

**FRAYMER:**  
Designing a simple web-based animation tool  
for communication & presentation

By

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# Abstract

Animation plays both a conceptual role in art and a functional role in design. Easily accessible tools for creating and communicating ideas through animation have become more imperative as social media has reduced the barrier to becoming a digital content creator by providing a platform for these creators to easily share and present their ideas and creations.

Tools for creating animations haven't changed much over time, maintaining the complexity necessary for catering to a large variety of animation styles and a multiplicity of use-cases required by animation professionals. These complex tools alienate novices and require specific hardware to run, reducing their accessibility.

By focusing on animation for communication and presentation using a Research-through-Design Methodology, this thesis highlights the process of designing Fraymer; a simple to use animation tool that is easily accessible to creators from a web browser. By designing and building a sequence of proof-of concepts that are user-tested and evaluated by digital content creators, we end up with a tool that addresses only the bare minimum features required to simply and quickly produce animated content for communication and presentation.

This research contributes to the fields of Design, Human-Computer Interaction, Computer Graphics and Computer Animation by highlighting a design process that can aid practitioners in the aforementioned fields, highlighting improvements to the computer animation design process while sharing insights and data from the iterative and collaborative user research sessions.

## **Keywords:**

Computer animation, Interactive web applications, Graphics image processing, Human-centred computing, Communication, Presentation, Design.

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# Chapter 1: Introduction

## 1.1 About the research

Animation has proven to be a key medium and art form for communicating messages and presenting ideas & experiences as demonstrated by Val Head in her book *‘Designing Interface Animation: Meaningful Motion for User Experience’* (Head). Because of the functionality and efficacy of animation, it has remained a highly technical field, requiring complex tools that run on powerful systems which are in turn operated by subject matter experts. With time, the web has increased in popularity and browsers in tandem have progressed in their computing abilities to keep up with the increased sophistication of modern web tooling and services.

The increasing prevalence of easy access to web browsers and the maturing of the web as an application platform has led to it being a popular choice for building more accessible applications that do not require specific hardware to run, as evidenced in the journey of building Figma—a powerful web-based design tool—chronicled by Evan Wallace in his essay *‘Building a professional design tool on the web’* (Wallace);

The practical goal of this research is to design a novice-friendly tool that simplifies the creation of animated content for communicating ideas and presenting information that is easily accessible through a web browser, without the need for specialised hardware or years of motion design experience to operate. Unlike other projects that have attempted to do this, Fraymer achieves this by simplifying the interface and possible interactions through the reduction of tool functionality to the bare minimum required to produce animated content by sacrificing the full range of flexibility more specialised animation software provides. The hope is to provide the capacity to build animated content to more people digital and content creators regardless of their level of technical prowess.

The primary question that this research focuses on is “How can the browser be used as a platform for designing simpler interactive animation tooling for communication and presentation by creators?”.



Preliminary field and observational studies hinted that the principal animation use cases by creators are:

- Communicating ideas that might be harder to express without the affordances of motion
- Presenting their creations in order to better engage their audience
- Promote an idea or get stakeholder approvals.

This assumption was later validated in a conducted survey with 25 diverse creators where all of the participants that already used animation in their creation process confirmed either using it for one of the aforementioned use cases or a combination of these use cases (See Appendix B).

By narrowing in on this subset of motion graphics and neglecting other animation areas like character animation or cel animation, I can focus on the absolute foundational requirements for building a simple tool that elegantly addresses the needs of the core research group—creators.

This research also considers the following supporting questions: “How can common presentation animation patterns be deconstructed and simplified to interactive reusable, modular templates?” and “How can complex, hardware intensive animation processes be engineered to run smoothly and performantly in the browser?”

Tackling the design and development of this tool from a first-principles approach allows us to break down the problem into fundamental truths and design a novel solution from scratch in contrast to reasoning by analogy; avoiding generalisations and simply adhering to established interaction models and patterns in use by existing tools.

The primary benefit of this research stems from the simplification of the animation process for both novices and experts and the democratisation of animation tooling by making specialised animation software easily accessible through a common platform like the web browser.

Simplification of the animation creation process comes at the cost of flexibility and an expanded feature-set but this trade-off is offset by the use of semi-automated approaches to streamline common steps in the creation process.

Fraymer aims to directly simplify the animation process for novice creators by building a very simple to use tool that is easily accessible to anyone from a web browser without the need for specialised hardware or years of experience to operate. This in turn might then make animation a more accessible creative process. Making animation more accessible can then give creators that might have never created animations before due to a fear of the complexity of animation a pathway to adding animation to their creation processes.

The importance of a simple and accessible tool for animation also extends to creators already comfortable with animation, since a tool with a very low barrier to creation can easily fit in and speed up their existing animation workflows. In a conducted survey with 15 creators (over 33% pegged their proficiency level as above beginner) that already use animation in their creative process, over 54% of respondents confirmed to only use it a few times a month at best, citing improvements to their existing motion workflows as a necessary incentive to adopting animation as a more staple tool in their daily practice (See Appendix B).

## 1.2 Terminologies

**Digital creators:** designers, artists and developers creating content and interactive experiences primarily for digitally native platforms like the web, mobile and social media. Their primary revenue source is their creations and they share these creations to get visibility for new projects or to grow an audience in order to operate as a content creator.

**Content creators:** makers of digital content in the form of videos and images, published on social media platforms. They use engaging content to grow a dedicated audience and then generate revenue through the monetization of their content or selling goods and services to their audience.

**Creators:** an umbrella term for both digital creators and content creators

**HTML:** A markup language made up of individual elements for writing any kind of content that can be viewed in a web browser. HTML is the fundamental building block of the web.

**Javascript:** a programming language that is one of the web's foundational technologies primarily used for interaction and document manipulation, alongside HTML and Cascading Style Sheets (CSS).

**Canvas:** a HTML element with graphical properties that allows for loading and manipulation of media content necessary for an animation tool. Allows for multiple specifications to be used through it.

**Canvas 2D:** a high level specification for programmatic graphic editing and manipulation using the Canvas element. Simpler to implement and use but slower than WebGL as it runs on the central processing unit (CPU) with all other system tasks.

**WebGL:** a lower level specification and programming language for writing complex graphics-intensive functions on the Canvas element by using the power of the graphical processing unit (GPU) in computers; a dedicated pipeline for rendering graphics separate from other computer system tasks.

**API:** an acronym for Application Programming Interface— a software bridge that enables data sharing and communication between two applications.

**Animation timeline:** a common feature in complex animation tools that allow users to animate in a declarative manner with fine control by declaring key points for the animation to take place over a given time period.

**Flipbook:** a simple practical animation style that does not require sophisticated tools or technical expertise to produce. The illusion of movement is created by gradually moving a series of static images from one page to the next.

## **Chapter 2: Literature and contextual overview**

The following review of literature comes from many sources and spans multiple disciplines. These disciplines include human-computer interaction, computer graphics, design and computer animation. This review frames animation from the perspectives of entertainment and art in order to confirm that animation is a useful communication channel, and the maturity of the web as an application platform makes it suitable for designing a simpler, more accessible animation tool.

### 2.1 Defining the problem

#### 2.1.1 Design, empathy and design tools

Designing a tool for creation requires the designer to be able to empathise with the end users in order to produce the best experience for them. Empathy in design is achieved by collaborating and including creators and aspiring creators with a wide diversity of experiences in the user testing and feedback sessions. Including others in the design process helps ensure we end up with an inclusive tool for creators and curb our inherent biases.

In his essay, *'Bad Mood: On Empathy and Design'*, Benjamin Bratton (Bratton) discusses how evocative design and empathy may enhance user experiences and draw users into particular scenarios and functions. The author questions if the absence of mood that characterises presumably empathy-free design is necessarily a bad thing and details how empathy is purposefully used as a strategy of and for mood-making design to ensure specific impacts. In his conclusion, he emphasises the need for designers to be aware of the performative needs of empathy as well as the significance of

working with the proper level of empathy. “Too little empathy leads to incorrect means calculations; too much empathy leads to incorrect ends calculations.”

An empathic understanding of the people you design for is especially important when designing tools for creators. By conducting numerous interviews to investigate the factors influencing the choice of tooling, Erik Stolterman and James Pierce (Stolterman and Pierce) investigate the complicated relationship between designers and their tool-set. In their essay ‘*Design tools in practice: studying the designer-tool relationship in interaction design*’, the authors come to the conclusion that while metrics like “efficiency” may at first glance seem to capture important facets of designers’ tool use; personal characteristics, life experiences, as well as the context in which the design process is conducted, are ultimately what shape the decision-making process. While the authors point out that there is no easy way to describe the reasons that actually lead a designer’s choice of tools, this paper serves as a guide for the key metrics for shaping a useful design tool.

A good understanding of the medium being designed for is equally as important as end user empathy. In his interactive essay ‘*What Screens Want*’, Frank Chimero (Chimero) examines what it means to natively design for computer screens and how end users’ needs must be met through this process. Chimero talks about how the screen serves as the main form of computer feedback and the necessity of using metaphors and abstractions in user interfaces to make screen functions easier to explain and comprehend. He draws the conclusion that animation serves a practical purpose in design and that we can harness interfaces’ effectiveness and power to enable people carry out their existing wishes more rapidly with a greater level of delight.

### 2.1.2 Modern improvements necessitate modern platforms

Our tools shape our work and this is very prevalent in design tools, where the final output is as a direct result of the features and limitations of these tools and the platforms they’re made for. Ian Jun Yeen Loh (Loh) explains how the current aesthetics of computer animation stem from ancient modes of animation and emphasises the need for new tools utilising modern technologies to inspire the

production of modern animation aesthetics. In the paper '*AniSketch: Alternative Aesthetics For Computer Animation Tools*', Loh reacts to this framing of animation by utilising new technology to develop an animation system that employs illustration and visual composition to create animations with non-traditional aesthetics.

The web browser as a medium isn't inherently a novel platform but its gradual adoption as an application platform has given rise to constant upgrades and additions to its native API's and functionalities. This steady improvement is well documented by Aiman Erbad, Norman C. Hutchinson and Charles Krasic in the paper, DOHA (Erbad et al.), in which they chronicle how web browsers have developed into robust application platforms that can compete with native desktop and other hardware platforms. They examine these improvements through the lens of a real-time web application written in Javascript.

## 2.2 Finding evidence of the need for a solution

### 2.2.1 Effectiveness of animation as communication tool

Communicating complex ideas can require more complex visualisation than static images can convey. A 2019 study '*Animation as a Creative Tool: Insights into the Complex*' (Hilton et al.), which was produced by a senior lecturer of design at Northumbria University and two additional design consultants, looks at how effectively communicating ideas and interactions through the use of digital animation might foster new ways of thinking, understanding, and making decisions. After critically reviewing a number of real-world case studies of various science and technology projects from Northumbria University's practice-led Centre for Design Research (CfDR), the authors came to the conclusion that while interactive prototypes may be best suited for extremely complex situations, moving images, such as animation, serve as a more effective means of communication than static info-graphics. Additionally, the authors found that the ability to simulate objects through animation

adds a new level of depth to storytelling. This research is extremely pertinent to my work on interactive animation, which aims to create a web browser-based communication tool that combines the advantages of animation with interactive prototypes.

In another study, Shreeshya M. and Sanjay Kumar Tyagi use Indian primary education as the case study to analyse the usefulness of animation as a technique for idea and information communication (Shreeshya and Tyagi). The authors review several similar past studies and examine the use of technological tools like animation and how it aids in conceptual understanding of complicated concepts. The authors draw the conclusion that animation can be a highly powerful communication tool, improving the academic performance of the study participants. The study's limitations—a small sample size and the use of only 2D animation—notwithstanding, is pertinent to my research since it exhibits how successful animation can be as a tool for communication.

The effectiveness of animation as a communication tool is not reserved for individuals with a specific level of literacy but applies to the general society. In a similar study in 2017, Chris McGillion inspects the use of animation in rural areas with high rates of illiteracy and low levels of media consumption to convey complicated scientific knowledge (McGillion). Animation was quite effective in training sessions, according to the author's interviews, and it gained enough traction with the study participants to provoke discussion. Despite this, it was considered a poor tool because the majority of the participants lacked adequate mobile devices to produce the animations. The author drew the conclusion that the use of animation to communicate information is well suited to participants with poor literacy levels, but suggested future research along these lines as cellphones become more widely available, which strengthens the case for my study.

### 2.2.2 Design & technology as catalysts of progress

Technological advancements over time have led to large scale societal improvements. Computer graphics and animation has not been left out from this growth and has seen its fair share of progress. In a research article, Haiyan Wei briefly investigates the role of digital technology in advancing the

evolution of the animation sector using animation majors from Chinese colleges as a case study (Wei). He also emphasises how collaboration across government, colleges, and enterprises can contribute to the progression as well. The author proposes a collaborative innovation platform using digital technology that integrates shared resources from the aforementioned institutions as a way to enhance animation knowledge while fostering progress across the animation industry; highlighting the important role digital technologies and collaboration plays in animation, especially for animation learners.

With a focus on computer graphics and image processing, Zhao Xiaolei charts the advancement of computer technology across time and how it has permeated many facets of society. In his paper, *'The Application of Computer Technology in Graphic and Image Processing'* (Xiaolei) he explores how current image-creation software and computer graphics tools make use of these technologies, and he draws attention to ways in which these same technologies could be applied to the development of new practical tools in a variety of societal contexts. Xiaolei draws the conclusion that as media technology advances, chances for resolving fresh issues and streamlining current solutions will materialise. This in turn will enable a larger number of societal needs across industries to be met and demonstrates the significance of my research.

In another similar paper, *'XP-Prototyping approach for user interface design of large web-based application'* (Al-Allaf) Omaima Al-Allaf analyses the predominance of robust interactive online apps and how their Graphical User Interfaces [GUI] play a significant role in their success. Based on empirical research, the author discusses prevalent interface design constraints and underlines the need for efficient methods of developing useful UI by enterprises. She offers a design strategy [XP-PROTOTYPING] for overcoming typical difficulties in creating UI for large web applications as her final recommendation.



## 2.3 Searching for solutions

### 2.3.1 The web browser as an application platform

The development of the web from a basic document-based environment to a fully developed platform for sophisticated desktop-style applications is documented in the paper '*Transforming the web into a real application platform: new technologies, emerging trends and missing pieces*' (Anttonen et al.). The authors analyse new browser technologies that improve the performance capabilities of the web-based applications while evaluating the drawbacks of web as an application platform. This work has a significant bearing on my research as the web technologies it describes are now standardised across the web and the technical learnings from this review will serve as the foundation for engineering the final web application. The limitations highlighted will also serve as markers for guiding the design of the system.

The nature of the web as a document platform can make it challenging to build rich applications on. In '*DOHA: scalable real-time web applications through adaptive concurrent execution*', (Erbad et al.) it is described how, due to single-threaded execution being commonly used on the Web, the quality of audacious processing-intensive browser applications might be constrained, making it challenging to develop high computational web applications like animation tools at scale. The authors develop a new tool (DOHA) for multi-threaded concurrent processing that is built on top of native browser capabilities and provides a good framework for tackling the computational difficulties of single-threading in the browser

In another study, Cindy Wong and Richard Zaragoza describe how users can easily generate and distribute visual material within their social communities as a result of the growth in the web's capabilities as an image production and processing platform (Wong and Zaragoza). The authors explain how creating simple animated content is still a challenging task done by subject matter experts using desktop-based technologies and workflows that are unsuitable for teamwork and communication. The authors provide a conceptual design framework [Volley] for the facilitation of

animation creation and collaboration using the web browser. This is a valuable source for my research since it shows how the web can be used as a platform for creating animations and offers a design framework for creating animation tools.

### 2.3.2 Can we build performant motion tools in the browser?

The difficulties in creating high-performance browser-based graphics applications are highlighted in the essay '*Building a professional design tool on the web*' (Wallace) by Evan Wallace, along with the contemporary web technologies that make it possible to address some of these difficulties. Wallace delves into technical capabilities and advice for creating effective graphics-intensive online apps using Figma, a real-world Software as a Service application the author helped design. He emphasises the significance of performance and quality for the success of rich apps in his concluding remarks.

Similarly, Ahire et al. report on the status of motion on the web in their paper '*Animation on the web: a survey*' (Ahire et al.), highlighting current approaches and platform shortcomings while outlining potential web standards for rendering and processing animation that could address some of these issues. This article assists in highlighting the essential technologies for overcoming the web platform constraints when building animations and motion tools for the web.

Speed is essential for ensuring an enjoyable end user experience in animation tools. The paper '*Towards real-time applications in mobile web browsers*' (Aho et al.) examines web browser standards that utilise hardware acceleration to speed up the processing of media [video, audio and graphics]. The authors highlight WebGL and WebCL, two browser technologies that can both be utilised to boost the performance of web applications and media processing within browsers. The writers also give a summary of the main technological development challenges, which is useful guidance for final technology selection.

### 2.3.3 Designing and building for the browser

Ease of use is pertinent to user friendly applications especially when attempting to bridge the gap between existing animation tools. In chapter 7 (Design Guidelines for Visualization Construction Tools) of Lars Grammel’s paper, ‘*User interfaces supporting information visualization novices in visualization construction*’ (Grammel) he describes the difficulties in creating information visualisation tools that are easy to use for beginners and offers suggestions for addressing these difficulties.

According to Grammel, these tools must adhere to the users’ mental models, restrict the amount of decision-making required, and encourage learning while incorporating built-in design support. This chapter is particularly significant to my research since it emphasises numerous empirically supported theories and methods that aid in the creation of beginner-friendly tools that are suitable for an expert audience as well.

In a talk delivered at the esteemed KIKK Festival in 2021, François Grassard emphasises that there is still a significant collaboration gap between the world of 3D animation tools, contemporary compositing pipelines and 2D tools, despite significant advancements in image processing and the rise of strong render engines (Grassard). This division necessitates the employment of numerous tools, many of which have poor interoperability, slowing down interactions and decreasing productivity in animation software. The author and his team’s application is used as a case study to demonstrate how a hybrid approach using both 2D and 3D production and compositing techniques may result in a more accessible animation tool that boosts productivity.

A hybrid approach is particularly useful when attempting to design a tool accessible to novices without completely alienating expert users. Maggie Appleton in ‘*Programming Portals: Small, scoped areas within a graphical interface that allow users to read and write simple programmes*’ (Appleton) provides a brief history of computer interfaces, stressing the two main paradigms of interface design—the command line interface (CLI) and the graphical user interface (GUI)—and noting how these two paradigms have separated interface users into two different classes—end users and super users or programmers. She discusses how the simplicity and speed of text-based interfaces, or CLIs, appeal to

programmers while GUIs are preferred by the bulk of end users. She investigates previous attempts to merge these two interface paradigms and the advantages of these efforts using historical case studies and demos. She comes to the conclusion that the main advantage of fusing restrictive GUI design patterns with open-ended CLI design patterns can ultimately lead to a more accommodating user experience for both the majority of end users and a smaller subset of advanced users.

Empathy in design often requires designers to consider the end users of tools and products as ‘people’ and not just ‘users’ in order to remind the tool creators that the user should be considered a human being during the design and validation procedures.

In the book *‘Turing Complete User: Resisting Alienation in Human Computer Interaction’* (Lialina), Olia Lialina introduces a third type of user between the CLI user and the GUI user; the Turing Complete user. The Turing Complete User is the technology user who finds their own routes to achieve their goals. Often these paths aren’t necessarily the correct approach, but they operate as desired lines for tool use.

In addition to building upon these principles, personal experiences can also help inform the design process. In *‘Understanding the role of designers’ personal experiences in interaction design practice’*, Xiao Zhang and Ron Wakkary (Zhang and Wakkary) make the case for the legitimacy of designers’ using lived experiences as positive contributions to their technology design processes. The authors review related literature and examine various interaction design case studies before coming to the conclusion that, even though more academic study on this subject is required for a more complete understanding, the importance of personal experiences in influencing design choices greatly enhances interaction design, especially when traditional design principles are used as justification.

## 2.4 Related works

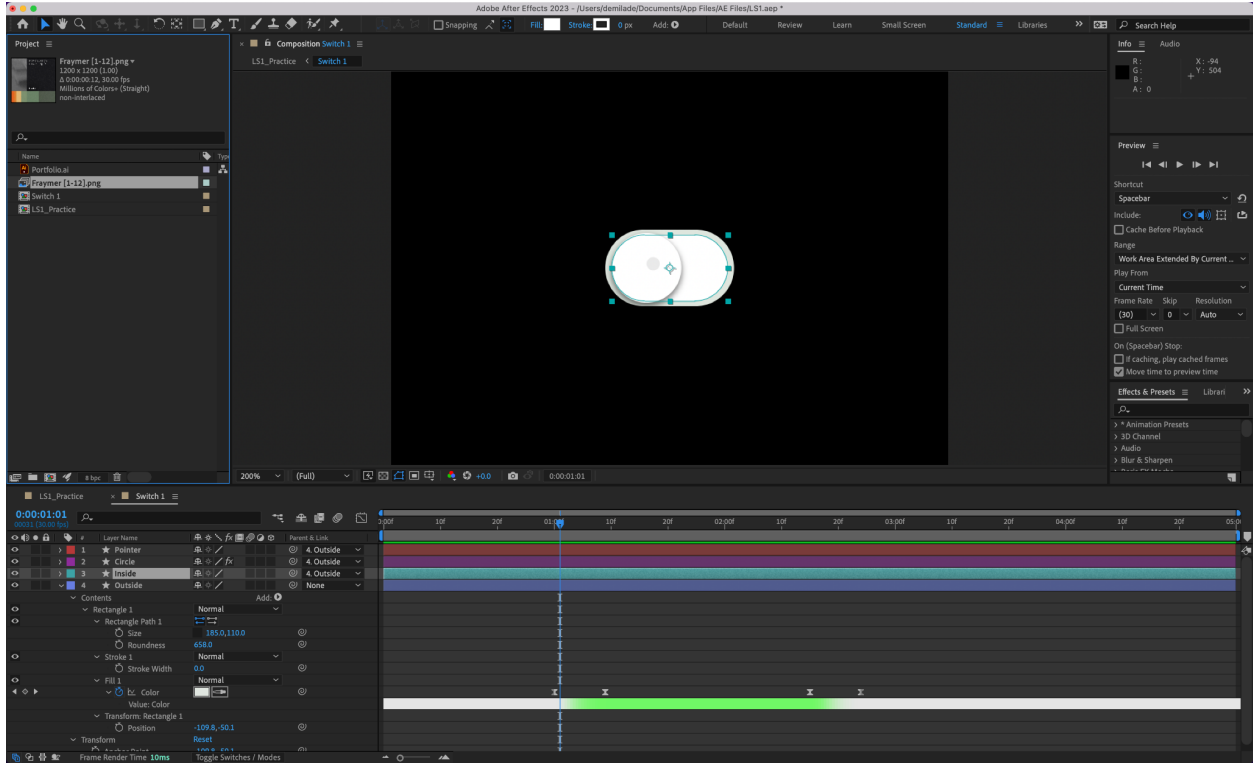
This research builds upon prior work related to computer animation, the authoring of motion graphic media, and tools & techniques for simplifying animation construction. This section highlights a number of these tools; findings from reviewing them, learnings from examining some of their perceived shortcomings and interesting patterns and learnings to take forward into this research.

### 2.4.1 Adobe After Effects

Adobe After Effects— or ‘AE’ as it is commonly referred to as by animators and videographers—is a desktop application for Windows and MacOS that allows its users to create visual effects, motion graphics, and digital composites. AE has become the de facto standard in animation thanks to its numerous features and capabilities to produce a large range of animation styles and formats for use across the fields of video games, television, and cinema post-production.

With the ability to adapt to a multiplicity of use cases—keying, tracking, compositing, and animation—the interface for AE has a plethora of panes, panels and components by necessity. The seemingly limitless nature of AE is represented front and centre by the user interface and can be quite daunting and intimidating for anyone not already familiar with the tool. This coupled with the fact that the software can only work on computers running “*Windows 10 (x64 only) v1703 and later, macOS 10.12 Sierra or later*” makes it inherently less accessible to novices while remaining a great choice for professionals with access to powerful computing systems.

These animation professionals derive utility directly from their use of the tool in their production processes making the effort required to get familiar with the intricacies and complexities of AE a worthwhile tradeoff. In contrast, digital and content creators might primarily be working with content they already created and are looking to make even more engaging through the use of animation; making the effort and technical restrictions required to use and learn a new and complex tool like AE too much of a barrier to adoption.



Adobe product screenshot reprinted with permission from Adobe.

Figure 1. Adobe® After Effects 2023® interface, 2023. Author's screenshot.

## 2.4.2 Artboard Studio

Artboard Studio is a design and animation tool for branding and marketing design that allows its users to create photorealistic mockups, interactive designs and animate them right in a web browser.

Artboard Studio shines by combining the design, animation and mockup process into a single accessible web-based tool rather than 3 separate tools as it has historically been; streamlining the creation and presentation process for designers.

Artboard Studio at its core is a powerful design and mockup tool that allows its users animate any of the design parameters using a timeline similar to what you would find in industry-standard motion tools like After Effects. The timeline gives users full control over the animation process but can be intimidating to novices who are not already familiar with how the animation process works nor

understand the prime settings and parameters for creating optimal animations. These beginners might not need full control but a series of presets and templates that start from best practices created by experts which they can use and modify to fit their use case.

Artboard does have a library of design and animation assets that can be used but these assets are not modular templates that can be combined to create new content but finalised media that can then be repurposed by swapping out the content. This causes beginners' creation to adhere pretty closely to the starting point, as an understanding of animation software and timelines will still be required for any significant creative modifications. One of the most interesting applicable insights from this tool is in the mockup creation process as it uses already created content and dynamically applies it to different frames and devices in real-time; elevating the content for communication and presentation purposes, similar to what Fraymer aims to do for creators' content through animation.

Artboard's biggest strength might also be its 'achilles heel.' Combining three processes into one comes with a slightly noticeable lack of focus that can be gleaned from the confusion the interface can cause for animation enthusiasts not already familiar with digital design tools as a large number of the panels and visible controls are catered towards design first and not animation; requiring additional steps to fully bring the animation features into view.

### 2.4.3 Greensock

The Greensock Animation Platform (GSAP) is a set of developer tools for creating animations on the web. It enables technical creators to easily build high-performance animations that work in every major browser making web animation creation more accessible.

In contrast to the other related works, GSAP requires both a high level of technical knowledge—an understanding of programming with javascript—and an understanding of traditional animation concepts like a *timeline* translated programmatically.

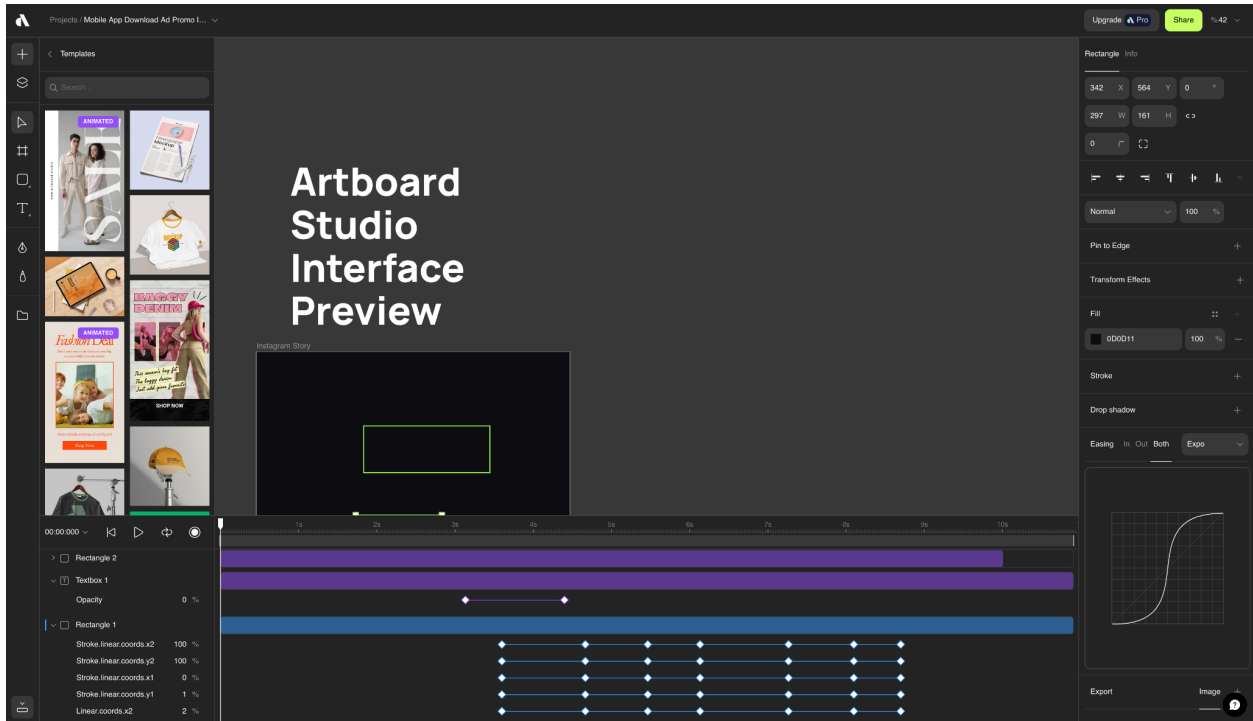


Figure 2. Artboard Studio on desktop web with animation feature in-view, 2023. Author's screenshot.

#### 2.4.4 Jitter

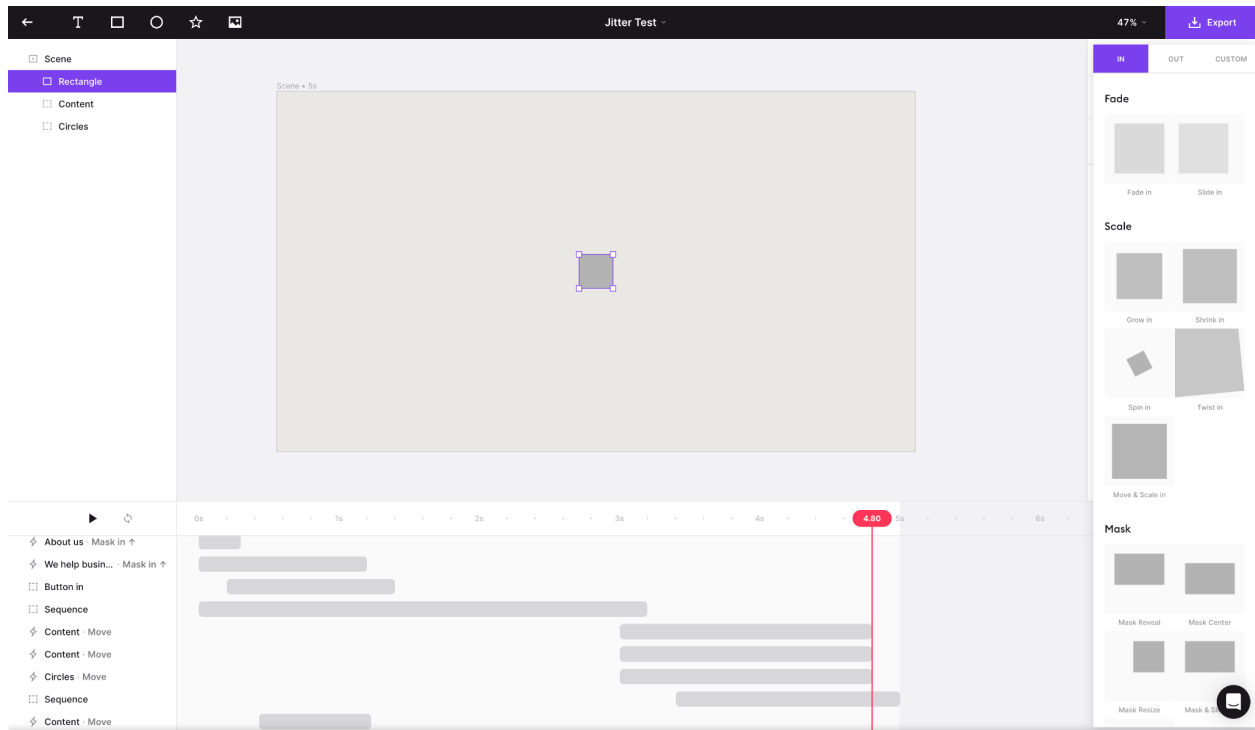
Jitter is another web-based animation tool, similar to Artboard Studio, but with a focus on the design and animation of content and interfaces. Like Artboard Studio, Jitter uses both design templates and an animation timeline in the animation creation process but Jitter goes a step further to simplify this process through smart animation presets.

Jitter uses a system of animation and effects presets that can be previewed in real-time, easily applied and modified by changing a series of simple parameters related to the selected preset. For more granular control, the applied effects can be additionally modified using the timeline or created completely from scratch, similar to complex animation tools.

This hybrid approach lends itself well to creators looking for some simplicity without giving up too much creative freedom. The interface might still appear intimidating to novice creators due to its



similarity to other more complex tools but this tool serves as a point of inspiration on how to incorporate simple, flexible presets into the animation creation process.



*Figure 3. Jitter on desktop web with animation presets in-view, 2023. Author's screenshot.*

### 2.4.5 Canva video editor

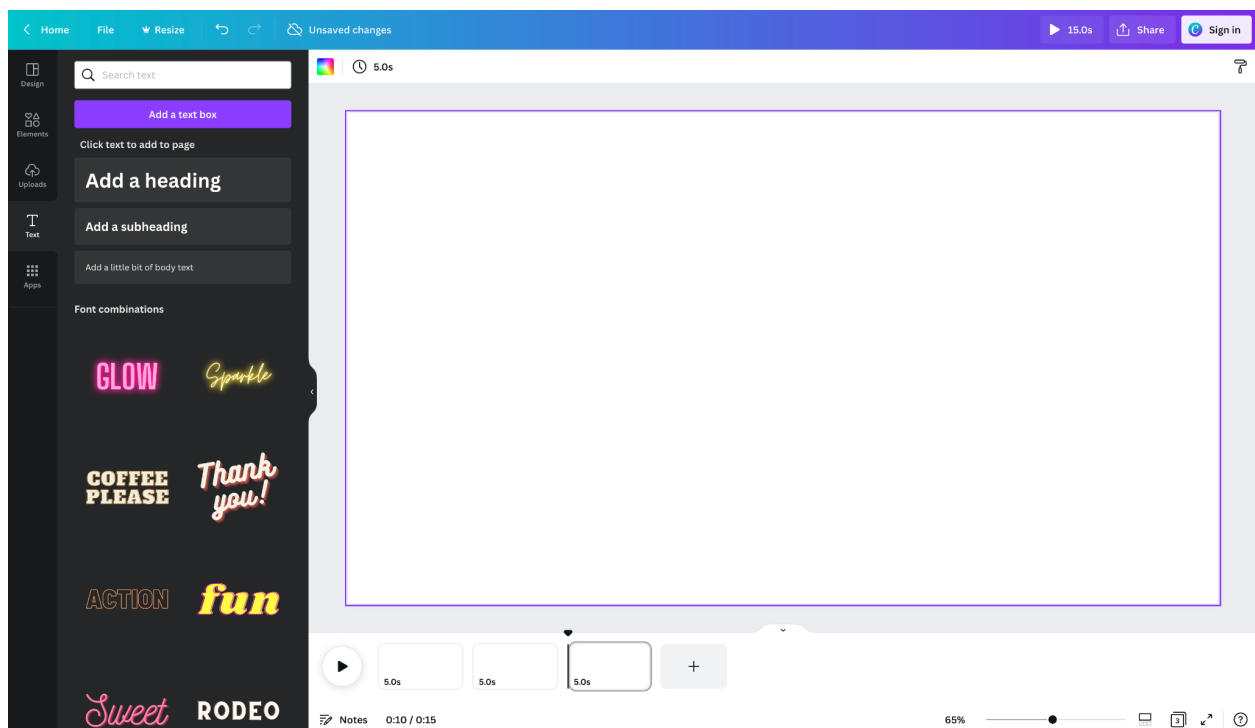
Canva is a web-based design platform that allows its users to utilise predefined templates to create social media images and presentations. Canva has been a major player in the design space for creators for a while now—thanks to their large library of editable templates and easy to use interface—and recently ventured into the animation space with their video editor.

Similar to tools like Artboard Studio and Jitter, Canva video editor utilises animation templates to simplify the creation process. Like Jitter, Canva also uses smart animation presets that can be customised using simple parameters but differs by forgoing the traditional animation timeline; sacrificing granular control for simplicity. In place of a standard animation timeline, Canva video

editor makes use of a novel scene-based timeline that allows the editing process to be modularized to match editors' mental models while enabling transitions to be applied between each scene.

Canva video editor also comes equipped with a suite of tools and effects for media post-processing, making it a truly feature-rich complex tool. Although this is still one of the simpler complex tools, its large feature-set and multiple nested panels can appear overwhelming to novice creators not already familiar with the convolutions of video editing tools.

Critical assessment notwithstanding, the Canva video editor serves as a shining example of how the combination of modular systems and flexible presets can introduce a high level of simplicity to otherwise complex animation processes.



*Figure 4. Canva video editor on desktop web with text presets and scene-based timeline in-view, 2023.*

*Author's screenshot.*

## 2.4.6 Rive

Rive is an application for creating performant interactive animations in a web browser. Rive enables its users to create rich interactive animated vector graphics that can run across multiple platforms like iOS, macOS, Android, Windows and Web.

In contrast to this research that focuses on animation for communication and presentation, Rive is focused on creating intricate animations that work at runtime in interactive apps, games and websites; while the programs are operational and react based on user interactions. Rive animations can be created using a timeline—similar to most complex animation tools—and made interactive using a state machine; a node-based visual way to connect animations to interaction logic, transitioning the animation from state to state based on user input and predefined conditions.

The complexity of Rive as a tool is necessary to create a wide range of interactive animation styles for a variety of platforms but not optimal for novice creators due to the high amount of friction required to overcome in learning the inner workings and paradigms of the tool. Despite this incompatibility with the subjects of this research, the imperative style of the state machine closely mimics how animation code is engineered behind the scenes as a series of connected commands which introduces an interesting interaction model that might be easier to directly translate to an interface; serving as a basis for developing novel, simpler patterns that are taken forward into this research.

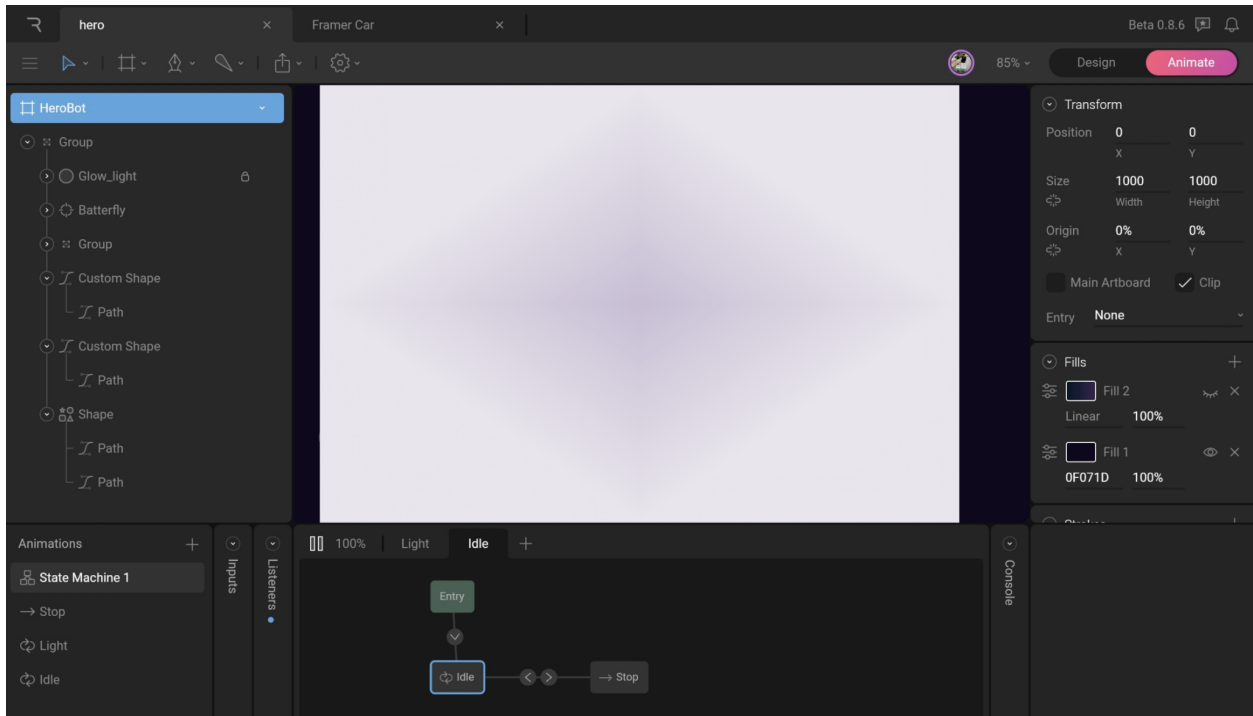


Figure 5. Rive on desktop web with State Machine feature in-view, 2023. Author's screenshot.

## Chapter 3: Methodology and methods

This project employs a Research through Design approach, which includes iterative design techniques like rapid prototyping, sketching, user testing, qualitative studies, wireframing, and layouting.

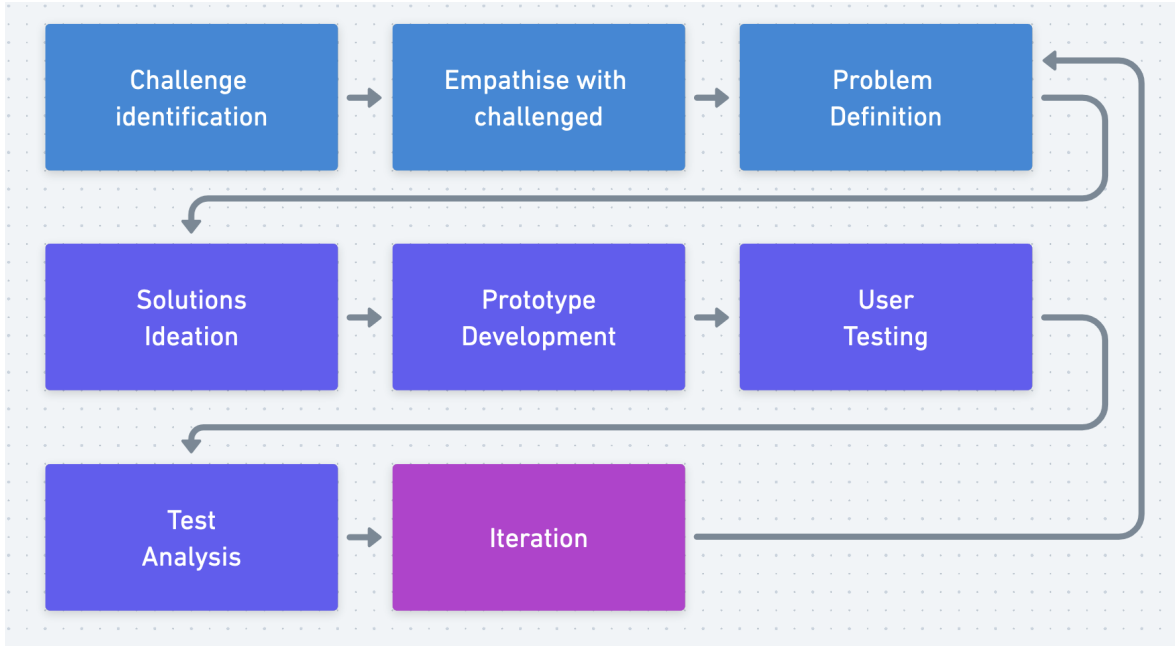
Iterations and the necessary revisions to each stage of the design process are informed by the production of iterative prototypes of varying fidelity and testing them with animated content creators.

Working with the primary stakeholder group—creators with varying animation experience levels—throughout the study will help ensure that the final research product created will meet the goals of the study and be able to be integrated into their content creation process.

### 3.1 Research through Design (RtD)

RtD is the act of using design and the creation process as a research tool or method for learning and knowledge creation. In RtD researchers generate new knowledge by understanding the current state and then suggesting an improved future state in the form of a design. It involves deep reflection in iteratively understanding the people, problem, and context around a situation that researchers feel they can improve.

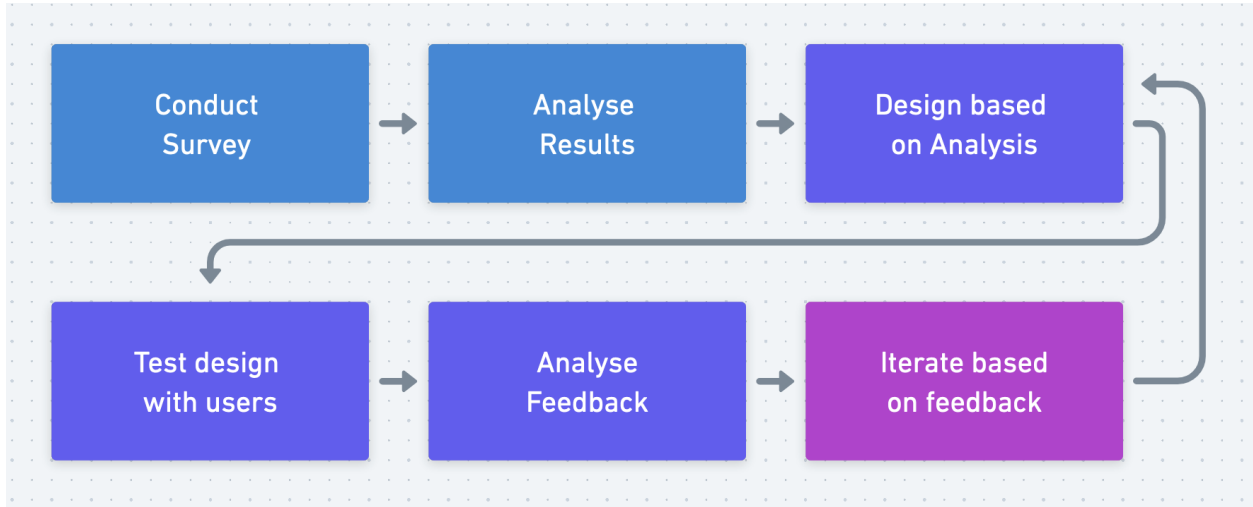
RtD in this study entails the creation of prototypes (interactive web-based interface mock-ups and programmed prototypes) that are used to test concepts and provide answers to the study's research question. Due to RtD's ability to keep designers engaged in a cycle of production and reflection on both a theoretical and practical level, it easily becomes a natural element of the design process.



*Figure 6. Flow diagram representing my iterative RtD process*

### 3.2 User research

This study uses user research methods as tools for data collection and analysis. The primary analysis method is qualitative analysis by conducting usability tests with design artefacts of varying levels of fidelity. The results of each testing session then inform further rounds of iterations based on observations and direct feedback taken from the research participants. The secondary analysis method is qualitative analysis of open-ended survey responses and interviews aimed to inform the design decisions taken in the creation of the artefacts for testing, prior to when any user testing is conducted.



*Figure 7. Flow diagram representing my user research process*

### 3.3 Research methods

This research being focused on the design of a simple animation tool for creators could not have been made possible without the active participation of the target audience of digital and content creators. Conversation with the audience helped me gain a better understanding of their current animation challenges and examine their perceptions of ease and simplicity in software and human-computer interactions.

All user testing sessions and surveys were reviewed and received ethics clearance through the Research Ethics Board at OCAD University (File #2023-01).

Approval from the Research Ethics Board came in January after a delegated review and the surveys were sent out immediately after and were kept open until the end of March. Recruitment for the surveys were sent out on social media through my personal Twitter channel that consists of a number of creators that fit the criteria for recruitment. In addition to social media, I sent out an email to a set of friends, acquaintances, and colleagues who met the necessary conditions to participate in the study.

Snowball recruitment was also accepted and encouraged if people chose to share the study with others they knew that met the participant criteria. (See Appendix A for recruitment samples)

User testing sessions were carried out in March with survey participants that indicated interest and additional participants recruited from my graduate program Discord channel. In addition to these recruitment channels, a website (Fraymer.com, see Appendix C) was created for creators that either didn't fit the recruitment criteria or were not interested in being part of the research. The web page allowed them opt-in to be notified when the tool was ready for general use so they could use it as part of their creation process. An option to request to be part of the user testing sessions was also added to the website helping it serve as an extra layer of recruitment for user testing while the wait-list feature provided validation that a simpler animation tool was indeed something creators would want to use.



## Chapter 4: Technical feasibility studies

Given that the crux of this entire research is based on the assumption that a simple animation tool for communication and presentation can be built as a web application, a number of early tests and technological explorations had to first take place in order to fully assess the practicality of this proposed research. This chapter examines the various demos created to analyse the project's feasibility.

### 4.1 Proofs of concepts

A series of technical prototypes were created in Javascript to test out fundamental functions necessary for building a web-based animation tool that can successfully load audio, video or image media, perform actions on these media and then export as a single composition in a video or image format.

#### 4.1.1 Video display in animation canvas

Displaying a video in a web browser programmatically is a relatively trivial action. The challenge is, in order to apply any further manipulations to the video which would be required for an animation tool, this simple method can't be used as the video will need to be rendered inside an animation canvas element to allow for complex manipulation of each of the individual image frames that make up a video.

This demo decodes all image frames from an MP4 video file and renders them to an animation canvas as fast as possible using either 2D or WebGL canvas rendering. This demo was built using Javascript, a library called mp4box.js and the browser's WebCodecs API.

This demo proves that video content can be rendered intricately in an animation canvas while also providing a benchmark for comparison between the two major methods for animation canvas rendering in the browser; 2D (slower than the latter but easier to implement) and WebGL (faster than the former but more complex implementation)

Renderer:  2D  WebGL

**Fetch** 55.3 MiB

**Demux** Ready

**Decode** avc1.4d401f @ 1280x720

**Render** 1787 fps



["Big Buck Bunny"](#) by Peach is licensed under [CC BY 3.0](#)

*Figure 8. Web demo of rendering video files in an animation canvas*

#### 4.1.2 Audio and video display in animation canvas

Building upon the first exploration, this demo combines the browser's WebAudio API to the previous technology used in the first demo in order to load and play audio and video simultaneously in the browser. The audio volume can be adjusted in real-time and is automatically synchronised to the video playing.



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*Figure 9. Demo of rendering audio and video files in an animation canvas on the web*

#### 4.1.3 GIF image rendering in animation canvas

Rendering a static image in formats like PNG, or JPG on an animation canvas is relatively straightforward as these images consist of a single image frame. Similar to video files, rendering animated images can be a little more complex due to a single image consisting of multiple frames. Using JavaScript, the browser's WebCodec API and the ImageDecoder interface, we can more easily render animated images like GIF files with full control over the frames and the animation of the image.



```
imageDecoder.type = image/gif
imageDecoder.tracks.length = 2

Partial metadata while still loading:
imageDecoder.complete = false
track[0].frameCount = 20
track[0].repetitionCount = Infinity
track[0].animated = true
track[0].selected = true

Final metadata after all data received:
imageDecoder.complete = true
track[0].frameCount = 20
track[0].repetitionCount = Infinity
track[0].animated = true
track[0].selected = true
```

*Figure 10. Demo of rendering animated image files in an animation canvas on the web*

#### 4.1.4 Animating image files and exporting as media

Following the various successful media rendering demos, the next step was to test out the possibility of compositing multiple forms of media, applying a simple animation and exporting out these animations as a common image or video format. This demo achieves that by allowing multiple image files to be uploaded and then displayed one after the other in a simple frame-by-frame flipbook style before being exported as a video (MP4) or animated image (GIF)

Select multiple images  3 files



Speed (seconds)

*Figure 11. Test demo for animating image files and exporting as media in a web browser.*

## Chapter 5: Iterative design

This research project follows an iterative design process that is driven by analysing direct feedback from creators and observations taken from their interactions with proposed solutions in the form of interactive digital prototypes

### 5.1 Designing from first-principles

When designing a solution that aims to improve on already established tools and services like in this case, it is very easy to get fixated on simply modifying established patterns and interaction models which in turn leads to recreating or modifying the past rather than creating the future. This limiting phenomenon was defined as ‘Design Fixation’ by David Jansson and Steven Smith in their seminal study by the same name (Jansson and Smith). They define the term as ‘when a designer is trying to create a novel design but fixates on the features of known designs they have witnessed, causing a blind adherence to a set of ideas or concepts limiting the output of conceptual design’

In order to truly design a novel solution; conception has to begin from the absolute fundamental truths of animation, removed from any preconceived notions and existing solutions. The framework taken for achieving this is based on the three-pronged approach proposed by Steven M. Smith and Julie Linsey; ‘1. Forgetting fixation, 2. Redefining problems, and 3. Using clues or hints to provoke new ideas.’ (Smith and Linsey). Awareness of fixation as in this case is the first step in forgetting and avoiding it but to truly redefine the problem, we need to be intimately familiar with the subject matter of animation.

#### 5.1.2 How does animation work?

Curiosity is important to designing using foundational concepts. From my experiences, innovation tends to arise from questioning our methods and processes, learning how systems operate and building structures that best accommodate these systems. The first fundamental question we have to answer is:

how do animations work? At its simplest, animation can be broken down to the rapid sequential progression of a number of still image frames over a given time period in order to create the illusion of motion.

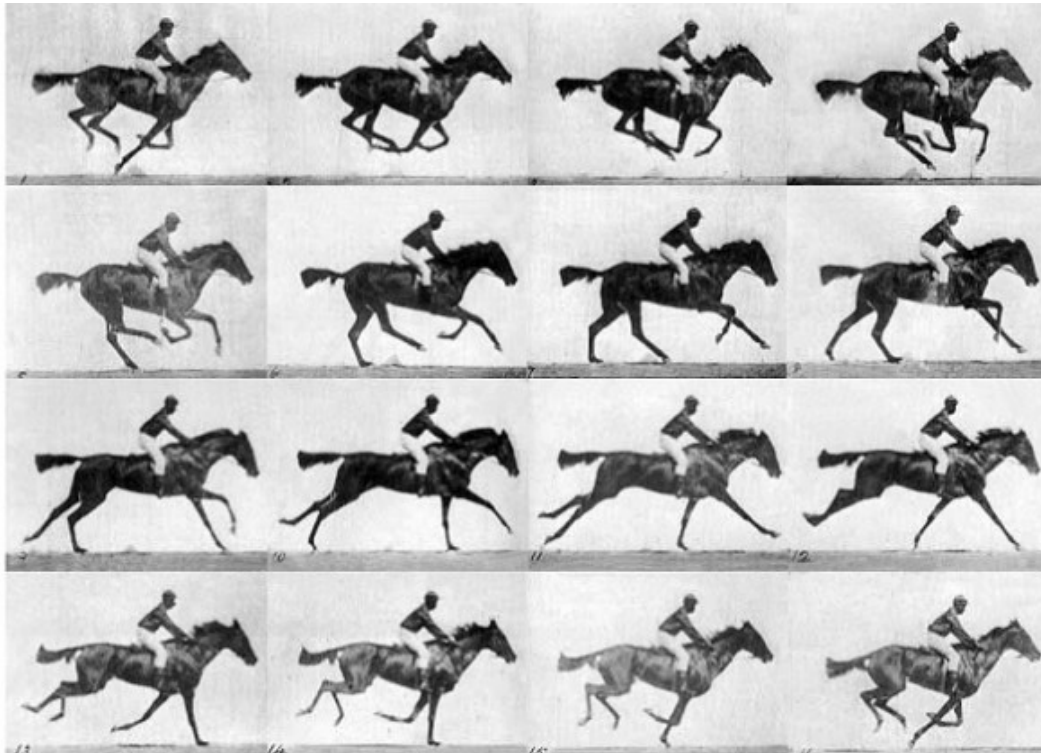


Figure 12. *The Horse in Motion*, by Edweard Muybridge, 1978, PD.



Figure 13. Representation of how cycling through the frames on the animation canvas creates motion

These frames could be drawn hand by hand (like in traditional animation techniques such as cel animation & rotoscoping) or created dynamically by computers using a process called *interpolation* in which key frames are manually set and the computer generates the possible new frames between the two key poses. This dynamic generation using key frames is the backbone of the animation timeline that can be found in almost all complex animation tools.



*Figure 14. Representation of how key frames and dynamic interpolation works*

## 5.2 First steps

A major part of the complexity of animation lies in the generation of the individual frames that are then put together to create motion. In the case of traditional animation, the hand drawn frames are painstakingly created by talented illustrators and animators with specialised knowledge beyond the scope of creators that do not work primarily in this field. Modern dynamic animation tools forgo a lot of the manual processes by being equipped with a suite of design tools that enable the creation of vector based assets and design elements that are then used to create the individual frames that are then interpolated between.

Professional animation tools tend to introduce a large number of design features in order not to restrict the number of possible styles that could be used to create an animation frame. This in turn



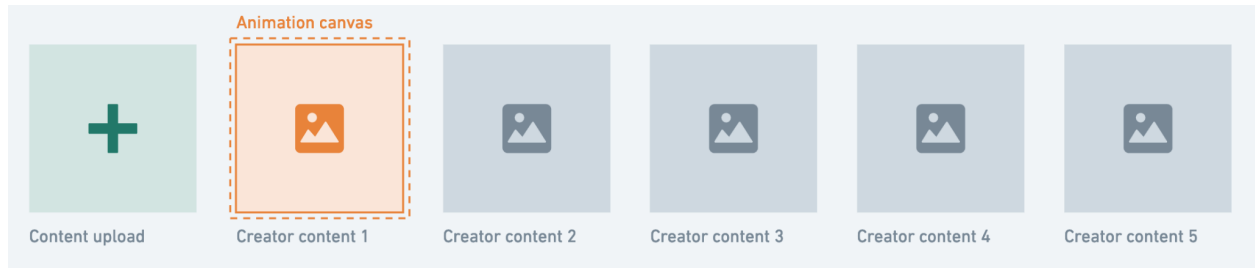
adds complexity as users have to learn both the design creation and the motion creation features the tool has to offer in order to get any results.

In a survey I conducted with a group of 25 creators from diverse sets of backgrounds, 20% of the group shared that animation was not part of their current creation process. 60% of those not using animation listed tool complexity and a fear of existing animation tools as the reasons for this. The remaining 40% stated that they simply did not think it was a necessary addition to their processes. When probed further about what made animation hard or intimidating to them, the non-users of animation pegged the reasons as an inability to grasp the functions of animation tools and confusion from the existing patterns and interaction models—such as the animation timeline—that exist in the current crop of animation tools they were familiar with (See Appendix B).

From these observations, I concluded that the first step to designing a solution for creators would be to develop a prototype devoid of the need for design functionality or granular control that comes with established motion interaction patterns like an animation timeline.

### 5.3 Prototype 1: Maximum utility, minimum control

In order to design a simple solution for creators that could still benefit their creation and sharing process, the final solution has to solve at least one of their key animation use cases. For this iteration I focused on creating a prototype that could help make their static work more engaging through the use of motion. By ruling out any major design features for this prototype, I was essentially relegated to focusing on the use of static creator content that had already been created in other tools and through other means that could then be imported into this first prototype and animated. Thinking back to the basic principle of how the animation cycle works, the simplest solution that would still provide a level of utility would be for creators to supply the content that would serve as the individual frames and then the tool would cycle through these frames to create a simple flipbook style frame-by-frame animation.



*Figure 15. Representation of how the Prototype 1 animation cycle would work*

### 5.3.1 Finding a solution

While testing out what was technically feasible on the web earlier (as documented in Chapter 4), the final proof-of-concept demo culminated to a simple solution pretty close to what this prototype is trying to achieve. Given that it was a rapid and scrappy technical demo, there were some protruding limitations to the user experience for creators that would be required to be addressed before a usable iteration for creators could then be engineered .

To kick-off the design process for this prototype, I went back to the final technical feasibility demo and audited it for visible areas that could be improved upon, using my years of experience as a practising User Experience Designer as a lens to conduct the critical analysis from.



*Figure 16. Screenshot showing the interface of the final technical feasibility demo*

I used an end to end design process of analysis, problem identification, solution hypothesising and design exploration in order to end up with the final prototype to be developed. The design exploration phase was broken up into two; low fidelity explorations using wireframing and higher fidelity explorations meant to flesh out the visual identity of the prototype after the structure and layout had been finalised in the exploratory low fidelity stage.

In order to ensure truly rapid development and escape unnecessary fixations that could arise from focusing too dearly on visual and aesthetic treatments in the higher fidelity stages of design exploration, I deemed it best to forgo that stage of the design process. What this meant was that structural design development from the low fidelity stage was immediately followed by a higher fidelity design created directly with code rather than in a dedicated interface design tool like Figma.

The ramifications of skipping high fidelity design meant the visual components of the design adhered closely to the web browser defaults, making use of the platform’s native implementations and styling as a backbone rather than spending time wrangling with how to adjust these defaults to match a visual similarity that would have been established in the high fidelity design phase. Doing so ensured the key focus in the design phase remained on developing the foundational layouts, structure and information architecture needed in order to adequately prioritise a simple experience for end users.

The confidence to conduct the higher fidelity design exploration at the development stage was fuelled by my lived experiences working in the capacity of a Design Engineer. Being intimately familiar with both the design and engineering life-cycle meant I could more easily merge stages from both fields into a single step for the sake of speed. Having conducted similar procedures in the past to develop rapid prototypes provided me with a level of comfort and assurance of the fact that merging stages could still lead to a feasible solution.

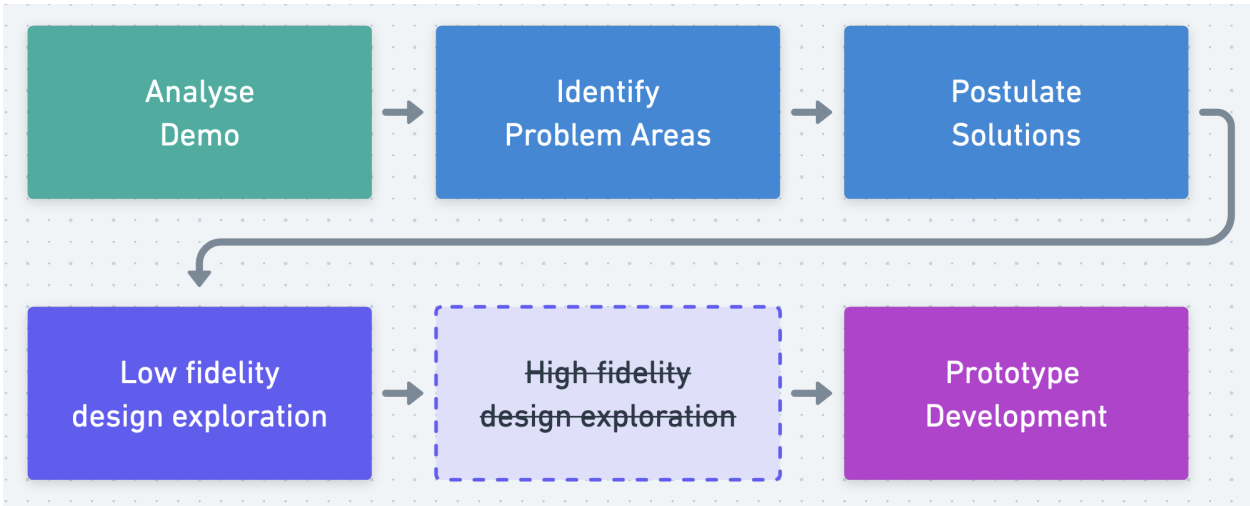
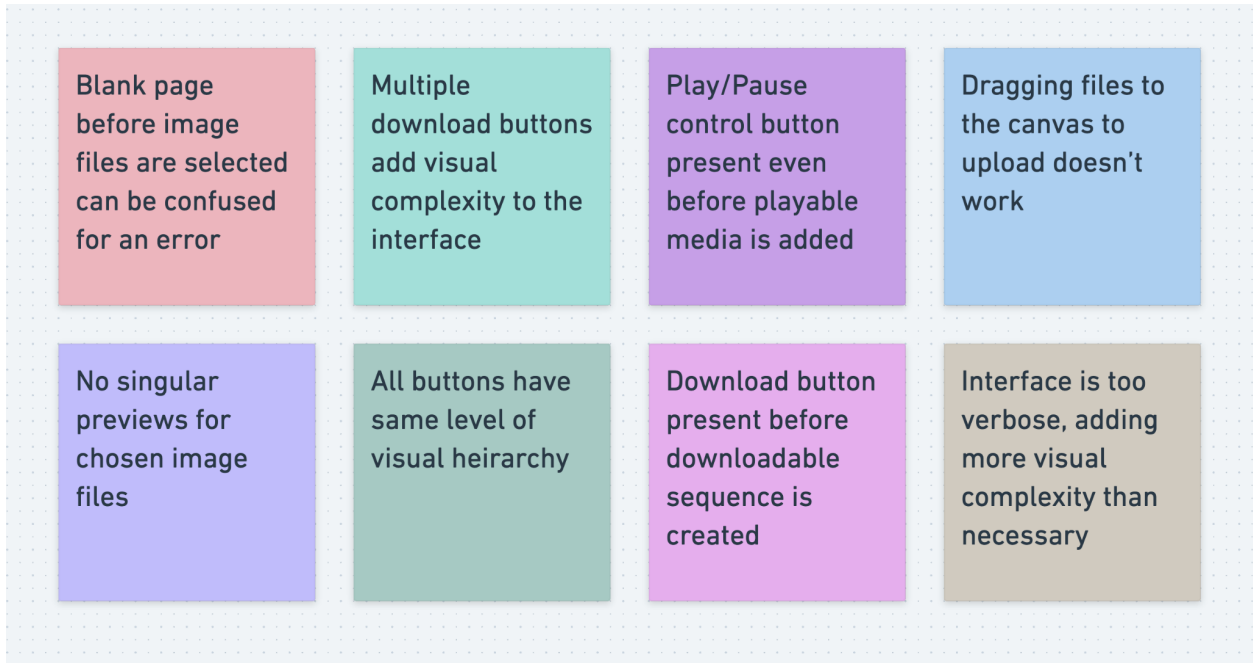


Figure 17. Prototype 1 design process

Upon completion of the technical demo audit and analysis, I documented the perceived key areas that needed addressing and improving upon before the user experience would be accessible enough to be easily used by creators.



*Figure 18. Key areas for user experience improvement noted from analysing the demo*

### 5.3.2 Foundational thinking for foundational solutions

Once I had identified the most glaring concerns from the technical demo, the next step I had to take was figuring out solutions to each of these concerns. Given that the foundation of this research design is built upon addressing existing problem areas from a fundamental perspective, each of the noted improvement areas had to be observed from a zoomed out, bird's-eye viewpoint. What this meant practically was that solutions to each problem area had to be analysed, reframed and iterated upon until the most foundational solution to each concern was derived.



Figure 19. Board representing the solution development process for previously identified key areas for user improvement.

Addressing each area of concern from this first-principles point of view ensured that the final solution that was derived didn't just solve the surface problem as it seemed but addressed the root of what actually needed to be solved. Working this way helped me develop elemental solutions that could be used as general guiding principles for solving problems (even those that may have not yet surfaced) while avoiding generic, prescriptive solutions that would only work for that single prospective area of concern.

Foundational solutions help modularize problem-solving, allowing a single solution to be used to address multiple overarching issues as evidenced in this case. Below is a list of the principal solutions identified that will be taken into the design phase as guidelines:

- Prioritise simplicity and clarity in visual communication
- Group similar functions under a common action.
- Enable multiple simple methods of content integration.

- Keep track of user uploaded media.
- Only display elements when they can be interacted with.
- Interface elements should indicate their state and importance.
- Reflect and prioritise possible interface actions based on state.

### 5.3.3 Designing a solution

Using the guidelines that were defined in the analysis and solution finding phase as direction, the first step taken was to design what the interface would look like in its initial state, when creators were interacting with the prototype for the first time. The core mechanic for this iteration hinged on the user uploading content they had created and wanted to combine together to create motion, so to draw emphasis to this, the design for this state was greatly simplified to direct users to this action.

The initial starting point is characterised by a large button positioned at the centre of the screen and nothing else, making it clear that a single, simple action was required. Users can upload content by clicking the button to select image files to be uploaded or by dragging and dropping selected content over the surface area of the button. This allows the two most common upload patterns in user interfaces to be used, adhering to expectations they might have from using other applications.

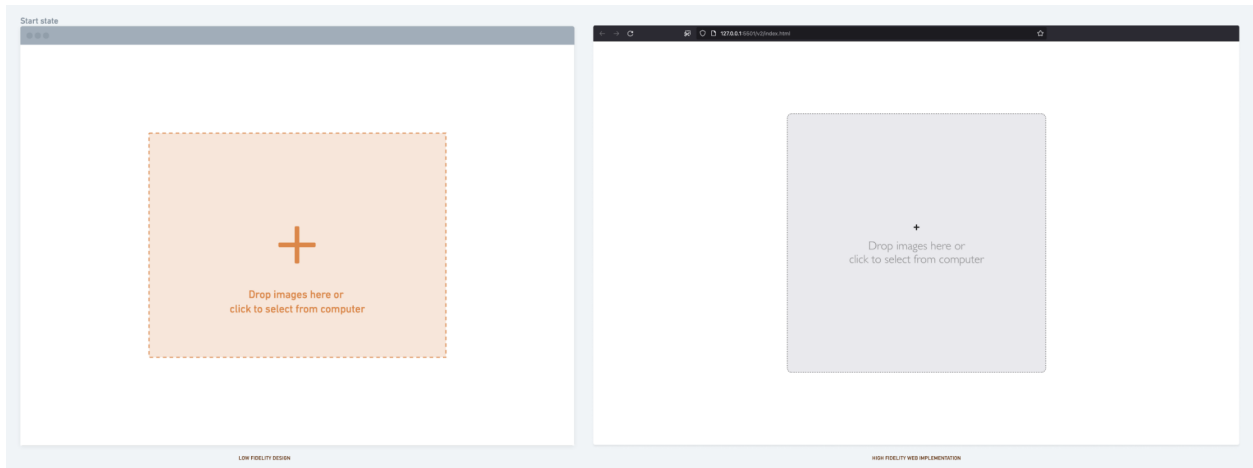


Figure 20. Low fidelity design for the Initial State and high fidelity web implementation for Prototype 1

Once creator content has been selected and uploaded, the upload area is removed and replaced with the animation canvas; the frame that will hold and preview the content animation. In addition to the animation canvas, a button to play the animation, a button to export the animation, a sidebar with uploaded content previews, and a button to modify the animation timing are all added to the interface.

The animation timing button allows the user to change the length of time a content frame in the animation holds for, before switching to the next. The sidebar with previews of each uploaded creator image shows a thumbnail for the content contained in a window (*Frayme*). This '*Frayme*' also serves the functionality of visually indicating which content frame is currently active and represented on the animation canvas. Clicking on a *Frayme* progresses the animation canvas to the point in time where that frame is active, making the *Fraymes* double as a progress indicator and timeline for progressing through the overall animation.



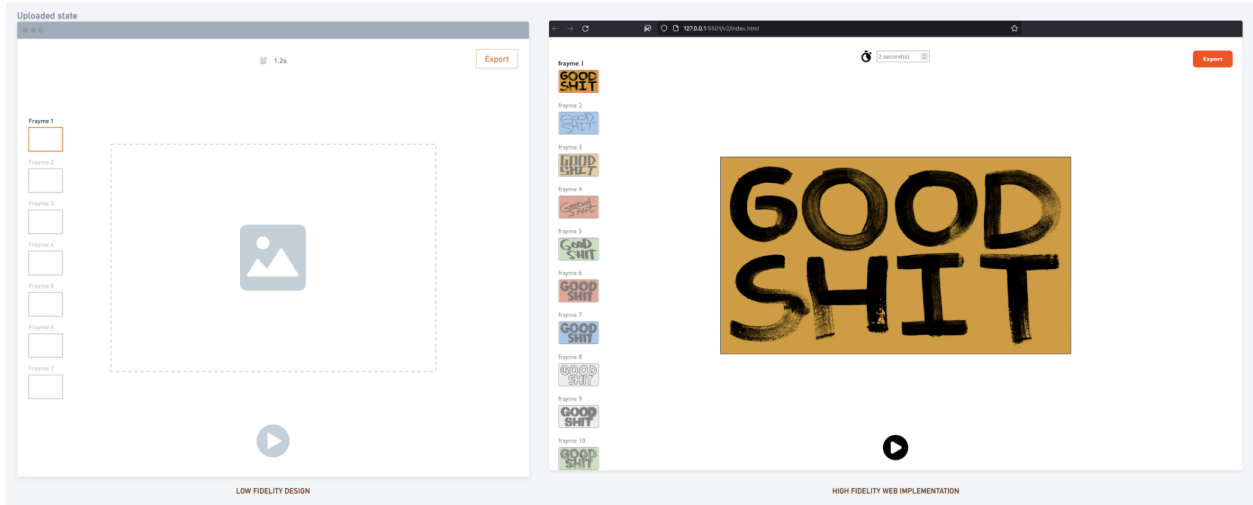


Figure 21. Low fidelity design for the Uploaded State and high fidelity web implementation for Prototype

1

The animation can be previewed by clicking the play button centred below the animation canvas. When the animation is played, the play button changes from the triangular icon depicting 'play' to two rectangular bars depicting 'pause'. This transition helps users understand that the same button used to play the animation could also be used to pause the animation.

In addition to a subtle transition animation that occurs between the play and pause icons when the play button is clicked, the button colour changes from a muted dark colour to a bright orange to adequately indicate to users that the application state had just changed and the playing state was now active.

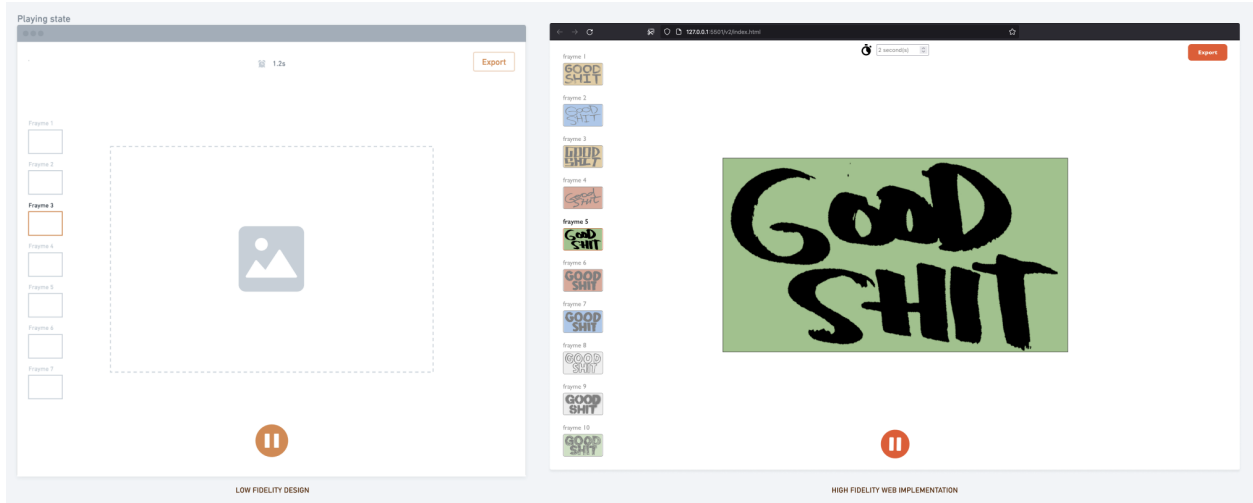


Figure 22. Low fidelity design for the Playing State and high fidelity web implementation for Prototype 1

### 5.3.4 User feedback

Upon development completion, this prototype was tested with 5 creators that identified as either digital creators, content creators or a combination of both. These participants were all selected from a subset of the earlier surveyed creators that had indicated interest in being part of a later usability testing session.

A week before their respective usability testing sessions, each creator participant was shown an example video and an example GIF image I had created with the prototype and then told to prepare necessary content they would want to use for testing.

Showing the participants samples of animated content I had made with the prototype helped manage their expectations of the kind of content that could be created and provided them with direction that helped shape the type of content they selected to be used in the usability testing sessions.

Each 30-minute user testing session was conducted remotely over video conferencing platform, Zoom. A link to the web prototype was shared with the participants and they were given a list of tasks to complete using the prototype while sharing their screens so I could observe and document their

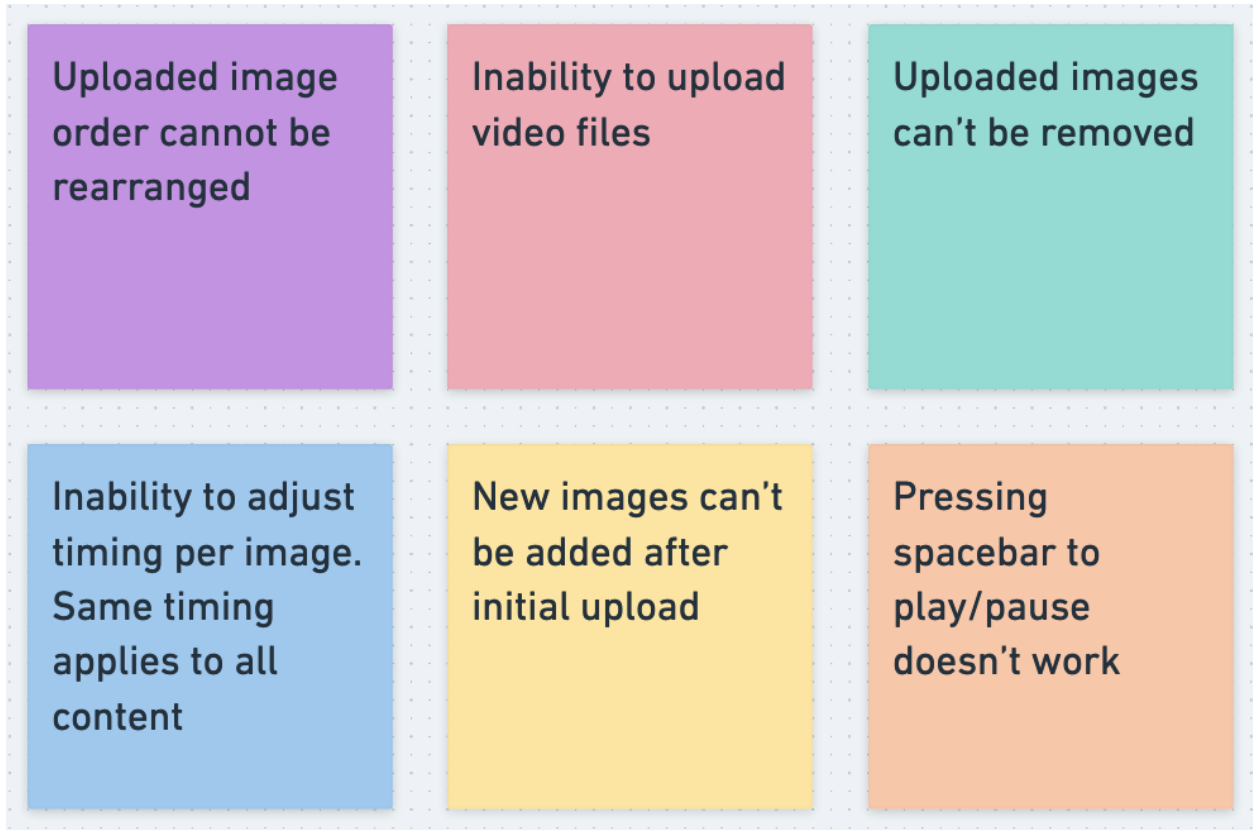
actions for analysis. Participants were encouraged to talk through their thinking and to explain the reasons behind their actions while using the prototype to complete the following given tasks unassisted:

- Upload all the content you would like to animate.
- Preview your animation.
- Modify your animation to fit your preferences.
- Export your animation as a GIF.
- Export your animation as a video.

Each of the participants were able to complete all of the assigned tasks using the prototype in less than 10 minutes with the average time to completion being about 5 minutes. Below is a highlight of some interesting observations about the completion process:

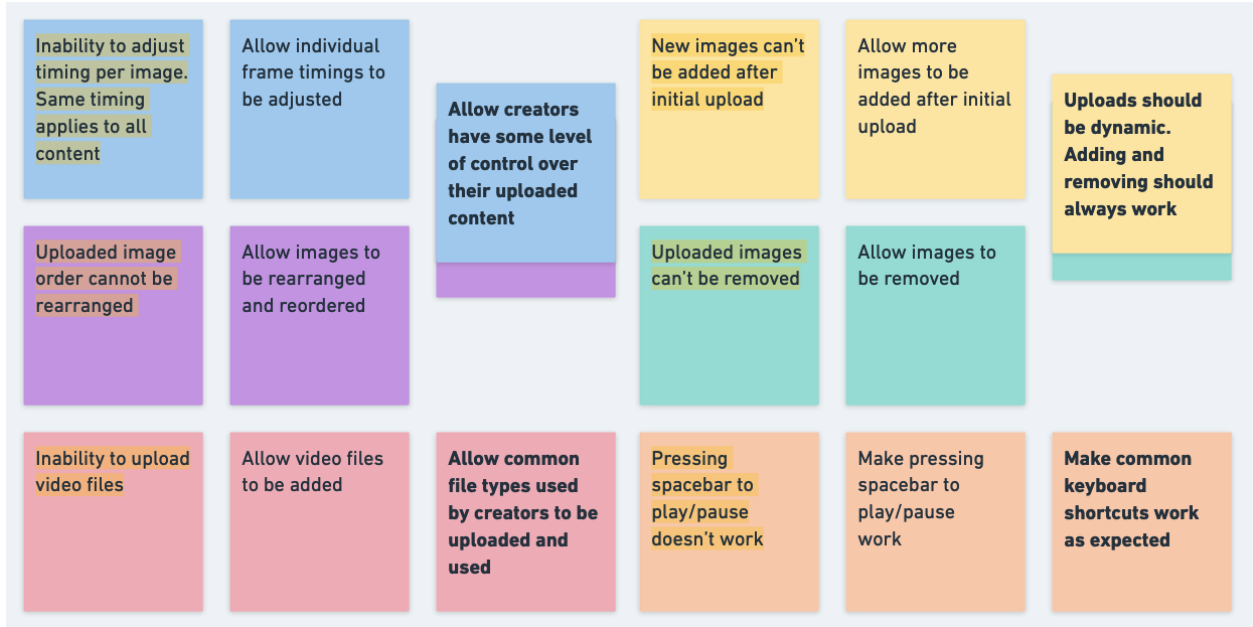
- The quickest participants completed their tasks without running into any hiccups or challenges.
- The 40% of participants that ran into challenges all did so at the upload stage by attempting to upload videos, a feature that had not been developed for this prototype.
- 4 out of 5 participants used drag and drop to upload their content instead of clicking and navigating through their system. (This could be because they had all prepared the content to be used in a folder).

Following the user testing sessions, I analysed all my documentation and created a list of key areas for improvement based either on direct feedback from the creators or observations noted during their interactions with the prototypes.



*Figure 23. Most common issues identified while testing Prototype 1*

Once I had identified what the key areas for improvements were based on user feedback, I used the same granular solution development process I had taken at the beginning of this prototype development cycle to generate possible solutions for each identified issue.



*Figure 24. Board representing the solution development process for the most common issues identified while testing Prototype 1*

Below is a list of each of the principal solutions identified from the user testing sessions that will be taken into consideration while developing the next iteration:

- Give creators more control over their uploaded content.
- Allow common file types to be uploaded and used.
- Allow user uploaded content to be more dynamic.
- Make common keyboard shortcuts work as expected.

## 5.4 Prototype 2: More control for even more utility

The focus for this iteration is allowing room for a little more customisation and user manipulation using the feedback solutions from the last prototype as guidelines for development. The design cycle

for this process was to develop the prototype solutions using low fidelity wireframing and then develop the high fidelity version with code, similar to the last prototype.

#### 5.4.1 Improving content control

In order to give creators more control over their uploaded content while making uploaded content more dynamic, a series of interaction refinements and interface updates had to be made. The first change was adding the ability to upload more content after the initial upload.

The first step was adding an option to add new content. An ‘add more’ button was added below the left sidebar component containing the *Fraymes* with the content previews. Placing the button in close proximity to the row of already added content helps provide context to users that this button is directly linked to the creation of content.

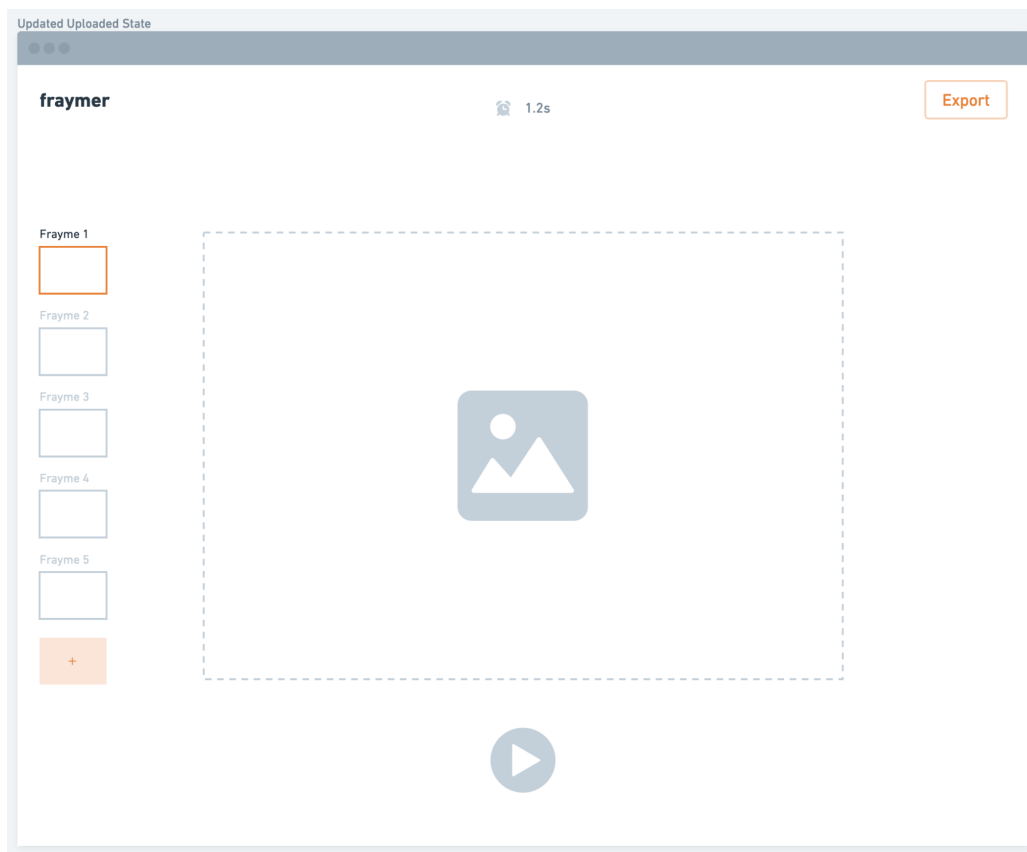


Figure 25. Updated view after upload with the addition of a new button for adding more content

When the “add more” button is clicked, the animation canvas is replaced with a big upload area just like at the initial upload state. This allows creators to upload one or more content media using the pattern they have now become familiar with.

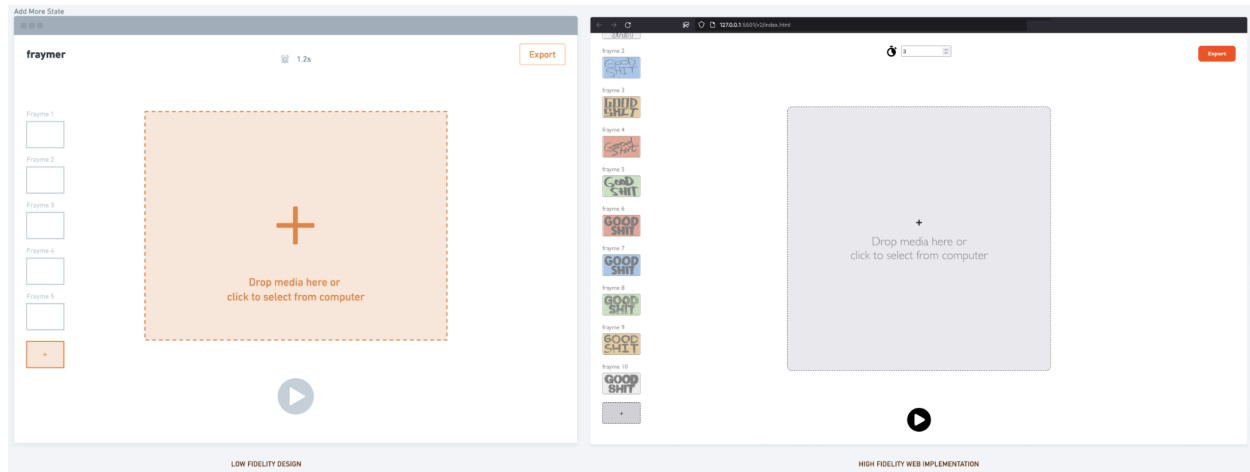


Figure 26. Low fidelity design and high fidelity web implementation for the Add more State in Prototype

2

Once the ability to add more content after the initial upload was implemented, the next content control improvement was allowing content order to be changed for the animation process.

Implementing the ability to reorder content did not require any visual additions to the interface but a change in user interactions. This was achieved by making the *Fraymes* draggable. Each content preview container was used as handles for allowing the content to be reordered by dragging and dropping on the vertical axis. This tactile interaction is very similar to how rearrangement would work while using physical objects, respecting and making use of creators' learned and expected mental models to ensure simplicity and ease of interactions.

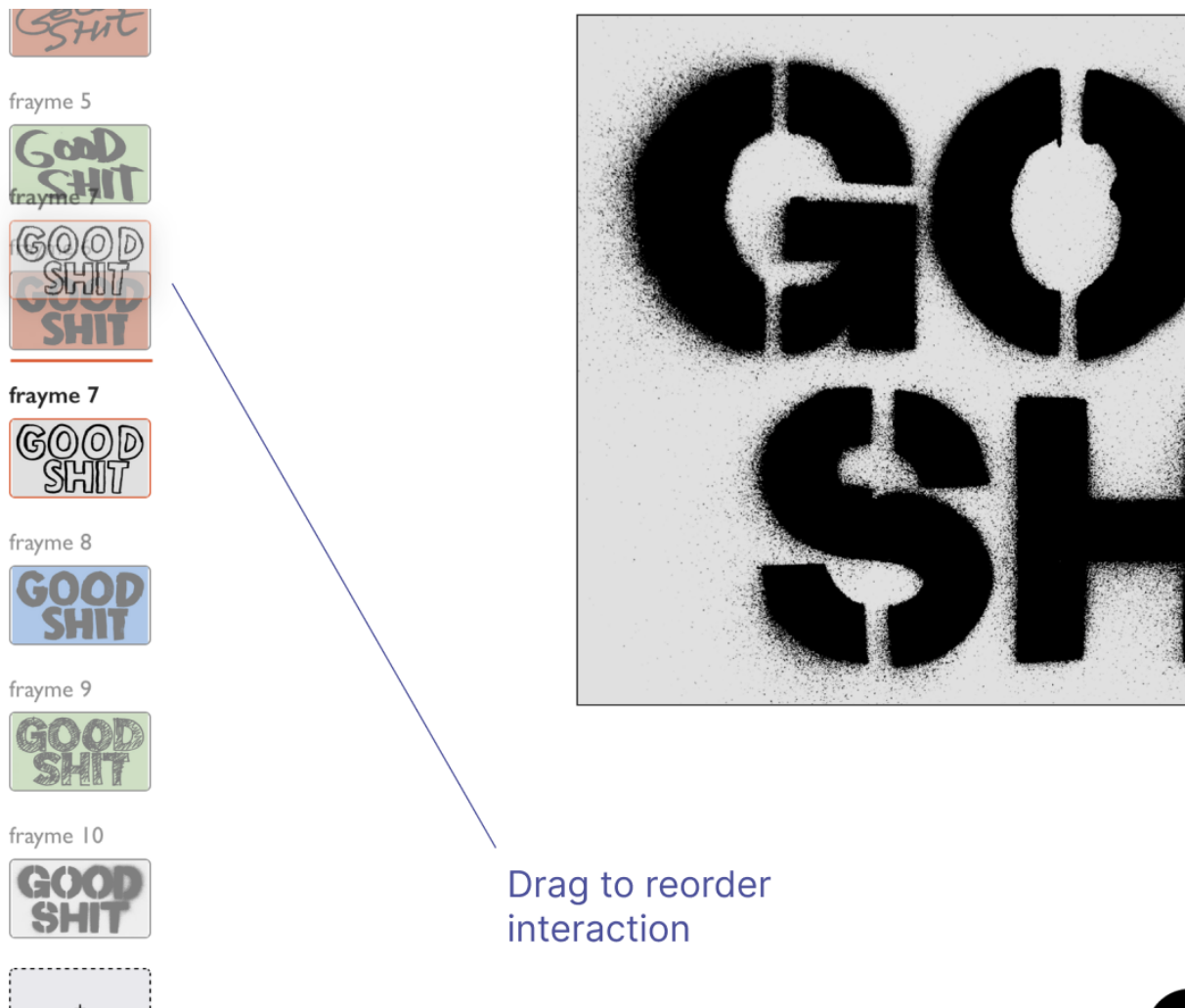


Figure 27. Screen capture of the drag and drop reordering in action

After the 'add more' upload button and the drag to reorder features were implemented, the next observed control improvement to make was that of animation timing. With the first prototype, each frame was shown for a default length of 2 seconds. This time could be adjusted to any length the user preferred but the same timing would always apply to each uploaded content frame. This restriction seemed to work against user's expectations as during the usability testing sessions of Prototype 1, 60% of the participants had attempted to change the timing while selecting a particular *Frayme*, expecting the timing to apply to only the selected content frame.



In order to allow for better timing and creative control, the timing control was changed to better match user expectations. The first step of this process was to add visual length indicators to each content frame. This text indicator was added as an overlay on the content preview thumbnails in order to show the length of time in seconds each uploaded frame was taking in the entire composition. After the indicators were added, the timing button was changed to affect only the actively selected *Frayme*.

In addition to the individual *Frayme* indicators, a general progress indicator was added beside the play button to show the total animation duration and the elapsed animation time at any point. The progress indicator was designed to help users see directly how any timing change affected the duration of the overall animation.

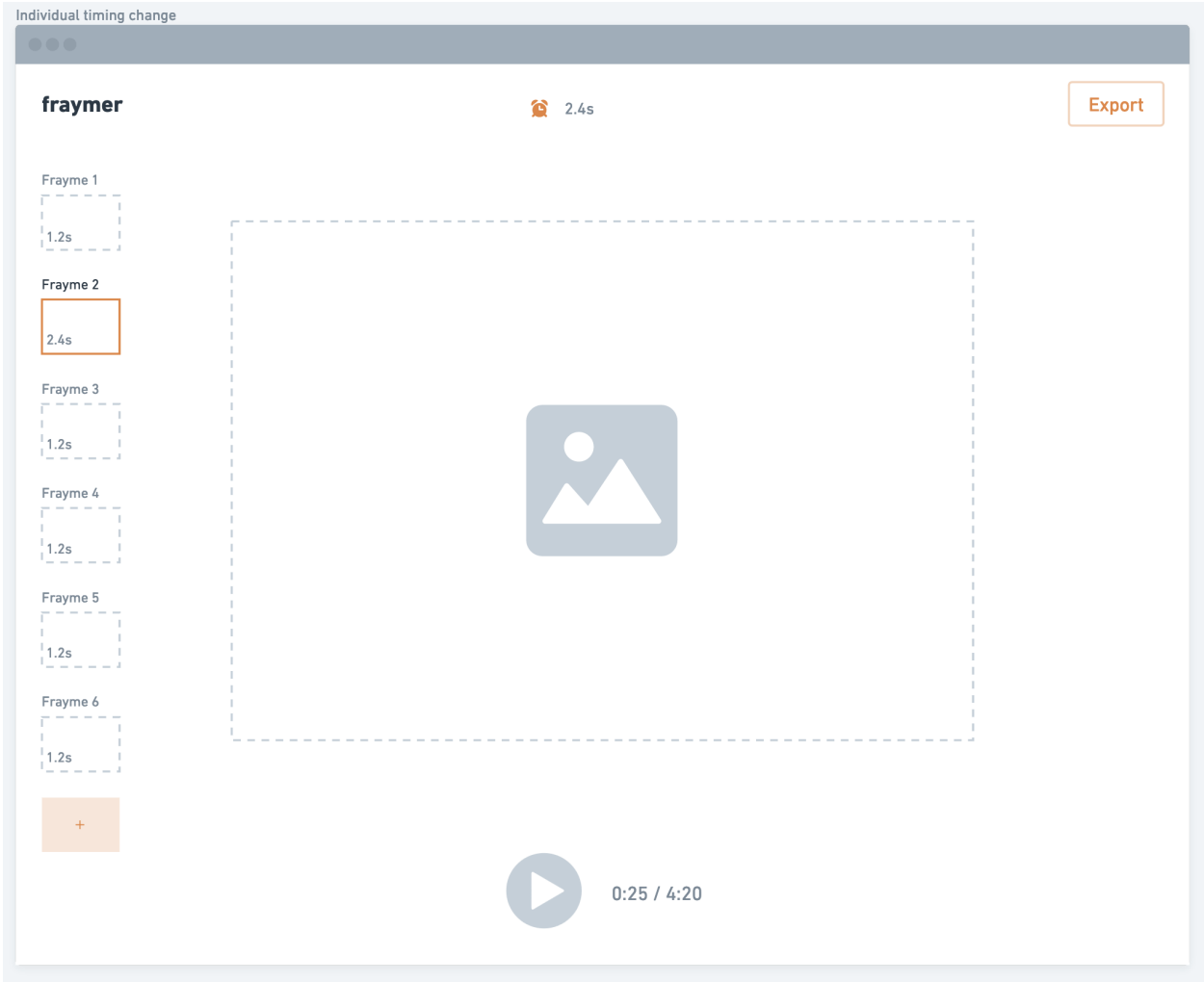


Figure 28. Low fidelity exploration of individual timing changes

Showing the elapsed time as the animation played also served the function of confirming to users that the animation was truly playing. This was especially important when playing animations with *Fraymes* that were holding for a long period of time as it would just appear as nothing was changing on the animation canvas until the time was up (because nothing was actually changing for the time being). Having the numbers progress while this was going helped provide an extra layer (the play button transition animation and colour change is the first layer) of reassurance to users that their action had been recorded when they pressed play and the system was indeed in progress.

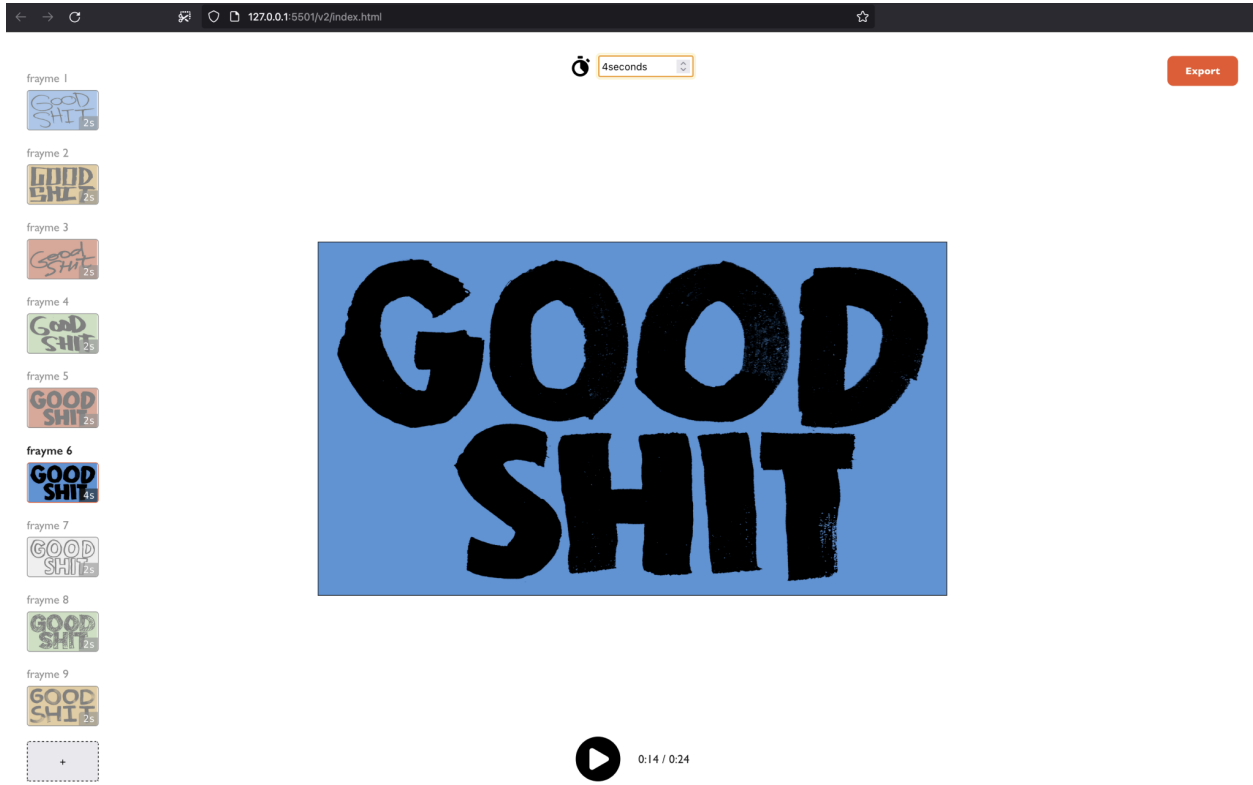


Figure 29. High fidelity web prototype showing how the timing now affects only the selected frame

## 5.4.2 Using more than just images

In a bid to allow more common file types to be uploaded and used as animation frames, I analysed the two most common creator file types other than static image files; video and animated images (GIFs). Having done feasibility studies for these two file types (see Chapter 4), I knew that implementation would be possible and focused on figuring out how these media formats would integrate with the current image animation cycle I was using from the last prototype.

I started with figuring out how the experience with adding GIFs could work but soon realised that they didn't fit the current linear approach to animation the prototype was taking as GIF files tend to loop infinitely. I eventually abandoned GIFs for the sake of speed as the potential solutions I was coming up with were seeming too complex for the current stage of prototyping.

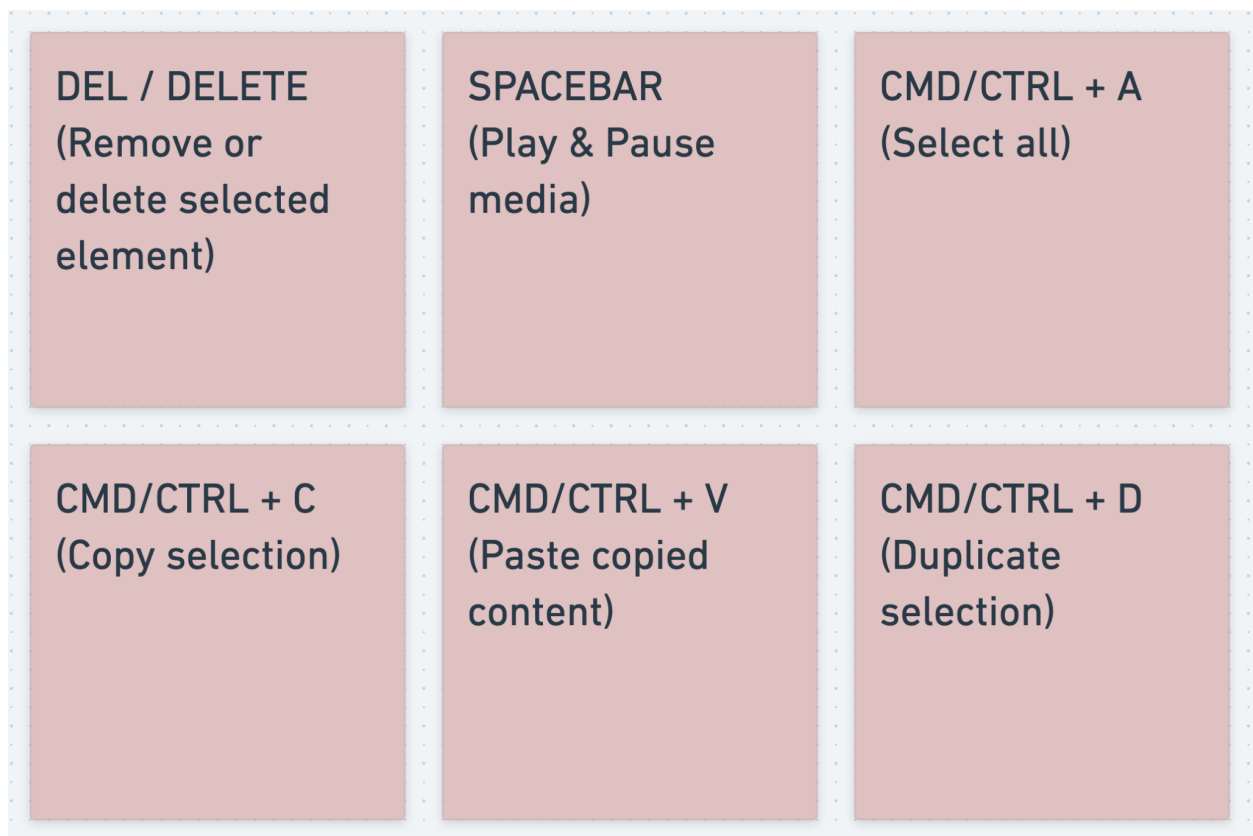
I ended up focusing only on video files as their finite play time worked well with the overall animation cycle I was working with for this prototype. On the development side, I added a handler for common video file types (MP4, MOV, WEBM, AVI, etc) to ensure selecting them during the upload process wouldn't cause any errors like in the first usability testing session. Once this was done, I detected the total duration of any uploaded video files and set that as the default duration for its containing Frayme. What this meant was that all Fraymes containing images would start with a default timing of two seconds but Fraymes containing videos would be set to the total length of the video. Timing for any Frayme could still be changed to match user's preferences but what this ensured was that users didn't have to manually go in and blindly adjust a Frayme timing if they wanted the full length video to play as part of their animated composition.

## 5.4.3 Keyboard commands and shortcuts

In order to improve the usability of the prototype, I decided to add the ability to perform commands with keyboard shortcuts. The first thing I did was binding the spacebar key to the play/pause functionality as a number of creators had requested for this functionality during the earlier usability

testing session. What this meant practically was that in addition to manually clicking on the play/pause button to toggle the play state, a creator could simply press the big spacebar key on their keyboard and that would simulate pressing the button, saving them the small travel time it might have taken for them to navigate to the button with their cursors.

Upon implementing the spacebar play functionality, I decided to research common keyboard commands used in tools, especially creative tools and came up with a small list of the most common ones that could apply to the context of this prototype.



*Figure 30. Some of the most common keyboard shortcuts found while researching.*

After analysing the list of shortcuts, I ended up only selecting the ‘delete’ key shortcut for this prototype as it was the simplest on the list (requiring only one key press instead of a combination like

the others) and could be applied as a solution for the last unimplemented improvement from the first prototype; the ability to remove uploaded content.

When implementing a destructive feature like a content delete, it is important to confirm from users if they would actually like to proceed with the action especially when the ability to undo an action doesn't exist yet, like in this case. To achieve this for this prototype, a combination of keyboard commands and manual confirmation is used.

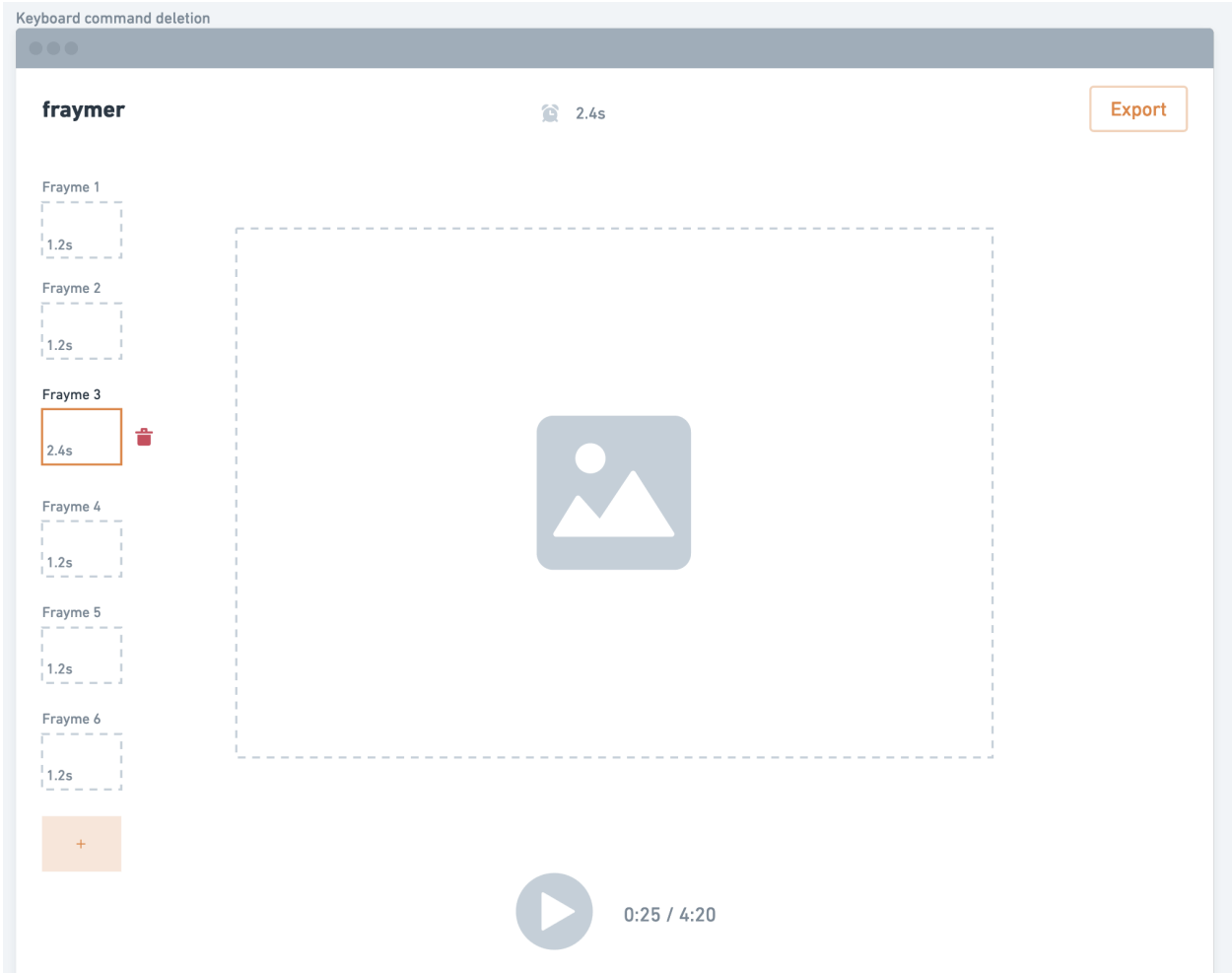


Figure 31. Low fidelity design for initiating content removal with delete key

Users can initiate the content removal process by pressing the delete key when the Frayme containing the content to be removed is selected. Once this happens, a secondary icon depicting a trash can appears beside the selected Frayme. Users need to click on this icon to confirm deletion and then the selected Frayme and its content is removed. When users hover over the deletion icon, it transitions to red to indicate once more to the user it is a destructive action.

#### 5.3.4 User feedback

Once all the identified issues from the first prototype were solved, it was time to do another usability test but for the updated Prototype 2 this time around.

Each 30-minute testing session was conducted remotely exactly like the first sessions but with a different group of 5 creators, selected from the same subset of the earlier surveyed creators that had indicated interest in being part of these later usability testing sessions.

As these creators were not the same that had tested the first prototype, I showed each of them samples of example content I had made with the prototype, to manage their expectations of what would be possible with the tool. Unlike the last time, I did not tell any of them to prepare content beforehand in order to observe if this would drastically change their interactions with the prototype compared to the last group.

For each testing session, the creator was given a link to the prototype and asked to share their screen and thought process while completing the following sequential tasks:

- Upload all the content you would like to animate.
- Preview your animation.
- Modify your animation to fit your preferences.
- Make the last Frayme last 1 second.
- Remove your least favourite Frayme.
- Export your animation as a GIF.

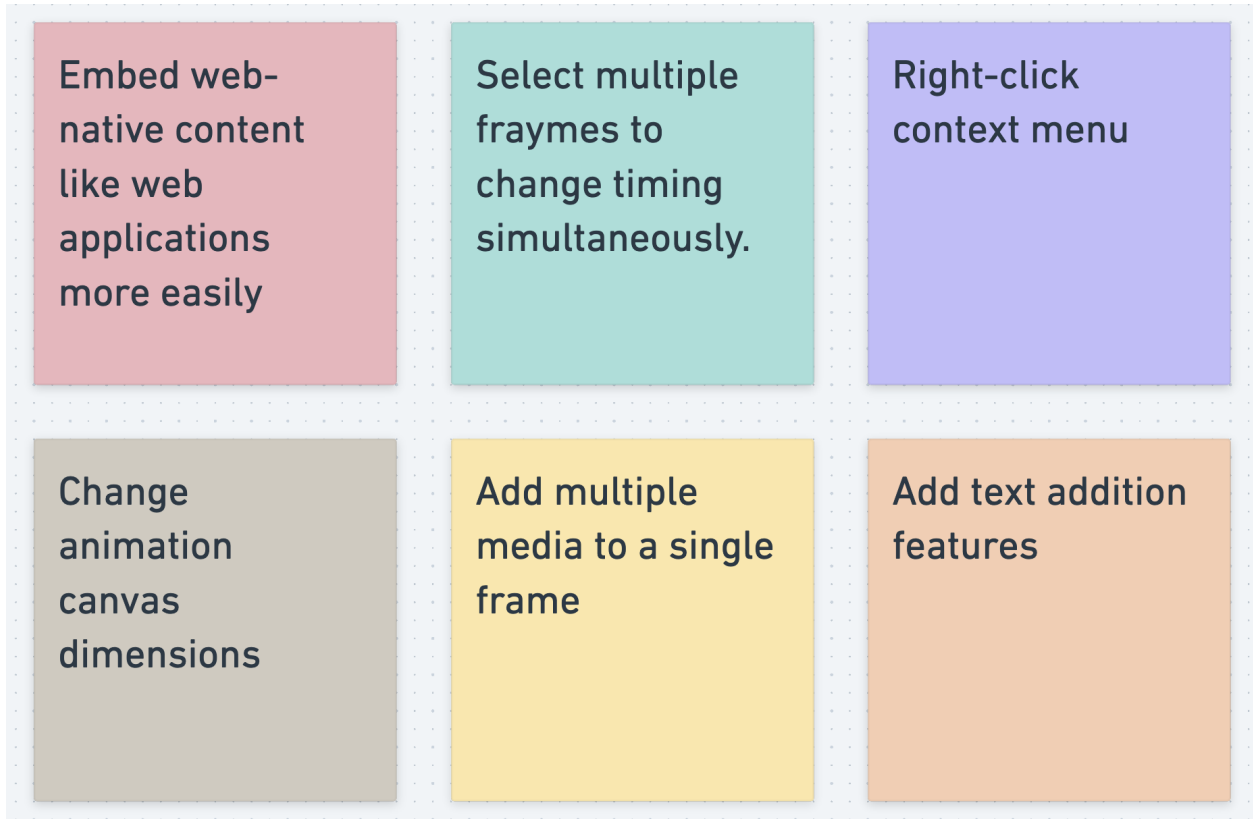
- Export your animation as a video.

All participants were able to complete all of their assigned tasks using the prototype but took noticeably longer than 10 minutes with the average time to completion being about 12 minutes. A large amount of this time was spent gathering and deciding on content they wanted to use as none of them prepared any content beforehand. Below is a highlight of some interesting observations about the completion process:

- 60% of participants added more content after the first upload.
- 1 participant noticed and used the delete feature while doing the 3rd task, before even being directed to remove anything.
- All of the participants noticed and used the drag and drop content reordering feature without being told about its existence.
- 2 out of 5 participants used the spacebar to play without being told to.
- All participants that uploaded videos uploaded screen recordings of their digital work like interactive websites and applications.
- 2 out of 5 participants used drag and drop to upload their content instead of clicking and navigating through their system.

While observing participant's interaction with the prototype, the most common unintended action was participants right-clicking on the selected Frayme when attempting to delete that Frayme. When probed further during the sessions they all shared similar explanations of how they expected some sort of contextual menu to appear and show possible actions for that Frayme, like deleting it. This was an interesting insight into a feature that could be possibly implemented in future versions of this prototype.

Following the user testing sessions, I analysed all my documentation and created a list of key areas for improvement based either on direct feedback from the creators or observations noted during their interactions with the prototypes.



*Figure 32. Desired features and key improvement areas identified while testing Prototype 2*

A majority of the requested features and improvements were leaning towards the addition of more design related features and modifications, something I had been avoiding as a way to maintain simplicity. Focus will be kept on enhancements that add the most utility without introducing too much complexity.

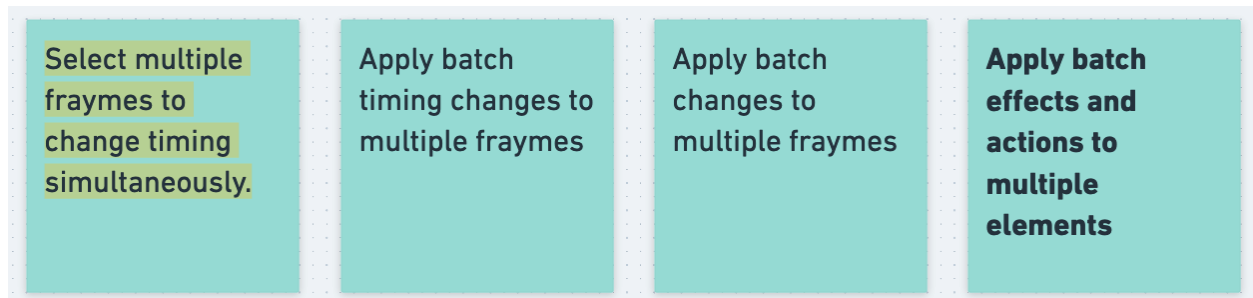
## 5.4 Prototype 3: Multi-selects and embeds

The focus for this iteration is to allow for easier actions and content integration. The design cycle for this process was to develop the prototype solutions using low fidelity wireframing and then develop the high fidelity version with code, similar to the last prototype.



### 5.4.1 Multi-select actions

One of the most requested optimisations from user testing the second prototype was the ability to set the same time to multiple Fraymes at once. In order to end up with the most elemental solution that would address the root of this concern, I proceeded to granularly analyse and reframe the users' request.



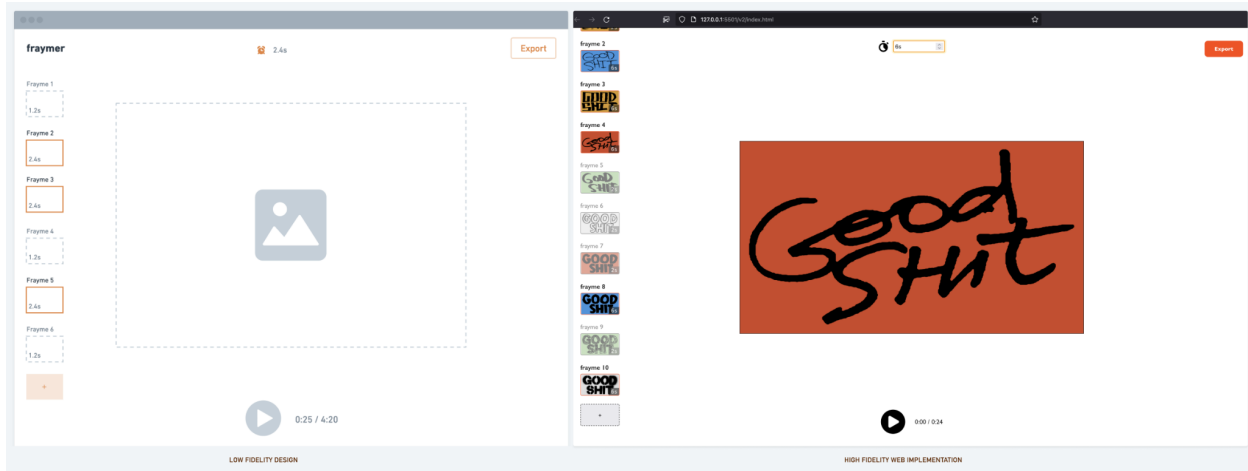
*Figure 33. Solution analysis process for multi-select actions changes in Prototype 3*

Synthesising user requests in this manner helps provide solutions and optimisations that work for both the immediate challenge at hand and some other use cases that focusing on the high-level alone would not have identified. The result of this synthesis was the understanding that users would like to:

- Apply batch effects and actions to multiple elements.

Having this knowledge helps unearth the motivation behind the request and improve other similar processes that could benefit from this style of optimisation.

In our case, we can immediately see another process pop-up in the form of batch deletion. By understanding the motivation we can deduce that if a user wants to batch apply an ACTION A (that they can normally apply to one element) to multiple selected elements, they may want to apply an ACTION B. As of the last prototype, the only 2 actions that could be taken on an uploaded content frame were either to change the timing or delete it. With this deduction, I proceeded to implement both a multi-select timing change and multi-select content removal feature.

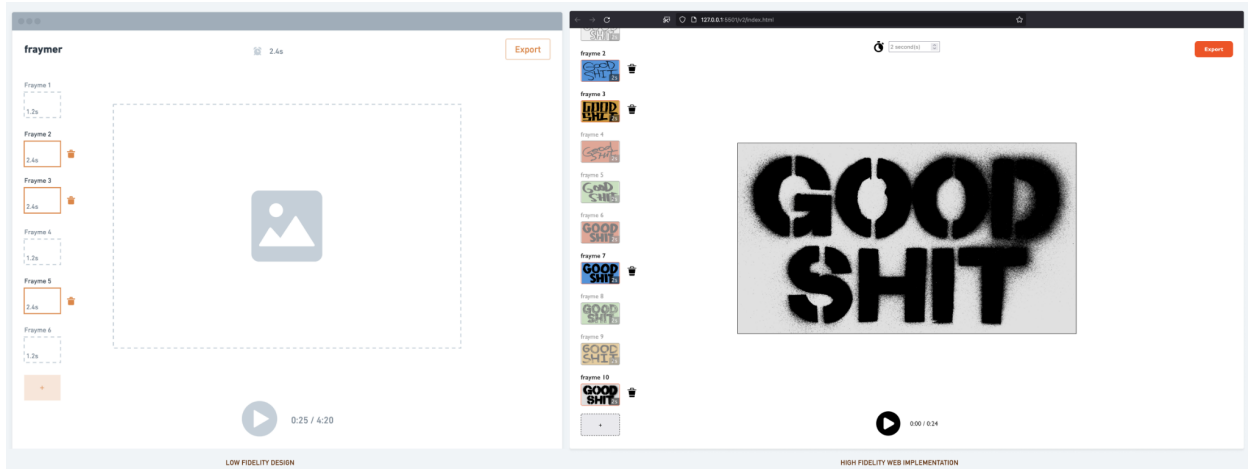


*Figure 34. Low fidelity design and high fidelity web implementation for multi-select timing change in Prototype 3*

The multi-select actions work by allowing you to select multiple Fraymes once you're holding down the 'command' key on MacOs or 'control' key on Windows, a similar pattern that can be found in popular productivity and creativity tools. Once multiple items are selected you can then proceed to either change time on the timing indicator or press the 'delete' key and the same changes that would have happened for one selection apply to all.

In the case of content removal, pressing the 'delete' key doesn't actually remove the content but initiates the deletion process allowing the final deletion button to show up. Users having to still delete each item one at a time was still less than ideal. This led me to think about alternatives to the deletion process that could be achieved faster while still providing enough warning before execution.

I eventually decided upon using a 'triple delete' system to achieve this. Instead of just pressing the delete key once to activate the deletion button, a second press would change the icon colour to the warning red you get when you hover right before clicking, and a final third press of the 'delete' button would finally delete all selected items.



*Figure 35. Low fidelity design and high fidelity web implementation for multi-select deletion activation in Prototype 3*

#### 5.4.2 Embedding web content

Seeing as all videos used by creators in the last prototype testing were screen recording of web content that had to be made with a dedicated screen recording tool, I set out to figure out a method of integrating these web applications and sites directly into the prototype.

Integrating and embedding one web document into another can be done using a HTML element called IFRAME. While researching and testing the IFRAME, I realised that it wouldn't be a very viable solution as embedding documents this way came with a lot of access limitations due to security concerns. From my research I discovered that the best way to access content while maintaining its visual integrity would be to simply have it open normally in a browser window. This was a limiting discovery as the best solution I could think of at first was to develop a browser extension that could record the chosen webpage and transmit it to the tool but that would require the user to download a separate add-on which would reduce the accessibility, a core part of this research.

I kept analysing the challenge while researching web technologies until I came across the 'Screen Capture API'; a modern interface for capturing and recording web pages as video.

I immediately set out to design a low fidelity exploration of how the experience could work. Once I had fleshed that out, I proceeded to implement the Screen Capture API in a new high fidelity web demo different from the previous prototype we had been working on. This allowed for the new API to be tested in isolation before integrating with the more stable and iterated prototype.

The final implementation worked by allowing users to enter a link to the site they would like to 'embed' and they got a video file back that they could then integrate into the standard prototype. Once they had entered the link, I programmatically opened their link in a new tab and then a popup would prompt them to select this new tab to be recorded. After the tab has been selected, they can interact with the website as they like while it's being recorded. Once satisfied they can stop the recording and a video file is immediately generated and downloaded.

# Chapter 6: Final prototype

The final prototype is a culmination of all the prototypes created so far combined with the latest embed demo. The final combination is done using a modular pattern that allows the iterated prototype and the embed demo to combine in a way that seems seamless and native to the prototype.

This amalgamation is achieved through the addition of a new right sidebar that houses a web component that allows the features of the embed demo work in the context of the entire prototype. This sidebar can be used to place other interactive components that can benefit the animation cycle like a text or template system that might be created in future work.

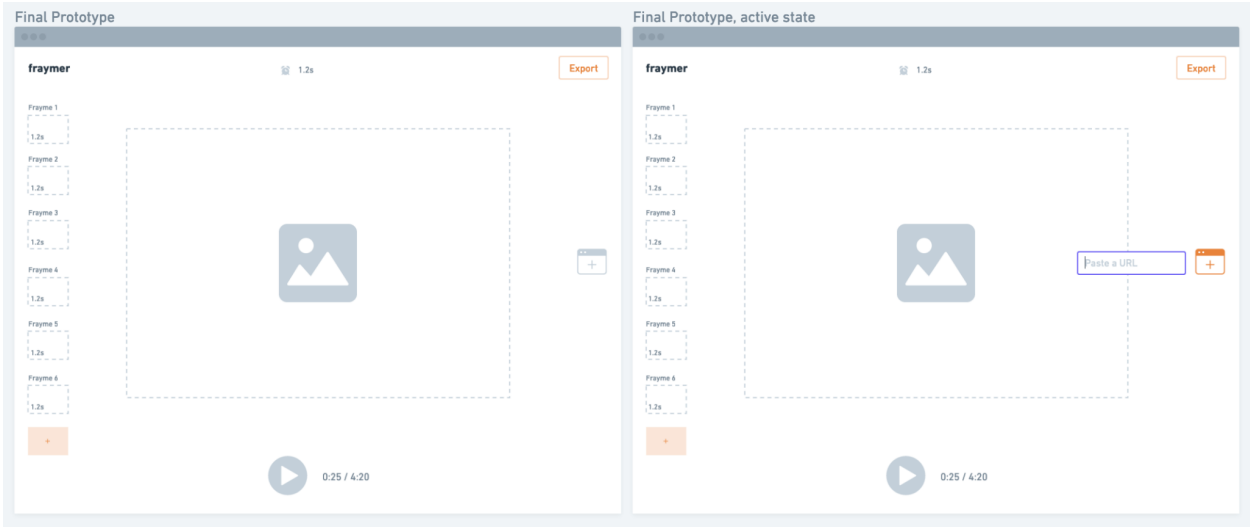
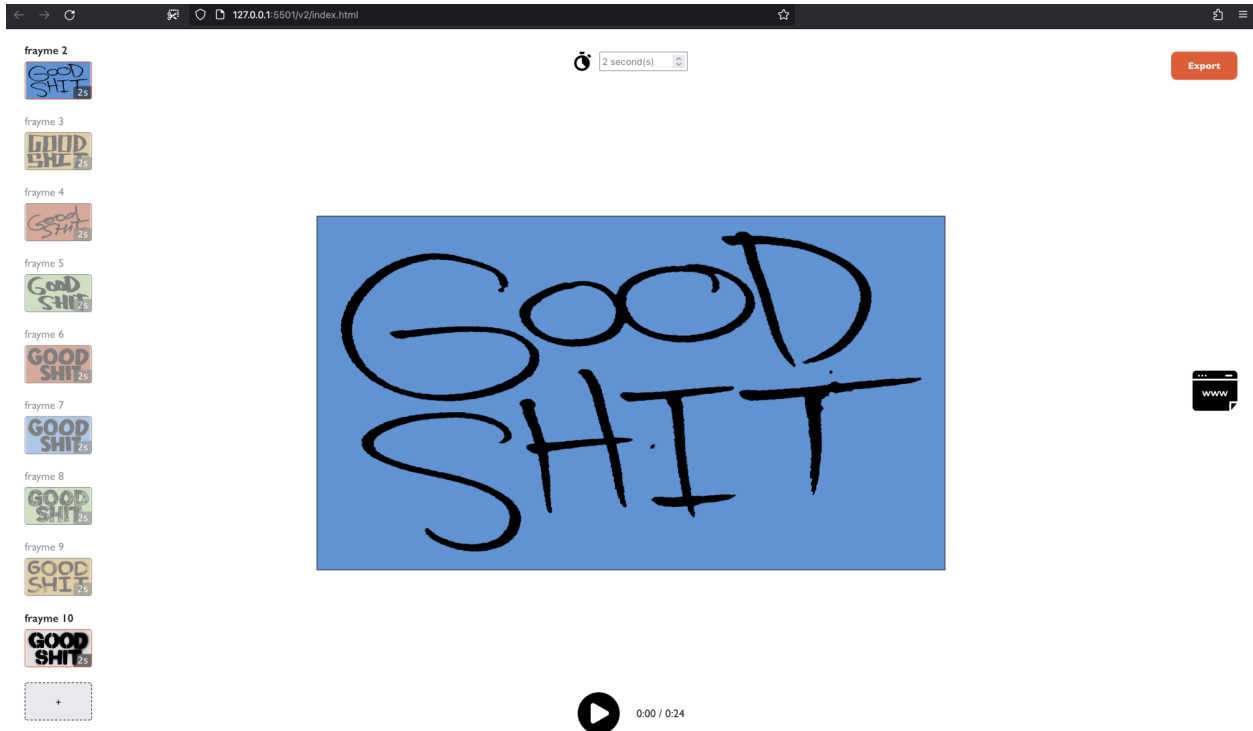


Figure 36. Low fidelity design exploration for the final prototype



*Figure 37. High fidelity web implementation for the final prototype*

## 6.1 Evaluation

A last usability and utility review was conducted with a group of 5 creators sourced from the previous usability tests. The overall sentiment and evaluation of the final prototype was good with 4 out of 5 participants saying they would use it again to create animated compositions. All participants acknowledged the tool to be the simplest animation tool they had encountered. A common complaint and point of concern from participants was the singularly-minded nature of the tool. Participants all acknowledged the tool as very simple to use but believe that this is largely due to the fact the tool is only good for creating a single flipbook animation style.

The general sentiment was that the tool was good enough to be used in their creative process but not complete enough to be truly used as a general purpose animation tool fitting all their communication and presentation needs.

One of the primary limitations of this study was the lack of adequate time and funding necessary to develop a large number of graphic-intensive prototypes. Exploration of user suggested design-related features with moderate levels of complexity were not able to be carried out due to these constraints. In order to design a tool that accommodates more of creators' communication and presentation needs, these complex features need to be explored and analysed using the foundational analysis processes used throughout this research.

## Chapter 7: Conclusion

While answering the first research question “How can the browser be used as a platform for designing simpler interactive animation tooling for communication and presentation by creators?”, this Research through Design demonstrates how a foundational approach of inquiry, solution finding and testing; using web technology as a high fidelity implementation platform can result in the creation of a simple animation tool for creators.

By creating prototypes and iterating upon them with feedback from a group of creators I was able to end up with a final solution that could be used to create animations for communication and presentation in a simpler manner than any animation tool previously used by the group of creators tested with.

This study illustrates the benefits of using a Research through Design methodology to practically engage with and discover novel insights, questions and principles that shape the solution creation process.

By constantly conducting critical problem analysis, prototyping solutions and discussing with and getting feedback from the target audience of creators, I was able to engage in a design process that culminated in the development of a simple tool that helps creators better communicate their ideas and present their content through animation. While the final tool developed helps improve communication and presentation for creators using a specific animation style, future research is required to establish the requirements for building an all-purpose communication and presentation animation tool that caters to a multitude of use cases.

### 7.1 Future goals

The final iteration developed for this tool works using content made by creators as the primary assets. A future goal would be to develop a version of this tool that is embedded in the primary content creation tools. This would eliminate the need to export content out of their site of creation before



being uploaded into the animation tool. This sort of integration can be developed as a plugin for a popular platform used by creators. Building the tool in this embedded way can allow for better synergy and even easier adoption by creators. A practical example of this could be in the form of a plugin or widget built for a common and accessible design creation platform like Figma, allowing the animation process with Fraymer to be embedded into preferred design workflows without the need for content exportation.

Apart from integrating the tool into another creator platform, another goal is to integrate multiple content sources such as stock image and stock video repositories into the animation tool, allowing more content to be easily sourced for the animation compositing process. This process can be facilitated through public open API's for content platforms like Unsplash (stock image repository) and Shutterstock (stock images, music and video repository).

The ultimate long-term goal this project aims to achieve is that of finding creative ways to simply integrate design-related features like texts, effects and animation templates into the animation creation process. Doing so will allow room for more creation in the tool and increase the number of communication and presentation applications the animation tool can be used for. Additional funding will enable further research exploration that can be carried out by an expanded research team which will enable more iterations to be created and testing to be carried out more swiftly.

← Tweet



**demilade olaleye**  
@demiladeHQ



Hey! 🙌

I'm building a tool to help creators make animated content easily and could use your help.

If your work/practice primarily involves making things/content, please contribute to this short, anonymous 3-minute survey to help shape the design.



[forms.gle/MrPWwt8oSp31n1...](https://forms.gle/MrPWwt8oSp31n1...)

3:35 AM · Jan 17, 2023 · **3,790** Views

📊 View Tweet analytics

**25** Retweets **1** Quote **21** Likes

## **Recruitment Scripts Sample**

### **User Survey**

Do you use design tools or applications for creation and are over the age of 18?

Are you interested in contributing to the design of a simpler, more intuitive browser-based animation tool?

If so, I'm looking for YOU to be a part of my graduate thesis project.

If not, please share with a friend or colleague that might be interested.

To participate, please complete the consent form attached below by *[a deadline date]* and share with me.

*[Attach consent form]*

### **Usability Testing**

Do you use animation tools/applications and are over the age of 18?

Are you interested in contributing to the design of a simpler, more intuitive browser-based animation tool?

If so, I'm looking for YOU to be a part of my graduate thesis project.

If not, please share with a friend or colleague that might be interested.

To participate, please complete the consent form attached below by *[a deadline date]* and share with me.

*[Attach consent form]*

## RESEARCH CONSENT FORM

### **Basic Information**

Title of Project: Fraymer; designing a web-based animation tool for communication and presentation

Principal Investigator: Michelle Astrug  
[mastrug@ocadu.ca](mailto:mastrug@ocadu.ca)

Student Investigator: Demilade Olaleye  
[demiladeo@ocadu.ca](mailto:demiladeo@ocadu.ca)

### **Overview**

We are asking you to be in a research study. A research study is an organized way of collecting information about scientific questions. This form will tell you what you should expect if you agree to be in the study. There are programs in place to make sure that investigators fulfill their obligations listed in this form.

It is your decision whether or not to join the study. We are asking you to be in this study because of your experience as a creator. We are doing the research to gather information that will help inform us on the best ways to design a simple to use animation tool in the browser. If you agree, you will participate in a short open-ended survey. You will be a part of the study for 7 months if you decide to stay for the whole study but the survey process takes less than an hour to complete. You will find more information about what will happen in this study later in this form.

There are no reasonably foreseeable risks and discomforts associated with being in this study. You will find more information about risks later in this form.

|

### **Purpose**

This study is based on a Research Through Design methodology and would require participants to take a survey to provide qualitative data that will inform the final design decisions. Working with the primary stakeholder group (design tool users) throughout the study will help ensure that the final product created will meet their needs and be able to be integrated into their content creation process.

### **What Will Happen in This Research Study**

Participants will answer a survey that includes open-ended qualitative research questions.

All forms, surveys and recorded data will be collected into a secure server that only the researcher has access to.

### **Risks and Discomforts**

There are no reasonably foreseeable risks and discomforts associated with being in this study.

If you decide that you want to stop being in the study, we ask that you let us know. You are free to stop at any time before March 1 2023. Participants who withdraw prior to the deadlines will have their data and contact information deleted.

### **Potential Benefits**

You will receive no direct benefit from being in this study. The primary goal of this research is to collect information about the scientific questions asked in this study. Your being in this study may help the investigators learn better ways to enhance the user experience of the animation tool being designed.

### **Costs**

There are no costs to you for being in this research study.

### **Payment**

The research may lead to the development of an application that might have commercial value. You will not get any money if products are developed from the research.

### **Confidentiality**

We will store your information in ways we that are secure. We will store electronic files in computer systems with password protection and encryption. Only the people listed later in this section will be given access to your information. However, we cannot guarantee complete confidentiality.

We will share research data where we have removed anything that we think would show your identity. Such sharing includes:

- Publishing results in an academic book or journal.
- Using research data in future studies, done by us or by other scientists.

### **Subject's Rights**

By consenting to be in this study you do not waive any of your legal rights and confirm you're over the age of 18. Consenting means that you have been given information about this study and that you agree to participate in the study. You will be given a copy of this form to keep.

If you do not agree to be in this study or if at any time you withdraw from this study you will not suffer any penalty. Your participation is completely up to you.

### **Questions**

The investigator or a member of the research team will try to answer all of your questions. If you have questions or concerns at any time, contact Demilade at 647-871-5710.

By agreeing to be in this research, you are indicating that you have read this form (or it has been read to you) and that your questions have been answered to your satisfaction.

**Subject:** \_\_\_\_\_  
Printed name of subject

By signing this consent form, you are indicating that

- you have read this form (or it has been read to you)
- your questions have been answered to your satisfaction
- you voluntarily agree to participate in this research study

\_\_\_\_\_  
Signature of subject

\_\_\_\_\_  
Date

If you have questions regarding your rights as a participant in this study please contact:  
Research Ethics Board c/o Office of the Vice President, Research and Innovation OCAD University 100  
McCaul Street Toronto,  
M5T1W1 416 977 6000 x4368  
research@ocadu.ca

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Title of Project: Fraymer; designing a web-based animation tool for communication and presentation

Principal Investigator: Michelle Astrug  
[mastrug@ocadu.ca](mailto:mastrug@ocadu.ca)

Student Investigator: Demilade Olaleye  
[demiladeo@ocadu.ca](mailto:demiladeo@ocadu.ca)

Study Phone Number: 647-871-5710

### **Overview**

We are asking you to be in a research study. A research study is an organized way of collecting information about scientific questions. This form will tell you what you should expect if you agree to be in the study. There are programs in place to make sure that investigators fulfill their obligations listed in this form.

It is your decision whether or not to join the study. We are asking you to be in this study because of your experience using animation tools. We are doing the research to gather information about the most intuitive ways to design a simple to use animation tool in the browser. If you agree, you will participate in usability testing sessions where you'll be given tasks to complete with a design prototype on a virtual call while we monitor and record observations. You will be a part of the study for 7 months if you decide to stay for the whole study but the testing process takes about 15 minutes per session with a maximum of 5 sessions. You will find more information about what will happen in this study later in this form.

There are no reasonably foreseeable risks and discomforts associated with being in this study. You will find more information about risks later in this form.

### **Purpose**

This study is based on a Research Through Design methodology and requires participants for testing the usability of design prototypes for informed iterations and refinement.

Working with the primary stakeholder group (animation tool users) throughout the study will help ensure that the final product created will meet their needs and be able to be integrated into their content creation process.

### **What Will Happen in This Research Study**

Participants are invited to a virtual call where a link to an interactive web based prototype of the tool is shared with them and they are given a list of tasks to complete using the prototype (a 2D design simulation of how the final tool might work), while sharing their screen for documentation.

Participants will be presented with basic shapes, simple vector graphics, text and images that help simulate the final experience of using the tool. All content will be context appropriate and child-safe.

Participants will interact with the prototype in a web browser by performing actions like clicking on buttons and interface panels.  
(10-20 minutes).

Participants tasks will be to simulate actions they will take as an end user using the animation tool to get certain outcomes. Examples might be to 'Login to the tool', 'Change animation timing', 'Export animated content as video', all using the given prototype.

The goal of this is to test the assumptions made through the design of the prototypes by examining the areas of confusion, ease of actions and number steps taken by the test participants, noting areas for improvement and refinement.

Requires screen and audio recording of the virtual call. Participants have the option to not turn on their camera and names will be hidden. All virtual call recordings are used for note taking and evaluating participant visual and verbal reactions

### **Risks and Discomforts**

There are no reasonably foreseeable risks and discomforts associated with being in this study.

If you decide that you want to stop being in the study, we ask that you let us know. You are free to stop at any time before March 1 2023. Participants who withdraw prior to the deadlines will have their data and contact information deleted.

### **Potential Benefits**

You will receive no direct benefit from being in this study. The primary goal of this research is to collect information about the scientific questions asked in this study. Your being in this study may help the investigators learn better ways to enhance the user experience of the animation tool being designed.

### **Costs**

There are no costs to you for being in this research study.

### **Payment**

The research may lead to the development of an application that might have commercial value. You will not get any money if products are developed from the research.

### **Confidentiality**

We will store your information in ways we that are secure. We will store electronic files in computer systems with password protection and encryption. Only the people listed later in this section will be given access to your information. However, we cannot guarantee complete confidentiality.

We will share research data where we have removed anything that we think would show your identity. Such sharing includes:

- Publishing results in an academic book or journal.
- Using research data in future studies, done by us or by other scientists.

### **Subject's Rights**

By consenting to be in this study you do not waive any of your legal rights and confirm you're over the age of 18. Consenting means that you have been given information about this study and that you agree to participate in the study. You will be given a copy of this form to keep.



If you do not agree to be in this study or if at any time you withdraw from this study you will not suffer any penalty. Your participation is completely up to you.

**Questions**

The investigator or a member of the research team will try to answer all of your questions. If you have questions or concerns at any time, contact Demilade at 647-871-5710.

By agreeing to be in this research, you are indicating that you have read this form (or it has been read to you) and that your questions have been answered to your satisfaction.

**Subject:** \_\_\_\_\_  
Printed name of subject

- By signing this consent form, you are indicating that
- you have read this form (or it has been read to you)
  - your questions have been answered to your satisfaction
  - you voluntarily agree to participate in this research study

\_\_\_\_\_  
Signature of subject

\_\_\_\_\_  
Date

If you have questions regarding your rights as a participant in this study please contact:  
Research Ethics Board c/o Office of the Vice President, Research and Innovation OCAD University 100  
McCaul Street Toronto,  
M5T1W1 416 977 6000 x4368  
research@ocadu.ca

# Fraymer research

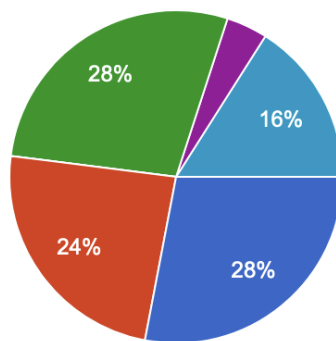
25 responses

[Publish analytics](#)

## Which creator type best fits you?

 Copy

25 responses



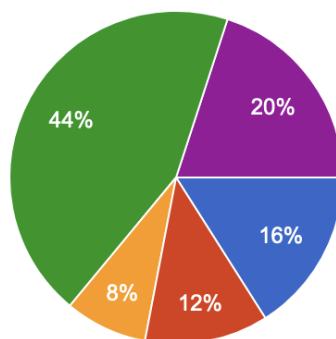
- Digital (I get value directly from my creations)
- Content (I get value indirectly from the attention my content...)
- Physical (I get value directly from my creations)
- Digital & Content
- Physical & Content
- All 3
- I'm not a creator

## Use case

### Do you use animation in your creation processes?

 Copy

25 responses



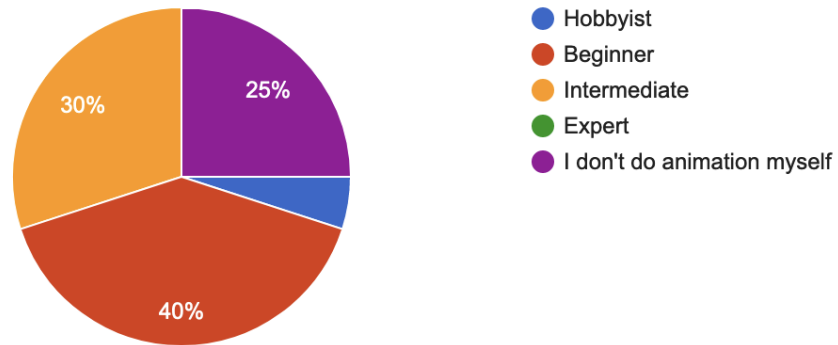
- Yes, to present my work in an engaging manner
- Yes, to better communicate my ideas to a team/stakeholders
- Yes, to make my work/content more engaging
- All of the above
- No

## Proficiency

How good are you at animation?



20 responses

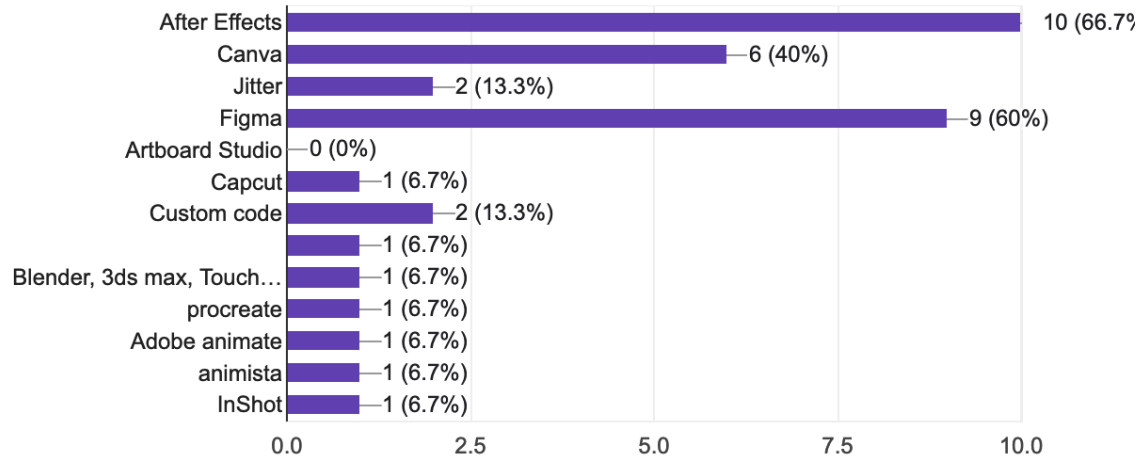


## Animation users

What tools do you use for animation?



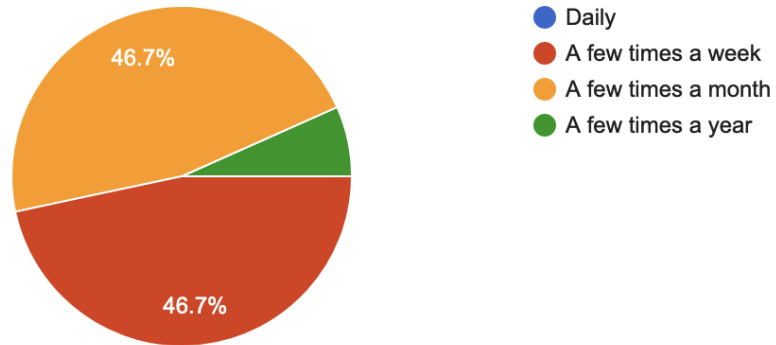
15 responses



### How often do you use animation tools?

 Copy

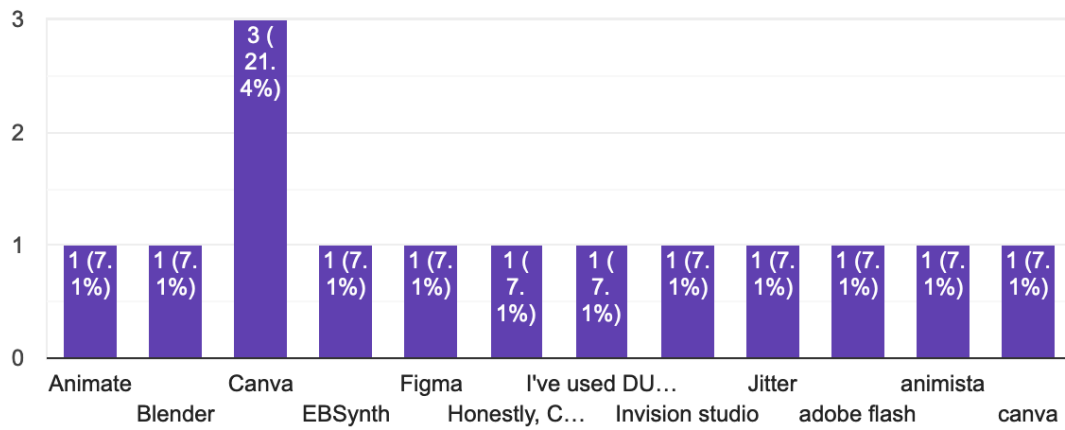
15 responses



### What's the easiest animation tool you've ever used?

 Copy

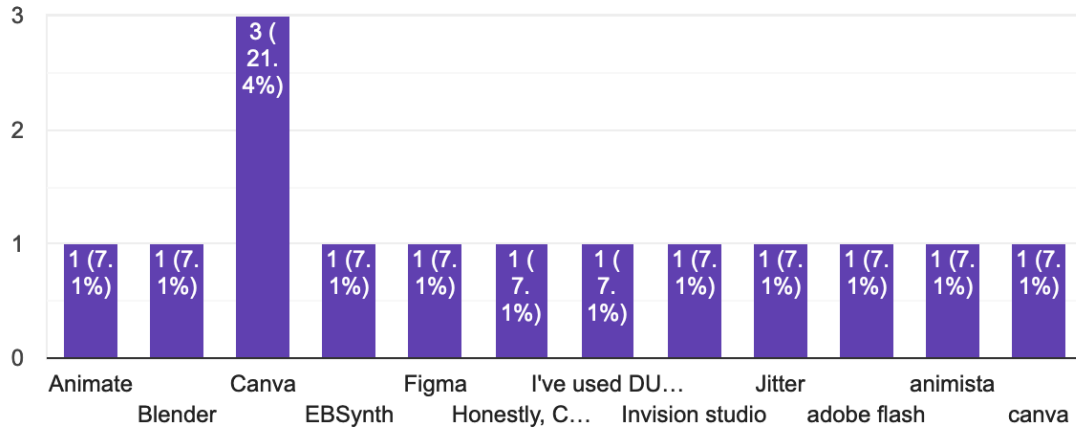
14 responses



## What's the easiest animation tool you've ever used?



14 responses



## What makes the tool from the last section so easy to use?

14 responses

Uses a key frame from video projects and interpolates footage however it is not super accurate and cannot deal with a lot of movement.

User interface is simple

have become comfortable using over the years

I'm just more familiar with the software

It combines the ease and functionality in one design tool. It's been deprecated, but it was amazing when I actively used it.

Easy to use templates

Basically creates it for you

You can map out the movement

## What makes the tool from the last section so easy to use?

14 responses

Basically creates it for you

You can map out the movement

tutorials and templates

i can configure the animations to my hearts content and just copy the css code

It's has a lot of animated templates that I can dissect and reuse to create my own visuals

Templates

It's not, it just allows me to have fine grained control over the medium I'm trying animate for, the web.

Its created for animated vector characters in After Effects, so its optimised for that kind of workflow.

## What do you think would make this same tool even easier to use?

14 responses

Better interpolation for movement and longer dynamic scenes

Documentation

a more automated workflow

If they added more options for animations (e.g. being able to animate texts while typing)

Introduce newer features and make it more stable

Templates that can be updated with my own assets

No

Create the character and a smoother flow

## What do you think would make this same tool even easier to use?

14 responses

Templates that can be updated with my own assets

No

Create the character and a smoother flow

nothing comes to mind

if i could use it as an npm package.

Can't think of anything right now

Better templates

Better explanation on how CSS works, and the bumps on the road one should expect.

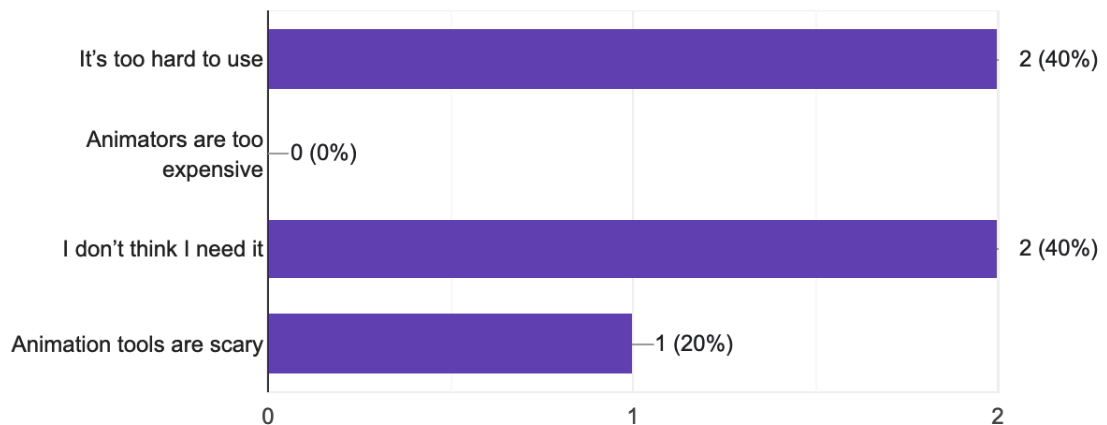
Not that I can think of in the moment.

## Non-users of animation

### Why don't you use animation?

 Copy

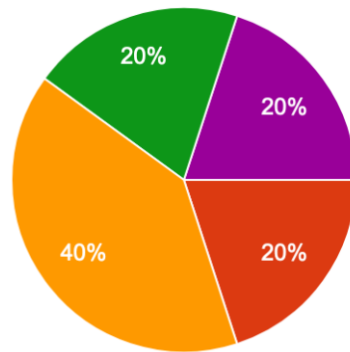
5 responses



## What makes animation too scary or hard to use for you?



5 responses



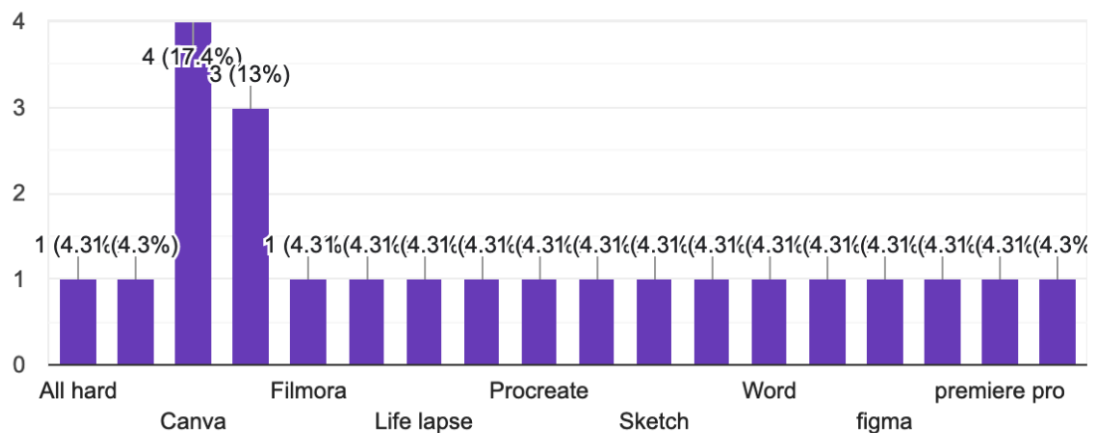
- The interface has too many buttons and panels
- The animation timeline and patterns are confusing
- I just couldn't get the hang of it
- Don't think I need it
- I don't make use of it

## General tools

### What's the easiest tool or software you've ever used?



23 responses



### What made it so easy to use?

20 responses

It's like MS Paint but better

Simplicity

simple design

Few steps to achieve my intended goal/output, relatively low learning curve



## What made it so easy to use?

20 responses

Was simple

The user interface

tutorials and easy interface

good ui/ux

The wide variety of templates and simple/ easy to understand UI

Simple to drag and use

Your job is only to tap one big button in the middle of the app screen and boom, it does it's thing.

It's designed with beginners in mind but can easily scale up to intermediate or advanced creators. This ladder approach helps not to overwhelm new users while also raising complexity for more advanced creators.

## What do you think could make this tool even easier to use?

19 responses

Honestly nothing, it's pretty versatile

Better interface

available on computer

I can't think of anything else.

Timeline based prototyping

Yup

automatically placing the mouse pointer in the text box

More editable templates

Nothing

## What do you think could make this tool even easier to use?

19 responses

Actions you can save and repeat after doing it once

The ability to use AI to create animations that do not exist

User guides like games

The laid down design templates

not really sure

I don't think there's anything. It's a pretty cool tool

More templates

To the best of my knowledge, that's as simple as it gets, I literally can't think of anything simpler than that.

I wish it was easier to animate in Procreate. Add more advanced features for example.

