TECHNOLOGY INCREASES EFFICIENCY IN THE WORKPLACE,

BUT OFTEN CREATES CHAOS

IN THE PROCESS

by

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Acknowledgement

I would like to thank my terrific parents, Joyce and Richard "Dick" Merz, who taught me that I can do anything I want to do in life and I never doubted them. And, thank you for teaching me by example how to treat people the way you would like to be treated. I never realized how rare these qualities are until I entered the workforce. I've been amazed at the amount of people who are cut-throat, mean-spirited, and extremely selfish. Many important decisions are made in the workplace that are self-serving with little or no regard to the negative impact their decision makes on others. Thank you Mom and Dad, for teaching me that people matter, first and foremost, and everything else is secondary.

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Abstract

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There is a multitude of technology solutions used in the typical workplace, aimed at increasing efficiency, but often chaos is created in the process. Can this chaos be reduced or eliminated? This paper seeks to answer that question. Specific technologies used in workplace environments and how they are implemented, including deployment, project management, and end-user involvement are dissected for a common thread.

Underestimating the importance of communication is the common thread identified when chaos follows the implementation of new technology. The end-user requires constant communication before, during, and after the implementation process, whether the news is good or bad. Without this communication, the negative push-back from the end-users to the new technology can eliminate any desired increase in efficiency in the workplace.

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Introduction

There is a multitude of technology solutions used in the typical workplace, aimed at increasing efficiency, but often chaos is created in the process. Can this chaos be reduced or eliminated? This paper seeks to answer that question. Specific technologies used in workplace environments and how they are implemented, including deployment, project management, and end-user involvement will be dissected for a common thread. The University of Texas at Arlington (UTA) is the primary subject case, although cases in other industries such as State Farm insurance, CitiBank financial, and Methodist System healthcare are reviewed for similar trends.

In addition to technology itself, the management of these systems through the various organizational systems in place will be analyzed. At UTA, these organizational systems include Application Services, Instructional Technology Services, Business Collaboration Services, Desktop Support, Service Desk, Information Technology, and Enterprise Operations and Systems. Best practices, including automated systems, production control, change management, data center disciplines, and training initiatives will be uncovered, dissected, and analyzed.

The Workplace

The typical workplace examined in this paper is defined as a place where people go to accomplish a task in order to earn an income. The goal of the employee is to make money. The goal of the employer is to make money. In order for the employees and the employers to both meet their goal of making money, the employer must manage the employees in the most efficient manner possible. When this is accomplished, the business hopefully makes a profit over and

above the cost of doing business. The employees are somewhat attuned to this need for the business to be profitable, because without a profit, the business will fail and the employee would lose their job. But, primarily, the employee is interested in the wages they earn.

The efficiency of employees is effected by many elements, some under the control of the employer, others not. The employer needs to provide the tools needed for the employee to accomplish the task. If changes are made to the task, the employer needs to provide training to the employee in order for them to continue to accomplish the task. The employer needs to understand that the majority of people are resistant to change, so minimizing the impact of any change in the workplace is crucial for maintaining a productive and efficient workplace.

Evolution of Technology in the Workplace

Technology -- as defined by Webster's -- is a manner of accomplishing a task especially using technical processes, methods, or knowledge. Consider the following evolution of technology in the workplace:

When the ink pen was invented, the pencil did not become obsolete. When the computer was invented, the typewriter was not replaced for many years. Just because automated, computerized systems have been invented, they are not automatically better than the manual processes that preceded them.

The pencil has the advantage of allowing what's written to be erased, compared to the ink of a pen which is permanent. Several attempts at erasable ink have been tried and rejected, because none were able to fully erase the ink from the paper. An ink pen does not allow for

mistakes, but a pencil does. A pencil even has a built-in eraser on the end of the device, convenient for removing the lead from the paper without a trace.

When the typewriter became a standard tool of the workplace, the need for duplicates was accomplished with the use of carbon paper (paper coated with a thin coat of carbon on one side). By the operator simply putting a piece of carbon paper between two pieces of blank paper, a duplicate was created when all three pieces were sandwiched together, rolled into the typewriter, and typed on. The result was a nice original -- the top paper -- and a lesser quality duplicate created by the carbon imprinted on the second sheet. The lesser quality duplicate was sufficient for the file copy that was filed in the office, and the original mailed to the intended recipient of the communication.

Making changes to the typed document was the next challenge. The invention of a white liquid to paint over the mistake saved the operator from retyping the entire document. After painting the white liquid on the typed mistake and waiting a few minutes until the liquid dried, the correction could be typed over the white area with very little indication that a mistake was made in the first place.

With the ability to correct mistakes or make changes without retyping a document, workplace efficiency increased tremendously -- all because of a little bottle of white liquid -- the latest tool in the typical workplace. Why is this important? Because in this case, increased efficiency in the workplace was achieved with a very simple and inexpensive tool.

Word processing machines with memory made changes to documents even easier. A document could be typed and all the information stored in the memory of the machine. After the document was printed and proofed, changes could be made in the text stored in the memory of

the word processor and a corrected document reprinted reflecting the changes. Retyping the entire document became a fading memory and white liquid dried out in the bottle in the bottom of the desk drawer. The workplace efficiency increased again with the newest tool -- the word processor.

The typewriter, followed by the word processor, enjoyed the position as the primary tool in the workplace for many years, until the desktop computer began to make an appearance. The first desktop computers did not replace the typewriter in the workplace, but just supplemented it. Operators were not comfortable changing from the familiar typewriter to an unfamiliar and much more complex computer. Change is hard. And even harder was convincing people that had used typewriters most of their lives that it would be replaced with a computer was a hard sell.

But even as the computer took hold and more and more typewriters were replaced with a desktop computer, the typewriter remained necessary in the workplace. Preprinted duplicate and triplicate forms were still used for many purposes such as shipping documents and legal forms. The printers attached to the computers could not print on preprinted duplicate and triplicate forms. These forms were rolled into the typewriter and filled out by typing into each area of the form requiring information. These forms were eventually replaced with computerized forms, as the industries requiring the use of these duplicate and triplicate forms adjusted to the new computerized workplace.

Technology continued to advance in the workplace as more complex computerized systems were implemented, allowing users to share information and work simultaneously in the office, across the country, and around the world. These more complex systems resulted in increased efficiency in the workplace, but not without some ups and downs. Each new

implementation of technology requires training on the new system. And, because all systems are not identical to the previous system, changes in business processes are inevitable. Anticipating the technical and business process changes is crucial for properly training the users on the new technology. The quicker the end-users feel comfortable on the new system and are able to accomplish their tasks, the quicker the increased efficiency in the workplace will be realized.

Implementing Technology in the Workplace

Staffing

The choice between the use of consultants with expertise in a new technology or the use of current staff has its pros and cons. When considering consultants, on the "pro" side consultants typically have more expertise than any current staff, except in rare instances. They are experts in a given system and typically have experience with multiple implementations. They understand the pitfalls to avoid and they understand the most difficult areas to implement.

On the "con" side, consultants leave at the end of the implementation and take all their expertise with them. Sometimes consultants are retained after an implementation or even hired as permanent staff to retain some of that expertise in-house. But, typically the expert knowledge leaves when the consultants leave. Any questions that arise after that point are directed to the system manufacturer for a resolution or custom programming to fix the problem.

When considering staff, on the "pro" side the staff has the most knowledge of the business processes. On the "con" side the staff has little or no knowledge of the new technology. New staff with knowledge of the new technology would need to be hired for the hope of a

successful implementation. But, knowledge of the technology is not the same as knowing how to manage an implementation. And after the implementation is complete, the new staff positions would no longer be needed.

Technology Decision Makers

The person making the decision on new technology in a company is crucial to its successful implementation. Many times that person is a senior level manager with little or no technology experience, but ultimately in charge of the monetary expenditure. Other times, the person making the decision on new technology is 100 percent knowledgeable of technology, but has little or no knowledge of the business processes that drive the technology. A blend of both technology and business knowledge is important for a successful implementation of new technology.

At UTA, the Vice President of Information Technology (VP IT) directly oversees all of the following departments:

- Information Technology Communications
- Information Technology Governance
- Project Management
- Risk and Compliance
- Development and Operations
- Desktop Support
- Enterprise Application Services
- Help Desk
- Infrastructure and Operations
- Instructional Technology Services
- Data Center Operations
- Network and Telecommunications
- Enterprise Architecture
- Enterprise Data Services

The VP IT reports to the Chief Information Office (CIO) who reports to the Chief Financial Officer (CFO) who reports to the President (see Organizational Charts in the Appendix). With all these levels in the organization and with each department responsible for an intricate part of the technology used by end-users throughout the campus, communication between departments and up the organizational chain of command is crucial. The success of any technology and to realize an increase in efficiency in the workplace when implementing new technology depends on this clear and constant line of communication.

Project Management

The implementation of any new technology usually follows a standard structure and process. The structure of the team includes a functional lead for each module and a team of programmers. The implementation team starts by meeting with each department to identify the key users. These key users become the voice for the department during the entire implementation process.

With the key users, the implementation team identifies the business processes, and determines which ones can be duplicated in the new technology, and which ones will need to be modified.

Conversion of the old system to the new system begins, followed by testing and training. When all conversions have been successfully tested, the old system is brought down and the new system is launched. From start to finish, the implementation process can take 12 to 24 months. After the new technology is in use, additional changes are identified and prioritized.

With MyMav, the student information system used at UTA, the change requests are communicated to Oracle. Oracle is the parent company that produces the PeopleSoft system. MyMav is the UTA version of PeopleSoft. PeopleSoft is used by thousands of organizations throughout the world. If enough customers request the same change, then Oracle's programmers will provide the change as part of the latest patch or bundle upgrade with the newest enhancements that they share with their customers. If not enough customers will benefit from the change, then the customer has to decide if they want to invest in the time and money necessary to make the change themselves.

DEFINE is an acronym for the DEpartmental Financial Information NEtwork accessed through The University of Texas at Austin's mainframe computer. Though primarily used to perform financial transactions, DEFINE is a powerful software tool that can be used for a variety of different purposes across multiple university campuses.

DEFINE's sophisticated accounting and departmental recordkeeping system enables detailed coding of transactions, report generation, and electronic reconciliation. DEFINE also allows users to create electronic documents, view accounting transactions, view account balances, update electronic signature authorization, and maintain departmental contacts. DEFINE is a DOS-based program, but it is a workhorse.

DEFINE was used for the financial business of UTA until recently. UTShare was acquired to replace DEFINE. The UTShare feature that was to be most beneficial to the end-user in the workplace compared to DEFINE was the integration of UTShare with MyMav, the student information system. With this integration, duplicate entry of information was expected to be eliminated, greatly improving the efficiency of the workplace.

End-User Involvement

Early in the process, identifying the end-users who have demonstrated superior insights into key business areas is crucial to the success of the implementation by leveraging their wisdom. After key users in every department were identified, they were offered training sessions one year prior to the go-live date. The training sessions were all conducted using PowerPoint presentations, no actual hands-on application was available to the end-users during the initial training sessions. As the trainers walked the participants through the steps to common processes, class participants were encouraged to ask questions. The majority of the questions asked were answered with, "that's a good question, I don't have an answer to it, but I'll find out."

Repeated training sessions conducted each month resulted in similar responses from the trainers. Good questions were being asked, the answers were not known. The end-users were assured that the questions were being brought back to the implementation team to get the answers. If the feature requested did not exist as of that time, the request would be prioritized to be implemented at a later date.

UTShare was launched for use for all financial business activities. DEFINE was still available to access for historical data only. No new transactions or activity was entered into DEFINE. The moans and groans could be heard in every department touching UTShare. The implementation lacked many of the promised features, including and most importantly, integrating with MyMav student information system. Reports that could be generated lacked crucial details of the data included to make the reports useful. Reconciliation of accounts could only be done by painstaking drilling down to multiple layers in multiple modules and splicing the information together manually. Entire positions were created within departments to build these reports, because no automated reporting system was available.

Consultants were assigned to work with end-users to identify the business needs and solutions. It was discovered that modules for UTShare had not been implemented that were needed to resolve the issues. Tears, anger, blame, frustration led to employee turnover and early retirement for those close enough to their date to throw in the towel. According to long-retired staff, this same sentence could describe the days and months following the implementation of DEFINE many years prior to UTShare.

The negative emotions coming from every department using the new technology should not be ignored but has to be addressed. Research shows that brushing aside negative emotions can cost organizations millions of dollars in lost productivity, disengagement, and lost effectiveness. For every person who leaves their position out of frustration, a new person must be hired and trained, figuring in this cost to the loss in productivity and far from the goal of increased efficiency in the workplace.

Change Management

With any implementation of technology, change is inevitable. The primary change is shutting down the previous system and replacing it with a new system. People resist change. Change that affects ones daily tasks is resisted because of the threat to the comfort level of the regular routine of the daily processes that are familiar. As the new technology is used to accomplish the daily processes, the changes are felt. Adjustments are made to accommodate the changes. Sometimes new business processes are developed to accommodate the changes.

Some business processes are identified that are not working as smoothly as needed or wanted. Change orders are part of the implementation process. The goal is to add the most

efficiency that is economically possible. The cost of the needs have to be weighed with the benefits of the change. All changes cannot be implemented. Some changes are too costly to implement. Some changes are not feasible because of the limitations of the technology.

Importance of Human Element

Technology is a tool used by end-users to accomplish a task. The end-user packages multiple tools together to achieve the solution. The human aspect of the solution is an important part of the package. Technology is not the miracle cure for all business processes. The human element in the equation is crucial. Relying too heavily on the technology can lead to too high of expectations and disappointments. End-users must identify the capabilities of the technology and work from that point.

An example of relying too heavily on the technology was evident when UTShare was first launched. End-users discovered that the data search tool was not functioning. Multiple databases of information needed to be accessed in order to complete tasks, such as looking up an account number in UTShare. These databases were not available in UTShare. Without access to the data, the task could not be completed within UTShare. Multiple missing databases exponentially exploded the problem to a crisis level. End-users came to a screeching halt as calls were made, emails typed, meetings scheduled, all in search of the solution.

Weeks and months passed with mounting frustration. A status report or update of any kind would have been calming, but no updates were issued. The implementation team knew that the databases had not been fully developed and were not accessible to end-users trying to use the search tool. This fact was not shared with end-users. The efficiency of the workplace was at an

all-time low with the implementation of UTShare. Too much expectation was riding on the new technology solving all the issues. The people forgot they have choices and alternatives to complement the technology they use.

Organizations need to blend technology with a sophisticated understanding of human choice in order to achieve success. Technology cannot stand alone (at least not yet). The people part of the equation is a crucial consideration when aiming for a successful implementation.

It should come as little surprise that the newcomers in a department have less resistance to change than those who have been doing the same task for a longer time. This is due to a theory called "automatic processing" where the mind solves a problem the way it has always solved it. When it cannot be solved the same way, it is time to step away from it for a while and think about something else. This pause in the process is called the "incubation" effect. The pause allows unconscious mental processes to be better able to combine ideas to create new innovations. The end result is an "aha" moment where the problem is solved in a new and innovative way.

Communication Before, During, and After Implementation

Communication could have changed the frustration level in the workplace and improved the level of efficiency during the implementation of UTShare. When the new technology was first launched, end-users should have been notified that the data search tool was not operational. Simply state the fact. People appreciate honesty and can take action when they know the facts. Lack of information is paralyzing.

The lack of data available by using the search tool within the system did not have to have such a debilitating effect on the workplace. With the knowledge that the databases were not available within the system, workarounds could be implemented. The previous system -- DEFINE -- was still accessible and had access to the database information needed. End-users could change their business processes to include looking up data needed to accomplish a task outside of the new system. Many end-users have multiple computer screens, which allow for running and viewing multiple systems at the same time. By knowing that the data was not available, and planning the process of looking the data up where it was still available, the task could be completed in an efficient manner.

Communicating the need to plan a workaround until the feature could be made available to end-users was critical to maintain efficiency in the workplace. The fear of change is real. The frustration that comes with change is real. By communicating the facts so end-users can plan accordingly, lightens the intensity of the pain that change causes.

When looking at the organizational structure and all the departments involved in the implementation of any new technology, it is no wonder that communication is a challenge. If we think of each department as a silo, it is important to break down the silos to let information flow easily to where it is most needed -- the end-users. This takes an organizational shift and must be instituted from the highest level down.

Executives can't lead effective organizational change without observing fundamental work processes in their organization. When they do, they can identify gaps between concept and reality and work toward closing the gaps.

Conclusion

      When technology creates chaos in the workplace before the increased efficiency is realized, someone or something is to blame. The natural assumption is to blame the implementation team. They should have identified all the business processes, programmed all the features, and trained all the end-users so that on go-live day everything worked smoothly. But, finding who or what to blame isn't that simple.

      Consider the possibility that a financial decision was made to only purchase 75-percent of the modules available for the new technology implementation. The implementation could be a success, for the modules that were available. The end-users could potentially perform 75-percent of their tasks with greater efficiency. But what about the other 25-percent of the tasks? Did the frustration of not knowing what to do for that 25-percent of tasks overshadow the success of the rest of the implementation?

      Underestimating the importance of communication is the common thread identified when chaos follows the implementation of new technology. The end-user requires constant communication before, during, and after the implementation process, whether the news is good or bad. The end-user is understandable anxious and frustrated at learning and using new technology to accomplish their daily tasks. Any status update on features or questions they have during the process can reduce the negative feelings and get people focused on their task. Without this communication, the negative push-back from the end-users to the new technology can eliminate any desired increase in efficiency in the workplace.
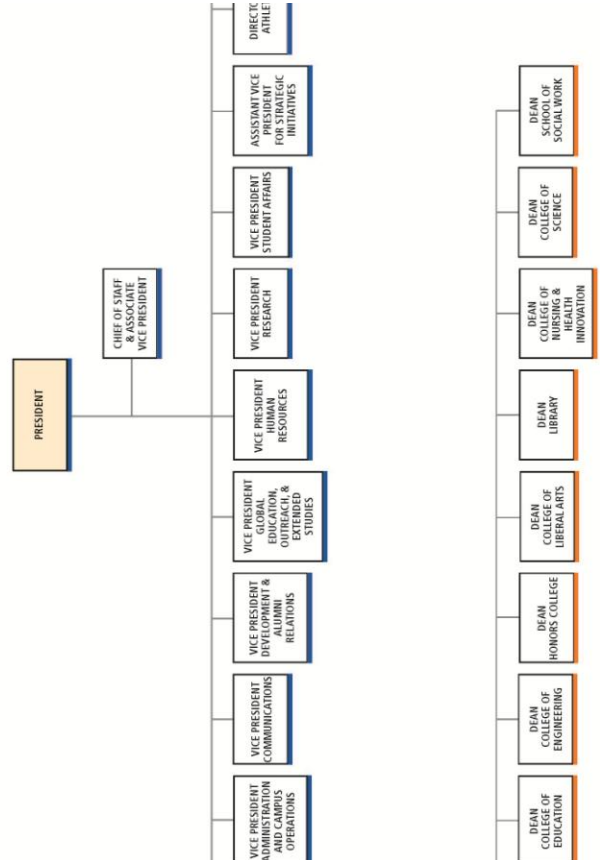
      Communicate, communicate, communicate. If you think you have communicated enough, communicate one more time another way.
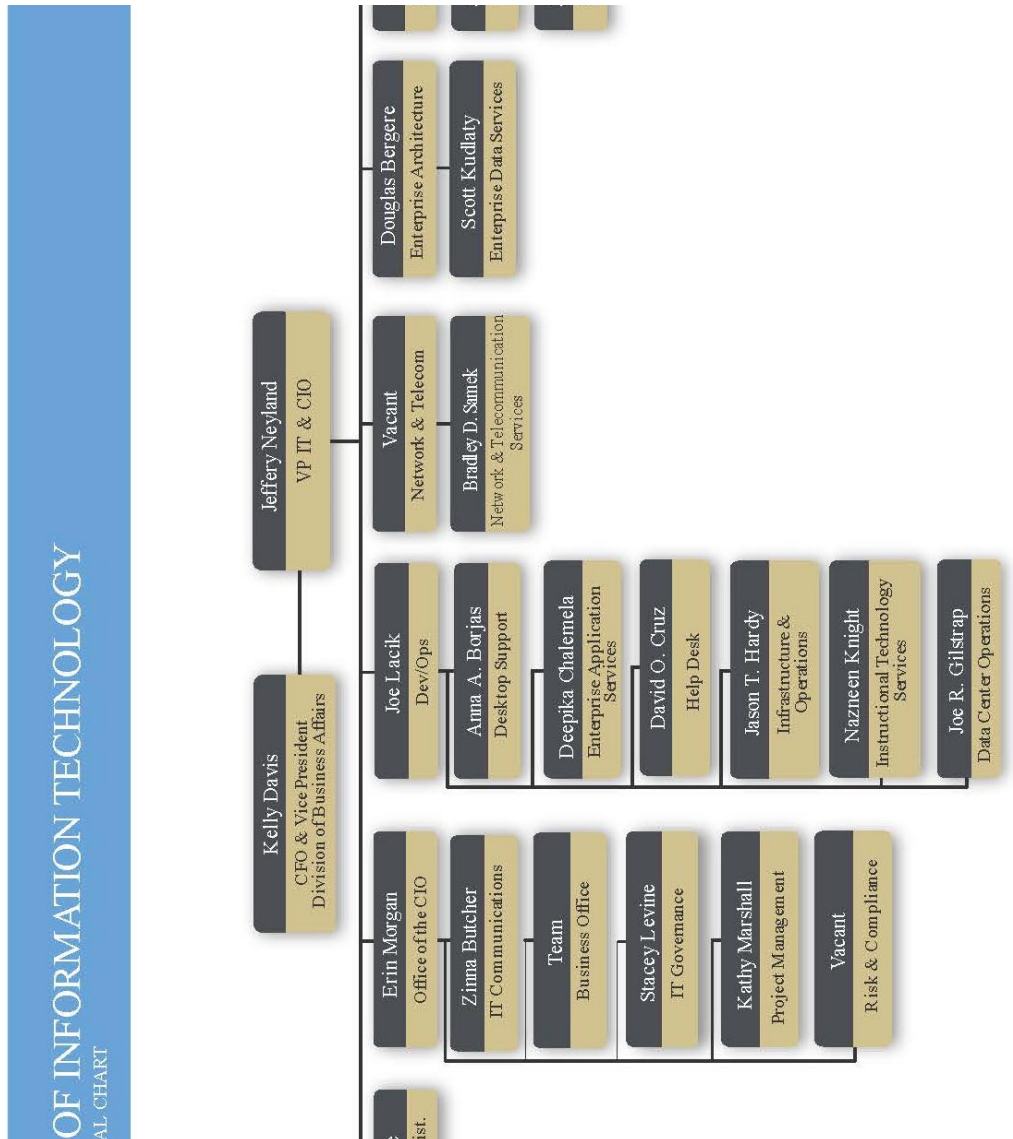
Appendix

Organizational Chart of the President

Organizational Chart of the Office of Information Technology

OF INFORMATION TECHNOLOGY
AL CHART

Jeffery Neyland
VP IT & CIO

Kelly Davis
CFO & Vice President
Division of Business Affairs

Douglas Bergere
Enterprise Architecture

Scott Kudlaty
Enterprise Data Services

Vacant
Network & Telecom

Bradley D. Samek
Network & Telecommunication Services

Joe Lacik
Dev/Ops

Anna A. Borjas
Desktop Support

Deepika Chalemela
Enterprise Application Services

David O. Cruz
Help Desk

Jason T. Hardy
Infrastructure & Operations

Nazneen Knight
Instructional Technology Services

Joe R. Gilstrap
Data Center Operations

Erin Morgan
Office of the CIO

Zinna Butcher
IT Communications

Team
Business Office

Stacey Levine
IT Governance

Kathy Marshall
Project Management

Vacant
Risk & Compliance

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Biographical Information

My academic career began at Skyline Career Development Center High School in Dallas, Texas where I studied Graphic Design. After graduating from high school, I continued to work at the Texas Methodist/ United Methodist Reporter -- a national religious publishing house, where I started working at the age of sixteen. I was promoted to supervisor and then manager by the age of twenty.

After ten years in the publishing industry, I started my own publishing business, Print Productions. This was a full-service publishing company offering design for corporate identity, print, radio and television advertising as well as annual journals and cookbooks. I secured my clients by word of mouth from happy clients and networking. I attribute my success to jumping onboard the desktop publishing train in its infancy, before Bill Gates made everyone a desktop publisher (with or without any formal skill or training).

In preparation for my empty nest after my son graduated high school, I enrolled at the University of Texas at Arlington to pursue a bachelor's degree in Information Systems. I attended year-round -- Fall, Spring, and Summer -- while working full-time and completed my degree in five years in the Fall of 2013. I took a short break and returned to earn my Master's degree in Information Systems in the Spring of 2017.