NORTHWEST NAZARENE UNIVERSITY

Current State Mapping and Duplicate Account Resolution.

THESIS

Submitted to the Department of Mathematics and Computer Science

in partial fulfillment of the requirements

For the degree of

BACHELOR OF SCIENCE

Riley Lamar Shaw

2023

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ABSTRACT

Current State Mapping and Duplicate Account Resolution.

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The Denali project is a multi-year campus-wide collaborative transition from the client, Northwest Nazarene University's (NNU), old enterprise resource planning (ERP) system to a newer, more modern option. The goal is to increase productivity in all departments that work with the ERP because the older system is no longer supported and is inefficient. The new system will also bring new elements to different departments to further improve their helpfulness to students.

For this project, duplicate accounts were found and corrected through multiple checks. After hundreds of duplicates were resolved, the next objective was to map the current state of several departments or processes around campus that would be the first to be affected by the transfer. The Registrar's office, student housing, and University advancement were mapped by the end of the summer. Accurately documenting existing processes and helping plan the transition will help create efficient communication between multiple NNU departments and the replacement ERP's team.

Acknowledgments

I would like to thank my advisor Dr. Myers for pushing me to succeed, on my senior project, as his student, and as an advisee. I would also like to thank Kevin Mark for offering the opportunity to work on this project and the other students who worked on the Denali Project with me.

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Overview

This project is part of an ongoing transition project aimed at increasing the productivity of several departments across our client's university campus. Because of the time at which the project began, the goal was to assist in the preparation of the transition teams for the new Enterprise Resource Planning (ERP) system. It took some time for the interns to gain the correct access to actually begin working on the project, so the first two to three weeks were spent in Microsoft's learning environment training to be prepared for a new environment. From there, the project went to finding, checking, and resolving duplicate accounts in the old system. These were prioritized because the first steps of the transition were related to accounts and it was a process that did not require attention from the team from the new ERP company that was assigned to our client. Once duplicate resolution was finished, the project could move on to the next preparation stage. This included the current state mapping of different departments and processes around campus. These current state maps were delivered to the replacement ERP's team to assist their understanding of how the client works and where it can be improved.

Background

This project started as an attempt to increase the ability of the client's employees to work efficiently by replacing an outdated and cumbersome tool provided by the existing ERP system with a modern cloud-based option provided by the replacement. The existing ERP has many unused resources that the university does not need or use, and it is a difficult tool for anyone lacking technical training. This is due to the age of the system and the lack of support it now has. This problem is exacerbated by the

customization capabilities that the client's programming team utilized, which created training difficulties as the client's turnover for employees is quite high.

With the replacement system, the client aims to alleviate many issues experienced by their staff and faculty as well as bring new capabilities that were not previously available. It is different from its predecessor in that it is a cloud-based system, is used with Microsoft, and does not require as much if any customization. These were all qualities that made the new system attractive to the leadership committee that decided to choose it as the new ERP System.

Preparing for a Microsoft Environment

The first task for all interns working on the Denali project was to go through several learning modules from Microsoft's training site called Microsoft Learn. This was done while the Human Resources (HR) and Information Technology (IT) departments finalized the team's permissions and employment information. For about two weeks, each Denali Intern spent their day reading the documentation for Microsoft's tools and standards. Each team member was able to gain a significant amount of Microsoft knowledge that would become useful in the coming weeks. (Microsoft, n.d.)

Duplicate Resolution

Duplicate accounts in the old system were the first priority for this project once it began. Their existence was not only a problem for the Denali project, but they were also a constant thorn in the side of the IT department's programming team. For Denali, the replacement ERP team needed the client to have all duplicate accounts taken care of before the transition could begin to avoid any possible issues that might arise from their existence. It also happened to be something that the people on the client's side could

work on before any transition action needed to be taken. The programming team was already addressing duplicate resolution, but they were not able to focus enough on it because of more pressing responsibilities.

The programming team previously designed a program that found accounts with certain similarities and differences and marked them as potential duplicate accounts. They were then put in a list, and the user was given the option to view much of the pertinent information those two accounts have within the original system. This allowed the team to resolve some accounts quickly, but most required more attention.

Those accounts that needed more work required using various tools to check personally identifiable information (PII) that could confirm or deny the duplicate status. The team used three primary tools: a document viewer that the client has licenses for, “Fast People Search” (FPS), and an “Audit Check.” The document viewing software is a service that holds sensitive information (such as transcripts and addresses) of every student or applicant with an ID in the current system. FPS is a free website on the internet that holds publicly available information regarding anyone’s past or present address. Finally, the team utilized another tool created by the programming team called Audit Check that allowed them to dive deeper into the information held by the ERP, such as looking into addresses, relationships, and account history. By utilizing all tools, two Denali interns and an advising professor were able to resolve more than 200 duplicate accounts.

Current State Mapping

The second half of this project was the current state mapping of processes and departments within the client’s campus. This was a process in which a team of two interns would meet with a department to learn about everything they do. These current state maps were made to give the replacement ERP team an idea of what they were

going to be working with once transitions began. The maps would also give them an idea of where to change and improve their functions. From interviews conducted with the Subject Matter Experts (SME) of each department, they commonly complained about the inefficiency and complexity of simple processes required of employees every day (Personal Communications, June 29, 2022, July 12, 2022, July 27, 2022). By replacing that system, the Denali project aims to assist the new ERP and the transition process by providing an idea of what needs to change.

The first map that the team requested was one of the student housing processes. This required a detailed Data Flow Diagram (DFD) that showed how a student is assigned to a dorm or apartment on or off campus. The first step in creating this DFD was a meeting with the Executive Assistant of Student Life, who had previously worked with the Project Manager for Denali and the pair of interns about their understanding of the system. The meeting with the Project Manager resulted in the whiteboard map seen in Figure 1. After receiving feedback, more meetings with the Executive Assistant, and creating eight drafts, the team developed the DFD seen in Figure 2.

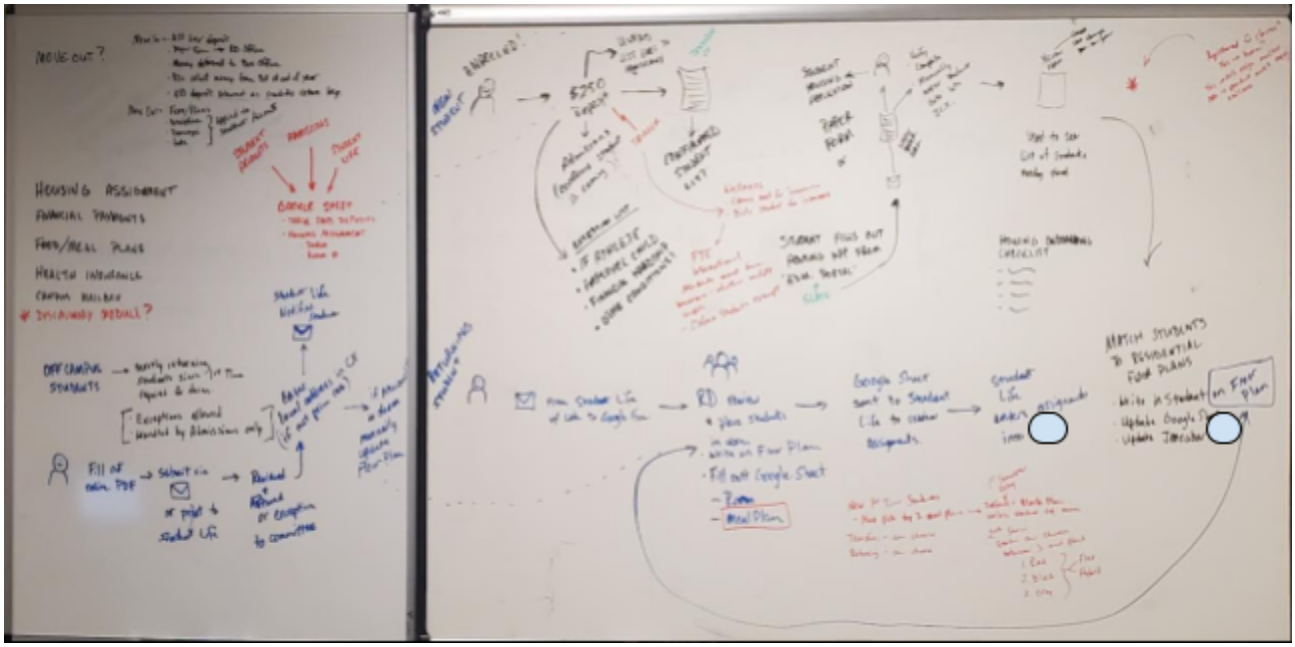

Figure 1 - Initial housing process map

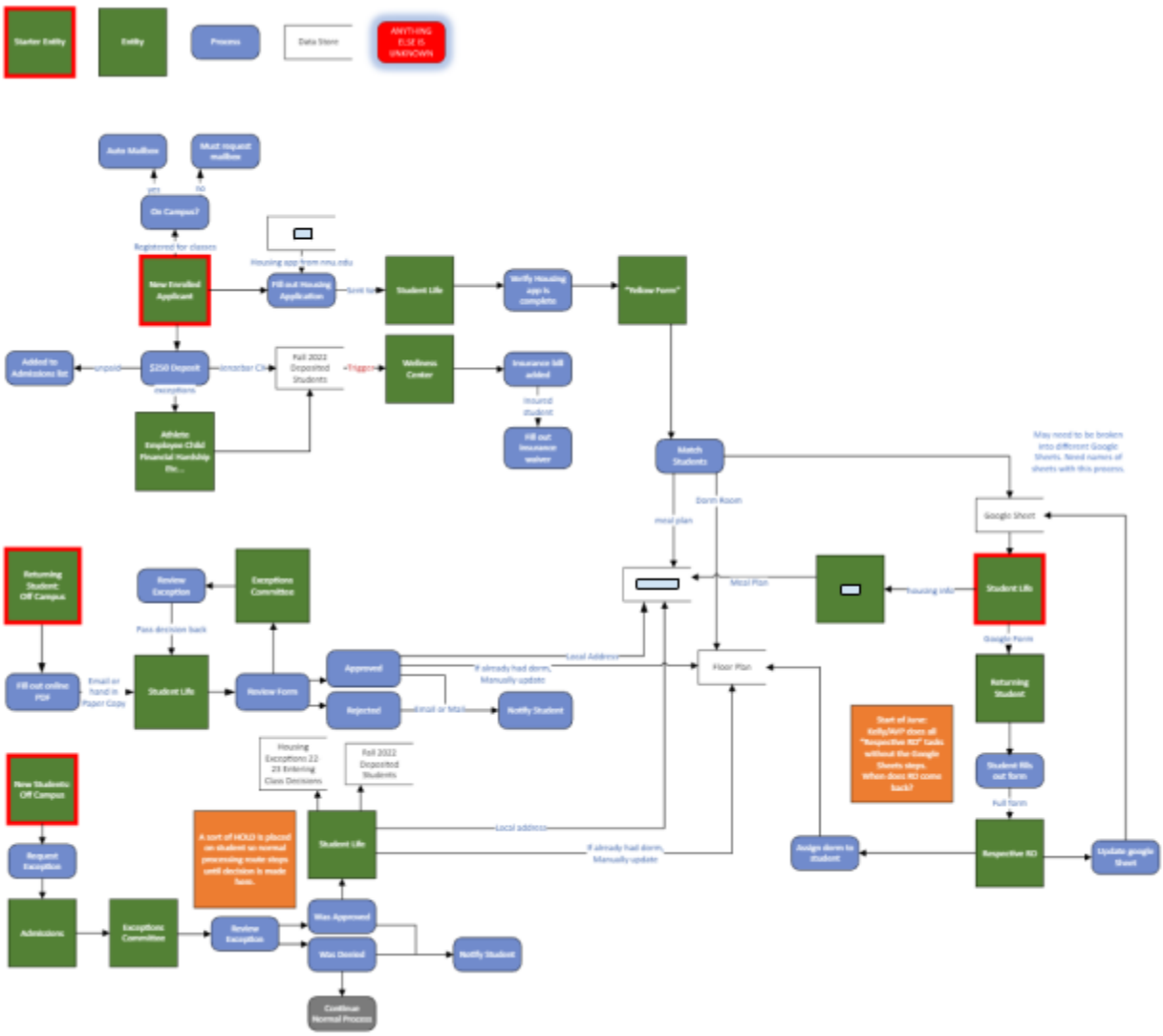

Figure 2 - Housing process map final draft

The second map completed for this project was that of the Registrar Office's Course Catalog maintenance process. This involved taking a low-detailed map (Figure 3) created for a group project in one team member's Systems Analysis class and expanding on it. From the meetings with the Registrar's SME, and later on with the rest of the department, the team was able to develop a more accurate and detailed map. With a deeper understanding of the processes, the team created a new, highly detailed DFD, as seen in Figure 4. By focusing on this specific process, the new ERP team would

get a good idea of what to focus on improving when dealing with the transition regarding the Registrar's Office.

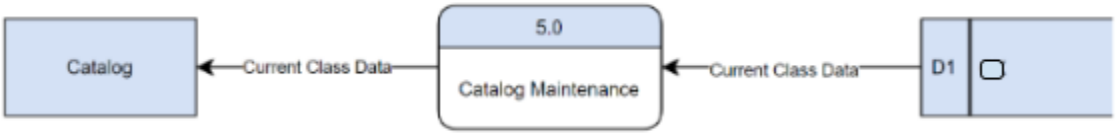

Figure 3 - Low detail DFD for Registrar

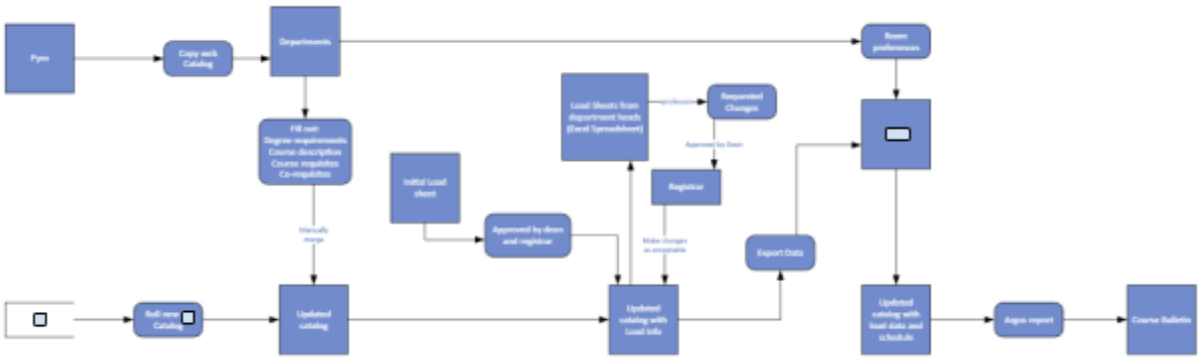

Figure 4 - Final DFD for Registrar's Office

The final task for this project was to map the current state of the University Advancement (UA) office. For this, the team utilized a Task Inventory form created by one of the IT programming team members to help create the map. The programming and project teams met with all employees involved with the UA Office to fill out the form. From the meeting, the team was able to prioritize specific tasks, as seen in Figure 5. Once all tasks were defined and understood, the team set about creating the DFD used for the UA office. Figure 6 shows three examples of process maps for separate processes listed in the UA office. In all, there are about forty-seven of these maps.

	A	B	C	D	E
1		Is this procedure required to comply with governing bodies? If so, which one?	Which staff member performed the proccedure?	How often is the procedures performed?	
2	Short descriptive phrase describing the process		Staff Member Name	Please enter D for daily, W for weekly, M for monthly, S for per Session , Y for yearly.	
3	e.g. Awarding new student aid	e.g. Department of Ed	e.g. Tom	e.g. S	
4	1) Donation total reports: various criteria - fund totals by time period and/or group (ie fiscal year - 7.1.2021 to 6.30.22 - alumni, trustee, faculty/staff, etc) for Annual Giving Statements, Reports to Board of Trustees, Donor Roll, various department chairs, etc			Multiple times a year. More often when there is a campaign going on.	
5	2) USPS and Email Address mailing lists based on various criteria for various events, donation campaigns (Asking for money), and informative/news pieces (Messenger magazine, UA Newsletter, President's Christmas Card, etc)			Multiple times a year	
6	3) Add an "interaction" to the recipient's record: Through [redacted] Communication Management operation, the Interaction process adds a description and date to a constituent's profile/data record for every email or USPS piece that was sent.			for every gift receipt letter and communication piece	
7	4) Creating new constituent profiles and updating data for constituents in the [redacted] database. Adding, end-dating, and/or changing ID numbers (add new ID numbers, that is), name, address, relationship, attribute, interaction, etc.			Daily	
8	5) Discovering/Recognizing, Researching, Correcting errors in a constituents data profile: relationships (ie. one person shows 2 spouses; in a parent/child relationship the child's DOB makes them older than the parent); wrong address-returned mail; incorrect donation post, etc.				

Figure 5 - Task inventory for UA

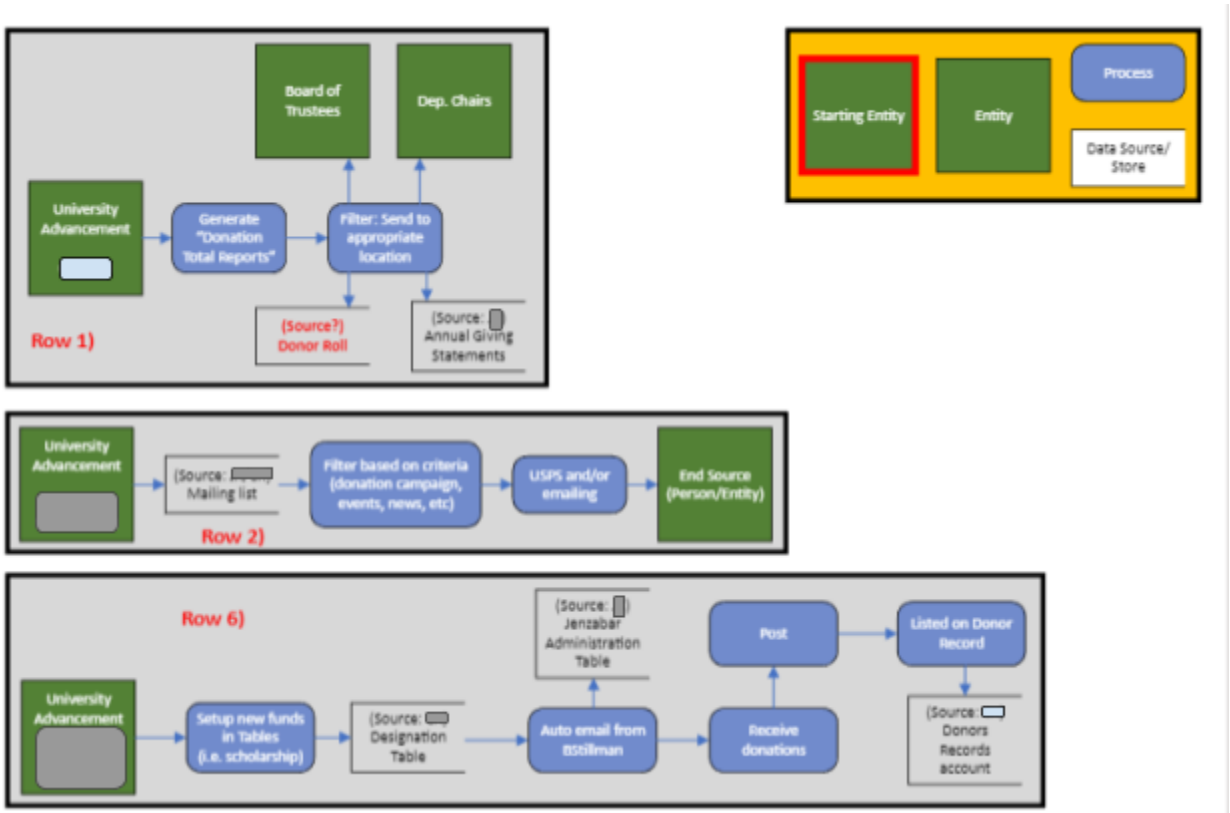

Figure 6 - Final DFD for UA

Future Work and Conclusion

Going forward from this project there is still a lot to be done before the conclusion of the Denali Project. The conclusion of this project came before the preparation phase was over. In this project, the team only fully mapped one, albeit large and important, department. There are many more that should be mapped before the incoming ERP begins its integrations.

I am thankful to have gotten the opportunity to work on the Denali Project. I was able to successfully utilize skills that I learned throughout my time as a student in a real work environment. The team environment experience and mentorship received from the Project Managers were invaluable to me, and I am extremely grateful to have ERP Transition experience under my belt. I was also able to get a good idea of how large

projects work in an organization as an employee rather than as a student, which will prove useful in my next job.

References

Microsoft. (n.d.). Microsoft Learn. Retrieved April 27, 2023, from https://learn.microsoft.com/en-us/training/