

Thinking Strategically About Digital Health Innovation Trends

Learning from the Past to Plan for the Future

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May 22, 2018

Digital Health Coalition



Overview

- **Trends and the Attention Economy:** Why the Right Innovation Focus Matters
- **Trend Evaluation:** How to Assess Strategically
- **Learning from the Past:**
Re-Evaluating Digital Health 2015 Trends
- **Preparing for the Future:** Assessing 2018 Digital Health Trends

Trends and the Attention Economy

Announcing the Smart Pill Revolution ...

How ingestible sensors and smart pills will revolutionize healthcare

Source: <https://www.marsdd.com/news-and-insights/ingestibles-smart-pills-revolutionize-healthcare/>

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There used to be a simulator ride at Walt Disney World called "Body Wars."^[1] Riders would sit in hydraulic chairs and face a wide-screen projection that took them on a journey: they would be "shrunk" to microscopic size and injected into a patient's body. Their mission? To diagnose and treat a flesh wound. It might be hard to believe, but the reality is that technology similar to this already exists. We can now literally consume technology and reap the medical benefits.

Move over wearables^[2] and embeddables^[3], because the mobile wireless health revolution is well underway thanks to smart pill technology, also known as "ingestibles." According to the report "Smart Pills Technologies Market (2012-2017),"^[4] the global smart pills market is expected to reach \$965 million by the year 2017. The technology development is currently focused on two primary functions: wireless patient monitoring and diagnostic imaging.

Prescribing smart pills to patients

Imagine receiving a text message notifying you that your grandmother forgot to take her pill this morning. The technology is within our reach. Ingestion monitoring systems have been approved and tested extensively. For example, Proteus Digital Health^[5] has developed a system consisting of a smartphone, a sensor patch and a pill. Each pill contains a one-square-millimetre sensor that is coated in two digestible metals: copper and magnesium. These metals are not dangerous to consume because they currently exist in multi-vitamin supplements, as well as naturally in our diets. Upon swallowing, the sensor is activated^[6] by electrolytes within the body. The pill then transmits a signal to a small, battery-powered patch worn on the user's torso and sends the data via Bluetooth to a caregiver's or family member's smartphone.



How ingestible sensors and smart pills will revolutionize healthcare

Source: <https://www.marsdd.com/news-and-insights/ingestibles-smart-pills-revolutionize-healthcare/>

Date Accessed: Tue Feb 10 15:20:26 0000 2015

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What Some People Want You to Believe About Digital Health

- Technology is always a positive force
- Every innovation will revolutionize healthcare
- Innovation adoption will either happen quickly — or take decades

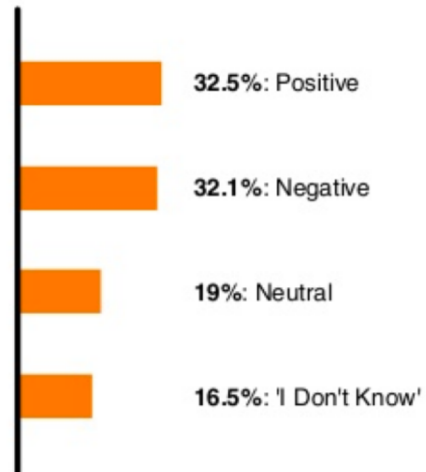
The Digital Health Reality

Technology is not
always viewed
positively.

The majority of patient respondents either have negative or neutral perceptions of digital therapeutics, including those that contain sensors designed to track adherence with medication.

Question: Increasingly, companies are creating digital pills that contain devices that can be used to track whether you are taking medication as prescribed and mobile applications that can be used in combination with or even replace prescription drugs.

How do you feel about the potential of using a mobile application in place of prescription drugs for some conditions like diabetes or taking a pill that can track whether you take your medication?



Data Source: Savvy Cooperative, Patient Survey Conducted March 26 - April 20, 2018, N: 238

Source: digihealth impact trac, Q1 2018, Enspektos, LLC



The Digital Health Reality

Technology diffusion
and adoption sometimes
takes years ...



Top Referenced Technologies: Q1 2018 (As Measured via DigiHealth Informer)

Technology	Major Themes and Market Events Related to Technology Area (Automated Content Analysis Conducted Using DigiHealth Informer)
Mobile/Mobile Health	<ul style="list-style-type: none">• Convergence: Combining mobile with other innovations (such as chatbots) to improve the clinical workflow.• Scaling: Mobile health is scaling in developing countries. For example, Mozambique is rolling out a mobile health solution nationally to improve community health delivery in underserved areas (it is one of the first low-income countries to bring mobile health to national scale).
Artificial Intelligence/ Machine Learning	<ul style="list-style-type: none">• AI Making Leaps and Bounds in the Area of Diagnosis: From helping to triage patients, to detecting potentially deadly heart conditions, AI-aided diagnosis is growing in strength.
Telemedicine	<ul style="list-style-type: none">• Telemedicine's Growing Integration into Health: Telemedicine-focused health organizations are helping to drive adoption of technology in the developed and developing worlds; e.g., remote medical consultations are becoming more commonplace in Afghanistan and throughout Africa.• Anticipating 5G: Increasing interest and speculation about the impact of 5G on telemedicine's speed, adoption and impact.
Digital Therapeutics (Breakout Trend)	<ul style="list-style-type: none">• Quest to Clarify and Define Digital Therapeutics: People are asking: What are they and how should they be defined?• A Pharma R&D Model for Digital Therapeutics?: Novartis and Pear Therapeutics partner to develop products for MS and schizophrenia.
Electronic Health Records	<ul style="list-style-type: none">• Workflow Problems and Physician Dissatisfaction Persists: Research suggests EHRs are contributing to physician burnout in the United States. Some studies estimate that physicians are spending 49% of their workday on EHRs versus 1/3 on patient care.

Source: Enspektos, LLC

The Digital Health Reality

But can also happen faster than anticipated.

Will data analytics in healthcare take until 2040 to be fully realized? And other highlights from Health IT Summit

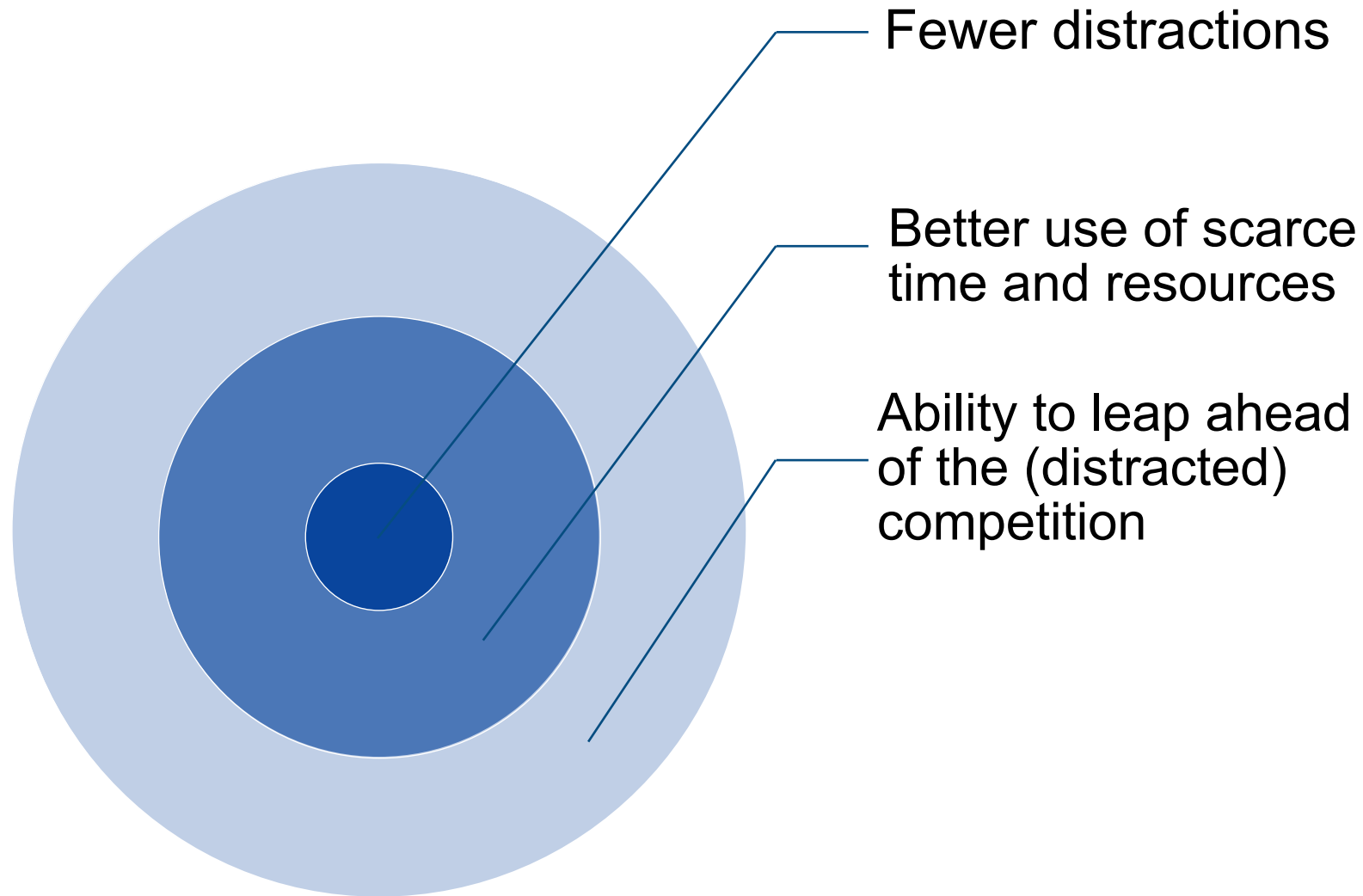
Source: <http://medcitynews.com/2015/03/will-data-analytics-healthcare-take-2040-fully-realized-highlights-health-summit/>

Date Accessed: Mon Mar 09 03:18:37 0000 2015

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Staying Realistic About Digital Health Requires Having the Right Innovation Focus

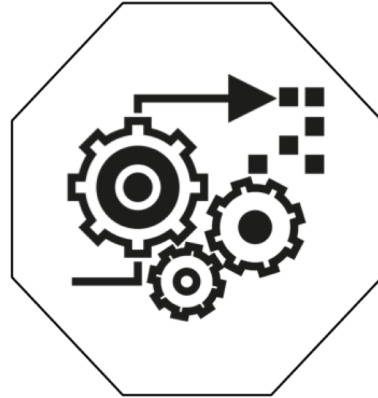


Today You'll Learn How

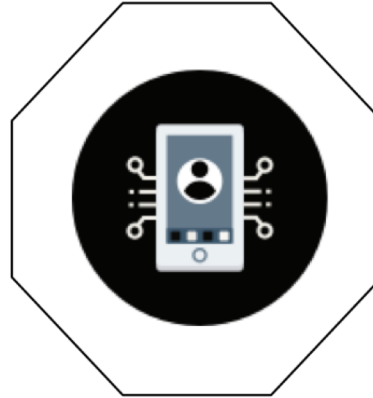
- Learn a trend evaluation strategy that will help you stay productive, focused and successful
- I'll apply the strategy to digital health (2015)
- Then, I'll use it to illustrate how to think strategically about 2018 digital health trends

A Trend Evaluation Strategy

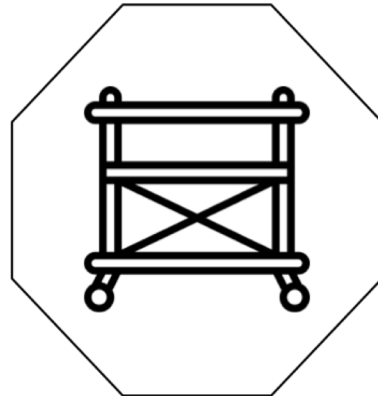
Trend Evaluation: Four Considerations



Technology Maturity



Technology Adoption

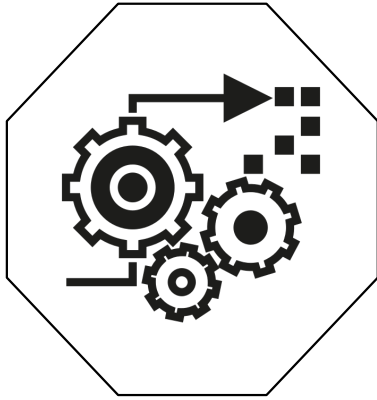


Institutional Support



Evidence

Trend Evaluation: Four Considerations



Technology Maturity

- Is the innovation being used widely across various industry sub-sectors? Numerous use cases and cross-industry utilization illustrates the robustness and maturity of the innovation.

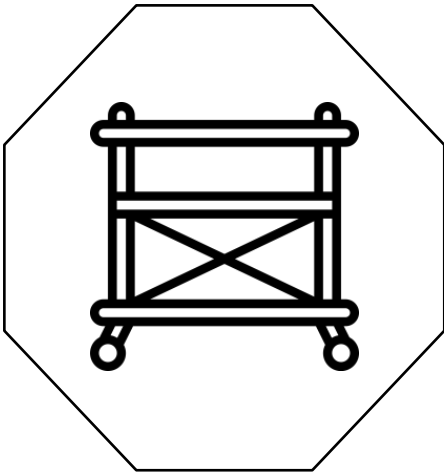
Trend Evaluation: Four Considerations



Technology Adoption

- Technologies that have broad adoption (consumer, professional) enjoy an advantage because people understand how to use it (and sometimes prefer it due to convenience).

Trend Evaluation: Four Considerations



Institutional Support

- Although consumer adoption is important, in some important areas (e.g., wearables, telehealth), institutional support (hospitals, insurers) is required for maximum diffusion and utilization.

Trend Evaluation: Four Considerations

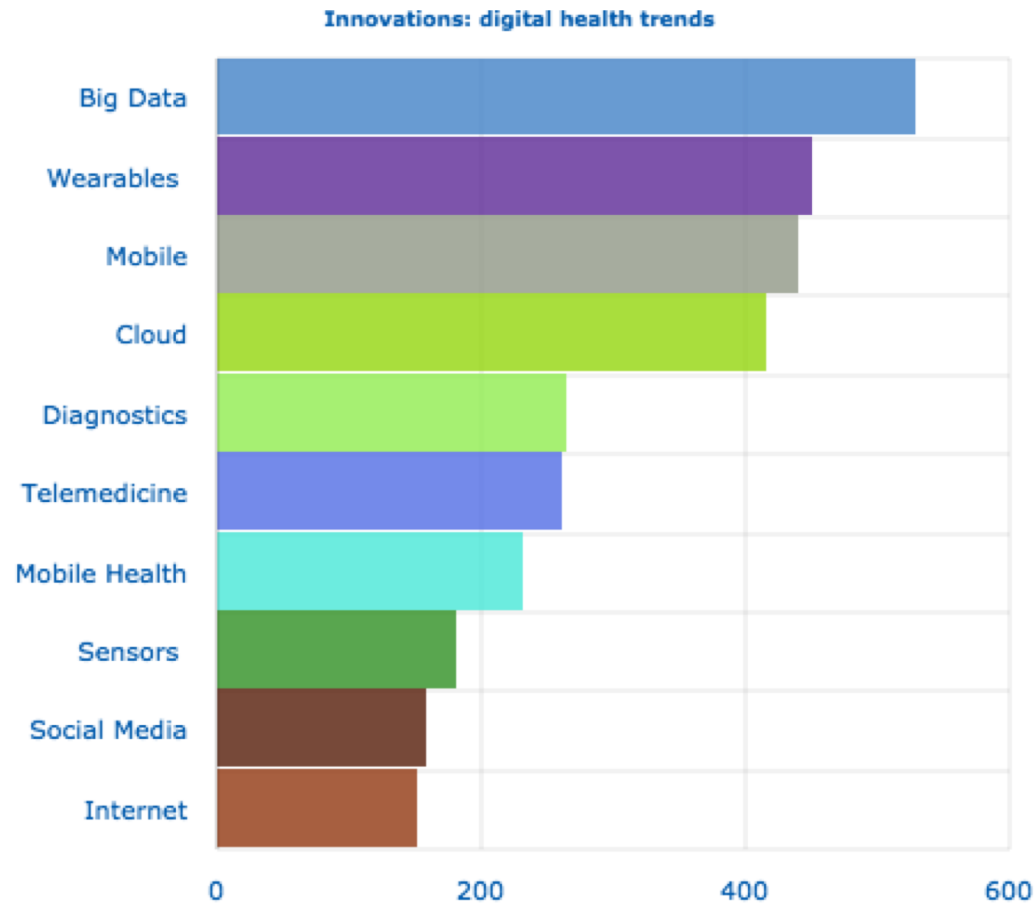


Evidence

- Due to healthcare's data bias, innovations with a track record of success (clinical evidence, economic impact, cost savings or profit generation) are more readily accepted and adopted.

Learning from the Past

Frequently Referenced Digital Health Trends: 2015





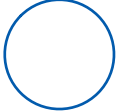
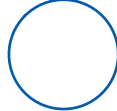
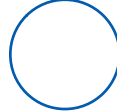
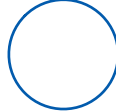





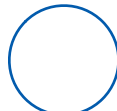
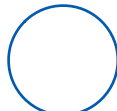
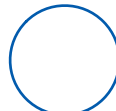


- Automated content analysis of online digital health content published January – May 2015 reveals trends/innovation areas that were frequently cited as being high-impact during this period.

Source: DigiHealth Informer, Time Frame: January 1 – May 20, 2015

Let's Evaluate Four of These Trends in Hindsight

Source: Enspektos, LLC, Trends evaluated based on status as of mid-2015

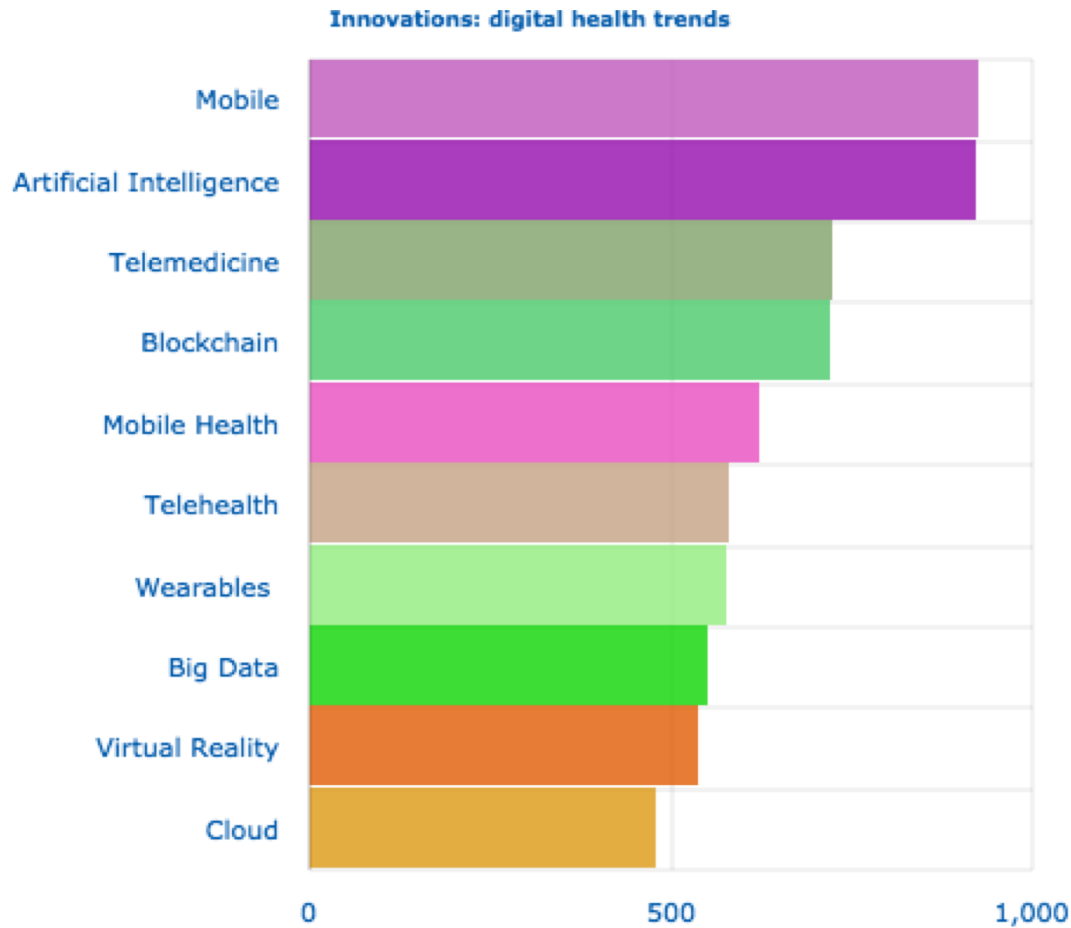
2015 Trend	Maturity	Adoption	Institutional Support	Evidence
Big Data				
Wearables				
Mobile/ Mobile Health				
Telemedicine				



Metrics:  Excellent  Good  Poor

Preparing for the Future

Frequently Referenced Digital Health Trends: 2018








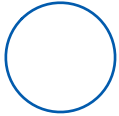





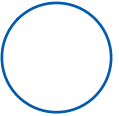
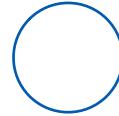
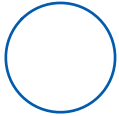


- Here are frequently mentioned digital health innovation trends (January to mid-May 2018), also identified via automated content analysis.

Source: DigiHealth Informer, Time Frame: January 1 – May 20, 2018

Let's Evaluate Four of These Trends for Impact

Source: Enspektos, LLC, 2018, Trends evaluated based on status as of mid-2018

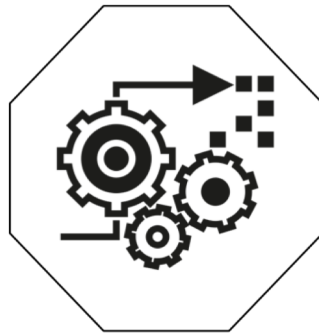
2018 Trend	Maturity	Adoption	Institutional Support	Evidence
Artificial Intelligence				
Wearables				
Mobile/ Mobile Health				
Blockchain				



Metrics:  Excellent  Good  Poor

Key Considerations: Strategic Evaluation of Digital Health Trends

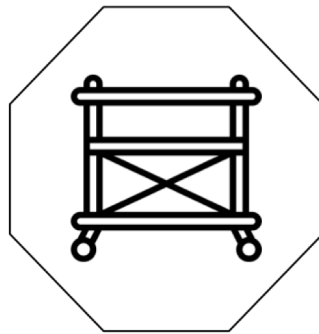
When evaluating emerging technologies, consider assessing them using these criteria (feel free to add others).



Technology Maturity



Technology Adoption



Institutional Support



Evidence

Evaluation and impact prediction success requires access to the appropriate market signals and analytics resources.

