

# Website Platform Migration

Design Document

Team sddec24-14

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# Executive Summary

## Development Standards and Practices Used

- Continuous integration
- Continuous deployment
- Implementing and Deployment in small batches
- Agile Methodology
- Emphasize software ownership

## Summary of Requirements

- SEO compatibility because it increases the number of potential clients.
- High quality, responsive websites because it sends a professional message.
- Successfully display what the company offers because we want to offer the potential clients the most clarity.
- Easy maintenance and updates because the website owner can use their time more efficiently.

## Applicable Courses from Iowa State University Curriculum

- SE 3090: Software Development Practices
- SE 3170: Introduction to Software Testing
- SE 3190: Construction of User Interfaces
- SE 4210: Software Analysis and Verification for Safety and Security

## New Skills/Knowledge acquired that was not taught in courses

- WordPress
- Local
- FlyWheel
- Automation
- How to communicate with a client

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**Note:** We have this (Figure and Table List) all added in the updated version

# 1. Introduction

## 1.1 Problem Statement

Our project is trying to solve Buildertrend's problem of migrating 70+ websites from the web building platform Duda to a different platform called WordPress. Buildertrend is a company that builds websites for different types of contractors, such as general contractors, subcontractors, residential builders, and commercial builders to name a few. Duda turned out to be more limiting for our client, hence why he wants to transition to WordPress. In this context there are some issues that exist, such as each of the websites being vulnerable to security attacks, or the people who own the websites may not know how to do website maintenance with WordPress, like updating posts or fixing links. These issues are important because people with mal-intent could try to steal sensitive information about the website owners, and potential clients may receive a bad first impression if the website is broken during maintenance. We are attempting to address these issues by keeping the Duda websites active. When they are fully implemented in WordPress we will deactivate the Duda website and deploy the WordPress one.

## 1.2 Intended Users

The product (websites) we are building is for John who is our client and wants to leave a popular website builder platform called Duda. The beneficiary of the project is John and Buildertrend who would have more leverage and control over his websites compared to using the Duda platform. The decision to migrate from the Duda platform to WordPress will affect the Duda company because they will be losing a good number of their clients through John.

Users of our projects are customers who are subscribed to web hosting services through Buildertrend, John and his company to be able to keep their sites alive for their end-users, clients, and customers who would be using their sites to get relevant information and request for other services with ease. One of the needs of the users is that they cannot have or experience downtime. Should be able to browse the websites with ease. Should be able to login into their accounts if any and get access to required data and information. Statistics from the popular reddit site [1], shows that about 75 people recommended wordpress to the public over 3 people for Duda.

## 2. Requirements, Constraints and Standards

### 2.1 Requirements & Constraints

Our project is to migrate websites by creating themes on the WordPress Platform. This project has four main types of requirements; resource, user, aesthetic, and UI.

**Resources:** Requirements of resources that we have to use during the project.

- Themes for the sites need to be created on WordPress.
- Use the provided pictures for the websites.
- Use the provided text for the website.

**User:** Requirements of what the clients (the owner of the sites) need to be able to do.

- Clients, who are not experienced with WordPress, need to be able to edit the sites.
- Plugins, themes, and features used need to be easily accessible, well-supported, and frequently updated. So the client can use them in the future if needed.

**Aesthetic:** Requirements on how the site should look.

- Sites should look similar to the original sites. Any changes should be made to improve the site.
- Clearly identify the company that the site belongs to.
- The text needs to be easy to read
- Pictures need to be a viewable size

**UI:** Requirements on how the user interface needs to be for the migrated sites.

- Interactive elements, like links and dropdown menus, should function correctly
- Navigation of the site needs to be simple (The sites we are working with are mainly sites where you can scroll up and down)
- Site response time and performance need to be at a reasonable speed. (The use of specific plugins or features can impact this)

## 2.2 Engineering Standards

The project has three engineering standards that apply: IEEE 1028, IEEE 1517, and IEEE 2001

### **IEEE 1028-2008 Software Reviews and Audits:**

This standard is defined by five parts: Management Reviews, Technical Reviews, Inspections, Walk-Throughs and Audits.

- Management Reviews: Focuses on the project's progress, status, and performance.
- Technical Reviews: Evaluates the technical aspects of the software such as architecture, code, design and documentation. Focuses on the quality of the project.
- Inspections: Inspection's main goal is to look at the output the software produces based on if it fulfills the requirement specifications. This includes identifying defects, inconsistencies, and deviations from the expected outputs.
- Walk-Throughs: This is a presentation to team members and clients on how the product works. Suggestions and feedback are made to further improve the quality of the project, and gives the client an idea on what the project status is.
- Audits: Audits are individual assessments to make sure that the product meets all policies, and covers any area related to software development.

In terms of this project, all five parts are covered and the entirety of this engineering standard will be used. The main goal is to make sure that each website has the best quality, is done on time, and that the specifications are fulfilled.

### **IEEE 1517-2010 Standard for Information Technology - Software Life Cycle Processes - Reuse Processes:**

**Definition:** The standard simply defines that the reuse of software and/or systems can be integrated to reduce cost, time, and potentially increase quality of the product.

**Project Relation:** For this project, the previous “look” and functionality of the website is being reused, along with other resources such as buttons, hyperlinks, and photos.

### **IEEE 12207-2008 Systems and Software Engineering - Software Life Cycle Processes**

This standard gives a framework for the software life cycle containing six parts: Acquisition, Supply, Development, Operation, Maintenance and Retirement.

- Acquisition: Finding needs/requirements, suppliers and software products.
- Development: Creating the product based on the needs/requirements.
- Supply: Provide the created product to the customer.
- Operation: The customer uses the product in the proper operational environment.
- Maintenance: Modifying and updating the product as needed.
- Retirement: Either stop using or replacing the product with something newer.

In terms of this project, only Acquisition, Development, and Supply will be used. Operation will be used for the customer whenever they want to search for it on the internet, and the owners of each website will decide what updates they should bring to the website and when to retire it.



## 3. Project Plan

### 3.1 Project Management/Tracking Procedures

The project management style we chose to use is agile. The choice of agile is due to the adaptability and frequent feedback that it provides. With our project being focused on the migration and creation of sites along with the potential of altering the site to improve its quality, it is essential we have access to frequent feedback. This feedback process is from both our team as well as our client (Buildertrend), which occurs during our biweekly client meetings. By getting feedback from our teammates and someone with more experience we can see if our changes or progress can be improved upon. The agile process also allows us to use the feedback to refine or change our plan and design sooner to resolve any issues without having to wait until the completion of the site or the whole project. Another reason agile fits well with our project is because we are working on 70 different sites, if we use the agile approach we can set each site as its own goal, with smaller sub goals. By doing this as we get more experience working with the sites we can improve on our planning in each of the following sites we work on, this will improve the efficiency and quality of the sites.

As we work on the sites we will keep track of our progress and share our work through Flywheel. Flywheel is a software owned by the WordPress platform, the platform we use to create the sites. This software allows us to work on the sites and push it to Flywheel for our teammates to view, the software also acts as the repository for the sites we make. The benefits of Flywheel aside from showing our progression on the websites is it also backs up our work so we can access previous versions of the site that we are working on. Another advantage is we are able to clone the sites that are good for implementing different things. We can make a clone and implement it there while still retaining the original, this can be useful for comparing if the implementation improves the site.

### 3.2 Task Decomposition

Our main task is to migrate 70 sites from Duda to WordPress. Each of the sites can be seen as their own individual tasks that we can further break apart as follows:

- **Task 1:** Identify what resources will be needed for the site (pictures, links, texts and plugins)

- **Task 2:** Work on the design/layout of the homepage first, as this is the most important page
  - **Sub Task 1:** Create the header layout and the navigation menu
  - **Sub Task 2:** Work on the footer of the website
  - **Sub Task 3:** Work on the body of the page adding pictures and text, making sure that it fits correctly
- **Task 3:** Implement the features (dropdown menu, links, and rerouting to a new page)
- **Task 4:** Review the page
  - **Sub Task 1:** Test the page to ensure all the functionality is working
  - **Sub Task 2:** Look for any design issues
- **Task 5:** Fix any issues that were identified in Task 4

This is the general decomposition of tasks that we will follow when we are constructing a website, and we will repeat for the rest of the pages. These tasks will be the same for every page that we do but we will always start with the homepage first as it is the most important page for the project and because its navigation menu is used to reach every other page on the site.

### 3.3 Project Proposed Milestones, Metrics, and Evaluation Criteria

With our project we determined that the best way to track our progress in terms of metrics will be by site completion. The reason for this choice is because tracking it based on something like the completion of each page wouldn't give an accurate understanding of the progress. Each page has varying time requirements to complete so it would be easier to treat an entire site completion as a metric. Another thing is with the metric it will directly indicate if we are able to progress to working on the next site which will make it easier to establish our milestones.

Our milestones that we will use to track progress will be based on a certain number of sites that we can complete within a given amount of time. Right now we have established our milestones requirements to complete 4 sites, completing every task defined in 3.1 Task Decomposition, within the time frame of 1 week. An example of the milestones would be as follow:

- **Milestone 1:** Complete 4 sites
- **Milestone 2:** Complete 4 sites
- **Milestone 3:** Complete 4 sites

- **Last Milestone:** All sites completed

The list provided is only a rough example, and the metrics of the milestones may change overtime. As we get more experience we may be able to increase the milestones to more sites or less time. The changes or these milestones will occur during our review and design phase of the agile cycle.

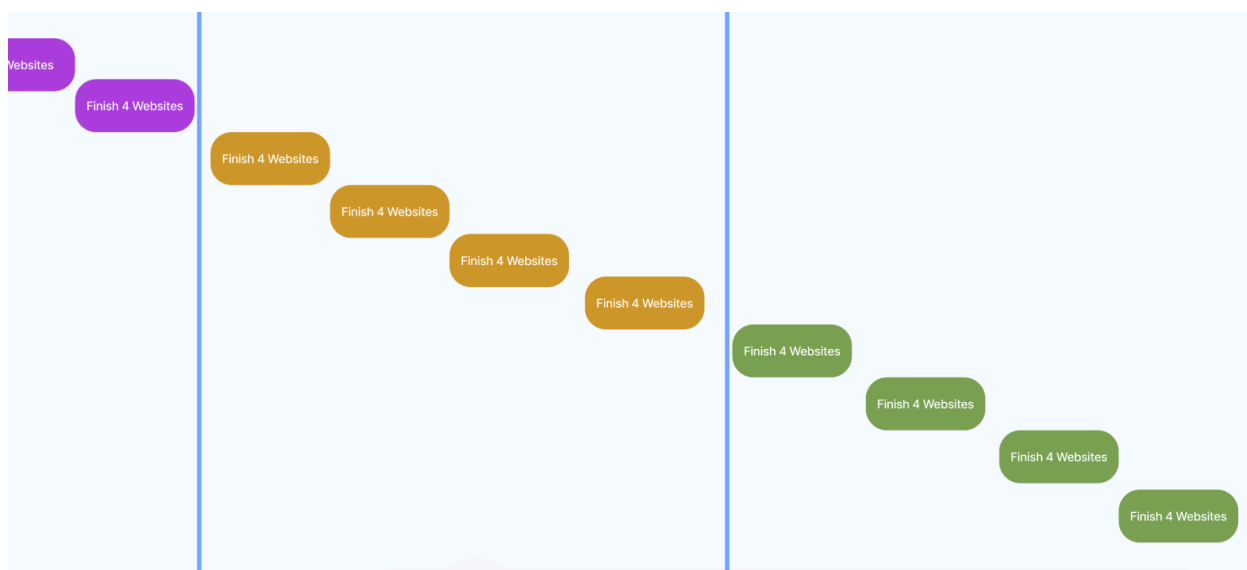
With these milestones it will help us in evaluating our progress. Some of the main things we will evaluate are “are we able to reach the milestones that we established?”, “Was the milestones easy to complete given our schedules?” and “Do we need to change the milestones?”. By asking these questions once we complete a milestone we can assess any changes that may need to occur. Pairing it with the agile process we can easily go back to the design plan and create more refined milestones that we will follow for the next cycle.

### **3.4 Project Timeline/Schedule**

**Note:** This is our original timeline with the recent change of approach (that will be explained in Part 4) to the solution our timeline has changed. The new timeline has not been established as we need to discuss it further with our client. The provided timeline was the one we followed for the majority of the semester.

This project is broken into two semesters, so for this semester our main goal is to complete 35 websites. There are 8 weeks left in the semester, and since we use agile, our sprint cycle will be a week (one website a week). Even if we reach this goal, we will still be short by completing 28 out of the 35 websites. Our advisor told us that we could also work on the websites during summer break if needed, and that can help us catch up and lighten the load for the later semester as well.

Gantt Chart:



For the images above, we have an updated version and caption in the recent document

For the chart, each website (deliverable) should be completed in one week.

### 3.5 Risks and Risk Management/Mitigation

- **Task 1:** May not have all the proper resources, probability: 20-30%
- **Task 2:** Header, Footer or Page may have a unique element that may take longer to research and make, probability: 60%
- **Task 3:** Same as Task 2, probability: 60%
- **Task 4:** No risks
- **Task 5:** No risks

For tasks 2 and 3, the only way around this issue is to do research, which depending on the complexity of the element may take up more time than originally planned. The good news is that as we encounter more websites, the number of unique elements will go down because we have more exposure and knowledge of how to deal with them

### 3.6 Personnel Effort Requirements

Task	Estimated Time
Identify Resources Needed	< 1 hour
Create Header	3 - 4 hours
Create Footer	2 - 3 hours
Implement Features	7 - 8 hours
Review Page	< 1 hour
Fix Issues	2 - 3 hours

**The section and table above is the personal effort individually**

### 3.7 Other Resource Requirements

The only other resources we need are the website's resources, such as photos, videos, fonts, ect. These are all provided by our client, and he will give us access to them when we complete the previous website.

## 4. Design

### 4.1 Design Context

#### 4.1.1 Broader Context

Our project relates the most to economics. The sites we are making are for companies primarily to get more customers to use their services. The site's simple UI, pictures, and descriptive text advertise the company's services and allow a wide array of customers to interact and learn from the site. The site also is used to connect the client with the company by providing contact information

#### 4.1.2 Prior Work/ Solutions

From our research we have not found any distinct or beneficial solutions. Most services that offer site migration just manually recreate the sites this which was our initial approach.

#### 4.1.3 Technical Complexity

The complexity of our project has changed over the semester as our approach has changed. Our original approach was a manual approach where we used tools such as WordPress and Elementor to create the sites from scratch. This approach lacked engineering complexity; the tools we were using needed more complexity since it was just dragging and dropping widgets. It is important to note that this approach was the one that our client wanted us to use to create the site and was the main approach we used for most of this semester.

After some discussion with our client and professors, we were allowed to use a different approach. The approach we decided to take was to create tools to assist in the migration process. This would allow us to avoid needing to create each site from scratch manually and will improve the efficiency of the migration. One tool we are working on is to create a script to convert the database from the Duda platform into SQL so that we can use it for the WordPress platform. Creating these tools for site creation/migration has a lot of technical complexity. It requires us to develop new tools, from our research, we found that a lot of companies offer migration services, but we did not find much on migration tools that someone can use. Developing these tools will challenge us as engineers, it will require us to use our experiences with software development, coding languages, databases, and multiple components interacting with each other.

## **4.2 Design Exploration**

### **4.2.1 Design Decisions**

- A. After completing the foundational elements of the site, including the header, footer, and body, we will then proceed to implement the website components, such as dropdown menus, links, sliding pictures, and other effects. We will initially leave placeholders for these components and return to them for implementation once the core structure of the website is in place.
- B. We decided to work on the homepage first before we moved on to other pages. The reason for this choice is because the homepage is what allows us to reach the other pages so it is easier to organize by making the homepage first and then working on the other pages. The homepage also has the most work to do in terms of text, pictures, and features so it will take longer than other pages to work on.
- C. Our design decision was to only use Elementor as the plugin to work on for WordPress. The reason for this choice is that the majority of the site design and features we need to implement are all possible through Elementor. This choice has multiple benefits. First, we don't need to look for new plugins and risk security issues. Second, by using one plugin, it will be easier to hand off to clients because they do not need to get

multiple plugins. Lastly it reduces the cost because some plugins require payment by sticking with Elementor we will not need to pay for other plugins.

#### **4.2.2 Ideation**

For design decision A we came up with ideas by using the Lotus Blossom Technique and the Agile approach. With the Lotus Blossom, we were able to look at the diagram we made and identify that each component of the page is broken down into widgets/blocks on WordPress and Elementor. This means that we can rearrange the order and placement of the widgets after we make them, and because they are broken into small blocks it's easier to edit individual text and pictures. From this, we created the following ideas:

- 1) Implement the features whenever we come across them during the site creation
- 2) Work on any part of the page first features, text, pictures etc. And then rearrange the page after.
- 3) Implement the features first because they will take longer compared to adding text or images.

After working on the pages for some time we discovered some new things. Features like parallax scrolling or having images appear on the page require us to mark the blocks in certain orders and we need to redo it if we choose to change parts of the page. It also makes it harder to know how far we want the features/function to move without knowing how the rest of the page will be structured. After these evaluations, we came up with the following new ideas.

- 4) Work on the page's foundation first, then implement the features at the end and place them in the desired locations.
- 5) Work on the foundations and leave placeholders for the features to indicate the size and locations of where they will be. [Chosen]

#### **4.2.3 Decision-Making and Trade-Off**



We identified the pro and cons of some of the ideas by directly testing them and we identified the pros and cons of them through first hand experience. We also spent time as a group discussing the ideas that we came up with before we chose the most optimal design decision. The following are the pros and cons of the ideas our group made:

#### Idea #1

- Pros:
  - Can follow step by step how the original site looks
  - We won't skip over any parts of the site because we go from top to bottom
- Cons
  - Some features require widgets that occur after so they can't be implemented

#### Idea #2

- Pros:
  - Allows for more flexibility
- Cons:
  - Difficult to make sure every part of the page is there until the end
  - Harder to track features because the site will be unorganized

#### Idea #3

- Pros:
  - Complete the most difficult tasks first
  -
- Cons:
  - Some features depend on other blocks so we will also need to make them to implement the features
  - Unorganized because we are looking for all the features to work on first

#### Idea #4

- Pros:
  - The creation of the site stays organized
  - Avoids the issue of a feature missing a widget to be implemented
- Cons:
  - May run into sizing or placement issues

- Have to backtrack in the site to determine where the feature needs to be placed

#### Idea #5 (Chosen):

- Pros:
  - Keeps the site organized
  - Have placeholders for the features so we know the sizing and placement will work
  - Avoid forgetting to implement features
- Cons:
  - It takes more time to make the placeholders

Out of these five ideas we determined that idea 5 is the best choice for us. The pros of this idea outweigh the cons. By making the features last we can avoid any issues of incorrect/missing blocks that the feature might need to be connected to. We will also be able to work from top to bottom and reference the original site easier. Lastly, by taking time and making the placeholders for the features we can get an idea of how they will fit on the site and avoid any placement issues that could have occurred.

## **4.3 Proposed Design**

### **4.3.1 Overview**

Our current design is not based on a project, but more as a procedure in order to migrate 70+ websites from Duda to WordPress. The process is very similar to the Scrum Agile framework, where it is a continuous cycle of planning, developing, testing and reviewing.

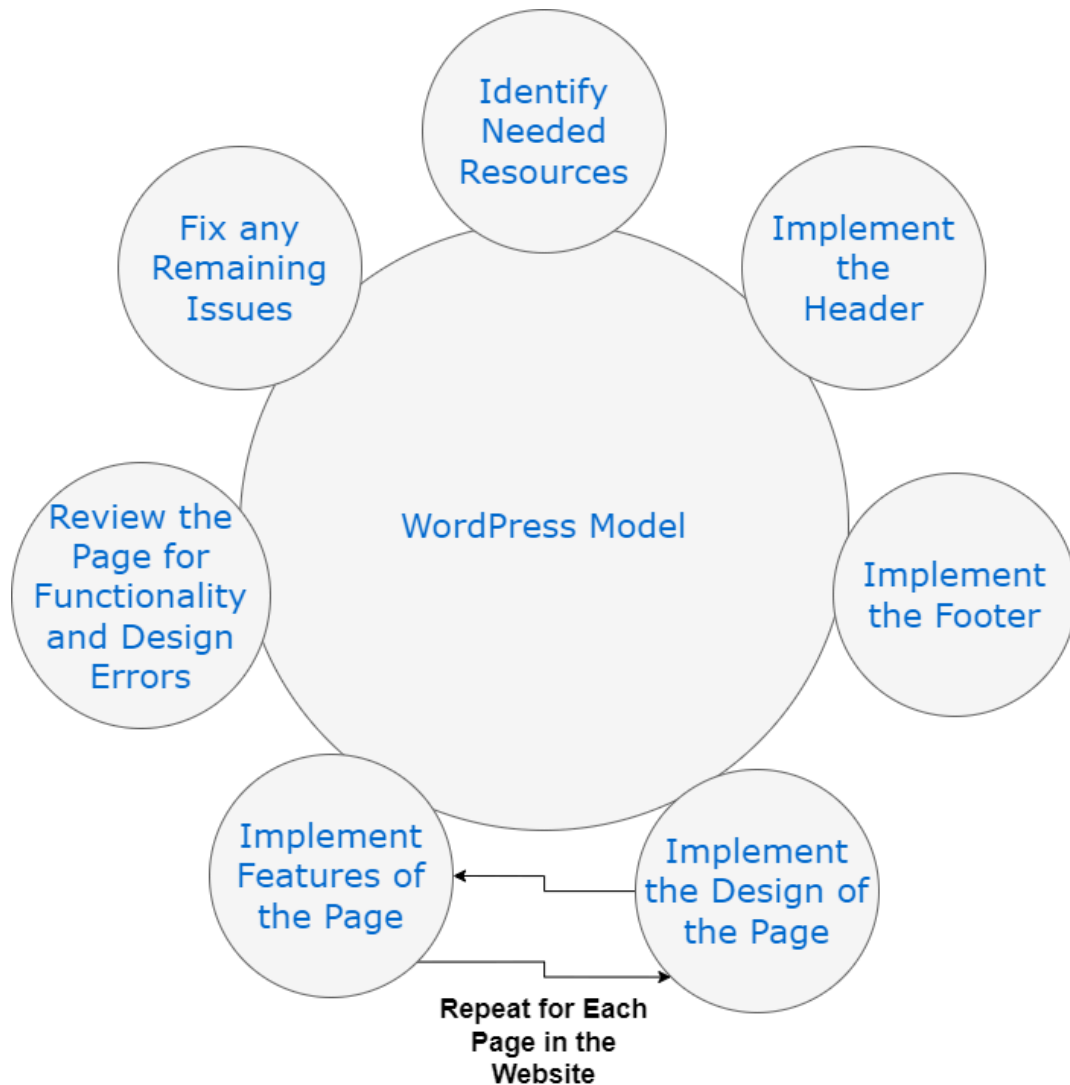


Figure 1: This is the diagram of workflow for each site implementation

Step 1, Identify Needed Resources: Identify what resources will be needed for the site, such as pictures, links, texts and plugins.

Step 2, Implement the Header: A header allows the navigation of the entire website and any contact information, so implementing it at first will provide a decent guiding light for the rest of the website.

Step 3, Implement the Footer: A footer closes off the website, it marks the end point; while the website may not be completed, it allows us to visualize it as a whole and see what's missing. It is also useful for the owner of the website, as it shows social media

that potential customers can use to learn more about the company via LinkedIn, Instagram, X, or Facebook.

Step 4, Implement the Design of the Page: This is the central part of the website. This step constitutes creating the design to mirror the website created with Duda.

Step 5, Implement features of the Page: This section focuses on the features and functionalities that will be included in each page. It has to do with the things that the pages can do such as buttons, links, forms, etcetera.

Step 6, Review the page for Functionality and Design Errors: This is the process of checking for any design errors, flaws, or functionalities that need to be corrected immediately.

Step 7, Fix any Remaining Issues: This is when the sites are complete and ready to be launched and handed over to the client, and a test-run is recommended for errors like broken pages or links. If any errors exist, refer to step 6.

#### **4.3.2 Detailed Design and Visuals**

The UML chart in Figure 2 shows how a client can securely give out resources (like images, icons, fonts, ect...), and how each component interacts with each other. First, the client sends the resources to FlyWheel, which acts as a GitHub that is more suited towards sending out said resources and helps with security where only those who are allowed access can pull. From the developer's personal computers, the resources are pulled from Local, which is a WordPress hosting platform that gives developers the ability to safely view websites before production with what is called "Live Links". Live Links forces privacy mode and HTTPS to keep bots, search engines, and automated attack traffic from finding local sites. When the website is running with Local, it immediately pulls up the corresponding WordPress website where the website can be developed. Elementor can then be downloaded inside of WordPress, where it simplifies the development process by using drag and drop methods instead of typing HTML, JavaScript, and CSS from scratch.

From here the WordPress development model listed in Figure 1 can be used to develop the needed website.

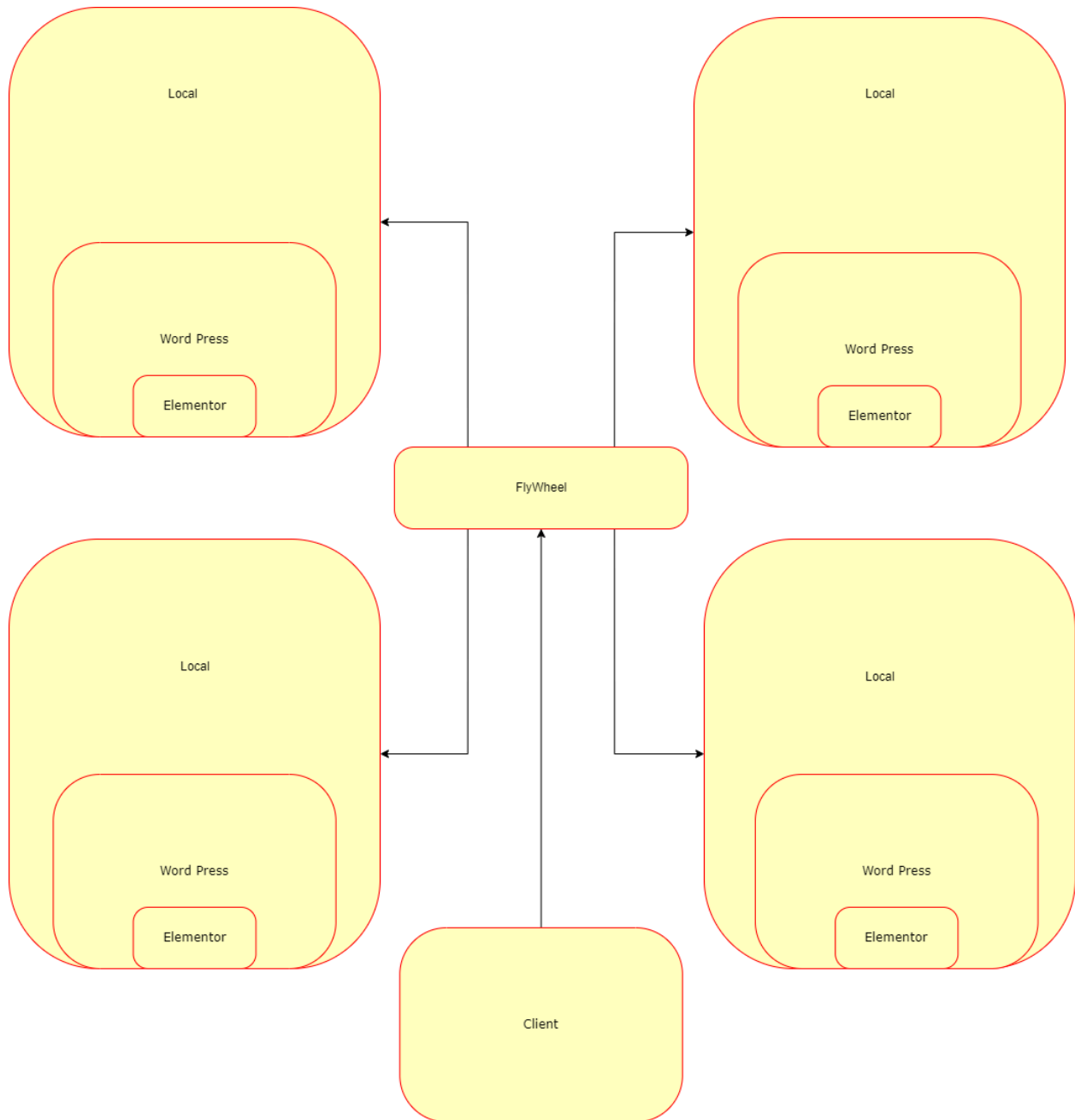


Figure 2. The image above represents the integration of the wordpress platform, local, flywheel, elementor, and client relationship.

### 4.3.3 Functionality

This project is unique because it has different types of users: The users of the website (customers) and the owners of the website.

Users can interact with websites in numerous ways, so for simplicity I'll talk about one use case:

Use case: User who is interested in Aune Brothers Construction, and they want to install a new in-ground swimming pool

This user is mainly going to use the website in order to gather information about the company who owns it. Take for example the user wants to install an inground swimming pool from Aune Brothers Construction. When they click on the link on a search engine it will take them to the homepage of the website. From here the user immediately knows that they offer swimming pool installation services because it is in the center of the home page, listed with other services Aune Brothers provides (Figure 3).

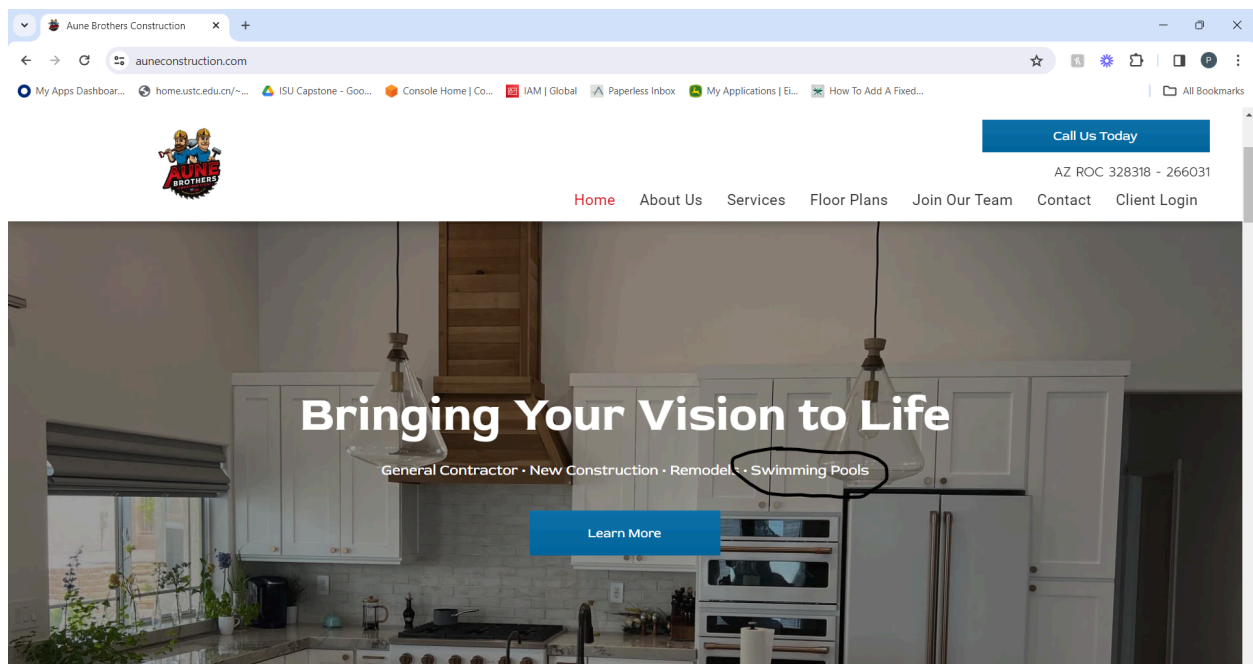


Figure 3, Aune Brothers Home page when first clicked on from a search engine

If the user wants to learn more about the process of how Aune Brothers install an in ground pool, the user can use the navigation bar to look at the Services Page, scroll down to “Swimming Pools” (Figure 4), and from there the user can get the information they need. If the user has any further questions, there is a contact button that will send a form to the website’s owners.

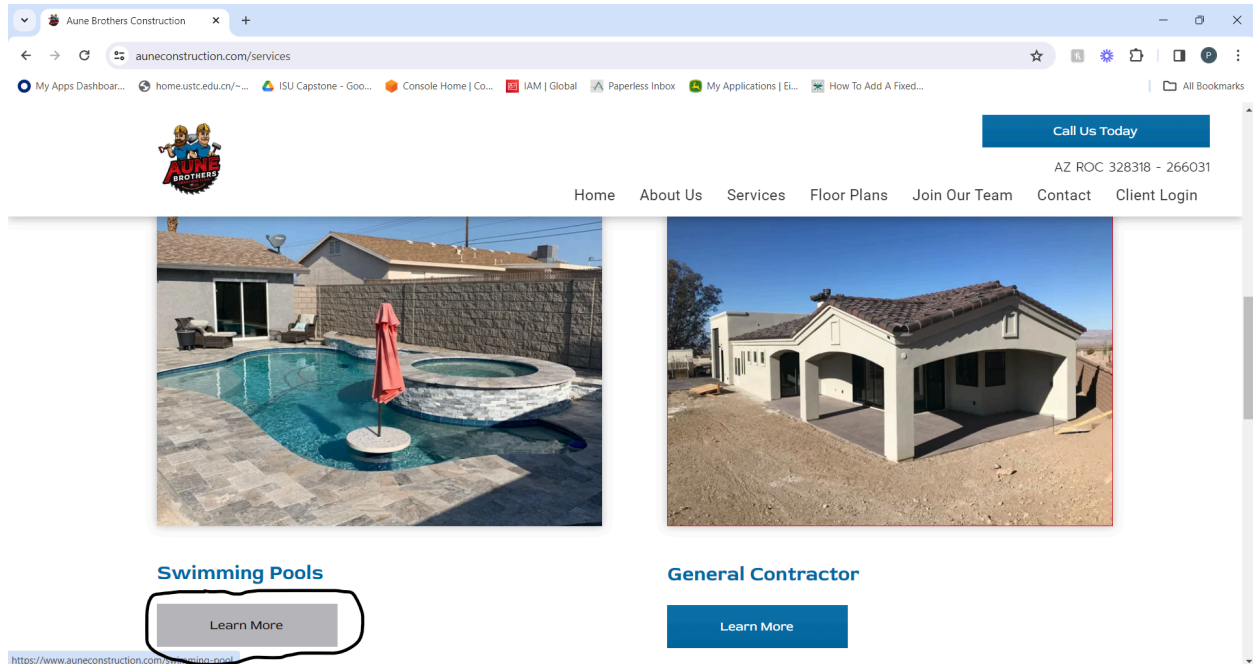


Figure 4, On the Services page, scrolling down to “Swimming Pools”

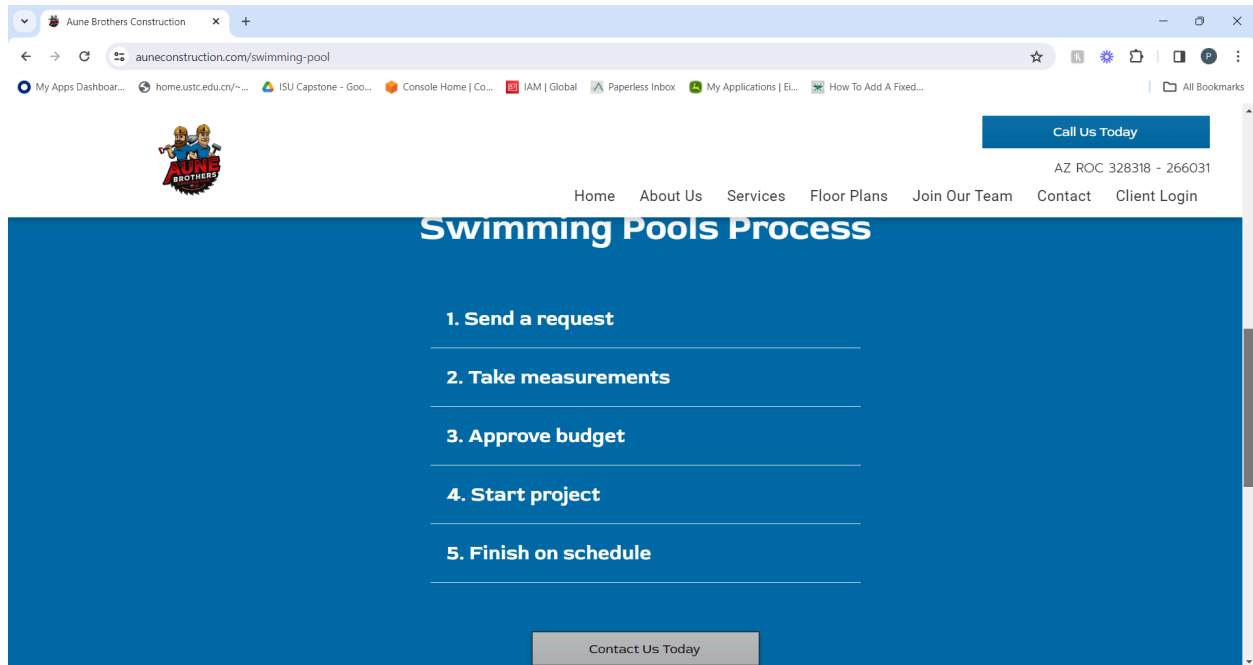


Figure 5, The Swimming Pool information needed

For the website owners, they will mainly be working on WordPress and Elementor. A common maintenance task for an owner of a website would be to look at forms sent from a user. Using Aune Brothers as an example again, they have two different forms: one for hiring and the other for answering users questions.

To look at submissions, the owner needs to log into WordPress. From there, they can go to Elementor, Submissions (Figure 6), and that brings up the Elementor Submissions page (Figure 7).



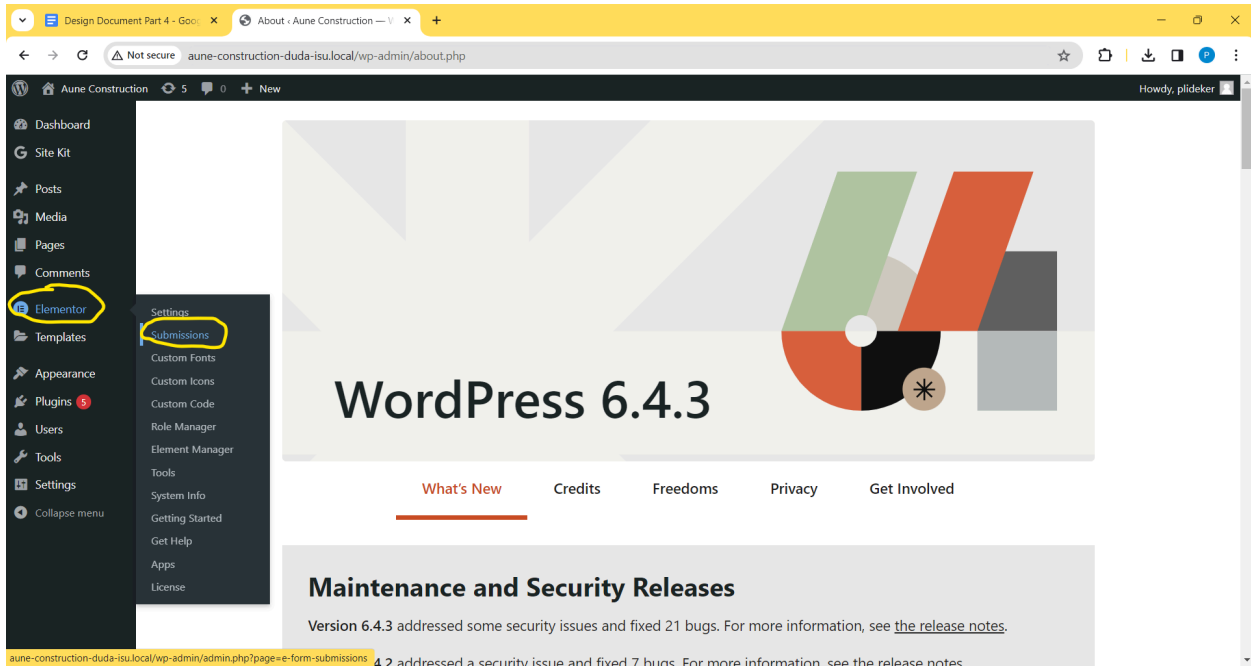


Figure 6, WordPress page, moving to the Elementor Submissions page

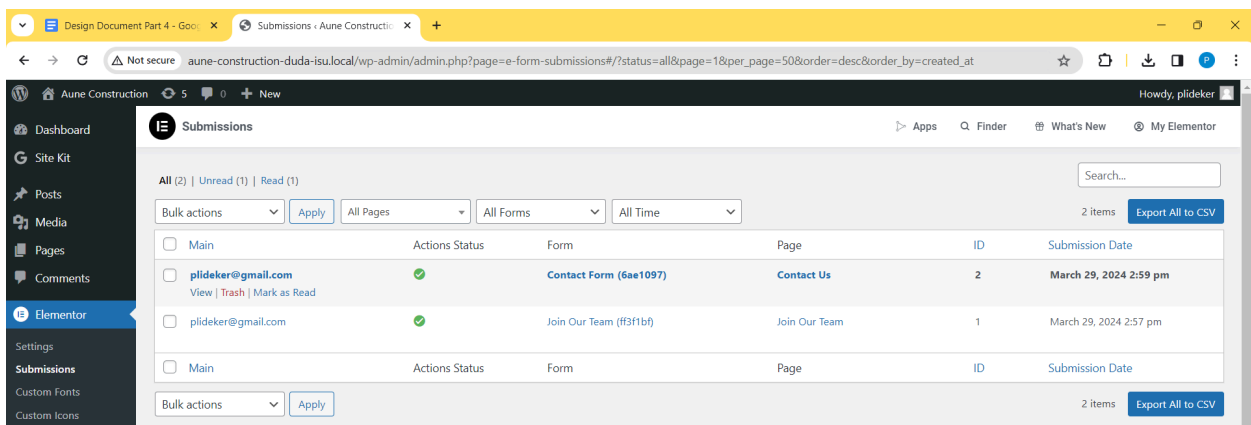


Figure 7, Submissions page.

From here the website owner can see that there were two form submissions, one from the Contact Us page and the other from the Join Our Team page. Clicking on the Contact form for example, we can see more information about the user who submitted the form and what questions/about comments they have (Figure 8).

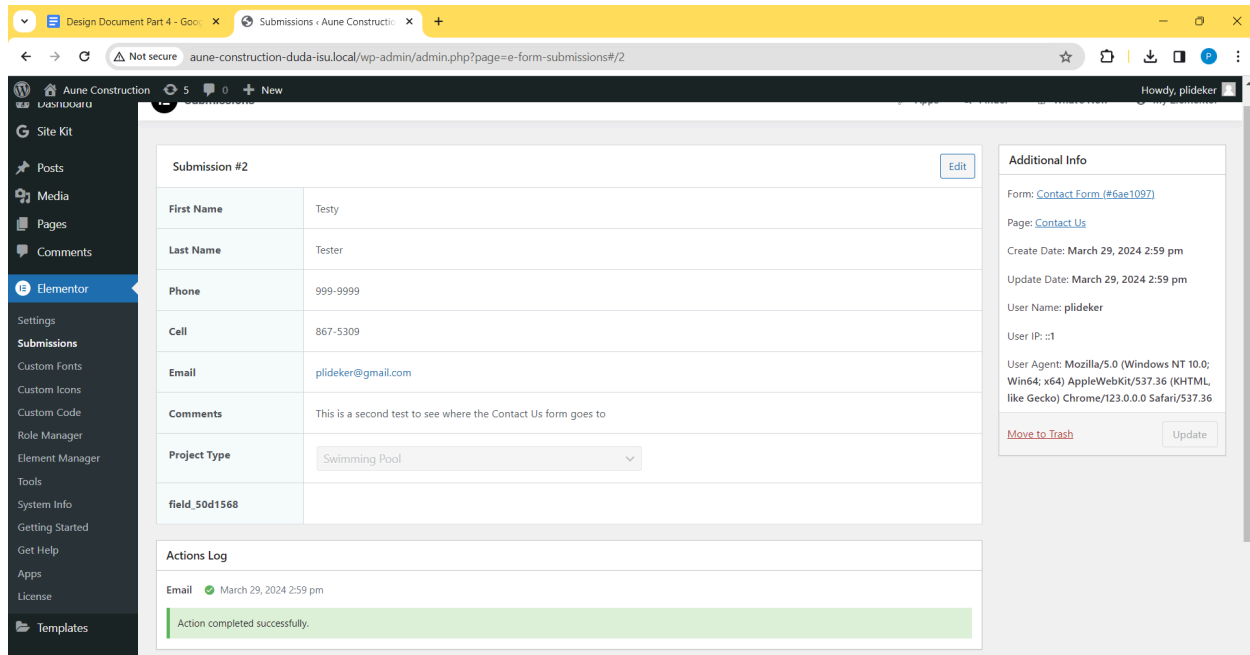


Figure 8, Contact Us submission

#### 4.3.4 Areas of Concern and Development

There are four listed requirements for this project (Resources, User, Aesthetic and UI), and the current design seems to fulfill them all.

**Resources:** Requirements of resources that have to be used during the project.

- Themes for the sites are created on WordPress.
- The provided pictures for the websites are being used.
- The provided text for the website is being used.

**User:** Requirements of what the clients (the owner of the sites) need to be able to do.

- Clients, who are not experienced with WordPress, are able to edit the sites.
- Plugins, themes, and features used are easily accessible, well-supported, and frequently updated. The client can use them in the future if needed.

**Aesthetic:** Requirements on how the site should look.

- WordPress sites look similar to the original sites. Any changes that do exist are made to improve the site.

- The company is clearly identified on the site that it belongs to.
- The text is easy to read
- Pictures are at a viewable size

UI: Requirements on how the user interface needs to be for the migrated sites.

- Interactive elements, like links and dropdown menus, function correctly
- Navigation of the site is simple (The sites we are working with are mainly sites where you can scroll up and down)

Site response time and performance are at a reasonable speed. (The use of specific plugins or features can impact this)

#### 4.4 Technology Considerations

For this project there are three main technologies that we are using WordPress, Elementor and Flywheel\Local:

- WordPress: WordPress is the site designing platform that we are migrating sites to from Duda.
  - Strengths: The strengths of WordPress come from its large variety of plugins which allows for scalability, adaptability, and flexibility when creating the sites. It also has the ability to create sites in the format of tablets, phones and desktops. WordPress is also more compatible with a larger scale of search engines compared to other site creation platforms.
  - Weaknesses: The weaknesses of WordPress also originate from the plugins. Some plugins require a subscription or payment to access, so users will need to buy the plugins. The plugins also have the potential for security risks where malware or other malicious software could be hidden in the plugins. Another weakness is WordPress can be hard to learn because it has so many features and functions, there is a learning curve when trying to create more complex functions on the site.
  - Trade-offs: The trade-off for us is using the plugin Elementor which gives us tools to create the sites more efficiently. The drawback of this plugin is we need the Elementor Pro version so it costs money to use.
- Elementor: Elementor is a popular plugin for WordPress, it allows for easier site designing and construction. The Elementor plugin gives us access to drag and drop features where we can place blocks onto the screen and edit them into the desired parts that we want.

- Strengths: The strength of Elementor comes from its ability to help us create and edit a site easily. It allows us to construct the site with individual blocks/widgets, which lets us break down the site into small chunks. We are also able to rearrange these blocks in any order after creating them, making the site creation process very flexible.
  - Weaknesses: One weakness of Elementor is that the Pro version that we use costs money. Another weakness is that it doesn't provide all the features that we need; like a before and after picture slider does not exist. Some features of Elementor also take some time to learn how to execute, an example is image effects.
  - Trade-offs: The trade-offs we have with Elementor are that even though we lack the ability to implement some of the features and it has a cost to use, we are still able to create the majority of the sites. With the given features of Elementor, we are able to replicate the majority of the features from the original sites, and for the features that we cannot replicate, we can substitute them for different ones.
- Flywheel/Local: Flywheel and Local are platforms tailored specifically to WordPress. It allows for multiple people to pull sites, work on them, and then push them into Flywheel.
    - Strengths: The strength of Flywheel and Local is it allows us to pull the sites and work on them, this allows us to collaborate on one site if needed. Flywheel will also automatically save our progress and allow us to access the previous versions of our work. And since Flywheel is made specifically for WordPress there are very few compatibility issues when saving or pushing sites. It also allows us to locally view the site without having to use a server.
    - Weaknesses: A weakness of Flywheel and local is there can be merging errors when multiple people work on the same site and push it. The way we are avoiding this problem is by working on different sites. Another weakness is it is not free.
    - Trade-offs: The trade-off of paying for Flywheel is we get access to the benefits of Flywheel. As mentioned in "Strengths" the benefits include autosaving, accessing previous versions, duplication of the site, and running the site locally without needing a server.

#### **4.5 Design Analysis**

So far, we have each been working on our individual sites to avoid the merging issue mentioned in 4.4, it also allows us to get more sites done. We have been following the design we established in 4.3, which has been working well because it prevents the issue of having to reimplement the features if we decide to alter a widget on the page. We intend to follow this design plan because it has been working well and allows us to avoid the weaknesses of the tools that we are using. A potential change in the future is we may be using additional plugins to implement features for Elementor. We do not have an exact timeline for that additional plugin, because it is going to depend on what BuilderTrend (Our client) decides. But once it is introduced we will go back and modify our design plan to accommodate for that additional plugin and its functionality.

## **5. Testing**

### **5.1 Unit Testing**

Unit testing involves testing of individual components of the website as it's being built. Due to buildertrend's websites focusing on displaying their client's service, there aren't many complicated functions to unit test. It mainly includes testing buttons, click-able elements and forms to ensure they work as intended.

### **5.2 Interface Testing**

This focuses on evaluating the interaction that exists between the different modules, and components of the website to ensure easy communication between pages and data. Tests like this ensure that links and user interfaces are adhered to the standards and specified requirements.

### **5.3 Integration Testing**

Integration testing, in our project, involves testing how different components of the website work together. For example, ensuring that plugins interact correctly with the theme and the core functionality of the website.

### **5.4 System Testing**

This tests the entire website to ensure that it meets the requirements. It mainly includes testing the frontend to ensure the quality is equal to or better than the website we are migrating from.

### **5.5 Regression Testing**

This aspect of testing is a very important part of website testing that gears towards ensuring that the recent modifications on the website does not affect the existing functionality of the website. It involves rerunning previous tests to ascertain that no new functionality or modifications have been made that would hamper the smooth functioning of the site, and the website still behaves and functions as expected after modifications and enhancements.

### **5.6 Acceptance Testing**

The acceptance testing stage is the final phase of the website testing process, where by the website is evaluated and considered if it meets the specification required and as well ready to be deployed. This involves assessing the website's functionality, reliability, usability, and general performance against acceptance criteria.

### **5.7 Results**

This is the aspect that deals with the outcomes obtained from a particular experiment, activity, or process. This represents the tangible achievement that indicates the success, effectiveness, or performance of the process. These could include, but are not limited to reports, or observations that provides insights, evidence or conclusions that are valuable to the endeavor.

## **6. Implementation**

Unfortunately we recently discovered that this project will end in June so there won't be time to finish implementation next semester. For the majority of this semester we planned to split the project in half and possibly use the summer as a way to relieve any work load. The good news is that there are employees at Buildertrend who are working alongside us and can help give us flexibility if something goes wrong.

## **7. Professional Responsibility**

### **7.1 Areas of Responsibility**

Area	Project Relation
Work Competence	Ensure that the site meets the expectations of the client and provides all the information and resources that the client wants.
Financial Responsibility	When creating/migrating a site it is important to stay within their budget and optimize the given amount. Any additional expenses should be address with the client prior to the spending.
Communication History	Make sure to be honest with the client and inform them of any blockages or issues.
Health, safety, and well-being	Make sure the creation of the site follows legal rules and does not result in any issues that could place the client at risk.
Property ownership	When creating a site for a company it is important to keep the information that they provide private.
Sustainability	Running and maintaining a website has environmental impacts. The energy used to create a site can result in carbon emissions and energy consumption. Complex sites often result in greater carbon emission and energy consumptions.
Social Responsibility	The website for a company should be able to benefit both the company and the user. It should allow the company to show its services while allowing the users to get information about said services.

## 7.2 Project Specific Professional Responsibility Areas

<b>Area</b>	<b>Project Relation</b>
Work Competence	Medium: We have been mainly working with WordPress and Elementor. We do not consider this to be a high-quality work as it is mainly just dragging and dropping.
Financial Responsibility	Low: In our project we are given a set of tools WordPress, Flywheel and Elementor. We are not given a budget for any additional plugins or tools so we do not manage a budget or practice financial responsibility.
Communication History	High: We keep frequent communication with our client and inform them of our progress and any issues that we experience.
Health, safety, and well-being	Medium: We follow the contract rules. By doing this we are able to avoid any legal issues for us or our client.
Property ownership	High: We signed a contract to ensure that we do not share the information or account information that we are using. By following this contract we can ensure we follow the ownership and privacy rules that our client wants
Sustainability	Low: We do not take much consideration about the environmental impact as we are working on this project. We are mainly focusing on making sure the site meet the wants of the client. We are also limited on the WordPress resources that we can use.
Social Responsibility	High: it is our responsibility to create sites for our clients and make sure



	that the users are able to get truthful and accurate information.
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### **7.3 Most Applicable Professional Responsibility Area**

For our project, the most applicable responsibility is Social responsibility. The reason is that the site acts as an advertisement for the service the companies. These services are sought out by people that need them so by providing a well-structured site with accurate information and contact to the company we are able to bring users to the services that they need. This will also benefit the company by bringing them more customers.

## **8. Closing Material**

### **8.1 Discussion**

Our results from this semester was that we started to work manually implementing one website at a time, thinking that having one website a week would be a good sprint time for our agile development. Unfortunately we discovered that these websites were complex and that simply implementing them from scratch would take even longer, so we started to shift our focus to creating new tools.

### **8.2 Conclusion**

For this semester, we originally started to implement the websites right away. This was our learning period trying to figure out how to push and pull to Local, how to implement pages with WordPress and Elementor, and using HTML and CSS as needed. As the semester progressed our group started to get concerned about the lack of engineering that this project had, so we started to look for automation to help speed the progress along. During the first week we didn't know if it was possible to automate this process due to each website being so unique that there was no clear angle of how to automate even one section. Later on we discovered that it'd be easier to make a tool that would make the migration easier and faster by:

1. Getting a file called collections.csv from Duda and from there we can create a program that will generate SQL statements to define and fill a table for WordPress to use.
2. Creating the theme by creating templates for the header, footer and pages to help make the websites easier to replicate by providing the websites structure.

## 8.3 References

[1] Duda or WordPress What's Best?,  
[https://www.reddit.com/r/TechSEO/comments/urg394/duda\\_or\\_wordpress\\_what\\_s\\_best/](https://www.reddit.com/r/TechSEO/comments/urg394/duda_or_wordpress_what_s_best/) (accessed Apr. 15, 2024).

# 9. Team

## 9.1 Team Members

Bryant David, Danh Hoang, Piper Ideker, Chiran Subedi

## 9.2 Required Skill Sets For the Project

Communication

- Communication with the team:
- Communication with the client:

Time Management

- Prioritize tasks, and set deadlines with the team:
- Effective time allocation with the team:

Teamwork

- Collaborate effectively with team members:
- Constructively resolve conflicts if any:

Emotional Intelligence

- Understand and manage personal and team emotions:
- Build rapport and empathy with the team:

HTML/CSS knowledge

SQL knowledge

WordPress knowledge

Elementor knowledge

PowerPoint knowledge

## 9.3 Skill Sets Covered By the Team

Communication

- Communication with the team: All
- Communication with the client: All

Time Management

- Prioritize tasks, and set deadlines with the team: All
- Effective time allocation with the team: All

#### Teamwork

- Collaborate effectively with team members: All
- Constructively resolve conflicts if any: All

#### Emotional Intelligence

- Understand and manage personal and team emotions: All
- Build rapport and empathy with the team: All

HTML/CSS knowledge: All

SQL knowledge: Piper Ideker, Chiran Subedi, Dahn Hoang, Bryant David

WordPress knowledge: Piper Ideker, Chiran Subedi, Bryant David

Elementor knowledge: All

PowerPoint knowledge: All

### **9.4 Project Management Style Adopted by the Team**

Agile

### **9.5 Initial Project Management Roles**

Danh Hoang: Project Coordinator

Piper Ideker: Implementation and Component Designer.

Bryant David: Design and implementation

Chiran Subedi: Theme design

### **9.6 Team Contract**

Team Members: Bryant David, Danh Hoang, Piper Ideker, Chiran Subedi

#### Team Procedures:

1. Team meetings will be: Tuesdays 4:00 - 4:20pm.
2. Preferred method of communication: Discord (virtually).
3. Decision-making policy: When making decisions, we will work together to determine something that we can all agree on. If there are disagreements, we will work to create a compromise that we can all agree upon.
4. Procedures for record keeping: Danh will keep track of meeting durations using Excel.

Participation Expectations:

1. Expected attendance and participation at team meetings: We expect all team members to attend meetings unless they have an emergency. If there is a conflicting scheduling issue, they should let the team know in advance so they can reschedule the meeting time. If they miss the meeting, they should spend some time talking with team members about anything important they may have missed.
2. Expected responsibility for team assignments: As a team we should all have around the same amount of workload and responsibilities for the team projects. We can decide these during meetings to determine how to split the work.
3. Expected communication: We should communicate frequently as a team, whether providing updates or asking questions. We should keep other team members updated on our progress or if we have any questions.
4. Expected commitment: Everyone should contribute to important team decisions and tasks. That way, we know that everyone is agreeing/comfortable with the decision that is being made.

#### Leadership:

1. Leadership roles of each team member:
  - a. Piper Ideker: Implementation and/or component design.
  - b. Danh Hoang: Establishing the team schedule and contact with the client and team advisor
  - c. Chiran Subedi: Keeping track of the progress on the theme design and website migration.
  - d. Bryant David: Advice/Recommendations, creativity, design, and implementation of website
2. Strategies for guiding work: We will set clear goals and tasks for each member to complete, always have open communication if we run into issues or need clarification, and provide feedback as needed. We will also set mini checkpoints so that we are able to track our progress.
3. Strategies for recognizing contributions: We will express gratitude, personalize recognition of work as needed, and recognize progress throughout the semester.

#### Collaboration and Inclusion:

1. Skills, expertise, and perspectives of each team member:
  - a. Piper Ideker: Previous experience with WordPress and languages associated with it (HTML, CSS, PHP, JavaScript).
  - b. Danh Hoang: Some experience with website development and design.
  - c. Chiran Subedi: Moderate experience with frontend web-development using HTML, CSS, JS, React. I have also used WordPress a bit previously.
  - d. Bryant David: WordPress, CSS, HTML, Website Development
2. Strategies for supporting contributions: Give/encourage all team members the opportunity to share their ideas. We will also ensure that everyone on the team understands what the other team members are working on. That way, we can all have the chance to pitch ideas to improve the projects.
3. Identifying and resolving collaboration issues: We will take some time at the beginning of meetings to discuss any issues or problems we have with the project or the team environment. By bringing up issues sooner, we can resolve them quicker before it leads to further issues.

#### Goal Setting, Planning, and Execution:

1. Team goals for this semester: For the first 2 - 4 weeks, we should be familiar with good WordPress practices, and learn the basics on how Wordpress works. Once everyone is familiar, we will then move onto creating a WordPress theme which we estimate should take about 8 - 10 weeks. Finally, we will use the remaining time to migrate as many websites as possible with this new WordPress theme.
2. Strategies for planning and assigning work: Assigning work will be based on volunteer work. If no one volunteers, then it will be decided based on who is the best fit for the task. In terms of planning, when work is assigned we will estimate how long it will take, and put it on record. When we give progress reports, we will adjust time as needed.
3. Strategies for keeping on task: We have bi-weekly meetings with our advisor, bi-monthly(or more) meetings with our client, and weekly meetings with the team, where we will discuss our progress, what went right, wrong, and if we need to assign more work.

#### Consequences for Not Adhering to Team Contract:

1. How will we handle any infractions: We will talk to them about our mutually agreed-on responsibilities on the contract.

2. What will we do if infractions continue: If they continue not following through with the contract agreements we created, we will bring the issue to the TAs and professors.

Signatures:

1. Piper Ideker, 1/26/24
2. Danh Hoang, 1/27/24
3. Chiran Subedi 1/30/24
4. Bryant David 1/30/24