

# Rocket Launch Tracker



## *Team Retrospective Survey and Report*

### Group 11

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## 1 Executive summary

The need that this project address to solve is to create a website that will provide all the information available on rocket launches for enthusiasts and for people who don't know much about rocket launches. The reasoning behind this is because rocket launches to space are happening all over the world, all the time, yet many people do not know about them. The amount of worldwide rocket launches are large, so it's not very easy for people to collect information about rocket launches schedules and locations with just one application; rocket launches are also highly weather-sensitive, so schedules of launches becoming out-dated is quite normal. In order to solve these problems, we created this project to design an application helping people to learn about rocket launches, obtain rocket launches updates easily, and schedule a visit accordingly.

To accomplish this we built a website that aggregates data about launches all over the world and lets users know when these launches are happening and what their mission is. We accomplish this by using an API called Launch Library which is constantly updated with new information regarding upcoming and historical launches. We take the data from this API and display it on a map so that users know where launches are happening and then display a variety of information such as when it launches, how long until launch, and we even provide a video of the launch if one is available. For each launch we also display weather data so that users can determine if they want to go to watch the launch in person or not. On a separate page we also display the latest news that pertains to the spaceflight industry so that users can stay up to date on the latest happenings.

Though our product has several major differences from our initial design it still achieves its intended purpose. One might argue that it achieves more than initially intended as we added several features after conducting user studies and usability testing. Our testing mosting included the developers perusing the site and inputting a variety of search parameters as well as sending the site to several close acquaintances. These tests resulted in many changes being made to how information is retrieved and displayed on the site. Our user studies were also vital in improving the design of the site as the users suggested several features that we had not thought of such as limiting searches to a particular country and some layout changes that made our site more accessible to users with disabilities.

Overall our team was managed well and for the most part the project stayed on track. There were several times where we slowed down and fell behind compared to our burndown chart but we often picked up the slack in a burst of work. Our communication was clear and everyone was well aware of what tasks they needed to complete in order to keep us on track for project completion.

## **2 Project overview**

This project designs and builds a web-based application named “Launch Finder” which provides easy access to rocket launches relevant information such as launch schedule, locations, weather conditions, and passed launches, so users can have a better understanding of rocket launches. There are four functionalities of this project: launch search by date and countries, launch locations display, launch information and weather display, and launch news display.

### **2.1 Needs statement**

Rocket launches happen all the time yet many people either cannot find them or do not know about them. Even still, rocket launches can get delayed due to weather or other factors. A single, unified platform is needed for rocket enthusiasts to receive updates and find rocket launches. For this to be able to happen, we have planned to combine APIs that would give you all the information that you need to go see a rocket launch or to learn more about them.

### **2.2 Engagement analysis**

In general, our team was able to finish the project and have most planned functionalities implemented. We are satisfied with the tasks organization, work distribution, and communication strategies. Our team usually has work finished ahead of the deadline at each sprint. The challenges were not all team members could master programming skills regarding HTML/Javascript and the use of API, which caused delay in some assigned tasks. Also, some planned functionalities were more difficult than our expectations, so we had to either give them up or switch to easier alternatives.

### **2.3 Product analysis**

Our final product turned out better than we had originally hoped. It had the majority of our initial desired features as well as some that we added in after we conducted our user study. The product itself functions wonderfully and has an excellent styling to it that makes it simple for users to use and understand. Throughout this project our team has become very familiar with using APIs and how to incorporate that into our javascript and HTML work. None of us had any prior experience using APIs and had really only used html, javascript, and css to create our personal websites. We are very excited to work on future projects that involve heavy API use and being able to apply our newfound knowledge of the technology. Our team did hit several speed bumps along the way with several features being more complicated than we originally expected that we ended up dropping from the product. We feel that if we were to build this product again we would be more vigilant in setting expectations and not giving up when something seems more difficult than originally anticipated.

### **2.4 Work and Work Effort analysis**

We are proud of what we accomplished. We enjoyed the tasks organization and work distribution. The burn down charts and Trello help us gain a clear understanding of what is expected and where we are in the process. Scrum meetings via Zoom and regular conversations through Slack help us communicate and exchange ideas. One of the improvements in communication is for each member to take into consideration some unforeseen circumstances and prepare ahead of time. Switching new devices, having Slack active in multiple devices, or not turning Slack workplace back in 315 class may cause failure in receiving notifications so that team members might miss important announcements and meetings. The other improvement in

communication is to organize announcements in Slack in a more clear and effective way, such as separate channels of important meetings schedule, upcoming deadlines, and the location of project materials, so that all team members will be aware of the project folder and due days, and not missing meetings to cause progress delay or other team members have to do extra work.

As a team, we did a wonderful job. For individuals, not all team members have the same amount of work done. Some team members might have less work done than others due to the lackness of relevant technical skills; the time distribution really depends on each individual, as some members can have more done in a relatively short period of time, while others might need more time to complete a not so complicated task. Overall, we always have our work turned in earlier than the deadline at each sprint, except for the first report. The original task distribution was that all members designed together, each member implemented one API, and at the end of sprint 3, all members worked together again on the final design/formatting. However, the actual timeline was slightly delayed that the original one, and one member had trouble finishing assigned tasks, so those tasks were distributed to other team members, so not all team members were able to contribute to the final formatting and design. Besides this, everything went well.

## **2.5 Future projects**

This whole project was a positive learning experience for everyone. Not everyone was familiar with web development and this project was a good introduction to it. Communication is of course, the most important part of a team when it comes to software development, and especially now with every aspect of our schooling being online. Communication and a group dynamic is often something that is built up over time as a group gets to know each other better. As we each become parts of more projects and teams, we may find that communication and building a positive group relationship becomes easier over time. The project and team management skills learned from this project are skills we are able to take to all future projects and future internships and jobs. The two skills that stick out the most are any experience gained from this project's development process and the previously mentioned communication skill. All these skills learned will be effective and necessary for our future success as Computer Science majors.

### **3 Final design**

#### **3.1 System design**

We designed the functionalities of the product before making design changes for the final product. For instance, we created a navbar and the search parameters so that we could then implement the Launch Finder API functionality. The whole process could be characterized as top down, because we planned out each phase before we created it and we distributed the tasks from basic functionality all the way to beautifying the design.

#### **3.2 Approach for design validation**

Design validation had two aspects, internal team testing, user and usability testing. Internally, design changes were discussed amongst group members and any observations that were made were brought up at meetings. If a feature was assigned to a group member, testing was mainly up to the creator of that feature as they designed it. However, in implementing that feature to the master branch, the functionality would have to be verified again to assure that it works as intended. This involved making sure the feature worked as intended and to make sure major bugs were avoided. For instance, by creating the search buttons, we had to verify that the correct buttons were implemented into the design and that we could correctly take the inputs in Javascript so that we could show the user the correct query of information.

In our user and usability testing, there were two phases. First a user story test, then a user study. For the user story, each team member interviewed either one or two individuals on the functionality and design of our product. How they interacted with the website was observed and questions over their process of discovery were asked in order to gauge how they felt about the product so far. Observations and good suggestions were made from this user story test. Next, we had a user study. This was done by interviewing another team from our CSCE 315 section. A similar method was used to discover how a user would interact with the website as the user test story. Each member was asked a series of questions as they interacted with the website. Questions pertained to how the user felt about the ease and usability of the design, and also asked for input on possible improvements or ways that the product could be improved or any possible features that might help or hurt the product. Again, the results were very helpful and some good suggestions for improvement were made.

#### **3.3 Updates from testing, usability testing, and accessibility**

The results from the user study and user story testing allowed us to make improvements to our website and pivot towards a more user friendly design. One of the main suggestions we had was to implement a landing page that provided information on what our website was and did. We innovated on this idea by adding a modal that a user could open that displayed information on how to use the website and provided a quick guide for new users. Another feature that we added based off of user testing was a “Search by Country” feature. We display a pin on a map for each launch and by being able to search for launches by a specific country, it makes searching on the map easier, and it also caters towards users that are in a certain geographic region that are either traveling or do not wish to travel. The next design changes are purely aesthetic and add to the design of the website. We received feedback that the map we use to display launch pins was disproportionately sized compared to the other features on the page. We were able to make a quick fix that changed the size of the map to a more agreeable size that did not drown out other features. The final design change that we made was related to our color scheme and being

accessible to color blind people. Our navbar at the time did not have a color scheme that was suitable for people with color blindness and our user study shed light on improvements we could make. We updated the navbar to a more comfortable design that was accessible to the color blind. Overall, our user testing was very helpful and offered some great suggestions that we implemented into our design.

The overall design from our Initial Design Proposal had some changes that we implemented because of our user testing, but we also made changes as we designed the website and made pivots. After comparing the Mapbox API and the Google Maps API, and seeing what our uses for the map would be, we decided to switch over to the Google Maps API. This was a much simpler API to use and allowed us to focus our energy on more important aspects of the project. As a result of that, one of our initial features was being able to click on a pinpoint on the map and show information on the desired rocket launch. We had difficulty implementing this with Google Maps, as we were only able to display the name of the rocket launch on each pin. The final changes from the initial design document were purely aesthetic design changes. Mostly related to how the information from each launch and news article was displayed on each page. We were able to innovate our product from not only our user testing, but also throughout our development as well.

As you read above, we made changes to the color scheme of our website to be more accessible to those with color blindness after some useful suggestions on our user testing. A user was using a helpful Google Chrome plugin that rated how accessible certain color schemes were, they were able to convey the information from the plugin which gave us good suggestions on appropriate color schemes. The next thing we did to help the disabled access our page was to make sure our website was screen reader accessible. The design and features of the website can be navigated by a screen reader. The design of the website is also mobile friendly, so any disabled person that has trouble using a mouse and keyboard can easily use the website on a touchscreen. These last two design features were both a result of our choice of design framework, Bootstrap, and a conscious decision during our initial design document. Our final product contains a user friendly design that is accommodating towards those with disabilities.

The design changes we made from user testing and those we made throughout our design process were critical towards us creating a good final product. The user testing provided good suggestions and allowed us to pivot in a positive direction. Any changes we made throughout the project were consistent with our initial project idea and problem needs. Any changes we made were suitable for those with disabilities. The changes we made throughout our project were positive changes that helped the overall design and functionality of our product.

## 4 User's Manuals

### 4.1 Navigating Between Pages

Navbar:

- Locates at the top of both the main page and news page.
- Shows the logo, site name and some tabs

Navbar (main page):



- Contains tabs “About”, “Find Launches”, and “Spaceflight News”
- “About” displays a popup window with basic information of the use of main page
- “Find Launches” leads you to the main page
- “Spaceflight News” leads you to the news page

Navbar (news page):



- Contains tabs “Find Launches” and “Spaceflight News”
- “Find Launches” leads you back to the main page
- “Spaceflight News” is highlighted and shows where you are
- Click on the logo can also go back to the main page

If the user is on mobile the menu will be condensed and show a button to toggle the menu open and closed.

### 4.2 Find Launches Page (main page)

#### 4.2.1 Search form

## Search for Launches

☐ Upcoming Launches ⓘ




☒ Previous Launches From:  ⓘ To:  ⓘ

Maximum Number of Launches to Display  ⓘ

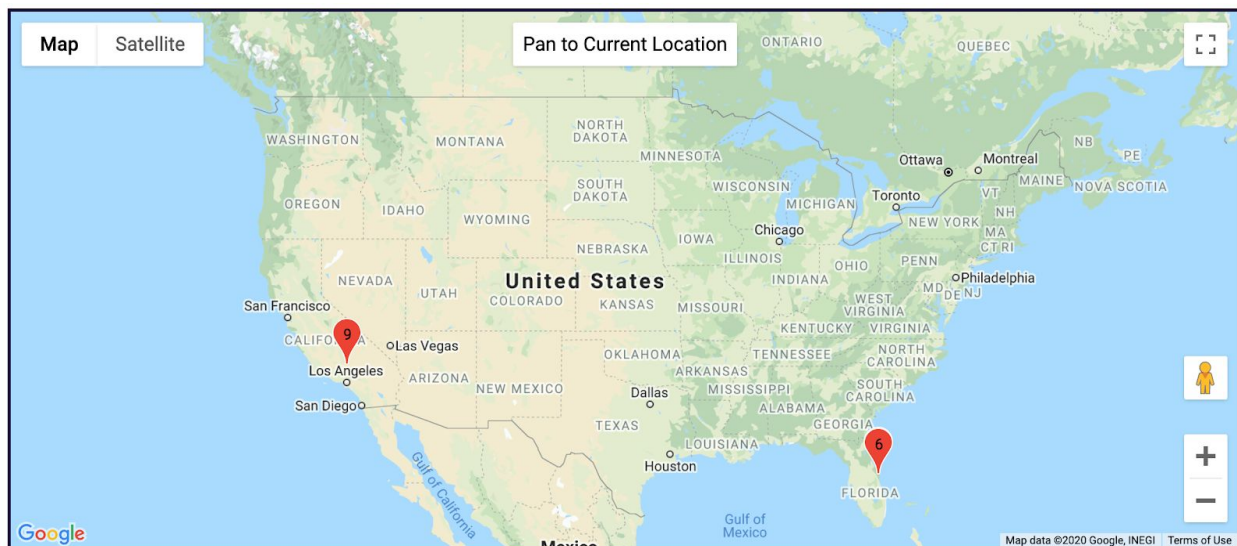
☒ Limit to launches from/by  ⓘ



At the top of this page below the navbar users will find a form where they can provide several inputs to determine what kind of rocket launch information is shown. The first and most important input a user can provide is selecting between **upcoming launches** and **historical launches**. If a user selects historical launches then they will need to select **two dates** that they would like to search between and input them into the date boxes. The next selection a user makes is the **number of results** they would like to display. Users can choose to display as little as one launch or as many as 100 launches. Below this users will see a checkbox and a dropdown menu containing the names of several **countries**. If a user decides to mark this checkbox then the results will be limited to whichever country they have chosen from the drop down menu. Once a user has selected their parameters they can click the **“Search” button** to execute a search. An example input would be upcoming launches with a limit of 5 where we only want to see launches from/by Japan. Another example would be displaying launches between June 1st, 2015 and July 1st, 2015 with a limit of 50 and no limit on country. This second example would only return five launches as those were the only launches to happen within this time period. There is a small black icon with the letter “i” at the end of each option; move your mouse to the icon for important information.

☒ Previous Launches From:   To:    Shows launches happening between two dates

## 4.2.2 Map



Below the search form, users will notice a map containing several markers with numbers on them. The number on each marker corresponds to the number next to the mission name on the launch information cards below the map. Each marker represents a launch pad where at least one launch is scheduled. If a launch pad is home to more than one launch then the marker will display the number of the first launch occurring from that site and then a “+” after that. If a user places their mouse over the marker they will see a tooltip showing the mission name and number occurring at that site. The map is automatically centered over the United States a user may manipulate the map in several ways. The first way is that a user may click the button located at the top of the mapbox that says “Pan to Current Location” which will then ask the users permission to see their location and center the map there. Next a user may use their mouse to

drag the map and move around along with using the control key in addition to the scroll wheel to zoom the map in and out. The final way a user can manipulate the map is using the arrow keys to move around and the “+” and “-” keys to zoom in and out.

### 4.2.3 Search result



**Mission(1):** Gonets-M30, Gonets-M31, Gonets-M32

**Launch Provider:** Russian Space Forces

**Rocket Type:** Soyuz 2.1B Fregat-M

**Launch Time:** 11/24/2020 6:00:00 PM

**Launch Site:** Plesetsk Cosmodrome, Russian Federation

 Clouds 32°F / 0.0°C

**Launch Pad:** 43/3 (43L)

[Description ▼](#)

Launch in 0d 3h 57m 54s



**Mission(2):** Chang'e 5

**Launch Provider:** China Aerospace Science and Technology Corporation


**Rocket Type:** Long March 5

**Launch Time:** 11/24/2020 6:00:00 PM

**Launch Site:** Wenchang Satellite Launch Center, People's Republic of China

Below the map lies the majority of the information that a user is likely to be seeking. A user should see two columns of cards that contain the information about launches that were returned using their search parameters. At the top of each card users will find an image related to the launch and below that the mission name and number. Below this information users will find who the launch provider is, what type of rocket is being used, the time of the launch, the launch site and launch pad it is occurring from, a button to display a description of the mission, an embedded video of the launch if it is available, and finally a countdown if the launch has not occurred or a status of the launch such as success or failure if it has passed.

### 4.3 Spaceflight News Page




**Telesat and Loral to form Canadian public company**

Canadian satellite fleet operator Telesat and Loral Space & Communications announced plans Nov. 24 to combine to form Telesat Corp., a Canadian public company, in a deal expected to close next year.

[Go To Article](#)

Last Updated: 11/24/2020, 11:15:41 AM

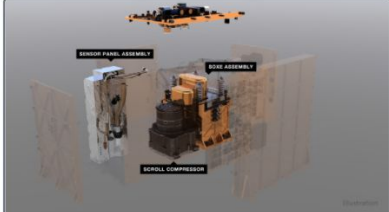


**Starship SN8 ready for final testing ahead of flight**

Following a slightly convoluted engine testing campaign, Starship SN8 is set to finalize its pre-flight requirements with a triple Raptor Static Fire test on Tuesday. Should this test go to plan, the path will be cleared for SN8 to conduct a test flight to 15 km (50,000 ft) as soon as November 30.

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Last Updated: 11/24/2020, 11:05:43 AM



**MOXIE Could Help Future Rockets Launch Off Mars**

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Last Updated: 11/24/2020, 11:27:30 AM



**Germany to become the first foreign military buyer of U.S.**

On this page, users can find the latest news in the spaceflight industry. Each article has an associated card that contains an image, the title, a brief summary of the article, a link to the news site, and a time and date stamp of the last time the article was updated.

## 5 Project debriefing and survey

### Trevor

1. Provide a thorough discussion of your *team management* style. If you were to do the project again, what would you do the same, what would you do differently?
  - a. Overall, the team management style was good and I would not really change much if not anything. We were able to communicate over a Slack channel for any project needs, and for the most part, aside from a few instances, group communication was effective enough for us to finish each phase of the project. We kept tasks remaining and assigned them to each group member on a Trello board. We implemented this on Sprint 2 I believe, and although I did not know about Trello at the time, if I were to do the project again, having a Trello board or something similar is very effective for delegating tasks and having an idea of what remains for the project. We kept all of our code on Github which is a good place to keep our updated code. Due to my experience with Github and not understanding how branches work, version control was slightly confusing to me. However, this is just a personal issue, and pushing everything to master and communicating with the team when pushes were made was not an issue. Overall, would not change much for the team management style if I had the opportunity to do this project again.
2. Are there any particular *safety*, *security* and/or *ethical* concerns with your product(s)? What steps did your group take to ensure these concerns were addressed? Are there any additional steps you would have taken if you were to do the project again?
  - a. We did not really have any safety, security, or ethical concerns with our product. Our website allows users to find information on rocket launches and any news related to spaceflight. Our website does not implement user accounts or have any non-public information that would raise any of the previously mentioned concerns. It would have been interesting from an educational standpoint but not a usability standpoint to implement users into the website. Overall our product did not warrant any safety, security, or ethical concerns.
3. Describe the position your product is poised for. Examples include proof of concept, ready for funding and a full staff, A quick and easy app that is complete and could be put in the Apple Store or similar, etc.
  - a. Currently our product is free to use and the only way to monetize would be to use ads or have a paywall if we were to implement user accounts. The product is fully functioning as intended and could be implemented into a quick and easy to use app on a smartphone app store. There is not any practical reason to take this product farther than what it is right now, in terms of having funding, or having staff. Our current product is just a website with rocket launch search and spaceflight news search functionality and no further plans for extending the functionality for the website is apparent at the moment.
4. Was the project fun and interesting?

- a. Yes, I learned a lot and I was engaged throughout the entire process. From the initial idea, to the user studies, to actual development of the website, I enjoyed this project.
5. Did it provide opportunities to innovate?
  - a. Yes, we were constantly innovating throughout the design process, development, and user studies. Constantly thinking of ways to improve our product. We changed the design and held discussions on ways we could improve.
6. What went well? What didn't go well?
  - a. Design of the website went well. Some people had issues with their parts, but overall we did not have an issue with meeting our development goals. Group chemistry was slow at the start, but we were able to create a group dynamic that was comfortable for everyone.
7. What lessons did you learn that you would share with your team?
  - a. A lot of what I learned was related to communication skills and reinforcing my knowledge of web development. I would share that with my team.
8. What one topic do you want to make sure we address in the retrospective meeting?
  - a. Overall communication was good, but there were some points that were iffy.

## Michael

1. Provide a thorough discussion of your *team management* style. If you were to do the project again, what would you do the same, what would you do differently?
  - a. My thoughts on my team's management style overall we're pretty positive. If I were to do this again there wouldn't be that many things that I would want to do differently. The way our team approached handling management and scheduling meetings was very efficient and kept everyone on the same page. The only thing I would change would be to have more comments on the code so that it is easier to understand and It will make things faster to add on to it.
2. Are there any particular *safety*, *security* and/or *ethical* concerns with your product(s)? What steps did your group take to ensure these concerns were addressed? Are there any additional steps you would have taken if you were to do the project again?
  - a. There wasn't really any safety, security, or ethical concerns involved with our project except for our website not being http secured. The steps we took in order to not have these concerns was by designing a website that won't ask for any sensitive information. Besides that, there aren't any additional steps that I would have taken if I were to do the project again.
3. Describe the position your product is poised for. Examples include proof of concept, ready for funding and a full staff, A quick and easy app that is complete and could be put in the Apple Store or similar, etc.
  - a. Currently the position our project is poised for is as a fully functioning web application. Proof-of-concept would be that you can access it and test it out for yourself on the web. For it to be implemented as an iphone application it would need to be written in a different programming language, but the overall design concept can still be used.
4. Was the project fun and interesting?
  - a. Yes the project was fun and interesting
5. Did it provide opportunities to innovate?



- a. Yes the project provided opportunities to innovate
- 6. What went well? What didn't go well?
  - a. What went well was that we were able to finish designing our project. What didn't go well was not being able to implement all of our ideas into the website.
- 7. What lessons did you learn that you would share with your team?
  - a. The lesson that I have learned is how to make a web application using JavaScript.
- 8. What one topic do you want to make sure we address in the retrospective meeting?
  - a. The one topic I want to make sure we addressed in the retrospective meeting is our final demo.

## Emory

1. Provide a thorough discussion of your *team management* style. If you were to do the project again, what would you do the same, what would you do differently?
  - a. Our team uses Trello and burn-down charts to organize tasks and track progress. The communication tools we used were Zoom and Slack. Google drive is where we organize all project materials other than source codes, and we have organized it into 4 different folders: one report folder and three sprint materials folder; all folders contained corresponding templates at the beginning of project process. Codes were kept on Github, so we could track all updates easily. LiveMache worked as a large white paper to display all things at once; we used liveMache for presentations.
  - b. If I had a change to do the project again. I would keep all things like this, the only improvement is to make all channels in Slack more organized (such as organize channels according to content instead of sprints) to clear out members' confusions.
2. Are there any particular *safety*, *security* and/or *ethical* concerns with your product(s)? What steps did your group take to ensure these concerns were addressed? Are there any additional steps you would have taken if you were to do the project again?
  - a. I believe there is no need to concern safety, security, or ethical concerns in our product. Our website simply gathers some information about rocket launches which are permitted to show the public. We access all data through licensed APIs. All pictures that we used have permission to access. I don't think there are additional steps that I would have taken if I need to do the project again.
3. Describe the position your product is poised for. Examples include proof of concept, ready for funding and a full staff, A quick and easy app that is complete and could be put in the Apple Store or similar, etc.
  - a. Our product is fully functional and doesn't need much maintenance. Since all data is accessed through API, if the API is down, then our website can't display all features functionally. However, our product is not ready to be put on the market yet. Currently, we have limited access to launch information data, since the launch API takes extra charge to upgrade.
4. Was the project fun and interesting?
  - a. This project is definitely fun and interesting. I have never heard of API before and now I have at least some knowledge of using it and understand how powerful it is.
5. Did it provide opportunities to innovate?

- a. This project offers a large degree of freedom to innovate. However, not all good thoughts can be implemented at this point; some are too difficult to achieve, and some would take way too long to implement.
- 6. What went well? What didn't go well?
  - a. In general the whole project went very well, even though we had to make adjustments to some initial designs, the final project came out very good. There is something that didn't go well in my part. I had trouble implementing an API call inside another API call, and this caused the assigned tasks that were supposed to be done in early Sprint 2 didn't accomplished until the very end of Sprint 3. The other thing went wrong was that I totally rely on Slack notifications and automated sent emails instead of checking Slack itself. I just found out that Slack has a feature of turning automatic emails off whenever users turned on notifications on mobile devices. I also turned notifications on in my laptop, iPad, and phone, then Slack automatically switched to the mode that only sends notifications when Slack is open. This caused me to miss important announcements and therefore missing important meetings. Most of the time, tasks are distributed during scrum meetings, and since I didn't attend, I didn't get work assigned at the end of Sprint 3 and other teammates had to do my part of the jobs.
- 7. What lessons did you learn that you would share with your team?
  - a. Make sure you check the communication tools themselves instead of relying on notifications and automated sent emails. There are many unforeseen circumstances that might cause a failure in receiving notifications. Also, maybe it is a good idea to have alternative communication methods for future team work, such as phone number and email; whenever one method won't work, the other methods should help.
- 8. What one topic do you want to make sure we address in the retrospective meeting?
  - a. The future maintenance of the website.

## Ryan

- 1. Provide a thorough discussion of your *team management* style. If you were to do the project again, what would you do the same, what would you do differently?
  - a. As team manager I organized all of the tasks we needed to complete onto a Trello board for easy management. This allowed us to easily label things as done, to-do, and in-progress so that we could easily glance at an item and see its status. It also allowed us to assign team members to specific tasks so we knew who was working on what as well as commenting on the tasks in case there was any specific info pertaining to a task. While Trello was nice to use during development it was a hassle while writing our reports. Any time we had to put our backlogs in a report I had to manually copy over the tasks, time commitment, and team member assignments. This often left me doing this menial task while the rest of the group answered the more important questions. If doing this again I would still use Trello but I would likely combine it with a spreadsheet containing most of the same information for easy use in official documents. For communication between the team we used slack and zoom. This was nice but there were also several instances of a meeting being scheduled and a team member not seeing the message. I don't know what changes we could have made to prevent this other

than be vigilant in checking the slack for important messages. For our code we used Github for version control and so that every member could maintain easy access to the latest updates to the code. We had several instances of work not being merged properly and important pieces being deleted and having to get remade so I would like if in redoing this project we made better use of branches so that this did not occur.

2. Are there any particular *safety*, *security* and/or *ethical* concerns with your product(s)? What steps did your group take to ensure these concerns were addressed? Are there any additional steps you would have taken if you were to do the project again?
  - a. We did not really have any concerns with our product. No user data is kept anywhere and any searches a user makes is sent directly to the APIs. As for ethics all of the data we are accessing is public domain and kindly aggregated for our use through our APIs. I wouldn't say we really took any steps to address issues as we never really saw any such issues come to light. If we had seen such issues I am positive we would have taken the proper steps to mitigate any risks associated with the safety, security, and ethics of our product.  
One thing that could be an ethical concern is the fact that our website displays information regarding Chinese rocket launches. This is a concern as the Chinese space program has and continues to drop rocket stages on Chinese villages which ends up killing the residents. If we were to take any steps regarding this it would be to just not show these launches but I feel that it is better to raise awareness for the ethical concerns caused by them than to hide them from the world.
3. Describe the position your product is poised for. Examples include proof of concept, ready for funding and a full staff, A quick and easy app that is complete and could be put in the Apple Store or similar, etc.
  - a. At the moment our product is fully functional. It currently contains all the major features we intended to add as well as all but a couple smaller quality of life features. The way the product is right now it is published online and should need no maintenance besides ensuring that the APIs we are using do not become deprecated. The only major thing that the site could still use is some adjustment to how the launch information is being gotten. The API we are using currently only allows 15 queries per IP per hour. This severely limits the usability of the site. If time permitted I would have liked to have built some sort of system that only queries the API every five or so minutes and updated a copy of the database stored locally. This means our users could have unlimited access to the data our site provides. Other than this one feature our product is ready for market.
4. Was the project fun and interesting?
  - a. This has been my favorite project that we have done all semester and it has given me a newfound respect for web design whereas before I absolutely despised it.
5. Did it provide opportunities to innovate?
  - a. I feel I was given many opportunities to innovate although most of that I was unable to accomplish due to time constraints.
6. What went well? What didn't go well?
  - a. The project as a whole went very well and I am pleased with the final product. We had some hiccups in the teamwork area but other than that everything was good.



7. What lessons did you learn that you would share with your team?
  - a. I learned a lot about teamwork and managing a large project. More than that I learned a lot about javascript as I was very unfamiliar with it prior to this project.
8. What one topic do you want to make sure we address in the retrospective meeting?
  - a. Making sure all team members are pulling their own weight and that the majority of the project doesn't get put on one or two people.

## 6 Appendices

Retrospective Meeting:

Where: Zoom

When: 11/23/2020 7:30pm

Participants:

- Ryan Parker
- Trevor Staebel
- Emory Lu
- Michael Mengistu

Agenda:

1. Talk about what went well
2. Talk about what went wrong
3. Talk about what we learned
4. Talk about how we felt the project went overall
5. Work on report