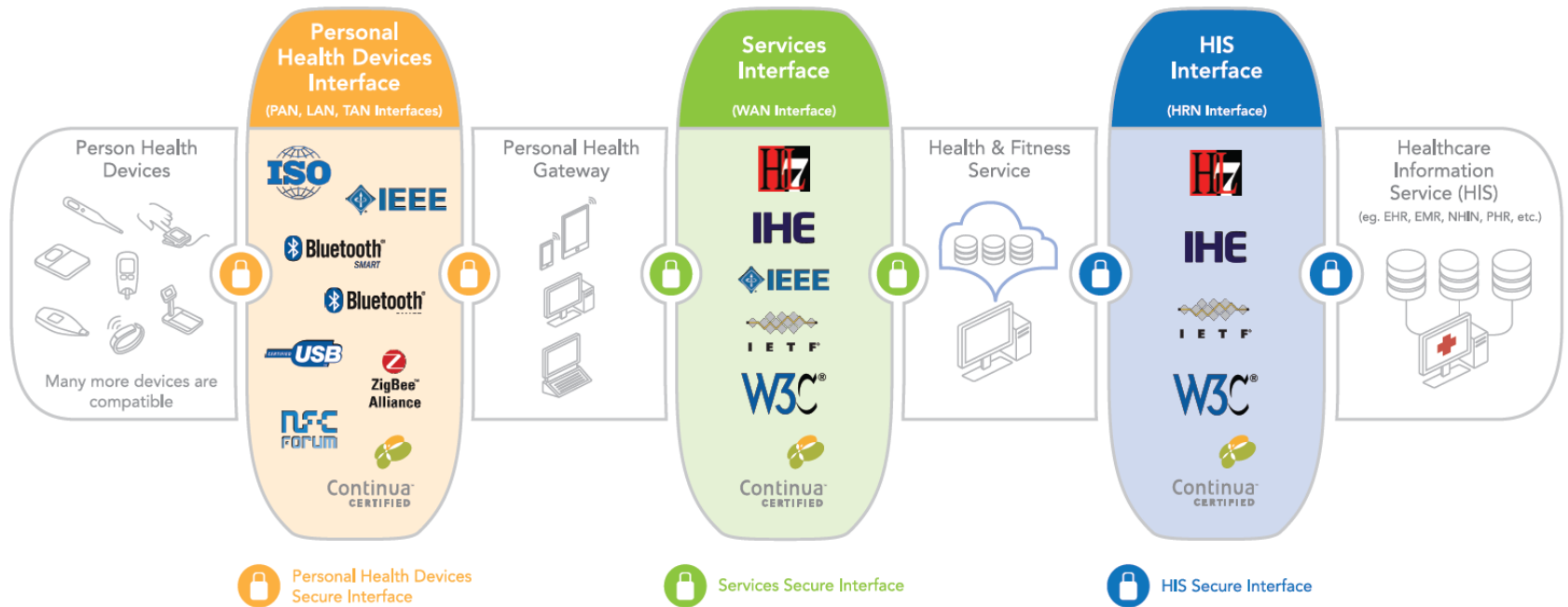
Security, data protection and privacy are core values of Continua which are tested as part of Continua certification. Continua Design Guidelines were developed recognizing HIPAA, EU Directives 95/46, etc.

PHILIPS

FHIR Demo Objective

- Demonstrate use of FHIR for reporting unsolicited observations across Continua Services Interface: Interface between Continua Personal Health Gateway (PHG) to a Health & Fitness Service

- Test efficiency of FHIR across different IFs in the Continua architecture

Why

- Many developers find it difficult to work with PCD-01.
- They feel at ease with web technologies such as JSON and HTTP REST.
- FHIR provides a good framework for building an ecosystem of innovative applications.
- Opportunity to influence draft FHIR spec based on Continua requirements.
- Demonstrate to the outside world (business developers, healthcare providers, product managers, engineers) that Continua is incorporating new standards such as FHIR in order to enable new applications in the healthcare continuum.
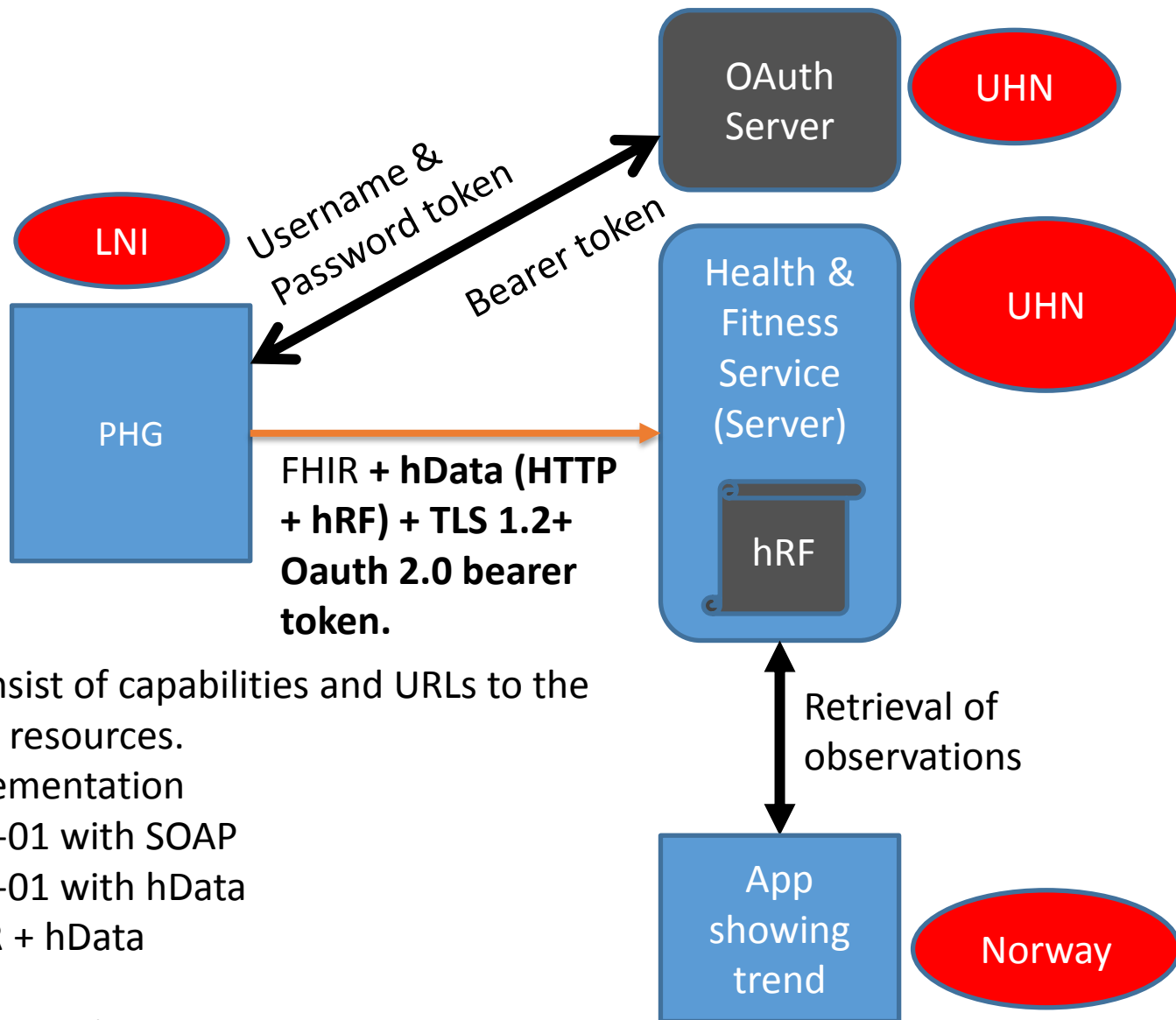
hRF consist of capabilities and URLs to the specific resources.
IF implementation
- PCD-01 with SOAP
- PCD-01 with hData
- FHIR + hData

Lamprey Networks - LNI
University Health Network - UHN
Norwegian Government

Additional Information

Personal Connected
Health Alliance
A collaboration between Continua, mHealthSummit and HIMSS

Empowering individuals to better manage their health.

What is the Continua Health Alliance?

"Our Mission is to establish an ecosystem of interoperable personal connected health systems that empower individuals and organizations to better manage their health and wellness"
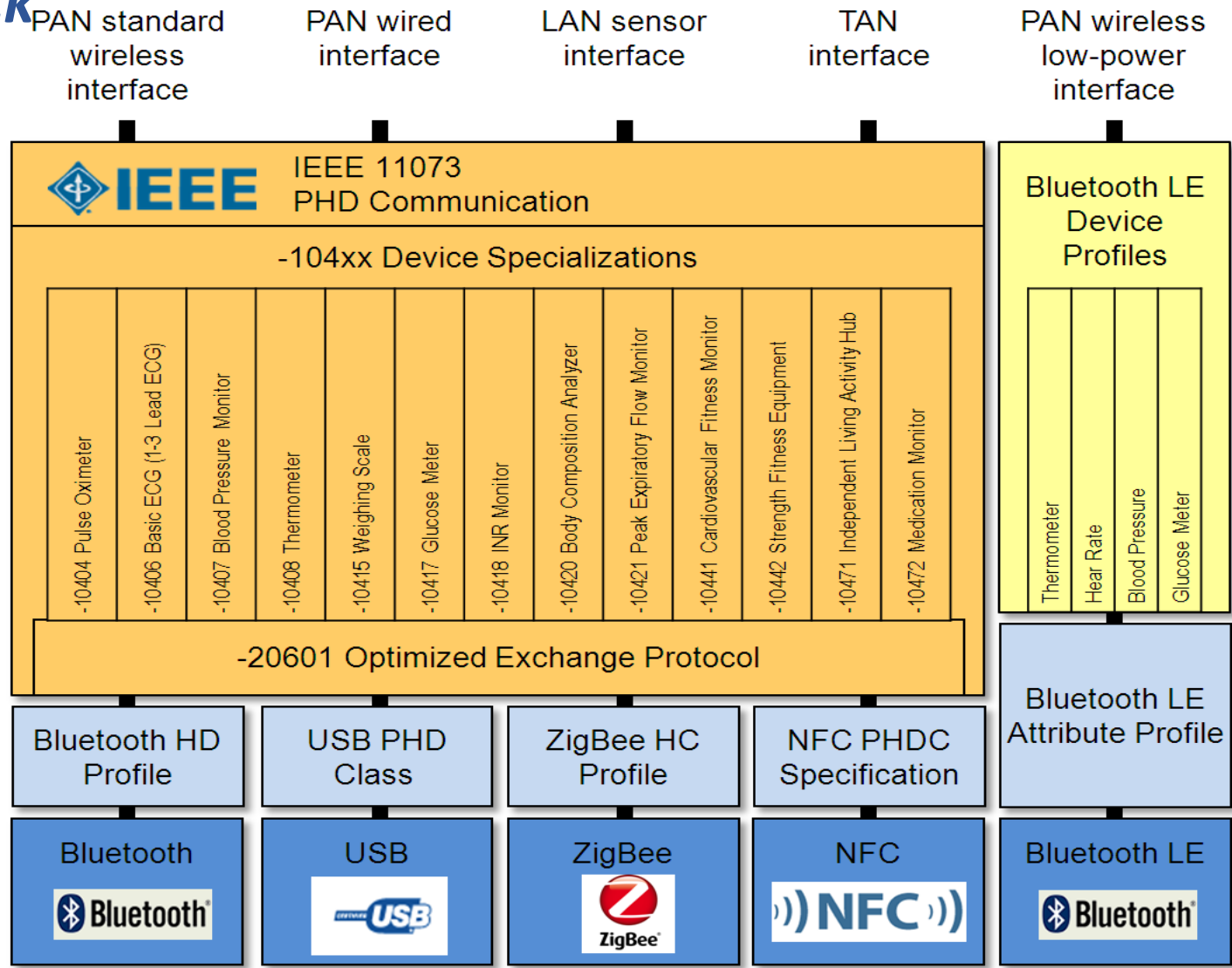
Promoter Members

Industry Liasons

Continua TAN/PAN/LAN Interface Communication Stack

Continua WAN-IF Communication Stack

Messaging

Semantics

HL7 V2.6 constrained by
IHE DEC PCD-01

IEEE 11073-20601 and 104xx terms	**IEEE 11073**-10101 terms and –10201 info model

Message Transport

Web Services WS-I BP
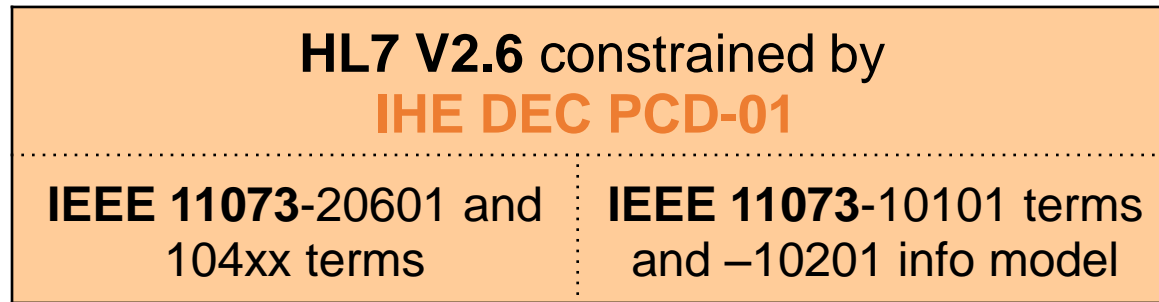
IHE IT Infrastructure TF Vol 2
Appendix V Rev 6.0

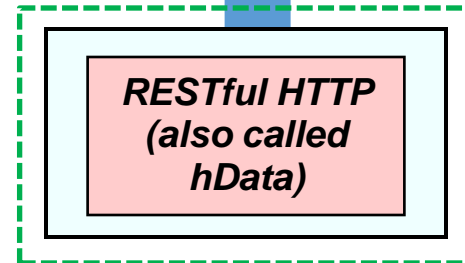*WS-I BP* over *SOAP* 1.2
Plus *WSI-BSP*, *TLS* and *IHE ATNA*

PHILIPS

Continua WAN-IF Communication Stack

Messaging

HL7 V2.6 constrained by
IHE DEC PCD-01

Semantics

IEEE 11073-20601 and 104xx terms

IEEE 11073-10101 terms and –10201 info model

Message Transport

SOAP

RESTful HTTP (also called hData)

PHILIPS
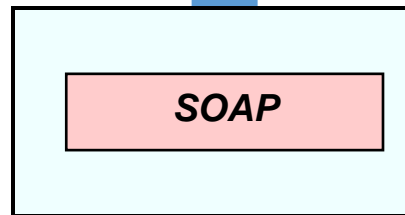
Continua HRN-IF Communication Stack

Messaging

Semantics

HL7 Implementation Guide for CDA R2:
Personal Healthcare Monitoring Report, Release 1

HL7 Clinical Document Architecture CDA R2 –
Continuity of Care Document (CCD)

SNOMED, LOINC, UCUM *and IEEE 11073 as required*

Transport: Document Exchange

IHE XDR
*IHE Cross-Enterprise
Document Reliable Interchange*
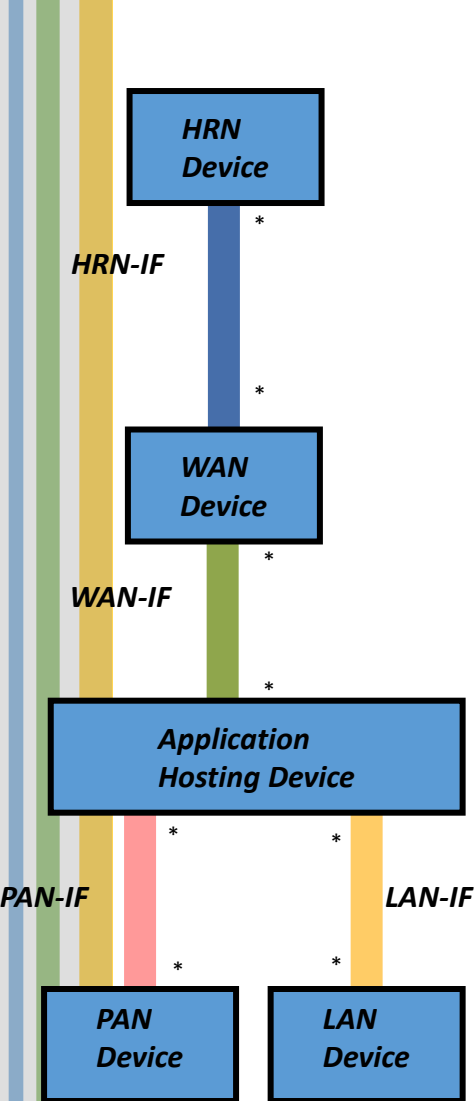*MTOM, SOAP 1.2 / HTTP*

(direct communication)

IHE XDM
*IHE Cross-Enterprise
Document Media Interchange*
ZIP format / S-MIME or media

(email, media)

PHILIPS

Security Standards used across Continua Interfaces

HRN Device

HRN-IF

WAN Device

WAN-IF

Application Hosting Device

PAN-IF

LAN-IF

PAN Device

LAN Device

- TLS v1.0
- IHE ATNA
- IHE XDM →S-MIME
- IG for HL7 CDA R2 Consent Directive
- IHE Document Encryption Profile
- IHE Document Digital Signature (DSG)
- IHE PIX, PDQ, Identity Feed
- IHE XUA, XUA++ (SAMLv2.0)

confidentiality + integrity
auditing
Confidentiality and integrity of emails
Consent management
Consent enforcement
Non-repudiation of origin
Identity management
Entity Authentication

Confidentiality + integrity
Entity authentication
Consent management
auditing

- WS-I BSP (TLS v1.0)
- WS-I BSP (WS-Security + SAML 2.0), OAuth 2.0
- HL7 CDA R2 Consent Directive
- IHE ATNA

confidentiality + integrity

authentication + confidentiality

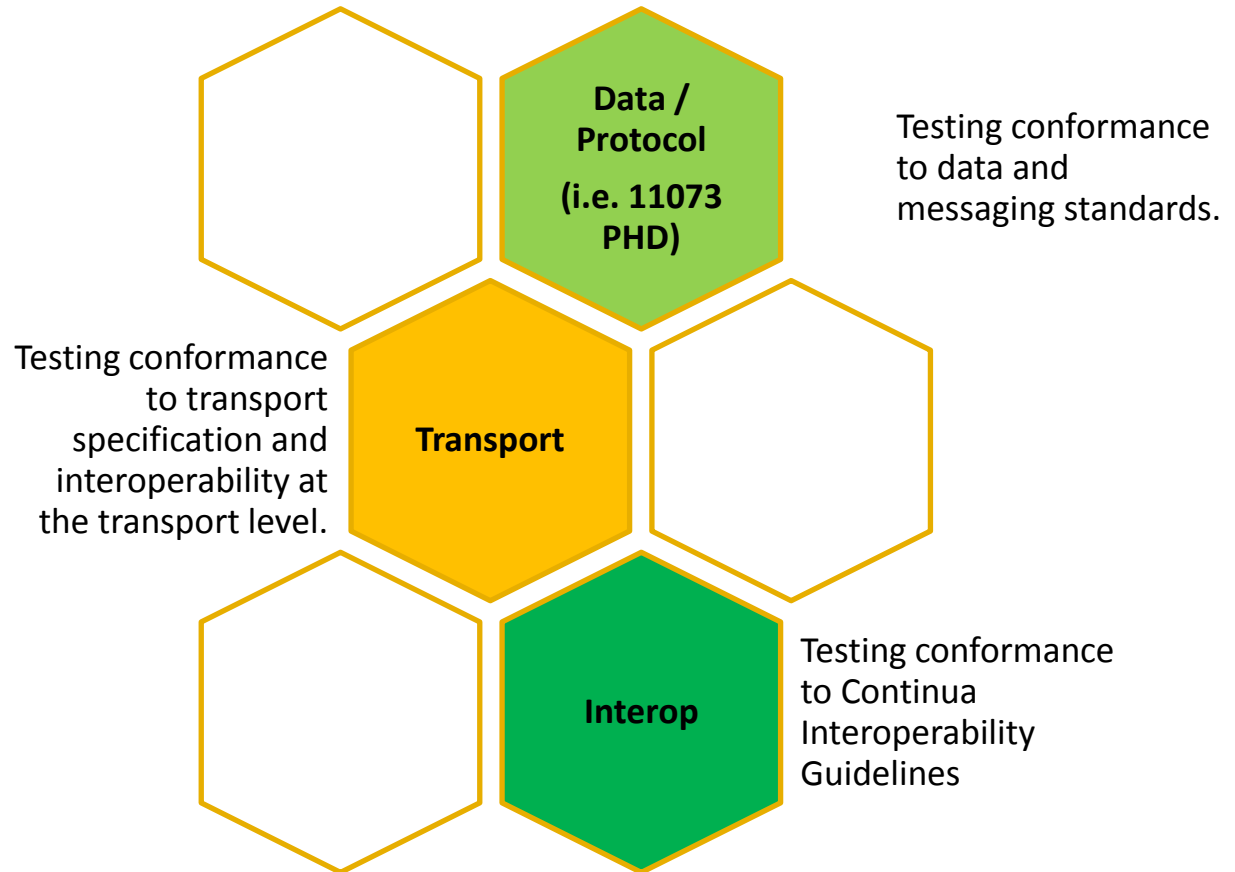- Zigbee security

- Bluetooth security

Continua Certification Program

Certification Goal

Assurance that a device has been designed to meet the requirements of the Continua Interoperability Design Guidelines.

Continua™ CERTIFIED

Data / Protocol (i.e. 11073 PHD)

Testing conformance to data and messaging standards.

Testing conformance to transport specification and interoperability at the transport level.

Transport

Interop

Testing conformance to Continua Interoperability Guidelines

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Devices with Continua Certified Interfaces

CESL – Reference Code

http://bit.ly/download-cesl

Speed the adoption

Reference source code

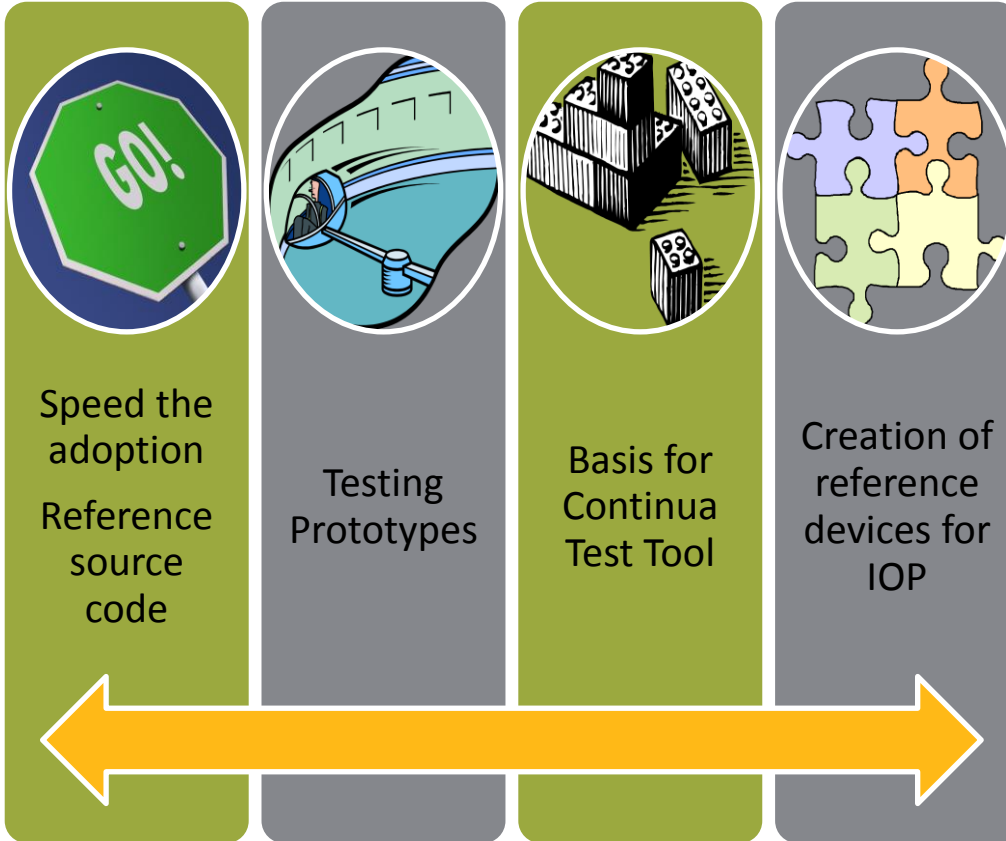**Testing Prototypes**
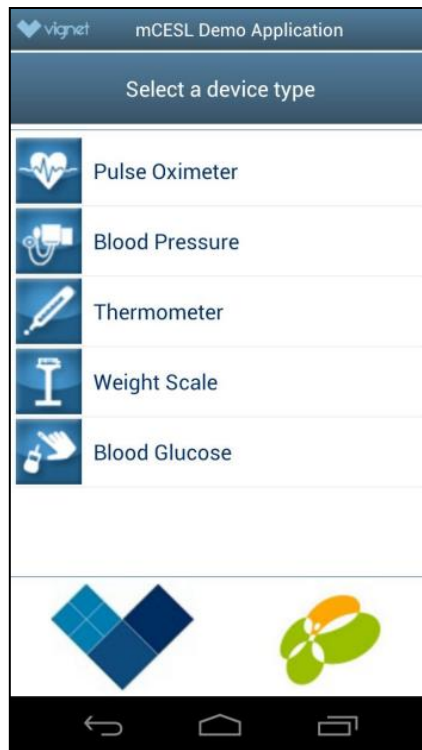
Basis for Continua Test Tool

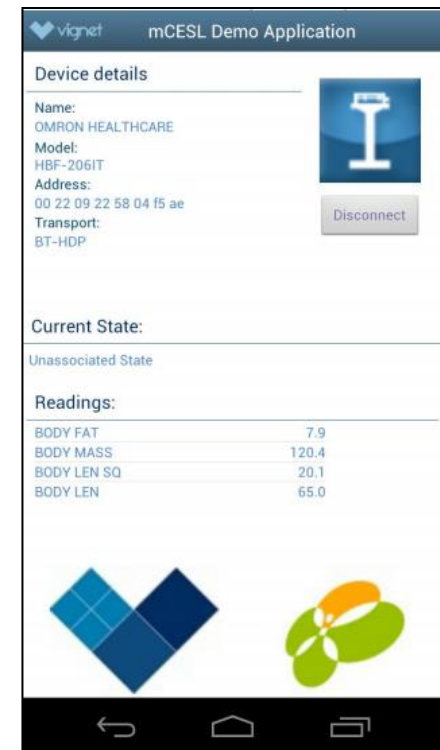**Creation of reference devices for IOP**
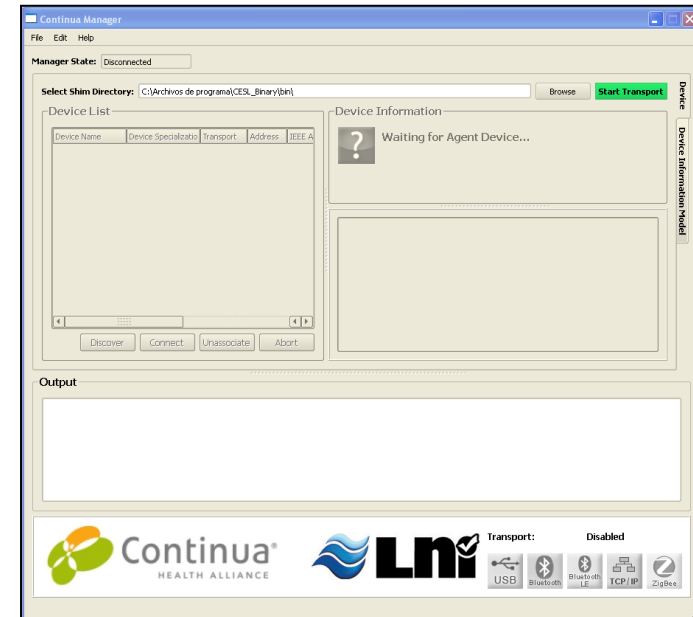
mCESL – Example AHD for Android

Continua Reference Device Code (Mobile)

PAN - Reference Manager Application
WAN - developed in C++ and JAVA.

Available as an SDK and Reference Application developed for the Android Nexus platform

Worldwide Continua/PCHA Adoption

Denmark

UK (NHS Worcestershire)

EU WG

US Department of Defense

US Veterans Administration

US WG

Abu Dhabi

India WG

SE Asia WG

Japan

Japan WG

Taiwan

Singapore

Brazil WG

Australia WG
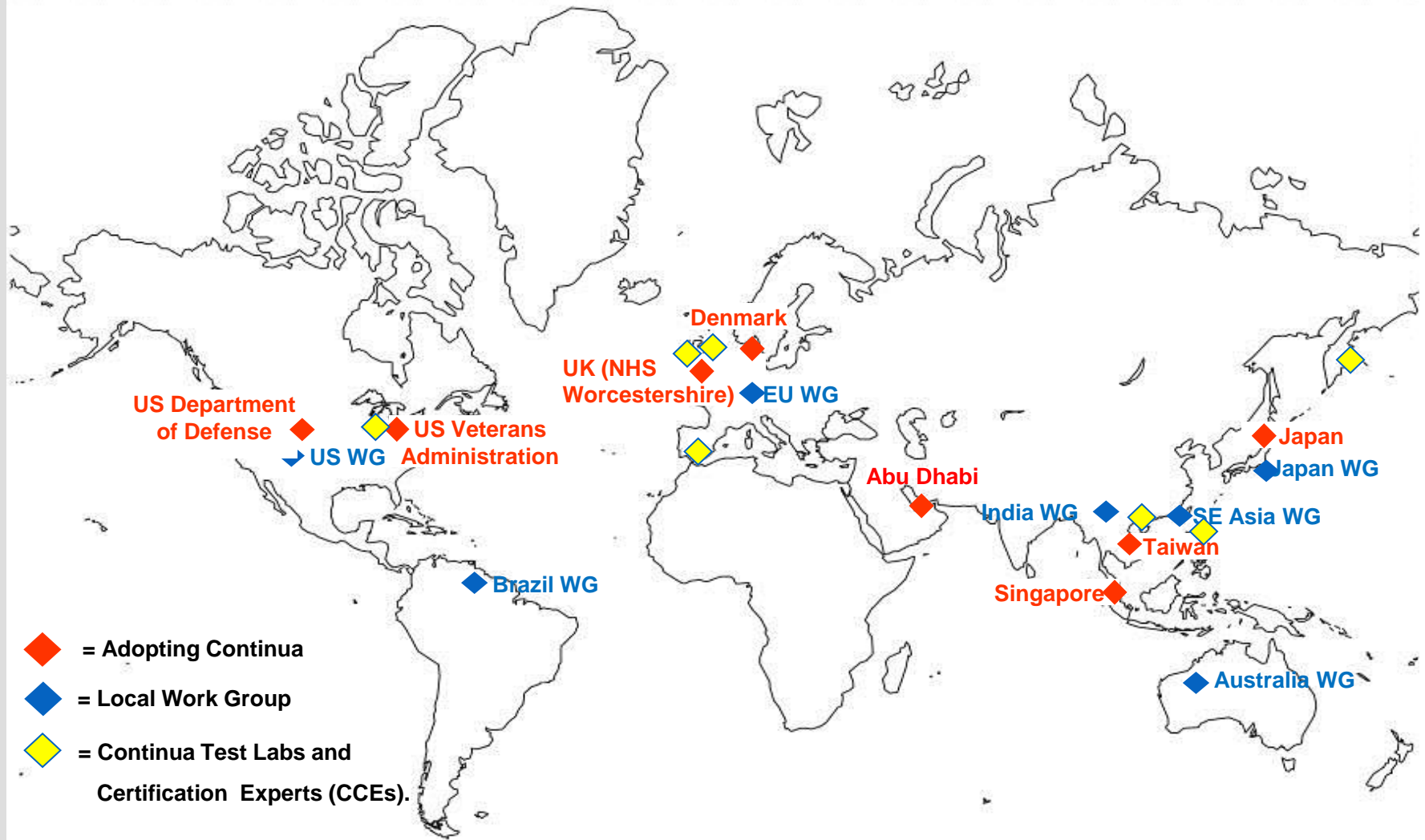
◆ = Adopting Continua

◆ = Local Work Group

◆ = Continua Test Labs and Certification Experts (CCEs).

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EU Nordic Countries

Denmark was the 1st country to adopt Continua and make the Continua framework a fundamental part of the national reference architecture.
Reference architecture officially released in June 2013.
Downloaded in more than 50 countries.

Norway is working toward mandating Continua compliance by 2018

Sweden recently held a large event involving industry and government.
Sweden made the decision to move from pending to actively working toward Continua adoption.

Finland is working on similar top-down approach as Norway with regards to Continua adoption

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ITU-T - H.810

Interoperability design guidelines for personal health systems ITU-T

Interoperability is becoming a key criteria for delivering health care remotely via readily-available consumer products such as smartphones, tablets and computers.

Continua Health Alliance's Design Guidelines contained within Recommendation ITU-T H.810 are specifications to ensure the interoperability of devices used for applications monitoring personal health.

2012:

– In 2012, the World Telecommunication Standardization Assembly adopted Resolution 78 – "Information and communication technology applications and standards for improved access to e-health."

– That same week, the Global Standards Symposium expressed the need for ITU to take a leading role in the e-health field by building on its collaboration with the World Health Organization (WHO) to create a global, open environment for the development and promotion of e-health standards.

2013:

– In December 2013, the International Telecommunication Union (ITU), the United Nations' specialized agency for information and communication technologies (ICTs), announced the adoption of Continua's Design Guidelines for interoperability under Recommendation ITU-T H.810.

– International standards avoid costly market battles over preferred technologies, and for companies operating in emerging markets, create a level playing field with regard to market access. Through economies of scale, global ICT standards can reduce costs for manufacturers, operators and consumers, and are also an essential aid to developing countries building their infrastructures and promoting economic dev.

2014:

– Continua contributes entire test suite to the ITU. Test suites were consented in July.
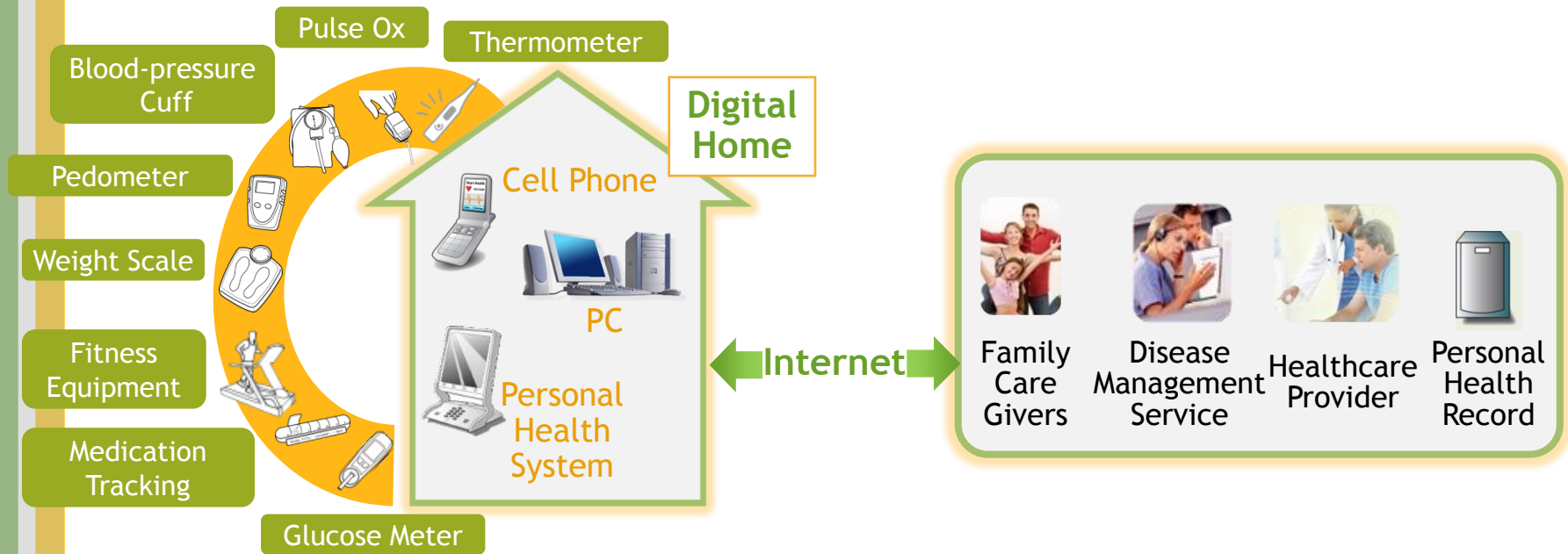
– H.810 converted in to 6 different languages.

2015:

– Continua working toward further contributions with ITU moving forward (DG 2015 and other materials, etc.).

Source: Building the Case: Developing the Global Ecosystem for Personal Connected Health

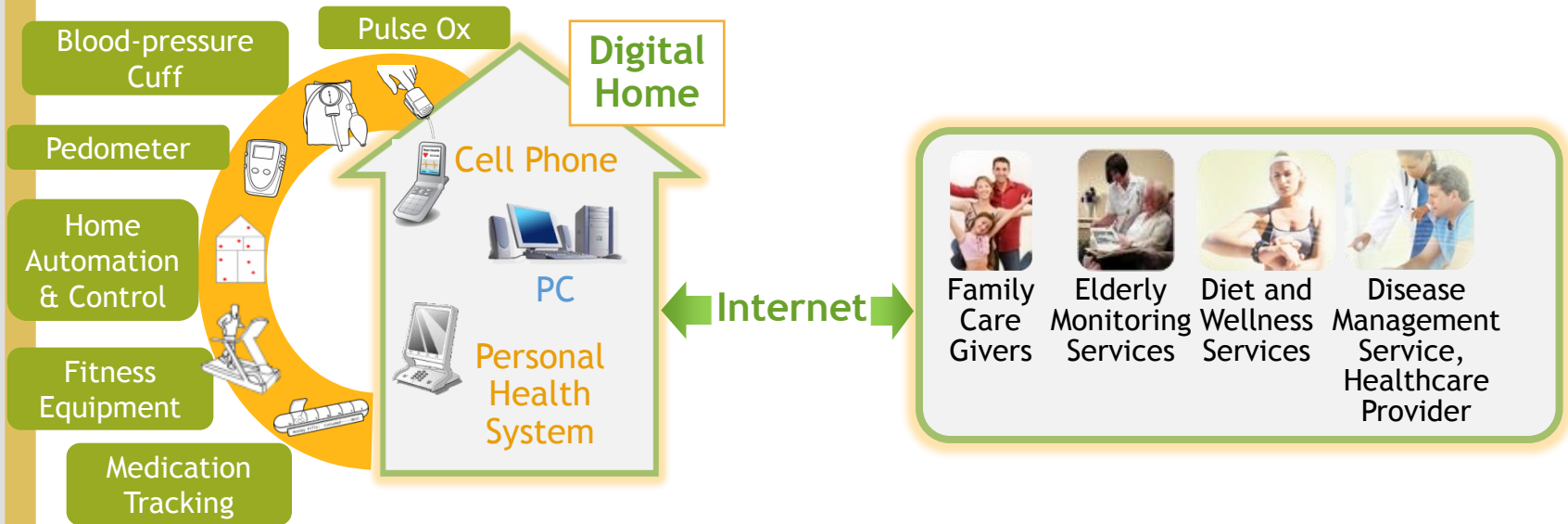# *Domain: Manage Chronic Conditions*

860 million individuals with chronic conditions world wide

Continua member companies help individuals with chronic conditions live healthier lives by connecting them to their care team through a more efficient exchange of personal health information.

PHILIPS

Domain: Living Independently Longer

600 million elderly individuals world wide

Blood-pressure Cuff

Pedometer

Home Automation & Control

Fitness Equipment

Medication Tracking

Pulse Ox

Digital Home

Cell Phone

PC

Personal Health System

Internet

Family Care Givers

Elderly Monitoring Services

Diet and Wellness Services
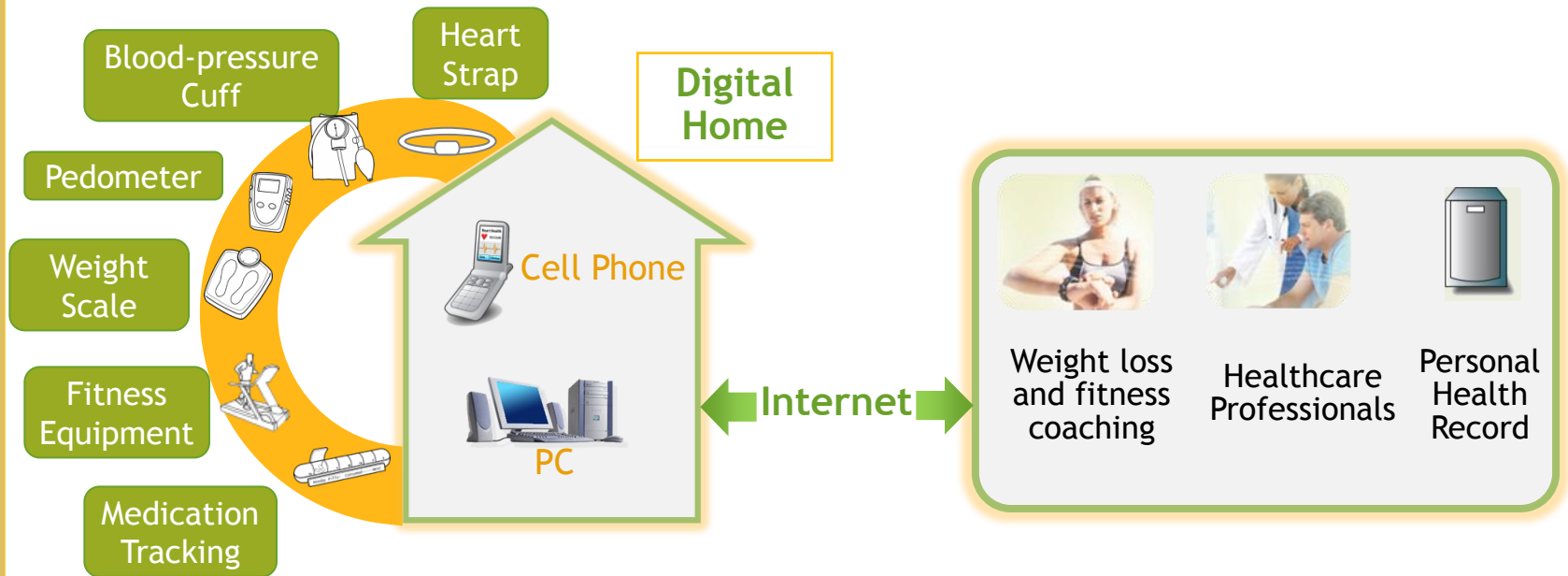
Disease Management Service, Healthcare Provider

Continua member companies help the elderly live independently longer, with dignity and security, through the efficient exchange of personal health and safety information that connects them to their family and care team.

PHILIPS

Domain: Wellness

One billion adults overweight worldwide

Blood-pressure Cuff

Heart Strap

Digital Home

Pedometer

Cell Phone

Weight Scale

Fitness Equipment

PC

Internet

Weight loss and fitness coaching

Healthcare Professionals

Personal Health Record

Medication Tracking

Continua member companies help individuals live healthier, more active lives by connecting them to their wellness team through a more efficient exchange of personal fitness information.

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