How the emergence of new Technologies and Polices might effect the near term Telemedicine environment

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“Health care … is heading toward one of the biggest societal crises that we can imagine, both here and abroad. … Because health care already accounts for 15% of the GDP in the U.S., we can't, as a society, afford to devote any more of our economy to it. So we're going to have a schism. Keep in mind, revolutions have been waged over taxation and over dividing the economic pie. But this is life and death—some people will get access to this ‘health-care mainframe,’ and everybody else dies.”

Andy Grove
Fortune, April 2003
eHealth Enabling Technologies

• The PHR as an agent for change
  − DOSSIA

• Remote Motorizing and Standards
  − Continua

• Wide area communications technologies
  − WiMax

• Mobile computing technologies
The personal health data environment today

200+ PHR and related applications...

... x 500+ data originators
What is Dossia?

• An employer led initiative to develop the needed shared infrastructure for life-long independent health records for individuals

• Dossia is being developed by a not for profit corporation. Will be run as a public utility – eventually open to all employers and developers

• Initial Founders are: Intel, British Petroleum, Pitney Bowes, Wal-Mart and Toyota. Other employers are under discussion to join.

• Dossia is not a PHR system – enables multiple PHR systems

• Dossia is not a product – the organization is a non-profit entity
The PHR industry with Dossia

- Vendor PHR
- Health Plan PHR
- Finance Application
- Hospital PHR
- Disease Mgmt App
- Employer Dossia App

Dossia Infrastructure

API

Authentication

- Drugs
- Claims
- Doctor EMR
- Hospital EMR
- Imaged Paper
- Labs
The Continua Health Alliance

- A non-profit, international, open industry alliance of the finest healthcare and technology companies in the world joining together in collaboration to improve the quality of personal telehealth
Nearly 100 companies are now part of Continual!

Contributors

BDNA Corporation
Better Health Technologies
BiancaMed
BL Healthcare Inc
Bridge Technology Holdings
Capital Health
Card Guard Ltd.
Cardionet
Carematix, Inc.
Dynastream
EarlySense
empirica GmbH
FitSense Technology
Fullpower Technologies
Healthsense
Institute of Biomedical
Jennie LTD
LG Electronics
MCR Group
Proskauer Rose LLP
Rauland Borg
Silicon and Software Systems
STMicroelectronics
Textronics
Timex Corporation
Tourmaz Technology Limited
Training Peaks, LLC
Tyco Electronics
Wipro
Your Choice Living
Zarlink Semiconductor
Suunto
One billion adults overweight worldwide

**Health & Wellness**

- Weight loss
- Fitness
- “Worried Well” vital sign monitoring:
  - Weight
  - Blood pressure
  - Glucose
  - Cholesterol
  - Activity level
- Personal Health Records

**In the future…**

- Extension of healthcare system into the home
- Initial triage of conditions
  - Vital signs
  - Images
  - Email / chat / video
- Appointment scheduling
Disease Management
860 million chronic disease patients worldwide

- Chronic disease
- Post trauma
- Pre-op

Disease Management
- Vital sign monitoring (RPM)
- Medication reminders and compliance
- Utilize home network to locate devices in logical places:
  - Scale in bathroom
  - Pill minder in kitchen
  - BP cuff in living room
- Trend analysis and alerts
- Email, chat, video
- Appointment scheduling
Elderly Monitoring
600 million elderly individuals worldwide

Aging Independently
- An adult child helping their elderly parents age gracefully in their own home.
- Basic life monitoring as appropriate (ADL):
  - Bed pressure (sleep)
  - Bathroom sensor
  - Gas / water sensor
  - Emergency sensor
- Vital sign monitoring (RPM)
- Medication reminders and compliance
- Trend analysis and alerts
- Email, chat, video
- Appointment scheduling

- Independent living
- Chronic disease

Home Automation & Control
- Pedometer
- Blood pressure Cuff
- Fitness equipment
- Medication Tracking

Personal Health System
- Cell Phone
- Digital Home
- PC

Internet

Family caregivers
Elderly monitoring service
Diet & wellness services
Disease management service, healthcare provider

Diet & wellness services
Death & wellness services
Disease management service, healthcare provider
Bonnie Nursing Bag
Cell Phone ID Badge
Video Conferencing Equipment Coagulometer
Stethoscope Point of Care Device (Laptop)
Ultrasound Glucometer
Weight Scale (missing: Baby Scale) Pulse Oximeter
Point of Care Device (Laptop) Instant Camera
Telemonitor Sphygmomanometer (Blood Pressure Cuff)
Glucometer Trunk Box of Medical Supplies
Coagulometer Instant Camera
Pager Trunk Box of Medical Supplies
Pulse Oximeter Instant Camera
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Sphygmomanometer (Blood Pressure Cuff)
Personal Health Eco-system

**SENSORS**
- Home sensing & control
- Bed / Chair Sensors
- Implant Monitors
- Baby Monitors
- PERS
- Consumer Electronics

**CONNECTIVITY**
- Ethernet
- Glucose Meter
- Blood-pressure Monitor
- Glucose Monitor
- Pulse Oximeter
- Spirometer
- Home Health System
- Pedometer
- Fitness equipment

**AGGREGATION**
- Mediation Tracking
- Pedometer

**COMPUTATION**
- Wi-Fi
- HomePlug
- ZigBee
- Bluetooth

**SERVICES**
- Healthcare Provider Service
- Disease Management Service
- Diet or Fitness Service
- Personal Health Record Service
- Implant Monitoring Service

**NET W O R K**
- (POTS, Cellular, BB)

**MICS / MEDS**
- Cell Phone
- Set Top Box
- Aggregator
GUIDELINES:
Continua member companies will select connectivity standards and publish Guidelines for strict interoperability.

CERTIFICATION & LOGO:
Continua will establish a certification program with a consumer recognizable logo signifying the promise of interoperability with other certified products.
Wireless Network Co-existence

The Result: Always Best Connected

*Other brands and names are the property of their respective owners.*
WiMAX Usage & Planned Rollout

Fixed Trials Began

'05

Notebook Integration & Early Mobile Trials

'06-'07

Phones & Early Mobile Network Rollout

'07-'08

Global Network Rollout

'08-'10
Device access nodes

**home user node**

- WiMAX subscriber unit and WLAN
- Wireless clients

**small office node**

- WiMAX subscriber unit
- Access point
- LAN
- Wireless clients
- Wired clients
Mobile Usages in Healthcare

- **Cart-free Room-to-Room Roaming**
- **Cart-based Room-to-Room Roaming**
- **Room and Office Roaming**
- **Office Roaming**

Unique requirements exist for each mobile usage model.
Mobile Clinical Assistant

A purpose-built platform, developed to meet the needs of a given set of customers
Mobile Clinical Assistant: Ingredients

- **Core Ingredients**
  - CMT-Ultra Low Voltage (ULV)
  - Wireless LAN (802.11a/b/g)
  - Wireless PAN (Bluetooth)
  - Health platform driver + CMT SW
  - Barcode, RFID, Integ. camera
  - OS: Win XP, Tablet Edition

- **System Features**
  - 10” touch display
  - Swappable battery (warm-swap)
  - Ergonomic handle
  - Wipe-able (sealed, bio-fluid resistant)
  - Programmable keys
  - Ruggedized chassis and hard drive
  - Trusted Protection Module (TPM)
  - Weight: Approx. 1.4kg (3 lbs)
  - Docking Station: USB, RJ-45 (LAN), spare battery
Usage Model: VoIP
Phones for Health

A global public-private partnership to deliver practical information solutions to strengthen health in the developing world.
The Reach of the Phone

- There are 1.7 billion mobile phones in the developing world.

- 1 million new phones are sold every single day.

- “The explosive spread of mobile phone networks across the developing world has created a unique opportunity to significantly transform how countries can tackle global health challenges.”
  - Dr. Howard Zucker, Assistant Director-General, WHO
Phones for Health Goals

- Develop an integrated set of standard information solutions that support the scale-up of HIV/AIDS, malaria and other infectious disease programs.

- Deliver those solutions to countries in a way that is cost-effective, scalable and sustainable and that lays the foundation for enhanced national health information systems.
Call To Action

• Develop and adopt standard PHRs for your citizens

• Develop and adopt standard use case scenarios for remote monitoring (Join Continua)

• Adopt wide area communications technologies (as they become available) to spread the reach of healthcare professionals

• Increase the use of mobile computing platforms to enable enhanced Point of Care delivery capabilities
“Don’t be encumbered by the past. Go out and do something wonderful”