Design and Development of a Website for a National User Resource

By Michelle Pichardo Munoz

Abstract

Websites are essential as remote experimentation becomes more accessible. Particularly, the Macromolecular Crystallography (MC) Group, a subdivision of the Structural Molecular Biology Group at the Stanford Synchrotron Radiation Lightsource (SSRL), has already transitioned their experiment, protein crystallography, to a completely automated experience. As their technology advanced, the ability to remove travel costs and increase convenience for their users grew, in turn, providing an influx of new scientists seeking to utilize their resources and facilities. In this paper, we examine, specifically, the website the MC group employs to accommodate remote access to their users. This paper will also serve to answer why modernization of websites is needed as time progresses. We will discuss a brief history of website design and its impression on our methods, the software and skills required to accomplish our tasks accurately and display the results of our stylistic decisions.

Who are we?

Macromolecular Crystallography (MC) Group

A subdivision of the Structural Molecular Biology Group

From the Stanford Synchrotron Radiation Lightsource (SSRL) Division

What do we study?

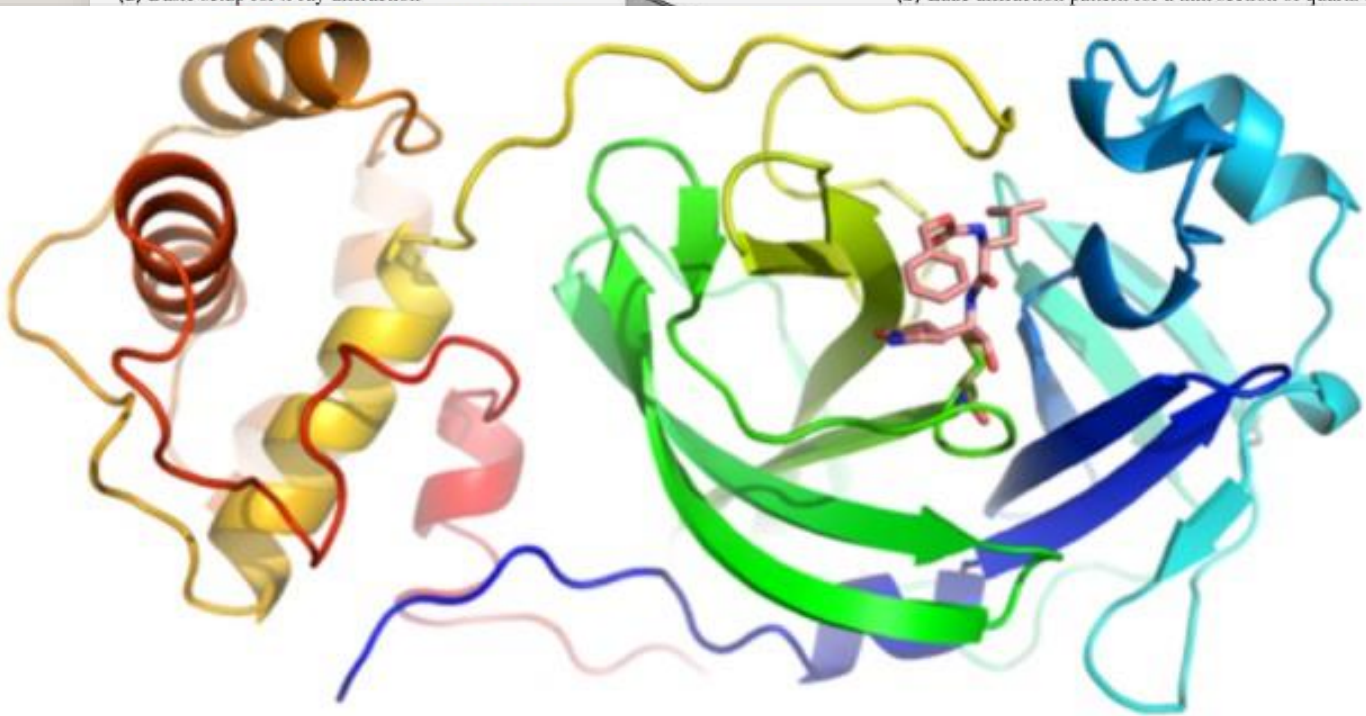
Protein Structures

- Enzymes, Viruses (SARS), i.e., large molecules

Method

- Diffraction

Crystallography structure of SARS



X-ray crystallography structure of the SARS-CoV-2 main protease with the GC376 inhibitor (red sticks) bound in the active site.

Images: Young and Freedman

Our Technology

Synchrotron

Produces high intensity x-rays

Beamlines

Experiments conducted within

Crystalized samples

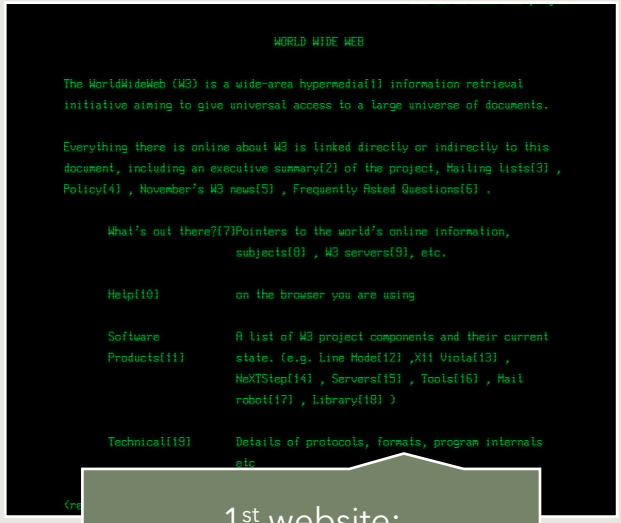
SAM: Stanford Automated Mounter

Modernizing a Website

- Brief history of website design
- Our reasons to update
- Requirements
- Implemented designs

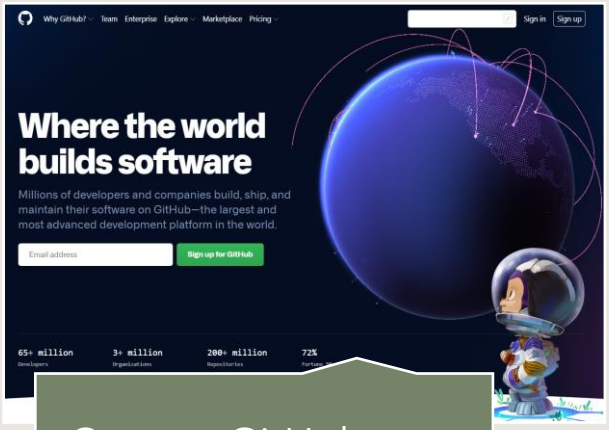
History 1990 - 2021

- Content management and function ruled
- Design emerged
- Apple introduced “User experience”
- Function, accessibility, and Aesthetics became intertwined



1st website:
Tim Berners-Lee

Apple



Current GitHub.com

BL12-1 MFX RoboSync BioSync

SAXS XAS SMB Cryo-EM SSRL LCLS SLAC Stanford NIGMS NIH BER Portal BER DOE

Macromolecular Crystallography

at the Stanford Synchrotron Radiation Lightsource

images Search

Home | About | News | Beamlines | For Users | Become a User | R&D | Science | Training | Our Team

About

- Macromolecular Crystallography
- Structural Molecular Biology
- SSRL

MC at a Glance

- 200 Resear
- 250 Active
- 10,000 Exp
- 90% Exper
- 1,000,000
- 7,000 Struc
- 3,200 Pape

Key MC Developments

- Sample Mounting Robot
- Uni-Puck
- Automated Screening
- Sample X-ray Rastering
- Remote Data Collection
- UV-vis Spectrometer

About Macromolecular Crystallography

The Macromolecular Crystallography Group, a subdivision of the Structural

Nobel Prizes

Frances Arnold (Caltech) was awarded the 2018 Nobel Prize in Chemistry for her work on directed evolution of enzymes that are environmentally friendly for catalyzing the manufacturing of chemical substances and the production of renewable fuels for greener transport.

Roger Kornberg received the 2006 Noble Prize in ...lar details of ...lueprint is ...of protein

... Prize in ...cture and ...k that had ... SSRL.

...l Prize in ...n-coupled ... Source and also SSRL to develop techniques for determining their structures.

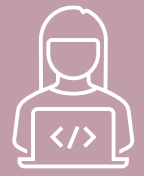
Current website: Drupal 7

Requirements

Software

- Drupal 7
- Backdrop CMS
- HTML
- CSS

Skills



- Inspect Element
- Markdown Languages

HTML and CSS Example

HTML

```html
<div class="exampleone">
  Lorem ipsum dolor sit amet, consectetuer
</div>

<div class="exampletwo">
  Lorem ipsum dolor sit amet, consectetuer
</div>

<div class="examplethree">
  Lorem ipsum dolor sit amet, consectetuer
</div>
```

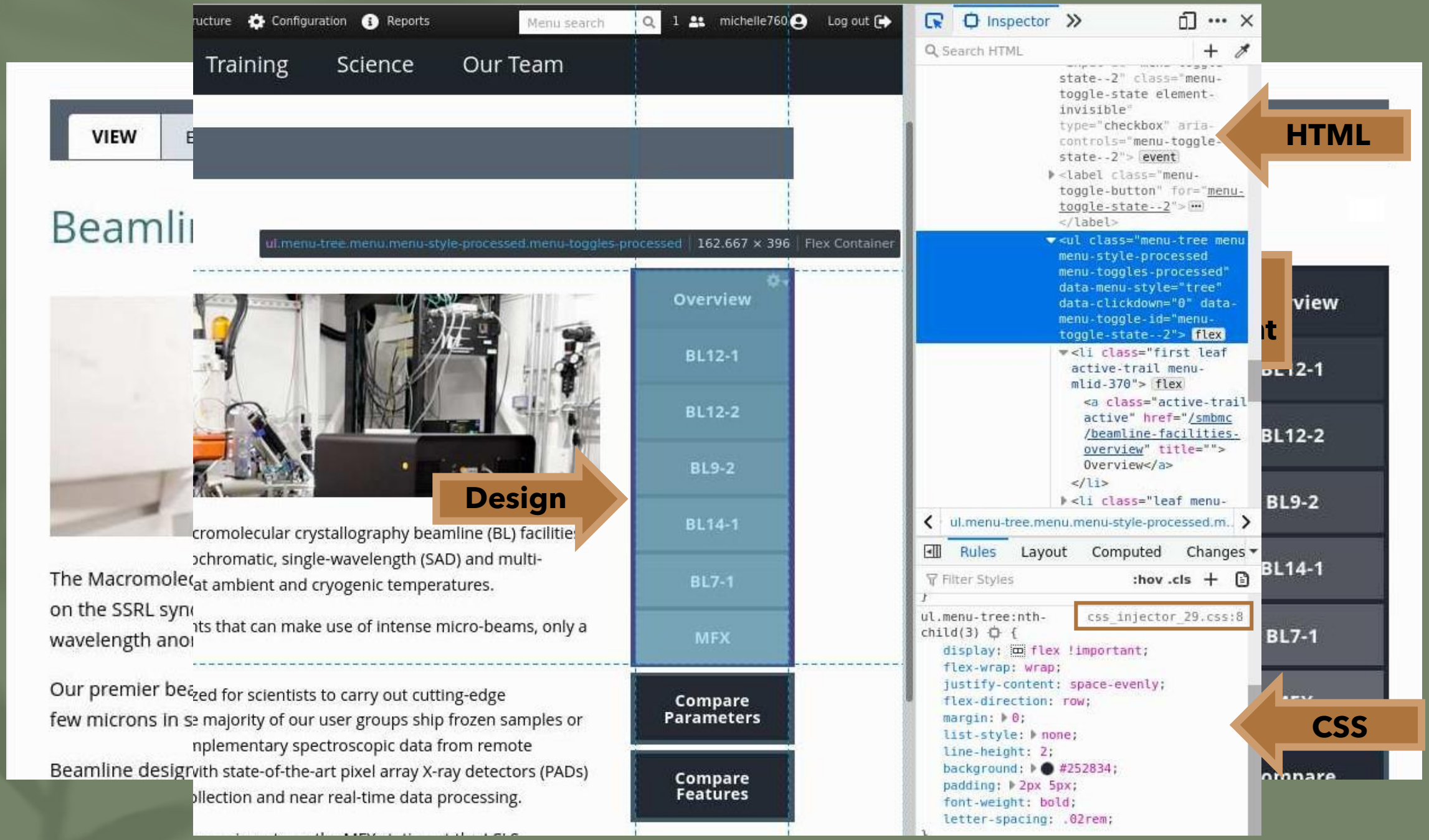
CSS

```css
.exampleone { background-color: transparent; }

.exampletwo {
  background-color: rgb(153,102,153);
  color: rgb(255,255,204);
}

.examplethree {
  background-color: #777799;
  color: #FFFFFF;
}
```

Result

Lorem ipsum dolor sit amet, consectetuer
Lorem ipsum dolor sit amet, consectetuer
Lorem ipsum dolor sit amet, consectetuer

Inspect element and CSS Injector


Configuration
Reports
Menu search
michelle760
Log out
Training
Science
Our Team
VIEW
Beamli
ul.menu-tree.menu.menu-style-processed.menu-toggles-processed | 162.667 × 396 | Flex Container
Overview
BL12-1
BL12-2
BL9-2
BL14-1
BL7-1
MFX
Compare Parameters
Compare Features
Design
cromolecular crystallography beamline (BL) facilitie
ochromatic, single-wavelength (SAD) and multi-
at ambient and cryogenic temperatures.
nts that can make use of intense micro-beams, only a
The Macromolec
on the SSRL sync
wavelength ano
Our premier bea
few microns in s
Beamline design
zed for scientists to carry out cutting-edge
e majority of our user groups ship frozen samples or
nplementary spectroscopic data from remote
with state-of-the-art pixel array X-ray detectors (PADs)
llection and near real-time data processing.
Inspector
Search HTML
state--2" class="menu-toggle-state element-invisible" type="checkbox" aria-controls="menu-toggle-state--2"> event
<label class="menu-toggle-button" for="menu-toggle-state--2">
</label>
<ul class="menu-tree menu menu-style-processed menu-toggles-processed" data-menu-style="tree" data-clickdown="0" data-menu-toggle-id="menu-toggle-state--2"> flex
<li class="first leaf active-trail menu-mlid-370"> flex
Overview

<li class="leaf menu-
ul.menu-tree.menu.menu-style-processed.m..
Rules
Layout
Computed
Changes
Filter Styles
:hov .cls
ul.menu-tree:nth-child(3) {
css_injector_29.css:8
display: flex !important;
flex-wrap: wrap;
justify-content: space-evenly;
flex-direction: row;
margin: 0;
list-style: none;
line-height: 2;
background: #252834;
padding: 2px 5px;
font-weight: bold;
letter-spacing: .02rem;
HTML
CSS

Edit CSS injector rule

Title *

Overview Menu and Compare Buttons

CSS code *

Disable syntax highlighter

```
5
6
7   /* Global-Menu: Adjust the Menu */
8   ul.menu-tree:nth-child(3)
9   {
10      display:                    flex !important;
11      flex-wrap:                  wrap;
12      justify-content:            space-evenly;
13      flex-direction:             row;
14      margin:                     0;
15      list-style:                 none;
16      line-height:                2;
17      background:                 #252834;
18      padding:                    2px 5px;
19      font-weight:                bold;
20      letter-spacing:             .02rem;
21
22  }
23
24
25  /*Global-Menu: Anchor Adjust*/
```

Themes to show on

Basis
Seven

Select themes css will be applied to. Basis theme is selected by default.

Add the CSS on specific pages

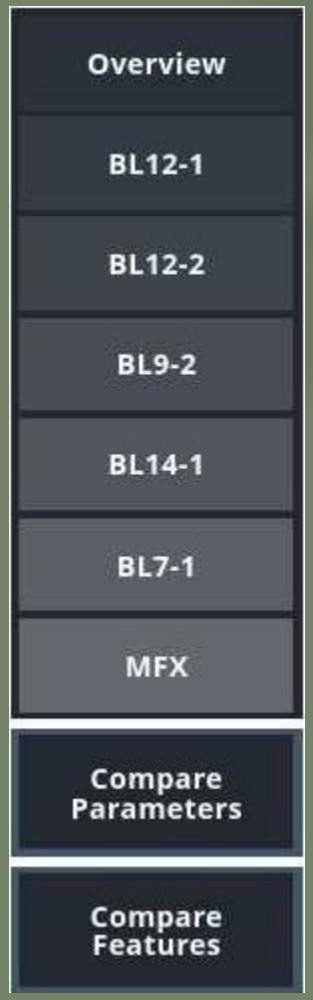
- ( ) Add on every page except the listed pages.
- (•) add on only the listed pages.

Pages

node/5

Results

Project 1
Properties:
- General font styling
- Gradient
- Hover
- Menu only



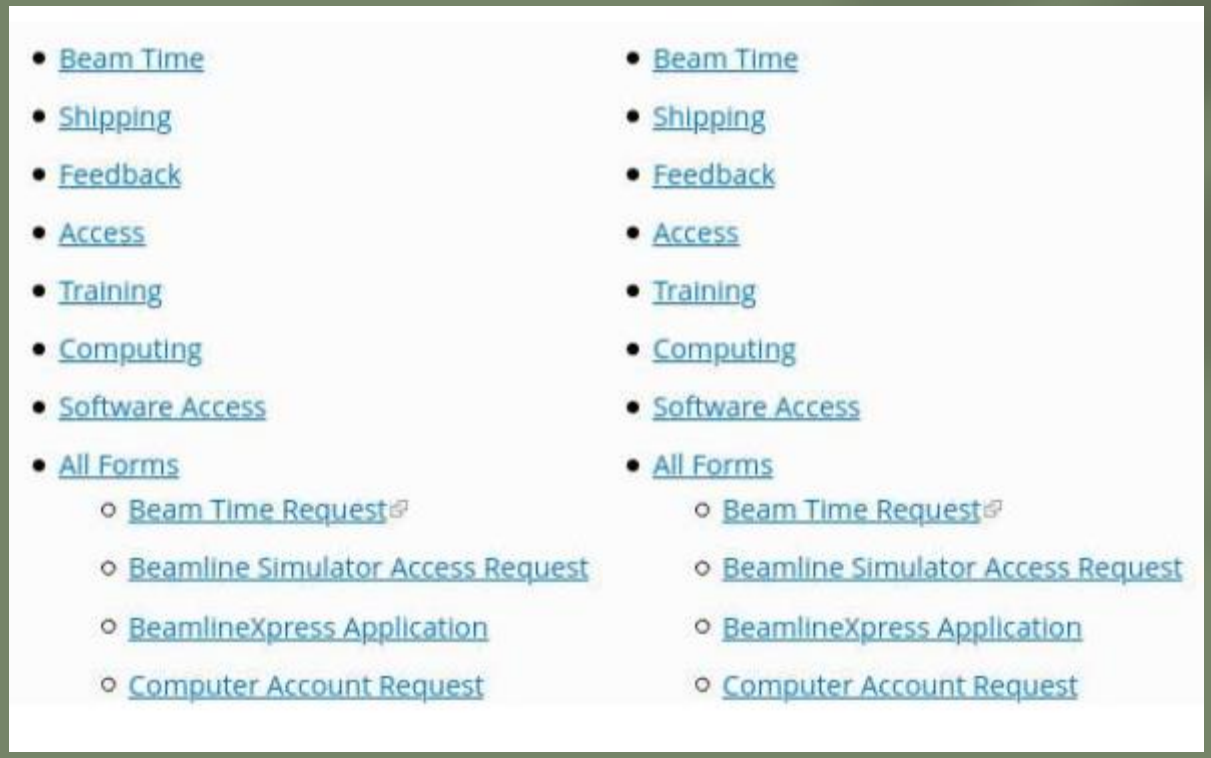
Project 2
Properties:
- General font styling
- Gradient
- Hover
- Menu
- Divisions

Results

Project 3

Properties:

- General font styling
- Hover
- 2 Menus
- Dropdown transitions
- Arrow flip Transitions



Future Considerations

- Colorblindness
- Placement
- Overall Familiarization

Acknowledgements

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