



**IHE 2010 North American
Connectathon Conference
Chicago**



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Board, HITSP



- Continua Overview
- IHE and Continua Collaboration
- Keys to Successful Interoperability
- Mobile Health Musings



Continua Health Alliance Overview

The Next Generation of Personal Telehealth is Here

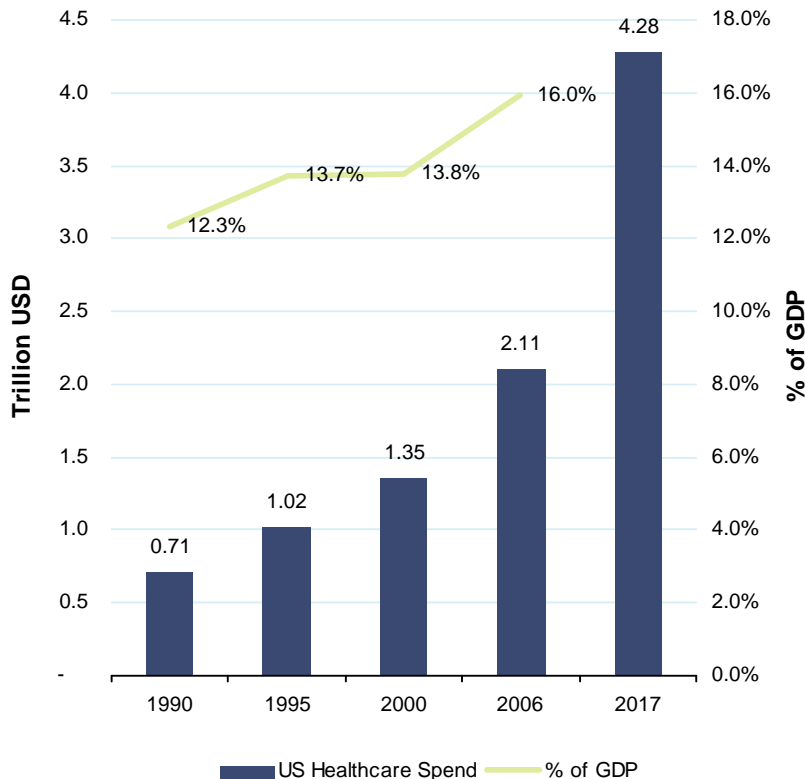
A global, non-profit, open industry alliance of healthcare and technology companies joining together in collaboration to improve the quality of personal healthcare.



“Our Mission is to establish an eco-system of interoperable personal health systems that empower people & organizations to better manage their health and wellness”

Skyrocketing Healthcare Costs

US Healthcare Expenditure
1990-2017F

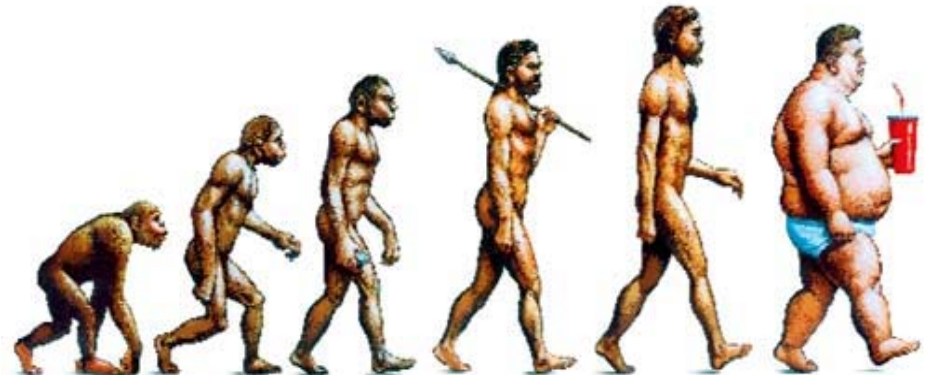


Skyrocketing Healthcare Need

Worldwide today:

- 1 billion adults overweight
- 860 million chronic disease patients
- 600 million elders age 60 or older

Source: World Health Organization; McKinsey



**Mismatch between our evolved biology and our modern life
(Fat storage has become a disadvantage today)**

Business Potential

- Telehealth monitoring is predicted to grow very rapidly, from a \$3B market in 2009 in North America and Europe to an estimated \$7.7B in 2012 (*Data Monitor, 2007*)
- Telehealth subscribers worldwide will increase to 55.5 million by 2016 [CAGR of almost 72%] (*InMedica, 2008*)

Lifestyle Improvements

91% Diabetes



83% Heart Disease



- Non-modifiable Contributors to Disease
- Modifiable Contributors to Disease

Hu et al. Diet, lifestyle and the risk of type 2 Diabetes in women. *NEJM* 2001 Sep 13;345(11):790-7.
Stampfer MJ, Hu FB, Manson JE, Rimm EB, Willett WC. Primary prevention of coronary heart disease in women through diet and lifestyle. *N Engl J Med.* 2000; 343: 16-22

Efficiencies in Disease Management

Remote Patient Monitoring:

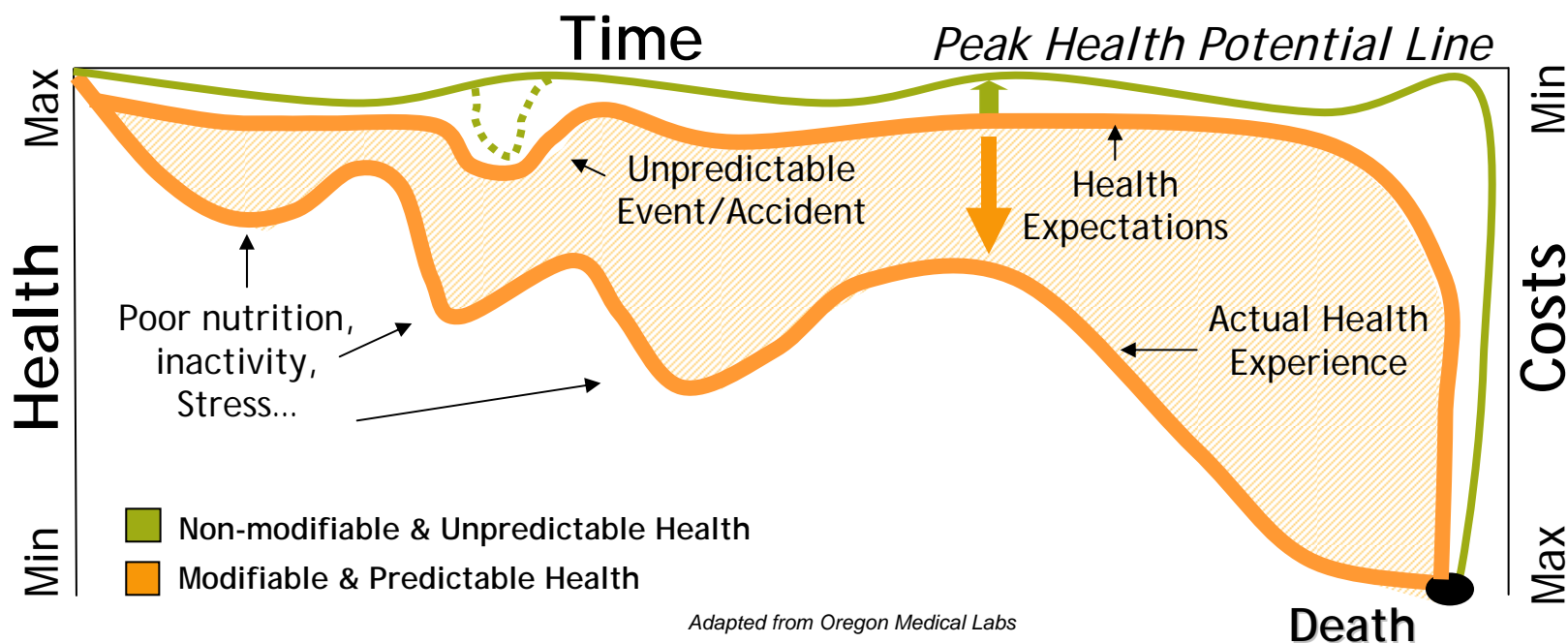
- 35-56% reduction in mortality;
- 65% reduction in office visits;
- 40-64% reduction in physician time
- 63% reduction in transport costs

US Veterans Admin (4 year, >30,000 patients):

- 19.74 % decrease in hospital admissions
- 25.31 % reduction in bed days of care

(*Cleland et al 2005; Lee R, Goldberg et al, 2003; Scalvini S et al, Darkins, et al, 2008*)
(*2001; Elsner et al, 2006; Van Ginneken et al 2006*)

- **Goal:** Experience peak health potential throughout life for a high quality of life at minimal costs
- **Reality:** Average individual is experiencing much less of full health potential than expected at a high financial & quality of life cost
- **Cause:** Adverse health events such as stress, poor nutrition, and inactivity are causing the population to fall away from their peak health potential



Adapted from Oregon Medical Labs







Healthy Family

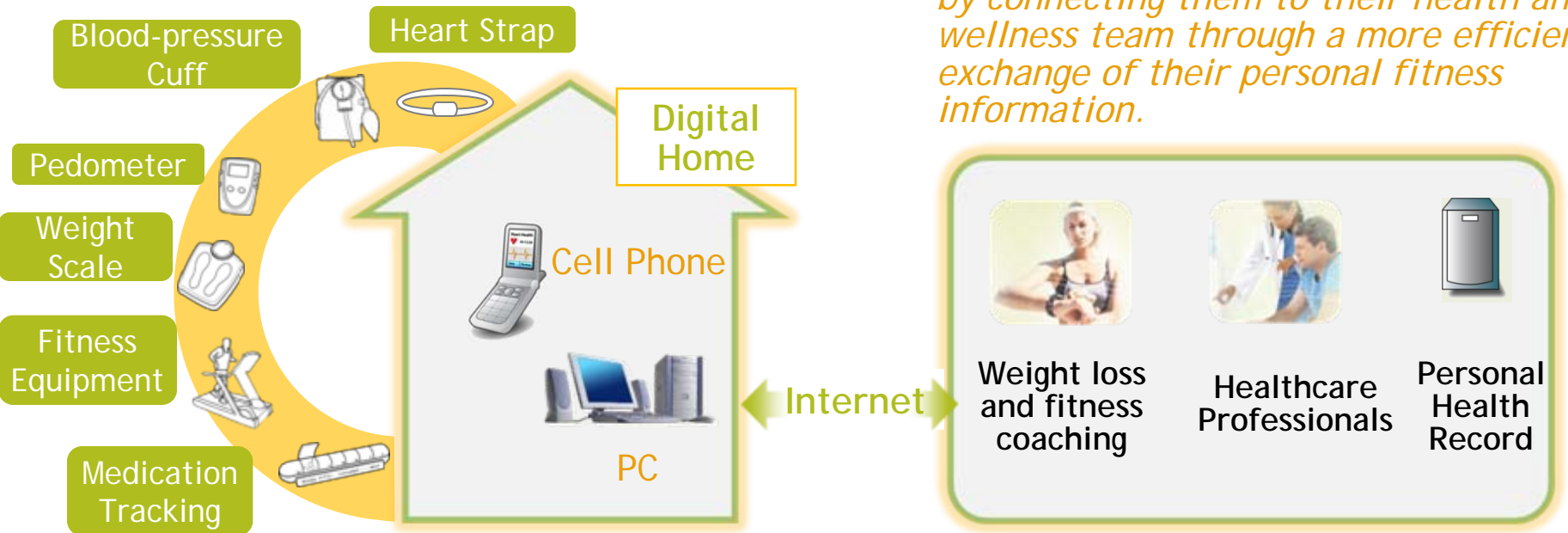
“Worried well” vital sign monitoring:

- Weight
- Blood pressure
- Glucose
- Cholesterol
- Activity level

Benefits:

- Monitor and motivate
- Achieve individuals’ goals
- Access personal fitness information anywhere
- Enhance trainers’ services

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



Disease Management

860 million chronic disease patients world wide



Vital sign monitoring: (remote patient monitoring)

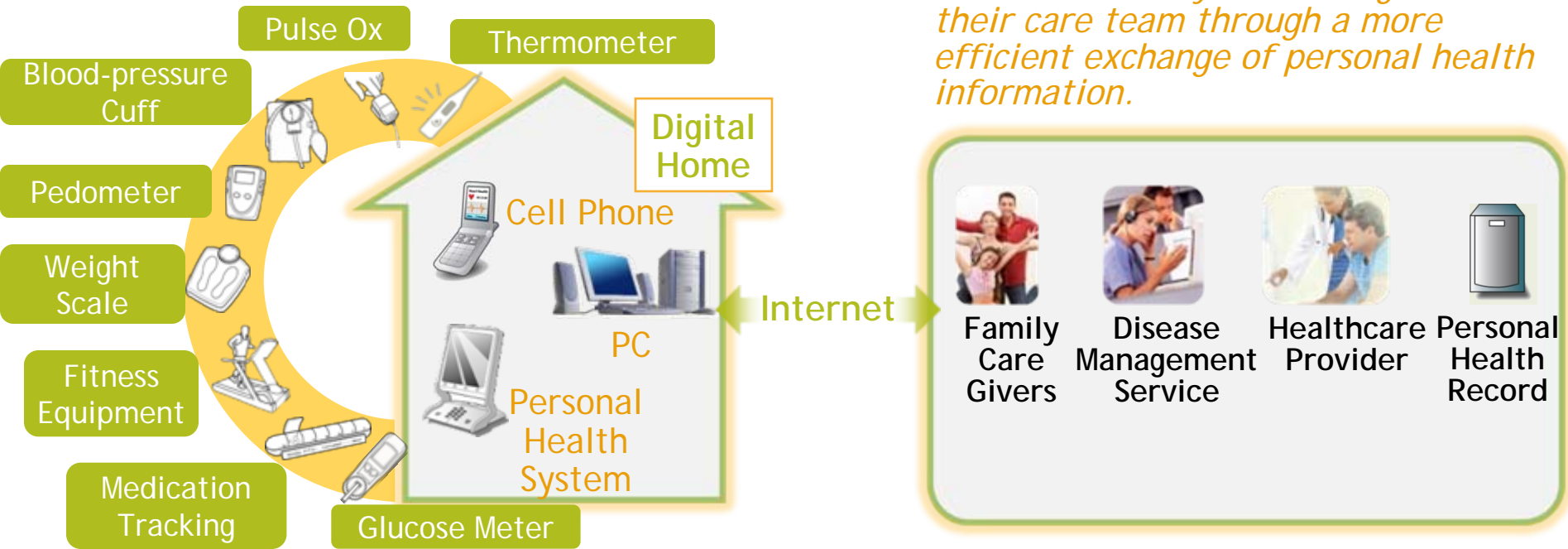
- Diabetes
- COPD
- CHF
- Hypertension

Benefits:

- Provide better-coordinated care
- Connect to care team
- Empower individuals
- Encourage early detection
- Reduce costs

- Chronic disease
- Post trauma
- Pre-op

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



Aging Independently

600 million elderly individuals world wide



Basic life monitoring:

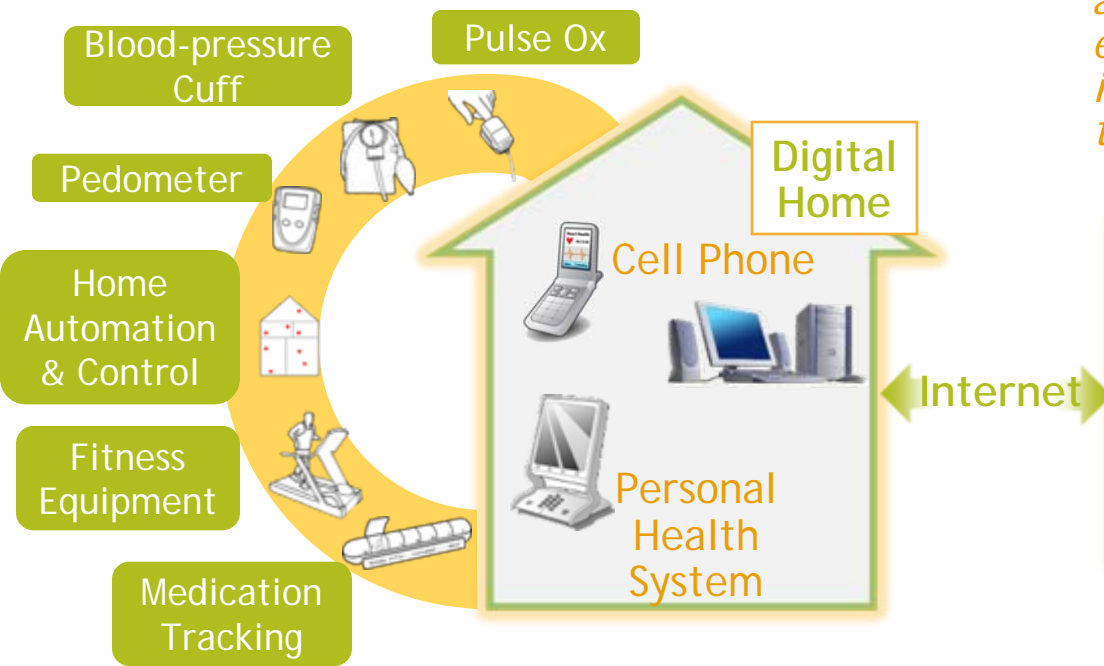
- Bed pressure (sleep)
- Bathroom sensor
- Gas / water sensor
- Emergency sensor

Benefits:

- Involve family members
- Allow remote analysis & care
- Provide integrated view
- Encourage early detection
- Reduce costs

- Independent living
- Chronic disease

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





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Guidelines

Continua member companies will select connectivity standards and publish Guidelines for strict interoperability.

Certification and Logo

Continua is establishing a test and certification program with a recognizable logo signifying the promise of interoperability with other certified products.

Product Applications



Product Substrates



Electronic Media / Software



Product Packaging



Marketing - Promote Continua (events, PR), provide marketing materials, and grow membership in targeted industry markets.

Policy Strategy - Advance Continua's Mission globally by addressing policy barriers, promoting policies that drive adoption, educating Continua's membership on relevant policy, furthering Continua brand recognition with governments, and collaborating with external stakeholders on advocacy activities.

Use Case - Identify and prioritize user experiences to be addressed by the Interoperability Guidelines.








Technical - Decompose Use Cases into requirements and develop Interoperability Guidelines that specify industry standards and profiles.

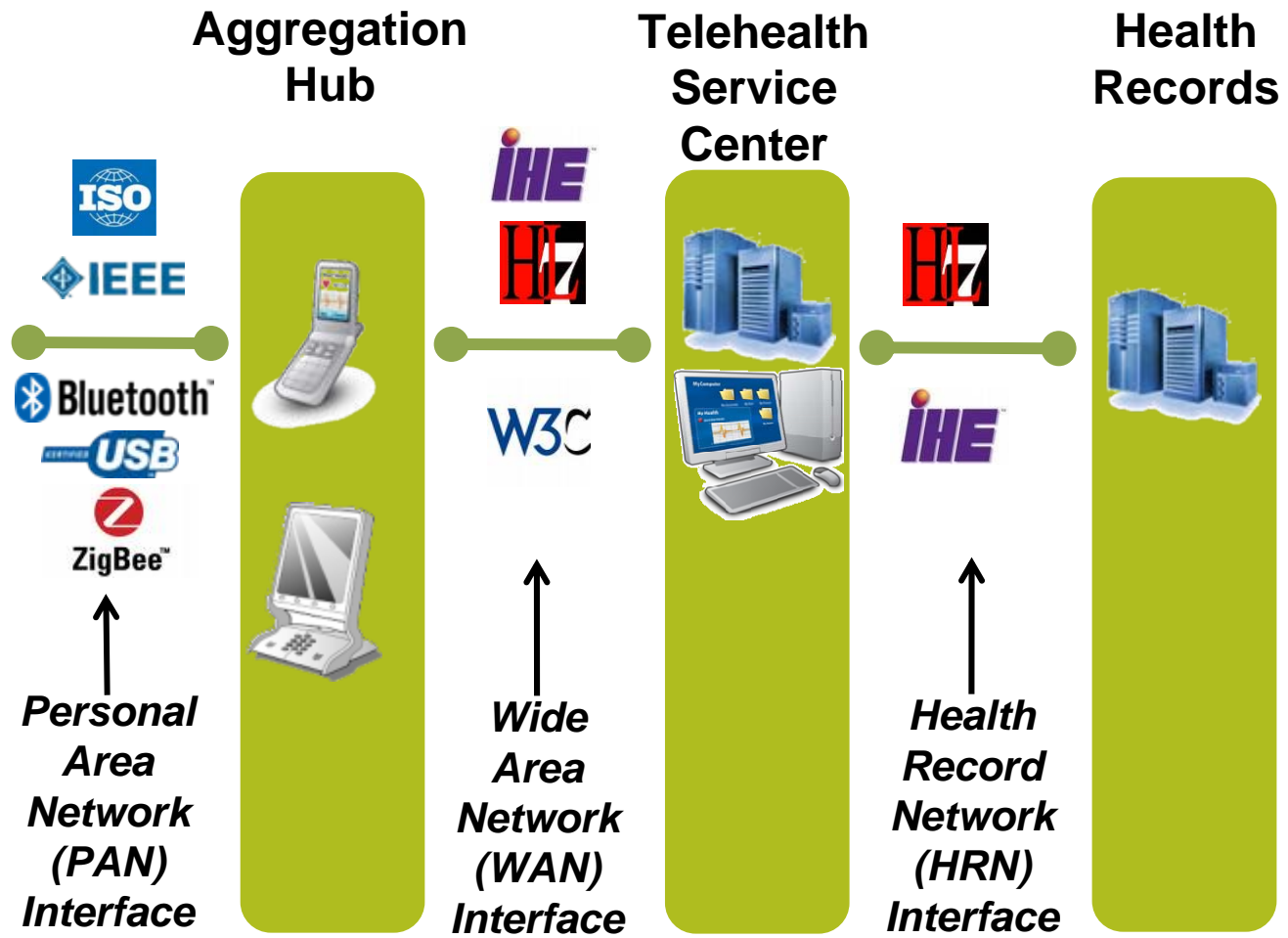
Wellness Solutions - Establish a clear value proposition for innovative health benefit plans that effectively manage the health, wellness, costs, and productivity of the workforce using personal telehealth technologies.

Regulatory - Clarify and describe interoperable device functions in a regulatory environment.

Test & Certification - Create and maintain the Test and Certification Program for Continua, including member test tools, plugfests, certified test labs, and certified product listings.

Personal Device

- Thermometer 
- Pulse Oximeter 
- Pulse / Blood Pressure 
- Weight Scale 
- Glucose Meter 
- Cardiovascular and Strength 
- Independent Living Activity 
- Medication Adherence 



Peak Flow



Physical Activity Monitor



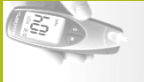
Medication Adherence



Electrocardiogram



Insulin Pump



Transport Independent



- 11073-10404 = Pulse Oximeter
- 11073-10406 = Pulse / Heart Rate
- 11073-10407 = Blood Pressure
- 11073-10408 = Thermometer
- 11073-10415 = Weighing Scale
- 11073-10417 = Glucose
- 11073-10441 = Cardiovascular Fitness
- 11073-10442 = Strength Fitness Equipment
- 11073-10471 = Independent Living Activity
- 11073-10472 = Medication Monitor

- 11073-20601 = Base Framework Protocol



Personal Health Device
Class Specification

Medical Device
Profile Specification



PC



Personal Health System



Cell Phone



Set Top Box



Aggregator

Developer Resources

- Web-based environment (repository, collaboration tools)
- Reference source code

Certification

- Test and certification tools
- Right to use certified logo upon completion of successful certification

Market Intelligence

- Access to market research data
- Access to pre-publication drafts of the design guidelines
- Internal and external education and training

Collaboration

- Plugfests participation
- Participation in RFP MatchMaker program
- Unlimited participation in Continua quarterly summits, town hall meetings, and education seminars

Device Interface **Heart Failure & COPD** *XHR Interface*



Bluetooth



USB



CYPAK



PHILIPS

Telehealth
Service

EHR



Obesity & Diabetes



USB



CYPAK



CYPAK



**CYPAK
ORACLE**



PHILIPS

Telehealth
Service

PHR



FitLinxx

claricode
Medical Software Architects

Telehealth
Service

EHR



- A&D Weigh scale, BP-cuff
- Omron Weigh scale, BP-cuff, Pedometer
- Panasonic Tough book
- Tanita Weight scale
- Toshiba- STB and UMPC



株式会社NTTデータ



NTT





Nonin 2500
PalmSAT® Pulse
Oximeter



Roche Accu-Chek® Smart Pix
Device Reader

Nonin Onyx® II,
Model 9560 Wireless
Fingertip Pulse
Oximeter



Continua
CERTIFIED

A&D Medical UC-
321PBT-C Weight
Scale



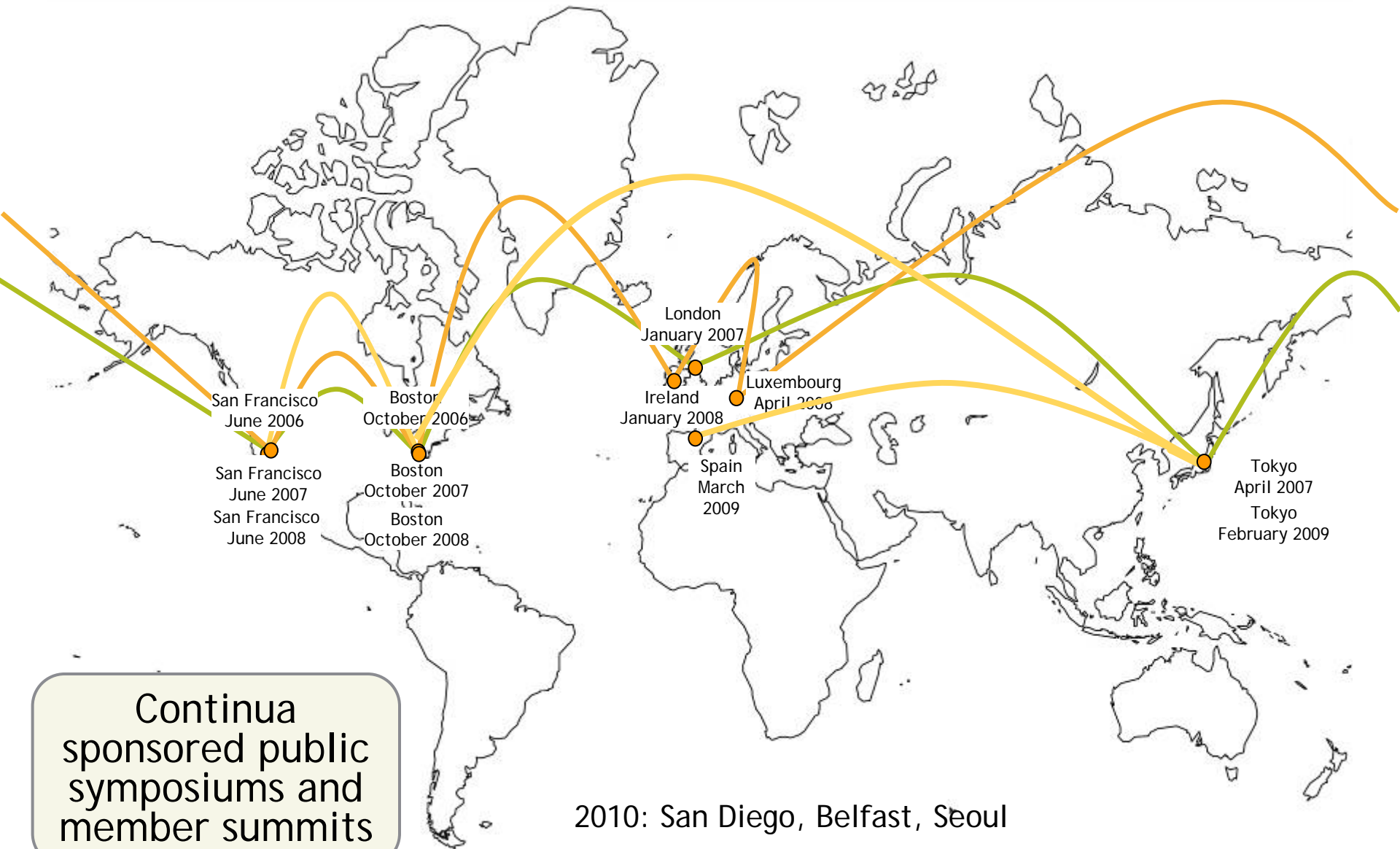
A&D Blood Pressure
Monitor w/ CYPAK
CPX186 Converter
Cable

A&D Weight Scale
w/ CYPAK CPX186
Converter Cable



A&D Medical UA-
767PBT-C Blood Pressure
Monitor





Continua
sponsored public
symposiums and
member summits

2010: San Diego, Belfast, Seoul



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IHE & Continua Collaboration

- Liaison agreement- collaboration, education, co-promotion
- EU Smart Personal Health Contract
- HITSP Remote Patient Monitoring (RMON) Use Case

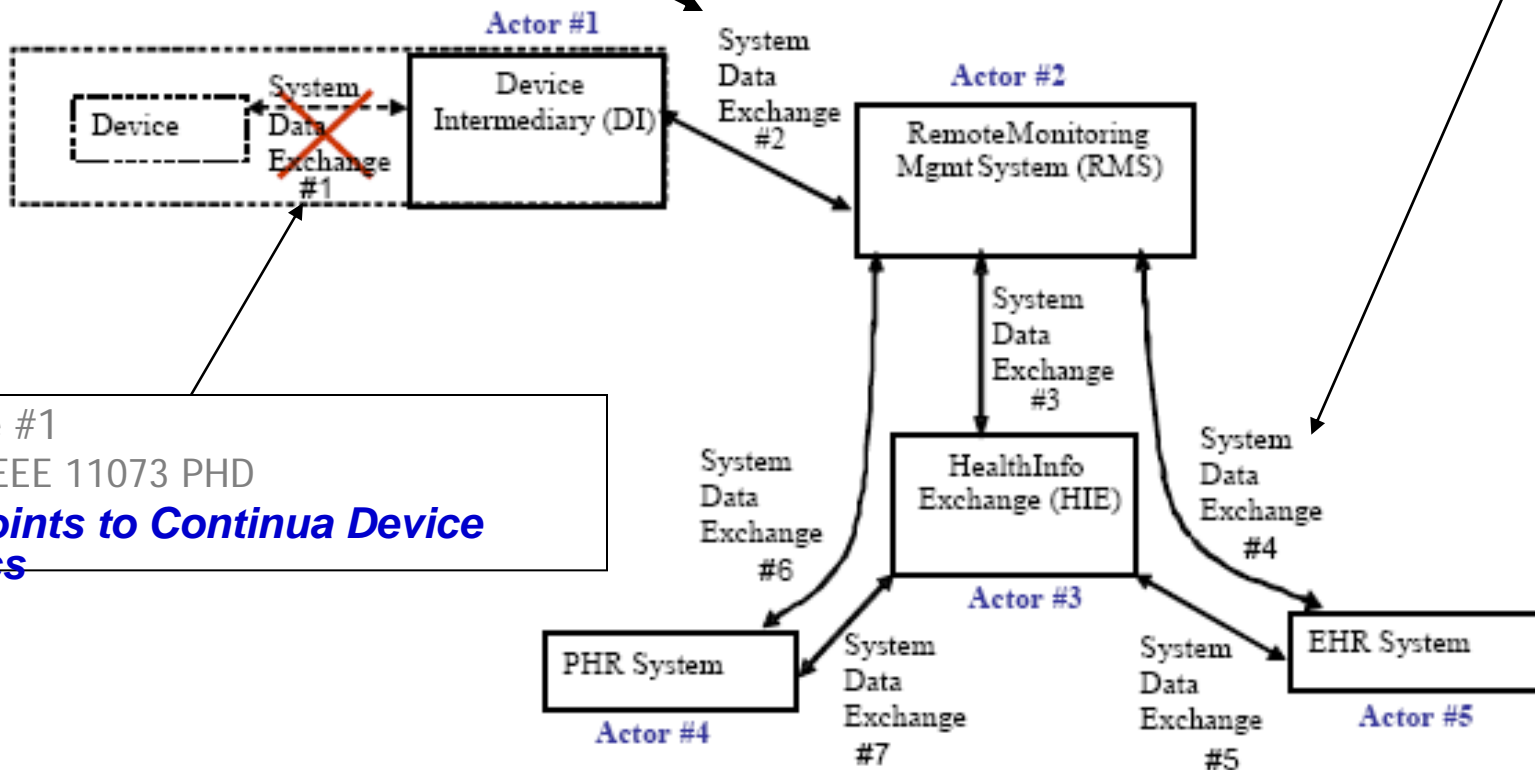


Interface #2 (WAN)

- Nomenclature: ISO/IEEE 11073 PHD
- Transport: WS-I
- Messaging: HL7 V2.6 / IHE PCD01 (PHD profile)
- **→ Aligns with Continua WAN Interface**

Interface #4

- Data: PHM Specification (HL7 CDA based)
- Transport: IHE XDR
- **→ Aligns with Continua EHR Interface**



Interface #1

- ISO/IEEE 11073 PHD
- **→ Points to Continua Device Specs**

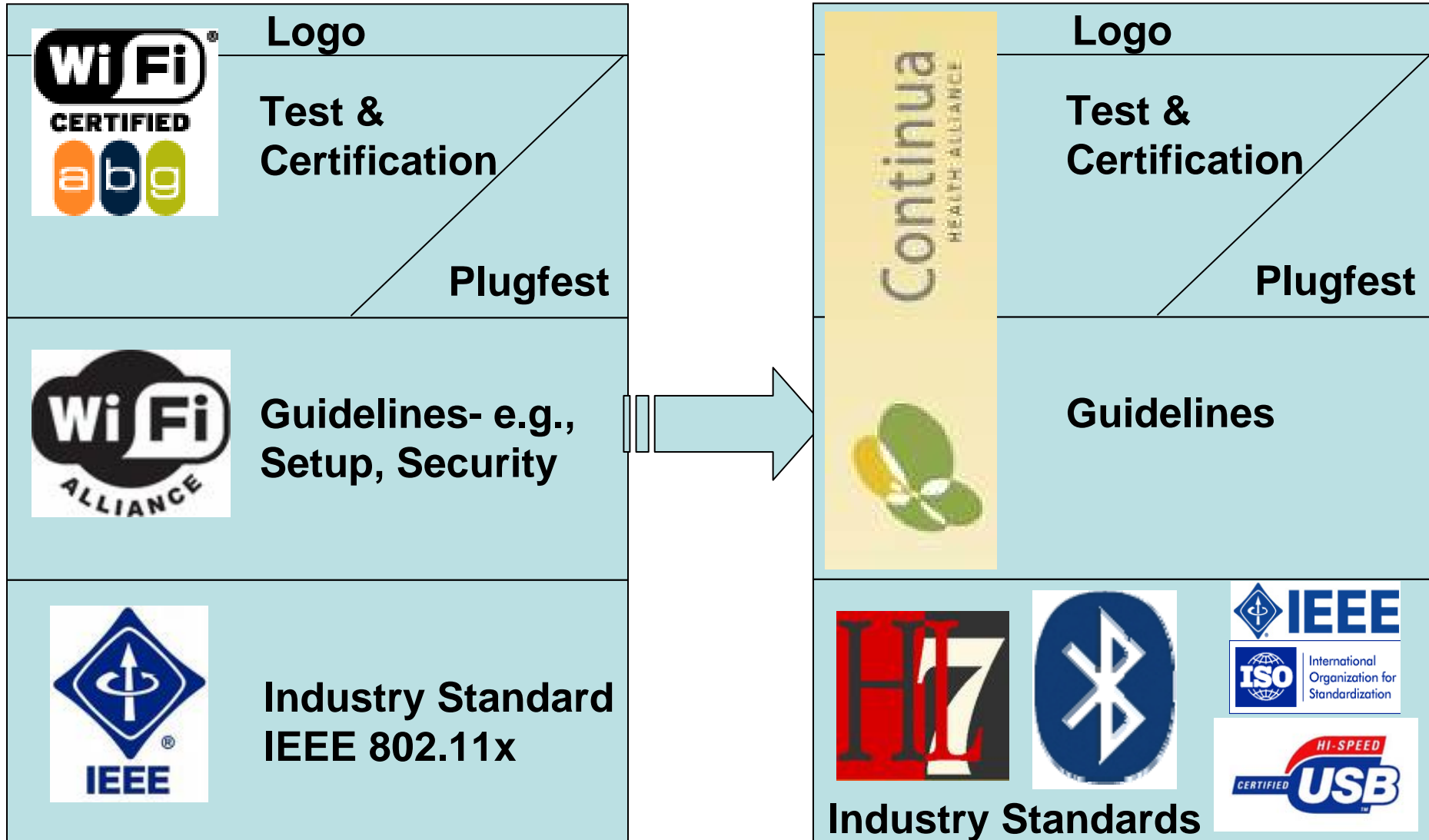


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Keys to Successful Interoperability

Reflections from the trenches



- Market viable use cases → requirements
- Standards to enable the requirements
- Business conditions that support interoperability
- Interoperability Guidelines
- Interoperability compliance testing
- Promotion (marketing, education, conferences)

- Market viable use cases → requirements
 - Home networking, public “hot spots”, wireless internet devices
 - Standards to enable the requirements
 - IEEE 802.11x
- 
- Business conditions that support interoperability
 - Service providers ← → equipment vendors ; win-win
 - Interoperability Guidelines
 - WiFi Alliance
- 
- Interoperability compliance testing
 - Certification test houses around the world
- 
- Promotion (marketing, education, conferences)
 - “...goal of driving the adoption of a single worldwide-accepted standard for high-speed wireless local area networking”



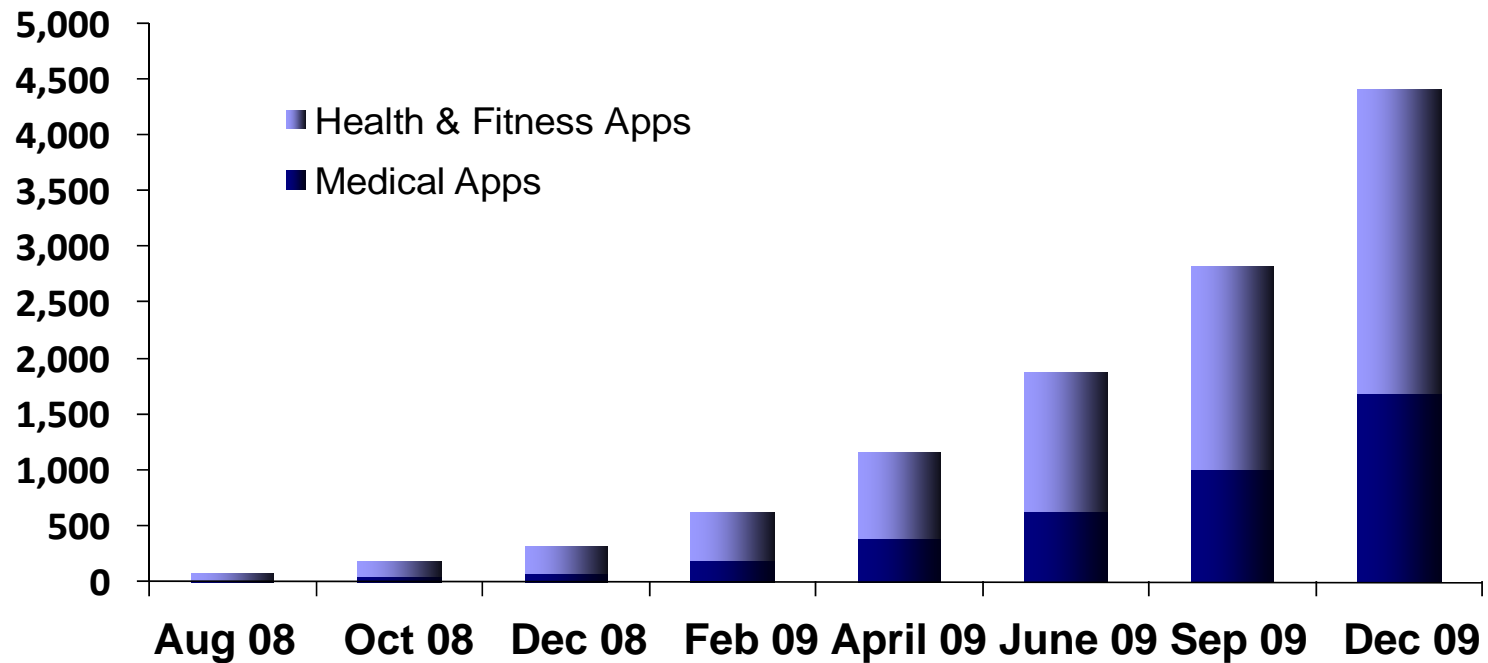
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Mobile Health Musings

Strong Growth in Mobile Health Apps

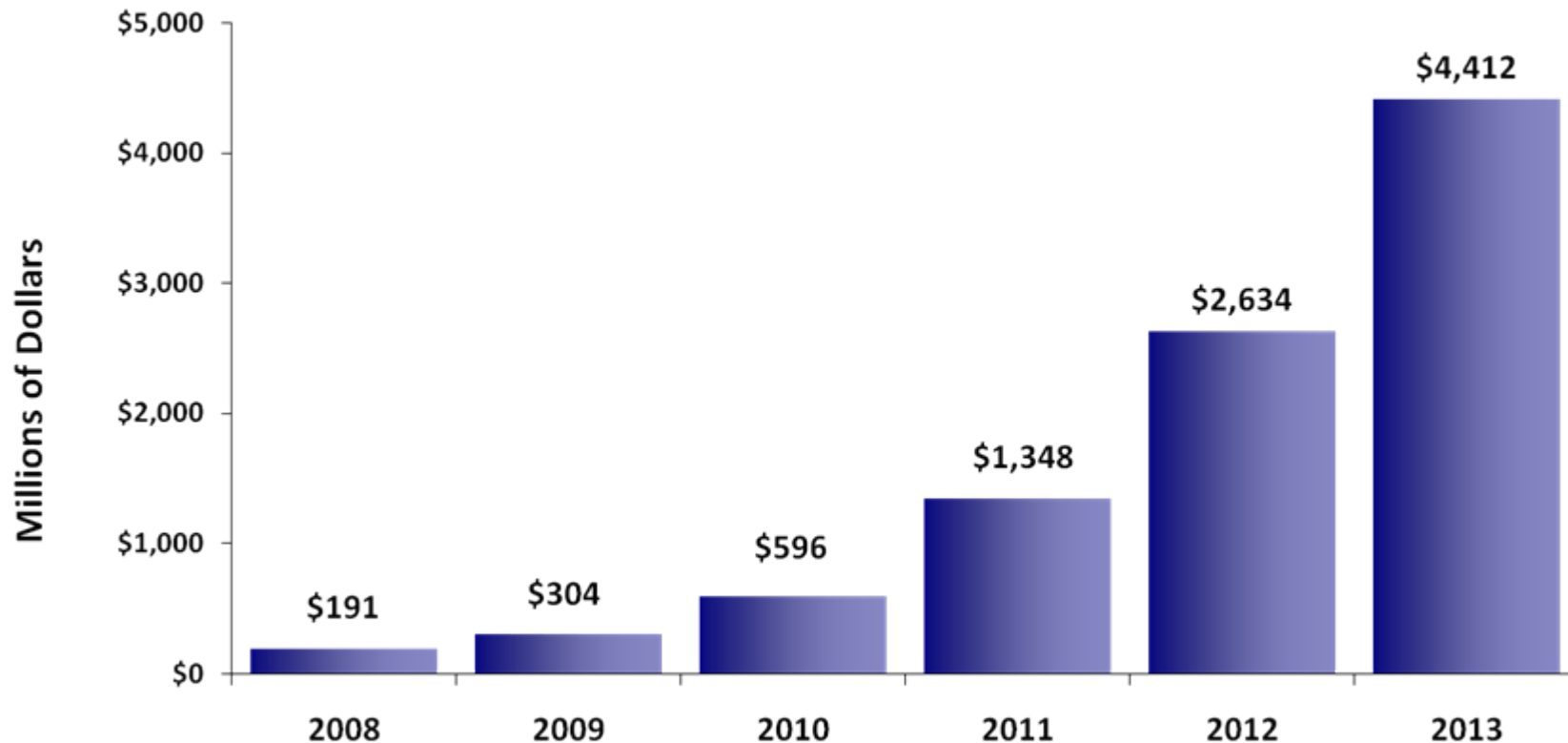
iTunes App Store Medical and Health & Fitness App Availability



Source: Parks Associates
© 2009-2010 Parks Associates

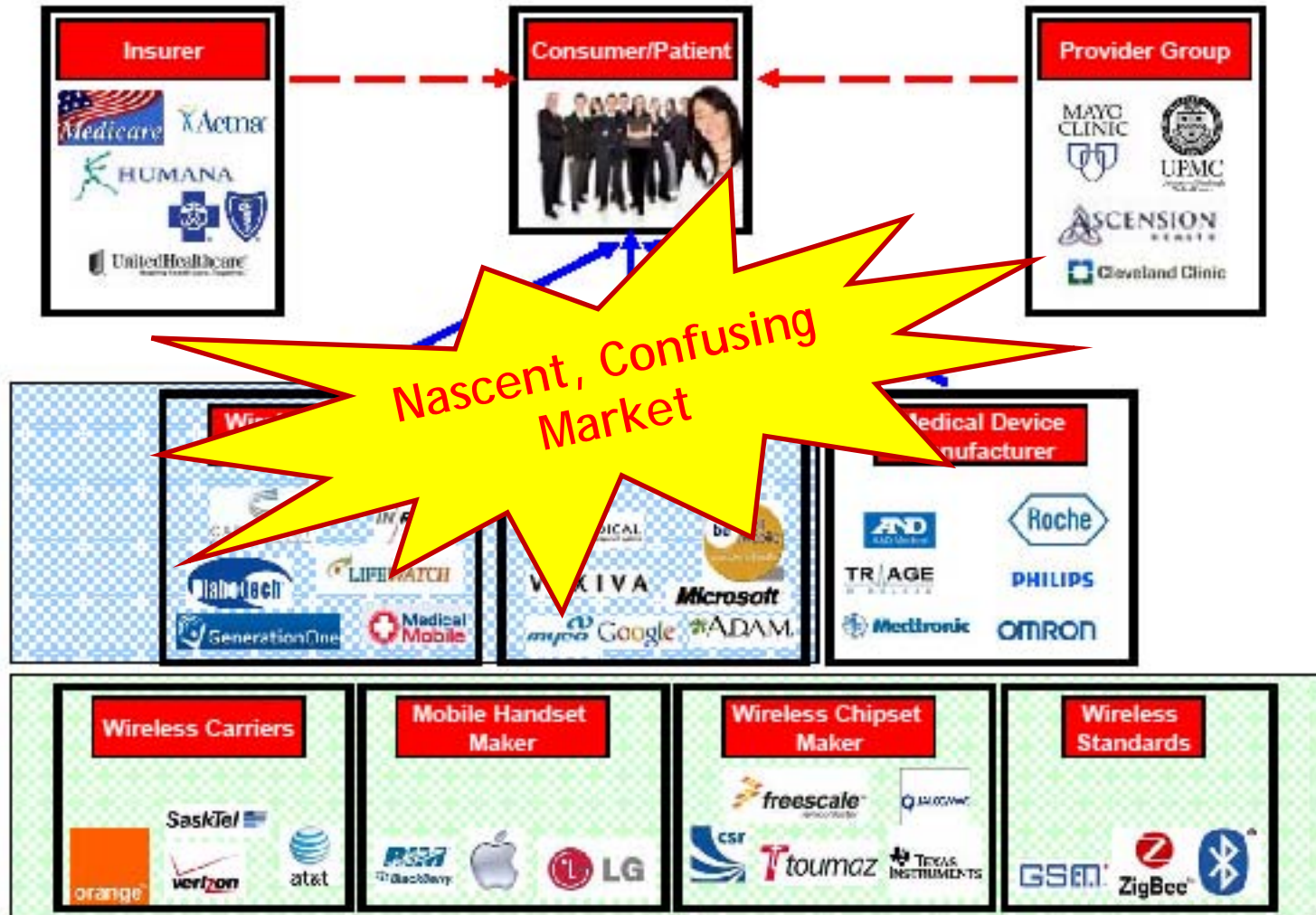
Wireless Healthcare Revenue Growth (2009-2013)

Wireless Healthcare Revenue Forecast U.S. (2009-2013)



Source: Wireless Healthcare: Analysis and Forecast
© 2009 Parks Associates

Wireless Healthcare Ecosystem



- Interoperability standards
- Business models
- Clinician acceptance (workflow, data overload)
- Regulatory / Liability
- Quality (coverage, bandwidth)
- International solution



Thank you!

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