

OptumServe

Artificial Intelligence in Health Care

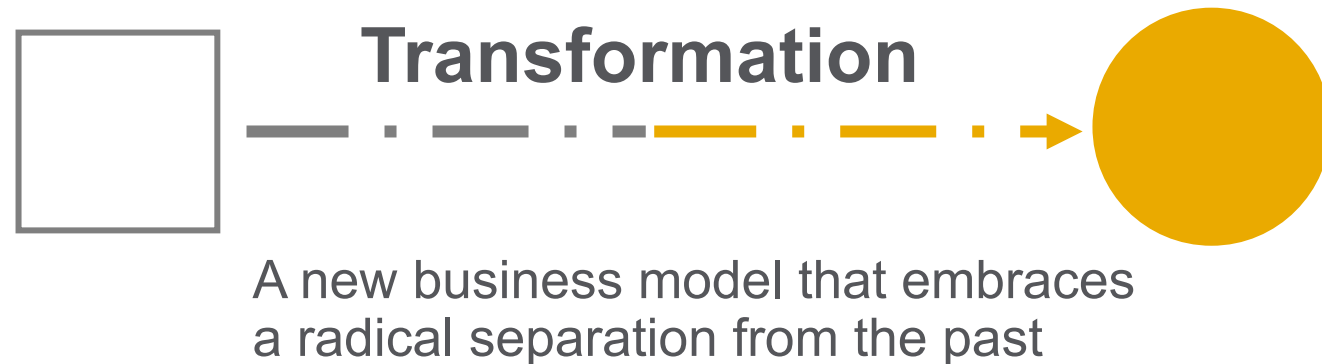
7th International Big Data and Analytics
Educational Conference

June 3-4, 2019



Constant change is the new normal

What type of change is necessary?



A Health Care Transformation Point of View regarding Artificial Intelligence (AI)

- Historical Evidence
- Big Data, Analytics and the First Wave of AI
- AI Transformed Patient Care














Higher Education System Point of View

- How can the higher education system engage in this transformation while transforming themselves?

Level Setting – What do the analysts say?

Adoption Rate of Artificial Intelligence by Industry

% firms in an industry that are adopting AI

Rank	Industry	Adoption %	
1	Technology and communications	32%	
2	Automotive and assembly	29%	
3	Financial services	28%	
4	Energy and resources	27%	
5	Media and entertainment	22%	
6	Transportation and logistics	21%	
7	Consumer packaged goods	20%	
8	Retail	19%	
9	Health care	17%	
10	Education	17%	
11	Construction	16%	
12	Professional services	13%	
13	Travel and tourism	11%	

OptumIQ Annual Survey on AI in Health Care (2018)

Beliefs and Expectations

1 Greatest impact of AI investment will be on improving health care

- 36% - believe AI will enhance the patient experience
- 31% - believe AI will improve health care outcomes
- 94% - agreed that **AI technology is the most reliable path towards equitable, accessible and affordable health care**

3 Many have plans, but progress is mixed across sectors

- 75% - believe health care organizations are actively implementing or have plans to execute an AI strategy
- 42% - believe they have a strategy, not implemented
- 22% - of organizations are reporting their AI implementations are at a late stage, with nearly full deployment

2 A positive ROI could be seen in as little as 4 years

- 38% of employers and 20% of health plans expect ROI to be less than 3 years
- Most hospital executives believe they will see ROI in 4-5 years (if not longer)

4 AI will make care more precise, and faster

- Top two benefits respondents expect to see from incorporating AI into their organization:
 - More accurate diagnosis
 - Increased efficiency

Where we are today – the First Wave

Insights from the OptumIQ Annual Survey on AI in Health Care (2018)

The “First Wave” of AI has hit the health care industry and health care organizations

- *The Good:* **94%** of health care organizations continue to invest in, and implement, AI
- *The Challenge:* Instead of focusing on patient care, most organizations have focused on solving immediate data challenges
 - **43%** are **automating business processes**, such as administrative operations or customer service;
 - **36%** are using AI to detect patterns in health care **fraud, waste and abuse**; and
 - **31%** are using AI to monitor users with **Internet of Things (IoT)** devices, such as a wearable technology

The Miss: the **focus wasn't on patient care** or developing insights from the unstructured data that many organizations already have

The Inflection Point

So what? What's in it for educators, students?

Hiring and training have become a top priority for Health Care organizations!

- 92% agree hiring candidates with **experience working with AI technology is a priority**
- 45% of health care leaders estimate that more than 30 percent of new hires will be in positions requiring engagement with or implementation of AI in the next 12 months

RESULT: Organizations seeking to hire experienced staff will likely face talent shortages.

“We are already seeing a race for AI talent in the industry that will grow as adoption continues to increase.”

- Steve Griffiths, SPV and COO of Optum Enterprise Analytics

Opportunity: Educational Institution partnerships with Industry (e.g. GMU and UA)

What about the Data? Data is complicated!

Maintaining efficient control and accuracy of data is critical in Health Care

To reduce the uncertainty of data management, we must address the following challenges:

Data Structure	Data needs to be standardized and organized in a repeatable fashion
Data Integrity	Data needs to be accurate, and consistent, across multiple sources
Data Accessibility	Without powerful, nimble platforms being made available to researchers, clinicians, and policy makers, even the best sets of organized data will not be leveraged to their full potential
Data Interpretability	The next phase of AI will place greater emphasis on providing interpretations of statistical analysis to stakeholders, especially in government
Data Governance	Policies, procedures and protocols need to be established (including data sovereignty on PII and PIH - e.g. ITAR, FISMA, etc.) that guide the availability, usability and security of data

The Inflection Point

So what? What's in it for educators, students?

Having data sets that don't address these challenges will have even the most advanced AI or analytics tools simply getting you to **the wrong answer faster**

If resolving these challenges alone does not solve the problem in Health Care, what does?

- Medical and policy professionals, who understand the **interrelationships between the data sets** and how they can be applied to delivering health care (e.g. identifying high risk populations, etc.), are needed to really deliver on the promise of AI
- A more intelligent analytics and **AI framework**: overlaying the knowledge of experts in the health care landscape on top of the vast amounts of the clinical data that already exists

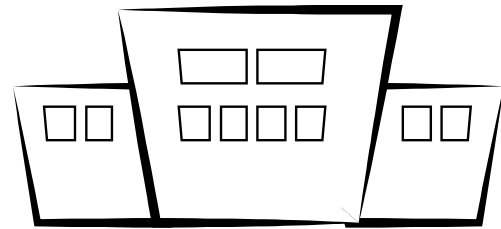
RESULT: Organizations leveraging AI must have experienced subject matter experts in the industry they are in with a base understanding of technology (e.g. medical professionals).

Opportunity: Non-Technical Curriculum aligned with technology education (e.g. LA)

The ongoing transformation in Health care

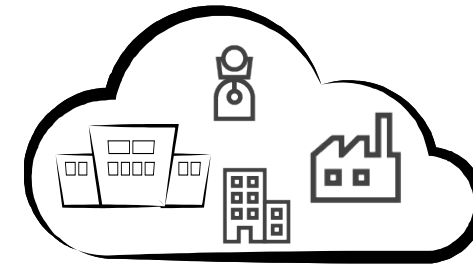
The Chasm Health Care is trying to cross

***Old Focus:
Historical
Understanding***



- Reacting to autism events
- Experience-based diagnosis
- Eminent-based medicine

***New Focus:
AI-based
Patient Care***

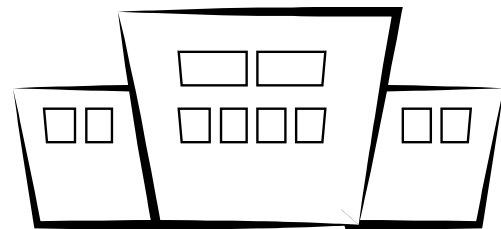


- Predicting the onset of autism events
- Predictive diagnosis and treatment options
- Evidence-based medicine

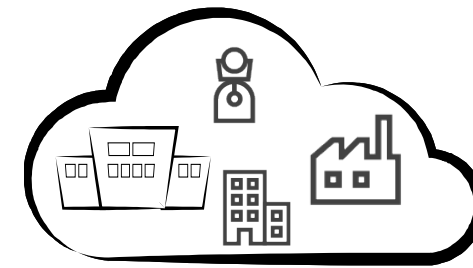
Shifting the Focus to the Educational System

Industry (Health care) and educators can cross the Chasm – together!

Historical Focus:
Bigger, Better
4-YR DEGREE
PROGRAMS



- Struggling to keep up with the rapid pace of technology
- Slow to modernize teaching methods or philosophy
- Educating technology students in 20th century career fields
- Focus on the University



New Focus:
Experiential,
life-learning
INITIATIVES

- **Immersive programs** with educational credentials
- **Industry partnerships** to redefine the educational journey of students
- **Industry funded** programs
- Renewed focus on **Soft Skills**
- Focus on the **Student Experience**

Crossing the chasm **requires** a transformation in the higher educational system!

The Inflection Point

So what? What's in it for educators, students?

Lifelong learning will become what the University system does, through:

- Rethinking the 4-yr degree program to include an shorter, immersive-style educational opportunities for students where **graduates are productive on day 1**.
- Real partnerships with industry to develop **customized curriculum** to fill competency gaps, building a workforce with the **skills employers actually need** (like AI, Natural Language Processing, etc.)
- Developing specific programs that combine industry and technology, where students get **first-hand AI experience** while learning to be agile and adaptable.
- Fostering the **development of skills that can't be automated**: communication, storytelling and leadership – the soft skills we use to launch new companies, engage in diplomacy, etc.
- The **focus on a student experience** that meets their needs (for location, budget, skills learned, and learning style) promotes **higher enrollment rates**.
- Establishing **multi-campus networks** (or partnerships) that students can access globally.

Opportunity: Empowering leaders of tomorrow by developing continual learning experiences.

The Implications

Educators and Health Care – Transforming Together with AI

Highly skilled Health Care professionals, enabled by educated technology professionals leveraging AI, **spend their time on their specialties with patients and patient care**, versus researching or sourcing clinical records or developing insights to enable their decision making and development of a proper course of action.

- Applying clinically intelligent natural language programming (NLP) to decision support and evidence-based medicine to help providers **improve health outcomes and save lives**.
- NLP and machine learning influence on complete and accurate documentation used as a **catalyst for continuous quality improvement in population health, care delivery and operations**.
- Combining historical clinical data, electronic medical record data with health insurance claims and AI to help with predictive diagnosis — and one day potentially treatment options — both of which help to bring down the **total cost of healthcare** across the United States.

Thank you.

Trevor Harris, Principal Architect

OptumServe

T: (703) 582-9509

trevor.harris@optum.com

