Digital technologies transforming healthcare

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What if we could draw upon a single fabric of information to enable, support and maintain better health for everyone.

What if that information could be gathered and analyzed to discover new insights that help us live healthier and receive the care we need.

What if the technology to make this happen existed today?
“Healthcare is different...”

- “100% uptime”
- Privacy is paramount
- Myriad data points
- Layers of abstraction
- Legacy systems integration
- Disparate costs and opaque pricing
- Contextulization
- Trust in professionals
- High and varied regulatory landscape

Is it different? Really? Why?
Shipping

Intermodal containers
At any time, 17 million metal boxes are moving on ships, trains and trucks.

Using technology in any smartphone, they can tell us:

- Where am I?
- Did I fall down too hard and break something?
- Am I moving or not?
- What’s my temperature?
- Who worked on me last year?
- What’s inside me? Is it safe? Changing?
Banking

Online banking
Any bank or brokerage account can be accessed 24/7 using a mobile device and a password.

Log in, and your accounts can quickly tell you:
• What’s my balance?
• When did my balance change?
• When did I receive money from another bank? How much?
• Is there any news about this stock?
• What’s the high and low for this stock in the past month?
Travel

Online reservations
Passengers and travel agents have access to the same reservation systems and information.

This consistent set of easy-to-use tools allows anyone to:

• See what flights, cars and hotels are available
• Create an itinerary and book travel
• View restrictions and policies
• Get the best price
• Modify travel plans from any location
• Share travel plans with anyone
Economic realities are driving significant changes in Healthcare

Clinical and economic outcomes

Consumerization of care

From treating illness to maintaining population wellness

From disconnected islands of information to Connecting everyone through common health information
The information is there, but it’s not very usable
Change stimulated by pricing pressures and exponential decline in cost of digital inputs

2 billion people have access to smart phones today, 4 billion by 2020

Transition from **2G to 4G** enabled a speed improvement of 12,000 times

Number of **devices connected** will go from 16 billion to 40 billion in 2020

It took **Facebook** only 7 years to get to 1 billion users

**A genome sequence** took 9 months and cost $100 million 10 years ago...today it takes 24 hours and costs under $1,000
Digital Technologies... transforming healthcare

Enabling **population health management**, including prevention

**Patient centric solutions**, allowing patients and their communities to engage and take ownership of their own health

**Integrating data from disparate point solutions** across hospitals, physicians, insurance, pharma, consumers

Providing **actionable and context sensitive information** to clinicians, patients and caregivers using analytics

Leveraging mobile **consumer technologies**
From discrete events to a Health Continuum

- **Healthy living**: People increasingly engaged in their health journey
- **Prevention**: Move towards population health and access to care
- **Diagnosis**: Ongoing focus on quality and cost plus personalization of care
- **Treatment**: Care shifting to lower cost settings and Homes
- **Recovery**: High tech and High Touch
- **Home care**: Integrated solutions for continuous care
  - Experiences bridging consumer and clinical spaces
  - Interoperability, connected devices, big data and analytics
Need for **data interoperability**

Any qualified data source

Provenance, correlation, normalization

Clinical Data Repository / Virtual Record

Cross-system pattern recognition, decision support

Data and tools accessible via API

Queries by individual, population cohort

Interoperable and dynamic workflows

Scalable application development
Use case: Cardiology across the Health Continuum

Healthy Living | Prevention | Diagnosis | Treatment | Recovery | Home Care
--- | --- | --- | --- | --- | ---
Healthy Living Tools | Point of Care | Anatomical Intelligence | Interventional Solutions | Care coordination | Seamless Monitoring

- Healthcare IT
- Genomics
Common application families; enhanced outcomes

Interrelated suite of applications written on Healthsuite Digital Platform...

**eCareCoordinator for professionals**
- Population health management & coordinated care
- Remotely monitor vital signs and health status for hundreds of patients simultaneously
- Dynamically prioritize individuals who need care

**eCareCompanion for individuals**
- Real-time communication with care team
- Health coaches for chronic conditions (heart disease, diabetes, COPD)

...enabling programs to achieve relevant financial and clinical improvements

<table>
<thead>
<tr>
<th>Hospital visits</th>
<th>ED² visits</th>
</tr>
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<tbody>
<tr>
<td>Baseline</td>
<td>Baseline</td>
</tr>
<tr>
<td>With solution</td>
<td>With solution</td>
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<tr>
<td>-38%</td>
<td>-67%</td>
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Less days in a hospital
10.2/patient/year

Total cost reduction
$27k/patient/year

1 Source: LeadingAge CAST Report, Provider Case Studies 2013
2 Emergency Department
Aggregating & analyzing patient data to improve care

Partnering with leading institutes and medical associations...

... to establish benchmarks, quality control and advance clinical research

China National Cardiac Data Registry

- Benchmark and identify improvement opportunities for cardiovascular care
- Monitor continuous (national) quality improvement initiatives
- Facilitate research that shape future best practices and clinical guidelines
- Assess efficacy and clinical outcomes of new treatments (e.g. TAVI, AF, new anti-coagulation care)
Key Takeaways

• **Digital technologies** (mobile, social, cloud, data) enable new healthcare models

• **Networked care models** with active patient and community engagement

• **Health IT infrastructure** with a focus on the health continuum

• **Telehealth** based on data analytics
Thank you

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