HIMSS16
Conference & Exhibition
FEB 29 – MAR 4, 2016 | LAS VEGAS

TRANSFORMING HEALTH THROUGH IT

Uncovering Value in Healthcare Data with Cognitive Analytics

Christine Livingston, Perficient

Ken Dugan, IBM

#HIMSS16

www.himssconference.org

Conflict of Interest

Christine Livingston

Ken Dugan

Has no real or apparent conflicts of interest to report.

Agenda

- Introductions
- Healthcare Analytics Challenges
- Introduction to Cognitive Solutions
- Impact of Cognitive Solutions
- Example of a Cognitive Platform
- Client Successes

Learning Objectives

- Identify emerging trends and challenges in healthcare data management and analytics
- Evaluate the application of cognitive solutions in the healthcare industry
- Show how cognitive analytics is addressing common data challenges in healthcare
- Demonstrate how cognitive solutions can help organizations achieve the Triple Aim

Introductions

Christine Livingston, Perficient

Christine Livingston leads Perficient's IBM Watson practice, combining a background in analytics, unstructured content management, and case management to architect and deliver Watson solutions. Leveraging Watson with a background in engineering, Christine helps healthcare organizations analyze complex problems to uncover hidden insights and trends.

Ken Dugan, IBM

The IBM Watson Channel team was introduced in February 2015 with Ken Dugan as the worldwide leader for solution providers. Ken was also part of the original team when the IBM Watson Group was first introduced in January 2014. Prior to joining The Watson Group, Ken was a solutions architect and account executive and for IBM's Enterprise Content Management Group.

Healthcare Analytics Trends

#1 Integrate clinical and claims data to enable population health management insight

HIMSS16

Healthcare Analytics Trends

#2 Leverage cross-continuum data analysis for improved patient care and outcomes

HIMSS16

Healthcare Analytics Trends

#3 Grow enterprise intelligence to measure and improve patient and organizational health

HIMSS16

Healthcare Analytics Trends

#4 Use predictive analytics to reduce readmissions and improve outcomes

HIMSS16

Healthcare Analytics Trends

#5 Leverage new tools and skills to transform large volumes of data into meaningful information

HIMSS16

Healthcare Challenges

Information deluge

Medical literature doubling every few years

Approximately 700 K new scientific articles per year

Explosion of patient data (EHR, Fitbits, etc)

Demand outstripping supply

American Society of Clinical Oncology suggests that by 2025, overall demand for medical oncology services will grow 42 %

At the same time, supply of hematologists/ oncologists is projected to grow only 28 %

Patients not being offered all treatment options

<20% of cancer patients are offered clinical trials as a treatment option[1-2]
About 20% of cancer patients are eligible for a clinical trial; yet, trial participation is at about 3%
Takes up to 15 years for latest evidence to be fully adopted

Patients expect to participate in decision making around their care

Fewer than half of patients receive clear information on the trade-offs for their treatments and are satisfied with their level of control in medical decisions

New research and advances in medicine increase the complexity of care and research

On a daily basis clinicians are challenged with…

Understanding the patient condition	Formulating treatment options	Selecting personalized treatment plans
…given disparate sources and varying completeness	*…based on latest guidelines and medical literature*	*…based on co-morbidities, conditions, contraindications, side effects for a patient's specific clinical attributes*

On a daily basis researchers are challenged with…

Staying up-to-date on medical literature	Exploring and uncovering novel connections	Generating new insights for future research
… like rapidly increasing volume of medical literature	*…looking across scientific domains for new relationships between diseases, genes and drugs*	*…to develop valid hypotheses with the potential to lead to groundbreaking discoveries*

Today we're in the midst of an information revolution

Health data will grow

99%

88%

unstructured

.

Insurance data will grow

94%

84%

unstructured.

80% of this data has been "invisible" to computers, and therefore useless to us.

Until now.

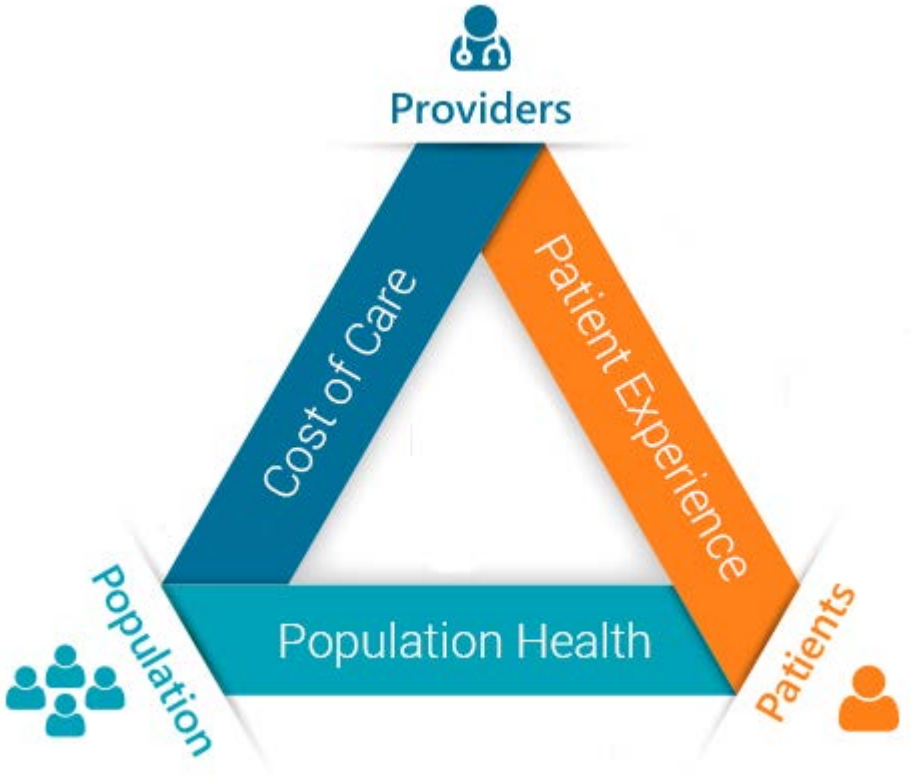
Due to this growth in data the cognitive solutions market is expected to reach $13.7 billion, globally, by 2020.

- Allied Market Research -

HIMSS16

Transforming data into knowledge is critical for achieving the Triple Aim

- Improving the patient experience of care (including quality and satisfaction)
- Improving the health of populations
- Reducing the per capita cost of health care



Expertise matters more today than ever before

HIMSS16

Cognitive systems combine data, information and expertise

Organized Data

APIs

Improve your processes and operations

Create better products

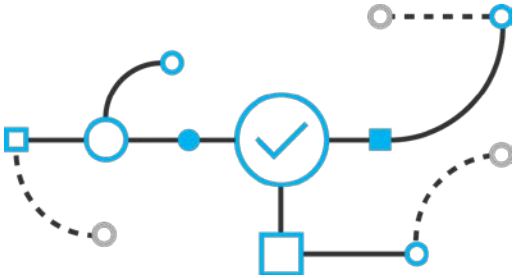
Enable new kinds of engagement

Leverage expertise

Enable new business models

Three capabilities that differentiate cognitive systems from traditional programmed computing systems

Understanding



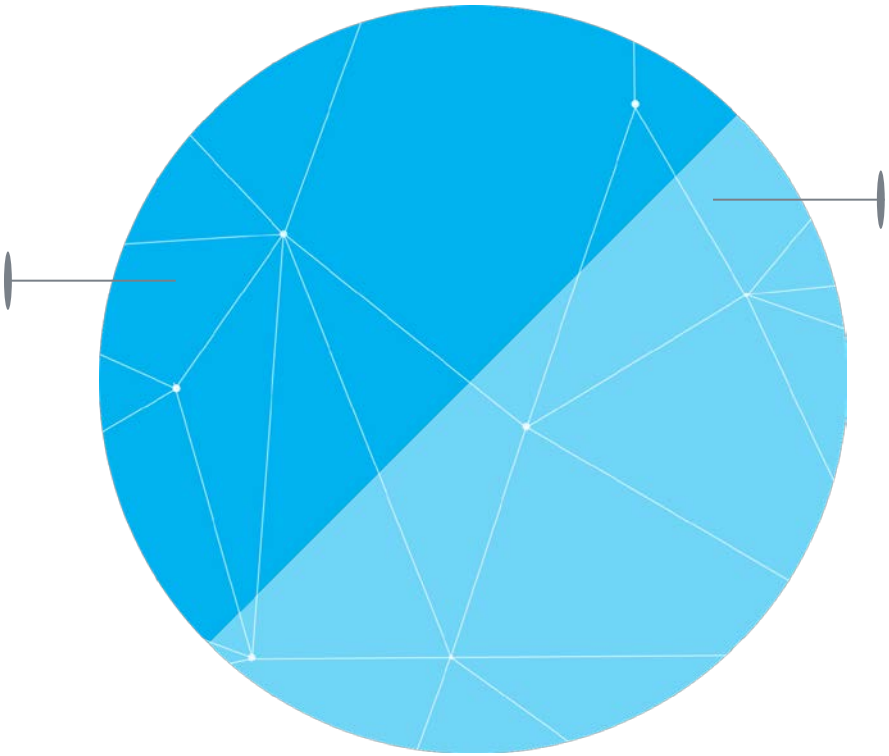
Reasoning

Learning

Cognitive systems are creating a new partnership between humans and technology

Humans excel at:

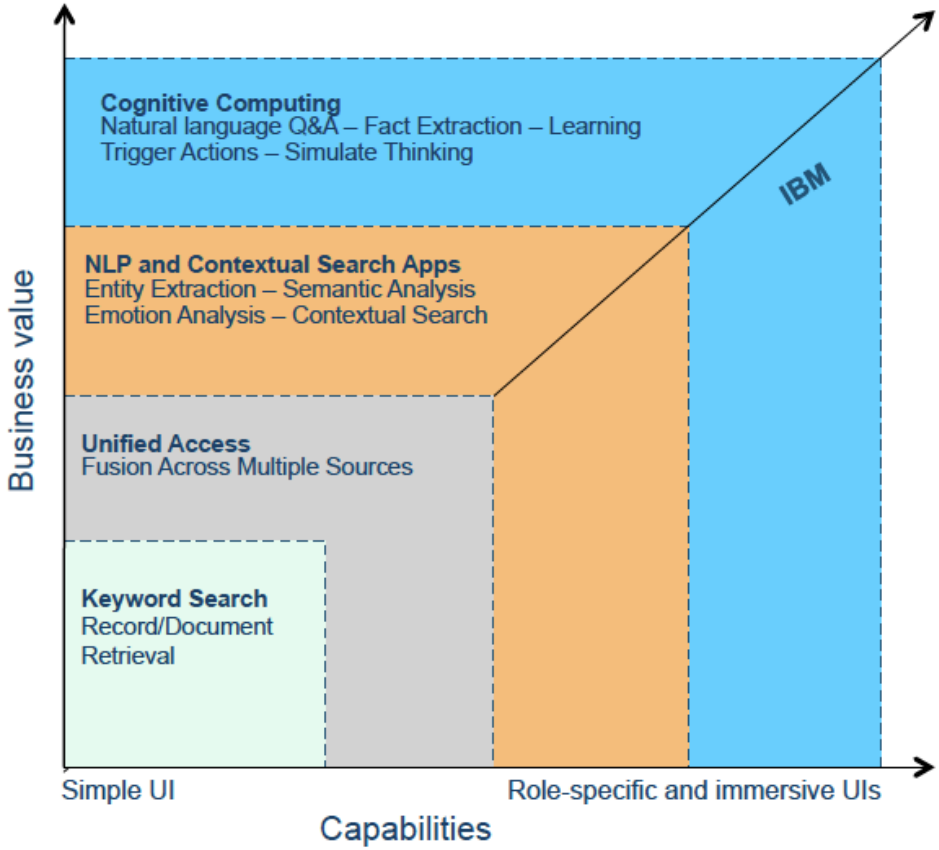
COMMON SENSE
MORALS
IMAGINATION
COMPASSION
ABSTRACTION
DILEMMAS
DREAMING
GENERALIZATION



Cognitive Systems excel at:

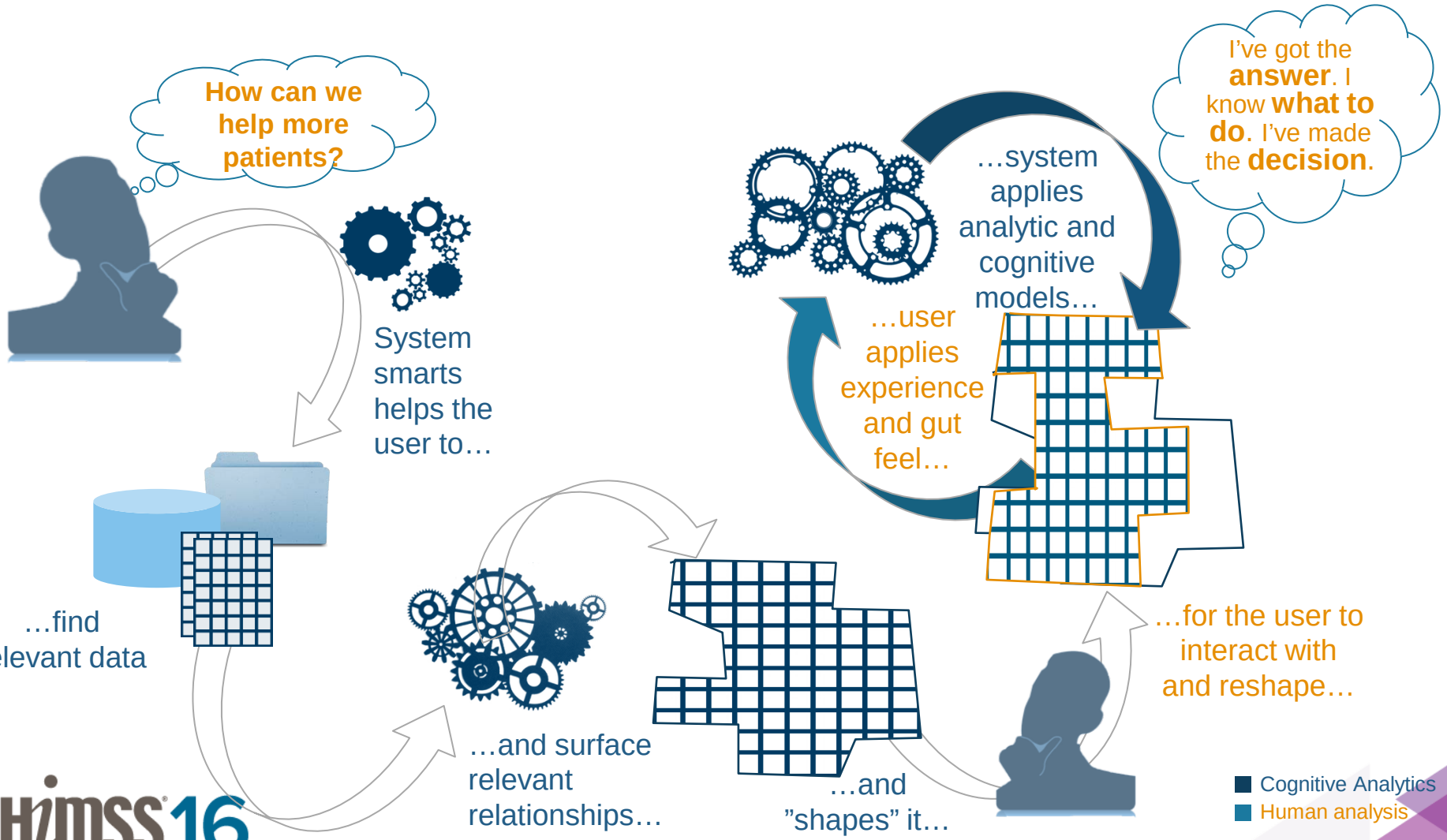
LOCATING KNOWLEDGE
PATTERN IDENTIFICATION
NATURAL LANGUAGE
MACHINE LEARNING
ELIMINATE BIAS
ENDLESS CAPACITY

The evolution toward cognitive computing

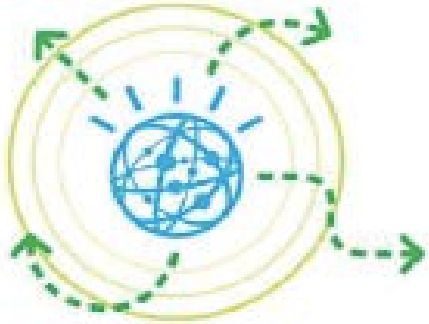


There is a natural and cumulative evolution from basic search, through advanced NLP, to cognitive computing … all with the goal of delivering information and scaling expertise.

Getting Started



Building blocks to cognitive computing



Search

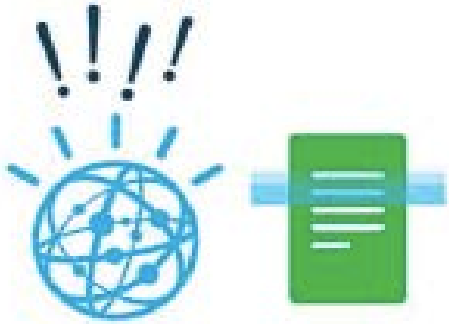
Explore and present relevant data and analytics

Consolidate data silos

Analyze

Analyze unstructured data to reveal new insights

Uncover trends and patterns hidden in unstructured content



Interpret

Interpret information with APIs

Cognitive Exploration

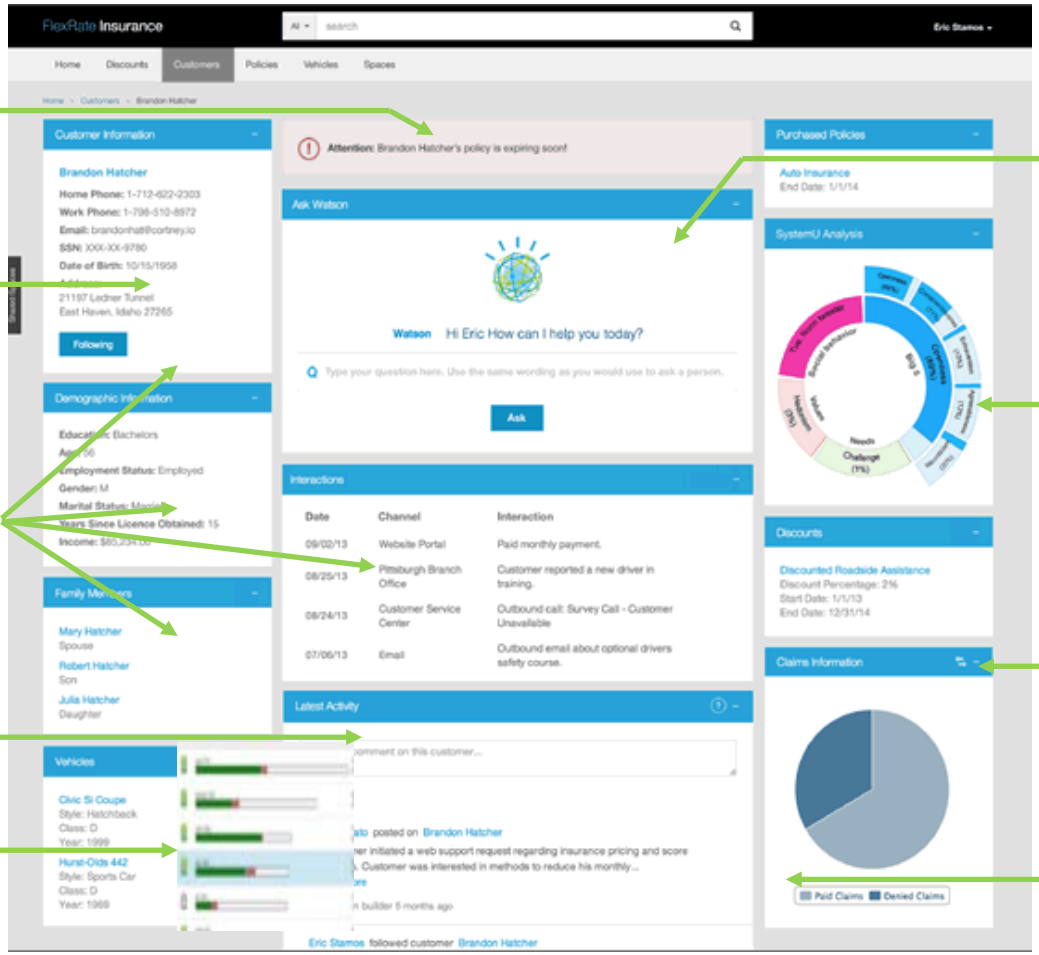
Information, analytics and cognitive insights presented in context

Data-driven alerts

Collaboration and information sharing

Data from enterprise systems such as CRM, DBMS, CMS and SCM

Content analytics to reveal insights from unstructured data



Question & Answer service enables the user to ask natural language

User Modeling service provides the user with a more detailed profile of the client

Analytics, in context

Activity feed for up-to-the-moment information

Content Analytics uses Natural Language Processing

Provides the “why” behind the “what”

Structured Data Analytics Tells us What is happening?

20 percent increase in congestive heart failure patients’ readmission rate

Claims payouts **over reserve by 8 percent**

Decrease in arrests over the past six months as the crime rate slowly rises

Sales missed because of out-of-stock inventory

Content Analytics tells us Why is it happening?

Missed medical facts buried in doctors’/patient notes the indicate relationship of age to readmission

Missed suspicious information in description claims submitted

Resources redeployed incorrectly due to **unrecognized patterns** in crime reports

Customers provide **negative sentiment** when product out of stock

Enable cognitive computing features in apps

Leverage APIs to extend existing healthcare applications


AlchemyLanguage


Concept Insights


Dialog


Document Conversion

Language Translation


Personality Insights


Retrieve and Rank


Natural Language Classifier


Text to Speech


Speech to Text


AlchemyVision


Tradeoff Analytics


AlchemyData News

Unlock the value of information

Cognitive Analytics

Providing unified, real-time access and fusion of big data unlocks greater insight and ROI

- Analyzes structured & unstructured data—in place
- Unique indexing
- Unlimited scalability
- Advanced data asset navigation
- Pattern clustering

- Contextual intelligence
- Text analytics & mining
- Secure data integration
- Query transformation
- Easy-to-deploy big data applications
- User-friendly interface

Improve customer service & reduce call times

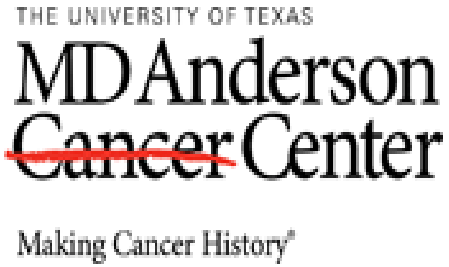
Create unified view of ALL information for real-time monitoring

Increase productivity & leverage past work increasing speed to market

Analyze customer analytics & data to unlock true customer value

Identify areas of information risk & ensure data compliance

Leading healthcare organizations recognize the promise of cognitive analytics



Southern Hospital System
Reducing CHF readmissions to improve care

The need

This Hospital System strives to reduce the occurrence of high cost Congestive Heart Failure (CHF) readmissions by proactively identifying patients likely to be readmitted on an emergent basis.

The solution

Cognitive analytics will help to better target and understand high-risk CHF patients for care management programs by:

- Utilizing natural language processing to extract key elements from unstructured History and Physical, Discharge Summaries, Echocardiogram Reports, and Consult Notes
- Leveraging predictive models that have demonstrated high positive predictive value against extracted elements of structured and unstructured data
- Providing an interface through which providers can intuitively navigate, interpret and take action

The benefits

- They will be able to proactively target care management and reduce re-admission of CHF patients.
- Teaming unstructured content with predictive analytics, Seton will be able to identify patients likely for re-admission and introduce early interventions to reduce cost, mortality rates, and improved patient quality of life

A Healthcare and University Partnership Unlocking Biomedical informatics answers

The need

Existing Biomedical Informatics (BMI) resources were disjointed and non-interoperable, available only to a small fraction of researchers, and frequently redundant. No capability to tap into the wealth of research information trapped in unstructured clinical notes, diagnostic reports, and more

The solution

Cognitive analytics to leverage structured and unstructured information by:

- Extracting key elements from clinical notes, patient notes and records and other unstructured content
- Quickly processing and analyzing huge volumes of structured and unstructured data

The benefits

- Researchers now able to see new trends, patterns and find answers in days instead of weeks or months eliminating manual methods also enables new grant revenue
- Researchers can quickly answer key questions previously unavailable. Examples include *Does the patient smoke?, How often and for how long?, If smoke free, how long? What home medications is the patient taking? What is the patient sent home with? What was the diagnosis and what procedures performed on patient?*

A Healthcare Organization Implements Proactive Patient Care

The need

Medicare and Medicaid will begin charging penalties for what they see as excessive hospital readmissions. For many hospitals facing readmission rates for heart conditions as high as 25 percent, those Medicare and Medicaid readmissions alone will total more than USD1 million in fines.

One hospital system in the United States realized that a key to reducing readmissions was to ensure that patients follow up on tests and treatments after discharge, staying healthier and reducing the likelihood of further adverse health events such as infection and relapse.

The solution

- Hospital staff can now use the solution to analyze unstructured text for key discharge terminology, convert that text into structured data, and generate alerts and reports for patients' primary care doctors and other caregivers
- Clearer data and better communication between health professionals helps ensure that patients keep their follow-up appointments and complete their post-discharge treatment
- Not only can patients stay healthier, but the hospital can also save millions of dollars on costly hospital readmissions.

The benefits

- Expected to prevent approximately USD1.1 million in Medicare and Medicaid penalty fines in areas of treatment with high readmission rates
- Expected to significantly reduce the overall number of hospital readmissions
- Expected to help improve recovery speeds by helping more patients follow up on treatments after discharge
- Expected to improve communications between staff, patients and follow-up caregivers by converting free text into searchable, reportable structured data

HIMSS16

Questions

Christine Livingston, Perficient

Christine.Livingston@Perficient.com

Available at the Perficient booth #2871

Ken Dugan, IBM

ken.dugan@us.ibm.com