

Deploying the right technology: a framework for digital strategy and selection at the United States Postal Service to shape the future of work

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ABSTRACT

With the rapid evolution of technology from more affordable hardware and data storage to artificial intelligence, companies must evolve their technology strategy to remain relevant. Federal agencies are no exception as they continue to deploy transformational technology to improve services for the American public. An important issue has surfaced in the evolution of technology and the increasing speed of innovation where companies no longer need to find technologies to solve their problems, rather they need to select the right technologies to focus their attention to best define the future of work. Methodologies are common across industries but how do they apply to public service? Is a qualitative or quantitative process possible for vetting new and existing technology implementations while remaining adaptive and service-oriented? This paper explores the development of a framework that provides guidance on deploying the right technologies. I will draw on desk research of existing methodologies while gathering information on effectiveness of past deployments to define a guiding framework for technology selection. These findings can assist in future decisions for technology investment along with tripwires for retiring existing technologies.

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Disclaimer

The views expressed in this thesis are those of the author and do not reflect the official views, policies or positions of the United States Postal Service.

No official United States Postal Service approval is expressed or implied.

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Chapter 1: Introduction and Problem Statement

Overview, Goals and Purpose

To make the most of ongoing advancements in digital technology, today's companies must adapt to remain efficient, profitable, and relevant. Even as new technologies redefine jobs, the focus of many business decisions often tends to be speed to market instead of long term impact and outcome. With the evolution of technology and the widespread sense that the pace of innovation is increasing, companies no longer need to simply find technologies to solve their problems. Instead, they now need to select the right solutions that will allow them to best define the future of work. With the impact of new technology on the future, a clear strategic vision is necessary to determine what the future will be. Leaders must evaluate the needs of the organization and select technology solutions that support the specific organizational changes that they desire. To accomplish this, they will need a strategic design process that can steer the direction of the organization and prevent short term focus from driving long term changes.

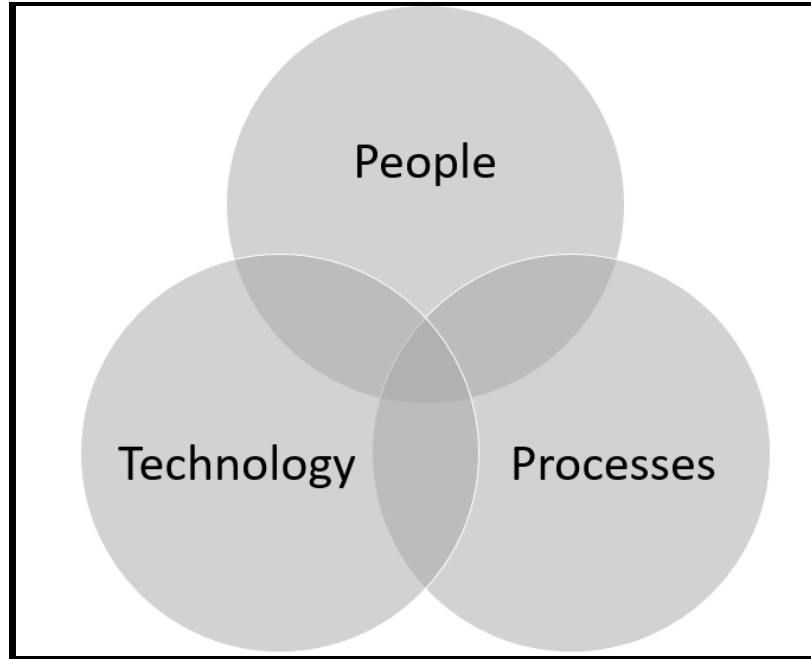
While organizational transformation often begins with a top-down approach by establishing strategy and goals for the organization, this is not always enough to ensure success in these change initiatives. Based on my 20+ years of experience in the technology sector, it seems that, to remain adaptive, a framework or process that aids in the decision of selecting the right solution is needed. This discipline ensures long term success by considering things such as technological advancement and technology adoption by employees. My experience has revealed that this type of change is possible

when an organization has a collective innovative, adaptive mindset. Newer technologies empower companies to not only do more with less but to increase their value and remain competitive in rapidly changing markets. However, trade-offs across the organization are essential when focusing on innovative technologies to support the right change in the organization for the long term. What processes can aid in the trade-off? Internal technology adaptation and adoption has been at the root of much of that change. As technology professionals strive to develop the next cutting-edge solution, they must keep individuals in mind. For example, when developing a technology to assist employees in an operational process, the solution should empower employees. What steps can be taken to increase the level of empowerment?

Technology is definitely at the core of plans to shape the future of work. A firm must understand how technology could be integrated into the workers' day and understand the impact it will have on their work to take full advantage of what it offers. End-users may or may not be involved in the design of the solution but must incorporate the tool into their functions. To be fully prepared for this type of transformational change, the workforce must be engaged in the activity and motivated to make the changes required. At the same time, today's employees demand more in their work environments. These human needs must be kept in mind as leaders establish digital strategies and select technology to motivate workers to perform their best. Without an engaged, skilled workforce capable of driving and adapting to technological advances, even a well-defined plan will have little effect on success for an organization.

While employee motivation and empowerment supports the necessary changes to implement and adopt these changes, technology selection must also focus on strengthening the business as well as the workforce. In other words, technology must either add value directly to the customer or increase efficiency in the internal processes. This focus eventually drives operational improvement and impacts the desired corporate metrics. As technology continues to evolve in development and support functions, collaboration of technical professionals, especially within large enterprises, is increasingly more critical. A trained technical workforce with the skills required to utilize new technology is also fundamental.

My thesis focuses on the future of work design within an organization to run the operations of a business to maintain a competitive advantage and produce value for all stakeholders. While the proposed framework could apply to any modern organization, I developed it specifically to ensure applicability to Federal agencies as they deploy transformational technologies to improve services for the American public. Through exploration of strengths and opportunities identified in the current Postal environment during the implementation of various change initiatives, themes surfaced from interviews and assessments related to technical change and employee engagement.



The Postal Service often approaches change initiatives with a 'people, process, technology' view. From the interviews, it became clear that the failure to consider any one of these created an imbalance that threatened a project's success in the long term. While this three part approach appears to align with the themes identified, technical change and employee engagement, this thesis will explore additional considerations to be used in the strategic design and change management approach. More specifically, I set to explore the next level, or a detailed framework, that would strengthen the organization and provide guidance for the design of the future of work. The research revealed that there are components that should be honed to support the right focus. This includes a mindset of innovation in order to remain adaptive, a strategic focus on employee involvement which, in turn, leads to empowerment, and finally intentional technology collaboration to ensure technology work is modular, reusable and adaptive.

In this paper, these components will be explored in detail. Industry-standard and industry-leading frameworks will be analyzed for applicability to the Postal Service's mission-driven mindset. As the discussion unfolds, I will walk through a history of the Postal Service and demonstrate their ability to pivot in response to market, political, and technology shifts. The frameworks will be applied with a lens of moral obligation of the mission of binding the nation as well as the legal obligation defined by the Universal Service Obligation.

An introduction to the United States Postal Service

The United States Postal Service is an independent federal agency that is self-supported through the sale of postage, products and services. Its creation began with the 1775 establishment of America's postal system. It serves the American public by providing trusted, affordable, routine, and secure mail delivery to all 160 million addresses and employs approximately 600,000 employees. With the Universal Service Obligation (USO) to provide secure and affordable mail services to every person in the United States, the United States Postal Service must continuously evolve to meet this mission, a particularly important requirement as the USO requires the USPS to serve all markets. With such an enormous responsibility, its leaders must embrace technology. The USPS has a long history of innovation to improve services for the American public while reducing costs for those services.

As a mission-driven organization, the Postal Service's focus is on binding the nation, i.e. connecting individuals and business through mail delivery. On the other hand,

profit-maximizing, competitive businesses make strategic decisions focusing on the bottom line, which often means excluding markets where costs are too high. This selection allows them to focus on new initiatives that generate revenue. In profit-focused businesses, the continuous strategic realignment demands innovation to focus on new business lines. As a public service organization, the USPS does not have the same type of focus and, therefore, might have less motivation to innovate compared to for-profit focused businesses. On the other hand, with competitive components that provide value-added services to their customers, many aspects of strategy are similar. Various frameworks for technology and motivation are available; however, with a service-minded focus, analysis is necessary to determine how to apply these frameworks.

As important as technology and innovation are, the USPS must operate within regulations and guidelines that impact their bottom line and complicate strategic decisions. One example is the Postal Accountability and Enhancement Act of 2006 (PAEA) which divided postal services into two categories: market-dominant and competitive. It also defined regulations for price increases. Market-dominant product prices are limited based on CPI inflation, while competitive products are less regulated but tied to market prices. PAEA also restricted the USPS from offering non-postal services (Postal Act of 2006). While some exceptions have been allowed by the Postal Regulatory Commission, the Postal Service continues to push for more flexible pricing and product regulations (Five Year Strategic Plan 2017-2021 12-15). With these limitations, the USPS must be selective in innovation and technology initiatives to ensure investment in new technology produces value for the organization.

The USPS shared their strategic goals into 2024 in their five-year plan titled *The U.S. Postal Service Five-Year Strategic Plan FY2020-FY2024*. These goals demonstrate the importance of investing in their employees and infrastructure and focusing on the customer. These goals include:

- Deliver world-class services and customer experiences.
- Equip, connect, engage, and empower employees to serve our customers.
- Innovate faster to deliver value.
- Invest in future platforms.
- Pursue legislative and regulatory changes necessary to achieve financial sustainability (9).

Importance of Frameworks

Herbert Simon once said, "A wealth of information creates a poverty of attention." Although this quote is from the 1970s, it continues to be relevant. Companies must have a clear strategic focus to effectively navigate the rapid evolution of technology and remain relevant, efficient, and competitive. Analyzing the history of the USPS, innovation has often been at the core of many efficient and effective processes to improve operations and services. A focus on operational efficiencies and innovation is important, but the paradox of balancing the need for stability and the need for change must be considered in those strategies. As the evolution of change continues, the focus, motivation and capacity for change of the end-user continues to be a key component for developing new technology initiatives. With the advances in technology, work environments will certainly undergo substantial changes with the increased role of automation and artificial intelligence. With focus, a balance of technological adaptation and adoption is possible.

How it evolves is, to a large extent, dependent on the choices made by technology and business executives.

While the USPS must first focus is its Universal Service Obligation and not primarily on profit maximization, as a self-funded agency, it experiences some of the same challenges faced by for-profit firms. Also, although the strategic decisions may be limited by regulation, technology deployment and efficiencies are similar. For this reason, it appears, on the surface, that principles for a technology framework are similar to other firms. Applying research of methodologies from behavioral economics, management science, innovation, and technology frameworks along with analysis of the effectiveness of past deployments, I will explore the development of a framework of guidance on the various aspects of technology deployments. Frameworks will guide future decisions for technology investments as well as tripwires for retiring existing technologies. As mentioned, this thesis will examine the topics that surfaced in the interviews with Postal employees: innovation, engagement, and technology collaboration. Each of these themes will be organized and explored as chapters. Each chapter will cover the current state of the USPS for that topic, analysis of frameworks found through desk research related to the topic, and the recommendations for the USPS to explore to strengthen competency in that area. In the end, an overall framework and a visual diagram will be shared to act as guide for long-term strategic direction.

Chapter 2: Research Methodology

Overall, this thesis employed several methods for assessing potential frameworks to increase the probability of success of a technology solution. First, it drew on informal interviews and discussions I had with 14 technology professionals to understand perceived challenges in the current environment. Using the topics from these conversations, I developed a survey to gain an understanding of methodologies in use, levels of engagement with end-users and their management chain, and state of technology strategy. Next, I held in-depth one-on-one sessions, either in person or over the phone, with 8 Postal managers. In these sessions, I collected survey responses and also asked open-ended discussions to allow the interviewees to provide additional feedback not directly included in the survey questions. Finally, I analyzed the results using metrics on past deployments available in an existing system managed by the Enterprise Analytics team. This system measures success based on the extent of adoption of the solution as well as impact to the key performance indicators targeted.

My original theory was some component in the survey (for example, methodologies for development or interest by the end-user) would directly correlate to the success of the project as measured in the Enterprise Analytics system. However, I found that no meaningful pattern existed in this quantitative data. For this reason, I quickly concluded that more was in play than could be measured and set this method aside to focus on the value of the qualitative data from the discussions, interviews, and from my personal experience.

Methods of Data Collection

With a goal to understand the effectiveness of technology management practices, I utilized qualitative methods in the form of a survey. I administered this 20 question survey in person or over the phone to technology professionals in the USPS CIO organization. These questions were either table/matrix selection, multiple-choice, or free-form. The questions were developed based on the perceived issues identified in the informal discussions. To understand the technology landscape as it compared to other organizations, I drew on an existing validated instrument: the detailed questionnaire from Jeannie Ross's *Designed for Digital* book that assesses the level of progress towards technology excellence.

Interview questions were designed to assess project success from 3 perspectives. The first perspective was based on the design and development methodology utilized in the following phases: design, development, deployment, and adoption. The survey questions specifically mentioned the following methodologies: agile, lean, six-sigma, user-centered design, crowdsourcing, design by users using innovation toolsets, prototyping, piloting, proofs of concept, and artificial learning/machine learning. The next perspective related to engagement. Business-side engagement (outside of the technical teams) was measured by level of interaction as perceived by the interviewee. The final perspective related to the respondents' view of the current state of platform strategies within the technology organization to assess the level of technical collaboration.

When designing the surveys and research questions, the primary goal was to understand and assess:

- Current strategies for selecting and discontinuing technology solutions
- Level of interaction of various stakeholders and the impact of that interaction on adoption
- Challenges related to deployment, development, or adoption
- Alignment to key performance measures of the organization which include both the Pay for Performance objectives and the strategic initiatives of the organization
- Issues in the development cycle that impact adoption
- Understanding of technology in place to prepare for the future of work

The structured surveys included several sections:

- Level of engagement (technology leads and management, business leads and management, and end-users) (Question 1, Appendix)
- Targeted business Key Performance Indicators the application aims to impact
- Metrics to trigger a review to consider retirement of an application
- Development methodologies utilized and stakeholders involved (Question 2, Appendix)
- Origination and prioritization of requirements (Question 3, Appendix)
- Status of progress towards technology building blocks (Question 4, Appendix)

Methods of Analysis

The interviews were primarily qualitative with selections for methodologies in use, ratings for functional building blocks, measures of level of engagement, and open-ended questions. These questions allowed free-form text collection, which served as the basis for broad themes. Analysis of each theme guided an understanding of participants' perceptions and motivations. Finally, the topics were quantified in the themes to determine which were most common. The extent of applicability of the topics to the broader organization was supported through the selection of participants across the technology organization. Later, with a focus on the themes found during the interviews, desk research of existing methodologies informed the potential alignment to better assist in the selection of the right technologies to shape the future of work at the USPS.

In general, during interviews, recurring themes surfaced that seemed to indicate that the organization already has prepared teams to support the changing needs of the organization. These included innovative activities such as the use of new technologies or the application of new methodologies. Topics also surfaced that seemed to suggest that certain factors tended to disrupt engagement. These included extensive delays, unexplainable solutions, and complicated user interfaces. Analysis of these strengths and opportunities helped to determine the most impactful attributes to focus on for establishing a framework of guidance for selecting (and retiring) technology solutions. Through analysis of interviews and solution effectiveness, I grouped the themes into three

categories to guide the desk research. Finally, applying the lens of the future of work to these themes, I began to develop a custom framework for the USPS.

Results

These interviews yielded insights that informed the literature review and analysis at the heart of this thesis. To highlight what I learned from them and set the stage for the three in-depth discussions that follow, I set the state with an overview of the themes that I identified from the full set of the interviews. The first theme related to innovation, both top-down directed innovation through teams assigned innovation activities through official roadmaps and bottom-up innovation from teams either inventing or leveraging new technologies to improve areas within their control are present throughout the organization. The dual method of pushing innovation is a positive influence on the organization to remain competitive and adapt to customer's needs. This focus also seemed to have a side-effect of engaged teams who were excited and empowered to take on the next challenge.

Employee engagement was at the center of most discussions. This topic included the engagement of end-users of the technology and their management chain. It also included the motivation of technology professionals to collaborate with other teams to reduce redundancy and to innovate to prepare for the future needs of the organization. Many teams mentioned having multiple priorities and working on components that were very similar to other initiatives. There also seemed to be some overlap in the function of

different systems; however, when asked about metrics they maintain to understand when an application should be retired, there was nothing official in place.

The next common theme was related to technology components and data sharing. Collaborative projects are far more complex than projects handled within a team. The more collaborative a project is, the more challenging it is to manage the cross-functional components. Also, sharing of processes that might be reusable was less evidenced across projects. This issue surfaced related to processes or modules that were common across the organization (such as sign-on methodologies) and with functions that were related and shared (such as address standardization or geocoding services). As an example, one interviewee reported project delays due to the development of a standard function for authentication. Another team reported working on similar capability that another team was developing without knowledge until late in both projects. While there were disconnects where integration would have been beneficial, pride and ownership in initiatives were always present, as was the willingness to collaborate with other teams. With a shared technology framework, I feel that efficiencies could be gained to further strengthen the technology environment.

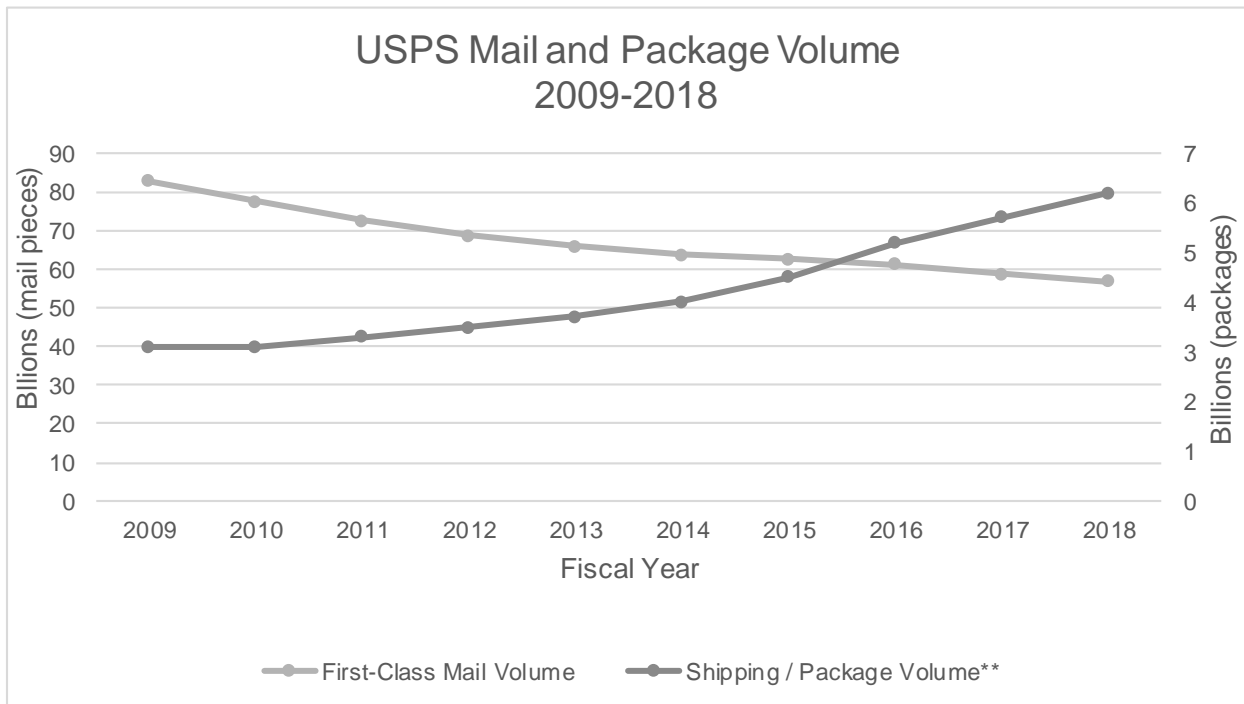
Chapter 3: Innovation

When I reflect on my experience, it appears that innovation must be a part of an organization's strategic plans to ensure the firm is ready for transformational change. Whether the gain experienced is marginal or a breakthrough advancement, it is crucial to consider the future to be designed. Organizations must innovate to prevent disruption both by inefficient processes, resulting in rising costs, and to keep up with customers' changing needs. However, with innovation, trade-offs are essential. An understanding of both the short term and long term goals are needed to ensure the desired outcome. Further, an understanding of whether the technology is explorative or more mature guides innovation efforts. As an example, robots for interacting with customers may be considered an explorative effort with long term implications and horizons while robotics in operations are more mature with a short-term horizon and implementation roadmap. In establishing a strategy, a strong framework will include a focus on continuous improvement and evolutionary changes as well as a guidelines for failing fast and retiring existing technologies that are no longer effective.

The USPS has a long history of innovation, which includes both internal innovation as well as collaboration with other organizations to apply new market technologies to improve aspects of the organization. The ability to leverage innovation to improve the USPS is a strength that supports the continued transformation of the organization. However, guidelines for innovation are important to ensure these efforts are focused, efficient and effective.

History of Innovation at USPS

Technology innovation has shaped the current work environment at the Postal Service and has the promise to continue to shape the future of work. When it comes to innovation, we often hear the phrase "disrupt or be disrupted." To some extent, disruption from new technology is currently impacting the USPS. With the continued evolution of bill pay and other services to the internet, the volume of first-class mail has declined. However, at the same time, the e-commerce market is booming, which in turn has a positive impact on package volume. The following graph depicts the decline and fall using data from the USPS (Appendix, Table 1). The USPS must be adaptive in order to remain efficient and best serve the needs of the American public when undergoing this type of change.



First Class Mail and Package Volume Chart adapted from Decade of Facts and Figures Table 1

Most technology deployments are in pursuit of operational excellence that tie directly to a company's key performance indicators. However, with shifts in markets, a certain proportion of a company's time should be spent on innovation to support future initiatives of an organization. As we consider ways in which the USPS will need to adapt for the future, it is essential to review the history of technological innovation at the USPS.

The United States Postal Service has a long history of innovation. USPS transportation has evolved from horseback riders and stagecoach drivers who carried mail in the 1700s, locomotive-driven networks, and fast-moving steamboats in the early 1800s, vehicle delivery in the 1900s and perhaps to drone delivery in the 21st century (The United States Postal Service: An American History 12-24). In between, airmail was tested in 1911 and officially implemented internally in 1918. These efforts were incredibly innovative at the time. They contributed to the improvement in aeronautics in the 1920s until the establishment of commercial airlines when the Department of Commerce assumed the infrastructure dedicated to these efforts. These innovations reduced the time to transport mail from New York to San Francisco from one month or longer to just six to seven hours (42-43).

Mail sortation equipment has been another continual focus for leveraging innovation to improve services within the Postal Service. During World War II, when many postal workers left for military service, the Postal Office Department created a zoning process in large cities. This zoning process used two numeric codes to designate each city, which allowed employees without knowledge of address schemes to sort mail.

Further expansion of the zoning process occurred in the 1960s to the Zoning Improvement Plan (ZIP) Code, where 80% of the mail could be sorted to a 5-digit code to designate a city for all addresses in the United States (The United States Postal Service: An American History 54-57). Today, 11-digit codes are assigned to addresses in a manner in which well over 95% of the 160 million addresses have a unique numeric assignment. This type of hierarchical numbering system empowers automation equipment to sort mail efficiently. It also allows the community of major mailers and mail service providers to contribute to the efficiency of the USPS.

Mail processing efficiencies are yet another area of focus for the application of innovative technologies. Through the years, mechanization and automation processing has seen a continual evolution of change. This automation began with the invention of cancellers, which voided postage on letters to prevent reuse and avoided the labor intensive process of hand-cancelling postage. Soon after, the Service introduced letter and package sorters along with automated address readers. By the late 1980s, the USPS combined this equipment along with the ZIP coding scheme to automate sortation to a finer level reducing the number of manual handlings to properly sequence the mail and substantially increasing the efficiency of mail processing. Later in the 1990s, the sortation was performed down to the delivery point level (The United States Postal Service: An American History 59, 68-71). To the current day, as the number of letters declines and package volume grows, new technology inventions continue to be developed to automate handling of larger flat mail and packages through the various points of the sortation and distribution network to further improve efficiency.

Even with transformation in transportation, sortation, and automation equipment, with continued growth in delivery points, the Post Office Department began to experience difficulty in keeping up with the volume increase and began to lose the confidence of the American public. President Johnson appointed a Commission on Postal Reorganization to determine if the then-current postal system was capable of meeting the mail delivery needs of the nation. The committee, comprised of academics, politicians, and the president of the AFL-CIO, reported back that "the procedures for administering the ordinary executive departments of Government are inappropriate for the Post Office." The 1967 committee also concluded that privatization was not in the best interest of the American public. The resulting Postal reform, known as the Postal Reorganization Act, fundamentally changed the way the organization functioned. This act provided the USPS with 3 new things: financing authority, management by a Board of Governors and Postal leaders instead of a political cabinet member, and authority to set rates upon review of the newly formed Postal Rate Commission. With this, the Post Office Department became an independent entity under the executive branch known as the United States Postal Service (The United States Postal Service: An American History 61, 63-64).

Current Innovation Efforts

Today, the United States Postal Service approaches innovation from several fronts. Within the technology organization, digital business is a strategic focus from technologies that run the business to adjacent technologies to enhance other services. This approach allows the USPS to connect internal efforts that are innovative in nature to

potential future offerings for new external markets. The marketing organization has an innovation focus to improve services to customers as well as engage with external entities such as start-ups and established organizations to keep abreast of technological advancements in the industry and to determine how it applies to the work of the USPS. They often act as liaisons to the other business units within the organization that might benefit from the new technology. The Executive Leadership Team also establishes an innovation strategy that is updated annually to ensure there is a proper focus on skills development and to drive the application of innovative technologies across the organization. Bottom-up, lower level management in the organization continually interact with industry leaders to find innovative solutions to improve operations in their area of focus. Finally, the USPS continues to develop and invent new technologies in-house, as evidenced by the continuous flow of patents issued to the organization.

As a 200-year-old company, the USPS has been through several cycles of transformation. From the days of delivering mail on horses, without the luxury of automation, to more modern days of embracing technology to more efficiently and effectively deliver the mail, the transformation of the Service is apparent. Typically, the Postal service embraces technology as it supports improvements in processing. From utilizing autonomous guided vehicles to move mail within large facilities, next-gen talking mailboxes to empower customers everywhere, IOT-connected carriers for delivery status, testing self-guided vehicles for long trips, video and image analytics to alert of issues and to focus efforts, technological breakthroughs are exciting and welcomed.

Not all technologies empower the Postal Service. Some result in increased competition and have the potential to reduce volume and revenue. Entrants into the market from other platforms continue to evolve and grow – from email providers, e-Doc signing applications, electronic tax filing software, and social media platforms. Electronic communications offer a cost-effective method for communicating anywhere at any time. Many of the providers combine online communication with advertisements. This reduces the cost to the companies and reduces the volume of official and marketing sent through the USPS. Since it takes very little time to communicate with millions of recipients, this method has clear advantages over traditional mail. Exploring the differentiators for the USPS, it is clear to see that the benefits of newer technology can be a disadvantage for the entrants. Because online mediums can connect to millions of people quickly, their communication often overwhelms recipients who must choose what to ignore and where to focus. Inboxes are inundated with thousands of emails, and online marketing can be overwhelming, as evidenced by the number of pop-up blockers in place. Comparing physical mail to electronic communication, the USPS appears to have an advantage in a few key areas. I will explore three of these in the following section: the mail moment, the physical connection, and the trust of the American Public.

The 'mail moment' is the moment you receive mail in your hand and emotionally connect to it. Studies have shown that upwards of 98% of consumers bring in their mail the day it is delivered. Of those, 77% look at it immediately (PrintintheMix.com). Mail is a great way to connect with customers at a low cost. The physical connection is another advantage. The USPS delivers to 160 million addresses six days a week. No other

company comes close to that level of service. Although it is not always profitable, it is a service afforded to the American Public through the Universal Service Obligation. While this mandate provides an opportunity for other shippers to outsource the last mile leg of the delivery network to areas more expensive to serve, it also generates trust with end consumers through that physical connection. This trust is evidenced by routine surveys performed by companies such as Gallup and The Ponemon Institute where the USPS is often ranked high in trust compared to other Federal agencies. Mail carriers often personally know their customers. With that local connection, the USPS is connected to its customers and has products to help B2C (business to consumer) companies stay connected and also connect to new customers moving into their market. Physical connection and confidence are competitive advantages that the USPS can leverage as they consider new innovative technologies in adjacent business models.

Through competitive advantages, the USPS has proven time and time again that they can transform. They are clear in their strategic planning that this will continue to be a focus. In their FY 2020 – FY 2024 plan, they indicate the goal "to drive innovations that give consumers more control over the mail they receive, make direct mail simple to send, enable multimedia touchpoints, and reinforce the resiliency of mail as a trusted, effective communications channel. Mail continues to be the primary revenue source for the Postal Service, so sustaining mail revenue by offering mail products and features our customers value is essential to our success" (23). The USPS is countering the disruption to its business model by online mediums through a new program, Informed Delivery® (ID), which embraces the digital to physical connection. With ID, the USPS sends a copy of

the mail that will be delivered that day, along with links to online websites about those products. The notification also includes additional digital marketing from businesses that desire targeted omni-channel offers but prefer to reduce the volume of email and online ads, which tend to overwhelm customers. According to usps.com, over 19 million mail recipient customers have signed up as of January 2020, and 88% of them open the daily notices every day. Embracing the disruption of online communication by incorporating email notices and online marketing with physical mail has allowed the USPS to add value to the mail and improve the customer experience while fulfilling their Universal Service Obligation.

With the rise of omni-channel connection, e-commerce purchases show no sign of slowing nor does package delivery for the USPS. The USPS delivered a record of 6.2B packages last year, and with innovations like Dynamic Routing Sequencing, they can efficiently deliver packages seven days a week in many markets, while mail is only delivered on six days. At the same time, they have implemented aggressive cost controls, often by leveraging innovative technologies, which have significantly reduced costs in moving and delivering the mail. These savings are evidenced by the reduction of career employees from 623,128 to 497,157 from 2009 to 2018, while the number of delivery points has increased by 150.1 million to 158.6 million.

The USPS describes many recent innovations which have resulted in efficient mail processing and a reduction of costs per delivery point served. The following details are provided of their capabilities are listed on usps.com:

- Is the world leader in optical character recognition (OCR) technology, with machines reading nearly 98 percent of all hand-addressed letters and 99.5 percent of machine-printed mail
- Is one of the largest material-handling systems in the world for moving mail. There are more than 200 miles of conveyors within postal facilities.
- Has the largest gantry robotic fleet in the world, using 174 robotics systems to move 314,000 mail trays per day.
- The Postal Service uses more than 8,500 pieces of automation processing equipment to sort nearly half the world's mail.
- The new Enhanced Package Processing System (EPPS) in Portland, OR, sorts packages at 25,000 pieces per hour.
- The Automated Delivery Unit Sorter (ADUS) sorts packages and bundles of mail at a rate of 4,000 pieces per hour with a sort accuracy of 99.95 percent.
- The Robotic Containerization System (RCS) sorts trays and automatically loads rolling containers or pallets.
- The Advanced Facer Cancellor System (AFCS) positions letter mail and postmarks stamps at 36,000 pieces per hour.
- The Delivery Barcode Sorter (DBCS) reads the barcodes on letters and sorts them at 36,000 pieces per hour
- The Automated Flat Sorting Machine (AFSM) sorts -at mail at 17,000 pieces per hour.
- The Automated Package Processing System (APPS) sorts packages and bundles of mail at 9,500 pieces per hour.
- The High Throughput Parcel Sorter sorts packages and bundles at 15,000 pieces per hour.
- The Automated Parcel and Bundle Sorter (ABPS) sorts packages and bundles of mail at 6,000 pieces per hour.
- Tray sorting machines sort more than 18 million trays per day through conveyor systems.
- Mobile Delivery Devices (MDDs) provide real-time scanning for daily delivery operations. There are more than 270,000 MDDs in use nationwide (facts.usps.com 24).

While their history shows a focus on innovation, this list illustrates a continued focus on operational excellence and proof that the USPS continues to embrace innovative technologies to improve those operations.

Importance of Innovation

According to the late Clayton Christensen, when assessing innovation, one key point to remember is the impact of the innovative technology under consideration. He describes two types of innovation: sustaining and disruptive technologies. Sustaining technologies provide incremental improvements and result in operating efficiencies within the company, rarely introducing significant risk to the organization. These types of technology are often leveraged at the USPS to process and move the mail more efficiently. Disruptive technologies, on the other hand, do not provide incremental improvements when they are introduced, often have inferior performance, and are vastly different from current technologies. These types of technologies are often smaller, with less functionality, but can change faster than consumers demand. As an examples, began with somewhat basic functionality but have grown into a comprehensive collection of technology replacing desktop computers, laptops and even cameras for large audience of users. Figure 1 depicts the trajectories of sustaining and disruptive technologies. The trajectory shown for disruptive technologies demonstrates that early market expansion to the lower end (for less profit) eventually expands into the mainstream market threatening the incumbent. The "innovators dilemma" is the conflict faced when a company has to decide whether to continue with existing market with continuous, incremental improvements (sustaining innovation) or change paths to capture a new market by embracing new technologies and new business models (disruptive innovation) (xiii - xviii). Leaders in large successful organizations, such as the USPS, must recognize the difference between the types of innovation to manage the impact effectively.



Fig. 1. The Impact of Sustaining and Disruptive Technological Change; Christensen, Clayton M. *The Innovators Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Review Press, 2016, page xvi.

Christensen further clarifies the necessary management focus and reaction for the different types of innovation. For sustaining technologies, being aware of the technology and applying it to operating efficiencies or to improving the customer experience is sufficient. However, knowing which technologies to focus on can be more complicated. A firm must determine where to focus resources and which segment of customers or part of operations to apply the technology. This focus must also consider the worker and, more specifically, the future design of the workplace. There is some time for making a decision in this case as, when dealing with sustaining technologies, it is not vital to be the first mover. Figure 2 demonstrates the typical s-curve of technology advancement where the important management decision occurs when the curve of the old technology begins to intersect with the newer technology. These technologies can be implemented as incremental improvements in operations to take full advantage of the innovation. The

most successful organizations find a way to stay on the dotted line to take advantage of the new technology to ensure operational efficiency and sustained competitive advantages (30-32, 39-40,121-123). This requires continual interaction with the market to understand advancement in technology to determine if, how, and when to apply to processes within the organization.

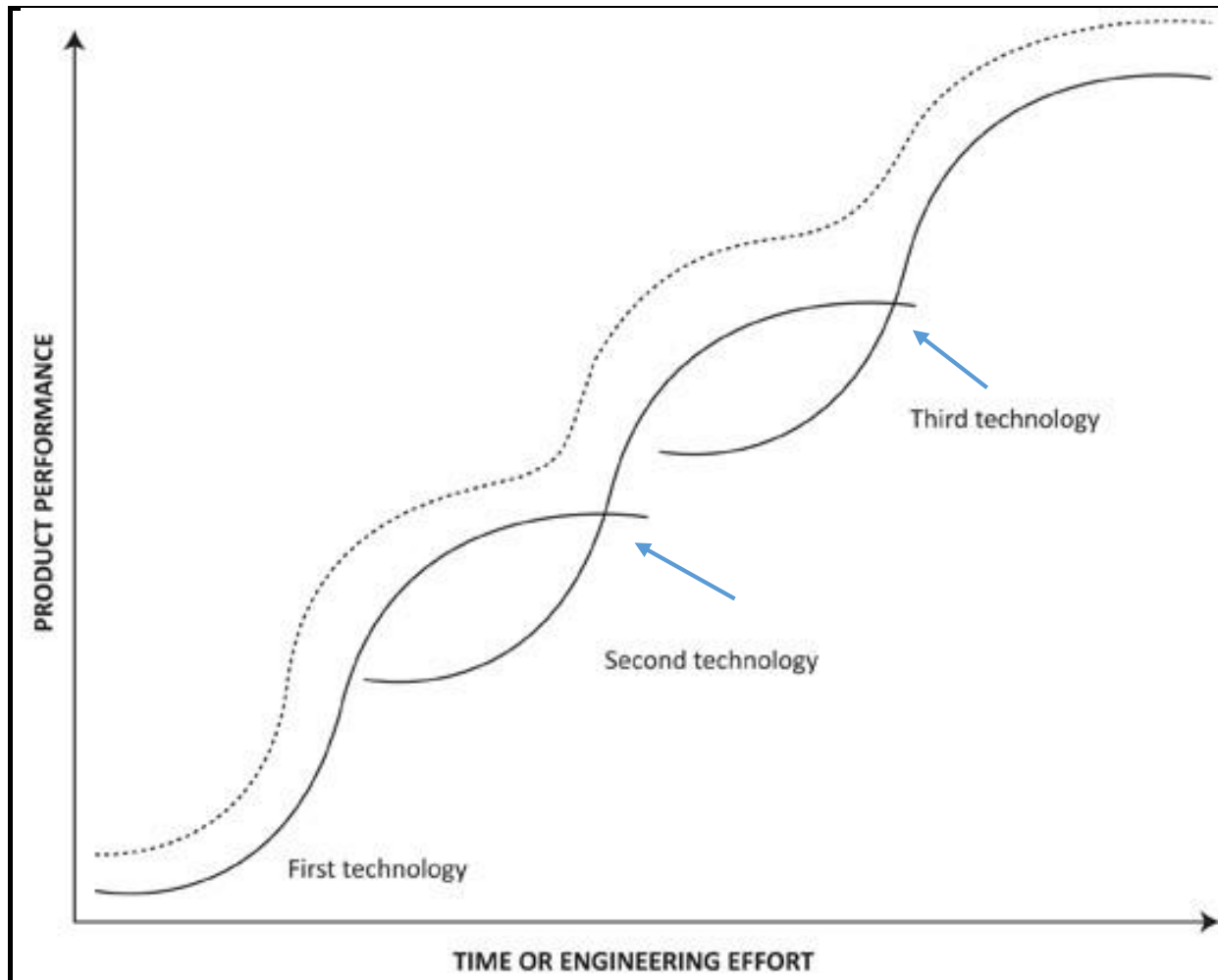


Fig. 2. The Conventional Technology S-Curve; Christensen, Clayton M. *The Innovators Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Review Press, 2016, page 40.

Disruptive technologies do not follow the typical s-curve. Instead, they typically start in another market. As they advance in performance, they begin to invade the other market. Figure 3 demonstrates this disruption. Because of this path, decisions around disruptive technologies are more difficult to make. Continual interaction with customers is critical, as keeping in-tune with their expectations is necessary when making strategic decisions around disruptive technologies. However, as Christensen stated, realizing that customers may not always know precisely what they will want, utilizing visionary techniques such as trajectory maps can assist in analyzing conditions to reveal what the company will face.

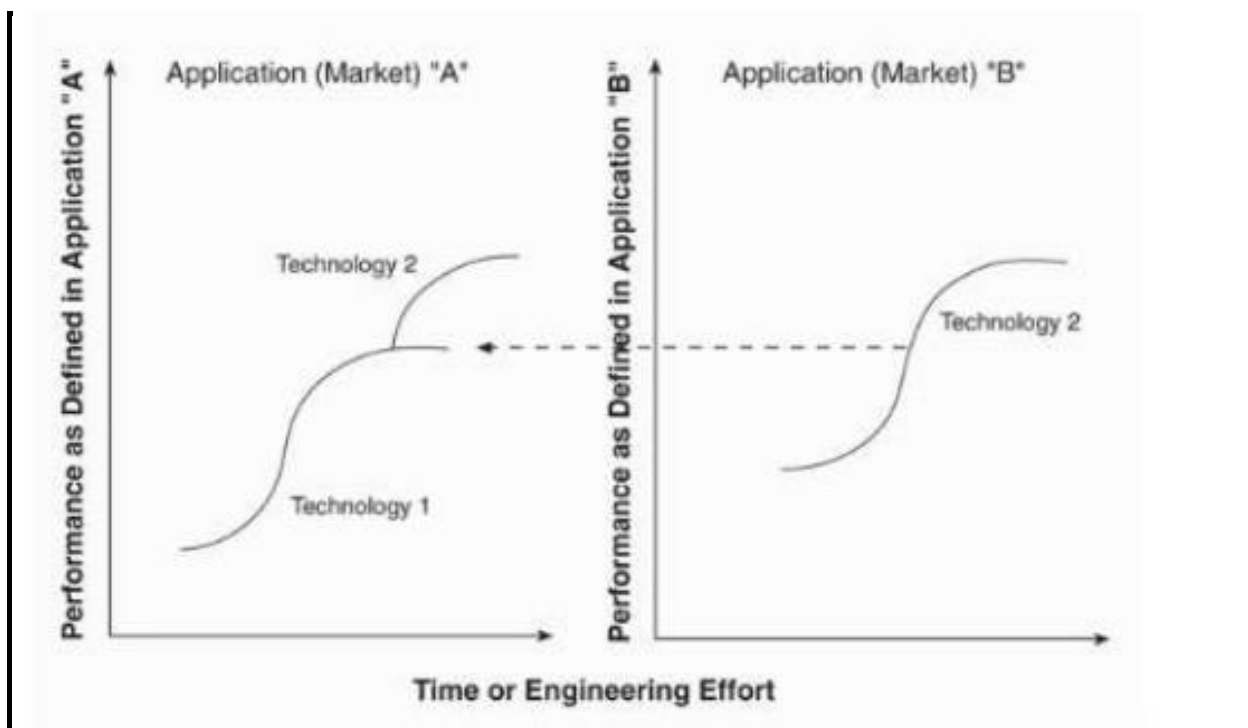


Fig. 3. Disruptive Technology S-Curve; Christensen, Clayton M. *The Innovators Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Review Press, 2016, page 41.

These disruptive technologies are typically of three forms, and, unlike sustaining innovation, speed of reaction is vital as first movers often have an advantage

(Christensen, 41-42). The first includes low-end disruptions that occur in similar markets with less functionality but higher adoption, which allows the lower end of the current market to switch. Examples include Dropbox's disruption of cloud storage solutions. The second includes new-market disruptions that are more affordable and allow a new market to own the product. This type of disruption was seen when personal computers impacted the use of high-end computers like Data General. Finally, the third includes hybrid disruptions, which involve both new markets and low-end solutions, such as discount airlines that expanded customer base to those who could not previously afford to travel and to existing customers who want a more economical option (Christensen, Chapter 7). These types of innovation can be a threat to the USPS. Online advertisement is an example. It can take the place of marketing mail, even in low-end solutions such as social media posts. For this reason, the USPS must stay informed of the state of the market and find ways to innovate and add value for their customers.

Recommendations for Continued Innovation

While historical evidence suggests that the USPS will survive this wave, innovation must continue to be part of their strategy to ensure efficient and effective processing while directing and designing the future of work. With a focus on both sustaining and disruptive technologies, the USPS must continue to adapt to effectively serve their customers and remain relevant. They must also collaborate with external markets, finding partnerships with competitors, and innovating to deliver value to their customers. This engagement with external innovators, start-ups, academics, and technology disrupters will ensure the USPS is better informed and in-tune with changes in the industry and better prepared to

embrace innovation to adjust and redefine itself to serve its customers well into the future. Remaining aware of disruptive technologies while continuing to provide universal service to the American public is essential to set a strategic direction that will adequately balance efficiency with innovation.

To be clear, the impact on the USPS from disruption is significant, as mail volume has declined from 213B in 2006 to 146B last fiscal year. However, as they historically have, the USPS is changing too. The USPS's strategy demonstrates a focus on differentiation while embracing new technology and preparing for the next disruption. Although inventors will continue to introduce disruptive technology, the USPS will adapt and ensure the mission of Universal Service is intact. When approaching both sustaining and disruptive innovation, an analytic, rather than fearful view, innovation provides a path for the organization to keep pace with changes in the market while empowering their employees to better serve their customers.

Finally, remaining mindful of the future of work when setting an innovation strategy will guide the organization in the right direction. However, to fully embrace innovation, organizations must have a culture of change. This type of culture is supported through an engaged workforce that embraces new technology. A discussion of employee engagement continues in the next chapter.

Chapter 4: Engagement

To prepare for the rapid evolution of change required to shape the organization, the workforce must be engaged to adapt to the continuous state of change and to interact with new technology. Standard practices across many industries measure engagement by aggregating employees' perspectives of several factors that impact the culture of the organization. These factors fulfill employee needs that are necessary to motivate and empower employees in the organization. These include basic needs, such as fair pay and treatment. Higher needs are also essential. These include topics such as connection to the company's mission and a feeling of belonging to a team. With basic and higher needs in place, employees have the mindset to adapt to change. However, even with the right mindset, change implementation requires some slack in the process. This slack is required to improve standard work processes and to persist through the learning curves of new technology implementations. Existing work, including the use of other technologies that may no longer be effective, should be considered as opportunities for creating this slack.

Typical USPS technology implementations ideally involve collaboration with end-users at several points. My experience indicates that solutions developed with a strong focus on collaboration are more likely to support the needs of the end-users. Although many methodologies support agile, efficient interaction, several frequent touchpoints for end user interaction are key. These touchpoints include problem definition, solution exploration, and technology implementation. While this level of interaction is not always

possible, it is essential to understand the integration of the technology into jobs and the level of interaction required by the end-user. Although technology teams should bring innovation to the table, they must also fully understand the problems they are solving. To accomplish this, a shared understanding of technology's impact on the problem, along with feedback from the end-user, often provides the level of information needed. In the end, cooperation, communication, and negotiation of both parties will build trust and result in solutions that truly engage and empower employees.

As mentioned earlier, even with an empowered workforce, an overarching strategy is vital to ensure technology selection supports the organizational change desired. This type of change requires a continued focus on strategic plans to ensure short term motivation does not distract from long term consequences. While bottom-up initiatives go a long way to increase employee motivation, top-down strategies are fundamental in steering the right selection of technology to design the proper workplace of the future. For that reason, convergence of top-down and bottom-up approaches supports both the need for employee motivation and strategic direction in the organization. This method of leadership is present at the USPS where the executive leadership team defines the strategic initiatives of the organization while lower levels of management have the authority to define initiatives that follow the strategic plans.

USPS's Current Strategic Focus on Engagement

The Postal Service gauges the level of employee engagement through Gallup's Employee Engagement Survey. The survey, which is branded "The Postal Pulse", includes twelve questions related to employee's basic and higher needs to measure the state of the work environment and employee engagement at the USPS. With improvement seen each year, a shift in the culture is evident. The USPS's Postmaster General Heroes' Program is also evidence of engaged employees who go above and beyond the call of duty. This program honors employees who perform extraordinary feats, often saving lives, locating lost children, and supporting others in a time of need. The program has no shortage of stories that demonstrate the service-minded nature of employees.

To support the employee development aspect of engagement, the USPS has developed various training programs that prepare employees for future job responsibilities and leadership roles. These structured programs are available at various levels of experience and responsibility. To assist employees in applying analytics to their current role, the USPS offers a program called Analytics University, which provides training on various in-house systems and provides employees with the necessary skills to support broad areas such as Delivery or Operations. Participation in these training programs is either employee initiated or through a nomination process. These programs prepare leaders of the future with a growth-mindset and ensure leaders have the tools necessary to engage the workforce.

The USPS has listed its employees as their "greatest asset" and includes their development and empowerment in their strategic goals detailed in *The U.S. Postal Service Five-Year Strategic Plan FY2020-FY2024*. These initiatives include several strategies to equip, connect, and empower employees, such as:

- aligning development and incentives programs to great customer service
- deploying technology to help them manage their work and also involving them in the development of new technology
- improving employee safety and well-being through training enhancements, smart device deployment and real-time reporting of safety concerns (22-24)

Recent organizational changes at the USPS are evidence of this strategic focus. These realignments created teams with the responsibility of fostering collaboration between technology teams and the business. One new business services team brings the voice of the business to early phases of development and assists in prioritizing efforts. The team ensures that technology solutions developed meet the needs of the end-users. They also prioritize technology initiatives to align with the needs of the business. Legacy processes and decisions still drive much of that process, but this has the potential to strengthen collaboration in the organization if implemented effectively.

From a technology development and deployment standpoint, the USPS leverages several of the standard methods of engagements mentioned earlier. From user-centered design, agile development methodologies, co-location of users and developers, or

customers as innovators using design tools, there is no shortage of methodologies to consider. From the survey responses, agile is the predominant method of coordinating these activities at the USPS. User-centered design methodologies are also sometimes in use. Even with the knowledge of the importance of end-user engagement, speed to market was sometimes identified as a driving factor limiting interaction with the end-user. This lack of input appeared to lead to implementations that are not aligned well with the needs of the business. Although agile development offers smaller iterative changes that keep stakeholders in the loop, the true measurement of effectiveness is seen when the solution is deployed to the end-users. At that point, the solutions teams often assess effectiveness by the number of users and the impact on key performance indicators. Although the interviews surfaced some projects with adequate interaction and others without, it was not possible to directly tie that to the success or failure of an initiative. In the end, motivation at deployment either through end-user involvement or by directly tying to metrics such as pay for performance indicators had the greatest impact on the utilization of the solution.

Engaged Workforce and Loyal Customers

“Success depends less on strategic inspiration than on the way people on the front lines implement new digital tools, and most leaders are not laying a foundation for those employees to succeed” (Cross, Edmondson, Murphy). Cross and colleagues note that this often occurs when managers are disconnected from what is happening in operations. This leads to a lack of adoption by the end-user. This risk can be minimized by the

technology design teams gaining an understanding of how the user interacts with technology and how it helps the user perform their job.

Further exploring engagement of employees, according to the Good Jobs Institute (GJI), nine factors lead to employee motivation. As with other engagement assessments, these fundamental needs of employees include both basic and higher needs. GJI includes fair pay and benefits, stable schedules with adequate hours, clear career path through evidence of internal promotions, and job stability and safety in their Basic Needs Model. For higher needs, they include meaningfulness in the mission of their work, personal growth in continuous learning, belonging to a larger group, achievement through job complexity, and recognition of co-workers and management. As visualized in their Higher Needs diagram (Figure 4), the basic needs are foundational and should be the first priority. With those in place, employees have mental focus required to begin to attain the higher needs in the right environment. These needs are imperative for motivating employees to focus and do their best work to create value for customers.

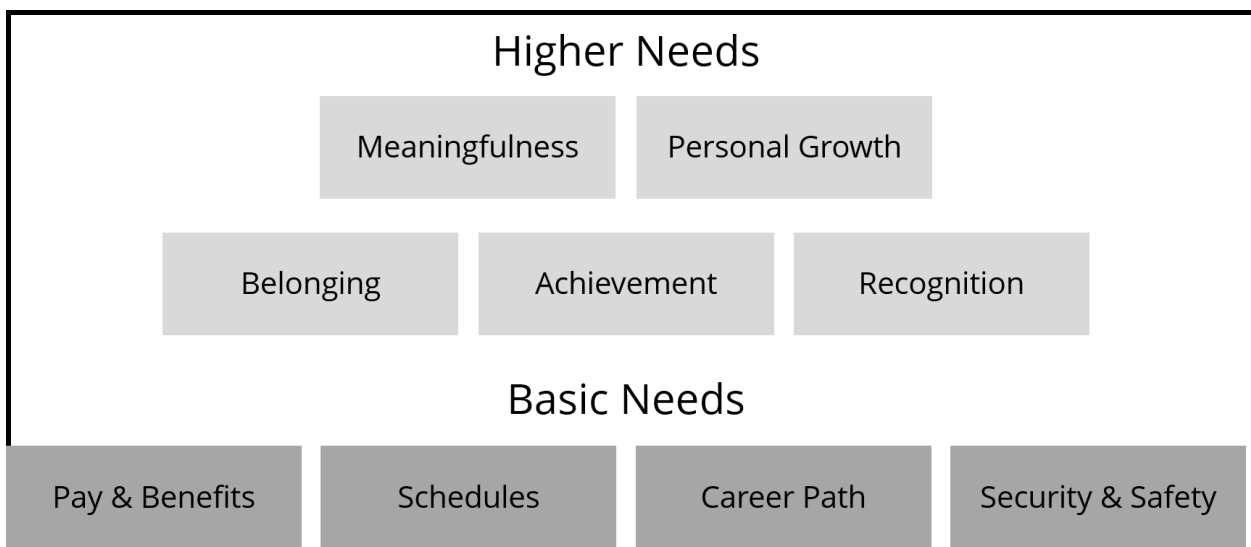


Fig. 4. Component 1: Employees; Good Job Institute, <https://goodjobsinstitute.org/good-jobs-scorecard>

For internally-facing applications designed for operational efficiency, employees are also customers. To ensure the employees, or internal users of technology, are engaged and empowered, they must be involved in the development of the technology. Business and Operations personnel should work alongside Information Technology personnel to ensure new initiatives add value, empower employees, and provide the right type of support. Good Jobs Institute also describes basic and higher needs for meeting the needs of customers. Again, their Customer Needs Diagram (Figure 5) demonstrates the fundamental basic needs that should be the primary focus before moving to achieving the higher needs. Basic needs include reliable services and systems, efficient processes, ease of use and functional customer interfaces, and responsiveness of service and systems. Higher needs include assurance, empathy, and purpose. Again, for solutions deployed in-house, employees are customers. To ensure proper engagement and motivation in the use of systems and processes, these needs should be addressed.

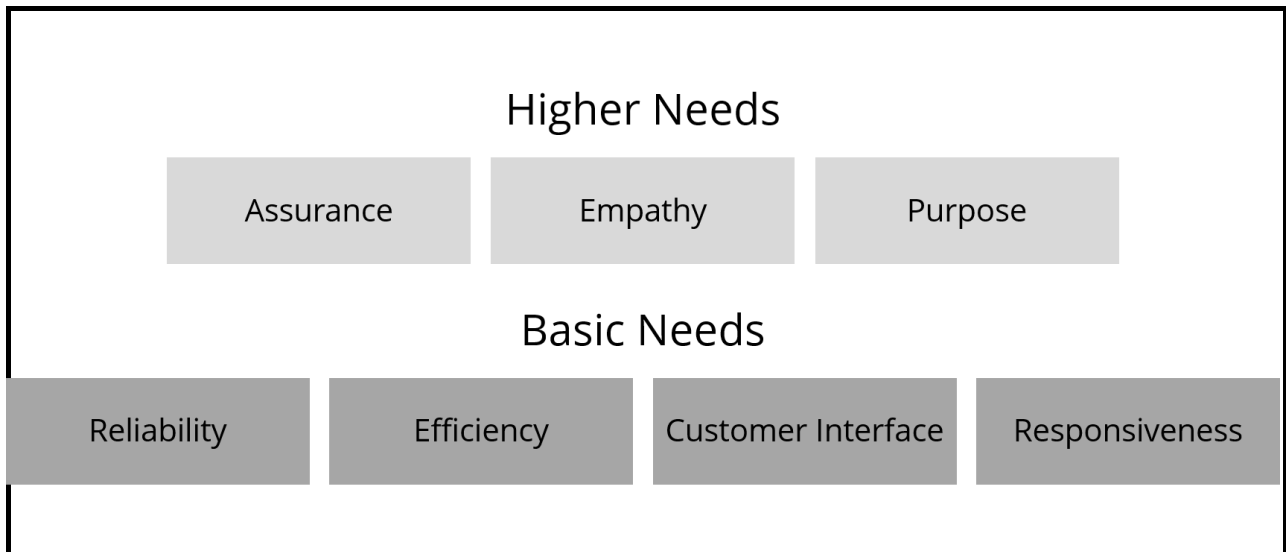


Fig. 5. Component 2: Customers; Good Job Institute, <https://goodjobsinstitute.org/good-jobs-scorecard/>

As the organization selects digital tools for the workforce, it is crucial to work in a manner to build trust. This trust applies to both internal employees and external customers and stakeholders as any erosion of trust will impact the trust within an organization. Across the technology industry, situations have arisen that forced tech leaders such as Google and Microsoft to weigh the privacy of their customers with risks to public safety or law enforcement efforts (Smith, Browne 39, 59). The same applies internally as an organization works to balance analytics of employee behavior with safety or efficiency metrics. Certain industry leaders have taken a principled approach to weigh privacy in high stakes issues, especially when surveillance warrants are received. With a focus on transparency, security, compliance, and privacy, the sharing and use of data is possible without sacrificing the company's principles and the trust of customers and employees (296-301). Most importantly, analyzing the purpose of the alternate use of data and ensuring any events outside the defined purpose of the collection must be understood and infrequent (36-37). While Smith and Browne reference cell phone GPS data later used to determine whereabouts of suspects under investigation, the same could apply within an organization when data collected by devices is later used for investigating employee activities. Some argue that this monitoring is essential to protect risks to the organization, for example, to protect data or intellectual property or prevent employees from getting hurt or breaking the law. While workers realize that they have 'no expectation of privacy' in the use of employers' equipment, the trust component remains an essential factor of engagement.

While gaining employee trust is incredibly vital to workforce engagement, other factors must also be in place, such as connection. Connection is key on two levels: connection to the mission and purpose of the company and connection and collaboration with others in the work environment (Cross, Edmondson, Murphy). Figure 6 demonstrates steps for teams or organizations to move to production collaboration. While there is overlap, it is my view that this study for workforce engagement begins where the Good Job Institute concludes. Employees who will be of service to colleagues and customers while aligning with the mission of the company are a tremendous asset to an organization. This collaboration results in employees feeling that they belong. In turn, this improves the workplace environment resulting in a more productive organization that allows employees to feel safe to take on challenging, aspirational goals and challenges even when facing risk. This connection is essential on many levels, especially between employees and senior leaders, and helps to gain trust across the organization. As trust in one another grows, leaders can communicate the value in what the company is doing to connect to a larger purpose. With trust and a clear purpose, the workplace becomes more engaged and energized, which in turn supports a collaborative environment.

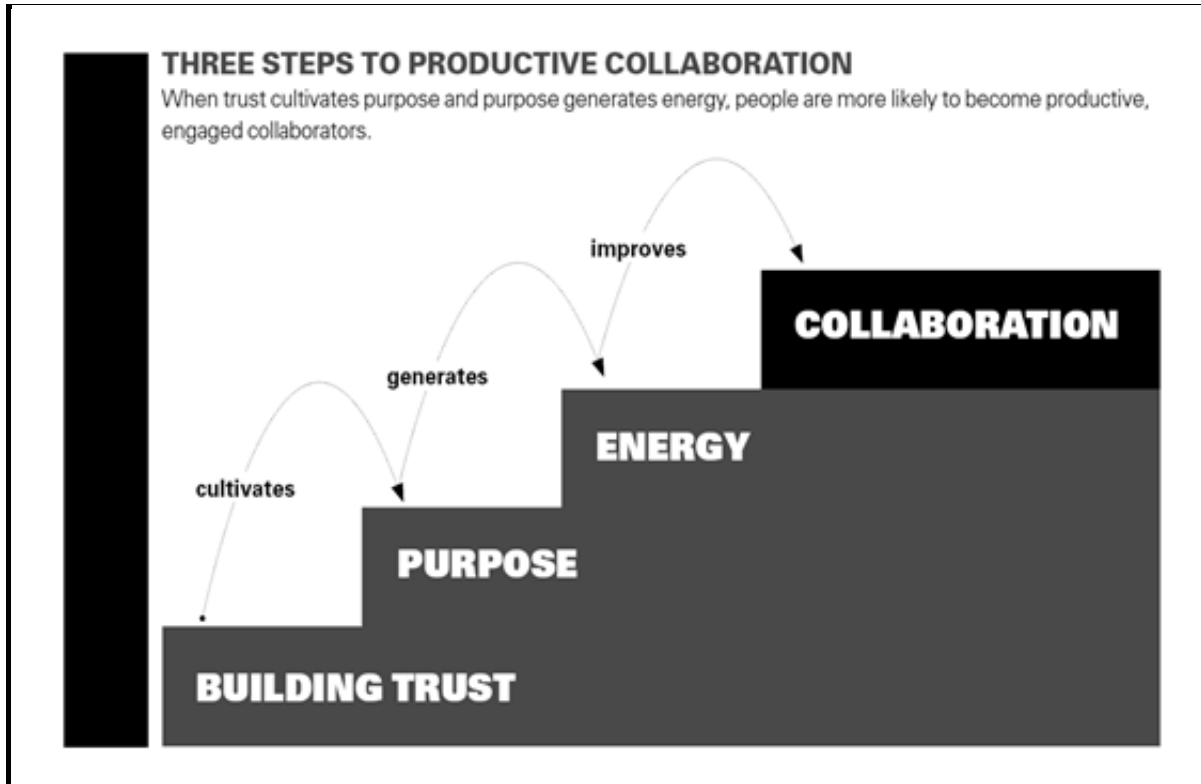


Fig. 6. Three Steps to Productive Collaboration, <https://sloanreview.mit.edu/article/a-noble-purpose-alone-wont-transform-your-company>

The right environment for change

There are a few additional considerations that increase the probability of success of technology change. Recent research identifies strategies to equip a company with the right environment to support continuous change (Brown-2, 2019). These include programs that support a growth-mindset where employees, at all levels, continue to learn new skills. Other research by Eggers and Hurst indicates that digital initiatives often fail due to not considering how people 'think and act'. Their research shows that, by not putting the end-user first in the design of an application or system, design teams often deploy solutions that do not connect with how the people cognitively interact with the

technology. In their research, they identified three themes that could result in the rejection of a technological solution.

The first of these themes was cognitive overload due to being over overwhelmed with technology. When users have multiple systems that support their work, adding a new system is likely to be more than they can handle. In this case, limiting the number of systems they have to operate would increase adoption potential. The next theme was “black box” components in the solution. When solutions are not well understood, as in machine learning modules, employees lose confidence in the system and are less likely to adopt the solution. Also, the users must understand how the solution helps them and the specific problem it is solving. Without that, it is difficult to connect the value to their work. Finally, the third theme was the 'always done it this way' mentality. It is easier, in the short run, to continue business as usual. Unless the workers understand the connection of the technology to their problem, adoption is unlikely (95).

Circling back to the first topic of cognitive load, a clear focus on what is most important to an organization is a great way of creating some slack in the process. This focus provides a method of discontinuing work that is no longer effective. One method is by implementing processes that monitor the effectiveness of an application to determine when to consider retirement. These types of tripwires apply to new and innovative processes as well as legacy applications that have existed for some time. While innovation is key to the continued growth of a company and its employees, it must be managed in a way that it is discontinued when no longer effective. One thought for the

selection of innovative solutions is to test and fail fast. While this is a universal concept, S. Brown indicates it might be time to reframe this thought due to the fact that failure is seen as negative which often makes it difficult for teams accept failure. This often results in teams continuing to work on a solution long after success is likely. Innovative projects should be framed as temporary experiments approached with a growth mindset and on the lessons learned. Framing in this way motivates teams to abandon a project when it is appropriate. Brown further lays out steps to this type of learning. These steps include defining and testing hypotheses for various steps of innovation, enabling cross-functional teams empowered to learn quickly and independent of management oversight, and changing goals to measure success by learning or experimentation instead of by completed projects. This methodology provides the framework for empowering teams to innovate efficiently without extending the life of projects beyond the point of value.

To further motivate a workforce to fulfill the long term strategy of the company, employees need to take ownership of the solutions. It is easy to disconnect short term initiatives from long term strategies, which often puts the designed future of work at risk. An approach to both motivating employees while aligning to the strategic future is operating on two different time horizons. Hagel and Brown shared a method for this type of strategic development. In their article, "Take a Zoom Out, Zoom In Approach to Business Strategy", they specifically mention two time horizons. One time period is very long-term (10 – 20 years) and is called 'zoom-out horizon'. The other is short-term (less than 12 months) and is called "zoom-in horizon". This multi-view approach is much different from typical approaches to strategic planning. Their 'Three Steps to Production

Collaboration” diagram (Figure 7) describes the dual focus and shared additional details on the phases.

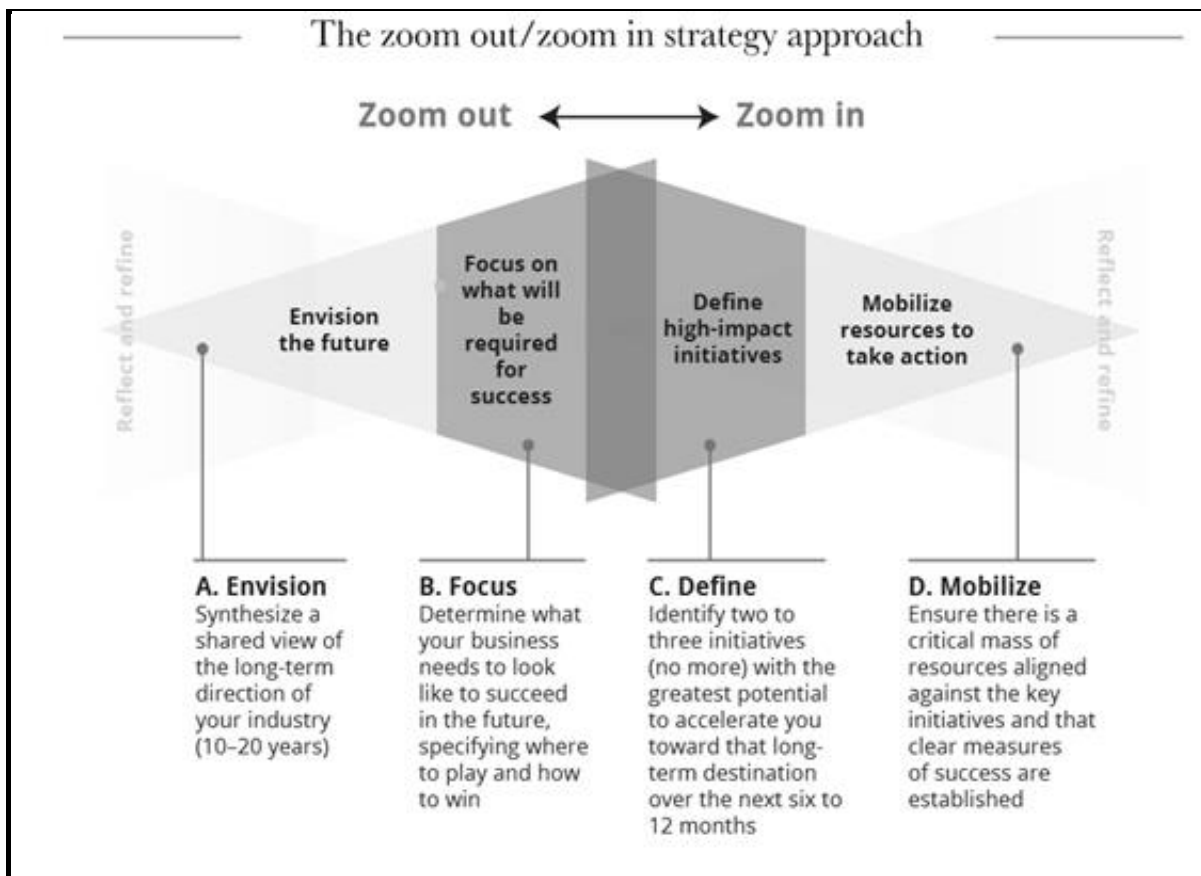


Fig. 7. Three Steps to Productive Collaboration, <https://deloitte.wsj.com/riskandcompliance/>

The concept is by focusing on the long-term combined with taking care of shorter-term issues, the typical 5-year plan will fall into place. Zooming-out involves envisioning the future of the organization and determining where the company should be and then understanding and defining what will be required to make that happen. Once it is clear where the company wants to be and what is needed to get there, the organization can refocus and zoom-in to prioritize a few short-term objectives to move towards the long term position (114). This method is an excellent way to ensure short-term actions align

with long term plans; however, continuous monitoring of the customers' needs and changes in the market is essential to ensure continued alignment with the focus.

Additional Considerations to Ensure Trust with Machine Learning

The surveys of Postal employees also surfaced delays in technology solution acceptance and adoption when the solution was complex or not understood by the end users. Stackpole indicates that the importance of transparency, understandability, and ease of use for technology for adoption raises other issues related to complex technology solutions. While some people will adopt the latest technology, others need encouragement or sometimes time to adapt. For example, because of the black-box nature of artificial intelligence to an end-user, technology teams must address additional concerns for genuine engagement.

Research by Renée Gosline, a researcher with the MIT Initiative on the Digital Economy, indicates that 62% of people do not automatically buy-in to these types of technologies. For this reason, organizations must address the fear of unknown technologies taking jobs, transparency in what the technology is doing, and trust related to accuracy and bias to raise the level of buy-in and adoption. With the increased focus on machine learning technology, understanding what is possible is the first step in easing concerns related to fear of job displacement. AI is good at specialized, routine tasks such as predicting outcomes of current data based on past behaviors or patterns. It is not good at creativity or applying knowledge in one domain to another. With this cross-domain

knowledge being fundamental need of today's business, employees will remain at the center of the discussion. Considerations include a people-first focus, primarily when AI is used to predict the behavior of individuals or replace a function once performed by a worker.

To address the need for transparency in explaining what the technology is doing, processes for increasing awareness of small parts is critical. In traditional development, one is given the input and creates an algorithm that transforms the input into the output. With machine learning, the method is different, and often the algorithm or logic is developed by the computer leaving it more difficult to interpret or explain. Because machine learning often starts with the input and output, the algorithm developed transforms the input into the output with the highest probability of success. While this is often more accurate, it adds to the complexity of understanding what is occurring. Data scientists understand the technology, but understanding the technology and explaining the results to an end-user are very different.

For this reason, the solution must be accepted by a user who does not fully understand the solution but instead trusts the output. For this reason, the user must reasonably understand the solution in order to gain acceptance. Guiding principles are essential to adopt early in the technology development and to protect from these types of issues (Stackpole). Utilizing a baseline method, such as an average result or results from logic generated through heuristic business logic, and comparing to the results of a machine learning output can act as a start to user acceptance. While I personally

witnessed this method in place at the Postal Service on a few occasions, use of baselines to gain acceptance of complex algorithms was also a topic in analytics courses at Massachusetts Institute of Technology such as Analytics Edge.

Finally, gaining and sustaining trust related to accuracy and bias must be considered. As individuals train AI, biases may exist in the solution. The complexity of the algorithms often make these issues difficult to spot. To overcome this, performing small experiments and developing tests for specific issues must be performed periodically to ensure trained algorithms do not produce biased output. Careful consideration is also necessary when AI is leveraged to confirm an assumption which, in turn, causes an organization to focus specifically on the result. Mitigating factors, such as experimentation or coding in automated checks for errors in training sets, can go a long way in preventing unintended consequences.

Organizations and agencies are drafting guidelines and laws internationally that can be used as a framework for this type of work. The European Union released guidelines in April of 2019 for trustworthy artificial intelligence in advance of a full report expected in 2020. The initial framework provides fundamental guidelines to consider for any AI implementation (Heikkilä 2019). These include:

- “Human agency and oversight” - AI should be used to empower humans in decision making. Further, humans should maintain sufficient oversight of AI.
- “Technical robustness and safety” – AI should be reliable and secure with backup plans when issues arise.

- “Privacy and data governance” – Personal data should be protected and only shared when access is appropriate. Data governance standards must also be in place to ensure data quality.
- “Transparency” – AI should be transparent. Individuals interacting with AI should be made aware of the interaction as well as the abilities of the system. The decisions of AI applications should be explainable.
- "Diversity, non-discrimination and fairness" – AI should be available to all demographics to use and must be developed with vulnerable groups in mind to prevent bias, prejudice, and discrimination.
- “Societal and environmental well-being” – AI should consider current and future generations and benefit both in an environmentally sustainable manner.
- "Accountability" – AI should be accountable. This accountability requires the ability to assess the input, processes, and output of an AI algorithm.

Shortly after, the Pentagon’s Artificial Intelligence strategy was released in early 2019, which requires the use of standard processes in the data validation, testing, and training phases. After that release, the Defense Innovation Board (DIB), a U.S. Department of Defense advisory group, shared guidelines for the use of AI. These guidelines included responsible, equitable, traceable, reliable, and governable use of AI. Responsible AI indicates that people who develop AI must use appropriate judgment and be accountable for the solutions produced. Equitable AI indicates that bias and discrimination should be avoided and monitored. Traceable indicates that AI should be transparent and auditable by experts. Reliable indicates that the use should be defined,

and security and reliability should be vigorous. Lastly, governable indicates that AI should perform the intended function while being able to detect unintended behavior (Nuis). This draft seems to align well with the European Union's guidelines released around the same time.

Finally, the U.S. CTO, Dave Nyczepir, shared the proposed principles for Artificial Intelligence in early 2020. This framework supports the safe deployment of solutions to promote public engagement with and trust of the technology while ensuring continued technological advancement in the United States. These principles are similar to the European and DOD policies in rules concerning equity, traceability, and reliability components; however, they take the recommendations a step further to propose the promotion of the development of AI. They also provide guidance in policy creation to include evidence-based decisions, input from the public, and cohesive policies across agencies (Kratsios).

Recommendations for Engagement

As the majority of the USPS workforce is responsible for moving or delivering the mail, these employees will need the right type of support to be prepared to embrace new technology that supports their work. The USPS is on the right path for future proofing their workforce with current training initiatives related to leadership, analytics, and innovation. These programs that help to build awareness of technology and innovation are

fundamental for developing the future digital mindsets that will be even more required in the future than they are today.

As Peter Drucker said, “culture eats strategy for breakfast”. Culture and behavior are crucial components of success, as change is only possible with the right culture. To support this, strengthening relationships and involvement in innovation would further improve the services provided. With 'pull' innovation where users request solutions for their problems, rather than 'push' innovation which originates elsewhere, solutions are more likely to equip employees with solutions that they prioritize. The change initiatives should be aligned with corporate strategy and also aligned to the incentives of the employees making the change. A disconnect in either the strategy or the incentives with the change initiatives will likely prevent engagement.

To further support the employee engagement initiatives underway, the USPS should strengthen involvement in technology initiatives by sharing success stories of ideas being generated by the workers. IdeaSmart is a constant flow of ideas across all functions of the Postal Service. It contains value-added suggestions that increase efficiency, reduce costs, and empower employees and customers. Submissions that became enterprise solutions could be showcased to demonstrate the collaborative nature of the teams. Currently, many initiatives originate from the front-lines, but the deployment is not always clearly connected to the employee suggestions. While some of the most effective solutions began with feedback from the frontline, others had that feedback as the solutions changed over time. For complex integrated solutions, end-users own the

problem but do not always know the exact solution they need; however, neither do Information Technology professionals. Iterative sessions and small experiments were shown to increase the understanding of what will work.

Finally, when utilizing artificial intelligence to provide a solution, the USPS should assess the level of acceptance of technology, and explain to an acceptable level for the user. Transparency, explainability, and continuous monitoring of the technology will establish the trust required to engage users properly.

To summarize, change initiatives will only be successful if the solutions make work easier, are understandable, and motivate and empower the user of the solution. Now that we have explored both frameworks for innovation strategy and employee engagement, it would be easy to think those alone could steer the company towards the proper future of work focus. However, in order to support rapid innovation and maintain the trust and attention of employees, a third component must be in place. This component ensures continued interaction between technology providers and supports integration, interoperability, and strong technical efficiencies. The next chapter explores this type of collaboration and integration.

Chapter 5: Technological Collaboration

As stated, to prepare for the evolution of change that will be required to shape the future, the organization must leverage a technology framework that supports the rapid change. Strategic direction acts as a guide, but an adaptable technology environment to support iterative changes and shared components are fundamental to empower an organization to adapt quickly. This flexibility allows multiple information technology teams to share and re-use components to work efficiently to respond to customer's and employee's needs. Frameworks are available for managing technology in this manner and often apply to Postal systems.

Current Technology Landscape at the USPS

The USPS has made significant strides in both innovation and technology modernization in recent years. As a 200-year-old company with 600,000+ employees facing competition and cost pressures, the USPS requires a strong technology-driven operational backbone to operate. To efficiently move the mail, the USPS has an expansive physical and digital network that provides near real-time information via 2600 data boards in over 200 smart facilities. Electronic scans of packages are performed at the rate of 2.5 billion per day and flow automatically to enable operations' staff to manage workload and keep customers informed. With a 99.5% scan accuracy rate, the USPS optical character readers scan mail pieces to extract the address and efficiently move that mail millions of times per hour. A continued focus on Lean Six Sigma provides the

discipline to raise issues to improve processes, even in the Information Technology arena. Routine, repeatable business processes are just as efficient. Functions supporting back-office activities such as Accounts Payable, Accounts Receivable, and Payroll operate seamlessly from the view of the employees. Standardization and automation continues to be a focus across the organization to leverage technology in the areas with manual intervention. The USPS describes the evolution of technology trends in their FY 2020 – FY 2025 plan:

The rapidly changing business conditions under which the Postal Service competes, coupled with the evolving needs of our customers, require us to adapt in order to maintain our relevance to the American consumer and to strengthen our business. The next five years are likely to usher in dramatic technological, social, and environmental changes that will fundamentally change the way we live, work, and relate to one another. We are seeing rapid technological advances across many areas that include artificial intelligence, advanced energy storage devices, next-generation broadband, autonomous machines, augmented reality, social networks, internet of things, and quantum computing (15).

As mentioned in the engagement section, technology engagement is managed with various methodologies to enhance effectiveness and user involvement. This allows a continuous release of code (weekly instead of monthly) to motivate end-users in the development cycle. DevOps is a newer focus that shows promise into the future to support rapid iteration of changes and increase the involvement of end-users.

Evaluating the USPS computing environment for policies and shared processes, the digital framework consists of a set of rules and processes that guide the implementation of best practices. These include the widely used software development lifecycle methodology (SDLC). These processes also involve the manner at which application deployment and integration occurs. At the USPS, applications are typically

virtually separated on computing platforms for accounting purposes. This segregation leads to limited shared application components. Across applications, shared repeatable components available through APIs exist (for example, address lookup and package information queries). However, duplicative efforts occur when customization of components occurs for one project when those components could have been used for another initiative (application authentication, single sign-on, geocoding addresses). Reusable APIs (application programming interfaces) within applications are standard, but publishing and sharing details for other initiatives are less common. One interviewee stated, "It seems that multiple teams are working on similar efforts. We are all willing to work together but need a way to know what others are doing." With integrated applications and cross-functional expertise, it is difficult at times to determine who should have responsibility for these functions.

To assess the structure required for rapid release through shared services and automated processes, the USPS organization chart is primarily organized around business functional areas. Lower in the organization, digital offerings are managed by project teams, while specialized technology teams manage technology services. Teams designed to resolve issues or improve efficiencies (such as Lean Six Sigma or Innovation teams) can be either management assigned or self-formed with the freedom to find a solution and take action with only touchpoints to share results with leadership.

Technological Collaboration

Digital transformation involves both technology and mindset shifts; however, technology often outpaces the mindset changes. Moore's law states that computer processing doubles every two years. Typically, organizations cannot keep pace with the change in technology. To address this challenge, Relihan argues that the technology selection should be guided by an assessment of the potential to strengthen the business. Companies successful in digital transformation often start by creating a vision that the employees can understand and implement with a strong focus on modifying legacy systems.

- To support this, leaders must embrace a mindset that involves transforming the strategy, culture, and employee training programs. Strategies must support shared platforms and collaboration across those platforms. Employee development programs should have a focus of a growth-mindset, and more specifically, on technological development of employees.
- Users of technology (whether internal or external) should be considered innovators; therefore, increased collaboration should be a focus.
- Risks exist with digital transformation, so cybersecurity must be at the top of any technology strategy.

Forsgren drills a little deeper to address this issue and indicates that companies must apply the Lean principles to development-operations functions to reduce the time to

market in their development efforts and support a collaborative technology environment. The steps for a successful DevOps strategy include continuous delivery of releases, proper architecture, lean product and processes, lean management and monitoring, and the right culture for collaboration. The “Overall Research Program” diagram (Figure 8) shows the connections between the strategies, actions or focus, and benefits. Additional detail from Forsgren’s framework includes:

Continuous Delivery of Releases

- fundamental code management procedures such as version control for code and configurations must be in place
- automated deployment that requires no manual intervention
- continuous-integration where code is checked-in often, automatically scanned, and programmatically tested with complete test datasets
- structuring of code check-out in a way that prevents locking out other developers from working on the same application and also prevents conflicts in versioning of changes
- continuous release of code which requires developers to focus on keeping the code in a deployable state

Lean Management and Monitoring

- Change management must be lean and only require necessary approvals
- Monitor the health of systems and applications to allow teams to mitigate issues before they become widespread

- Use lean processes such as WIP (work-in-process) and visual displays to monitor and improve processes

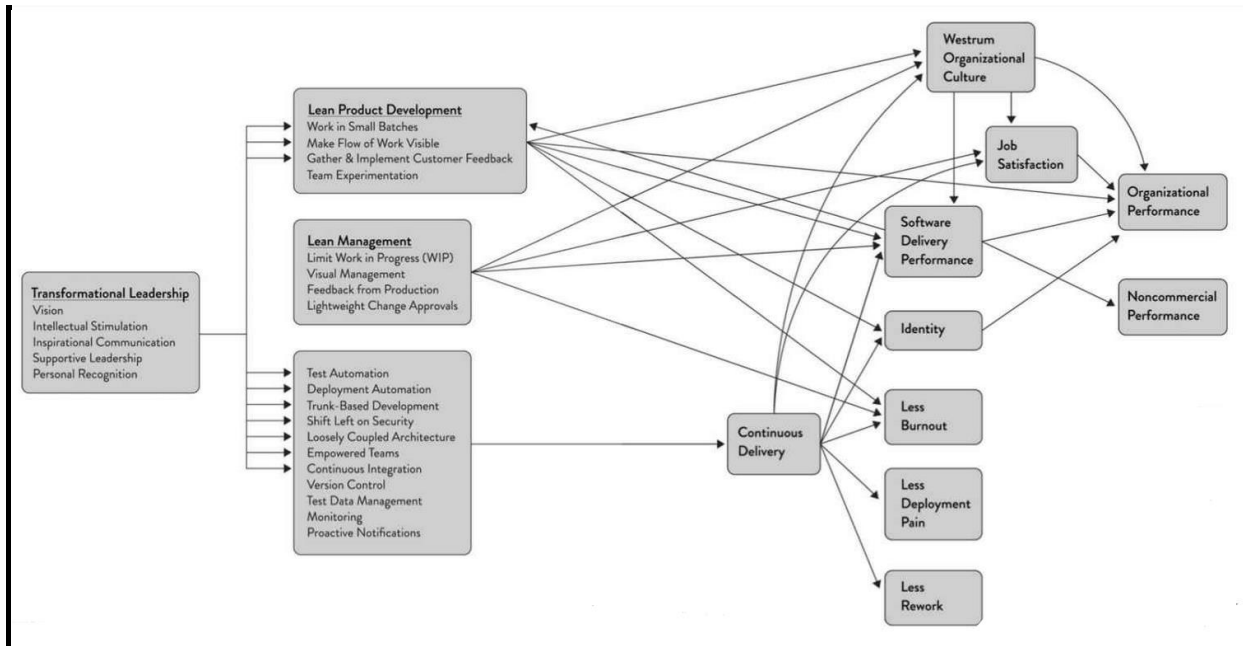


Fig. 8. Overall Research Program; Accelerate: Building and Scaling High Performing Organizations, page 208

Importance of Digital Strategy

For sustained success, information technology leaders must think strategically and build technology components that support collaboration and future changes. Ross describes the fundamental components that prepare an organization for the future in her book, *Designed for Digital*. This describes a five-step framework for continued digital success (Figure 9). While part of the focus for her framework is specific to external collaboration with customers, the digital strategy components also apply to an internal solution designed for employees or internal customers. Excluding the external

component, four of the five steps directly apply to internal work to empower internal operations: a reliable operational backbone, shared insights from customers, a digital framework, and an accountability framework. The fifth component, an external development platform, is out of scope for an internal solution and will not be discussed here.

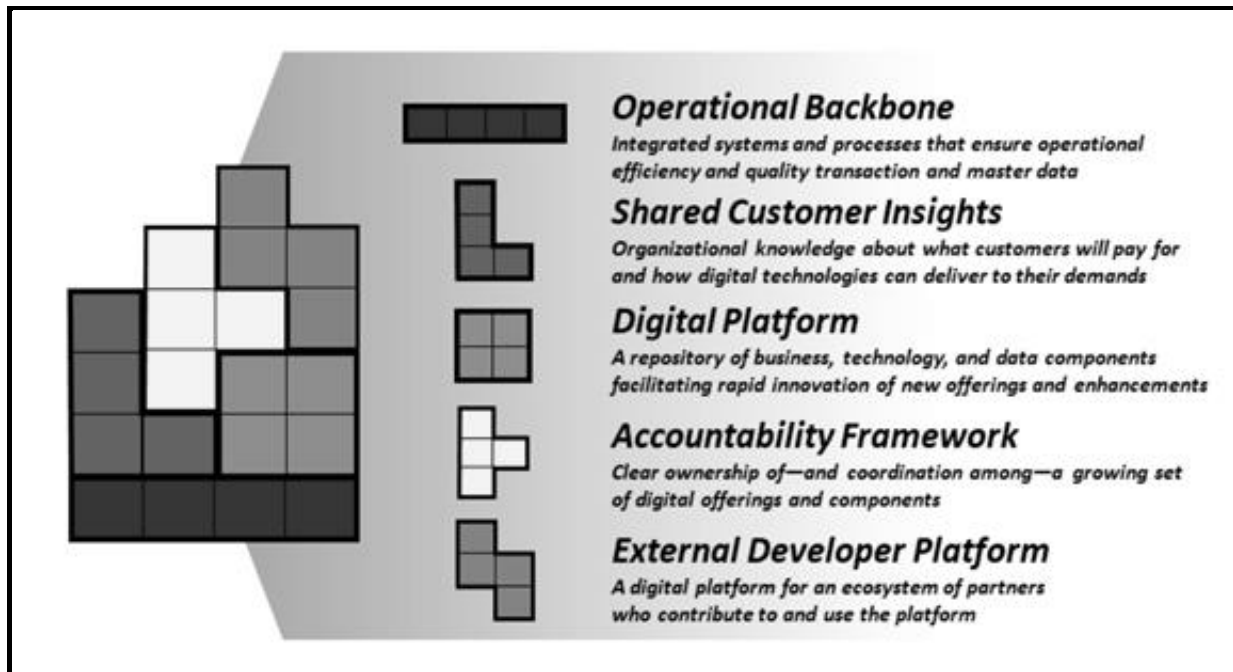


Fig. 9. The Five Building Blocks of Digital Transformation;
https://cisr.mit.edu/publication/2018_0601_BuildingBlocks_RossMockerBeath

In order to achieve this level of transformation, several strategies must be adopted. This includes developing interchangeable technology modules to integrate into other systems. It also requires a strong focus on data management standards where a single source of truth and data quality are known, documented business definitions exist, and reusable modularized code is the norm. Further, these platforms will allow for continuous release of code to enable small experiments. These experiments allow for the testing of

iterative changes to create value-added services for the customers. With this type of platform, rapid development and technological collaboration are possible.

Tripwires for Retiring an Initiative

In addition to having a strategy for selecting the right technology at inception, it is also essential to have a method for retiring or discontinuing an application or system. This process is particularly essential to create the level of slack required to support innovation, change, and empowered employees. Although it is challenging to establish metrics for retiring an application at inception, without that, technology will likely continue long after its useful life. According to Hollister and Watkins, there are strategies for knowing when to stop an initiative. Essential guidelines include assessment of the current need for each project, establishing a "sunset" process for each initiative, and ensuring the success of an initiative is not measured by the leaders who own the project. The first step is to confirm that it still meets the current strategy of the organization. The next step assesses the continued impact on the relevant key performance indicator. This step also measures the impact on the users' work. The final step is to combine the metrics to ensure a positive net impact. This assessment typically involves an inventory of all programs across the organization, analysis for business needs and resources (budget and people), and impact to KPI. The output is a list of prioritized initiatives across the organization with retirement plans for each initiative. These assessments should be performed each year before funding programs into another year.

Gartner has a similar framework, TIME, which evaluates and categorizes existing initiatives based on value. This model places each application in one of four categories: Tolerate, Invest, Migrate, and Eliminate. TIME uses business value and quality to determine the state of an application. Business value measures the alignment of the application with the goals of the organization. It focuses on the impact to the business need and operational efficiencies, assessment on whether or not an application is critical or mandatory, extent of user utilization and experience, financial benefit (revenue or cost reduction). Technology teams evaluate quality from a technical perspective and by the impact on the technical support team to maintain the solution. This evaluation includes the support required, data quality, source code quality, reliability and security, ease to change, and technology health. Tripwires to monitor for application health include misalignment with strategic direction, duplicate functionality across applications, costs exceeding sustained benefits, increased risks to the organization, and decrease of utilization. Without this type of focus, technical and business teams become overwhelmed with maintenance or use of technology with little continued value, unable to operate with the slack needed to operate optimally.

Recommendations for Increased Technology Collaboration at the USPS

Generally speaking, any change should have a strong focus on being adaptive to serve the American public and providing the most efficient, customer-focused service possible. As a trusted federal agency, privacy and security must be at the center of technological decisions. Corporate-wide initiatives are in place to ensure these risks are

addressed. With a mission-driven focus on serving the American public and security-minded focus for ensuring data is secure, decisions should then be intentional to ensure they support the desired plans for the future of work in the Postal Service.

The technology backbone that supports USPS operations is mature as evidenced by ability to efficiency move the mail and maintain high service levels. This should be considered an asset for the next phase of automation. To move into the next level of automation in the technology space, DevOps should be a focus to decrease speed to market and keep internal customers engaged in the process. To ensure adequate time to improve and automate routine Information Technology functions, the development and technology operations teams must have some slack in their work to support this type of change. By selecting technology initiatives that fit the corporate strategy and by utilizing assessment frameworks, such a Gartner's TIME model, to discontinue existing processes, the technology teams will have the ability to focus on transforming their work to be as efficient and effective as operations focused work is today.

A culture of technical collaboration is necessary to support a robust digital environment of the future. This collaboration includes governance programs such as enterprise data management to clearly define the source of truth and ensure quality across the environment. It also includes modular code development. Technology silos are not effective business models. Technology professionals need to understand the purpose of giving up control of coding an entire technology solution end to end and instead rely on solutions from other teams. A focus on developing a platform with shared

reusable components will add value to the organization for the long-term. Teams must first determine if new processes are unique needs for a particular initiative or could apply to future projects. If re-use is a possibility, they should be assessed to determine whether or not customization necessary. Reusable, configurable code has a much higher value than customized code, so it should be considered the first choice. These platforms with usable components will require slightly more investment upfront but set the foundation for efficient, collaborative future technical work. Through investment in modularized components and platforms for collaboration, solutions can achieve more rapid iterative change. This will support continued innovation and enhanced end-user involvement to properly focus and direct the future work environment at the Postal Service.

Chapter 6: Conclusion

The topic 'future of work' has been trending in literature for several years. However, with continual advances in technology that improve performance while driving down cost, the topic has never been more relevant. The USPS is certainly making steps towards shaping the future of work in a positive direction as evidenced by their work to engage and empower their employees. With innovation initiatives, employee empowerment activities, and strategies that support technology platforms, the Postal Service is on the path of defining the right environment for the future. With a continued strategic focus in those areas to better prepare for a collaborative, connected workforce, the Postal Service will best use of their advantages to advance the design of the desired workplace of the future.

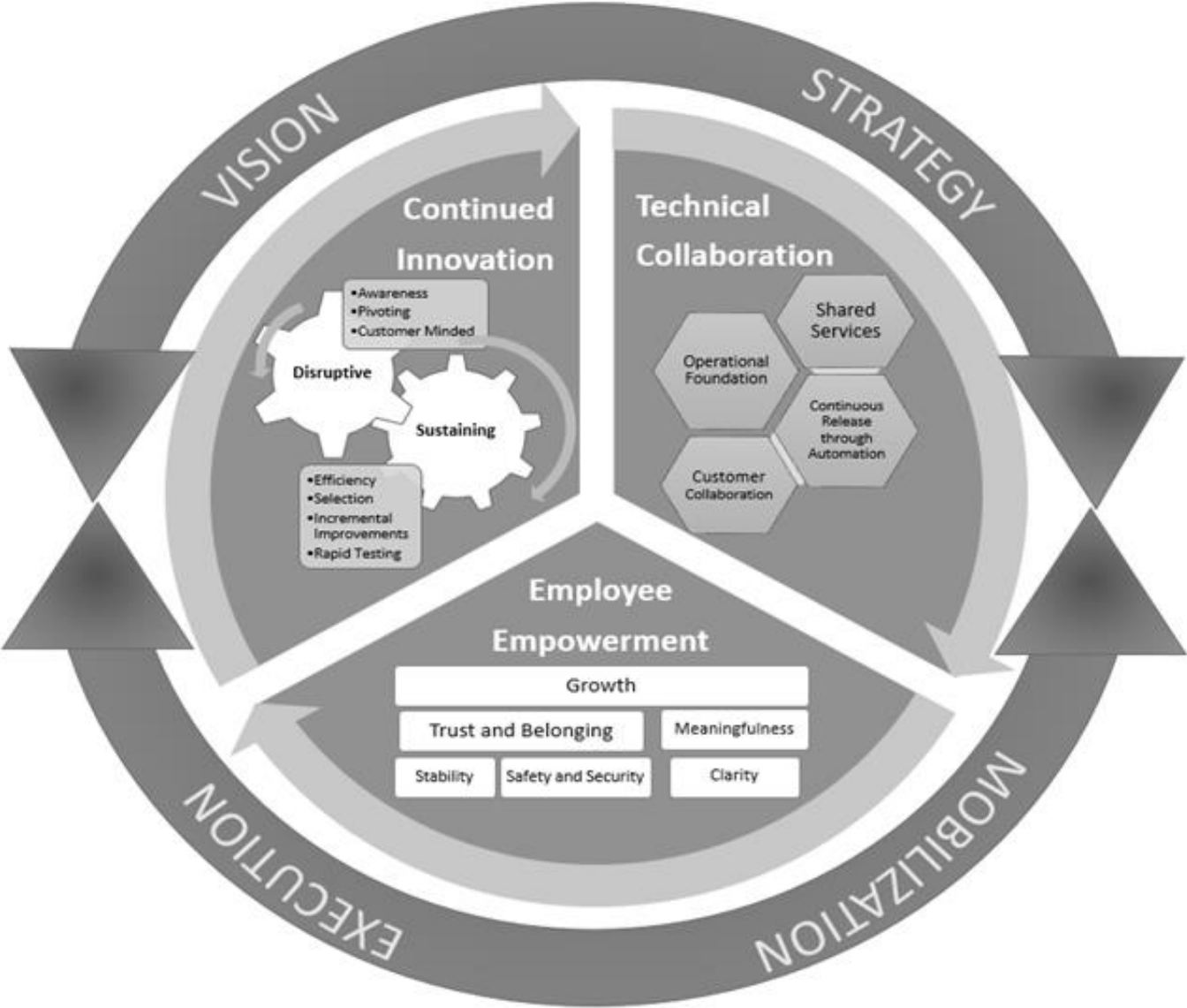
As a company that has always embraced innovation, the USPS is well-positioned to leverage innovative technology to become even more efficient. Continued focus on disruptive technologies is also vital to ensure the USPS evolves with customer's changing needs. As a company that values its employees, the USPS must also continue to focus on engagement in a way that empowers employees and keeps them at the center of technology decisions to ensure the proper shaping of the future of work. Finally, as a technology-centric company, the USPS should leverage its computing assets and expertise to continue to manage technical initiatives efficiently and to increase collaboration to ensure integration in their centers of excellence models, where technology teams act as internal experts in a topic and share across the organization.

Proposed Framework

The Postal Service has the fundamental components for technical excellence and is well-positioned to be a leader in this area. With a strategic focus on continued innovation, collaboration across the organization, and enterprise technology design principles, they will experience continued success in the future with less friction. A framework to ensure this success is challenging but possible. Combining components from various methodologies and frameworks into a guide for the Postal Service will ensure their place as a world-class technology leader.

Through analysis of technology deployments to measure success through the impact on the organization's key performance indicators as well as the impact of engaging employees, a framework for technology selection to lead to the future of work emerged for the USPS. This framework was primarily created by assessing methodologies used in other organizations and selecting components that directly tied to both prior successes and challenges encountered by the USPS. The result was a framework that consists of a focus on disruptive and sustaining innovation to prepare to accept new technologies, a priority on employee empowerment to embrace new technology, and an intentional technology strategy to ensure adequate collaboration of technology professionals. All of this is reinforced through both top-down and bottom-up management to balance strategic direction with employee motivation. A visual representation of this framework follows. This visualization can act as a guide where USPS teams focus on small parts of the diagram so that together they steer the organization towards a focus on the future of work.

PROPOSED FRAMEWORK: USPS STRATEGIC GUIDE FOR FUTURE OF WORK
 Developed by author guided by research of frameworks applicable to the USPS



Recommendations

Although the three focus areas, innovation, empowerment, and technology collaboration, were evaluated separately, there is a lot of overlap and interaction between these areas. The following suggested recommendations will further enforce efforts at the USPS to shape the future of work and ensure an adaptive mindset, workforce, and technology landscape with the flexibility to change as needed to meet the ever-changing needs of the American Public.

ADAPTIVE FOCUS WITH AN INNOVATION MINDSET

Sustaining Innovation - Managers should continue to be empowered to experiment and innovate to apply a steady stream of new technologies that support improved efficiencies and improved customer experience. This empowerment drives both collaboration and innovation and allows teams to apply new technology to business problems.

Disruptive Innovation - The organization must remain adaptive and prepare for the next disruption by positioning itself to consider new technological innovations as opportunities. The Postal Service has adapted over time to remain relevant. The organization must maintain a growth mindset that is ready to adapt to take advantage of innovation to support continued success.

Management Balance - To ensure short-term efforts result in the continued progress of the Postal Service towards the desired future workplace, the focus must remain on

strategic plans. While bottom-up initiatives go a long way to increase employee motivation, top-down strategies are fundamental in steering the right selection of technology to design the proper workplace of the future. For that reason, convergence of top-down and bottom-up approaches is a crucial methodology to support both the need for employee motivation and strategic direction in the organization.

EMPOWERING AN ENGAGED WORKFORCE

Engagement - To further support the employee engagement initiatives underway, the USPS should strengthen collaboration in technology initiatives by sharing success stories of IdeaSmart submissions by the front-lines that became enterprise solutions. IdeaSmart is excellent for collecting innovative ideas from employees and is an asset to leverage to increase engagement. Further, technology initiatives should include end-users in the process as early as feasible and minimally as part of the design of the solution.

Empowerment - Implementation of business process integration will strengthen networking across the Service. Leveraging the business services organization as a business-enabling function will further ensure the business remains in focus and has a voice in the process.

Change-ready workforce - A change-ready organization is necessary to support the future evolution of technology. To prepare for this, the USPS should ensure training related to technology is available for all levels of the organization. They should also ensure collaboration in strategic development across the organization and focus on only

the most critical initiatives. Once the strategies are defined, engagement supports change through early adopters who drive change, better preparing the organization for successful change initiatives.

Operating with slack - To allow time to prepare for, design, and implement new technology initiatives, some slack in the process is required. This provides the time, attention and resources required to make change. This slack is possible with a strategic focus. This focus includes careful selection of new technology as well as discontinuance of less effective older technology. Metrics are essential to bring existing applications back into focus for review to confirm a continued positive impact. This review ensures a focus on the right solutions instead of continual maintenance of solutions that have reached their useful lifespan.

COLLABORATIVE TECHNOLOGY STRATEGY

Trusted Technology - Technology should be both explainable and reliable. As the organization uses more sophisticated technology such as artificial intelligence to create algorithms once developed by humans, it must find a way to help users understand the logic in the algorithms to support adoption by many individuals. Further, reliable technology that is secure and available 24x7 is necessary to ensure engaged employees remain engaged. Finally, a clear scope for technologies that analyze the activities of employees, such as inefficiency or safety applications, is vital to ensure trust remains while meeting the needs of the organization.

Lean, Automated Technology Solutions - DevOps solutions should continue to be a focus for the Service. A complete strategy includes continuous delivery of releases, proper architecture to support smaller, shared services, lean product and processes, lean management and monitoring, and the right culture for collaboration. Without lean, automated solutions, the speed-to-market desired in the future will be difficult to achieve.

Shared Technology Components - Shared services, insights, and processes drive efficiencies and excellence in technology organizations to support the business. Information Technology teams can support this by architecting applications to allow integration. Further, a shared understanding of projects and shared services is possible through a centralized function. Business Services is a neutral team well-suited to support this technology collaboration.

Forward Focus

I have evaluated several frameworks, including some that are cutting-edge (by Ross and Heikkilä), and their applicability to the USPS through a review of the history of the Service and the state of the current environment. My approach for applicability to the USPS was through a new lens: a mission-driven organization. The frameworks that I evaluated are often in place at for-profit organizations which have the market as a feedback mechanism. Although the Postal Service certainly responds to feedback from market, its focus is very different and requires a different approach to the selection of frameworks. Further, as this was focused on the future of work at the USPS, I chose to limit analysis on initiatives that support internal operations. While the recommendations would also apply externally for engagement with customers, an external focus would require extensive analysis of collaboration across the industry as well as a stronger focus on security and cyber risk.

It is one thing to select technologies based on efficient processes. It is another to make decisions based on the world we want to create. With the foundation of the meaning of the future of work is mission and not market, the USPS is uniquely positioned to lean into their mission-driven mindset to properly direct the future of work. It is important that organizations create their own future and not be at the mercy of what happens. There is evidence of this the Postal Service taking charge both historically and more recently with initiatives related to growth and innovation mindsets as well as increasing levels of employee engagement. The USPS will continue to push what is in their control to shape

their future. The current strategic direction to 'equip and empower employees' at the USPS has the necessary foundation to steer the organization in the right direction to focus on the future of work. As technologies continue to advance and deploy more rapidly, more specific research on the level of strategic guidance to shape the work may be necessary.

There is no doubt that the Postal Service is a resilient, strong entity that has adapted and transformed several times during its history. By leveraging its strengths of adaptability and a powerful, efficient network of employees and technology, the Postal Service will continue to connect the nation. With a continued focus on strengthening employee involvement and trust to achieve true engagement and empowerment, the pride of employees will support the "Postal Proud" motto. As the USPS innovates to improve internal processes and better serve the changing needs to the American public, they will continue to be one of the most trusted governmental organizations, binding the nation through products and services, and efficiently and effectively providing service that America has come to expect. The USPS will leverage its history, trust, and efficiencies with a focused emphasis on innovation, empowerment and technology to strengthen their leader position into the future, because as the USPS states "the eagle always faces forward".

Tables

Table 1: Decade of Facts and Figures

Source: https://facts.usps.com/wp-content/uploads/2019_POSTAL_FACTS_WEB_COMPANION.pdf

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Annual Operating Revenue	\$70.6 B	\$69.6 B	\$71.4 B	\$68.8 B	\$67.8 B	\$67.3 B	\$65.2 B	\$65.7 B	\$67.1 B	\$68 B
Career Employees*	497,157	503,103	508,908	491,863	488,300	491,017	528,458	557,251	583,908	623,128
Mail Volume	146.4 B	149.5 B	154.3 B	154.3 B	155.5 B	158.2 B	159.8 B	168.3 B	170.9 B	176.7 B
First-Class Mail Volume	56.7 B	58.7 B	61.2 B	62.6 B	63.8 B	65.8 B	68.7 B	72.5 B	77.6 B	82.7 B
Shipping / Package Volume**	6.2 B	5.7 B	5.2 B	4.5 B	4 B	3.7 B	3.5 B	3.3 B	3.1 B	3.1 B
Marketing Mail Volume	77.3 B	78.3 B	80.9 B	80 B	80.3 B	80.8 B	79.5 B	84.0 B	81.8 B	81.8 B
Delivery Points	158.6 M	157.3 M	156.1 M	155 M	153.9 M	152.9 M	152.1 M	151.5 M	150.9 M	150.1 M
Address Changes	36.8 M	36.8 M	37 M	37 M	34.4 M	38.8 M	39.7 M	39.9 M	41.5 M	43.8 M
Total Retail Offices	34,772	35,005	35,423	35,520	35,649	35,434	35,369	35,756	36,222	36,496
Postal-Managed Retail Offices	31,324	31,377	31,585	31,606	31,662	31,702	31,857	32,146	32,528	32,662
Retail Customer Visits	838.7 M	857.1 M	877.4 M	919.5 M	948.7 M	989.1 M	986.2 M	1.02 B	1.06 B	1.12 B
Retail Revenue	\$12.7 B	\$12.9 B	\$13.5 B	\$19.2 B	\$19 B	\$18.3 B	\$17.5 B	\$16.9 B	\$17.5 B	\$17.7 B
Delivery Routes	231,843	228,483	229,104	226,777	224,365	225,152	227,000	228,160	230,600	232,900
Vehicles	232,372	230,939	227,896	214,933	211,264	211,654	212,530	213,881	215,625	218,684

Question 1

Interaction

Level of Interaction by HQ/Management Level (tech)

	Initial Brainstorming	Design	Testing/Release Management	Deployment	Use/Implementation
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monthly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weekly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Daily	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

positive HQ (tech) view?

- yes
- No
- i dont know

Question 2

Technology Methodology					
Tech Methodology Leveraged					
	Agile	User Centered Development	CI/LSS	Innovation toolset - designed by actual user	UI/UX designer
business VP involvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
business management involvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
end-user involvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 3

Requirements

where do requirements originate?

- end users
- hq
- tech team
- pm
- Other: _____

how are requirements prioritized?

- end users
- hq
- tech team
- pm
- Other: _____

Question 4

Description of Digital Building Blocks					
digital building block assessment					
	non-existent	limited	expanding	committed/rolling-out	widely adopted
shared customer insights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
operational backbone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
digital platform	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
accountability framework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
external development platform	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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