Big Data is now a proper noun

Randy Olinger – Optum
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Introduction - Optum

- Largest (by far) health services company in US, probably the world.
- Parent company 2015 revenue $157B, Optum $67B.
- Exploiting the convergence of data and care models
  - Outreach and Wellness Programs
  - Contract Claim Processing
  - Pharmacy Benefits
  - Optumhealth Bank (HAS)
  - Revenue maximization
  - General Consulting
  - Direct Care Delivery
  - Optum Labs
- All of this is data driven, and compliant with a myriad of privacy and other regulatory statutes.
- Strong Culture of innovation and “do it yourself”
Some Business Challenges

- Multiple Identities of a constituent
- Data regulations around privacy and retention
- Consolidation of the industry (500 acquisitions over 10 years)
- Untapped value of integrated data
Greg was recently diagnosed with diabetes and he calls Optum to ask a benefit related question.

Optum identifies gaps in care and program opportunities. Optum combines all opportunities, applies behavioral segmentation and offer management’s decisioning engine to determine the best and most relevant offers for Greg.

Greg agrees to enroll in the Diabetes program. The Care Advocate then looks on her Dashboard to see the most relevant offers for Greg and sees there is a Lower Cost Alternative for his current medication. Greg saves money on his prescription.

Optum’s Care Advocate answers Greg’s question and lets him know that Optum has a program to help him manage his diabetes. She also finds out that Greg has depression and reaches out to a behavioral care advocate for a consultation.

Greg’s Optum nurse works with him to understand his goals and help him manage his diabetes. She shares Greg’s care plan with his doctor to ensure they have the best plan of care for Greg and his lifestyle.

Greg is happy. Optum and his doctor see him holistically and consistently and are helping him manage his diabetes condition.
Centralizing Consumer Data to Enable Whole Person Care

TODAY
Each project brings in their own data elements into disparate sources resulting in **duplicative capital spend** and decentralization of consumer data. **We cannot get the holistic view of a member**.

We do not have a holistic view of the consumer:
- Unable to realize clinical integration
- Client data is scattered across the organization
- Unable to uniquely identify our consumers
- Unable to create a personalized experience

To improve the Consumer Experience and enable Clinical Synchronization, we are delivering the Optum Big Data Platform. BDP will centralize consumer data so we can see the whole consumer, personalize our interactions with them, improve clinical outcomes and reduce medical costs.

Multiple activities need the same data! and Consumer Data needs to be in a central location to enable the delivery of whole-person integrated care:
- Clinical Synchronization
- Personalized Optum digital experience
- Patient Center Care Model Technology
- Advocacy
- Offer Management
- Preference Center

**360° View of Consumer**
- Increased Consumer Engagement
- Improved Clinical Outcomes
- Reduced Medical Expenses
Consumer Data Strategy

Integrated 360° View of the Consumer

**SEGMENTATION:** Propensity to Engage, Health Ownership Segmentation

**SOCIOECONOMIC:**
- Demographics:
  - Ethnicity, Gender

**CONTACT INFO:**
- ID #s, Name
- Phone, Email Address

**MEDICAL:**
- Diagnosis, Symptoms
- Programs, Labs, Imaging, Biometrics
- Notifications, Assessments

**BEHAVIORAL:**
- Inpatient
- Outpatient
- Diagnosis
- Lifestyle choices
- Substance Abuse

**PREFERENCES:**
- Opt-In/Opt-Out
- Do Not Call
- Communication

**PHARMACY:**
- Prescriptions, Rx fills
- Medication reviews
- Contraindications
- Lower Cost Alternatives
- Retail to Mail

**EMPLOYER HISTORY**

**PROVIDER HISTORY**

**BENEFITS INFO:**
- Benefit Plans
- Eligibility
- Enrollment
- PCP

**MEDICAL:**
- Diagnosis, Symptoms
- Programs, Labs, Imaging, Biometrics
- Notifications, Assessments

**CLAIMS:**
- Cost Utilization

**HEALTH FINANCES:**
- HSA, FSA, Incentives
- Billing
- Deductibles

**OTHER FINANCES:**
- Credit information

**CLAIMS:**
- Cost Utilization

**HEALTH & WELLNESS COACHING**
- Appointments, Conversation, Enrollment

**IVR TOUCH POINTS**

**SOCIAL MEDIA**

**CUSTOMER SERVICE ACTIVITY**

**VISION and DENTAL**

**CLINICAL OPPORTUNITIES:**
- Gaps in Care
- Clinical Program Referrals
- Wellness Opportunities
- Risk Scores
- Lifestyle Changes

**CAMPAIGN HISTORY / CONTACT HISTORY:**
- Letters, Digital

**DIGITAL ACTIVITY:**
- Optum ID, Web, Mobile Activity

**CLINICAL OUTREACH HISTORY**
- Activity Tracking, Progress, Alerts
- Work Queue Status

**OPTUM**

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New Solutions – Building the Foundation

• Migrate the hard core analytics to parallel open source systems (Hadoop, Spark, R, Kibana)

• Significant investment in visualization capabilities
  – Detect data quality problems sooner
  – Find lost revenue opportunities
  – Geographically represent cost or other trends

• Deduplication of identities
  – Also called Master Data Management, or “The Belly Button ID”
  – Consistent identifier over the lifetime of the patient or other entity

• Longitudinal and comprehensive consumer data record
  – All ingested data transformed into a canonical model, matched to the MDM, and stored in a data lake
  – Transformed data also stored in a NoSQL document oriented database with data level security.
  – Data can be used for any legitimate need in the organization, such as interventions, gaps in care closure, or the digital experience.
  – Ultimately consolidate over 20 disparate warehouses resulting in reduced complexity, improved customer experience, and lower costs.
Common Foundation Across Transformation Programs

Key Enterprise Programs (Products and Applications)
- Clinical Synchronization (A4Me, Advocacy, Rx Touchpoints, MBI, Total Population Health, Telephonic Coaching)
- Consumer Engagement (Personal Dashboard, Rally, Marketing Campaigns & Offers, Optum Market)
- Patient Centered Care Model (PCCM)
- Rx Integration

Program Tools

Analytic & Insights
- ID/STRAT | Segmentation | Modeling
- Facts | Opportunities | Risks | Scores | Segments

Integrated View of Consumer
- Contact Services | Clinical Services | Claims
  - Contacts | Medical | Behavioral | Rx | Provider

Individual MDM
- Individual ID | Eligibility | Enrichment | Consumer/Provider | Golden Record
  - Common member identifier, Common provider Identifier

Provider MDM

Data Fabric, Data lake

Data Management
- Intake | Standardization | Quality | Storage | Access
  - All Data

Drive a common Big Data Platform build to accelerate key enterprise transformation programs and maximize capital
OBDP Reference Architecture

In-Bound Interactions
- Portals
- Chat
- Letters
- eMail
- Mobile App
- Fax
- Voice

Out-Bound Interactions
- Messaging
- Chat
- Letters
- Voice
- Fax
- Mobile App
- Campaign Management
- eMail

Optum ID Services
- Multi Factor Authentication
- Identity Management
- Branded Identity
- Single Sign On (SSO)
- Call and Voice Authorization
- External Identity Integration

Enterprise Applications/Services
- Context Based Rules
- Continuous Monitoring
- Real Time Alerts
- Event Driven Campaigns
- Continuous Analytics

Big Data Platform
- Consumer 360
  - Optum ID
  - Internal Consumer ID
  - Preferences
  - All Data
- Provider 360
  - Optum ID
  - Internal Provider ID
  - Preferences
  - All Data
- Customer 360
  - Optum ID
  - Internal Customer ID
  - Preferences
  - All Data
- Consumer ID
  - Internal Consumer ID
  - Survivorship Rules
  - Golden Record
- Provider ID
  - Internal Provider ID
  - Survivorship Rules
  - Golden Record
- Customer ID
  - Internal Customer ID
  - Survivorship Rules
  - Golden Record

Data Sources
- Medical Claims
- Clinical
- Lab
- Eligibility
- Other
- RX Claims

Structured Data
- Images (X-ray, CT Scan etc.)
- Charts Notes etc.

Data Warehouse

Unstructured/Semi-Structured Data

Optum Cloud

Interaction Channels

Data Lake
This program has quietly revolutionized the way we connect systems, with near universal adoption, and substantial, ongoing cost savings.

From: Tightly coupled, point to point, complex

To: Loosely coupled, reusable services and infrastructure