

INSPIRE Pre-College Internship
Kennedy Space Center
Computer Assets Recovery Project
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NASA/INSPIRE
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During the INSPIRE summer internship I worked with the IT Boeing Integrated Site Support team in support of an IT industry standard metric regarding computer to head count ratios. Our goal is to reduce the ratio of 1.4 to 1.19 for Boeing at the Kennedy Space Center. The current ratio represents an excess of over 500 machines that include tablets, CPU's, monitors, docking stations and laptops. Change in budget proposals and planned reductions in force causes the increase of computers without users. Some computers do not meet the minimum requirements to upgrade to Windows 7 OS and therefore are excessed. Our duty is to organize and recover these computers to be issued to another user or transferred to non-profit organizations. Additionally the Desktop Support Team assists end users with computer problem resolution. As side projects, I worked on toner and printer inventory, loading new computers, connecting them to the network, LEAN meetings, Blackberries, and Gold Cards.

The Boeing Company at KSC is the Checkout and Assembly Payload Processing Contractor (CAPPS) of NASA and provides engineering services to United Space Alliance. The Boeing Company has the distinction of being the major payload processor for the Space Shuttle. Payload processing is an integral function of the shuttle program, and the KSC Division is responsible for all processing phases from the time a payload is scheduled to fly, through launch, landing and cargo deintegration after a completed mission.

The Corporate Asset Management System (CAMS) database generates a monthly Automated Data Processing Equipment (ADPe) excel report. The spreadsheet contains the following item data: tag number, model number, ADPe code, building, room, account, custodian, username, CPU speed, BSCO unit, acquired date, and comments. While working at the Space Station Processing Facility (SSPF) I worked on a Desktop Instruction that explains how to use the ADPe report to generate any sub-reports. With pivot tables and filters we can easily keep track of assets from different perspectives.

To locate and recover machines in the various Boeing locations at KSC, Titusville, and Cape Canaveral, I gathered with property custodians. The custodian manages and issues machines for end-users in a certain building. Among other tasks they manage location tracking, transfers, and excess. I assisted various Property Reviews of the Orbiter and Logistics Assets with the following property custodians: Nick Hopkins and Cindy Nguyen from the OSB, Kathleen Brothers from the SSPF, Nalena Kennett from building 100, and Debbie Rich from the NSLD1. We used tools such as the telecom and Webex to complete real time updates to the ADPe report. Then we determined which computers were possible candidates for recovery and excess. Possible computers for recovery include those used by employees with more than one computer and those that do not meet the minimum requirements to upgrade to Windows 7 OS. Other cases we encountered were computers that were being used to obtain a larger combined hard drive space. Our solution is to expand the computer's hard disk size. Another situation we

identified was employees using a laptop and two monitors, forgetting that the laptop monitor can be used to extend the desktop. The custodians informed us of employees out on IWA work, which is short term work at an offsite location, or out on a DTA which is a long term assignment. We also looked at pulling back computers used in the Constellation project since it is near the end of program (EOP). Also we recover assets that do not follow the Energy Star standard, which are equipment that consume over 20% to 30% less energy than federal standards. Simple changes like these can help reduce corporate spending in additional assets such as the support, repairs and power that goes along with the machinery.

My mentor Vicki Mazurek is the manager of Boeing and she gave me the opportunity of working closely with various property custodians such as Katherine Brothers at the SSPF, Nick Hopkins at OSB and Bernadette Nicholson. While working with Hopkins, I was given the task of verifying the location of a list of assets in the OSB and update any discrepancy in user, tag number, and/or room number. I also worked at the NSLD together with Katherine Brothers and Debbie Rich. There we analyzed the assets we had identified in the Property Review meeting and transferred some of them for excess and replacement. While working at the SSPF with Katherine Brothers I verified that the computers were coded according to its usability and condition and then I excessed many monitors and CPU's.

The Site Support team handles three types of machines that go through different excess processes. Untagged excess are written down in an excel Excess Info sheet and then sent to material management. For government machines we notify the property management office and the custodians that the machine is in process of excess. And finally, we use the CAMS Database to excess corporate machines. To first understand how to use the Corporate Asset Management System (CAMS) within the Citrix Metaframe, I went through an online training tutorial. To excess we access the Custodian module, input the condition code according to condition of the hardware and click on excess pick up. After that we go into ADPe module and change the program name to INTXS which means that the asset is in transit and will not count against us in the computer to head count ratio. On the first week of my internship I excessed over 28 computers. Another task I completed in CAMS was fixing the ADPe codes of workstations and Unix Servers, and to include the version of the OS in those computers.

After virtually excessing the assets, the Transportation team, Jim Fiers and Jim Kerrigan, fills up a Corporate Property Transaction Document (CPTD) and then take the computers, docking stations, monitors, and/or tablets to the Apollo warehouse in Cape Canaveral where all its data is erased. Meanwhile I use the CPTD hand receipts to update the program name from INTXS to EXCESS in the ADPe module at CAMS database. I worked this process out at the SSPF and building 100.

The working corporate tagged machines follow the Partners in Education (PIE) process which consists of excessing the computer equipment to non-profit organizations that support the school district. It was an amazing event. We filled a truck full of hardware from the KSC warehouses and drove them to building 100 where we distributed it to Brevard Schools Foundation, Computers for Kids, and Computers for Education. Every PIE event donates over 160 computers. The tradition of the PIE event is that upon its finalization, we eat real pie with the team that makes this all possible. It brings me great satisfaction to see this wonderful process

take place and to know that the final step in the Boeing Company's computer lifecycle is in the hands of children.

Another area I was able to help with was on loading new out-of-the-box computers with Windows XP. They first go through the installation of a Fast Image which contains all the settings for the computer to connect through the network. At building 100 there are two LAN cables, D1 is for the South Eastern Boeing Network (SE) and D2 is for the NASA Network (NTBSCO). We configure Loaner Pool laptops to be on the SE network or the NTBSCO depending on the user's needs. Then we install the excursion program which is a program that secures stolen hard drive data by making it useless if it lands on the hands of another person, then in order for that person to use the computer they would have to delete the entire hard drive. I setup a total of over ten Boeing computers.

At building 100, I learned how to create pivot tables in excel and I updated the some printer data that was missing such as tag numbers, and model numbers inventory of printer toner cartridges on an excel spreadsheet. The next step was to verify that the model numbers matched with its toner at www.hp.com. Additionally, I took inventory of toners from the Storage Room and added it to the spreadsheet. This data is critical for making printer toner orders.

I attended various LEAN meetings during the summer. LEAN focuses on having clear organization following the 5S procedures which is to have assets in offices sorted, simplified, swept, standardized and its users would follow self-discipline to maintain it this way. This allows inexperienced new users of any system to easily follow the signs and complete the task they need. By following 5S employees will become more productive and save time. We follow 5S procedures when excessing hardware from any IT storage room. One of their meetings presented a program that would keep track of what goes on in a meeting and provides the capability of easily sharing that data with anyone who did not attend or need to review the notes. LEAN also focuses on quality process improvement. They hold Accelerated Improvement Workshops (AIW) where they discuss ways of eliminating duplication of effort and closing loops in a process. And finally I attended a LEAN continual improvement meeting and learned how Boeing works to reduce the quantity of energy and waste generated by the center.

Employees who travel a lot need quick and easy access to their calendar, email, internet and phone calls. Boeing provides their employees with Blackberries to solve this problem. During my third week I activated a Blackberry Smartphone and configured it to synchronize with a new Boeing employee's outlook. I worked at the OSB resetting over 36 Blackberries prior to their planned excess to non-profit agencies in the community. Then I organized them in a shelf according to 5S standards and then created an excel sheet of the inventory of everything in that shelf, to assist with the excess process.

For non-Boeing users such as United Space Alliance (USA) to gain access to the Boeing network, they must connect through "virtual tunnels" using a Gold Card. Gold Cards are similar to small calculators that by inputting a unique PIN number, it generates passwords to gain access to the network. Dave Ruiz taught me how to use the Gold Cards and how to change the tunneling configuration from VS Client to Nortel IPsec. Z Token, the old way of tunneling, would expire soon and Gold Cards have become the new way of tunneling in. After setting up the cards, I

configured their computers to access a new PASSPORT Mainframe window. To understand the significance of this, I had a QAIMS Mainframe 101 session with the subject matter expert Thomas Young. The new Mainframe is being setup to block non-Boeing employees from gaining access into networks that they do not have permissions to access. By changing the IP Host name in PASSPORT to a new external gateway server a PLX configured machine would only be allowed access to QUAIMS and/or CVASI. While Boeing users can connect to the QCCI mainframe, non-Boeing users have to go through a filter. The user name of non-Boeing users indicates which networks the user has access to. All of these changes increase the level of security needed to access these systems.

With all the necessary training, I was prepared to visit various employees at the OSB I, OSB II, Logistics Facility, NASA Shuttle Logistics Depot (NSLD) and the Thermal Protection System Facility (TPSF) to issue them the cards and teach them how to use the new mainframe system. I used the NASA Employee Self Service Management Tool to locate end-users of the Gold Card. At the TPSF I encountered a user discrepancy problem which blocks their access to the Mainframe, I solved it by calling the HelpDesk. After I issued five Gold Cards at the TPSF, I had a tour of the building. The TPSF manufactures the Orbiter's tiles, gap fillers, and insulation blankets that protect the exterior of the shuttle from the heat of launch and re-entry. There are over 24,000 tiles on the shuttle. I walked through the different rooms through which the tiles are processed, such as where the tile layers are pressurized together, coated, densified, heat and water proofed. I also went to the last floor where some of fabric is sewed by men and women. The next building I tackled was the OSB II, there I issued two Gold Cards. I walked on the fifth floor balcony where you can see a clear view of LC 39A, LC 39B and the VAB. Also I went into the conference room where NASA directors from different space centers gather to determine whether the next shuttle is go or no go for launch. The following week I issued a dozen gold cards at the NSLD in Cape Canaveral. One issue I encountered was a double log on screen in the Mainframe due to having different passwords, so we access an external password reset page to reset all mainframe passwords. At the end of that day a Logistics employee gave me a fantastic tour of the NSLD where he showed me the Space Shuttle windows, the emergency egress window, its layers and how they put it together. The next day I had the opportunity of working at the Logistics Facility issuing nineteen Gold Cards to employees of the United Space Alliance. The Logistics Facility contains thousands of space shuttle hardware. I created an excel table listing the BEMS ID and location of users who requests the new Gold Card. Then I sent the DES Gold Card order to Dawn Cejda, the Boeing Project Manager, to initiate these new card orders. Working at different locations has allowed me to learn about the variety of different jobs around the center and the functions of each building.

While working at the Kennedy Space Center I had various tours. My first tour was of the Launch Complex 39A with Ronald Caswell, a Launch Package Engineer for Barrios Technology. I walked on the Launch Pad and went 255 feet high looking straight to where the Orbiter's wing would be. I also saw the Rotating Service Structure (RSS), the two large cryogenic tanks that store liquid hydrogen and liquid oxygen, the sound suppression water system, and the emergency egress system. Later throughout the week I attended a tour of the Space X launch pad, I learned about the different mechanisms it uses in comparison to NASA launch pads. The INSPIRE interns had a tour of the Prototype Lab, there I learned about how products have been invented, modeled and created in as little as 3 days, and also NASA's

involvement with the FIRST Robotics competitions. I toured the OPF1 and OPF 2 where I saw the Atlantis and Endeavour Orbiters. Also I got the opportunity to sign the VAB wall next to many engineers and scientists who has worked on the Shuttle Program. The following week I walked over to the Banana River near the VAB where the External Tank has arrived in a covered barge from NASA's Michoud Space Systems Assembly Facility near New Orleans. They unloaded the ET and I walked next to it as they transported it in to the VAB. The following week I assisted a tour of the Launch Control Center firing rooms used for the Apollo and Shuttle program. In the afternoon I met four astronauts from STS-132: Commander Ken Ham, Mission Specialists Piers Sellers, Pilot Tony Antonelli, and Mission Specialist Steve Bowen. The next day I attended a conference at the OSB II about Boeing's future plans in the space exploration industry. Then I attended a conference given by the latter four astronauts. While working at the SSPF, I met Ron Woods a veteran spacesuit preparer for the space shuttle astronauts. He dressed up Buzz Aldrin for the Apollo 11 mission and currently he paints spacesuits and other flight crew equipment.

I also attended a couple of enrichment activities. The first was the BEST Barbeque Intern Social event where I met other interns, co-ops and employees with similar goals and aspirations. The next was the *Social Networking* presentation about the importance of communicating with new people because no one can succeed on their own. After the presentation I had the opportunity of networking with various Deputy Directors, one of them was Miguel A. Rodriguez the Deputy Director of the Management Engineering Directorate. I also attended the Solid Rocket Motors presentation at the O&C center. As part of the INSPIRE program the interns held a Digital Learning Network (DLN), where we video conference with students interning at Langley Research Center and Marshall Space Flight. It motivated me ever more to listen to all the exciting projects other INSPIRE interns where working on this summer. Afterwards we went to the visitor complex and hopped on the Shuttle Launch Simulation. Another educative activity I attended was the enrichment activity *Tips for making a good life* presented by the ex-deputy director James W. Kennedy. After that I went to the presentation *Are You a Future Entrepreneur* at building 100, as part of the Boeing Women and Leadership Affinity group. They discussed alternate ways of income if planned reduction in workforce where to occur. At the Headquarters building I assisted a diversity presentation about American Sign Language and tips on how to communicate with deaf and hard of hearing people.

The CAPPS computer to head count ratio has been reduced from 1.34 to 1.33. The overall site ratio reduced from 1.4 to 1.38. During the month of June and July, a total of 34 CPUs, laptops and tablets were excessed. The NASA INSPIRE program has been a life changing experience helping me explore a diversity of careers and shaping my goals. I am proud to say that I have contributed to BOEING, USA and NASA as well as they has helped me to grow as a person and a future engineer in the STEM fields. While working on my project I expanded my knowledge on the different contractors that play an important role in the space program. I continue to be awed at all the opportunities that lie ahead and ever more motivated to continue my studies in Aerospace Engineering and contribute to the space exploration program. I want to especially thank my mentor Vicki Mazurek for her guidance and support throughout the summer internship. I also thank everyone in the Integrated Site Support team Bernie Nicholson, Alan Grenville and Nick Hopkins, the End User Support Specialist Kathy Brothers, Property Manager Johnny Outing, the Transportation team Jim Fiers and Jim Kerrigan; and Dave Kolb. Another set of thanks to Norm Ring, Thomas Young, and Dave Ruiz. Special thanks to my physics teacher

Elba Sepúlveda who informed me about this outstanding program and helped me throughout the process. Thanks to all those who made this program possible: Jim Gerard, Priscilla Moore, Steve Chance and many others. I enjoyed the work I did this summer and aspire to return for a third internship next year to continue building upon my knowledge and contributing to NASA's missions.