IST – 614 – FALL 2017 – FINAL EXAM – 12/13/2017

PART I – COURSE LEARNING OBJECTIVES – 4 POINTS

Here are the essential learning objectives for this course:

- Organizational missions, goals, plans and strategies;
- Organizational valuation and capital planning for IT;
- Management and leadership;
- The structural design of organizations;
- Organizational culture;
- The recruitment, selection and retention of workers, especially 'knowledge' workers;
- Management techniques for teams and groups;
- The use of information systems for managerial decision support;
- Innovation and organizational entrepreneurship; and
- The role of IT in globalization.

Please select **FOUR** of them and showcase your knowledge in those selected areas with the use of:

a) Drucker essays
b) Stone "The Upstarts"
c) Williams MGMT
d) Any class assignments and discussions

Make sure to match at least one learning goal to each area (a, b, c or d).

PART II – CASE STUDY ANALYSIS – 4 POINTS

What a trip! You're exhausted from changing planes (three times because of cancellations) and trying to corral your colleagues as well as their luggage. And after all the cramped seats, complaining travelers, long lines, and marginal food, your team still hasn't come to a decision about what do to—at your own airport.

Last month, you and your management team from Hartsfield-Jackson Atlanta International Airport began discussing using radio-frequency identification (RFID) tags in the airport's baggage-handling operations. Recent reports on lost luggage have caused more than a ripple of concern, with roughly 1 in every 150 U.S. passengers losing a bag in any given year. U.S. airlines spent an estimated $400 million to replace mishandled luggage in a recent year, yet passengers are regularly incensed that the airlines give only partial reimbursements for lost bags and belongings. The cost of lost luggage, however, is not just the $400 million in reimbursements. There's the time and expense of staffing large customer-service departments to take complaints, process claims, track down and identify missing baggage, and deliver found bags to either the owner's travel destination or home. Multiple deliveries are often made, as the bag arrives at the passenger's destination after he or she has left for another destination or returned home. The International Air Transport association estimates that airlines worldwide could save $760 million a year by reducing lost luggage.

Your team would love to reduce the costs associated with lost luggage at Hartsfield-Jackson (ATL), which consistently wins the title of world's busiest passenger airport. Nearly 6.5 million travelers pass through the airport in a given month and bring about 75 metric tons of luggage with them. That's more than the either the monthly amount of mail or commercial freight (think FedEx and UPS) that passes through the airport's facilities!

Thirty-one airlines take off and land at ATL, but Delta accounts for over 58 percent of passenger volume. As (bad) luck would have it, Delta has a dismal ranking for lost luggage, reporting 6.8 mishandled bags per 1,000, second only to US Airways' 7.7 losses per 1,000. Company-wide, Delta handles 1.3 bags per passenger, and there's no reason to think this number is any lower in Atlanta, its biggest hub. That means Delta alone puts over 160,000 bags into the ATL system each day!

To manage this tremendous flow of personal belongings, ATL uses the bar-coding system in use at the majority of U.S. airports. Adhesive paper tags are very economical at 4 cents each, but they also rip, smudge, get misread, or get torn off completely. Scanners even have trouble with twisted tags. Baggage sorting with bar-coded tags is only 80 to 90 percent accurate. And once they're printed, that's it. If a passenger's destination changes due to, say, inclement weather, flight cancellations, or being rerouted, the bar-code label can't change to reflect the new itinerary.

Armed with all this, well, baggage, your team went on a trip to Las Vegas' McCarran International Airport, which has been using radio-frequency identification tags to manage its bag handling. McCarran is the fifth-busiest airport in the United States, and it handles more than 70,000 outbound bags per day. Using bar-code readers, as many as 7,000 bags per day were not read properly and tossed into an "unknown" pile to be hand sorted. There was also the headache of lost luggage for passengers on quick 3- and 4-day excursions to consider. In the end, the airport decided to invest in a system based on RFID tags. Tags costs 21 cents apiece, or five times the cost of a bar-code tag, but the accuracy of the RFID system has cut the number of hand-sorted bags by 90 percent, and the tags can be rewritten electronically mid-travel if itineraries change. The RFID system has enabled the airport to let inbound passengers on long flights check their bags all the way to their casino or hotel so that their luggage is waiting for them when they arrive.

What to do? ATL is already in the middle of a $5.4 billion campaign to improve facilities. Management does a great job managing the finances of the airport, and Hartsfield-Jackson is considered a good risk (meaning a safe bet) for lenders. The hardware required to start using RFID is cheaper than maintaining the hardware that manages the system of traditional bar-code tags, but the difference in the cost of the tags is substantial, if decreasing. And who's going to foot the bill? Should the airlines, which are nearly all suffering financially, be expected to pay for the program that will ultimately benefit them as well? Delta already stopped paying its $3.4 million annual rent to the airport as part of its bankruptcy restructuring. If they don't pay for the hardware required to read the tags, should airlines at least pay for the tags themselves?

Maybe you need to take another trip, this time to Furth, Germany, where Siemens, a provider of industrial software, has built a mock airport to demonstrate how automated technology can help airports improve efficiencies in nearly every aspect of their organization. Siemens's automated luggage belts equipped with RFID readers can move at up to 30 feet per second, which means that passengers wouldn't have to wait hours for their bags to show up at the carousel, as they often do now. Even though the people at McCarran were helpful, their airport has less than half the traffic of Hartsfield-Jackson. Perhaps consulting with the folks at Siemens will help you better frame the issues for your massive operations. Or maybe you'd be better off visiting Denver International Airport, which is known for its notoriously flawed—and inefficient—automated baggage-handling system.

Case Questions:

1. Implementing RFID is a complex situation that draws on many managerial roles. Describe the ways that the management team from Hartsfield-Jackson will fulfill different Mintzberg's managerial roles as it thinks through the decision.
2. Additional information gathering at Siemens's mock airport is a good idea, but who to send? Identify how many and which type of managers to recommend for a fact-finding team and to tour the facility at Furth, Germany. Estimate how much money will be required to fund such a trip.
3. Do you implement RFID at Hartsfield-Jackson immediately, or do you schedule a trip to Furth, Germany, before deciding? Or do you decide not to implement RFID at all?
4. How does this potential implementation affect domestic and international travel? Please think of an example (can be personal) of your travel to/from Syracuse and what the issues associated with RFID might be. You can form your answer as situational analysis.

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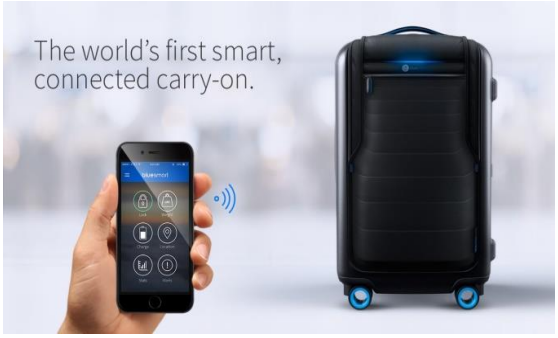
PART III – TOOL REPRESENTATION – SMART LUGGAGE – 4 POINTS



a) What business is smart luggage in or trying to access?
How does it affect the airline industry? Is the responsibility of tracking luggage associated with the airport/airline (*Part II RFID case*) or the passengers? Please provide your answer taking into account **Drucker's** approach.

b) What are the elements of the BCG matrix for smart luggage?
Your answer can be in graphical format.

c) List (bullet points) **three main challenges** you perceive the users of this new design could be facing.

d) In your opinion, would this product follow the S-curve pattern of innovation and introduce a new technology cycle?

*** please make sure to check some current news addressing banning of smart luggage**

PART IV – CASE STUDY PRESENTATION SYNOPSIS – 3 POINTS

Those are our in-class final presentations:

1. Twilio
2. Esri
3. Chobani
4. 23andMe
5. Carnival Corporation
6. Farmers Business Network
7. Simplify Network
8. The Home Depot
9. Data Kind

Please consider **three** different aspects related to the Internet of Things (big data; use of drones; AI; biochips, etc.) that would be used across ALL of the listed companies. List the examples for each and how theoretically/hypothetically it can be used for the company, its users and future innovation.
You can create your answer in table format.

GOOD LUCK!!!

IST 614 – Management Principles for Information Professionals (Fall 2017)

Final Exam

Part I – Course Learning Objectives

a) The Essential Drucker, by Peter F. Drucker
The recruitment, selection and retention of workers, especially 'knowledge' workers.

As correctly stated by Drucker, picking people for an organization is a difficult, irreversible decision with extremely long-lasting consequences. The basic principles of picking people – it is the recruiter's mistake if the person they recruited is unable to perform; managers are responsible for performance of employees in the organization; it is of utmost importance to make decisions regarding people, as they determine the performance capacity of the organization; let a new worker learn the basics in an established position while giving the high-risk jobs to experienced professionals. These principles may be viewed as the rule book for recruiters.

When it comes to making staffing decisions, the steps mentioned by Drucker are best understood with examples. Think through the assignment – brainstorm all possible scenarios and think about what the project needs and who can fulfill that. Look at a number of potentially qualified people – qualified is the basic requirement, potential is what should be looked for. Think hard about how to look at these candidates – the assessment of each candidate must be done on their overall strengths and weaknesses, and how committed will they be to the job. Discuss each of the candidates with several people who have worked with them – get an outsider's perspective on whether or not the person is fit for the job. Make sure the appointee understands the job – as a manger, teach them well, show them the way, and consider it as your mistake if they do not follow.

These principles and steps set a base for development of a knowledge worker – true pioneers, working out the policies and practices that define the future of businesses. These knowledge workers lead the way with high level of knowledge and experience that makes them the best at what they do.

b) MGMT – Principles of Management, by Chuck Williams
Management and leadership.

The definition of management by Chuck Williams is one of the most important takeaways from this course. In the simplest of terms, management is getting the job done. It is not the ability to do a particular task, it is the ability of getting the task done. It takes into consideration efficiency: getting the work done with minimal effort, expense or waste; and effectiveness: accomplishing tasks that help fulfill organizational objectives. Under the umbrella of management come a variety of functions, which are: planning, organizing, leading and controlling. Leadership is a function of management. A good manager must be a good leader. Depending on the role, there are different types of managers like top-level managers, middle managers, etc. The managers may have to perform inter-personal, informational or decisional roles. The book also mentions a few common mistakes that managers make, like being untrustworthy or over-ambitious, inability to think strategically, etc. Digging deep into the history of management, the book teaches us how it has evolved over the years. Personally, earlier, my view of management was being able to work efficiently and having the required skillset for getting the work done, but the course and this book

taught me that good management is defined by how well one can delegate and get things done, and not do it themselves.

While management is getting work done through others, leadership is the process of influencing others to achieve group or organizational goals. The primary difference between leaders and managers is that leaders are concerned with doing the right thing whereas managers are concerned with doing things right. There are various theories that revolve around the concept of leadership for example, the Path-Goal Theory states that managers can increase subordinate satisfaction by clearing the paths to goals. Through the book and the Interview Assignment for the course, the types of leadership that one can showcase were also learned. Situational leadership, where the leader adapts to the current situation and takes steps accordingly, is the kind of leadership that I personally would follow.

c) The Upstarts, by Brad Stone
Innovation and organizational entrepreneurship.

Uber and Airbnb are prime examples of organizational entrepreneurship in companies that came into existence in this generation of advanced technology. The book, The Upstarts, showcases how the founders of these companies led the company to success by following their business instincts and showcasing their management skills. It takes a brilliant mind to identify a business idea and build a company on it, which could be best explained by how Brian Chesky and Joe Gebbia saw an opportunity when they could not make rent for the month, started a bed and breakfast service, recognized the potential of this service, got Nathan Blecharczyk on board and started a company that we now know and use as Airbnb.

Talking about innovation, it is very evident that the whole idea of both, Uber and Airbnb, is based on innovative solutions to already known problems. Booking a cab was always a hassle before Uber, but just by introducing technology, Uber started an innovative service that seamlessly helps each and every customer get where they want. Airbnb allows people with spare living space rent out rooms to travelers – a simple solution for both the owner and the renter. Owner earns money, renter lives in a homely environment with locals. It is a win-win. Such is the innovation that has merged creative thinking and business models to establish these upstarts.

d) Class Assignments and Discussions
Organizational valuation and capital planning for IT.

The financial aspects of any organization's evaluation primarily consist of the assets and liabilities of the organization. The balance sheet helps with listing down the various assets and liabilities and their values. Another tool that helps with a kind of financial evaluation is the income statement. The income statement describes the various sources of income and expenditure for the company, and the difference between the total values of each of those is the net income of the company.

Calculating the time value of money helps in capital planning for IT in an organization. A dollar today is worth more than a dollar tomorrow, this means that correctly calculating the present and future value can estimate the financial risk of any investment. Comparing all costs and benefits at the same point in time can determine the value of investment. Present and future value calculations take into consideration the time period and rate of interest. Determining these helps calculate the overall return on investment and help with capital planning.

Part II – Case Study Analysis

1. Mintzberg suggested three major managerial roles, which are: interpersonal roles, informational roles and decisional roles. For implementation of RFID technology at Hartsfield-Jackson, the management would fulfill the aforementioned roles as follows: -

Interpersonal Roles: this role is people-intensive. The figurehead sub-role could be fulfilled by organizing a gathering and informing the management team at Hartfield-Jackson of the new RFID project. For performing the leader role, the manager could set out various objectives for the project, which would initially be researching on the possibility and feasibility of implementing the new technology, and motivating the team to devise feasibility reports and plan for implementation. Role of a liaison is very important in this project as the manager would have to deal with outsiders which in this case would be by communicating with officials from airports where RFID technology has been implemented and getting information from them.

Informational Roles: managers at Hartfield-Jackson would have to spend most of their time fulfilling the informational role for gathering information from McCarran International Airport, and Furth, Germany, from the mock airport that Siemens has developed. For the monitor role, managers would have to contact officials from other airports, build a relationship with them and try to collect as much information from them as possible. As the disseminator, the management team would provide all the information to their subordinates so that they can devise a feasibility report on whether or not the airport should implement the new technology. If in case the plan moves forward, Hartfield-Jackson would have approach lenders to finance the project, for which the manager would have to take up the responsibility of a spokesperson and pitch the idea to lenders.

Decisional Roles: as a disturbance-handler, the manager would have to deal with the problems of loss of luggage being faced by the airport and try to resolve them as soon as possible. As a resource-handler, in this case, the manager would have to decide whom to send to other airports to study the environment there. As a negotiator, the management at the airport could try to convince airlines to pay for the new project, or at least the new RFID tags, as they will also benefit from it.

2. To tour the facility by Siemens at Furth, Germany, the following type of managers must be sent:

One General Manager, who would be the highest point of authority at the location and will be responsible for undertaking the process of gathering information, communicating with officials at Furth, and reporting back to top-level managers.

One Team Leader who will guide the team through the process of studying the environment and gathering information. The Team Leader will be responsible for handling a team of three members who will be observing and documenting how the technology is working at the location

The expenses of such a trip would approximately be as follows:

Flight tickets for 5 members: 5 * $700 = $3500

Stay for 5 members for 4 days (one room for GM, two rooms for team leader and team): 3 * $80/night * 4 = $960 (~ $1000)

Estimated money required to fund such a trip would be approximately $4500.

3. Implementing RFID technology at Hartsfield-Jackson immediately, in my opinion, would not be a good idea. It is better to have researched well and then making a well-informed decision. In order to understand how the technology works, a small team of employees should not only be sent to Furth, Germany, but also to McCarran International Airport, Las Vegas. If decided to implement, the technology must be rolled out in phases and not all at once, for example, trying RFID tags for baggage going through one airline initially and then checking the performance of the system.

4. In my opinion, RFID technology drastically affects international travel, but may not be very beneficial in the domestic travel sector. Domestic flights are short and have lesser and shorter layovers, reducing the risk of baggage misrouting. Even in case the baggage is lost, cost of tracking it and delivering it to the travel is low as domestic courier services cost less. For international travel, the stakes are high as there are longer waiting hours at connecting airports and higher risk of flight delays, thereby making implementing RFID a beneficial move.

This can also be explained using SWOT analysis on implementation of RFID technology as follows:

Strengths	Weaknesses
- Reduced risk of baggage loss for customers and airlines - Customer can track their luggage	- High cost of implementation - Requires multiple approvals for government organizations
Opportunities	**Threats**
- Better customer service - Better performance by airports and airlines with reduced risk of error	- Loss of data from back-end system - May not be accepted by customers who do not understand the technology

To give an example, on my travel from Mumbai, India, to Syracuse, I had a flight from Mumbai airport to John F. Kennedy International Airport (JFK), New York, where I had a layover of 5 hours and then a flight from JFK to Syracuse. All international travelers with a layover at JFK must check-out their luggage upon arrival and then manually check-in the luggage for the next flight, a process that could simply have been automated. While waiting for the luggage at the baggage carousals at JFK, only two of the three bags I was carrying came out on time while the third bag did not come out till after one hour of waiting. In the same scenario, had there been a RFID tag associated with my baggage, it would have saved a lot of time and I would have had full knowledge of where my luggage was.

Part III – Tool Representation

a) Based on Drucker's approach, the business that Smart Luggage operates in can be defined using the following key areas:

- Innovation: Smart Luggage provides technology-enabled services like GPS tracking, USB charging ports, etc. and such a product is an innovative form of traditional travel luggage.

- Productivity: these products are beneficial to the customers as they solve various problems when it comes to travel, especially that of baggage loss during air travel. The productivity of Smart Luggage is very high for customers.

- Profit Requirements: Smart Luggage can be extremely profitable as it solves a major issue for customers, and also for airlines and airports who also have to deal with baggage loss of travelers. Customers would be inclined to pay for Smart Luggage than to have their bags lost.

Based on the above case analysis, the responsibility of tracking luggage is to be taken care of by both, the airport and the airline. While the airline is responsible for the luggage in-transit, the airport is responsible for loading and unloading the luggage at the source and destination. The cost for RFID tags can be borne by the customer. Even if every traveler carrier 4 bags, at 22 cents per RFID tag, the customer would still have to spend less than a dollar on them. Its implementation must be handled by the airline and the airport.

b) BCG Matrix for Smart Luggage:

MARKET GROWTH	RELATIVE MARKET SHARE
Question Mark	**Star**
AWAY	AMERICAN TOURISTER, Samsonite
Smart Luggage can be seen as a fast-growing market of which, companies like Awaytravel have a small share.	These are well-established companies that have a large share of a fast-growing market.
Dog	**Cash Cow**
Barracuda	bluesmart
Barracuda makes luggage among other items and captures a small market share.	Bluesmart started manufacturing Smart Luggage and captured a large market share in a then slow-growing market.

c) Three main challenges for users of Smart Luggage are:

- Increased cost of product as it comes with additional features that may seem very attractive to customers.
- Smart Luggage is battery enabled. Recent reports suggest that battery-operated luggage is a fire hazard while air travel, and hence has been banned by many airlines. This leaves users with no choice but to use normal bags.
- As most airlines allow only free carry-on baggage and charge for check-in baggage, smart luggage, which only makes sense if checked-in, increases the overall cost of travel for the customer.

d) In my opinion, Smart Luggage technology will follow the S-curve pattern of innovation subject to certain conditions and approvals. The S-curve pattern of innovation describes technological innovation characterized by slow initial progress, then rapid progress, and them slow progress again as the technology matures and reaches its limits.

When the technology was first released, it had slow progress as users were still understanding its features and functions. It is human tendency to be reluctant to change, and Smart Luggage would have been a change the users needed to understand well before accepting. As its popularity increased, there was rapid growth in worldwide sales of Smart Luggage. Its features lured a large number of customers into buying the product.

While the growth of this technology has been steep in the upward direction for the past few years, it has now been challenged by regulatory authorities. According to latest news, Smart Luggage has been banned by major carriers in the United States, including American Airlines and Delta Airlines, as part of safety management and risk mitigation. The issue being faced is that Smart Luggage is operated by Lithium Ion batteries that have the potential to explode and catch fire, presenting a significant fire hazard for aircrafts. If any of these bags catch fire in the storage compartment of the aircraft, it would be very difficult to extinguish it and could become deadly for the aircraft and its passengers. Although manufacturers of Smart Luggage are fighting this recent ban and trying to comply with rules and regulations, it seems like Smart Luggage has reached its limit of innovation[1, 2, 3].

[1] Economy, Peter (December 7, 2017). Here's Why American Airlines Just Banned Your New Smart Luggage (and Why Others Are Following). Retrieved from URL: https://www.inc.com/peter-economy/american-airlines-just-banned-your-fancy-new-smart-luggage-with-more-to-follow-soon.html

[2] Martin, Grant (December 3, 2017). US Carriers Move to Ban Smart Luggage. Retrieved from URL: https://www.forbes.com/sites/grantmartin/2017/12/03/u-s-carriers-move-to-ban-smart-luggage/#60ff0aaf1d94

[3] Balke, Jeff (December 6, 2017). Airlines Ban Smart Luggage! Wait, What's Smart Luggage? Retrieved from URL: http://www.houstonpress.com/news/smart-luggage-banned-what-is-smart-luggage-10013169

Part IV – Case Study Presentation Synopsis

Internet of Things	**1. Twilio**
Big Data	Although no personal data can ethically be stored, meaning that Twilio cannot read into and keep the messages sent over its platform, it can store metadata related to it, like call logs, number of messages sent, etc.
Machine Learning	Data collected by Twilio can be put through sentiments analysis algorithms. Machine learning can help create a more personalized experience for the user.
Cloud Computing	Twilio itself is a cloud computing platform. It allows software developers to programmatically exchange phone calls and text messages using their cloud platform.

Internet of Things	**2. Esri**
Big Data	The GIS generates a massive amount of data for analytics and can be used to discern trends correlating between geographic and demographic aspects of an area.
Machine Learning	Machine learning algorithms can be set up to let the software learn the already analyzed areas and then categorize new areas with similar characteristics.
Cloud Computing	As the data provided by the GIS is open-source, it can be stored on a cloud platform to make it accessible to everyone all around the world, enabling its use all around the world.

Internet of Things	**3. Chobani**
Big Data	The number of people consuming yogurt worldwide is huge, meaning that a huge amount of data can be collected based on the likes and dislikes of the consumers, and can then be analyzed to improve service.
Machine Learning	Machine learning algorithms can learn the various patterns generated through data analytics, such as the kind of people who like a specific flavor of yogurt, or the time when the sales peak, and make predictions on whether or not a new product will be successful.
Cloud Computing	Yogurt is a healthy food, and as the producer, Chobani can make data regarding the product and the consumer available through cloud, which can be useful during medical conditions.

Internet of Things	4. 23andMe
Big Data	Large database of existing chromosome patterns and genetic data. It uses this database to let individuals explore their DNA. This data can also be analyzed to learn biological patterns of human DNA and in medical research.
Machine Learning	Machine learning algorithms can be devised to automatically learn DNA patterns through existing data and then categorize any new data, making the process automated and faster.
Cloud Computing	Storage of data over the cloud, making it remotely accessible. Personal records are sent via mail, but then can also be stored online, letting the user decide its accessibility.

Internet of Things	5. Carnival Corporation
Big Data	Traveler information database, that includes personal information, preferences, feedbacks, etc. recorded for past years. This massive data set could be used for analysis on customer satisfaction.
Machine Learning	Applying machine learning algorithms to learn preferences of customers and give them a personalized experience. It can also be used to develop the best travel packages based on attributes like time of year, number of travelers, etc.
Cloud Computing	Travelers' information can be stored on cloud, including booking confirmations, so that the user can access them and would not have to worry about having everything handy during their vacation.

Internet of Things	6. Farmers Business Network
Big Data	Data regarding various aspects of farming can be collected and analyzed. For example, recording values for amount of rainfall, temperature patterns and pressure levels for previous farming seasons to categorize drought conditions.
Machine Learning	Machine learning can be used to train and test data for prediction of crop growth and quality. If the same crop is grown under the same weather conditions and is provided the same nutrition, the quality of yield should be similar.
Cloud Computing	All data must be available on the cloud so that farmers and organizations can access them and track the progress from anywhere in the world. If data is readily available, and any problem comes up, a solution can be devised quickly.

Internet of Things	7. Simplify Networks
Big Data	Collecting data for usage of internet, personal information of customers, internet service providers, etc.
Machine Learning	Tracking internet usage patterns, amount of data that is used periodically, etc. Analyzing these patterns to automate how people sell data to their service.
Cloud Computing	Storage of all data and user profiles on cloud, creating a centralized database architecture.

Internet of Things	8. The Home Depot
Big Data	Collect information regarding tools and services required. Development of a customer management system using the huge customer information database.
Machine Learning	Learning algorithms to identify sales patterns, procurement structure, etc. For example, keep items in stock before winters when everybody would want their houses repaired.
Cloud Computing	Storing product and customer databases online so that all stores at all locations can access this information whenever necessary.

Internet of Things	9. Data Kind
Big Data	Big data analytics is there core line of business. It allows data scientists from all around the world to access its data and use it for the service of humanity. An example of their project is forecasting water demand in California.
Machine Learning	Using historical data to predict future scenarios. For example, analyzing customer payment behavior to identify customers for pay-as-you-go solar power to help rural households in India access electricity using machine learning.
Cloud Computing	Their vision is to have data scientists from all around the world access and analyze their data to solve social problems. Such high level of accessibility can be achieved by storing all the data on cloud.