



Noroff
School of technology
and digital media

Technical Report

PROJECT EXAM 1 CA

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SUMMARY

This report is reflecting on the microsite created for SpaceX to raise awareness about space program activity around the world. The process is described from planning and research, design, development, testing and implementation of the final product.

The microsite is built for the target group of female students around the world in the ages between 20-30 years old. The target group was carefully selected based on the research for the project. The design is made user-friendly by being consistent, simple and with necessary affordances and signifiers targeting the personas created based on inquiry-based interviews. The goal has been for users within the target group to easily access information while ensuring good user experience and interaction with the microsite. The users should remain in a state of flow on all devices and screen sizes when searching for specific information about space technology and linking to other relevant pages for further reading.

The microsite is SEO and WCAG optimized and does not contain any unnecessary information, and the goal is to keep the user in a state of flow when searching for specific information about space technology and linking to other relevant pages for further reading.

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INTRODUCTION

The assigned project was to build a microsite for SpaceX or NASA to raise awareness about space program activity around the world. The most important aspect to consider when approaching this project, was defining the specific target group in order to build a microsite that appeals to the users of the final product. After identifying the target group, I focused on what information to display, what links to add, and how to build the feed of launches in order to make the site appealing and user friendly for this target group.

During the research process, I decided to build the microsite for SpaceX and include the content that the volunteers from the inquiry-based interviews focused on during their exploration of space related websites.

This report is reflecting on the process and choices made within the planning and research phase, to design choices, development process and structure of code to the implementation, testing and rollout phase.

MAIN SECTION OF REPORT

Planning

The planning process started with investigating the official websites for both SpaceX and NASA in order to decide which of the following I would create a microsite for. During the research I was looking for interesting features, presentation of information, design, layout, content strategy, navigation, the use of colors, typography and visual representations.

I made note of the following similarities between the websites:

- Dark color usage in different shades of black, grey and blue - mostly in contrast to white.
- Massive visual representations in form of images from space, rocket ships and astronauts in spacesuits, illustrations and animations of the rockets, the systems and takeoffs etc.
- The typography is consistent, easy to read and in good contrast between headings and body copy.

I also made note of the different ways of displaying information between the websites:

- NASA's website is presenting a lot of information in combination with a lot of text and visuals and little white space that makes it seem cluttered and similar to an online newspaper – this makes me rate the content strategy lower than what I would have wanted from such a big organization (which also tells me that I might not be in line with their target audience). The headlines are not standing out, but rather small enough to avoid the user to focus on it instead of the content.

However, the navigation on the website is good and uses breadcrumbs which makes it easy for the user to navigate while knowing how to go back and where to

go next. The navigation's position is also fixed/sticky which makes it easy for the user to access it anytime.



Figure 1: NASA - breadcrumb navigation

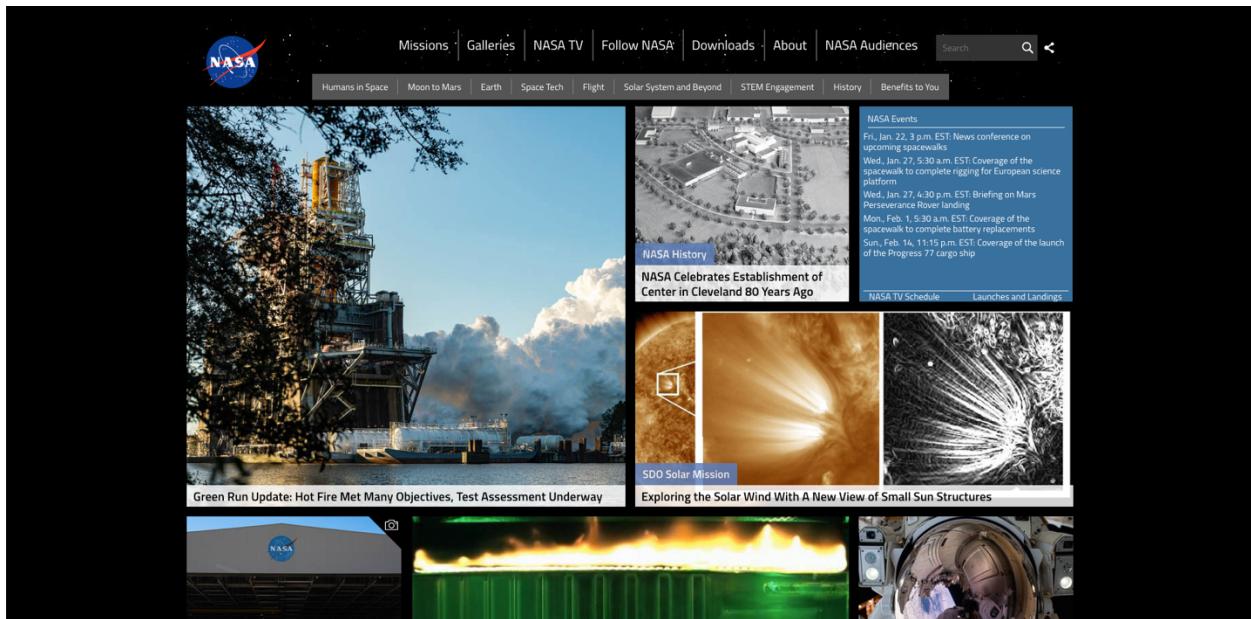


Figure 2: NASA - Presentation of information

- SpaceX's website is very simple and neat with a clear content strategy. There is a lot of white space either in form of a background-color or images. Headlines are massive and draws the user's attention right away. The text is kept short and images are large and evenly spaced out. It's easy to navigate in the menu and get an overview of the short presentations of different topics and to explore further only into the topics of interest. I would like to have seen a better way for the user to know which page they're on, how to get back to the previous step and how to quickly reach back to the top of the page as there is a lot of scrolling on the pages.

However, they have implemented a DOM manipulation of displaying the navigation on up-scroll after the user hits a certain point down on the page.

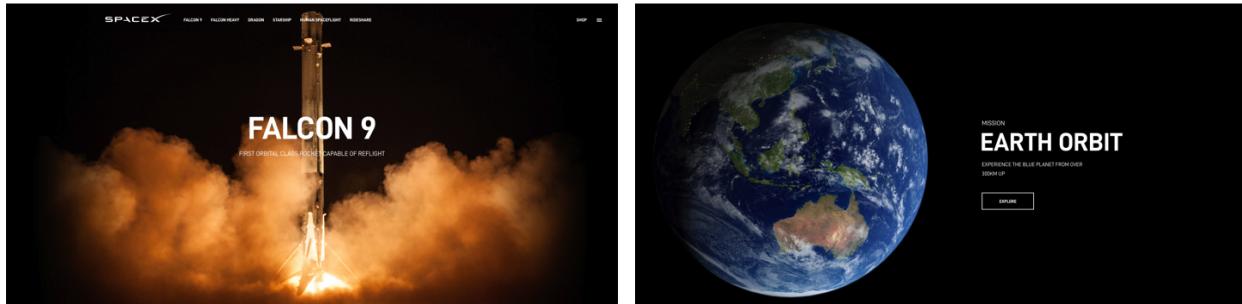


Figure 3: SpaceX - Headings, short descriptions and Explore-buttons

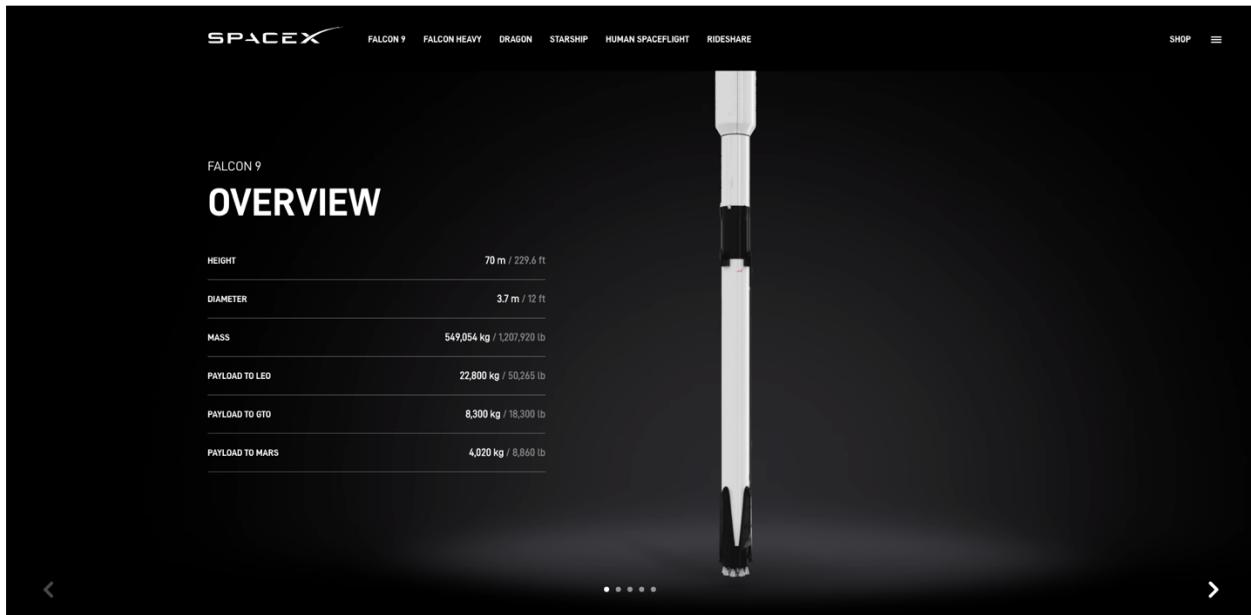


Figure 4: SpaceX - Presentation of information and navigation

After investigating the websites, I decided to create the microsite for SpaceX as I liked the design, content strategy, presentation of information, use of visual representations, typography, colors and contrasts from this website better. Further into the project, my design choices will be based off of the findings from SpaceX in order for the users to feel

as if they are browsing a microsite that is actually a part of SpaceX – even though the domain is separate.

Gantt Chart

I created a Gantt chart to easily keep track of my process throughout the project. The chart was created with the application Monday from Monday.com and is presented in the “Gantt chart” view in the application. Most of the planned activity did follow the plan, but things like the development process including development testing got extended which shortened the production testing period. However, this was ok as I caught most of the bugs when developing instead of after the rollout.

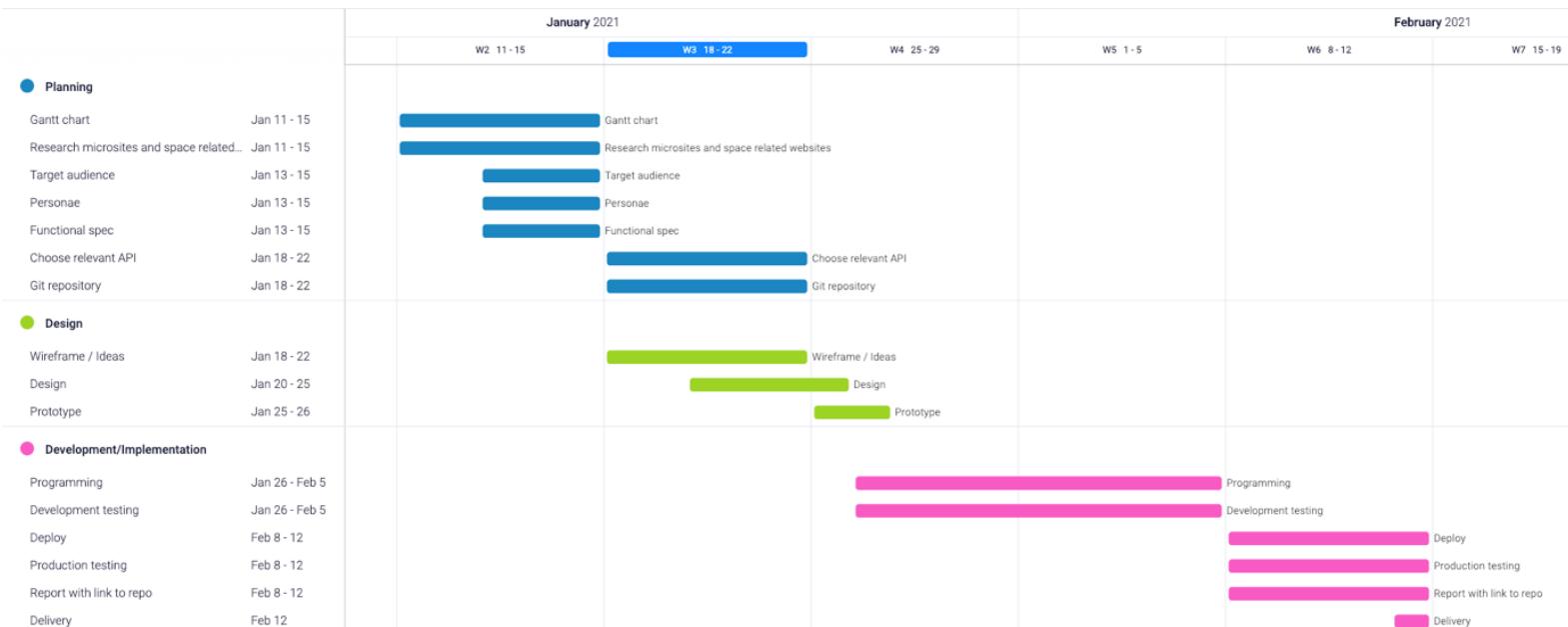


Figure 5: Gantt chart created using Monday.com

Target audience/research

As target audience, I selected female students around the world in the ages between 20-30 years old. I selected this target group after doing some research on groups around the

world that were the least involved/interested in space technology. My findings are pointing towards women being one of these groups, with a general focus amongst space enthusiasts trying to change this around. Combining women with students in a certain age group makes it easier to shape the design of the page to better accomplish a good user experience for this group.

According to Wendy Whitman Cobb [1], NASA signals a new focus on the role of women in space exploration as there is and has been a huge gap between gender involvement in space exploration. Also, according to the article “Communicating with multiple audiences in space advocacy” [2], the author suggests that marketing space technology to women (amongst two other groups) are the greatest potential for expanding the awareness of the movement because this is a group that has been rarely observed at space advocacy.

Some of the key suggested strategies to reach the audience of women includes:

- *Avoid condescension* – which basically means not “dumbing” the information down by assuming women knows nothing about the topic.
- *Invite them in* – not by making the page pink and sparkly, but by presenting information that women find interesting and keeping them in a state of flow.
- *Make it relevant* – Find the key points that makes the microsite relevant and avoid presenting in depth information about irrelevant information.

Graphic design

As mentioned in the planning process, the choices in this chapter are based off of SpaceX’s design choices in order to make the target audience feel as if they are browsing a microsite directly from SpaceX.

Design principles

I have focused on making the website as user-friendly as possible by avoiding clutter and unnecessary information for the users. The general appeal of the page is good and easy to navigate. The design is consistent with how the content is presented, spacing, pictures and information. I've used headings and sub-headings, images, and the navigation to help the users quickly orientate themselves on the page. All icons used on the website are from *Icons 4 Design* plugin in Adobe XD, except for the SpaceX logo from World Vector Logo [3]. The images are linked directly to SpaceX's Flickr account [4] that are free for public use, in addition to images from unsplash [5] and freepik [6].

I'm satisfied with the design and the feedback from my volunteers in this project that confirmed that it indeed did appeal to the target audience. As I have focused on not displaying too much information about the technology, I have added links for the users that are interested in reading more about it on SpaceX's official website.

Typography

For the typography I chose to find a font-family that was similar to what SpaceX uses on their page. I ended up with the two sans-serif font-families 'Roboto' and 'Lato' from Google Fonts [7]. I started by selecting Roboto as it was similar to the 'D-DIN' font used by SpaceX and ended up with selecting 'Lato' that were one of the selected compatible fonts. The selected typography makes the text easy for the users to read as it is very simple and elegant.

Color

The page mostly consists of the colors black (#000) and white (#fff) as these are the colors used in SpaceX's official website and the fact that they are very good at contrasting each other for better readability. Other colors used in the contact form, errors and launches

page are green (#24C564) to symbolize a successful action or launch, and red (#E66E6E) for failed launches and errors. I've also added #grey to the footer copy-field and "Launch to top"-link for some variation in color-use on links.

I checked the red and green color codes up against each other and the black and white colors on "Coloring for Colorblindness" by Nichols [8] to simulate how the colors would look like to viewers who are colorblind and make sure that they were in contrast to each other.

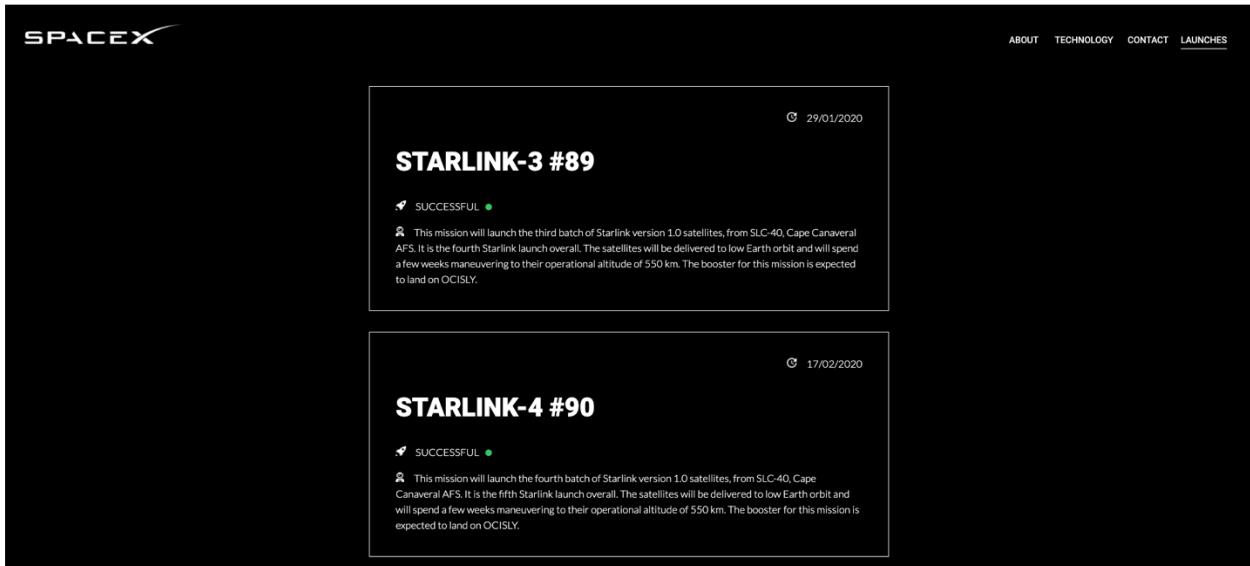


Figure 6: Use of color to visualize successful flights

Interface Design

Inquiry-based interviews

In order to create personas, I found two volunteers for my project to perform inquiry-based interviews on. For the interviews I prepared the following websites for the users to explore while I was observing them:

- nasa.gov

- spacex.com

I also prepared questions to ask/get answers to through their actions in order to understand the user's goals, motivations and concerns about using the websites:

- What are the users interests? (Mainly to understand if the user is interested in space technology, and if so – on what level is their interest?)
- In what setting are the user browsing a website about space launches/missions?
- Which website is the user's choice?
- What attracts the user to the specific site/article etc.?
- What type of information are you looking for when exploring space technology?
- How is the information structured to keep the viewers interest?
- What does the user see as concerns/distractions on the website?

Important findings from the inquiry-based interviews

- None of the users were very interested in space technology, but both were curious on learning about the topic. Information therefore needs to be presented short, to the point and on a surface level rather than presenting in depth details about the rockets.
- The users are browsing for information either in relation to school projects, to find simple facts, to learn how space technology can impact human life or to look for job opportunities and possibilities to travel to space themselves.
- Both users were only familiar with NASA before exploring the two websites. After exploring they both felt that SpaceX presented the information in a better way than NASA and that NASA had more interesting information that went beyond rocket technology than SpaceX.

- The users seem to be attracted to headings with known words/information, images, animations, links and videos.
- The users are looking for information through headings and images that relates to the following keywords: “Humans in space”, “Crew members”, “Living in space”, “Opportunities”, “Astronauts”, “Mission”, “Sustainability”, “Launches” and “Landings”.
- The information needs to be structured in a simple navigation, headings that are big and draws attention, short text with a lot of white space and the possibility of reading more through clicking on links/buttons, large images, animations and videos.
- The main concerns discovered were cluttered information on pages, too much text, less interesting images, and social media content mixed in with articles.

In order to ensure the functional requirements for the users, I created a User Story with the following summary: “As a female student, I can explore space technology on a microsite for SpaceX to gain new knowledge and explore easily accessible information about space program activity around the world”. The user story was broken down into sub-tasks based on the findings from the inquiry-based interviews:

- Display a live feed of launches.
- Display information about humans in space.
- Present the mission in order for users to understand what the organization does.
- Brief information about the space technology used in SpaceX with a focus on sustainability/reusability.
- Present/link to opportunities to get involved with SpaceX.
- Link to relevant social media accounts for users to further explore.

Personae and Scenario

After performing the inquiry-based interviews and analyzing the notes, I drew storyboards to create scenarios and built the personas. The persona-cards with storyboards were created with Adobe XD. The storyline/board is created by using *Brooklyn illustrations* icons with *Streamline* plugin to create the feeling of what is happening while the personas are exploring space technology. The storyline is included in the persona-card to make a more interesting “full-picture” of the personas.

The persona illustrations are created with *Humaaans Illustration* plugin to create a better visual representation of a real person when considering the users for further design and content choices.

JADE

PERSONA #1



The user is a 26 years-old female midwife student looking for information for a school project that hopefully will lead to some interesting findings that will lead her on to investigating further beyond the project.

USER GOALS

- Find information about space for a school project
- Become curious and gain new knowledge
- Intuitive website with easily accessible and understandable information
- Watch visual representations

USER CONCERNS

- Social media content mixed with other content about space
- Messy design, layout and structure of the page and navigation

INTERESTS

- Anatomy, biology, human science, sustainability, workout, sports, health
- Space technology: low

SCENARIO: THE FOCUSED YET DISTRACTED STUDENT



Figure 7: Persona/Storyboard #1

LOLA

PERSONA #2



The user is a 30 years-old female Information Technology student constantly in a hurry. She is looking for random facts about space technology and possible job opportunities or other types of involvement/projects to explore.

USER GOALS

- Browsing for information while on-the-go or in a hurry
- Find possibilities/opportunities to join the space technology work
- Intuitive website with relevant information
- Watch visual representations

USER CONCERNS

- Poor design and structure
- Links/buttons without function
- Ads or other irrelevant content

INTERESTS

- IT, environment, sustainability, animals, wildlife, workout, healthy lifestyle
- Space technology: medium

SCENARIO: ON-THE-FLY MULTITASKING STUDENT



Figure 8: Persona/Storyboard #2

Affordances and Persuasion

In order to meet the target group and the specific personas, I decided to use the following types of affordances on the microsite:

- Pattern: The navigation bar, and the “home”-link on the website is attached to the logo in the top left corner as this is a pattern I observed from the users when exploring the websites during the inquiry-based interviews.
- Pattern/hidden: Hamburger-menu on mobile view for the on-the-fly user.
- Physically: 3D effects on buttons with contrasting colors and outlines.
- Hidden: Hover effects to indicate action when the users move the mouse over buttons and links as a feedback to invite interaction. “Take-me-to-top”-link with the phrase “Launch to top” next to a spaceship icon that is specifically targeted for this audience.
- Explicit: Contact form with the submit-button that says, “Send message”.

As the microsite is not directly selling any items, but rather focusing on space technology with the intent to raise awareness about space program activity around the world, it has been important to me not to use any sales-specific persuasion techniques. Instead, I focused on tweaking the persuasion techniques we learned about in the Moodle lesson about Persuasion and Design Values in the Interaction Design course to keep the users interested and in the state of flow while browsing for information with the following techniques:

- Getting users to engage: Present information in a structured manner instead of having the user “do” too much. Buttons for “Read more, learn more or watch” has been included to engage the users in displaying more of the content they are interested in.

- Buyer's remorse: I've renamed this to "Message remorse" and inserted a message to the users after they've sent a message to avoid the possibility of anxiety and remorse of even contacting "SpaceX".

Positive and ethical product

The microsite is developed with a focus on being ethical and avoiding harming the user in any way. The website is targeting the personas as a reference to the target audience, the users can use the website regardless of their education and ability, it's containing products that are developed with a reusable technology, in addition to the clean design and easy navigation throughout the website that will avoid confusion and humiliation for the users.

I've also used feedback to invite interaction by visually representing the length of data inputs. The name, e-mail and search inputs are set to one shorter line and the message-input is on a wider and taller box to visually represent room for more text. The errors are made understandable for the users and required fields are pointed out.

Navigation

When designing the navigation, I kept the users from my research in mind to make sure it would benefit both the focused yet distracted student and the busy on-the-fly explorer. For both of these users it is important to know where on the page they are, what the next step is and to be able to easily access more information if needed, but also to quickly browse through the information that's not appealing to them. Keeping the information architecture in mind, the navigation is designed simple and easy to access with a sticky top-line for web view on scroll with a visual representation of active pages for the focused yet distracted student, and a commonly known hamburger menu on mobile view for the on-the-fly explorer.

I chose to create a hamburger-menu because that's what users would be familiar with from the SpaceX website and because it is more user-friendly for mobile view. For large screens I chose not to have the hamburger-menu because there are only four pages besides the homepage to choose from in the menu, so using a hamburger-menu here would only cause the users to use an extra click to find what they are looking for.

Wireframing and Prototyping

I created sketches and wireframes on paper before a simple prototype of the microsite in AdobeXD in order to be able to user-test the product before I started the development process. The user tests resulted in changing a few things on the layout in order to better meet the user's needs. After making the required changes, I started the development process of the microsite.

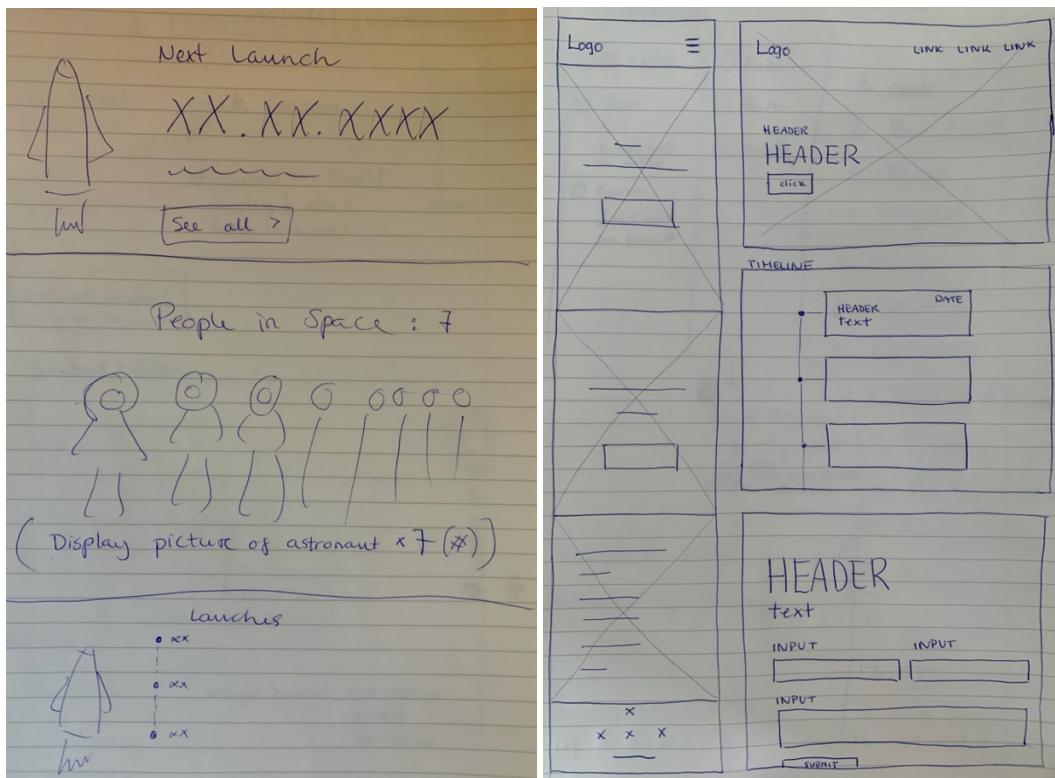


Figure 9: Wireframes/Paper sketches

SEO/Content Strategy/WCAG

According to Bureau of Internet Accessibility [9], SEO and WCAG overlap because websites that have good use of WCAG will rank higher on search engines like for example Google and YouTube. Having a good content strategy is also important in order to rank high on the search engines for the specific users within the target group.

When designing/developing for WCAG, it is important to keep users with disabilities and the principles of accessibility into mind. Here are some examples of considerations taken when developing the microsite regarding the principles of accessibility intertwined with SEO and Content Strategy:

- Perceivable: non-text content/multimedia has alt attributes, captions or other text alternatives. The content structure makes it easier for users to listen to text read out loud without jumping back and forth between topics.
- Operable: Users can easily navigate through the page and determine where they are without disruptive effect that can cause seizures. If the users cannot use a mouse, they can for example use the tab on the keyboard to navigate or use text readers. No text is therefore presented within images to strip this functionality from users.
- Understandable: The content strategy is designed for the target group and the created personas which makes the content appropriate, meaningful, short and simple and therefore understandable. The text is contrasting and easy to read. By the feedback given in the contact form and with the use of call-to-action buttons, the users are helped to both avoid and correct mistakes.
- Robust: The content behaves consistently and predictably regardless of device or platform due to the responsive support from designing for mobile first approach.

This is especially important as most of the users within the target group will likely use the mobile website regardless of disabilities.

The content strategy is also closely related to the information architecture, when focusing on the users' needs and logic sense in order to keep them in a state of flow. In addition to the areas described above, the information architecture and content strategy is considered in the following areas:

- Headings and content: Descriptive headings to make it easy to find relevant content and to be discovered through search engines. <h>-tags for SEO and ACWG optimizing and font size are considered to point out the importance of the content. The content is presented in a structured manner to make it easy for the user to read through, know where new content begins and current content ends.
- Call-to-actions is organized and presented where it's natural for the user to pay attention on the page.
- Understandable terminology is used, and a wordlist is added for more complicated terminology, especially keeping Jade, the focused yet distracted student in mind.

HTML/CSS: Semantics, structure

Hypertext Markup Language (HTML)

I started out by writing the HTML for the homepage (index.html) while focusing on it being neat, semantic and properly indented. I grouped elements into containers and boxes using div-tags with unique id's and classes that made sense for grouping purposes to further be used in the stylesheet. I made sure to structure the code according to hierarchy by using the h1 – h4 tags from most to least important titles. I built the nav and footer with unordered lists and added “active” classes for the links within the navigation to style with CSS.

After completing the homepage, I moved on to creating a js-file to fetch data from the API before I continued with the next HTML pages; Launches, Latest launch, About, Contact and Technology by reusing some of the written HTML for containers and boxes that would appear the same after styling. I made sure that every page got a unique title, one unique h1, and meta description for SEO purposes. For all images I added an alt attribute for descriptive alt text that is accessible to text readers. I also made sure to use specific words related to content strategy by keeping the target audience in mind.

When writing the HTML for the contact form, I did use attributes like “type” and “required” on inputs to prevent default behavior, but rather added divs for error messages that I targeted with CSS and JavaScript to validate the form.

Cascading Style Sheets (CSS)

I used external stylesheets for all of my CSS styling in addition to linking to an external stylesheet for typography by Google Fonts [7]. I decided to use multiple stylesheets for this project to keep the structure as clean and neat as possible. The navigation, footer and the contact form therefore got their own stylesheets separate from the main stylesheet for all other styles.

When writing the CSS, I designed for mobile view first and then I added media queries to change the styles for larger screens where the layout would break or needed to be presented in a different manner. I used flexbox [10] for the layout to switch between displaying row and column on responsive and web-view.

For the body, I added a property with its corresponding value “word-wrap: break-word;” in order to make sure no words would go outside of the screen width on mobile devices as I

am not in control of the titles/text when it's fetched from an API. I learned about this property from Codrops [11] when searching for properties to assist forced word-break or word-wrap.

I organized the styling from the most universal tags to most specific styles by targeting the body, typography and whole pages before working on unique layouts, tags and classes on specific pages or within specific divs. I used comments in the stylesheets to gather relevant styles and to be able to go back and change the code easily as needed throughout the process. Due to the DRY-principle, I focused on trying not to repeat myself in the code lines.

For general styling, I inspect the page to investigate the user agent stylesheet for the different tags and elements in order to remove any default styling that I don't want as a part of my design.

```
ul {                               user agent stylesheet
  display: block;
  list-style-type: disc;
  margin-block-start: 1em;
  margin-block-end: 1em;
  margin-inline-start: 0px;
  margin-inline-end: 0px;
  padding inline start: 40px;
}
```

Figure 10: Disabling styles from user agent stylesheet

Timeline

When styling the timeline for launches, I used a video on YouTube [12] for inspiration but decided to go for a simpler layout by just presenting the boxes underneath each other with a solid border. I chose not to use any border-radius on any elements to keep the same style of the layout throughout the page, which is also the effect used on SpaceX's official website.

Navigation



Figure 11: Navigation on mobile view, max-width: 812px

When creating the navbar, I used a CSS hack to create a hamburger menu [13] for smaller screen sizes, and a fully visible navigation for wider screens. I initially added a search bar to the navigation that I later removed because I decided that the need for a search bar on a microsite wouldn't be very pressing for the users.

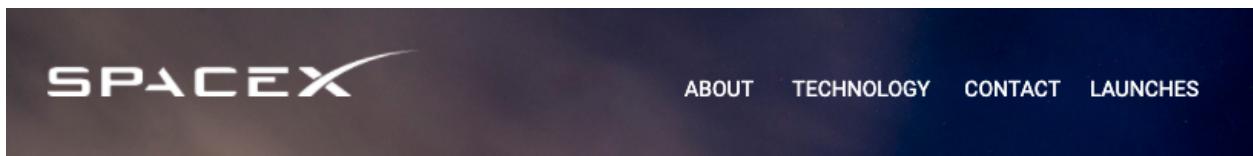


Figure 12: Navigation on homepage, min-width: 813px

In the navbar for screens wider than 813px when the hamburger menu is set to display: "none", I added a fixed position to the unordered list in the navigation. I targeted the individual items with the pseudo-class ":nth-child()" based on the item's position within the group of siblings to evenly space them out. In order to remove the background color without changing the layout, I targeted the <header> and set it to a height of 0. The scroll-function from the js-file will change this back to a black background on scroll.

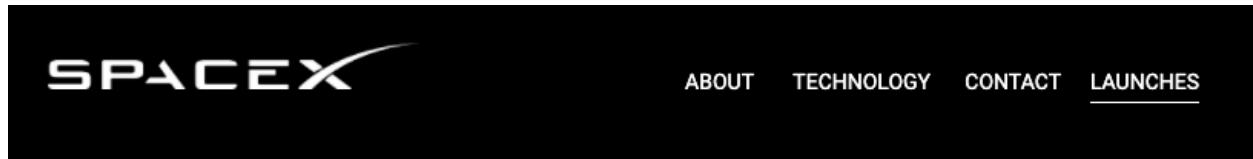


Figure 13: Navigation on active page (Launches), min-width: 813px

The “active” classes for the links within the navigation was styled with border-bottom to indicate to the user which page they are currently on, except for the homepage which is linked to the logo. I used the same styling for the “active” classes on the open hamburger menu to indicate which page the user is currently on when opening the menu to navigate to a different page.



Figure 14: Open hamburger-menu navigation on mobile view

JavaScript

I used JavaScript mainly to create functions to fetch results from space related API's, controlling the navigation and preventing default validation of the contact form. From the API results, I manipulated the DOM by presenting new HTML content and making the website more interactive with functions that added effects to actions like onclick and scroll.

Navigation

I created a function to add a fixed display to the nav for widescreen without a background to match the styling of the nav from SpaceX and decided to add a background to the nav on scroll because I found it lacking user-friendly styling when the background were transparent while scrolling over other text on the page. I therefore added a function to manipulate the DOM with a scroll event on the y-axis that only targeted the wide screen and kept the nav as it was with a black background on mobile view. I used the Moodle lesson about DOM concept in the JavaScript 1 course and supplemented with window object property “innerWidth” [14] to target the viewport in combination with the scroll height. I also increased the z-index in order to make sure the navigation would stay on top of other content on the page.

Form

I added validation by prevented default behaviour of the form by using “event.preventDefault();” and used the “trim() method” to remove spaces before and after characters in input values to avoid the form being validated when only typing in spaces. I did not set a required length of the inputs except for it having to be at least one character that is not a space. Error messages are set to “display: none” in CSS and then controlled with if-else statements in the js-file based on whether or not the input passed the validation.

I also used a regular expression to validate if the form input value for “e-mail” matched the certain pattern of an email address. An error will display if the entered input does not match this pattern. When preventing the default behaviors and adding my own validation to the form, I used what I learned in the Moodle lesson about Form validation in the JavaScript 1 course.

Fetching results from API's

How Many People Are in Space Right Now

API link: <http://api.open-notify.org/astros.json>

Description: I used a function to fetch the amount of people in space and further created a function that would run if the user clicked the button “Learn more” to see more details that would build the amount of <div>’s the amount of people in space and reveal the names of the humans in space next to an icon in addition to their current location at the ISS inside a table. When doing this I used what I learned in the Moodle lesson about Query String Parameters in the JavaScript 1 course where we had to build the number of boxes that matched the value selected from a drop-down list. I also added an if-statement to convert the location-name “ISS” to “International Space Station” to improve the user experience as the abbreviated name (ISS) isn’t necessary known for the users.

International Space Station Current Location

API link: <http://open-notify.org/Open-Notify-API/ISS-Location-Now/>

Description: I used a function to fetch the latitude and longitude of ISS that would run inside the “People in Space” function in order to use the location of the humans in space inside of the CreateHTML function.



HUMANS IN SPACE

There are currently 7 astronauts in space. Learn more about who they are and where they are located.

[LEARN MORE](#)

 Sergey Ryzhikov
 International Space Station
 -49.2436° N, 157.3268° E

 Kate Rubins
 International Space Station
 -49.2535° N, 157.3717° E

 Sergey Kud-Sverchkov
 International Space Station
 -49.2535° N, 157.3717° E

 Mike Hopkins
 International Space Station
 -49.2635° N, 157.4167° E

 Victor Glover
 International Space Station
 -49.2635° N, 157.4167° E



Figure 15: Results from Open notify API's "astros.json" and "ISS-Location-Now"

All SpaceX launches

API link: <https://api.spacexdata.com/v4/launches/>

Description: When presenting the response from this API, I chose to filter out any launches before year 2020 in order to meet the target audience as I didn't get the impression that they were interested in previous launches all the way back to 2006 from the inquiry-based

interviews. The launches are presented in a timeline with the date of the launch that I had to create for loop in order to make the dates readable for the users. I created sorting-filters to fetch the first and latest/upcoming launches as we learned in the Moodle CA delivery of filtering products in the Content Management Systems course. I had to add the Noroff CORS link to fetch this API.

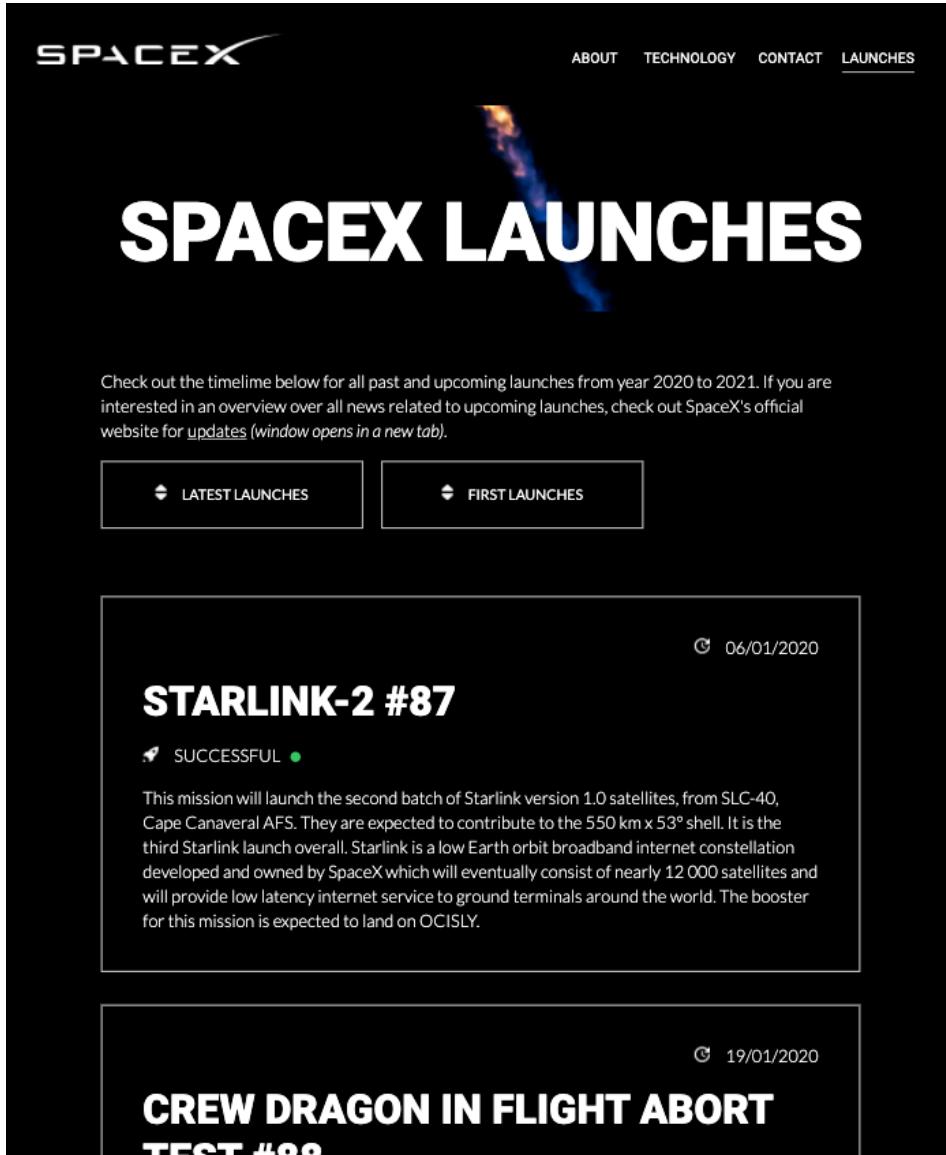


Figure 16: Results from SpaceX launches API

The latest SpaceX Launch

API link: <https://api.spacexdata.com/v4/launches/latest>

Description: I used the same date converter that I created for all launches on the results from the response to present the date of the latest/upcoming launch. I added another html-page to display the description of the launch and found a link to a video in the API that I used on the details page. If all results from the API had a video, I could have just fetched the video as a variable and added it to the createHTML function, but unfortunately this was not the case, so I decided to use a link to have some visual content to display to the user even if it won't be of the same launch that is described above. If I were to maintain this website regularly, I would have updated the video-link. I had the same dilemma for images as some of the launches had images, whereas others did not. I therefore decided to use an image from SpaceX's Flickr account in the header. I had to add the Noroff CORS link to fetch this API.

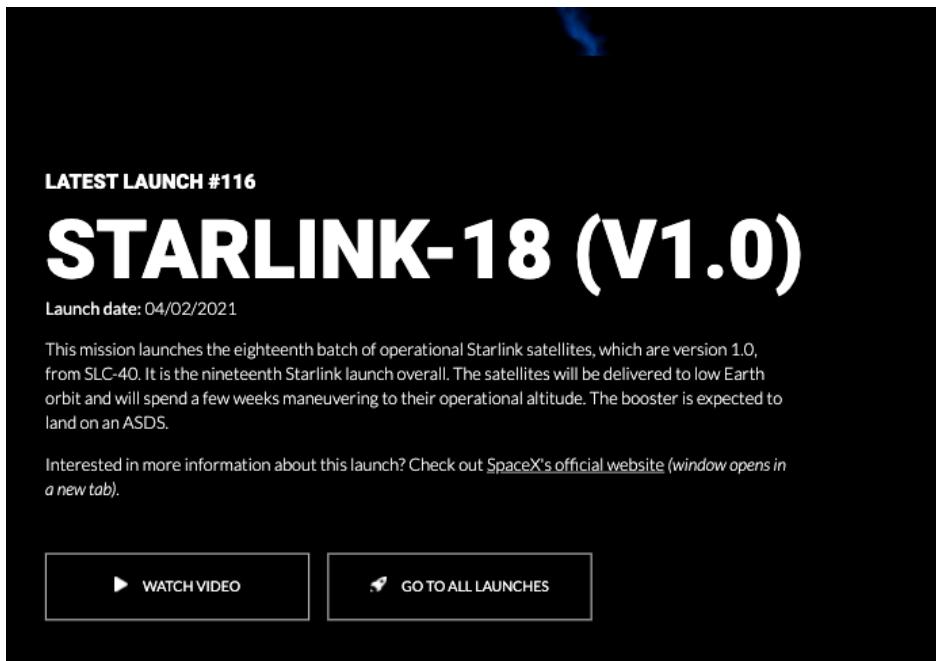


Figure 17: Results from SpaceX latest launch API

Implementation/rollout

During the development process I stored all of my files in Dropbox to make sure I had a back-up in case anything would happen to my computer. When making major changes to the code throughout the process, I commented out my lines of code in order to easily go back to the previous functioning code in case I would mess something up by making the changes.

I chose not to upload the files to my repository on GitHub until after the product was “finalized” but still before the production testing phase began. This way I knew that my repo included the final product, and I could easily keep track of bug fixing by committing and pushing the last changes from test-discoveries. Due to the frequent changes and new lines of code throughout the process while being live and constantly saving the documents, I chose not to upload the files to my repo from the beginning of the process. This was simply to avoid losing track of the rapid changes when I wanted to revert implementations.

After uploading my files to my repository, I also uploaded the files to my web-host server through the SPFT-server with the FileZilla Application.

Testing

Throughout the development process, I created a simple checklist for implementations to test before and after the rollout/release:

- Operable page: using the tab to navigate through the whole website including filling out the contact form.
- Descriptive alt attributes or multimedia captions.
- API results and errors

- Form validation and success message
- Responsiveness (wrapping, margins, padding, scaling of images etc.)
- Default styling in various browsers
- Functioning links and navigation

Phase 1: Development testing

While coding the website, I frequently tested the API-results, errors and all styling locally in my browser by using Google Chrome developer tools. This helped me discover any bugs and required media queries along the process in order to be able to finish one page at a time without having to go back and figure out what went wrong after coding a whole lot more.

When testing the technical functionality of the form, I made sure that all the fields gave the errors from the error messages when not being filled out, in addition to filling in the blanks and pressing “Send message” to ensure that the successful “message sent” text would appear to the user. After the rollout I went through the same test-scenarios to make sure the behavior was the same as the expected outcome on the webhost server as they were on the local server.

Phase 2: Production testing - Validation Checkers

1: HTML test

I used the W3C Markup Validation Service [15] to check the HTML markup and fixed the following errors: “Element <p> and <div> not allowed as child of element <label> in this context”. I also got another warning about bad values for the width and height attributes of the images styled in the stylesheet, so I chose to ignore this warning.

2: Link test

I used W3C Link Checker [16] with the result of valid anchors in addition to some warnings of links that could not be parsed by the server or forbidden my robots. I double checked all of my links in the browser and on my phone after this test to make sure they were all working correctly.

3: CSS test

I used W3C CSS Validation Service [17] to check my Cascading Stylesheets in reference to all of the html pages, where I got the following error: *Property padding-inline-start doesn't exist for "footer ul" and ".launch-timeline ul"* which I ignored because the property was added to prevent default styling from the user agent stylesheet.

Phase 3: Production testing across devices/browsers

The last phase of the testing included testing across several browsers and devices. In addition to my own testing, I got assistance from my volunteers from the inquiry-based interviews when testing across browsers and devices. Unfortunately, none of the volunteers or myself had access to any Android/Huawei mobile devices.

The microsite was tested on the following browsers: *Google Chrome, Microsoft Edge, Safari, Firefox, Opera*, and the following devices: Macbook Pro both with and without connected to a large screen, Macbook Air, iPhone Xs Max iOS 14.4, iPhone 11 Pro iOS 14.2, iPhone 11 Pro Max iOS 14.4 and Windows Terraque computer. I also tested across all responsive views in all browsers on my Macbook Pro.

Findings from testing on mobile screens

- Text on the “peopleContainer” on the homepage got too diffuse on mobile view so I had to make the background-color stronger.

- I had to change “window.scrollBy(0, -20)” to “window.scrollY(0, 707)” in order to display the “remorse message” on mobile screen after sending in the form on the contact page successfully.
- The input fields in the form works slightly different on mobile devices because of default styles like border-radius and the marker-style. I did not change this as it reflects the way a user on that specific device usually sees inputs and decided that it would benefit the user experience.
- The “word list” on the Technology page got feedback from one of the testers of being a bit much with a white background, so I ended up replacing this with a white solid border.

Findings from testing across browsers and devices

- Colors in general and in pictures may vary a bit on different browsers and devices. I did not change anything regarding this as it is out of my control.
- <h2> and <h1> headings on latest launch page were too close together, so I added some top and bottom margin to the <h2> on this page.

CONCLUSION

The report is a documentation of my project work for the exam. I've used the knowledge gained throughout this whole year of the Front-end Development Course. I've solved errors and applied vocational knowledge to practical problems throughout the planning, development- and implementation process. I've focused on a well written and structured code in order to make the website easily maintainable for other developers in addition to creating testing criteria that could easily be reused in the future for development or production testing when implementing new changes.

Throughout the research and planning process I've mastered the relevant tools and techniques described in this report. The process was important groundwork for developing a dynamic web solution with design elements, colors and images, content strategy and structure. The decisions made were in accordance with guidelines for universal design, WCAG guidelines, content management and SEO to create an appealing microsite with good interaction design for the target audience and personas.

I've considered the hierarchy of titles and text, color usage, navigation, images, contrast and alt-text or captions for readability. Text lines are kept short and the typography makes the text easy to read. Images are used for effects to create excitement for the users. I've added links to relevant sources for the users to gain more knowledge about space technology in addition to having presented valuable live feeds of launches and people in space.

RESOURCES

All lessons from the first year of Front-end Development including videos and other resources provided from Noroff on Moodle were used in this project.

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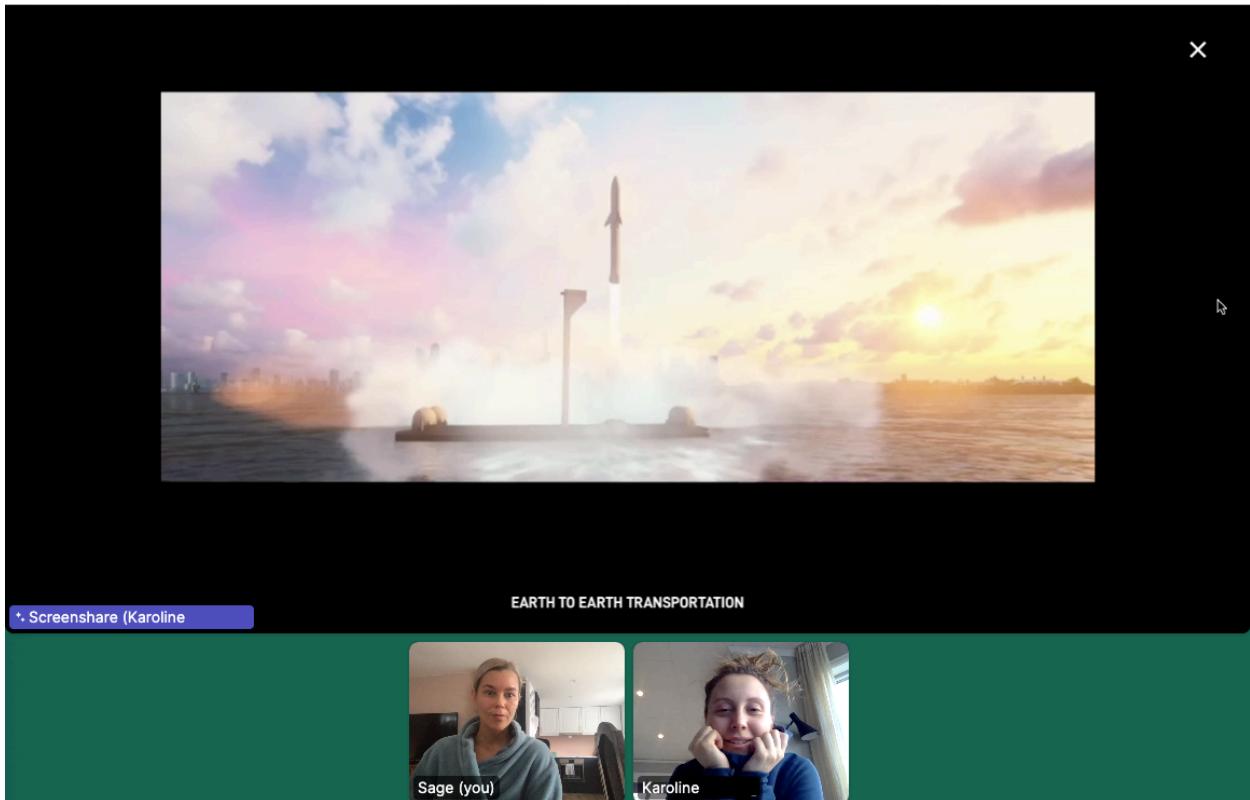
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APPENDICES

Thanks to Karoline and Jenny for being volunteers for both the inquiry-based interviews, wireframe testing and production testing of the final product.



Screenshot: Inquiry-based interview performed with the app Whereby to be able to share screen and camera.