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Harnessing the Power of Data in Health Care: Data as a Strategic Asset

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Abstract

Harnessing the Power of Data in Health Care: Data as a Strategic Asset

A big-data revolution is underway in health care, driven by an exponential growth in data from the digitization of existing data and the generation of new data. With this data expansion, health care organizations are ***harnessing the power of data*** to improve consumer & provider engagement, deliver better health outcomes, and drive down costs.

Many organizations are finding success in using advanced analytics to deliver new value, but it is not all about the analytic models. The growth and complexity of data created by and available to health care organizations requires that data is ***managed as a strategic asset***. This has put a greater emphasis on data governance, data quality and integrated data solutions within health care organizations to ensure they can continue to meet customer expectations, improve service delivery, and enable value creation opportunities through the use of advanced data analytics.

In this presentation we will examine ways in which these rich data assets are being leveraged and what organizations are doing to manage this health care "data tsunami".

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A big-data revolution is under way in health care

Health care is experiencing exponential growth in data from the digitization of existing data and the generation of new data

2012

500

petabytes

50%

% of data available that is analyzed for decision making[2]

Worldwide health care data is expected to grow to **50 times** the current total[1]

2020

25,000

petabytes

73 days time it will take for health care data to double[3]

1) Big Data in Health Care Hype and Hope. Dr. Bonnie Feldman, Business Development for Digital Health. October 2016
2) Cloudera. Mike Olsen, CTO. Big Data Day Presentation. January 30, 2017
3) US National Library of Medicine. Challenges and Opportunities Facing Medical Education. 2011

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Payers and Providers are digitizing their patient records at an increasing rate…

Electronic Health Records have replaced traditional handwritten notes and filing systems

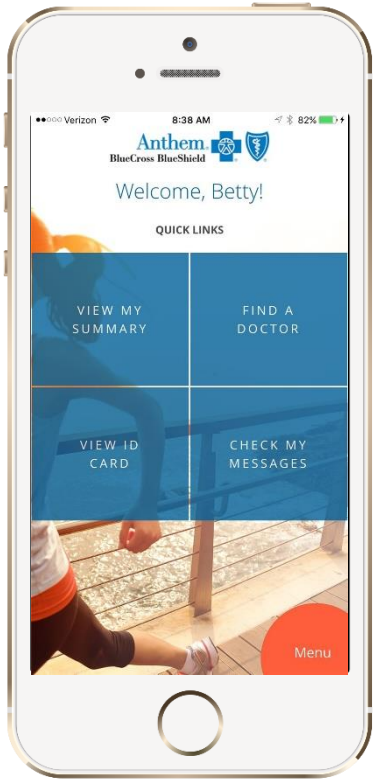
In 2009, only 16% of U.S. hospitals were using an EHR…by 2013, that grew to 80%[1]

This translates into a cultural shift that will drive and advance data-driven medicine, increase consistency in care and reduce cost of care

1) Business Insider. Internet of Things in healthcare: Information technology in health. December 2016

…and consumers are generating new data through the use of mobile apps and wearables for personalized health management

mHealth, freeing health care devices of wires and cords



In 2015, **2/3** of Americans favored digital health management over physical[1]

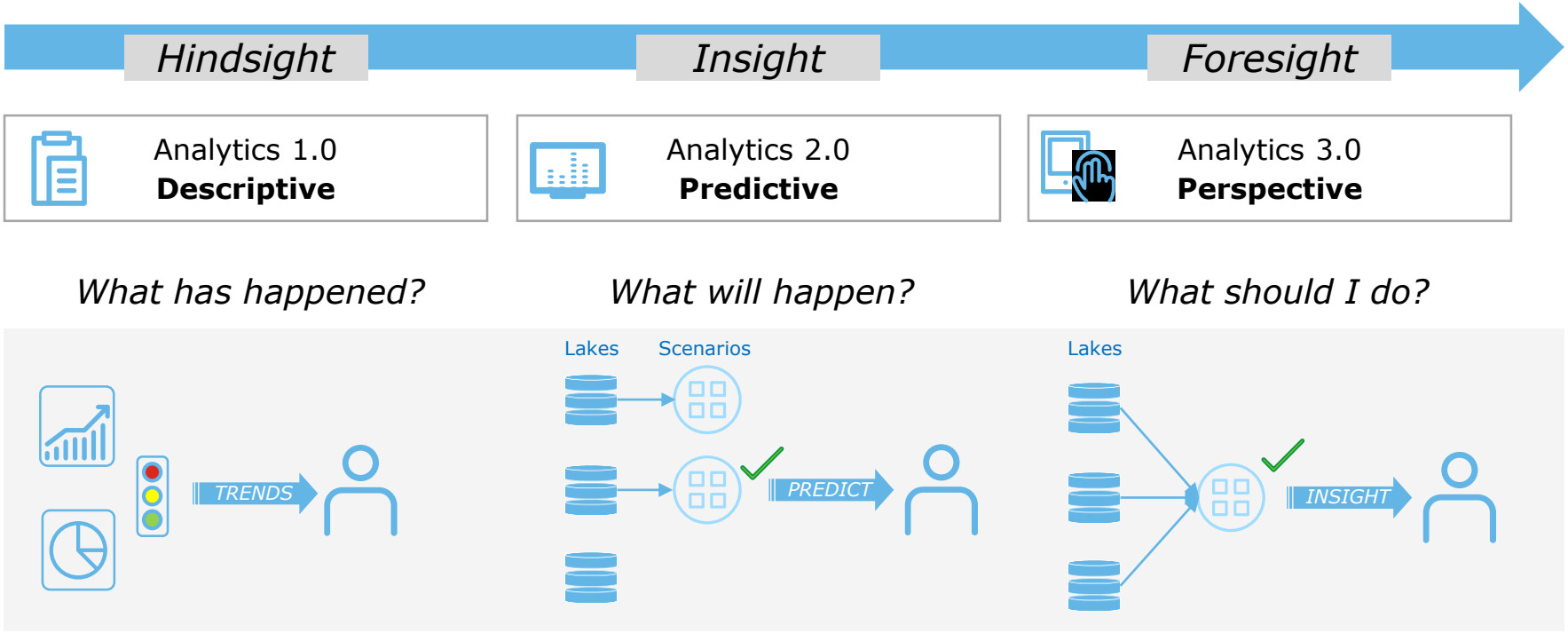
79% Willing to use a wearable device to manage their health[1]

45% Willing to track symptoms via digital device[1]

43% Willing to manage a personal health issue or condition[1]

1) ITN Online. Two-Thirds of Americans in Favor of Digital Personal Health Management. February 2015

The resulting “Data Tsunami” is an opportunity to evolve analytics to aggregate, analyze, and act in powerful ways



The health care industry could potentially save **$300 billion** annually by leveraging data and analytics[1]

1) Gartner. Market Trends: Applying Analytics in Health Care. March 2015.

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Harnessing the power of data

Health care organizations are harnessing the power of big data through analytics to improve patient outcomes, reduce costs, and increase revenue

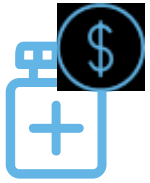
Claims Efficiency

Improving performance with cognitive analytics & robotics automation

Value-Based Care

Proactively identify individuals who benefit from preventative care or lifestyle changes

Participatory Health Care



Collect data on medical procedures to help patients determine the care protocol that offers the best value

Support Health Initiatives

Use mHealth to help manage care, locate providers, and improve health

Predict & Minimize Fraud

Advanced analytics for fraud detection and prevention and to check the accuracy and consistency of claims

Revolutionizing claims processing through robotic automation

Industry direction is to streamline claims processing and applying cognitive solutions to intelligently ingest, process, and route claims more efficiently

Today's Challenge	A Cognitive Solution	Savings & Efficiencies
• Paper and manual processes	• Intelligent OCR	↑ Increase in automated claims processing
• Best guess OCR	• Robotic Process Automation	↓ Reduction in hours spent adjusting scanned claims
• Time intensive process	• Intelligent Context Aware Routing	↓ Reduction in payment penalties

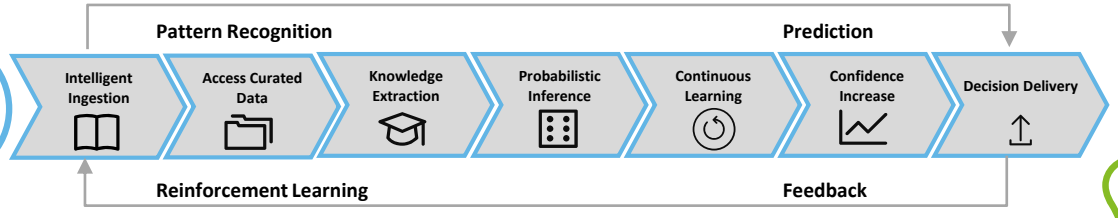
Traditional Approach

Manual, Inaccurate Methodologies

Rules Base Opinions in **10 Days**

Cognitive Automation

Automated, Efficient, & Streamlined



***Evidence Based Conclusions in* 10 Minutes**

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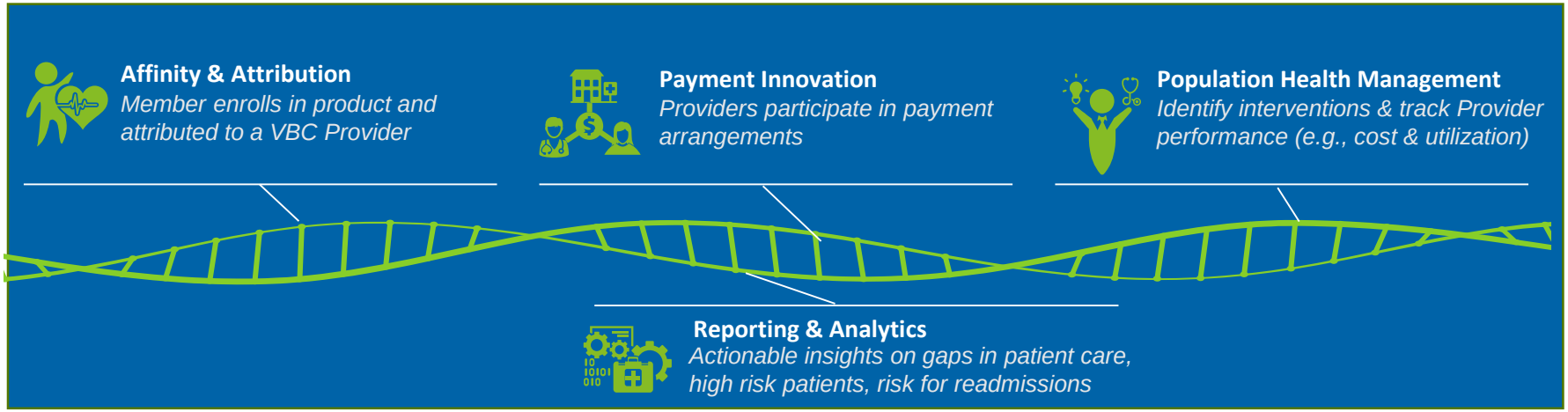
Value-Based Care: Better care, better health, lower costs

Redesigning care delivery models to improve quality care, improve health outcomes, and reduce costs through integrated care management and risk stratification



Value Based Care Program

8 million + attributed members

78k+ providers enrolled

What's next for Analytics:

- **COGNITIVE INSIGHTS** to build longitudinal member views based on structured and unstructured data
- **COGNITIVE ENGAGEMENT** to personalize member care plans
- **MACHINE LEARNING** to train models and optimize programs

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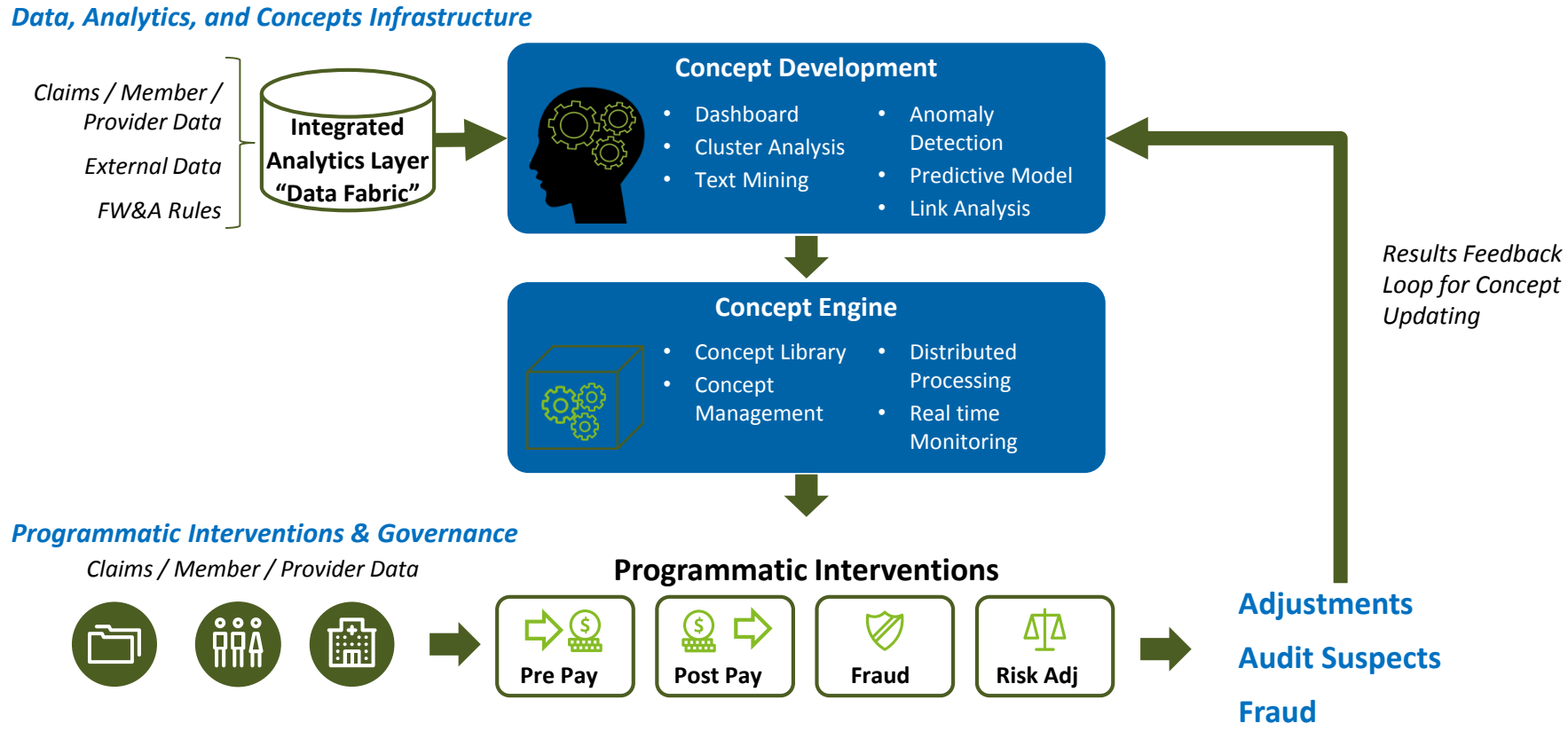
Reducing fraud, waste and abuse through analytics

Leveraging analytics to identify fraud detection across member, provider, and to check the accuracy and consistency of claims



The value: **80% savings** from avoidance and **90% reduction** in internal efforts

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Let's consider the following about data….

Incomplete & "Dirty Data" account for 62% of quality issues.[1]

Through 2015, more than 90% of business leaders will view content information as a strategic asset, yet fewer than 10% will quantify its economic value. [2]

By 2016, 30% of businesses will have begun directly or indirectly monetizing their information assets. [2]

By 2020, information will be used to reinvent, digitalize or eliminate 80% of business processes and products from a decade earlier. [2]

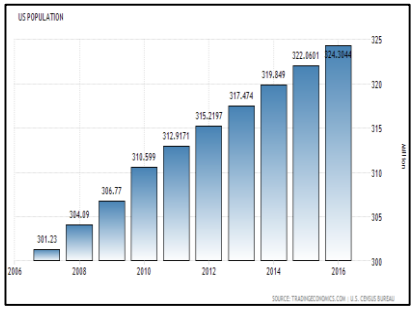
By 2020, 30% of data will be prescribed provenance, business, security and value metadata at the time of its creation. [2]

By 2021, in 75% of large enterprises will have central data organizations seen as a mission-critical function, comparable to IT, business operations, HR and finance. [3]

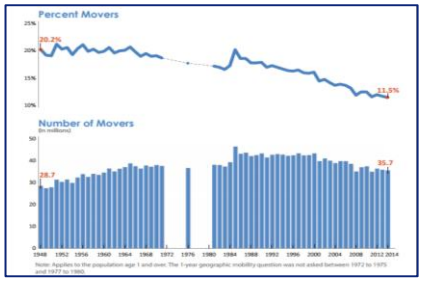
1) CEB Tower Group, Operations Quality Council
2) Gartner, "Why and How to Measure the Value of Your Information Assets"
3) Gartner, "How a Chief Data Officer Should Drive a Data Quality Program"

What is driving many of our data challenges today?

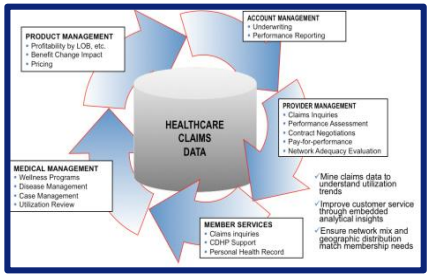
Increasing Data Volumes



Continuous Data Changes



Complex Data Supply Chains



Leading To

Data "Fr agm ent a tion" & Quality Degradation Over Time

Active governance & management of data is critical in the healthcare industry in order to identify & mitigate data issues; slowing the degradation of quality.

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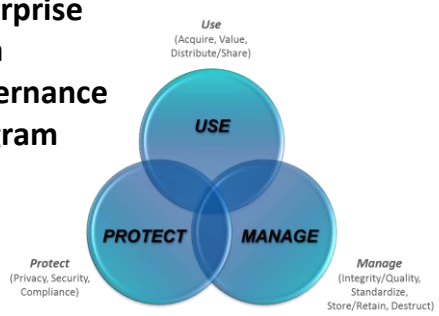
Data as a Strategic Asset

Organizations are approaching management of data in various ways, but generally the themes are consistent

DATA GOVERNANCE

Enterprise Data Governance Program



Data Governance Council or Chief Data Office is accountable for defining & effectuating a data governance strategy & program

DATA MANAGEMENT

Data Quality

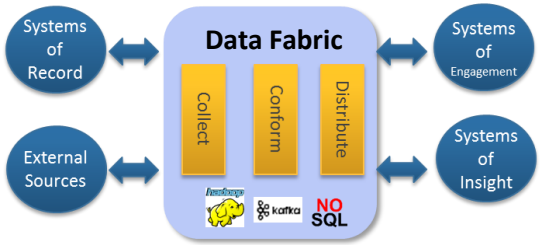
Data Catalog/Metadata

Master Data Mgmt.

Operational Governance & Mgmt. Processes

Data management capabilities to enable a more integrated & collaborative data management & governance operating model

DATA FABRIC

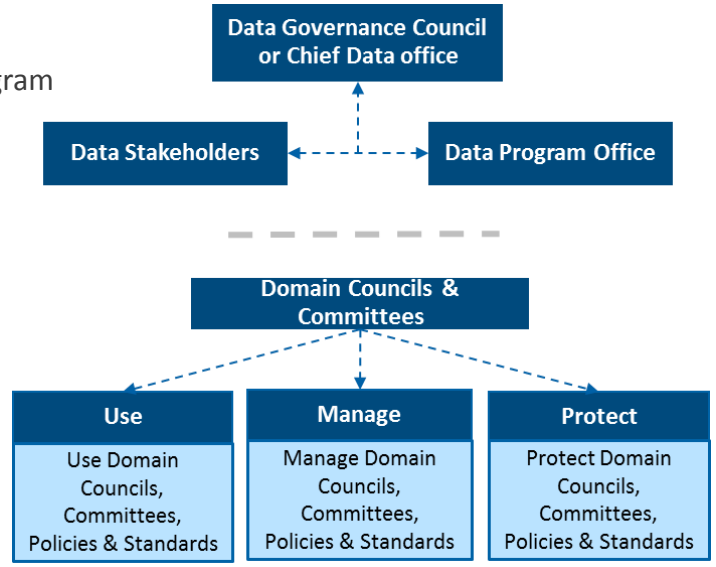


The Data Fabric is the **central point of integrating and sharing** uniform and consistent data across the enterprise

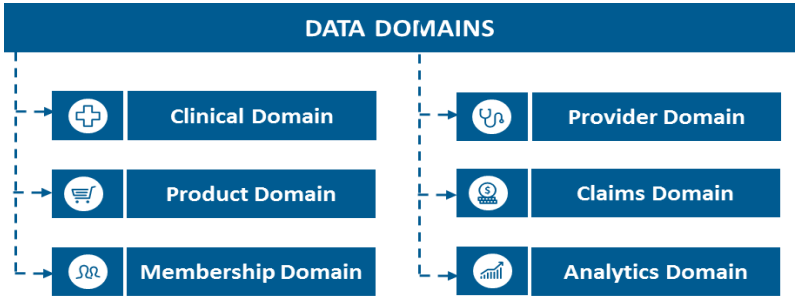
Data Governance

Data Governance requires top-down management, but activation happens with those that are closest to the data

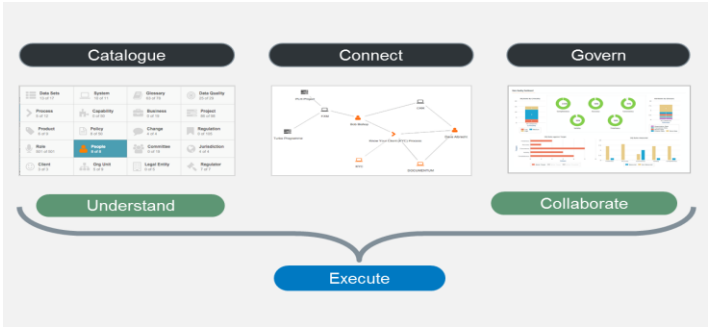
Strategic
(Council, Program Office, Policy)



Active Management
(Data Owners, Stewards, Domain Committees)

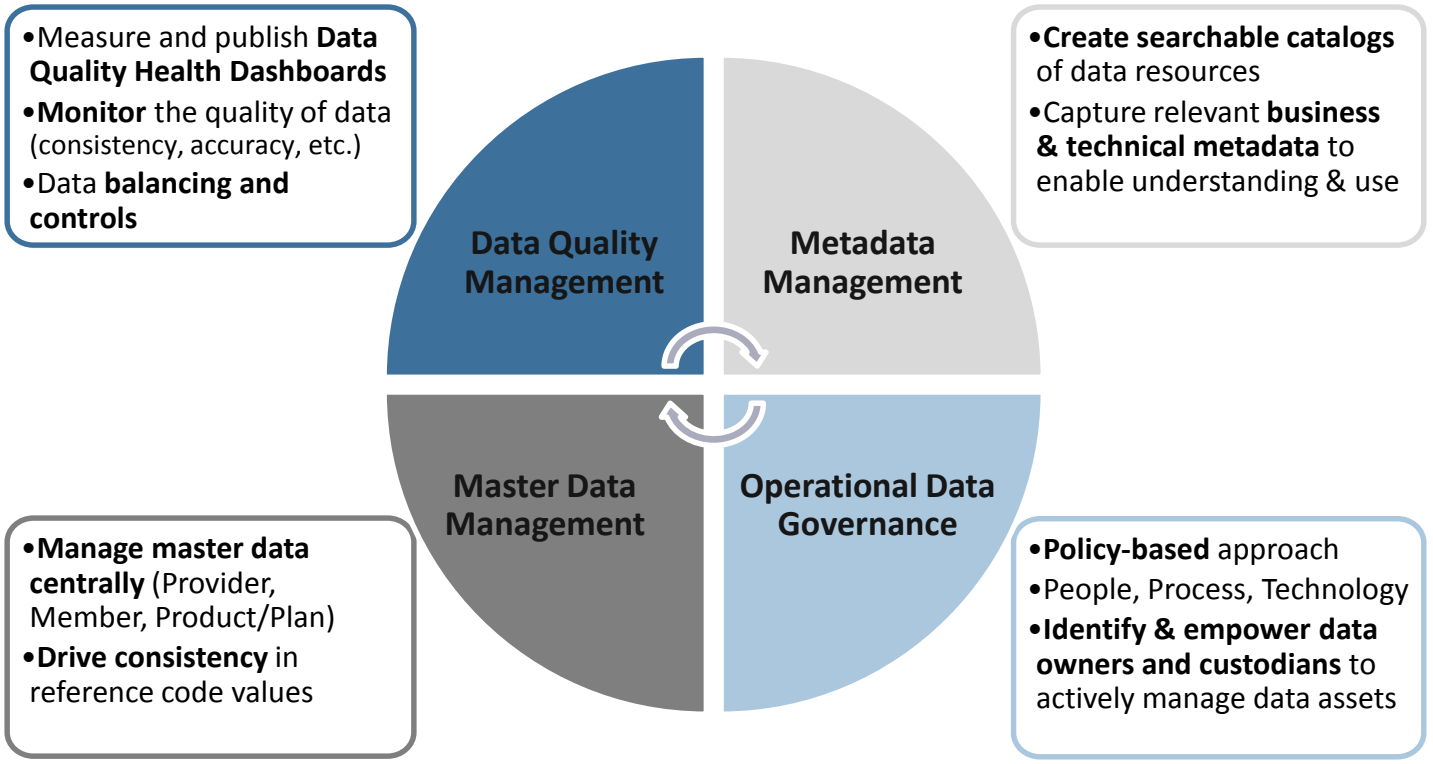


Processes & Capabilities
(Technology, Standards, Guidelines)

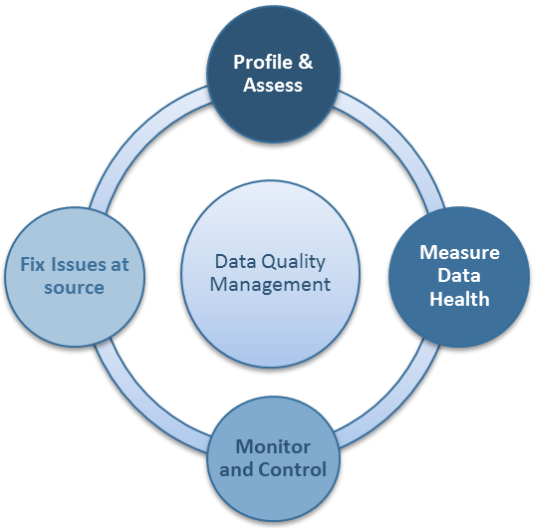


Data Management

In order to leverage data as an asset, Data Management disciplines need to work in concert with each other



Data Quality Management



Profile & Assess:
Profile data to identify data accuracy & completeness issues. Assess & research where the failure points or root causes exist.

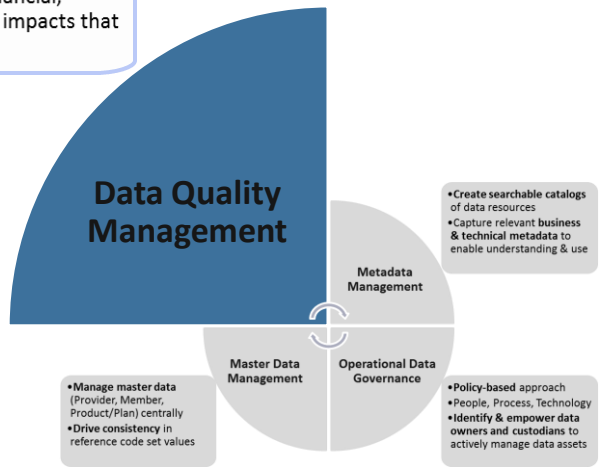
Measure Data Health:
Deploy Data Quality Health Dashboards driving adoption across the enterprise. Tie quality measures to value (Op. Gain) & performance.

Monitor & Control
Implement data balancing checks on data flows between systems. Monitor using control reports & scorecards with well defined data quality metrics (measures, thresholds).

Fix Issues at the Source:
Require ownership of data at source to reduce risk of financial, operational, regulatory, legal, and reputational financial impacts that occur downstream.

- Measure and publish **Data Quality Health Dashboards**
- **Monitor** the quality of data (consistency, accuracy, etc.)
- Data **balancing and controls**

- Focus on business pain points and strategic initiatives where value can be realized
- Empower a Data Quality Center of Excellence to drive adoption of tools and practices
- Drive data ownership and accountability through Data Governance policies & roles
- Measure Critical Data Elements (CDEs) & publish via Data Quality Dashboards & Reports



Meta Data Management

Create a searchable catalog of business & technical metadata to enable data discovery

Imagine shopping at a grocery store that has items but no labels

Labels help us find what we need

This applies to our data as well

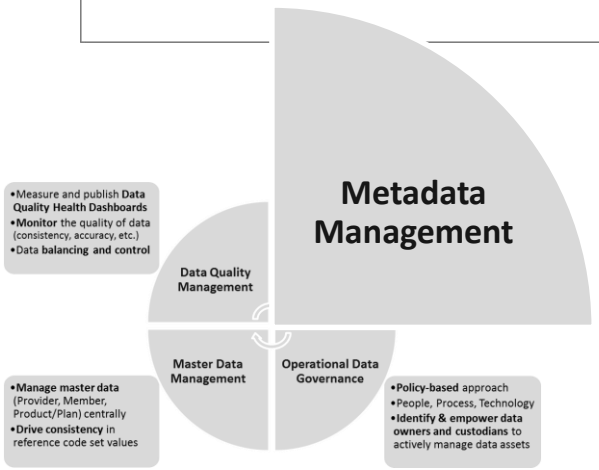
```
CREATE TABLE EMPLOYEE (
    employee_id       INTEGER NOT NULL,
    department_id     INTEGER NOT NULL,
    employee_fname    VARCHAR(50) NULL,
    employee_lname    VARCHAR(50) NULL,
    employee_ssn      CHAR(9) NULL);

CREATE TABLE CUSTOMER (
    customer_id       INTEGER NOT NULL,
    customer_name     VARCHAR(50) NULL,
    customer_address  VARCHAR(150) NULL,
    customer_city     VARCHAR(50) NULL,
    customer_state    CHAR(2) NULL,
    customer_zip      CHAR(9) NULL);
```

Technical metadata describes the structure and format of data

Term	Definition
Employee	An employee is an individual who currently works for the organization or who has been recently employed within the past 6 months.
Customer	A customer is a person or organization who has purchased from the organization within the past 2 years and has an active loyalty card or maintenance contract.

Business Metadata describes the business definitions, rules and context for the data



- **Create searchable catalogs** of data resources
- Capture relevant **business & technical metadata** to enable understanding & use

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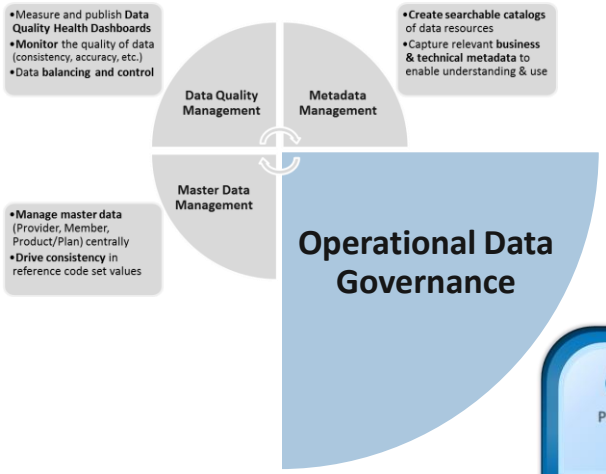
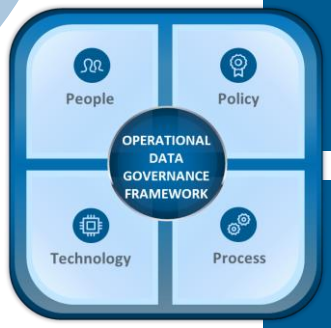
Operational Data Governance

Activities relating to the use, management and protection of data. An effective program includes a governing body, defined processes and policies.





- **Policy-based** approach
- People, Process, Technology
- **Identify & empower data owners and custodians** to actively manage data assets

People

- Defines the responsibilities and rights of key roles in the governance of data
- Details the accountabilities and decision making authority of data governance roles

Policy

- Provides structure to implement effective data management
- Establishes guidelines and principles for enforcing data management standards

Process

- Defines the detailed data management activities for respective roles ensuring governance policies and standards are complied with across the organization

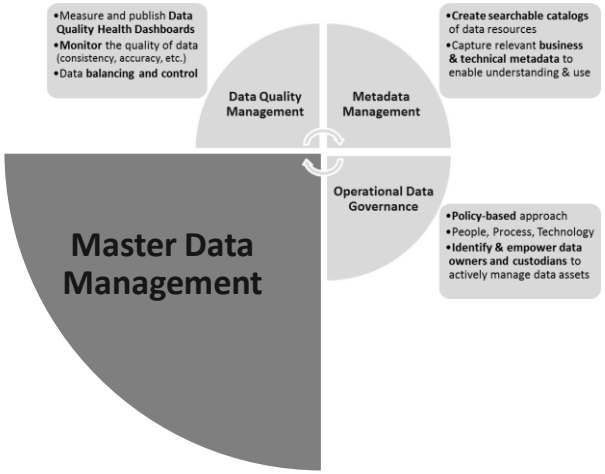
Technology

- Administer & manage technologies, vendors and systems involved in the management of data
- Interfaces between data management tools, end users and associated systems

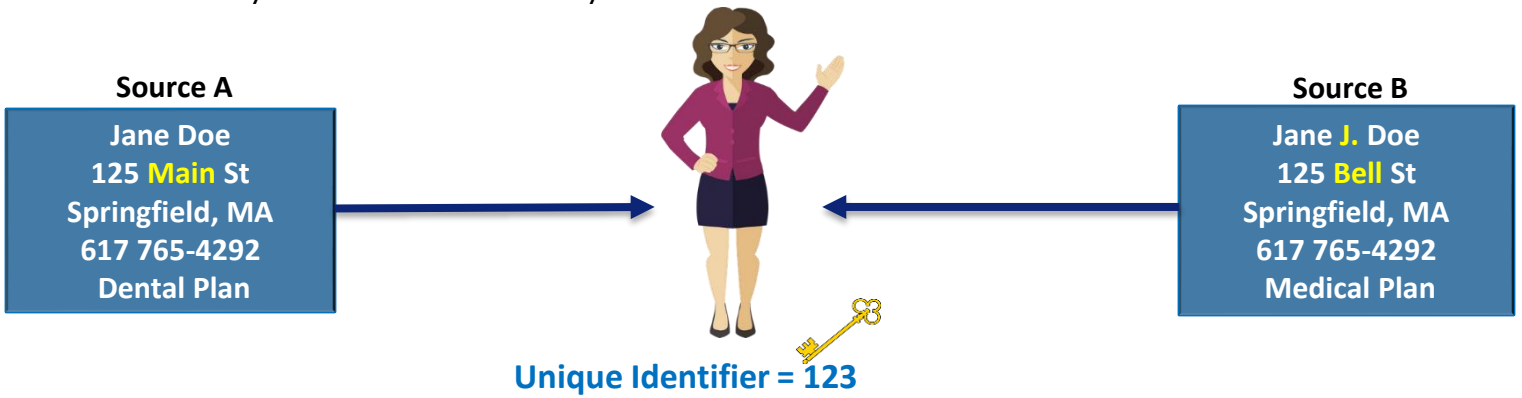
Master Data Management

In large organizations, a member or provider can have interactions (or transactions) with many business areas (and systems) that could result in multiple unrelated records

- **Manage master data centrally** (Provider, Member, Product/Plan)
- **Drive consistency** in reference code values



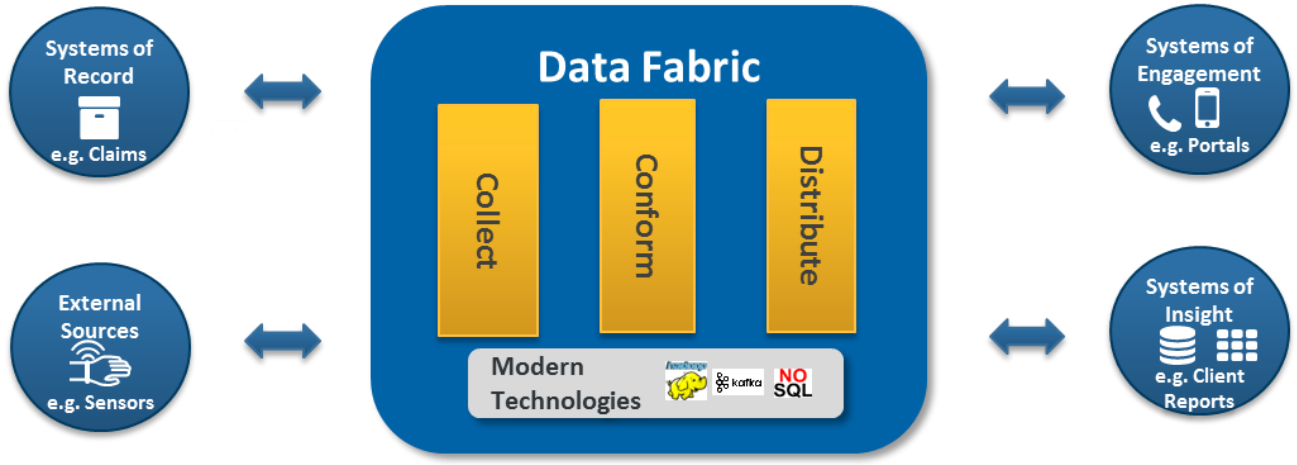
- The unique identifier is the key that tells us that both Jane Doe records belong to the same person and that Jane Doe has a dental and a medical plan.
- Master Data Management solutions provide the ability to capture key information about a customer and the identification of a single customer across many business areas and systems.



Enterprise Data Fabric

Health care organizations will benefit from establishing a "Data Fabric" in order to:

- **Simplify** the data ecosystem by creating a central point of collection, conformance & distribution that integrates new data types with existing "administrative" data
- **Modernize** using open source and low cost scalable technologies
- **Govern** data and its quality, focusing on points of data creation, collection, conformance and consumption



The Data Fabric becomes the central point of integrating and sharing uniform and consistent data across the enterprise.

In the age of data & digital disruption…

Organizations need to develop new capabilities that harness the power of data while preparing to evolve existing capabilities

Traditional Focus		The New Data World
Retrospective Analysis Use of descriptive analytics & reporting to described "what happened"	→	**Insights & Foresight** Advanced Analytics for "what will happen" (predictive) & "what should I do" (perspective)
Batch Data Processing Daily, weekly and monthly processing cycles tied to rigid business processes	→	**Real-time insights & decisions** Ingestion and processing of data pipelines to enable quicker and more relevant insights
Functional Data Silos Data imbedded in tightly coupled functional applications	→	**Integrated Data Assets** Integrated "data fabric" to enable enterprise grade data operations & analytics
Passive Data Monitoring Management of data at rest without monitoring end to end data lifecycle	→	**Active data governance** Proactive data management and data quality controls for use and distribution - 'Fit for Purpose'

Change is NOT a choice but an imperative; organization must innovate and deliver solutions, faster, to meet market demands. This requires a fundamental shift in how we manage these strategic data assets.

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Thank You!

Christopher Joyce

Vice President Enterprise Data Solutions
Anthem, Inc.

Christopher Joyce is vice president of enterprise data solution at Anthem, Inc. He oversees enterprise-wide data platforms including data warehouse strategy and technical development, semantic data layer integration and design, data management and development, advanced analytics platforms and business intelligence capabilities.

Christopher is a leader in the technology team that is charged with providing one of the industry's most comprehensive data analytic platforms by building the engine that will help deliver improved and more relevant health care outcomes. Christopher's team is constructing a fully integrated enterprise data fabric and analytic capability, built on a best-in-class data infrastructure, to support the operational, advanced analytics and reporting needs for Anthem.

Prior to joining Anthem in May 2014, Christopher served as managing director of Enterprise Data for TIAA-CREF, where he was responsible for the delivery and operations of the firm's data assets and capabilities. In this role, he focused on strategic leadership for the company's data transformation program and execution of its data strategy. He also played a key role in delivering the organization's data governance and management practices.

Christopher's career spans almost 25 years in information technology management, including architecture, governance, analytic platform design & development, and operations. He has held various roles at several companies including JP Morgan, Bear, Stearns & Co. and AT&T. As a transformational leader, Christopher has led global teams focused on collaboration and delivering business value through innovative technology solutions and architecture-based initiatives.

Christopher has a Bachelor of Science in Management Information Systems from Penn State University and a Master of Business Administration from Seton Hall University. He also serves on the Board of Advisors for the New Jersey Institute of Technology (NJIT) College of Computing Sciences.