



How New Technology Will Transform the Disease Management Process

2004 Disease Management Colloquium

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Disrupting like the Roomba...

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A New Kind of Clean


Automatically cleans your floors while you enjoy life

TOUR ROOMBA!

What is Roomba?
How does it work?
Does it really clean my floor?
How does Roomba know where to clean?
Is it safe and easy to use?
More answers...

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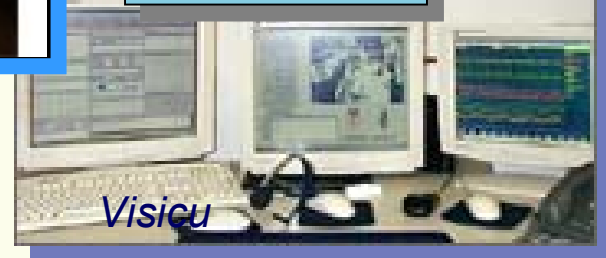
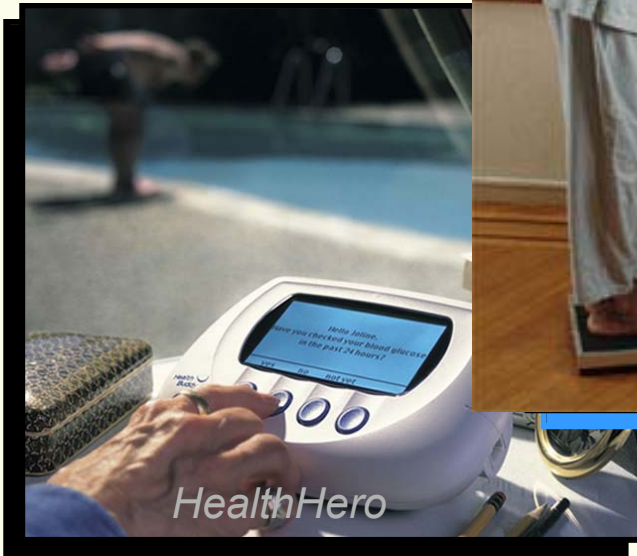


iRobot

Internet

Start | Internet Explorer | Word | PowerPoint | Excel | Outlook | Firefox | Safari | Chrome | Edge | ... | 1:25 AM

"Mrs. Marshall, get on the scale..."



The Vision

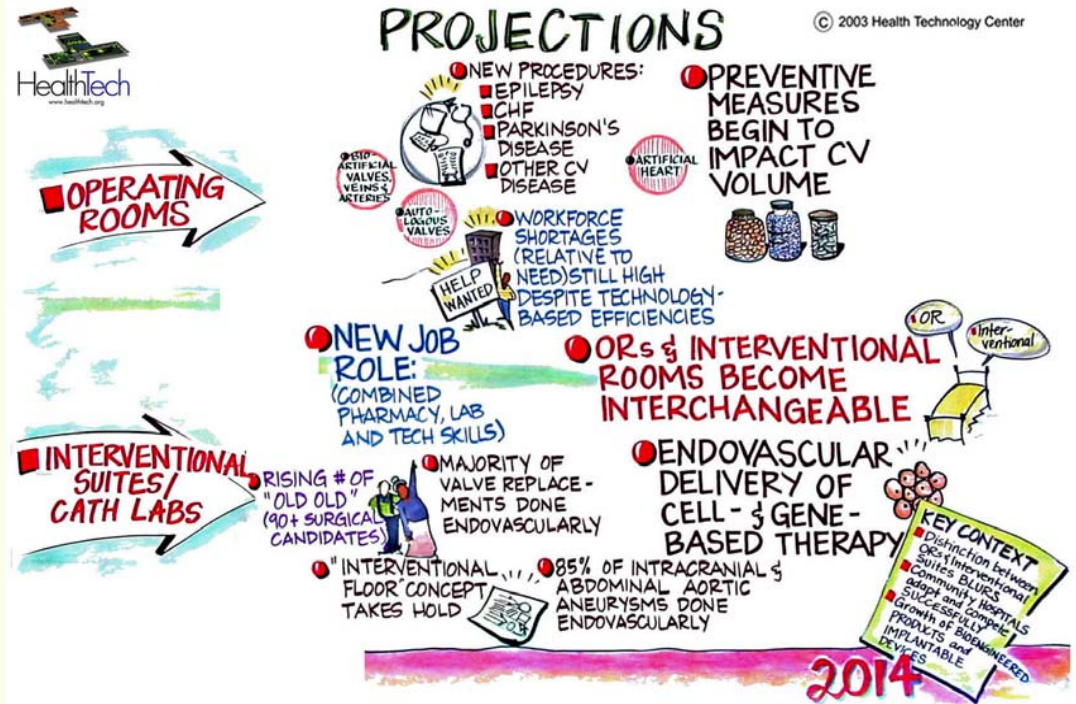
Advancing the use of new technologies to make people healthier.

The Mission

To create a trusted source of expert information about the future of healthcare technologies.

The Means

*A nonprofit pooled research center for delivery systems and health plans.
Funding independent of developers and vendors of technology.*





HealthTech Partners

Ascension Health
Banner Health
Baylor Health Care System
Bon Secours Health System
CAPH
Carolinas HealthCare System
Catholic Healthcare West
Chinese Hospital and Health Plan
**Centers for Medicare and Medicaid
Services (CMS) Federal Liaison**
CHRISTUS Health
El Camino Hospital
Greenville Hospital System
Group Health Cooperative
Health Alliance for Greater Cincinnati
Hudson Health System
John Muir/Mt. Diablo Medical System
Kaiser Permanente
Lenox Hill Hospital
Lumetra

Medisys Healthcare System
Methodist Health System
Mills-Peninsula Health Services
Overlake Hospital Medical Center
Parkview Health
Partners HealthCare System
PeaceHealth
Premier, Inc.
Presbyterian Medical Services
Providence Health System
The Queen's Medical Center
Ryan Community Health
Sequoia Healthcare District
Sutter Health
Texas Health Resources
UC-Davis Health System
VHA, Inc.
Veterans' Health Administration
WellPoint Health Networks

Innovation Is An Unnatural Act



268 Years Later...





Forces Driving Toward the Tipping Point

- *The American health care delivery system is in need of fundamental change. The current care systems cannot do the job. Trying harder will not work. Changing systems of care will.*

IOM: Crossing the Quality Chasm

- RAND: Almost half of all patients get sub-standard care
- IOM et al: One-third of healthcare expenditures are waste



IOM: Recommended Actions

- Chief external levers for change:
 - Support investment in information technology
 - Reform payment systems
 - Stop penalizing physicians and hospitals for quality improvement
 - Reward the behaviors and results you want
- Establish standards for clinical data exchange
- Remove legislative and regulatory barriers
 - Stark
 - Anti-trust



HHS Leadership Breaks New Ground

Secretary Thompson:

- “Grocery stores are more automated than healthcare”
- Announced Federal agencies will lead in adoption of data standards – *using purchaser clout to drive the market*
- Medicare Modernization Act of 2003 – IT provisions
- Would use half of \$1.2 billion in fraud and abuse settlements for hospital IT investments
- Asked IOM, HL7 to define, develop standards for EHR functionality

President Bush:

- Executive Order
- National Healthcare IT Coordinator
- Reimbursement incentives
- Data exchange and connectivity



Gridlock beginning to loosen...

- Regional Data Exchanges
 - *NEHEN, Indianapolis, Santa Barbara*
- Federal Investment
 - \$150 m in 2004 budget, other legislation pending
 - HealthTech Policy Recommendation: Spending Our Money Wisely
 - Endorsed by HIMSS, NAHIT
 - eHealthInitiative Coalition: *Investing in America's Health*
- Reimbursement
 - CMS demos
 - IOM proposed work on payment reform options
- Employer, Coalition Voices:
 - Leapfrog
 - NEHI: Advanced Technologies to Lower Health Care Costs and Improve Quality
- Health Plans enter the fray:
 - Wellpoint distribution of IT/e-prescribing to 19,000 physicians
 - Disease Management – third generation
 - Relay Health – structured messaging between physician and patient



Better, cheaper care

- Joint findings: New England Healthcare Institute (NEHI), Massachusetts Technology Collaborative November 2003
 - ✓ **Electronic communication between patients and their physicians**
 - ✓ **Electronic prescribing**
 - ✓ **Ambulatory computerized physician order entry**
 - ✓ **Inpatient CPOE**
 - ✓ **Regional data sharing**
 - ✓ **Intensivist onsite 24x7 in ICUs**
 - ✓ **Disease management**
- *Projected net annual benefit (75% adoption rate) for Massachusetts of \$2.48 billion*

nehi.net, November 2003



Increased workforce productivity

Our Partners are Adopting:

- Communication
 - Vocera – wireless workforce communication tool
- Cost of labor
 - Service robots for delivery of materials
 - Point of care laboratory testing
- Throughput
 - Remote video translation services in ED
 - e-ICU
- Telemedicine services for institutionalized patients
- Passive RFID
- PACS-enabled reorganization of radiology services

Improved business processes

- Facility planning
 - 20-40% expansion in hospital capacity
 - No coordination between IT, facilities
 - Clinical process changes enabled by IT
- IT support for clinical devices
 - Emerging devices are unique combinations
 - Require real-time reading, action
 - Where will the 'hub' be built?



LVAD



Bioartificial liver



Better, Cheaper Care



Home-based Telemedicine for Uninsured, High-risk Diabetic Population

Inpatient Admissions	▼ 32%
Emergency Room Encounters	▼ 34%
Outpatient Visits	▼ 49%

(Diabetes Technology & Therapeutics Journal, 2002)

Asthma Self-management for High-risk Pediatric Population*

Activity Limitation	▼ (p = .03)
High Peak Flow Readings	▲ (p = .01)
Urgent Calls to Hospital	▼ (p = .05)

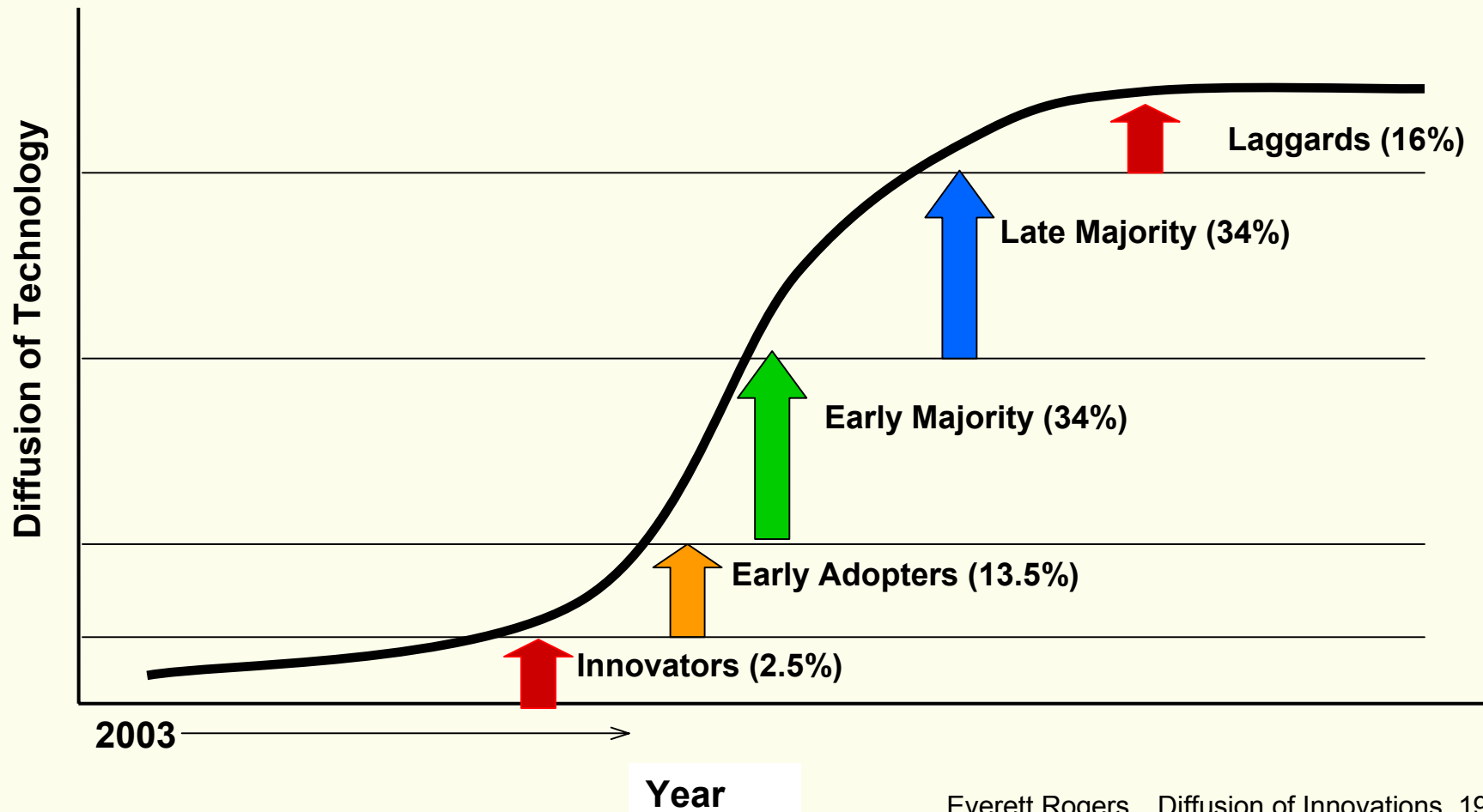
(Arch Pediatr Adolesc Med. 2002)

Care Coordination: Hypertension, Heart Failure, COPD, and Diabetes*

Emergency Room Visits	▼ 40%
Hospital Admissions	▼ 63%
Hospital Bed Days of Care	▼ 60%
Nursing Home Admissions	▼ 64%
Nursing Home Bed Days of Care	▼ 88%

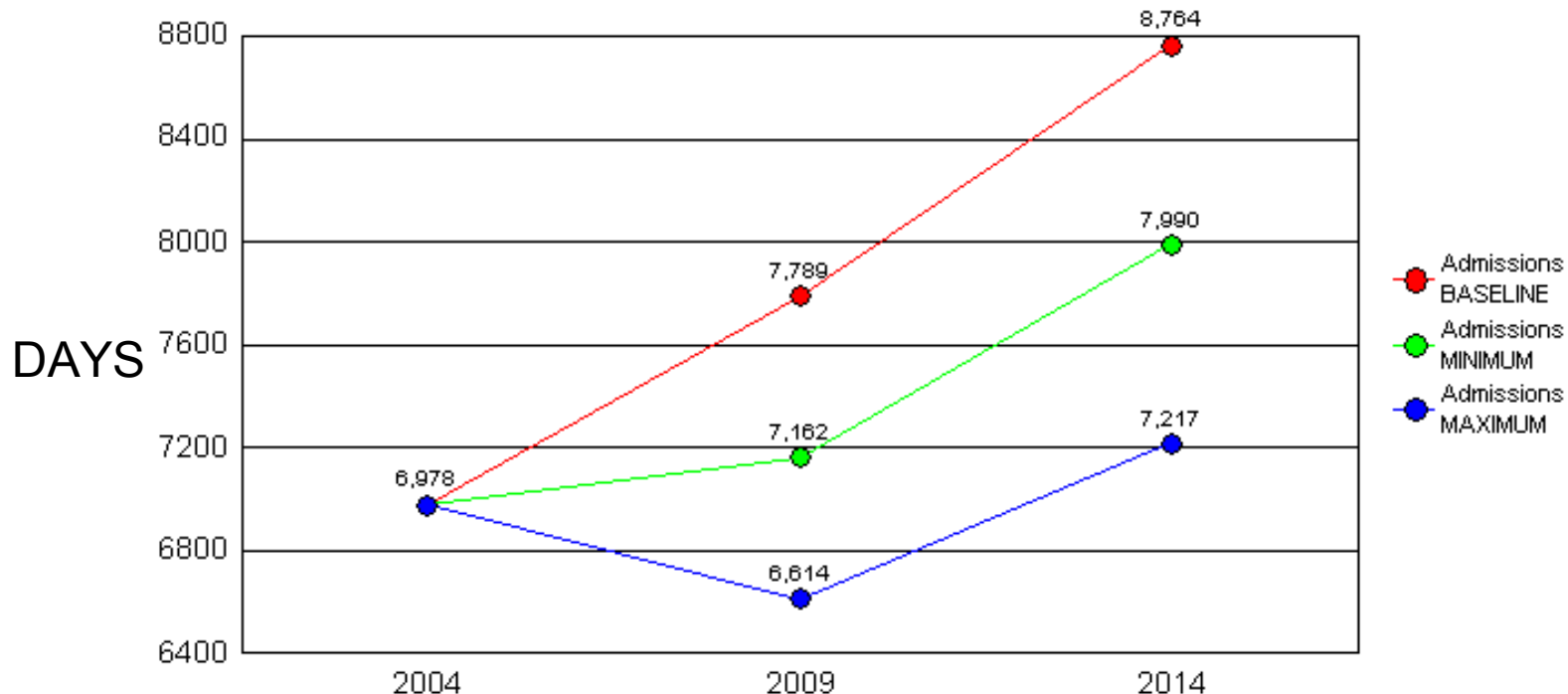
(Disease Management, 2002)

Find Your Starting Position...



Diffusion Impact: Broward County

Closed-loop implants for cardiac disease



Broward County

**Condition: 428-HEART FAILURE; Technology: Closed-loop implant;
Market Availability Year: 2006; Implementation Year: 2008; Full Impact
Year: 2010**

Delivery System Concerns



- Reduction in revenues:
 - Decrease in physician visits
 - Decrease in ED, hospital admissions
- Patient redirected to participating system
- ED Management of patients with devices
- Preparing for interface of devices, services, office EMR and IT
- Cultural issues of physicians and patients
- Training for personnel
- Threat of negative perception (low quality) for non participating providers
- Adequacy of reimbursement for participation in program
- Physician network relations



Physician Group Concerns

- Reduced revenue from office visits and follow up calls
- Possible loss of patients to carve out network
- Perceived “interference” with patient management
- Capital cost of installing IT capacity to link electronically to care management program
- Care management program operations
 - Quality of service provided by program
 - Ability to incorporate patient information from care management program with physician records



Health Plan Concerns

- ROI
 - Patient disenrollment before initial investment recouped
- Costs of Emergency Care
- Quality of carve out programs
- Efficacy
 - Differentiator in the market place (adverse selection)
 - Lack of CMS reimbursement
 - Promoting physician adoption
- Patient selection





Problems with Managing Chronic Disease



Data



People



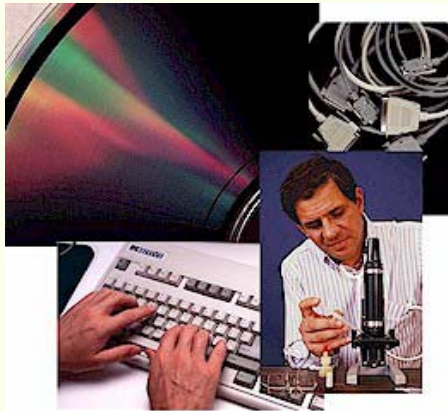
Business

Data and Chronic Disease Management



Data Challenges...

- Accuracy
- Collection
- Access
- Presentation



What Technology Can Do...

- Improve quantity, accuracy and quality of data
- Reduce error
- Enhance data access & exchange
- Process and display in a more palatable way

People and Chronic Disease Management



People Challenges...

- Behavior Modification
- Coordination of care
- Culture
- Trust
- Workforce



What Technology Can Do...

- Improve coordination and communication
- Provide feedback
- May even build trust
- Support decision making

Business and Chronic Disease Management



Business Challenges:

- Poor efficiencies
- Alignment of incentives
- Ability to demonstrate ROI
- Reimbursement
- Population Stratification



What Technology Can Do...

- Increase efficiency
- Provide economies of scale
- Improve process



**Physiological
monitoring and
measurement**

Challenges	Emerging Technologies (0-5 yrs)
<ul style="list-style-type: none"> • Data accuracy, quality and quantity 	<ul style="list-style-type: none"> • POC Lab testing (<i>iStat, Roche, Litmus Concepts</i>) • Sensors: Implantable & Transdermal (<i>Medtronic</i>) • Mobile Computing (<i>Palm, HP, Toshiba</i>) • Robotics (<i>InTouch</i>) • Remote Technologies: monitoring, management, and messaging (<i>Relay Health, Agilent, Welch Allyn</i>) • Wireless: motes (<i>Intel, Dust</i>) • Internet “port” (<i>iMetrikus, HealthConnex</i>)
<ul style="list-style-type: none"> • Self-assessments not accurate • Costly to transcribe • Cognitive status difficult to determine 	<ul style="list-style-type: none"> • Wireless: motes (<i>Intel, Dust</i>) • Remote Patient Management (<i>HealthHero, HomMed, American Telecare</i>)

**Patient-based
psychological
assessment**

Monitoring and Measurement: Technologies (continued)

**Professional
assessment and
observation**

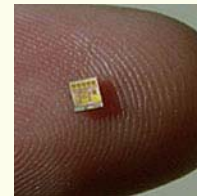
**Compliance
enhancement**

Challenges	Emerging Technologies (0-5 yrs)
<ul style="list-style-type: none"> • Shortage of skilled staff • Cost 	<ul style="list-style-type: none"> • Mobile Computing (<i>Palm, HP, Toshiba</i>) • Wireless (<i>Major service providers</i>) • Remote Patient Monitoring (<i>American Telecare, HomMed</i>) • Point-of-Care Testing (<i>iStat, Roche, Litmus Concepts</i>)
<ul style="list-style-type: none"> • Data accuracy 	<ul style="list-style-type: none"> • Data mining of pharmacy information (<i>Health Audit</i>) • Drug & detector combinations (<i>Sequella</i>) • Graphic presentation of progress and status (<i>Accordant, Cor Solutions, American Health Pathways, iMetrikus</i>) • Reminder devices and systems (<i>MedReminder, Cadex, MedReadt</i>) • Integrated Device & Web Portals (<i>iMetrikus, Cerner, Welch Allyn</i>)

Monitoring and Measurement: Forecast

- **Greatest area of technical development**
- **Large improvements in sensors**
- **Implantables** will provide revenue potential for physicians and centers third party call
- **Comprehensive monitoring will be a challenge** for patients with multiple co-morbidities.
- **Data stream integration** will be of increasing concern
- **Call centers** will proliferate.
- **Personal baselines** will emerge as trend in managing chronic disease
- **Motes** progressing rapidly
- **Gateway products** will proliferate

Physiological
monitoring and
measurement



-
- **Personal cognitive baselines**

Patient-based
psychological
assessment



Monitoring and Measurement: Forecast (continued)

Professional assessment and observation

- These will be **enabling technologies**
- **Aspects of care will increasingly be shifted** to the patients and caregivers

Compliance enhancement

- Growth area
- **Integrated Web portals**
- **Drug & detector : Gating factor is Pharma**
- **Pill bottle systems will diffuse slowly** due to costs and logistics process, and
- Other gating factors: Cost, flexibility for disease management process, and demonstrated ROI

Underinsured and Scared



Billy Beane: The Innovator's Solution

Read Moneyball !!

- Invested in players most others passed on
 - Used statistics – on-base percentage, not slugging
 - Ignored the scouts
 - Tested for success in the hinterlands
- The technology is disruptive, but the implementation will often be incremental – until the tipping point is reached
- Find and invest in early adopters
- Michael Moritz (Sequoia):

“It takes a long time to build a company of value.”
- IT, and IT-enabled devices, are the only counter to rising demand and costs in devices, pharma and biotech

The Early Adopter Unmasked

