Bringing Big Data Down to Earth

Sarah Howie
Jeffrey Daigle
Katie Ryder
Mary Horsey

Web conference

E Source

July 28, 2016
Sarah Howie
The Heart of Big-Data Operations: Personnel Strategies to Make It Happen

Katie Ryder
Leveraging Data to Optimize DSM Program Design and Performance

Jeffrey Daigle
Big Data’s Role in an Omnichannel Experience

Mary Horsey
Big Data’s Role in Streamlining Energy Design Assistance Programs
The Heart of Big-Data Operations
But first, what is big data?

E Source defines big data as a body of information with three characteristics:

**Volume**
A tremendous amount of data—far beyond what might fit in an Excel spreadsheet

**Variety**
The data take many forms, including sensor-derived, text-driven, operational, images, and video

**Velocity**
The data are being quickly collected from a number of different streams that often require near-real-time analysis
Rise of the CDOs

Chief Data Officers

Chief Digital Officers
Rise of the CDOs

Chief Data Officers

Data as a Corporate Asset

Chief Digital Officers

Change Management to a Digital Future
Chief Data Officers
Having a [Chief Data Officer] isn’t a prerequisite to success, but in a data-driven world, where competitors glean actionable insights from their data, if you don’t have the ability to do that, you better think twice about how you plan to achieve your goals and eventually survive.

Jennifer Belissent
Forrester
Fortune 1000 Firms with a Chief Data Officer

Percentage of respondents

Year
2012 2013 2014 2015

12 26 43 54

“Gartner predicts that 50% of all companies in regulated industries will have a Chief Data Officer by 2017”

© E Source; data from NewVantage Partners
Chief Data Officers' Growing Role Descriptions

Responsibilities included in role

© E Source; data from PwC
Chief Data Officer Organizational Reporting Lines

- COO: 42%
- CIO: 42%
- CFO: 8%
- CRO: 4%
- CTO: 4%

© E Source; data from PwC
the Chief Data Officer must have both a technical and business background to rely on. Too much focus on the technical will result in too much emphasis placed on the tools and bits of data, but too little and the CDO won’t be able to effectively communicate with his or her team. Were I crafting a job description for a CDO, I would require:

- Evidence of strong leadership and communication skills at a C- or board level
- Experience in information management projects and programs
- Familiarity with big data solutions including Hadoop, MapReduce and/or Hbase
- Familiarity with data governance and quality control
- Background in statistics or mathematics
- Experience with creating best practices and methodologies for technical projects
- Experience managing technical teams
- Understanding of and experience building business cases for large technical projects
- Familiarity with data modelling and visualization techniques
- Strong business experience in the field

Bernard Marr
Forbes
The Chief Data Officer’s department should be revenue-generating, not a cost center like IT is in many other organizations. Everything we do should advance the business. And data should drive every strategic business decision…

JT Kostman
Chief Data Officer, Time Inc.
A key point I drove home was that all of my team’s successes are by proxy. We only succeed if they succeed. My entire mandate was to ensure the success of my internal customers. They weren’t lending me a cup of sugar; they were letting me see their cup of sugar. And in seeing it, I could help them derive additional value. That really changed the nature of our relationship.
Chief Digital Officers
Professional Backgrounds of Chief Digital Officers

- Marketing: 34
- Sales and distribution channels: 14
- Technology: 17
- Consulting: 10
- Other: 7
- Strategy and business development: 13
- Academic: 2

© E Source; data from PwC, Financial Times, OneSource/Avention
“Make sure you become part of the team, understand and work within the culture, and apply the rules. But at the same time you need to maintain your energy and your external views and your willingness to disagree with others regarding digital strategy. I like to quote a counterpart at another large company who told me that to some degree, ‘[Chief Digital Officers] need to be hooligans.’ You need to find the right balance.”

Patrick Hoffstetter
Chief Digital Officer, Renault
Firms with a Chief Digital Officer, by Industry

- Communications/media/entertainment: 13
- Food/beverages/agriculture: 11
- Consumers products/retail/wholesale: 9
- Transport/travel/tourism: 8
- Insurance: 8
- Banking: 7
- Pharma/health/chemicals: 6
- Automotive/engineering/machinery: 6
- Technology/electronics: 3
- Other: 2
- Utilities/oil/gas: 2
- Metals and mining: 1

Base: n = 1,414

© E Source; data from PwC, Financial Times, OneSource/Avention
Data Team Talent & Bridging Organizational Gaps
Talent is critical along any data and analytics journey. And analytics talent by itself is no longer sufficient, in my opinion. We cannot have people with singular skills. And the way I build out my organization is I look for people with a major and a minor. You can major in analytics, but you can minor in marketing strategy. Because if you don’t have a minor, how are you going to communicate with other parts of the organization?

Zoher Karu
Vice President of Global Customer Optimization and Data, eBay
Big Data’s Role in an Omnichannel Experience
Seamlessly Connected Across Channels
Why Omnichannel?
Personalization and Predictive Experiences

Website that prompts you with content and notifications based on recent interactions
Personalization and Predictive Experiences

An interactive voice response system (IVR) and customer service representatives (CSRs) that know a customer’s history and offer insights based on how the customer has interacted in the past.
Personalization and Predictive Experiences

Mobile communications that give you the information you need, when you need it
Personalization and Predictive Experiences

Communication preferences that are modified based on how the customer interacts with messages
Ethical Data Stewards
Leveraging Data to Optimize DSM Program Design and Performance
Current Program Design Strategy

TYPICAL METHOD

1. Load-shape goal / cost-cutting goal

2. Target customers

3. Sell programs based on utility needs and goals
Fundamental Shift in Program Design Strategy

CUSTOMER-FIRST METHOD

1. Target customers
2. Incorporate attractive attributes
3. Blend in utility goals
Leverage Internal and External Data for Deeper Understanding of Customers

Big data can provide utilities with a means to better target customers for programs that fit their individual needs.
PG&E Uses Customer Data to Increase DSM Program Participation

Source: California Public Utilities Commission, Policy and Planning Division, “Customers as Grid Participants”
The Gadget Family

- Tech-savvy
- Larger households with moderate incomes
- High utility bills and all the latest equipment
- Willing to pay for technology; do so consciously
- Careful financial management
- Consider incentives in their purchase decisions
- Actively participates in utility energy-efficiency and rebate programs
- More-involved relationship with their utility provider
- Use digital channels to manage usage and pay bills
APS: Data-Driven Targets

- **CIS**
  - Billing/usage
  - Rate plan
  - Payment mode
  - Location/contact info
  - Program participation

- **Customer surveys**
  - Satisfaction
  - Demographics
  - Barriers to participation
  - Aids to participation

- **County assessor data**
  - Dwelling type
  - Age
  - Characteristics

- **Claratia Prizm segments**
  - Social group
  - Life stage

- **J.D. Power**
  - Segmentation profile

© E Source; adapted from Smart Grid Consumer Collaborative, “Segmentation Successes” (2014)
Duke Energy Utilizes Call Centers to Increase Program Uptake
Big Data’s Role in Streamlining EDA Programs
Big Data Rescues Utility Energy Design Assistance (EDA) Programs
Utility New Construction Programs

- The incentive’s attractive, but …
- The program takes too long
- I need to get this building built

Customer

- Building codes are rising
- We get less savings per measure
- We’re not meeting our goals
- Our program costs are rising

Utility
The Heart of the Matter

Building energy model

- Building data
- Utility data
- Weather data
- Baseline data
- Owner criteria data
- Energy-efficiency measure data
Xcel Energy’s Solution: Partnership

Energy Design Assistance Program Tracker (EDAPRT)
EDAPT

EDAPT web service: Reduce administrative costs

OpenStudio & EnergyPlus: Reduce modeling time and cost

OpenStudio & EnergyPlus: Find deeper savings
EDAPT web service:
Reduce administrative costs

OpenStudio & EnergyPlus:
Reduce modeling time and cost

OpenStudio & EnergyPlus:
Find deeper savings
EDAPT

EDAPT web service:
Reduce administrative costs

OpenStudio & EnergyPlus:
Reduce modeling time and cost

OpenStudio & EnergyPlus:
Find deeper savings
EDAPT web service: Reduce administrative costs

OpenStudio & EnergyPlus: Reduce modeling time and cost

OpenStudio & EnergyPlus: Find deeper savings
Overview of EDAPT Workflow

1. Application
   - Fill out online Application and submit.

2. Introductory Meeting (Intro)
   - Hold introductory meeting.

3. Preliminary Energy Analysis (PEA)
   - Upload preliminary energy model with energy efficiency measure alternatives and PEA Report.

4. Final Energy Analysis (FEA)
   - Upload final energy model with customer approved energy efficiency measures and submit FEA Report.

5. Construction Document (CD) Review
   - Review construction documents and match the model to them. Submit updated Model and CD Review.

6. Measurement & Verification (M&V)
   - Verify and update energy model, review and verify construction documents, create M&V Report.

Design Alternatives
- Baseline Model

Design Alternative
- Construction Documents
- Energy Model

Measured Data
- Energy Model

Construction Documents
- Energy Model

Xcel Review
- Intro
- PEA
- FEA
- CD
- M&V

Auto QA Check on Model
- Report auto-generated
Preliminary Energy Analysis (Step 3)
Preliminary Energy Analysis (Step 3)
Preliminary Energy Analysis (Step 3)
Preliminary Energy Analysis (Step 3)
Preliminary Energy Analysis (Step 3)
Measurement & Verification (Step 6)
Measurement & Verification (Step 6)

- Verify and update energy model, review and verify construction documents.
- Create M&V Report.

- Measured Data
- Energy Model
- Construction Documents

- Auto QA Check on Model
- Report auto-generated

- Xcel Energy
Measurement & Verification (Step 6)
Measurement & Verification (Step 6)

- Verify and update energy model, review and verify construction documents.
- Create M&V Report.
- Measured Data → Energy Model
- Construction Documents
- Auto QA Check on Model
- Report auto-generated

© 2016 E Source | www.esource.com
Measurement & Verification (Step 6)
Xcel Energy’s EDAPT Results

- 300% increase in number of consultants
- 28% increase in number of projects
- 33% increase in program energy savings
- 6% reduction in administrative costs
Xcel Energy’s EDAPT Results

- 300% increase in number of consultants
- 28% increase in number of projects
- 33% increase in program energy savings
- 6% reduction in administrative costs
Xcel Energy’s EDAPT Results

- 300% increase in number of consultants
- 28% increase in number of projects
- 33% increase in program energy savings
- 6% reduction in administrative costs
Xcel Energy’s EDAPT Results

- 300% increase in number of consultants
- 28% increase in number of projects
- 33% increase in program energy savings
- 6% reduction in administrative costs
Xcel Energy’s EDAPT Results

- 300% increase in number of consultants
- 28% increase in number of projects
- 33% increase in program energy savings
- 6% reduction in administrative costs
Add EDAPT to Your New Construction Program!

Contact:
Dr. Larry Brackney
Commercial Buildings Group
Sensors, Controls, and Analysis Tools Manager
National Renewable Energy Laboratory
larry.brackney@nrel.gov
Volume
A tremendous amount of data—far beyond what might fit in an Excel spreadsheet

Variety
The data take many forms, including sensor-derived, text-driven, operational, images, and video

Velocity
The data are being quickly collected from a number of different streams that often require near-real-time analysis
Questions?
For More Information

Sarah Howie
Business Line Lead, Corporate Communications Practice
303-345-9166
sarah_howie@esource.com

Katie Ryder
Senior Analyst, Demand-Side Management Practice
303-345-9174
katie_ryder@esource.com

Jeffrey Daigle
Senior Analyst, Customer Experience Practice
303-345-9183
jeffrey_daigle@esource.com

Mary Horsey
Practice Director, Technology Assessment Practice
303-345-9160
mary_horsey@esource.com
E SOURCE FORUM 2016

September 13-16
Sheraton Denver Downtown
550 Court Place Denver, Colorado