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Five ways to get a grip on organizational logistics, backends, and workflows

Cinq façons de maîtriser la logistique organisationnelle, les backends et les flux de travail

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Abstract

Organizational backends and logistics are often complex and many institutions set-up their workflows based on manual and tedious processes that negatively shape their interactions with stakeholders. Incorporating new technologies can be intimidating. However, a plethora of financially and technically accessible resources that do not require any coding knowledge, can be utilized by institutions to enhance their organizational workflow and stakeholder experience. Guided by our own learning experiences in optimal logistical set-up and user design, we wish to highlight five effective and easily implementable tricks to aid higher institutions and student groups in healthcare to accomplish their administrative duties.

Résumé

Les backends et la logistique des organisations sont souvent complexes et de nombreuses institutions établissent leurs flux de travail sur la base de processus manuels et fastidieux qui influencent négativement leurs interactions avec les parties prenantes. L'intégration de nouvelles technologies peut être intimidante. Cependant, il existe une pléthore de ressources financièrement et techniquement accessibles, qui ne nécessitent aucune connaissance en codage, que les institutions peuvent utiliser pour améliorer leur flux de travail organisationnel et l'expérience des parties prenantes. Guidés par nos propres expériences d'apprentissage en matière de mise en place d'une logistique optimale et de conception pour l'utilisateur, nous souhaitons mettre en avant cinq astuces efficaces et faciles à mettre en œuvre pour aider les établissements supérieurs et les groupes d'étudiants en soins de santé à accomplir leurs tâches administratives.

Previously, automations and integrations (Appendix A*) within and between programs required coding knowledge, forcing non-experts into allocating time on repetitive and menial tasks (data entry, sending of standardized emails, etc.), which potentially risk errors and downstream consequences as described below. There is a growing trend towards simplified and inexpensive "drag-and-drop" (Appendix A) program interfaces; giving anyone the ability to design flexible and effective workflows (Appendix A).[1]

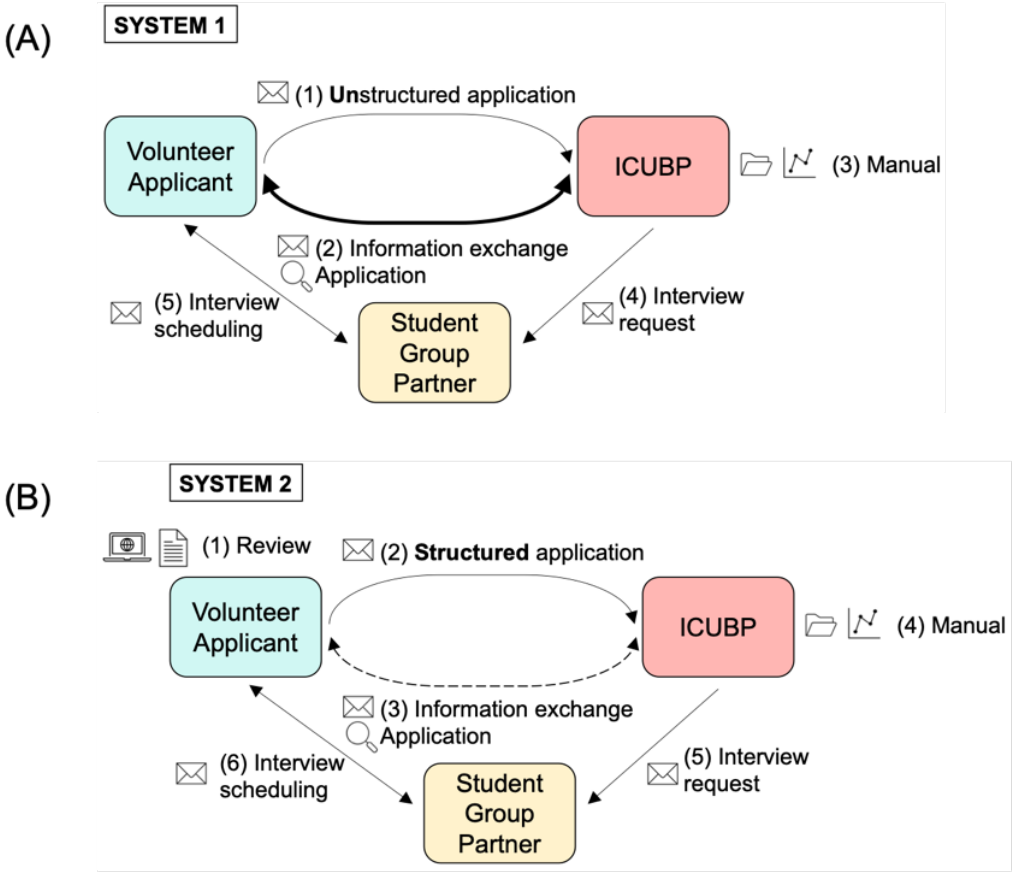
These technological advances in the 21st century have provided new opportunities for organizations to optimize their workflow designs, connect with current and future stakeholders (Appendix A), improve user experience, and attract new audiences. However, the speed of these improvements makes it difficult for both large institutions (e.g., medical schools) and smaller organizations (e.g., student groups) in the healthcare field to assimilate and apply these changes, resulting in analysis paralysis and improvement stagnation (Appendix A). Other barriers to technological adoption include gaps in knowledge and/or experience with these tools, lack of time needed to learn, and doubts regarding whether adoption will save time or prove more effective.[2] Despite these obstacles, embracing these advancements would enhance the administrative, research, and community initiatives of medical faculties and student groups.

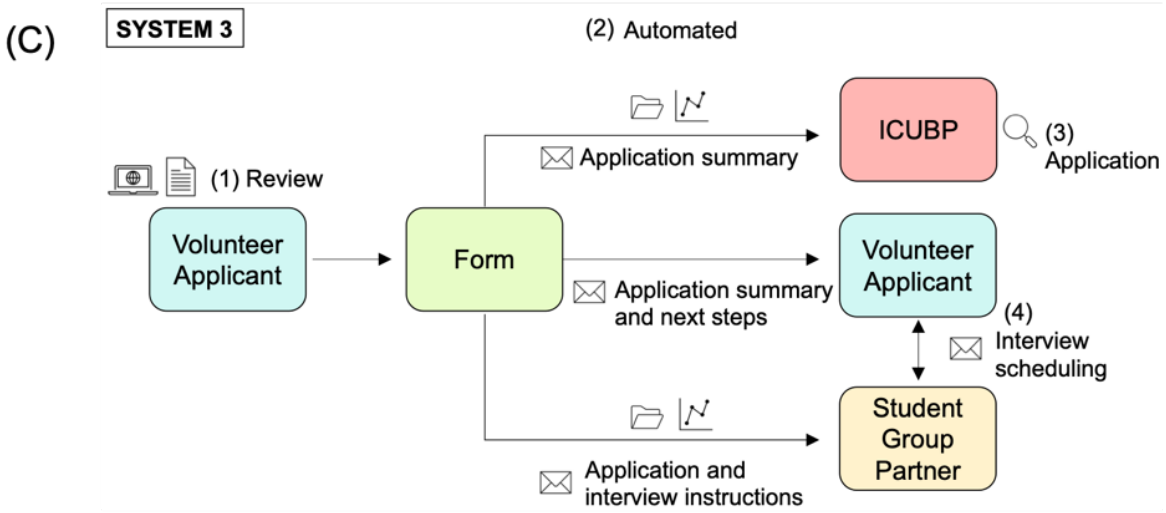
*Appendix A contains definitions of technical terms.

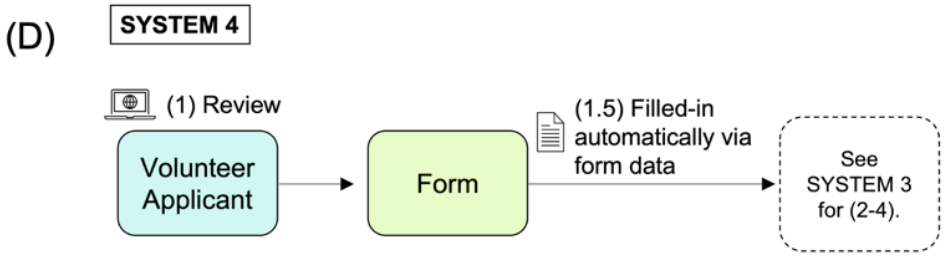
Over the past six years, we've incrementally improved the foundational administrative processes that are responsible for the founding and management of the Intensive Care Unit (ICU) Bridge Program (ICUBP), a student-run organization whose mission is to humanize ICUs for staff, patients, and families through university volunteers. The ICUBP serves as a model for workflow efficiency and design as the volunteer and hospital management, marketing, fundraising, and social aspects of the program have been entirely run by an independent group of full-time student volunteers.[3]

The philosophy behind the program's sustainability as a student-run organization is a concerted and continual allocation of time and resources for students' progress from applicant to interviewee, orientee, and finally, to trained volunteer helping the healthcare community. We believe that even minor changes can have a large impact and that active reassessment is important to incrementally improve as an organization. Over time, the ICUBP has automated data entry, document storage, and template/standardized email responses to reduce mistakes and any potential downstream consequences that would delay our volunteer workflow, such as: misunderstandings, communication delays, and unnecessary email chains between the volunteer applicant, the ICUBP organizing executive team, and the student group partner that conducts our volunteer interviews. Furthermore, we considered all perspectives to predict future barriers during this process and used any mistakes as a learning experience to further improve our process, guided by the principle that "*Once is a mistake. Twice is a decision.*" This optimizes the application process for current and future stakeholders by providing professional and timely interactions. We appreciate our stakeholders' time and want to optimize it, and in turn, the ICUBP benefits from an engaged and passionate volunteer community.

We wish to share five grips in creating an efficient backend (Appendix A) workflow and design that our executive team, student group partners, and volunteers would appreciate, one that ultimately benefits our organization's mission (Table 1). We've also provided an example of how these grips were implemented and guided the evolution of the ICUBP's volunteer application process over the past six years (Figure 1 and Supplemental Video 1). We have provided a description of Figure 1 in Appendix B.







(E)

Workflow characteristics	Stakeholders	System 1	System 2	System 3	System 4
Professionalism	ICUBP	Baseline	↑	↑↑	↑↑↑
Set-up complexity	ICUBP	Baseline	↑	↑↑	↑↑↑
Ease of use	Volunteer Applicant Student Group Partner	Baseline	↑	↑↑	↑↑↑
Mistakes	ICUBP Volunteer Applicant Student Group Partner	Baseline	↓	↓↓	↓↓↓
Grips used		Baseline	2	1-5	1 & 3
System to system changes		Baseline	*Structured* ↓ *exchange*	*Post-form automated*	No due to post-form automated fill-in.
Implementation dates		*March 2016*	*Mid-late 2016*	*June 2018*	In progress

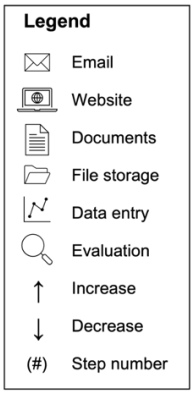


Figure 1. Intensive Care Unit Bridge Program's (ICUBP) application workflow over time

Table 1. Grips summary

Grips	Features	Benefits	Challenges
#1-5	These are benefits and challenges that are common to all five grips.	1. Increased efficiency and time saved via automations, fewer mistakes, and/or misunderstandings. 2. Increased stakeholder appreciation and the organization is perceived as more open, caring, organized, and professional.	1. Difficult to implement change: lack of knowledge, experience, and/or time, organizational inertia (Appendix A), financials, structure, and/or size. 2. Requires significant testing to avoid confusion. 3. Big picture complexity of how to best connect multiple programs.
#1 Experiment	1. Opportunity to learn and improve as an organization.	1. Plethora of low-risk programs (free to minimal cost and easy to learn) with potential high rewards (flexible and powerful). 2. Even if not adopted, possibility to implement features discovered into your current framework.	
#2 Email design	1. Thorough and length optimized. 2. Ordered chronologically with expectations and timelines. 3. Visual elements a. Numbering b. Bold c. Underlining d. Separate sections e. Graphics. 4. End of email summary/CTA. 5. Personalize email and customization for relevant stakeholders. 6. Sign off and emotional tone. 7. Email timing.	1. More likely to be read, keeping stakeholders informed and more likely to respond to your CTA.	Mail merge: 1. Relies on relevant, organized, and up-to-date information on stakeholders (#4).
#3 Supercharge forms	1. Specific question type. 2. End of survey optional comment section. 3. Conditional logic. 4. Option to respond anonymously. 5. Multilingual. 6. Mobile/desktop compatible. 7. Increase branded URL accessibility.	1. Improved form availability and clarity and reduced length, preventing responder confusion and fatigue, leading to higher quality and more actionable data.	
#4 Database	1. Quick and efficient grouping, sorting and analyzing of data in different views. 2. Attach files directly. 3. Backup, history, and encryption.	1. Essential for the success of emails and forms (#2-3). 2. Easier to visualize information and track stakeholders' and the organization's progress.	1. Analysis paralysis. 2. Data protection.
#5 Integrate programs	Integrate form (#3) with: 1. Database (#4). 2. Organizational and stakeholder emails (#2) with summary response and/or next steps.	1. Avoids data entry (#4) errors. 2. Empowers stakeholders.	1. May require third-party automation software, which may have security/privacy issues.

Abbreviations: Call to action (CTA)

Our "grips" to avoid ineffective organizational logistics, backends, and workflows

Grip 1: Set aside time to experiment and research outside of your current framework

To borrow from an online productivity tips article "*The best way to learn technology? Click all the buttons.*"[4] Even if you are satisfied with your current workflows, databases, Customer Relationship Management (CRM) software, forms, etc, it is notable and worth the time investment to enquire and search for "*Top 10*" or "*Best*" programs for "*(Insert need).*" There is a plethora of programs that are a healthy mixture of:

1.1) Free: For most low volume use cases these can be free (with branding attached) or relatively affordable platforms, particularly when you factor in non-profit or education-related discounts.

1.2) Easy to learn: There exists a multitude of drag-and-drop style programs that require no coding skills, and that

contain timely and user-friendly support systems (i.e., newsletters, forums, and/or tutorial explanatory video guides). While easy to learn, they do require time investment and some convincing for colleagues to adopt. Both these issues can be resolved by creating duplicate set-ups as a test or sandbox environment (Appendix A) where you and your team members can explore and as previously mentioned, "click all the buttons" without fear.

1.3) Flexible and powerful: Despite being simple to implement, they can be packed with useful time-saving features (automations, integrations, etc.) that can be applied to a variety of workflows.

Grip 2: Design and plan emails strategically

Emails can be a useful tool to keep your stakeholders informed and/or bring them to your call to action (CTA, Appendix A). Nonetheless, they can also be a source of frustration and confusion.[5] From an organizational standpoint, it is important to think critically about email design and create well thought-out emails that are structured and detailed, while optimizing their length and the timing of when they are sent.[6,7] These details show that you respect your stakeholders and appreciate their time, and in return, your emails are more likely to be read, resulting in more effective CTA and emails. Ways to do this are:

2.1) Order and structure: Number multi-step processes in chronological order to make it easier for stakeholders to remember that "*I need to do (insert number) of things.*" Likewise, make sure the email itself contains a logical flow and includes visual components to break up the text: bold, underlining, separate sections/paragraphs, and/or graphics ("*don't tell them, show them*"). If known, provide future expectations and established timelines. The CTA itself should stand out and not be hidden within the email contents. Ideally, this should be included at the beginning and/or end of the email.

***2.2) Personalize your emails*:** If your email should differ depending on stakeholder status, make use of the mail merge feature (Appendix A) to efficiently customize emails so that the relevant and personalized information is displayed for each stakeholder. One crucial change that can be made is addressing email recipients by name as opposed to a universal statement ("*Dear (insert organizational community)*") that would indicate the email was sent to all stakeholders.[8] As spam and mass emailing are becoming increasingly abundant, with close to 85% of emails being spam,[9] addressing email recipients by name adds an additional level of certainty.[10] Despite mail merge requiring more preparation, testing, and an informed, organized, and up-to-date database (Grip 4), it can be used to significantly cut down on email length and increase relevancy to stakeholders.

2.3) Sign-off and emotional tone: Express gratitude to your email recipients by ending with a "*Thank you.*" Research indicates that this generates a higher response rate and increases participation.[11] Similarly, sending emails that have a slight to moderate positive tone have an improved response rate over neutral or overtly positive emails.[10]

2.4) Email timing: The best time to email someone is early in the week and in the morning, as you will not only receive a faster response, but a longer reply.[12] This is the time people tend to check their emails (before the rush of the day) and they tend to respond to their inbox from a top-down fashion. In addition, if your CTA involves a deadline, make sure to email sufficiently in advance and set up reminders specifically for individuals who have yet to respond. In our experience, the later practice is important for any group or individual emails and our general guideline is that we respectfully follow-up with stakeholders after two weeks. There are a number of programs and email providers that can facilitate this by allowing you to send planned emails in advance and/or have the email bounce back to your inbox by a certain date and time if you did not receive a response.

By incorporating these elements into your email drafting process, stakeholder communications become more clear, relevant, professional, easier/pleasurable to read, and more responsive. This ensures that they are understood and taken seriously, thus preventing future time-consuming misunderstandings and complications.

Grip 3: Supercharge your forms

Similar to email drafting (Grip 2), when creating an electronic form, minimizing misunderstandings, response errors, and form fatigue is crucial. When conducting research (Grip 1), it is recommended to look for an all-encompassing form builder. Please consider the following elements in order to develop user-friendly surveys that help gather optimal and precise data (Grip 4) that will help the organization moving forward:

***3.1) Question type*:** The default question type for many organizations is a short/long answer text box. Instead, use specific question types that will either limit the characters (example: phone number questions limiting characters to numerals) and/or potential options (example: using single

choice questions if there are a limited number of potential responses). This will create more uniform responses that will simplify future data organization and analyses. At the end of each survey, it is recommended to include an optional long-answer question that invites survey respondents to comment on their situation or to make any general comments about the form (errors, recommended questions, improvements, etc.). The open-endedness of the comment section will require dedicated time and attention to review. If an important comment is not addressed or slips through the cracks, stakeholders may feel alienated. Alternatively, addressing comments provides an opportunity for organizations to show you care about individual stakeholders and their feedback and satisfaction.

3.2) Conditional logic (Appendix A): If you want the survey responder to ignore or answer questions depending on previous responses, have those same questions remain hidden or appear respectively. For your stakeholder, this reduces the form length and makes all questions more applicable to their circumstances, avoiding any potential confusion for the survey respondent, as they can simply answer questions as they come. For the organization, this allows you to make all your questions mandatory (with the exception of the aforementioned comment section) and avoids inappropriately answered questions or missing data. In addition, giving stakeholders the option to respond anonymously could provide you with more honest feedback.[13] The tradeoff here is that you won't be able to follow-up with that specific person if their responses need clarification or if you wish to consult with them, but you can always initiate this dialogue to your whole organization. Adding an anonymous option can be done via a yes/no conditional logic question ("*Would you like to respond anonymously?*") that will exclude/include identifying information.

3.3) Translation*:* To avoid intimidating the respondents with longer forms that accommodate multiple languages, provide an option where the language of the form can be toggled. This also has the benefit of making the form easier to edit from an organizational standpoint. If your form builder doesn't have a multilingual feature, consider whether this is a dealbreaker.

3.4) Mobile and desktop compatibility: According to Google, more than half of web traffic comes from mobile devices.[14] As such, it is important to find a form that automatically adapts to different platforms and resolutions, or at least one where you can view and edit how your form appears on different devices.

3.5) (Bonus) Increase branded URL accessibility: This can be applicable to anything that an organization wishes to share widely, allowing stakeholders to easily distribute to their entourage. We recommend hyperlinking text and images with an included prompt to "click here", providing QR codes (as these can easily be read by most modern cellular cameras), and using a branded URL shortener. These branded URL shorteners can often double to generate your QR code. The branded aspect requires a domain name (highly recommended to have in general), but is perceived as more professional, trustworthy, and makes the link easier to remember and share.[15]

When choosing and/or publishing your forms, be sure to have your team ensure that all its features work as intended and that it generates usable and actionable data. Ideally, if you can have an unfamiliar and unbiased third-party test group complete your form, that would be optimal.

Grip 4: Choose and use your database system wisely

Having customized emails (Grip 2) and high-quality data (Grip 3) in combination with a good database allows an organization to continuously improve and better serve their community and mission through actionable analysis and assessment. The database in question should be able to group, sort, filter and analyze data (summary statistics or graphics) in a quick and efficient manner. Ideally, you should have the flexibility to save different grouping/sorting/filtering of your data, so that you can easily refer back to continuously updated versions of these as new data comes in. You can also include attachments, pictures, and other files directly into the database and organize all of your data into different viewing formats (traditional grid, calendar, Kanban, Gantt, etc.) (Appendix A). This helps provide a clear visualization of your workflow and be able to follow stakeholders as they move and interact with your organization. Please keep in mind that despite the convenience of all these features, they may lead to analysis paralysis.

To protect your data, you should be able to backup and track changes over time. Depending on the nature of your data and whether it's confidential, you should consider anonymization, end-to-end encryption when information is in transit, and encrypting any device that can access the data when at rest.

Grip 5: Integrate your programs

When going about your research (Grip 1), it is important to find an email service, form, database, and/or programs that you regularly use that have non-coding automations built-in or are otherwise compatible with the numerous third party (Appendix A) integration services (beware of any privacy issues). One we would like to highlight are the automations that occur post form submission:

5.1) Database: The form information should transfer information to your database of choice. This saves time and avoids data entry errors.[16]

***5.2) Email autoresponders*:** Having summary emails sent automatically to respondents provides both confirmation that they successfully submitted the form as well as a traceable record of their response that they can refer to and/or forward back to the organization if need be. This also provides the organization a framework to set future expectations for respondents ("*What should I do or expect next?*"). Respondents become well informed and encouraged to follow up with the organization ("*If we do not get back to you within (timeframe) please forward us this email*") and empowered to go about your CTA. The former reduces the likelihood that a stakeholder is forgotten and misses out on an opportunity and overall, your institution is seen as more organized. For many of the same reasons, having a summary email sent to your account may be beneficial. As such, automating data transfer and information dissemination benefits all parties.

Conclusion:

Despite their invisibility to users and stakeholders, organizational workflow and design is complicated, and its overall efficiency is crucial. It directly impacts the organization's ability to achieve their goals and their connection with said stakeholders. Herein, we presented five ways to optimize an organization's logistical systems (Table 1) and provided an example of the stepwise implementation of these grips (Figure 1 and Supplemental Video 1). Some may consider the investment of time and resources in continual improvement and innovation of administrative duties as a wasteful diversion and distraction from a healthcare organization's mission. However, even relatively minor changes signal to stakeholders that your organization is continually evolving in both visible and non-visible ways and demonstrates that you are open to feedback and learning in order to better serve your community.

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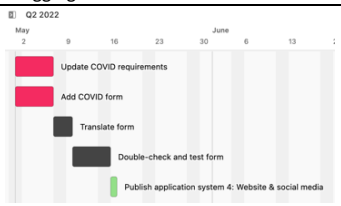
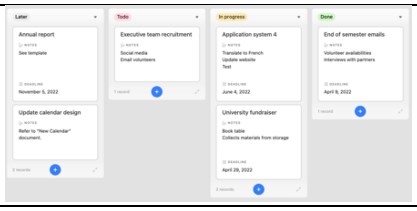
Appendices

Appendix A. Glossary of technical concepts

Term	Definition	Example
Analysis paralysis	Overthinking a situation to the point where decision or action is not made within a reasonable timeframe or at all ("paralyzed") due to: a complicated scenario with multiple options, anxiety regarding potential consequences (making an error), or trying to achieve a perfect solution.[17]	When creating a volunteer schedule that considers volunteers availabilities for 28 shifts/week, an individual becomes overwhelmed due to the number of possible combinations and other factors that must be considered.
Automation	Done spontaneously, unconsciously, or in a self-regulating manner as if by machine.*	See Figure 1: Emails are sent immediately after submitting the form without having to manually do so.
Backend	"*Computing: the part of a software system that is not visible or accessible to a user of that system.*"*	The conditional logic set-up of our form cannot be seen by our volunteers, but they experience it depending on how they fill out our form.
Call to action	Marketing term for the use of instructional phrases (often using an imperative verb) designed to prompt the audience to respond or act in a specific way.[18]	"Please fill out our survey."
Conditional logic	A form of whereby if "x" requirement is met, then "y" happens as a consequence.[19]	If a respondent to our form selects "Yes" to wanting to remain anonymous, the identifying questions (name, email, etc.) disappear.
"Drag-and-drop" program	Being able to include items on a computer through the actions of a computer mouse.*	The ICUBP's form software does not require coding and they can simply add new questions by clicking on buttons and dragging boxes around.
Gantt	Form of bar chart that visually represents a project's schedule in the form of a list of tasks (vertical axis) and time (horizontal axis), which gives an overall timeline of each individual task and the project as a whole.[20]	
Improvement stagnation Organizational inertia	When an organization becomes complacent and has stopped growing and improving, though isn't necessarily unsuccessful.[21] An institution's inflexibility and resistance towards changing their processes, becoming static.[22]	When receiving valid customer feedback and points of improvement, an organization responds "that's the way we always do it".
Integration	"*Linking together different…software applications physically or functionally to act as a coordinated whole.*"[23]	See Figure 1: The ICUBP application form is integrated with the program's database and file storage systems.
Kanban	Board that visualizes tasks and project progress from start to finish with the purpose of limiting work in progress items by working according to capacity and improve flow.[24]	
Logistics	*"The handling of the details of an operation."**	Figure 1 is an example of the logistics behind the ICUBP's application process.
Mail merge	Tool to personalize letters/emails to multiple individuals by importing data from a spreadsheet that fills in placeholders within the letters/emails with the appropriate information for each individual.[25]	"Dear (Name), Thank you for your donation of $(Amount)." Name and their donation amount will be personalized for each person.
Sandbox environment	An isolated electronic environment where individuals can safely experiment without affecting other programs or data (similar to children playing in a sandbox).*	Prior to publishing our form, the ICUBP edits and test it in a sandbox environment without fear of making errors.
Stakeholder	One that has an interest or share in an organization and affected by its actions.[15] Internal stakeholders are "*significantly impacted by the associated concern and its performance*".[16] External stakeholders don't have a direct relationship, but are still affected by the business' actions.[26]	ICUBP's: Internal stakeholders (1) Executive team (2) ICUBP hospital staff representatives (3) Volunteers (4) Student group partners. External stakeholders: (1) Hospital staff (2) Patients/Families/Visitors.
Third party	"O*f, relating to, or being software that is created by a vendor to be compatible with the products of another vendor.*"*	The ICUBP occasionally uses a separate program to connect our form with our database.
User design	Evidence-based method of creating friendly and positive interactions and experiences between humans and products. Factors that are considered include: usability, usefulness, and overall performance.[27]	When creating the application form, the ICUBP team considers ways that volunteers can improperly fill out the form and tries to make the process simpler, clearer, and faster.
Workflow	"*The sequence of steps involved in moving from the beginning to the end of a working process.*"*	Figure 1 is an example of the ICUBP's application workflow.

*Definitions from Merriam-Webster Available at: https://www.merriam-webster.com/dictionary/

Appendix B. Explanation of Figure 1.

(A) System 1: **(1)** Volunteer Applicant sends an unstructured and incomplete application to the ICUBP, due to the absence of a program website in this initiative's early days that would guide the applicant. **(2)** The application is reviewed and after emailing back and forth, the application is complete and **(3)** the ICUBP manually downloads and stores the files and enters the data into a database with six independent tabs that helps track the volunteer status ("*needs interview, needs orientation, hospital assigned, future semester, former, and refused*"). To change the volunteer status, all their information must be manually copied and pasted from one tab to another, a method that is prone to error and that makes any analyses more time-consuming to perform. **(4)** The ICUBP sends an interview request email to the Student Group Partner, **(5)** who subsequently exchanges emails with the Volunteer Applicant and schedules an interview.

(B) System 2: **(1)** Volunteer Applicant reviews the ICUBP's website, downloads and completes all the appropriate documentation, **(2)** and sends a structured email template ("*My name is (name) and I am in (program) in my (year) at (university). I am interested in volunteering and shadowing in the ICU Bridge Program. I have attached the following (forms, CV etc.). Thank you, (Name)*") provided on the ICUBP's website. **(3-6)** Process is the same, but assuming the Volunteer Applicant follows all instructions, fewer emails are exchanged in regards to the application submission with the ICUBP, resulting in fewer applications reviews. Data entry becomes simplified due to the standardized email structure.

(C) System 3: **(1)** Process is the same. **(2)** Due to the form's question typing and conditional logic, the Volunteer Applicant is encouraged to complete their application as per instructions. Once the form is complete, the form automates most of the emails sent between all 3 stakeholders with everyone receiving an application summary. The Student Group Partner only receives an abbreviated summary with only the necessary information needed to conduct an interview. The Volunteer Applicant and Student Group Partner are instantly kept more informed regarding next steps by providing instructions on the interview. These speed up the interview scheduling process as the ICUBP no longer has to send out any emails to start the interview workflow. The Volunteer Applicant's documents are automatically uploaded to the correct location in the ICUBP's file storage system and data is automatically entered into the ICUBP and Student Group Partner's databases, eliminating any file storage and data entry mistakes. Due to there being fewer documents required for the interview process, the files are stored within the Student Group Partner's database. To change the volunteer status within the ICUBP or Student Group Partner databases, this can be done via a toggle that switches the volunteer's position within a single tab, thus reducing manual data displacements and simplifying data analysis. **(3-4)** This process is the same.

(D) System 4: **(1)** Volunteer Applicant only needs to review the ICUBP's website and does not need to download, repeatedly enter similar information in multiple forms (name, contact information, etc.), or upload any documentation. **(1.5)** The form auto-populates all the documentation for the applicant, ensuring fewer volunteer applicant errors. **(2-4)** The process is the same, but since the document information is derived from the form, the ICUBP no longer has to review individual forms for proper completion and can simply review the automated summary email.