Optimizing the Nexudus System for the Worcester Regional Food Hub

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WPI

Worcester Community Project Center

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Abstract

Worcester Regional Food Hub (WRFH) Director, Shon Rainford, wants to use Nexudus, a customer relationship management (CRM) system, in the WRFH expansion to Union Station. To help facilitate this, we evaluated User experience with Nexudus and assessed whether the system could manage all of the WRFH's billing, scheduling and messaging needs. To assess User experience and the capabilities of Nexudus, we used a combination of interviews and surveys. We then developed tutorial videos and user guides to enhance the User experience and streamline the WRFH's business processes. In the end, the enhanced Nexudus system at Union Station will offer an easier payment method, a more efficient check-in system, and an improved communication system that is integrated with Slack, a platform for team communication.

Food Hub Commercial Kitchen

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Food Insecurity

As of August 2021, almost 800 million people around the world go to sleep without the ability to access food (USAID, 2021). When an individual or family is food insecure, it means that they have limited access to healthy and affordable food. Food insecurity is a global issue that affects families and individuals. Food insecurity is the condition of not having consistent access to a sufficient quantity of affordable, healthy food. In the United States, in 2019, 10.5% of households experienced food insecurity at some point throughout the year, with 4.1% (5.3 million households) experiencing extreme food insecurity. Which means that they have little to no food to eat on a day-to-day basis.

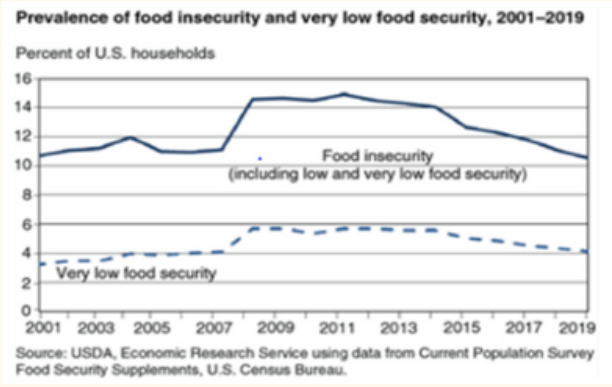

Figure 1. Graph of food insecurity in U.S. households (2001-2019)

Households suffer from food insecurity due to a lack of money and other resources such as low levels of education, a lack of social networks, a lack of social capital, a low family income, and unemployment (USDA, 2014). The numbers in figure 1 show that from 2001-2007 the amount of prevalence of food insecurity was at about 11% then rose from 11% to 15 % between 2007-2016. Finally, it went back to the 11% from 2016-2019. (Figure 1) Meanwhile, the number for very low food security just kept rising from 2001-2019. Thus far, you can tell by the statistics that the food insecurity is an issue that is not being discussed enough in the United States.

In these food-insecure homes, one or more household members' typical eating habits were disrupted and food intake decreased at times during the year due to a lack of money or other food resources. At some point in 2020, 3.9 percent (5.1 million) of US households had extremely low food security. (USDA, 2020).

Health Affects of Food insecurity

Food insecurity causes health issues, such as malnutrition and asthma, and increased crime rates in many communities. Food insecurity is the leading health and nutrition issue in America. In particular, “food-insecure children are at least twice as likely to report being in fair or poor health, and at least 1.4 times more likely to have asthma, compared to food-secure children; and food-insecure seniors have limitations in activities of daily living comparable to those of food-secure seniors fourteen years older” (Gundersen & Ziliac, 2015). This means that food-insecure youth are at significant risk of health issues if not addressed at a young age. According to research conducted by the American Society for Nutrition, "Research indicates that individuals with food insecurity consume diets of lower quality.. and lower in micronutrient content than those who are food secure" (Neff,2020)
The impact of food insecurity affects the nutrition of many Americans, especially young children.

Food Insecurity in Worcester

In the city of Worcester, Massachusetts, residents are struggling with food insecurity. In 2012, 99,796 individuals, about 12% of the population, got support from the Worcester County Food Bank. In Worcester County, approximately 27,800 children (17.7% of Children 18 and under) live in food-insecure families. Additionally, 33.5% of households in Worcester with a person who has a disability are deemed food insecure (WFPC, 2015). In 2013, 11.9% of Massachusetts residents had earnings below the poverty line ($23,834 for a family of four.) which means that they could barely afford food to feed the whole family (Massachusetts report, 2014).

According to the Worcester Food Policy Council, in Worcester County, 82,951 individuals (about 10% of the Worcester population) live at or below the poverty line ($23,050 for a family of four).In 2013, a $57,000 annual income is required to sustain a family of three in Worcester without help. (Worcester Food Policy Council,2014). This is to show that the families that are living in the 10% margin need to make about $30,000 more yearly from the $23,050 in order to reach $57,000 needed to sustain them. Fast-forward to 2019 about 20% of Worcester residents live in poverty; compared to the 10% mentioned earlier. The numbers above indicate that food insecurity and lack of resources is an issue that's occurring within the last decade (2010-2020) in the Worcester community, and it needs to be addressed.

Programs to Address Food Insecurity

The Federal Government has put into place many programs that address food insecurity. American residents are facing barriers such as hunger and malnutrition that need to be addressed. Some programs that remove those barriers to obtaining nutritious food include the National School Lunch Program (NSLP), the Women, Infants, and Children (WIC) program, and the Supplemental Nutrition Assistance Program (SNAP).

Figure 2. Snap Figure

These initiatives have been shown to decrease food insecurity (ODPHP, 2020). In a study about the SNAP program, Ratcliffe et al., economist and senior fellow at the Urban Institute, found that receiving SNAP benefits decreases the chance of being food insecure by around 30% and the likelihood of being severely food insecure by 20% (2011).

Food hubs are another measure used to tackle food insecurity. A food hub is a warehousing and distribution center that contains raw agricultural goods and value-added meals such as fresh fruits and vegetables from local farmers and distributes them to the community, restaurants, schools, hospitals, and other community institutions.

Figure 3. Worcester Regional Food Hub

The city of Worcester, Massachusetts, houses the "Worcester Regional Food Hub" (WRFH). One of the primary goals of the Worcester Regional Food Hub is to help local farmers, ranchers, and food producers improve their supply chains from farm to table. The Food Hub was established to encourage good eating habits by offering fresh, nutritious food to people of all economic levels, thus tackling food insecurity. They also want to boost economic growth by promoting new businesses and encouraging people to eat more locally.

Introduction to Food Hubs

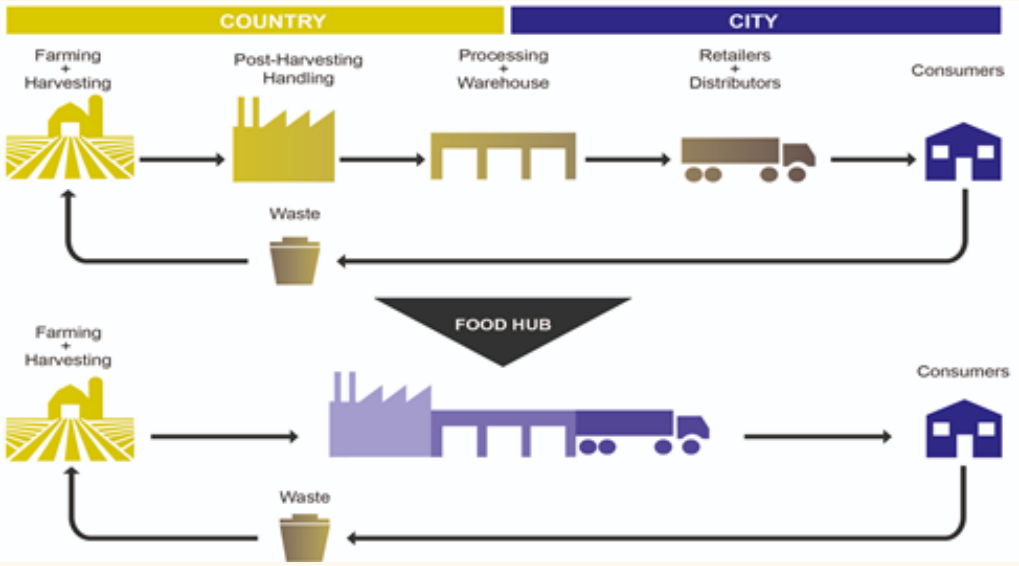

Figure 4. Food System
(Rosenfield, 2015)

In order to understand food hubs, we must first step back and understand what food systems are. A food system is a process that includes all steps involved in food production, distribution, and consumption —from where food is grown to where it is consumed. The food hubs mediate the processing, storage, and distribution of food throughout the system, as shown in Figure 4. Food hubs are generally small and focus on the surrounding areas within a region or county.

Food hubs are a positive influence on the surrounding region's economy and community. Jablonski, et al (2016), used data from a thriving food hub to model the economic benefits that food hubs can have on local economies. They showed that the presence of the food hub created an increase in the profits of participant farms and thus an overall increase in local spending. Hunger and health are inextricably linked. Food insecure individuals are disproportionately impacted by diet-related chronic illnesses such as diabetes and high blood pressure (Feeding America, 2021).

Despite their potential benefit, there is a lack of reliable data on local food hub performance, both financially and operationally. According to Karp (2017), part of the reason for this is that the U.S. Department of Agriculture and other data collectors have traditionally focused on what farm products are being sold rather than food hub innovation and performance metrics (p. 3). This lack of comparative data and information sharing prevents food hub staff from making informed and educated decisions. Learning is a process of building on what is not working. Without knowing what is not working, food hubs often make similar mistakes. This impedes the overall growth of food hubs and, consequently, their corresponding food systems. Although food hubs simplify the food system, they tend to face challenges related to customer relationship management and space booking management. Customer relationship management systems are increasingly seen as a solution for food hubs in managing relationships and data.

Introduction to CRM Systems

Figure 5. CRM System

A Customer Relationship Management (CRM) system is commonly used to store and organize information. A CRM system can be an interface for marketing and promotions; it can be a central point of communication and even a lifeline for customer service (Olupot et al., 2013). A CRM system helps facilitate the process by which an organization manages its interactions with customers, potential customers, employees, and suppliers. Every interaction is an opportunity to maintain and improve a relationship.

CRM data collection can take two forms: manual or electronic. In a manual CRM system, all information would be collected by hand; through interviews, questionnaires, or sending files of information via fax machines. The data would then be stored in filing cabinets or spreadsheets. However, in recent years, the application of technology in CRM has led to a new system called electronic customer relationship management or e-CRM. This process is more automated, where all the information is stored and processed online (Salesforce, n.d.). This automated process involves capturing email, telephone, social media data, and more from suppliers, employees, and customers. Some e-CRM systems also use other information, such as recent news articles or personal details, to build the personal preferences of a customer, employee, or supplier (Salesforce, n.d.). Although both manual and e-CRM systems are designed for the same purpose, e-CRM systems are much more efficient.

While there are many benefits to both types of CRM systems, e-CRMS are more user-friendly and offer other strategic benefits. According to Olupot, Kituyi, and Noguera (2013), "e-CRM systems offer potential benefits including better business competitiveness, increased customer loyalty, and total profitability" (p. 17). A customer relationship management system enables customers to quickly create reservations, make purchases, provide customers with reminders, or urgent information—providing the company a competitive advantage. A company can establish a message board where customers and employees can interact and post critical questions, issues, or requests all on the same platform. Darejah & Tahajod confirm in their research paper (2010, as cited in Navimipour, N. J., & Soltani, Z, 2016) , " by deploying an e-CRM strategy to maintain relationships with customers, an organization will be better equipped to serve their customers' desires and improve their loyalty, which will in turn improve the organization's efficiency and profitability" (p. 6). Taken together, the benefits of a higher customer retention rate, an advantage over other competitors, and a superior system that is both cost-effective and efficient will result in greater total profitability for the company.

Though there are many benefits to a CRM system, there may be some challenges to implementing the system. When implementing a new system to a company's organizational routine, resistance to change is often encountered (Olupot et al., 2013). For example, when switching from a manual CRM system to an e-CRM system, the system users may have liked the manual system because it was the system with which they were most familiar.

Helping others navigate change, especially when introducing new technology, is not easy. However, some e-CRM systems offer training courses to make a transition as smooth as possible. With that in mind, users may still think taking a training course or watching a tutorial is not worth the switch. In this case, the e-CRM that is being implemented must be designed to help users operate and navigate the system in a straightforward way.

Introduction to Nexudus

In 2021, four Worcester Polytechnic Institute students worked with the WRFH to identify the best customer relationship management system for WRFH's needs. The student team recommended use of an e-CRM system called Nexudus to help Shon Rainford, the director of the WRFH, with an upcoming expansion to expand the kitchen to Union Station.

Nexudus is widely used—installed in almost 2000 spaces in 90 countries. In Massachusetts, two food hubs have started using the Nexudus system, the Worcester Regional Food Hub and the Commonwealth Kitchen, located in Dorchester, MA. Both food hubs use Nexudus for scheduling, billing, and room reservations (Commonwealth Kitchen, n.d.).

The prior WPI student team provided WRFH a cost and benefit analysis of three managerial systems, including Nexudus, MIDAS and WordPress. These three different systems had different pros and cons, including different primary functionalities. As shown in comparative Table 1 below, the Nexudus system was found to have all the functional features that WRFH needs. However, the price was the highest among those three systems (WPI, 2021).

Drawing from the summary of functions detailed in Table 1, there were several opportunities to fully optimize Nexudus for use at the WRFH. By optimizing the Nexudus system we aimed to streamline WRFH Director, Shon Rainford's multitude of tasks and enhance the User's experience of the Nexudus system.

Preferred Specification	Nexudus	MIDAS	WordPress Plug-in
Integrates with WordPress	✓	✓	✓
Is flexible and can be updated easily	✓	✓	✗
Built in tutorial/support	✓	✓	✗
Ability to set buffer times (built into booked times)	✓	✓	✗
Easy to make changes if there are conflicts	✓	✓	✗
Ability to contact other entrepreneurs / WRFH staff	✓	✓	✗
Desktop and mobile compatible	✓	✗	✗
Integrates with QuickBooks, Authorize.net	✓	✗	✗
Fast, efficient, accurate	✓	✗	✗
Easy to use and learn	✓	✗	✗
Digital check in / check out	✓	✗	✗
Good support team	✓	✗	✗
Automated billing to client for greater time spent in kitchen	✓	✗	✗

Table 1. Functions of different systems (WPI,2021)

The Process of Enhancing the Nexudus System

In order to accomplish our goal of improving user experience and efficiency of operation of Worcester Regional Food Hub (WRFH), we developed five objectives. First, we determined the current business processes of the WRFH. Then, we identified the existing User challenges of the WRFH's use of Nexudus. Next, we located opportunities to enhance the WRFH's use of Nexudus that streamlined the identified business processes. After, we modified the identified Nexudus functions. Then, we developed a tutorial video and a short Users' guide manual that introduced the modifications that were made. Next, we piloted the new Nexudus system. Lastly, we reevaluated the Users' and WRFH's use of the new Nexudus system.

Objective 1: Identify the current business processes of the Worcester Regional Food Hub

In order to complete the first objective, we identified the current business processes that the Worcester Regional Food Hub utilizes. To accomplish this objective, we interviewed Worcester Regional Food Hub Director, Shon Rainford, who helped us go through WRFH's business processes, which provided us with information on how WRFH operates. After, we decided to develop a flowchart to help visually understand the WRFH's operation. Although flowcharts may look messy when first developed, organizing our understanding of the business processes on paper assisted us in identifying each process's critical milestones while also providing a larger view of the operation.

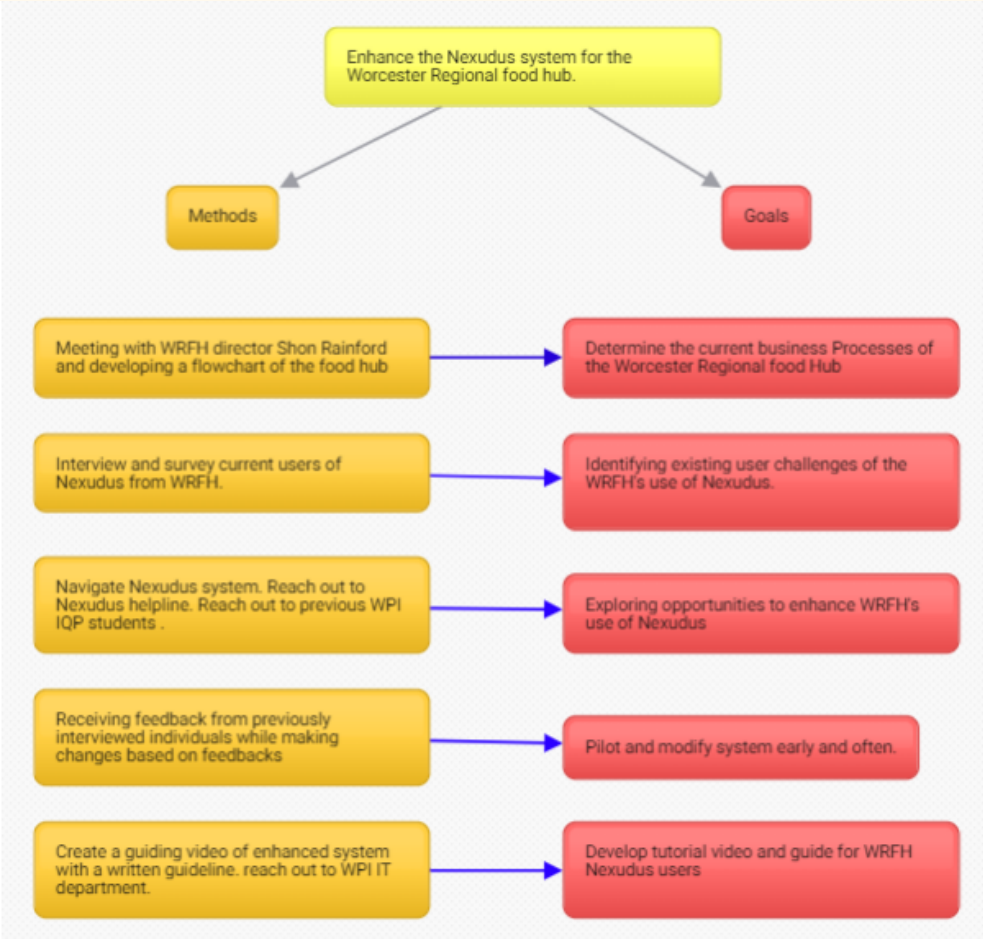

Figure 6. Process of the enhancement of the Nexudus system for the WRFH

Objective 2: Assess WRFH's Users' experiences

To gain initial insight into user experiences, we first interviewed Worcester Regional Food Hub's (WRFH) Director, Shon Rainford (see Appendix A for interview questions). Mr. Rainford provided us with names and contact information for 6 "heavy Users" of the WRFH commercial kitchen, as they are the major Users of the Nexudus system at the WRFH. However, we wanted to interview not just the heavy Users but also those with almost no use of Nexudus. We were able to interview 4 of the heavy Users and 1 new User. With two drastically distinct groups, we were able to compare their reflections on Nexudus. Then, we reached out to the Commonwealth Kitchen, a food hub that also uses Nexudus and is in Dorchester, MA. Unfortunately, we were unable to set up an interview as they were understaffed and were in the process of switching to a different system other than Nexudus. However, they did answer a few questions by email that explained the reasoning for the switch to a different system.

We sorted the interview information into a qualitative decision matrix. A qualitative decision matrix is a table in which there is a criteria or a statement and then each User we interviewed evaluates that criteria or statement. By organizing which User was in agreement or opposed to the statement we were able to identify some different areas of the system that were challenging but also areas that worked.

After conducting our interviews, we sent out a survey in order to hear from the other Users who were neither new nor a heavy User. We sent the survey to 51 active Users of the WRFH. However, we only received 10 responses. The low response rate was expected but will still give us some insight on the general User's experience with Nexudus.

Objective 3: Explore opportunities to enhance WRFH's use of Nexudus

In Objective 3, we reached out to the Nexudus support line, conducted participant observation, and we intensively explored the internet for existing User guides and tutorials.

We reached out to the Nexudus support line numerous times. We emailed them a list of questions to seek information regarding different Nexudus functions. We wanted to know how to better operate the message board function and how to upload files to Nexudus. However, we kept messaging back and forth about eight times because the responses were not direct.

We also performed a participant observation on the Nexudus system, which gave us a perspective of both the Kitchen Users' and the Admin's side. By looking at both sides, we were able to identify some challenges in the Nexudus system. For every challenge we identified, we tried to find an existing guide or tutorial online. However, we could not find any User guides online that helped with the identified challenges. Though, we were able to find and watch a few youTube videos on how to write a User guide. With all this extensive research, we finally developed a Kitchen User guide and a tutorial video for the WRFH Kitchen Users.

Objective 4: Introduction of the enhanced Nexudus system

In Objective 4, we introduced the modified system based on the enhancements identified in Objectives 1 and 2. The purpose of this objective was to introduce the improved Nexudus system so all users can follow along and be able to use the new system. To achieve this goal, we first had to update the Nexudus system with the innovative solutions we found in Objective 3. Then, we did some research on youtube on how to create short and engaging user guide manuals.

To have a more positive impact on the society of Worcester Regional Food Hub, we created a step-by-step tutorial video and a user's guide for the functions of the Nexudus system (Appendix E&F). The videos and guides allowed people who were not familiar with the system and people who were new to the kitchen to become more skillful at using the Nexudus system. While modifying the system we also reached out to the users of the system to receive feedback. That way we determined which parts of the modified system were good and which parts still needed more enhancements.

Understanding WRFH's Business Processes

An organization's effectiveness is dependent on its ability to fulfill its business processes as efficiently as possible. To this end, Worcester Regional Food Hub's Director, Shon Rainford, sought to better leverage untapped Nexudus functionality to help streamline some of the Food Hub's business processes. A first aspect of our project was to meet with Mr. Rainford to develop a business process flowchart. Worcester Regional Food Hub (WRFH or Food Hub) has multiple different business processes (see Figure 9). A first process includes the "aggregation" process by which raw food and products from farmers are brought to the Food Hub via trucks. This aggregated food is then processed through either the kitchen or the warehouse (Rainford,2021).

A second process involves food distribution to buyers. While working on the business processes we realized that the Food Hub has two different types of buyers. Wholesale buyers receive aggregated foods/products but do not take them directly to customers. Instead, they buy the products and sell them in bulk to a third-party firm. On the other hand, retail buyers get the products and sell them directly to their customers (Scott, 2019).

Understanding the Nexudus Processes

As shown in Figure 10, the second set of processes focuses on how WRFH Kitchen Users use (or could potentially use) the Nexudus system both inside and outside the kitchen. The potential Nexudus processes include: onboarding, scheduling, reminder emails, billing, checking in, community messaging, and managing ongoing documentation and we discuss each in more detail below.

Onboarding.

The onboarding process includes the set of tasks that Kitchen Users need to complete prior to using the kitchen. Currently, the onboarding process involves Mr. Rainford sending out a PDF of the list of things needed before using the kitchen. The list of onboarding materials include: Completed Application, Signed Kitchen Rental Agreement form, ServSafe manager Certificate, etc (Rainford, 2021). Using Nexudus to manage onboarding tasks is an area ripe for exploration.

Scheduling and reminder emails.

In order to schedule time in the WRFH kitchen, Kitchen Users currently use two approaches to reserve a time, either by calling Mr. Rainford to schedule a reservation manually or online via the Nexudus system. Prior to this project, when Kitchen Users reserved time on the Nexudus system, they needed to log in to WRFH's Nexudus website to find available time slots. After they reserved a kitchen slot, they received a confirmation email right after reserving a time. However, a reminder email of the reserved time does not get sent until 20 minutes prior to their session time(Rainford, 2021).

Figure 9. WRFH Business processes

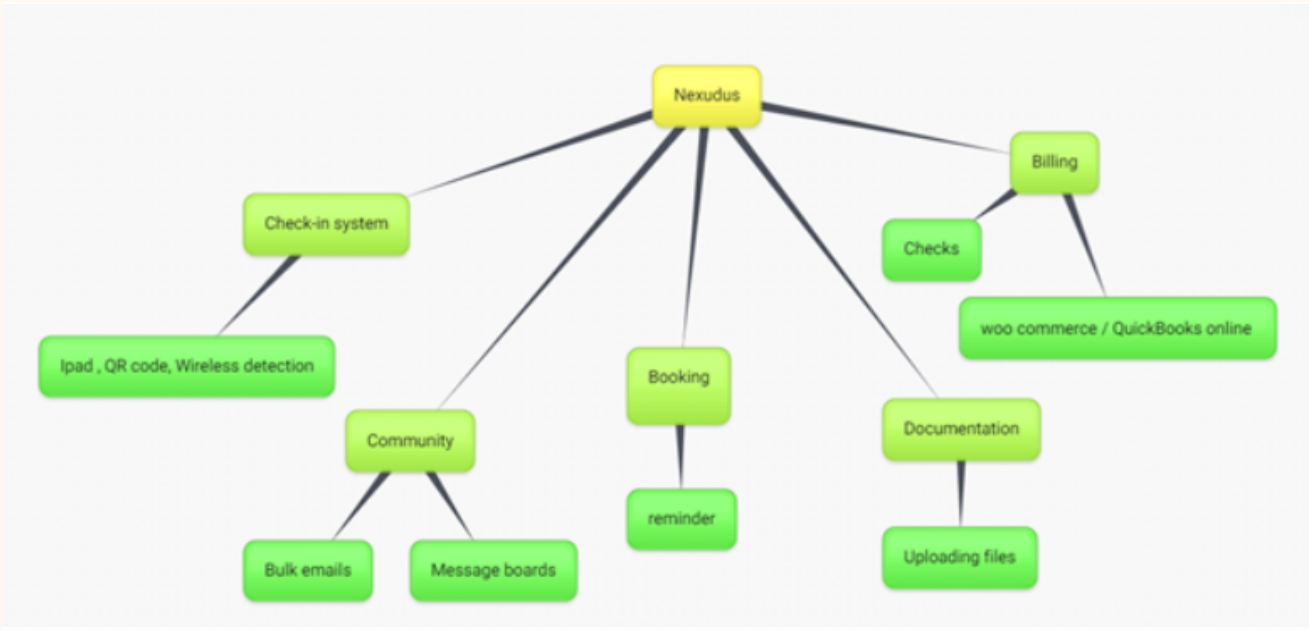

Figure 10. WRFH Nexudus processes

Billing.

A third business process that uses Nexudus involves billing the Kitchen Users for the times they reserved in the kitchen. Currently, the User's cost of using the culinary facility is $25 per hour. Users are charged on the first day of the month based on the amount of time spent in the kitchen from the previous month. The invoice is sent straight to their Nexudus account where it can be paid by either check or credit/debit cards (Rainford, 2021).

Checking-in.

Prior to this project, Kitchen Users recorded, on paper, the time and date of when they entered and exited the kitchen (Rainford, 2021). Currently, Nexudus offers four different ways for Users to check into an area. These ways include manual check-in, QR code/app check-in, wireless check-in, and key card check-in.

To manually check-in, Users or an Admin must use a Food Hub device to select the User's name from a dropdown list of members and then manually enter the time they entered and the time they left the Commercial Kitchen.

In order to have a more automated check-in system, a QR code or a company tablet with the "NexIO" application can be set up in an area to allow Users to enter their pin that is connected to their User account. Users would have to enter a code when entering and exiting an area.

Another way to check-in is completely automated but relies heavily on a User's use of the internet on their device. This wireless check-in system uses and remembers the MAC address of a User 's device as long as the device is connected to the company's wireless fidelity(wi-fi). The User would be considered registered and checked in when connected to wi-fi, which has the disadvantage of people accidentally connecting to the wi-fi that wasn't meant to check-in. The system would then consider a User checked out when the device is no longer connected to wi-fi.

The last check-in system that Nexudus offers is a key card check-in system. With this method, each User would have a key card that is connected to their User account. Users would then swipe/scan their card on any card reader. Each swipe/scan would grant the User access to an area of the building (Nexudus, 2021).

Community messaging.

An additional business process involves a community message board that consists of messages between Kitchen Users and Admin. While available through Nexudus, this functionality is currently not being used by the WRFH (Rainford, 2021). On the Nexudus community message board function, members are encouraged and allowed to communicate to other members on the members' site. Members may use the members portal to view a reduced version of the message board that's called the discussion board. They can initiate, follow, and like discussions. They may mention other members in their messages and get updates about new communications (Nexudus, 2021). All messages on the message board, even those initiated by members, are under the Administrator's supervision, which means any member's message or chat may be edited or deleted by an Admin. This could become problematic as it would require manual processing by the Administrator or delay the sending of any message, undermining the desire for real-time messaging (Nexudus, 2021).

Managing ongoing documentation.

Finally, the last business process that could utilize Nexudus is the online/digital management of ongoing documentation, where Users can download and upload files. This aspect, however, is currently not being used by the WRFH (Rainford, 2021). Nexudus currently offers a Forms and Documents section. However, the Forms section only allows Users to upload files. To download blank files that need to be filled out, the Admin has to create a file in the Document section of Nexudus.

Understanding the Needs of Kitchen Users and Nexudus Capabilities

In order to enhance the WRFH's use of Nexudus, we analyzed data from our interviews with heavy Users of the Nexudus system (Kitchen Users who use the WRFH kitchen more than twice a week, as evidenced in the WRFH Nexudus booking calendar), survey data, analysis of online content regarding the Nexudus system, and our own participant observation and use of the Nexudus system. As of December 2021, the Food Hub Commercial Kitchen currently serves six heavy Users, four of whom we were able to interview and one User who has very little use with the Nexudus System. Using this data, we identified core findings regarding each of the different business processes: Onboarding Tasks, Scheduling, Billing, Check-in, and Community Messaging. We discuss these each in turn below.

Nexudus Process	Themes	Minuteman Kettle Corn(HU)	Nutty Bird Granola (HU)	Stretch's Pickles (HU)	Buttered (HU)	Nana's Best
Onboarding Tasks	Online documentation	√	√	√	Prefers personal help	Prefers personal help
Scheduling	Want to see the companies before and after their reservation time	√	√	√	It's straight forward	Dislikes
Scheduling	Calendar views are hard to understand	√	√	√	It's straight forward	√
Scheduling	Want an advanced notice of User's time slot	√	√	√	√	N/A
Billing	Are comfortable with online payment as long as it is secure	√	Prefers checks for accounting	√	√	√

Table 2. Qualitative Decision Matrix with identified themes within each Nexudus process
HU=Heavy User

Onboarding Tasks

We found that both WRFH Kitchen Users and the WRFH Director, Shon Rainford, would like to digitalize onboarding tasks through Nexudus for many reasons. Firstly, Mr. Rainford expressed his concerns about having too many physical papers and not enough time to manually check if each User finished their onboarding tasks. This concern for time efficiency of manual paper submissions was shared with 3 of the 4 WRFH heavy Kitchen Users. However, two of the interviewees said that they liked having the human interaction with Mr. Rainford since he walked them through the whole process.

To address digitalizing onboarding tasks, we followed the Nexudus "Knowledge Base" website where it walks you through how to use the Forms section (Nexudus Knowledge, 2021). However, the Forms section only allows Users to upload files. To download blank files that need to be filled out, the Admin has to create a file in the Document section of Nexudus. However, this is inconvenient for a User to have to go back and forth to two different places. We then attempted to create one onboarding landing page in Word that had hyperlinks to the downloadable blank files that needed to be filled in by the new User and then a file submission button immediately after the blank files, where a User could upload the corresponding file. However, we were unsuccessful at getting the code to work. We continued to go through online resources and reached out to the Nexudus support line, however, there were no helpful resources found online.

Going forward, we recommend that the WRFH hire a website developer to work alongside an Administrative officer to develop one onboarding page for new Users that allows files to be downloaded and uploaded to one spot.

Scheduling and reminder emails

We found that the Nexudus Calendar function is insufficient to meet Users' needs for several reasons. First, we found that is important for Users to be able to view who is using the kitchen prior to their time slot. This is especially important for Kitchen Users who need to ensure that their products are allergen free. By knowing when companies that produce nut products are using the kitchen, allergen-free Users can take the necessary precautions , such as extra sanitation of the kitchen. In our interviews, we found that 3 of the 4 heavy Users said that "calendar views are really hard to understand." Echoing this, 3 of the 10 survey respondents said, " it would be helpful to see business names on the calendar instead of (person) User names. Additionally, it would be useful to easily see the end time of other Users' bookings on the calendar." However, one heavy User thought the different calendar views were pretty straight forward, as she was able to locate the button that allowed her to switch the views based on her needs, such as the weekly view and the monthly view (Table 2).

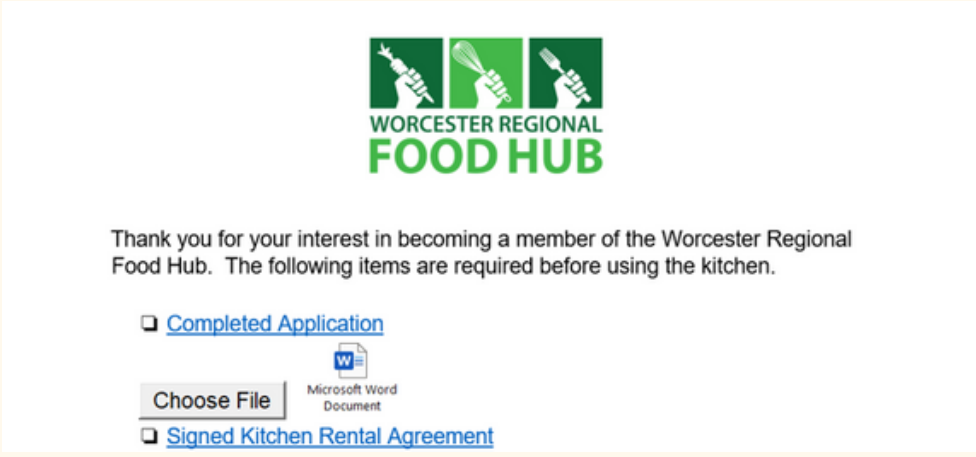

Figure 11. Unsuccessful onboarding landing page

We found that Users are unsure of how to change the calendar views to meet their needs (Figure 12) and cannot determine how to find the company name of a User instead of their personal name (Figure 13). Finally, we found that the existing email reminder system does not work well for Kitchen Users, especially since it only sends reminders 20 minutes before a kitchen slot starts. As one of our survey respondents said, "It would be so helpful, if it could send a reminder through text message." In our participant observation of the Nexudus calendar and scheduling function, we experienced similar difficulties.

In analyzing "resource" content on Reddit, YouTube, and Nexudus Guidelines, we found there are no online User Guides focused on the Nexudus scheduling calendar and that there is no easy way to fix the calendar so that individuals can see company rather than person names. Further, the Nexudus system cannot send a reminder through text messages.

To address these gaps, we made several changes to the existing system. First, we changed the email reminder time to 12 hours before the kitchen slot start time. Second, we developed the WRFH User Guide to help Kitchen Users better view the calendar on the Nexudus system (Appendix E).

Going forward, we recommend that WRFH send the issue of not being able to see company names on the calendar to the Nexudus helpline to see if they can manually customize it on WRFH's behalf. If Nexudus cannot solve this problem, we recommend that WRFH hire a website developer that could modify the code for the calendar page and allow company names above time slots.

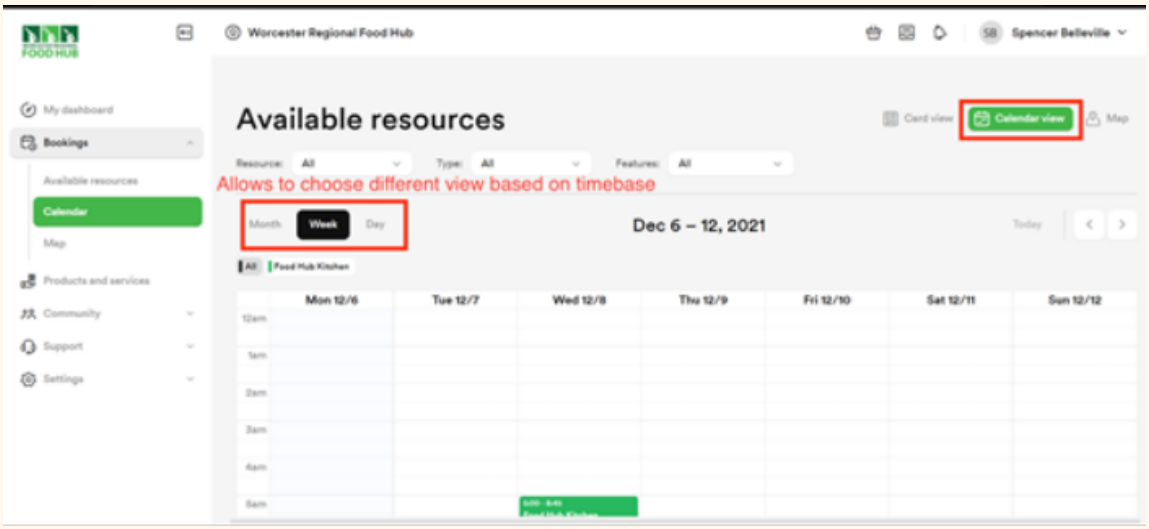

Figure 12. Change different views on the Nexudus system

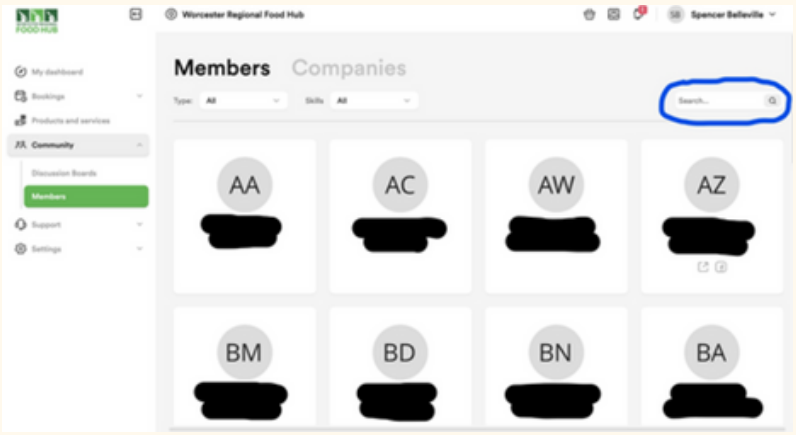

Figure 13. Company names of other Users

Billing

We found that Kitchen Users are willing to pay their bills online for two reasons. First, 3 of the 4 heavy Kitchen Users found online billing more convenient and were more comfortable with it as long as the payment methods were secure. However, one heavy User, the owner of Nutty Bird Granola, explained that "it'll be easier for me to manage my money by using checks to pay bills. " We also found that when a Kitchen User pays their bills by using a check, the Nexudus system would not update the payment request, which caused numerous notifications to be sent to the Kitchen Users about overdue payments. While one heavy user, the owner of Buttered, said that "I use Nexudus for online billing, which is convenient for me," three other heavy Users did not even know that online billing was established yet.

Since only 1 out of the 4 heavy Users knew that Nexudus offers an online billing system we wanted to see if these percentages were accurate for the rest of the Kitchen Users. We found that 3 of the 10 survey respondents use Nexudus to check their bills (Figure 14). However, 7 of the 10 survey respondents are willing and happy to pay the bill by using a credit card and/or debit card (Figure 15). This indicates that not all the Users are familiar with how to pay their bills on Nexudus. This finding is consistent with what we found in our interviews with heavy Users. During our observations of the Nexudus system, we found out that the Nexudus system has the capabilities of different payment methods , except for paper checks, and that WRFH's Nexudus website does offer a way for Kitchen Users to pay by credit/debit card.

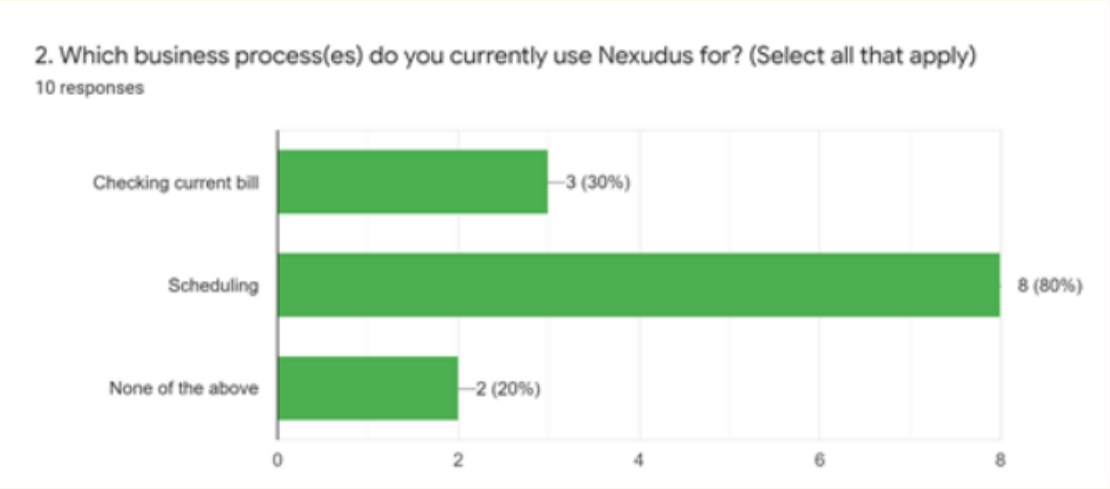

Figure 14. Use of the Nexudus system

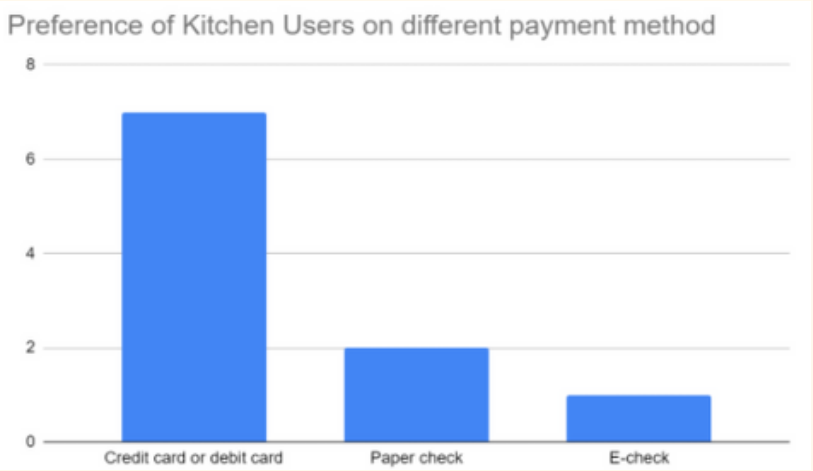

Figure 15. Users' payment preferences

To address Users' knowledge gap, we created a WRFH User Guide to help Users navigate the Nexudus billing system (Appendix F). When paying bills on the WRFH's Nexudus website, we highly recommend using the User Guide as a reference to help add a credit/debit card to the User's account. Additionally, we recommend looking into other helpful payment methods that can be integrated with Nexudus. Some of these payment methods include: an Automated Clearing House (ACH) payment methods, which includes electronic checks (e-checks), PayPal, or Forte ACH.

Check-in

We found that WRFH Kitchen Users would like a more time-efficient way to check-in. Three of the four heavy Kitchen Users we interviewed were willing to have an online check-in method. While 7 of the 10 survey respondents were comfortable with the current paper check-in method, 8 of the 10 respondents were comfortable moving to a QR code-based system that could enable Users to use their phone to check-in (Figure 16). However, as previously mentioned regarding the calendar system, most Users prefer to see the names of the Users that checked in before them. During our interview with Mr. Rainford, he expressed interest in both the mobile app check-in method and a keycard check-in method. Both offer an easier approach for Users to check-in and for Mr. Rainford to manage the kitchen.

To evaluate more time-efficient check-in methods offered through Nexudus, we referenced the Nexudus "Knowledge Base" website which describes each check-in method that Nexudus offers. Nexudus offers four different ways for a User to check into an area. These ways include manual check-in, QR code/app check-in, wireless check-in, and key card check-in (Table 3).

Given Nexudus's capabilities and the responses from the interviews and the survey we conducted, we recommend that the WRFH uses a QR code check-in method for now as most respondents would be comfortable with this method. By setting up the online check-in system, the names of the Users in the kitchen would automatically be displayed on the Nexudus dashboard and would be visible by all Users.

Check-in Method	Does not Require Admin's Device	Does not Require User's Device	Does not Require User's login information	Does not Require Additional Object
Manual Check-in		✓		✓
QR Code	✓			✓
Wireless Check-in	✓		✓	✓
Keycard Check-in	✓	✓	✓	

Table 3. Requirements of Check-in Methods

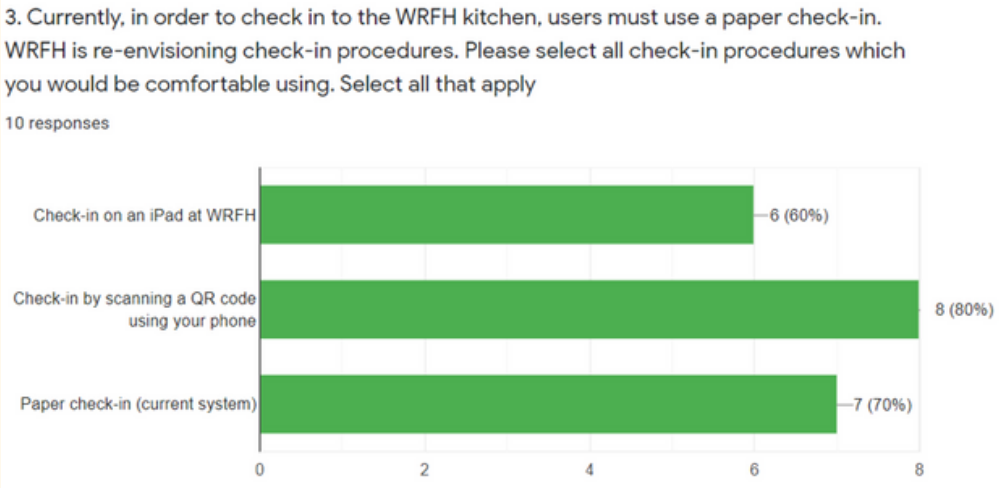

Figure 16. Users' check-in preferences

Additionally, we recommend looking into the keycard check-in method as it would be the most User-friendly way to check-in and the most time-efficient way for both the Users and the Admins.

Community messaging

We found that Users of the WRFH Commercial Kitchen were either supportive or neutral regarding the addition of a community message board. All of the heavy Users we interviewed said that it would be very useful to have a community message board to communicate with the other members of the WRFH. For instance, one heavy User said that she would like to have a way of communicating with the other members to invite them to different events that she might be hosting.

Also, another interviewee, from Stretch's Pickles said, "I would like to know who is going to be there after I use the kitchen, then if I am running out of time, I can communicate with the person after me and tell them that I will need a few more minutes to clean up" (Table 2). Upon analyzing our data from the surveys, we found that 6 of the 10 respondents would like to have a community message board and 4 of the 10 were not sure (Figure 17). Since, both, the majority of the survey respondents and all of the interviewees were in support of a message board we decided to look into the capabilities of Nexudus.

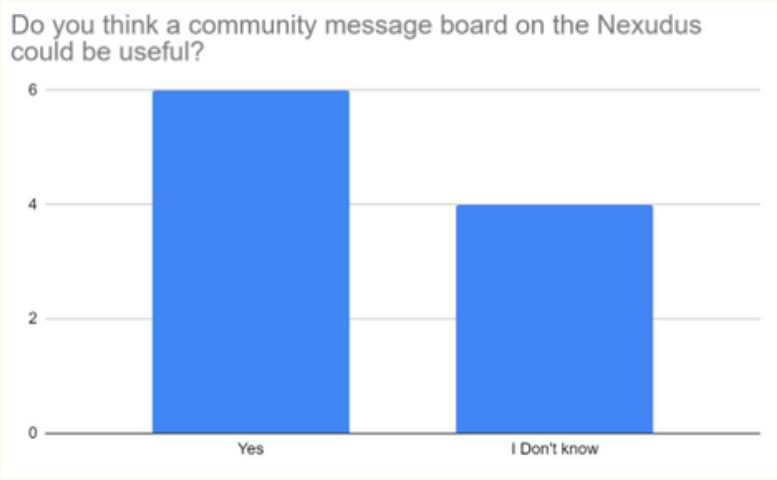

Figure 17. Users' preferences of the community message board

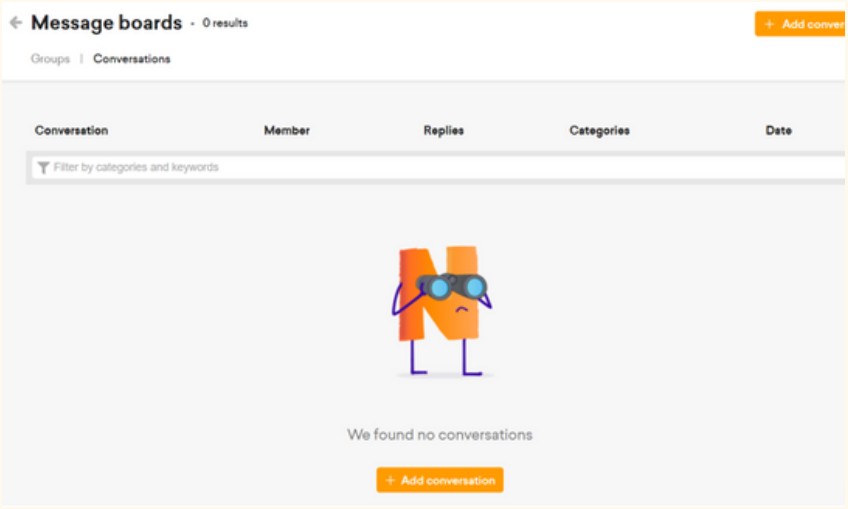

Figure 18. Screenshot image of failed conversation through Nexudus

When engaging on hands-on experimentation with the Nexudus messaging platform, we found that groups and discussions are the two basic components of the message board. However, these components lack functionality. For example, we created a private conversation as a way to test the message board. However, the conversation that we created did not show on the message board, even after we followed the steps that Nexudus gave us (Figure 18).

Given the issues of the malfunctioning messaging board, we looked into what other apps could be integrated within the Nexudus website. One of the integrated apps that Nexudus offers is Slack. Slack is a group messaging platform mainly used for business purposes. Until Nexudus updates its message board platform, we recommend that the WRFH integrates Slack as a form of communication between the commercial Kitchen Users and WRFH Administration.

Slack is a great platform to use for many reasons. First, Slack keeps people connected by allowing anybody within or outside WRFH to chat and collaborate as if they were in person. Next, Slack offers a lot of flexibility because it allows people to work in channels, which are designated locations that bring together the appropriate people to talk about information that the specific channel is about. When work is arranged in channels, Users can obtain the information they need on their own time, regardless of time location, time zone, or role. Lastly, Slack offers an inclusive database providing all company members access to the same shareable documents and information. Slack makes it simple to communicate with others within the WRFH ecosystem (Slack, 2021).

Helping WRFH Kitchen Users adopt Nexudus-Based Business Processes

As part of our research, we reached out to another commercial kitchen, Commonwealth Kitchen, to identify ways that they might be using Nexudus that would be beneficial to Mr. Rainford and WRFH Kitchen Users. We found that their adoption of Nexudus had not been successful. As one Commonwealth Kitchen admin shared, "we can say that our experience with Nexudus as a scheduling and billing solution has not been the most optimal and are planning to transition to a different solution that better suits our needs at some point in the future." We understand that as technology advances it is also becoming more complex. We found that most of the WRFH Kitchen Users had issues that related to not having time to go through and learn how to effectively and efficiently utilize the Nexudus system's functionality. To address this issue, we created a User guide tailored specifically for the WRFH Kitchen Users (See Appendix F).

Regarding the ease of use of the Nexudus System, it is a platform that is still in its developing stages. This software was founded in 2012 and is constantly going through changes and updates (Nexudus, 2020). The system offers regular updates to fix glitches and improve their implemented features. It is a system that is easy enough to use as long as you have enough time to work through each section to customize it the way you want your system to run. Taken together, we recommend—that they continue to use? Discard? We recommend that WRFH continue to iterate and improve upon our manuals to help make onboarding through ongoing scheduling and documenting easier for all administration and Kitchen users. Our group worked through 7 weeks to make the Nexudus system easier to use for the WRFH Kitchen Users.

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