uOttawa

Data Monetization

Prof. Morad Benyoucef
University of Ottawa
benyoucef@telfer.uottawa.ca

1. Data
2. Data Monetization
3. Example 1: IoT
4. Example 2: My own research - Applying Analytics to Sales Data
5. Research Opportunities
6. Some Thoughts

agenda

- Data assets are dubbed "the new oil of the digital economy"
- Data has economic properties that enable it to be leveraged in ways other assets cannot
  - it can be used simultaneously for different purposes
  - when you consume data it does not get used up
  - when you use it it often generates more data (Facebook uses data to generate engagement, hence more data)
  - it has relatively low inventory and transit costs compared with other assets, making monetizing it a high-margin venture [8]

data

- “the role of data is shifting - from serving as a secondary asset that supports decisions, processes, and digital strategy to being a primary asset that businesses can productize [make into a product] and sell” [9]

data

• "Data monetization occurs when companies convert data and analytics into financial returns." [4]

data monetization

uOttawa

- According to Gartner, "Data Monetization refers to the process of using data to obtain quantifiable economic benefit. Internal or indirect methods include using data to make measurable business performance improvements and inform decisions. External or direct methods include data sharing to gain beneficial terms or conditions from business partners, information bartering, selling data outright (via a data broker or independently), or offering information products and services (for example, including information as a value-added component of an existing offering)." [10]

Gartner®

data monetization

- There are 3 main data monetization approaches
  - Improving processes with data (to create returns through operational efficiencies)
  - Wrapping core offerings (products/services) with analytics features (to increase a product's price, wallet share, market share, or customer loyalty) [4]
  - Selling information solutions

MITSloan MANAGEMENT

data monetization

- **Improving processes** is the most immediate way to monetize data (aka indirect or internal data monetization)
- Financial returns can be generated by using data to create operational efficiencies
- This consists of putting data and analytics in the hands of employees who make decisions
- E.g.,
  - Microsoft improved the productivity of its salespeople by 30% by using actionable insights from data
  - Microsoft used predictive analytics and machine learning to compute the likelihood of a successful sales engagement based on data [11]

improving processes

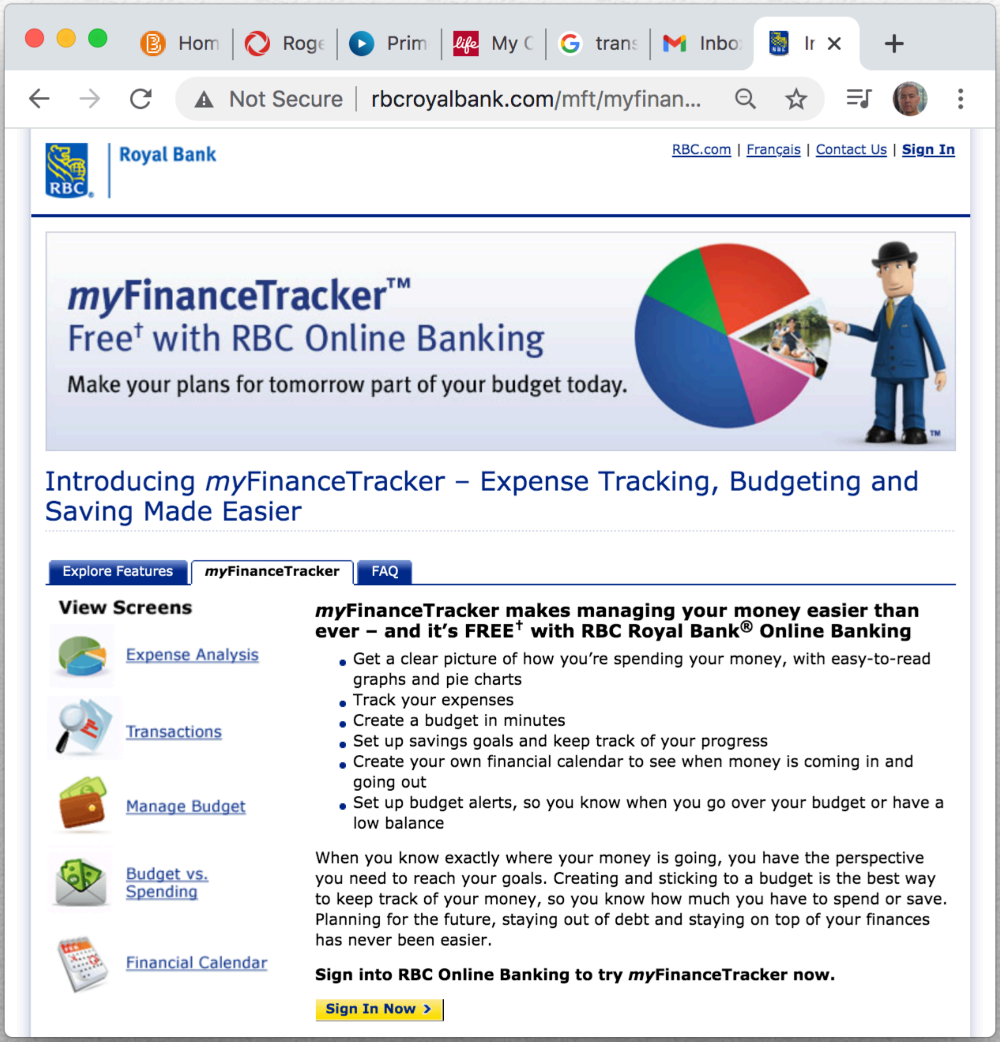
- Unless an organization is able to measure the impact of indirect data monetization, it is hard to claim that it is in fact "monetization"

improving processes

- **Wrapping** means enriching products/services using data analytics (i.e., dashboard, report, alert, suggested next step, or automated action). [1] [3]
- Goal: Differentiate products/services; Enhance value proposition
- E.g.,
  - Johnson & Johnson offers its customers who use its glucose monitors the following: historical reporting on their blood glucose levels, and tools to help them understand patterns of change [3]

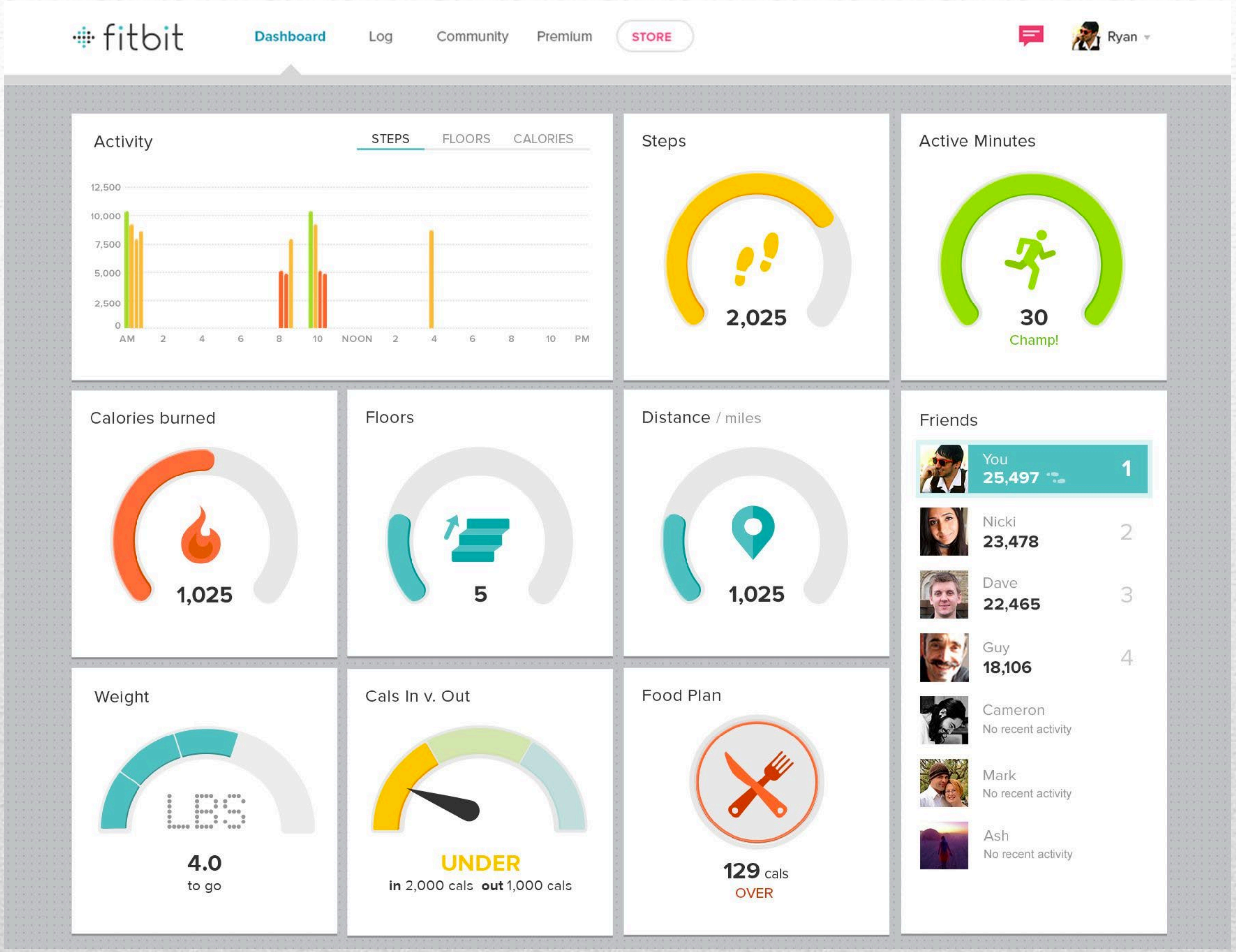
wrapping

For a long time banks have been wrapping their products/services with analytics



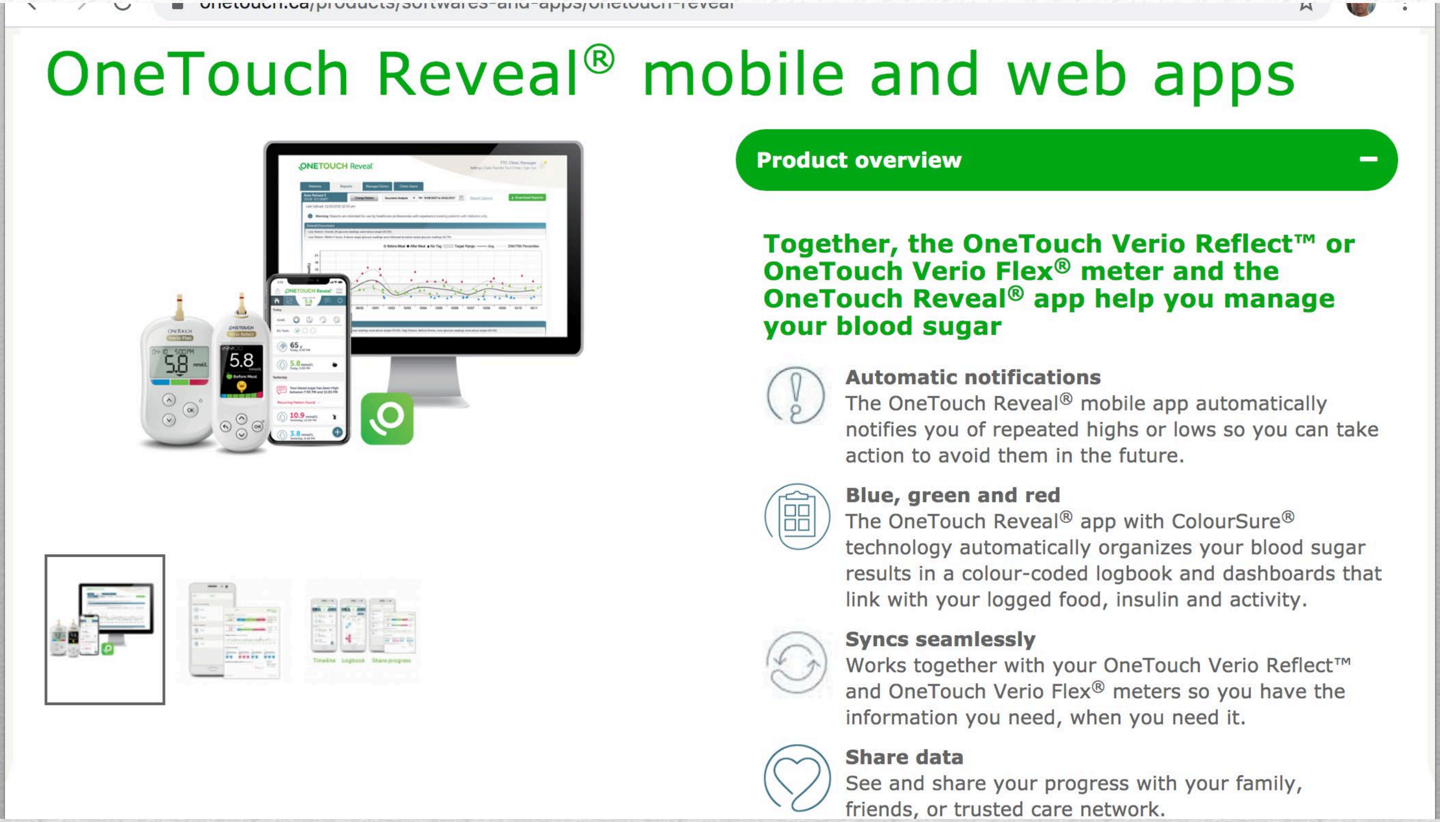
wrapping

Fitness wrist bands such as **fitbit** offer basic analytics for free and premium analytics for a fee (subscription)



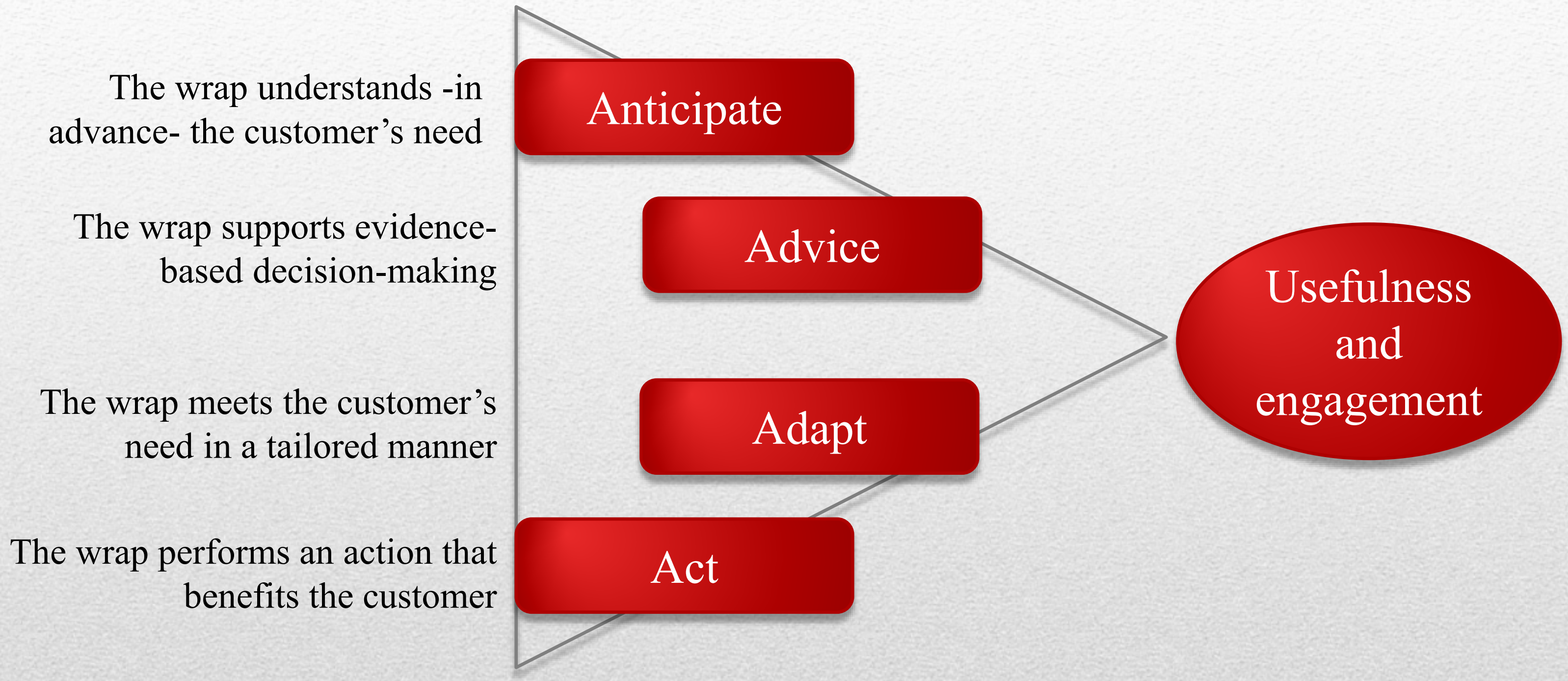
wrapping

The OneTouch Glucometer offers an app rich with analytics



wrapping

Four Design Characteristics for data wrapping [7]



- Anticipate
- Adapt
- Advice
- Act

Biosensors detect biological elements such as organisms, tissues, cells, enzymes, antibodies, and nucleic acids

wrapping

- The users of analytics are customers, not employees
- Product owners, not IT, lead the wrapping initiative as analytics must be developed as a part of the product's feature and experience portfolio
  - Product owners understand a product's cost structure and how it is consumed
- Economic returns result from a lift in sales, not from an internal business process improvement
- Wrapping can be risky: could confuse, irritate, or offend customers [12]

wrapping specificities

- **Information-based offerings** represents the hardest way to monetize data because it requires a unique business model (i.e., becoming an information business)
- E.g.,
  - State Street Corp (a financial services company) created a <u>new information business</u> division that combines existing data and analytics capabilities with new research, creating solutions that its clients are willing to buy independently of its core services [11] – Note: this is not the same as wrapping

STATE STREET

information offerings

- Information offerings are positioned along a continuum called Information Offerings Consumption Path made up of three phases – data, insights, and action [9]

information offerings

Information offerings consumption path [9]

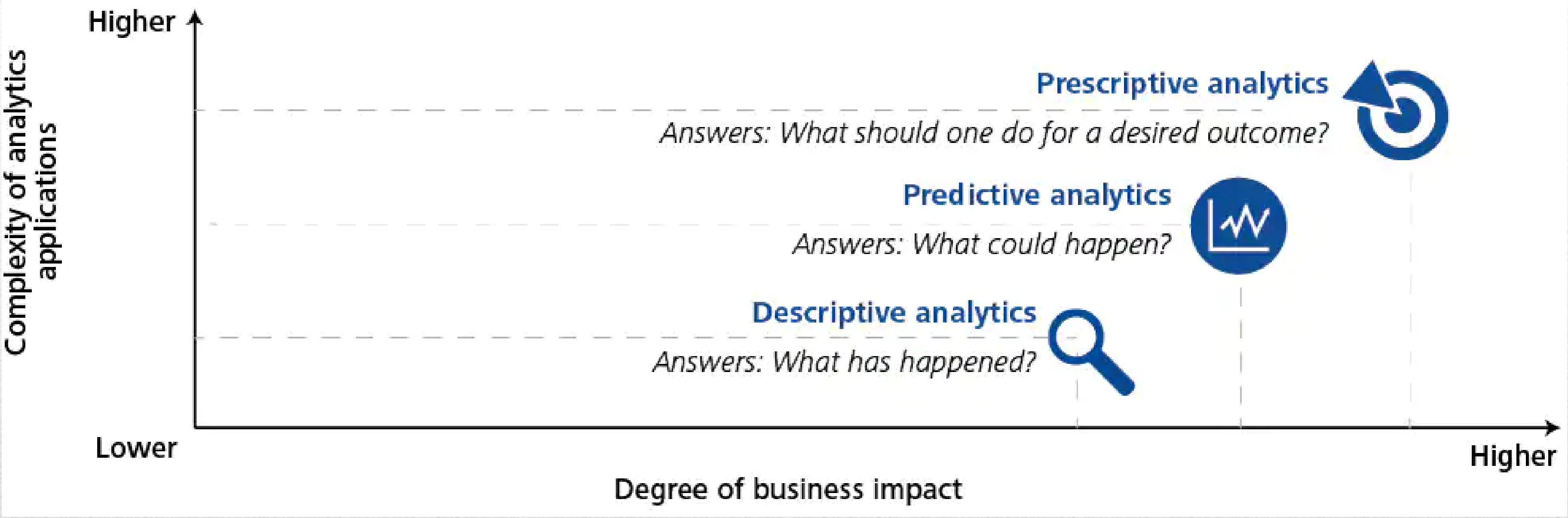
DATA INSIGHTS ACTION

- **Data offerings** represent the foundation for the information offerings consumption path
- Require data acquisition platforms
- Require mechanisms to understand the data after it is sold because the buyer is alone in analyzing it and using its insights
- There are 2 categories of data offerings
  - **Raw data**: data with no cleansing, transformations, or enhancements (e.g., retail POS - point of sale - data)
  - **Prepared data**: data transformed, enhanced, cleansed, etc. It is usually prepared to be used for specific purposes [9]

data offerings

insight offerings

- **Insight offerings** include reports and analytics that directly support processes and decisions
- Reports and analytics must be useful and easy to use
  - Ease of use fostered through visualizations, dashboards, interface design expertise, training, and customer service
- There are 2 categories of insights offerings
  - **Reporting** (descriptive): dashboards, visualization tools
  - **Analytics** (predictive and prescriptive): tools that use algorithms, statistical modeling, and machine learning to discover insights in the data [9]



insight offerings

- **Action offerings** help customers act on insights
- There are 2 categories of action offerings
  - **Process design**: consulting services and on-site support. Leverage insights from reporting and analytics offerings to create recommendations (how client should change processes and decisions). They package recommendations with justification for change, process design, and measurement strategies
  - **Process execution**: include process automation and outsourced solutions that execute tasks on behalf of the client based on reports and analytics [9]

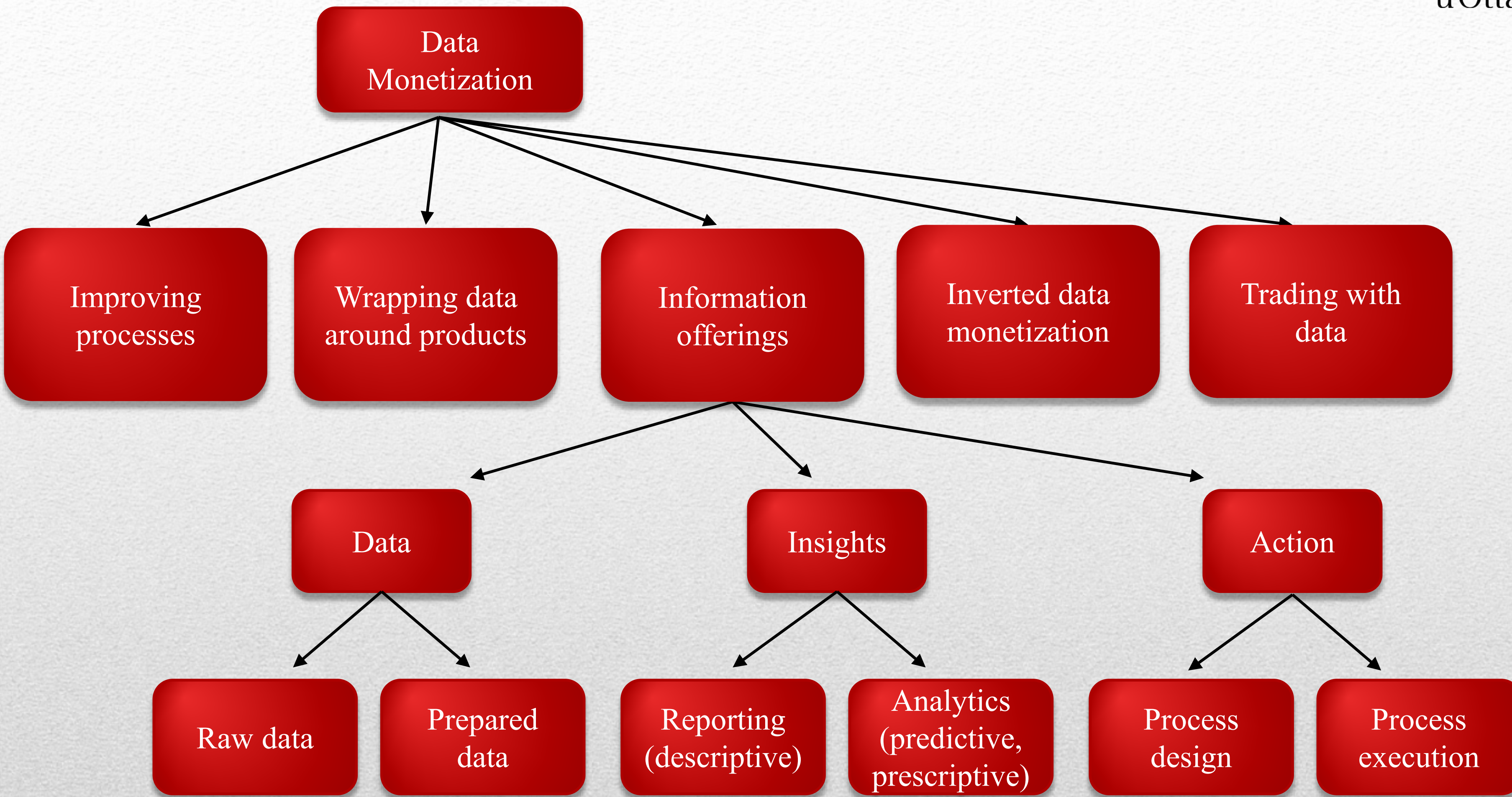
action offerings

- **Inverted data monetization**: although a company might not be able to share its customer data with other companies, it can share other companies' products and services with its customers in return for a referral fee or commission [13]
- e.g., a bank that knows its customers' purchases, lifestyle, demographics and financial situation could refer its customers to particular insurance products or even non-financial products that meet their profile [13]

inverted data monetization

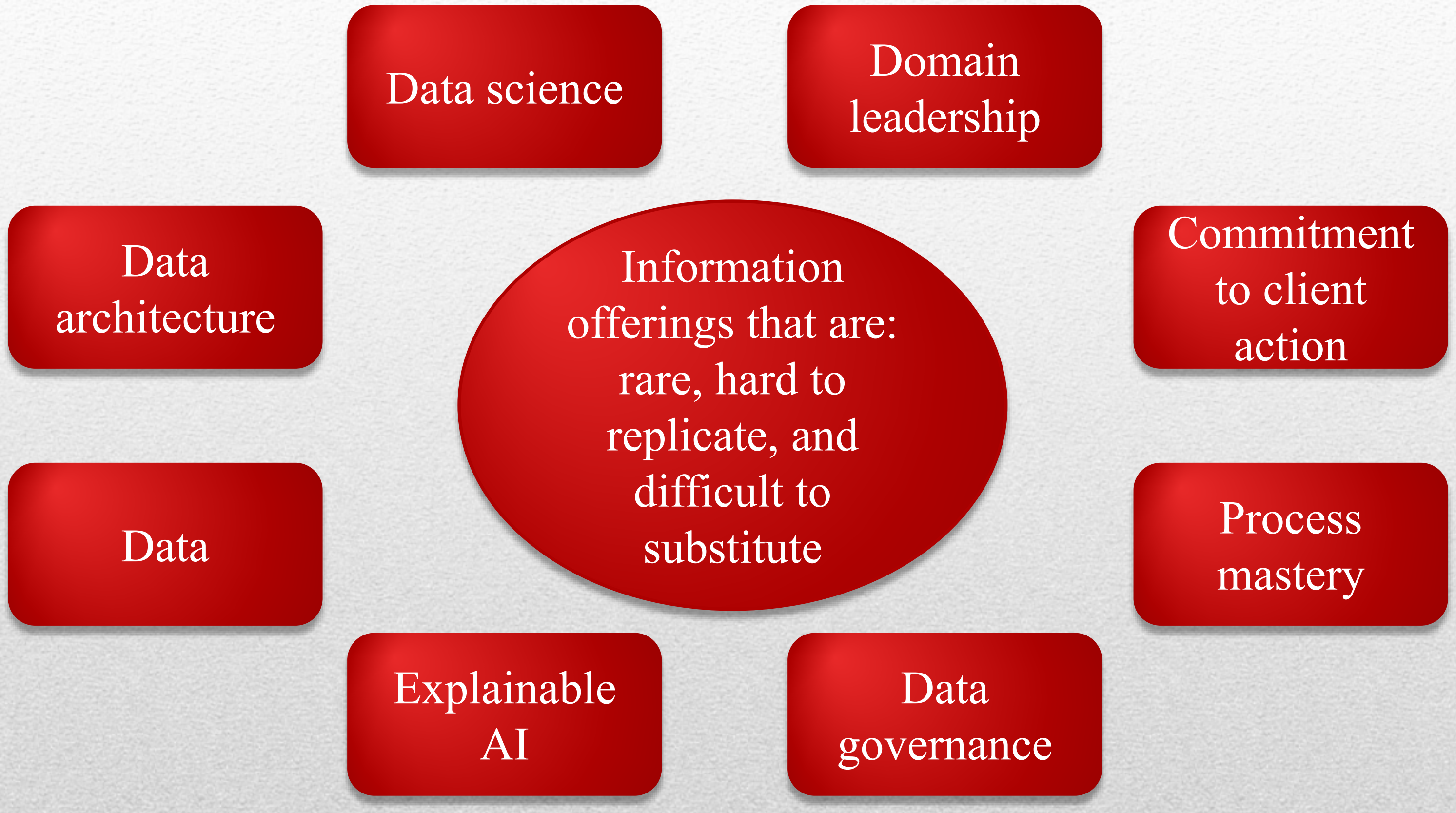
- **Trading with data** means exchanging data for goods and services [13]
  - e.g., loyalty programs exchange data for discounts
- Could be done with customers (as part of CRM) or suppliers (as part of SRM – supplier relationship management)

trading with data



data monetization

Sources of value for information businesses - adapted from [14]



sources of value

1. Data
   - Data must be unique and have value in the marketplace
   - Data value (volume, comprehensiveness, accuracy, diversity of sources, etc.)
2. Data Architecture
   - Distinctive architecture based on open source technologies, custom programs, innovative design, etc.
3. Data Science
   - Attract, train and retain a team of bright data scientists
   - Foster a data science culture
   - University partnerships, etc.

sources of value

4. Domain Leadership
   - Perfect understanding of and expertise in the domain (e.g., finance, healthcare, etc.)
     - Hiring employees from specific industries, partnering with clients to develop solutions
5. Commitment to Client Action
   - Ensure that clients act on upon the insights gathered from the data to generate business value
   - Provide training and support to the client
6. Process mastery
   - Sellers master the business process they are offering to inform
   - This provides opportunities for the seller to execute processes on behalf of the client (though outsourcing or automation)

sources of value

7. Data Governance
   - Must have norms and policies that ensure data-related activities are compliant and ethical
8. Explainable AI (XAI)
   - Making the black-box of AI transparent in order for the client to trust the insights gathered through machine learning

sources of value

- **Explainable AI (XAI)** is an emerging field in machine learning that aims to address how black box decisions of AI systems are made
- XIA tries to understand steps and models involved in making decisions
- XAI is expected to answer questions like: Why did the AI system make a specific prediction or decision? Why didn't the AI system do something else? When do AI systems give enough confidence in the decision that you can trust it? [6]

explainable AI

- BBVA (Spanish banking group) offers customers a personal finance management app
- One of the app's tools uses machine learning algorithms to sort customer transactions into common budgeting categories such as rent, food, and entertainment, and then displays a customer's expenditures broken down as a simple chart [7]

wrapping and AI

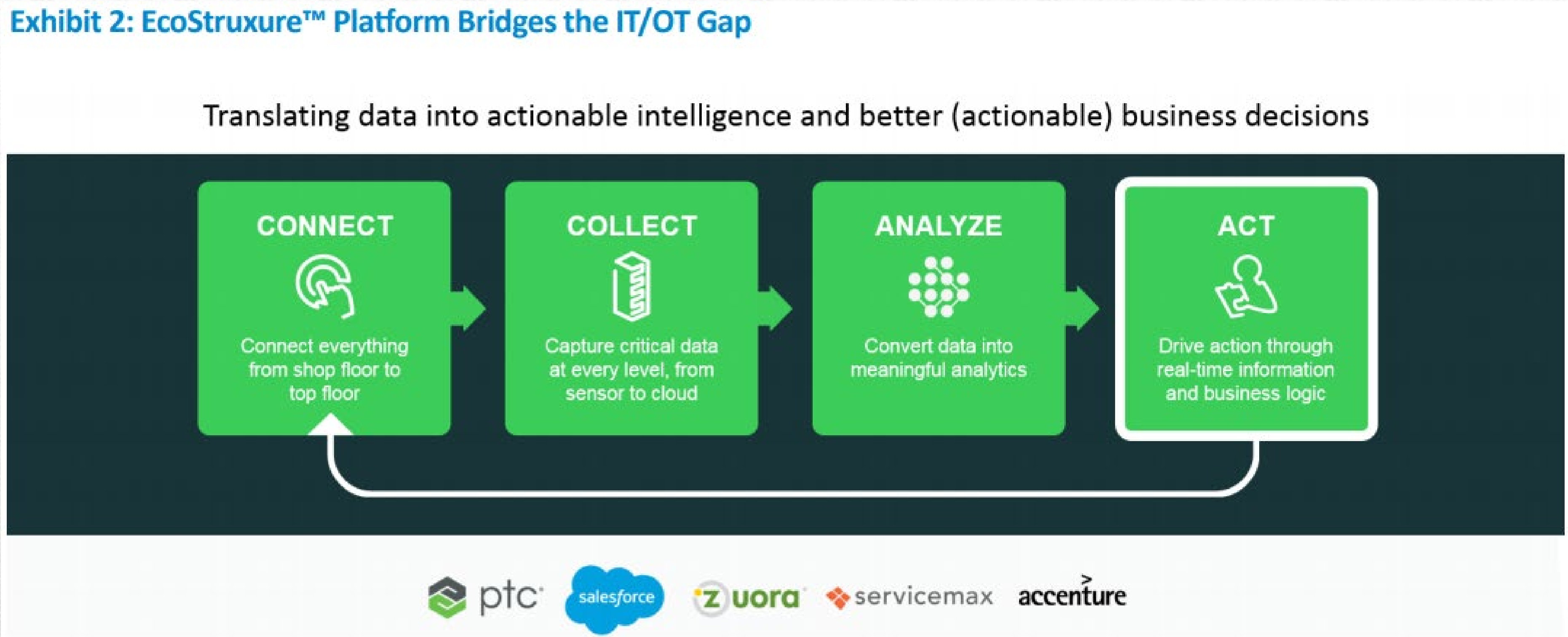
- Australian hearing solutions manufacturer Cochlear "released its Nucleus 7 Sound Processor, a device used for patients with hearing implants. The company paired the device with a mobile app offering scene classifier technology [machine learning based], which allowed users to automatically adjust their sound settings based on their surrounding environment (for example, a crowded street corner or quiet waiting room)." [7]

wrapping and AI

- **Data sharing 1.0**: companies share minimal data, only when required, to execute transactions, solve well-defined problems, and comply with regulation [3]
  - E.g., share tax related data with government agencies
- **Data sharing 2.0**: “sharing complementary data assets and capabilities to create new value propositions” [3]
  - E.g., Schneider Electric built and IoT platform and uses it for data sharing with its B2B customers (who use Schneider’s sensored products). Customers use the IoT platform’s analytics, and Schneider’s Machine Learning Models learn and improve from customer data.

data sharing 2.0

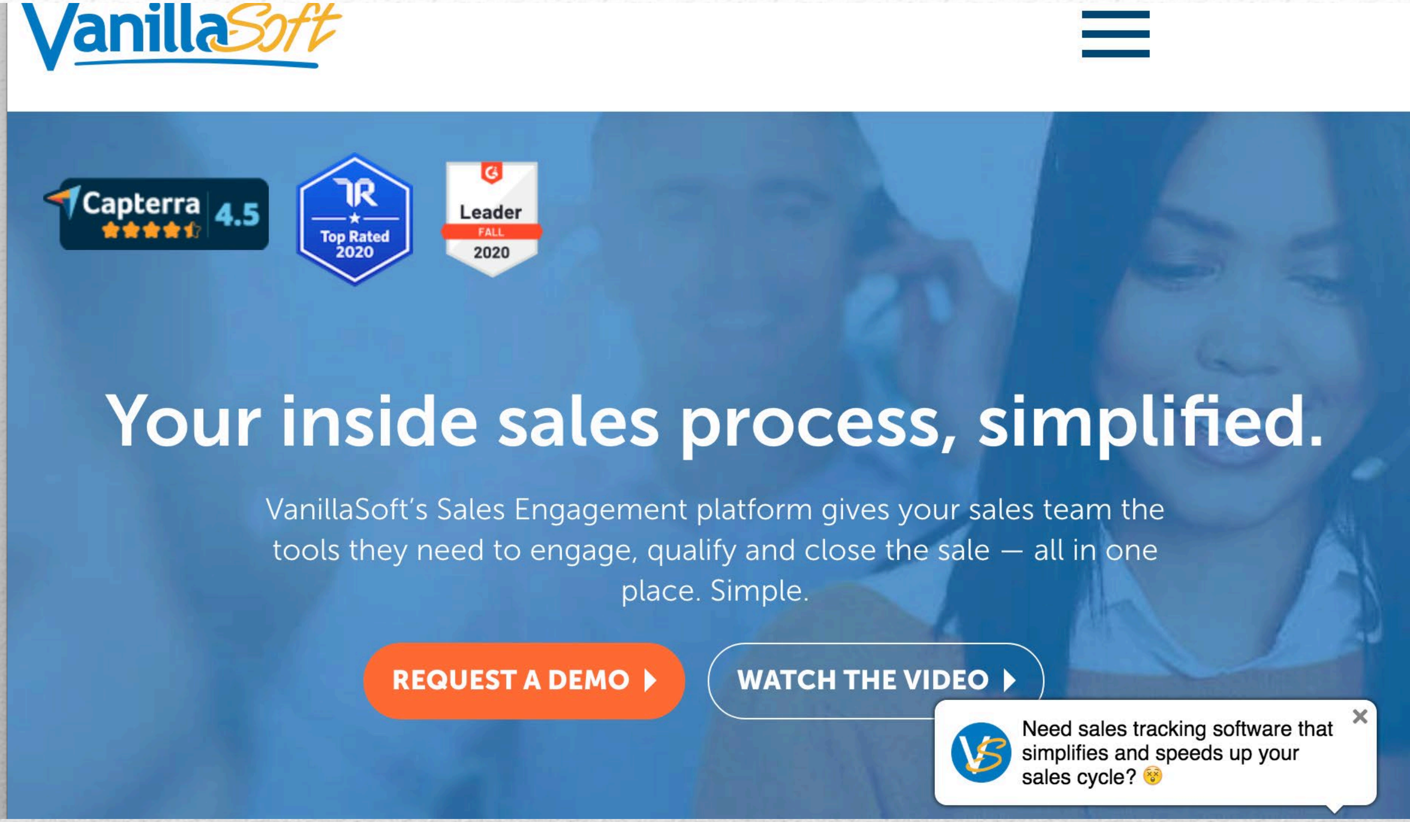
uOttawa



Schneider Electric's IoT Platform [15]

example 1: IoT

uOttawa



Research Question: How can data analytics optimize lead engagement outcomes for inside sales?

example 2: sales data

uOttawa

Research Question and Objective

Question
- ❑ What are the drivers of team-based Inside Sales performance in the B2B sector?

Objective
- ❑ Identifiy stages of the inside sales pipeline
- ❑ Introduce & validate a model of team selling performance across the sales pipeline

Research Approach

- ❑ **Data:** 6 B2B Companies; 3M interactions; 929,481 sales leads
- ❑ **Text mining:** Topic Categorization; Leximancer & LDA - 63 Concepts->Five stages identified: (99.45% classified)
- ❑ **Data Analysis:** Multinomial regression

Some Results

- ❑ Smaller sized teams do better.
- ❑ Later stages of the sales pipeline require more team experience and skills
- ❑ Earlier stages require more repetition
- ❑ Intra-team communication and team effort are necessary across all three stages

example 2: sales data

uOttawa

- Data cleansing and integrating techniques and tools,
- Cloud-based data architectures,
- Analytics algorithms,
- Data wrapping solutions
- Applications of machine learning algorithms to different area (e.g., healthcare, commerce),
- XAI
- Data-based business models,
- Open data,
- IoT applications,
- Smart cities,
- Etc.

research opportunities

- Data, information, knowledge, wisdom
  - Know your data and its potential, if you cannot act upon insights, there is no point in analyzing the data
- Databases, data warehouses, and data lakes
  - What data to keep & and how much does it cost to keep it?
- You do not necessarily need sophisticated tools or processes to analyze data
  - Excel spreadsheets can be enough
- Analytics: descriptive? Predictive? Prescriptive?
  - Which one to aim for?
  - Remember that if an insight is actionable, it can "prescribe" action

some thoughts

[1] MAKING MONEY FROM DATA WRAPPING: INSIGHTS FROM PRODUCT MANAGERS, Barbara H. Wixom, Ronny Schüritz, MIT CISR Research Briefing, Vol. XVIII, No. 12, December 2018

[2] Barbara H. Wixom and Jeanne W. Ross, "How to Monetize Your Data," *MIT Sloan Management Review* 58, no. 3 (Spring 2017): 10–13.

[3] Data sharing 2.0: new data sharing, new value creation, Barbara H. Wixom, Ina M. Sebastian, and Robert W. Gregory, MIT CISR Research Briefing, Vol. XX, No. 10, October 2020

[4] BBVA's Data Monetization Journey , E. Alfaro, M. Bressan, F. Girardin, J. Murillo, I. Someh, and B, Wixom, June 2019 (18:2) | MIS Quarterly Executive

[5] Carlton Sapp, "Laying the Foundation for Artificial Intelligence and Machine Learning," A Gartner Trend Insight Report, 2018.

[6] Understanding Explainable AI, Ron Schmelzer. Jul 23, 2019, in forbes.com

[7] Why Smart Companies Are Giving Customers More Data Barbara H. Wixom, Ronny M. Schüritz, and Killian Farrell, MIT Sloan Management Review, 2020

[8] Data Monetization: New Value Streams You Need Right Now, Douglas B. Laney, Jun 9, 2020. Forbes.com

[9] Foundations for Data Monetization, by Anne Buff, Barbara H. Wixom, and Paul Tallon, CISR WP No. 402 and MIT Sloan WP No. 5213-15, Aug 2015

[10] https://www.gartner.com/en/information-technology/glossary/data-monetization

[11] How to Monetize your Data, by Barbara H. Wixom and Jeanne W. Ross, : https://sloanreview.mit.edu/article/how-to-monetize-your-data/, Jan 2017

[12] Why Smart Companies Are Giving Customers More Data, by Barbara H. Wixom, Ronny M. Schüritz, and Killian Farrell, MIT SLOAN MANAGEMENT REVIEW, Massachusetts Institute of Technology, 2020

[13] Data Monetization: New Value Streams You Need Right Now,
https://www.forbes.com/sites/douglaslaney/2020/06/09/data-monetization-new-value-streams-you-need-right-now/#61ded67e46ff

[14]Six Sources of value for Information Businesses, by Barbara H. Wixom, Anne Buff, and Paul Tallon, Research Briefing, MIT Sloan, CISR, Volume XV, Number 1, Jan 2015

[15] Schneider Electric: Connectivity Inspires a Digital Transformation. CISR, Sloan School of Management, MIT, May 2017

references