THE EUROSTAR JOURNEY:

Experience and interact with the story of the iconic international railway inside a

replicated Eurostar Powercar cabin

OVERVIEW:

The National Railway Museum in York provides members of the public with the opportunity to explore an extensive collection of historic locomotives and examples of innovative engineering. However, visitors are often limited in their experiences due to certain vehicles being closed. "The Eurostar Journey," an immersive and interactive installation, seeks to provide visitors with an engaging and informative trip back to the mid 1990s and the early years of the iconic rail service. Taking inspiration from the Hogwarts Express ride at Harry Potter World, the Eurostar Journey is designed to transport visitors through time and space so that they may gain a deeper understanding and appreciation for the technical and cultural significance of the Eurostar. Desk research was conducted on NRM visitor statistics and satisfaction in order to develop the design concept: a replicated Eurostar 3308 cabin, with windows that display captioned videos depicting the story of the Eurostar, and an interactive map that visitors may use to change the "view" outside their window.

DESIGN APPROACH:

The site visit to NRM and Q&A session with its curators provided a solid starting point for the project. Many of the trains are closed to the public, and what little you can see inside of them is only accessible via narrow raised platforms with steps. Information is primarily displayed on signs. The curators described their struggles to provide visitors with engaging experiences; a sentiment which was mirrored in many of the reviews I read as part of my desk-based research. To gauge visitor statistics and feedback, I consulted the January

2022 Monthly Visitor Insight KPI Report and January 2022 Post Visit Survey Responses spreadsheet provided by NRM, and the reviews for NRM on TripAdvisor. I began my research by sorting through the responses for all three and calculating percentages for the the different levels of satisfaction, with the highest level being "Excellent" and the lowest level being "Very Poor" in regards to the Monthly Visitor Insight and Post Visit Survey and "Terrible" in regards to the TripAdvisor ratings.

The total number of respondents was not listed in the Monthly Visitor Insight Report, but at the time of my research, the Post Visit Survey had 694 responses and TripAdvisor had 18,859. In the Monthly Visitor Insight Report, 58% of visitors rated their visit as "Excellent" and 1% as "Very Poor." In the Post Visit Survey, 57% of visitors rated their visit as "Excellent" and 0.6% as "Very Poor." On TripAdvisor 73% rated their visit as "Excellent" and 0.5% as "Terrible." These percentages from the three sample sizes demonstrate that over half of all visitors had a generally positive experience, with very few rating their visits on the lowest level of satisfaction.

	SCM		LOCO		NRM		NSMM		SIM	
	Last month	Year-to-date	Last month	Year-to-date	Last month	Year-to-date	Last month	Year-to-date	Last month	Year-to-date
Excellent	54%	46%	76%	63%	58%	52%	40%	44%	32%	40%
Good	30%	34%	21%	31%	34%	37%	29%	38%	38%	33%
Fair	10%	13%	2%	5%	7%	9%	18%	13%	19%	17%
Poor	4%	5%	1%	1%	2%	2%	9%	3%	7%	7%
Very poor	2%	3%	1%	0%	1%	1%	4%	3%	4%	5%

Table 1: Monthly Visitor Insight KPI Report from January 2022, ratings on visits to NRM. See bibliography for citation.
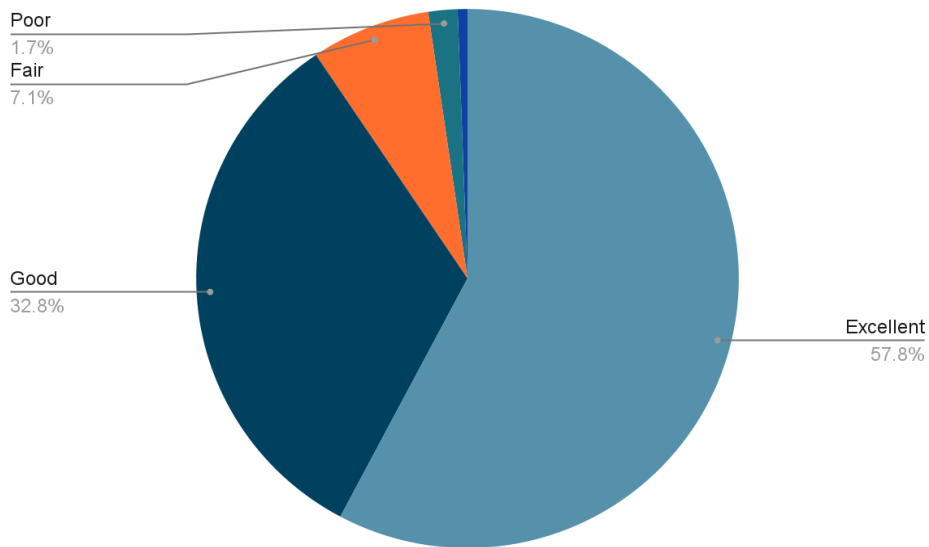
Chart 1: NRM Post Visit Surveys January 2022, overall score given by visitors. See bibliography for citation.
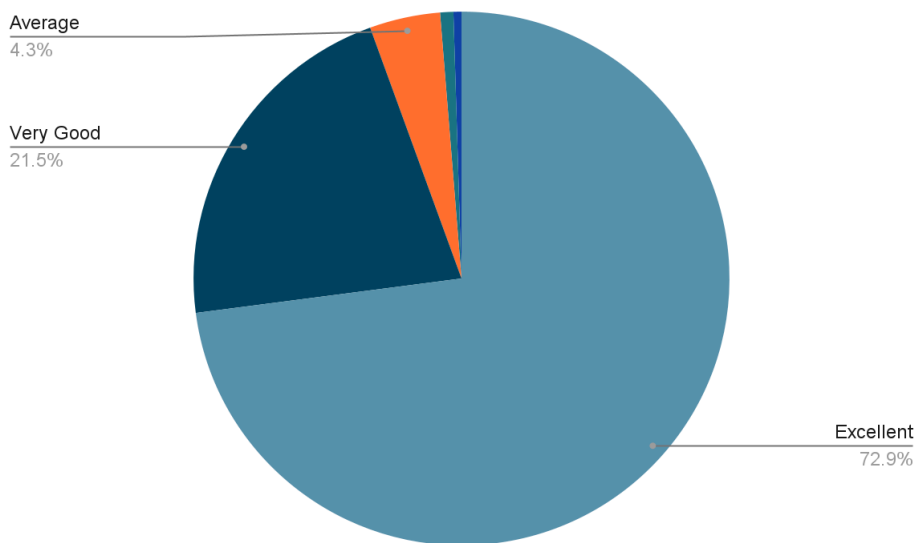

Chart 2: NRM on TripAdvisor, reviews by visitors. See bibliography for citation.

To gather more detailed visitor feedback, I scrolled through TripAdvisor reviews and noted common themes or complaints. Popular mentions included statements such as "free entry" and "all ages." Most of the critique centered around inaccessibility and lack of interaction with the trains, such as the step-platforms and only being able to peek inside.

Some specifically mentioned how they were disappointed by the minimal signage and descriptions for the exhibits. In addition to the numerical data I gathered, I adapted quotes from TripAdvisor reviews to help build my two personas and establish the design requirements for my project. The user experience should provide visitors with an interactive, historically accurate experience that both educates and entertains. Visitors should leave the experience with a deeper understanding of the train and what it was like to travel on it. The experience should be accessible and easily enjoyed by a wide range of ages.

Name: Joy Smith

Age: 40

Relationship Status: Married

Occupation: Teacher

Bio: Has three children that are 15, 10, and 5. Money is tight but she still wants the family to enjoy outings together and make good memories. Values education and culture.

Goals: Find free family activities, make sure everyone is having fun, make sure the children learn something

AdobeStock image by contraswerkstatt

"I want my children to be able to experience history from up close, and learn something from it."

Image 1: Primary persona is Joy, a mother of three who wants all her children to feel engaged at museums. See bibliography for full image citation and Appendix F for secondary persona.

To develop the prototype itself, I began with initial rough sketches of the envisioned setup and drew inspiration from three pre-existing interactive projects that are expanded upon later in the report. The sketches evolved into a low-fidelity prototype of an interactive Google Slideshow, which then provided the framework for an early Processing sketch. At this stage I conducted usability testing by asking three individuals, all over the age of eighteen, to interact with the Processing sketch. Their feedback was used to further develop the prototype to the version that was submitted as part of this assessment. Ethics documentation is included

in Appendices A-C, and more details on the usability testing is included later in the report.

DESIGN STATEMENT:

Rail travel is a prominent feature of public transportation in the UK and many other countries across the world. The ease and convenience of modern railways has made traveling by rail increasingly common, so much so that the millions of passengers in the UK who undertake journeys by train every day may have little interest in the history and technical background of the vehicles they sit within. Institutions such as the National Railway Museum seek to provide the public with a deeper understanding and appreciation for railway travel by exhibiting historic trains, however NRM has stated that they have not always been able to allow visitors inside the trains on display, which further distances members of the public. They also face the challenge of conveying movement and other unique aspects of the experience of riding in specific vehicles, especially those that are older or foreign.

To address these challenges, I chose to design an immersive and interactive installation for NRM centered around the Eurostar 3308 displayed in the museum. I conducted research on NRM visitor feedback to develop my project. Titled "The Eurostar Journey," the installation transports visitors back in time to 1996, two years after the Eurostar officially opened to the public. The Eurostar Journey not only gives visitors a glimpse into what a typical journey would have been like in the early years of the iconic international railway, but seeks to tell them the story of how the Eurostar came to be. I chose the Eurostar as it's likely some of the visitors to NRM may have traveled with it before, and because of its cultural significance to the UK and Europe as a whole. By taking something most visitors will be familiar with and expanding upon it, I hoped visitors would gain a deeper appreciation for the iconic rail service and the story behind it.

DESIGN CONTEXT:

The main source of inspiration for this project came from the Hogwarts Express Ride at the Universal Orlando Resort in Orlando, Florida. The ride consists of a replicated Hogwarts Express train that visitors are able to sit inside and travel from one location in the resort to another. The journey begins at Hogsmeade Station in the Islands of Adventure theme park and ends at King's Cross Station in the Universal Studios Florida theme park (The Park Prodigy, 2023). The immersive experience simulates the actual journey taken by the characters of Harry Potter by utilizing the windows in each train cabin as a screen that plays footage of scenery from the films. Although the ride only lasts around four minutes, there is a high level of user engagement due to the detailed replication of the interior of the Hogwarts Express, audiovisual elements, and the characters within the footage interacting with visitors. The journey never feels too short, and the slow speed of the ride itself is easily forgotten when visitors are captivated by the window footage. I wanted to replicate a similar style of engagement in which users can easily forget the reality of the immobile replicated Eurostar cabin and feel like they are truly a passenger back in the 1990s.

I was also inspired by the website WindowSwap, which was created in 2020 by Sonali Ranjit and Vaishnav Balasubramaniam as a way to help people cope with the pandemic. WindowSwap allows users to click through videos of views from windows across the world (Joel, 2020). Users can maximize the video they're watching and fully immerse themselves in a view that could be thousands of miles away. I liked the concept of "moving" from window to window despite the user being stationary at their laptop. I was similarly inspired by The Wilderness Downtown interactive website created by Chris Milk for the band Arcade Fire to promote their 2010 album "The Suburbs." The website allows users to input the address of their childhood home, which prompts browser pop-ups of short cinematic scenes and Google Maps footage to tell the story of someone running back to their roots (Milk, 2010). I liked

how the browser pop-ups simulated movement on a still screen.

DEVELOPMENT PROCESS:

      I conducted basic background research on all the vehicles available to us, but I chose the Eurostar after finding value in the story behind it. The Eurostar was revolutionary not only because it connected the UK to France and by extension the rest of Europe, but it was also a feat of international engineering. With the themes of interconnectedness, collaboration and cooperation in mind, I began development with preliminary sketches and digital visualizations. The Eurostar 3308 on display in NRM never actually made an international journey, but I would still be treating it as the foundation for my project. I was inspired by a past trip to Universal Orlando and the Hogwarts Express Ride and wanted to design an immersive experience with audiovisual elements that would allow NRM visitors to "travel" with the Eurostar and explore its history.
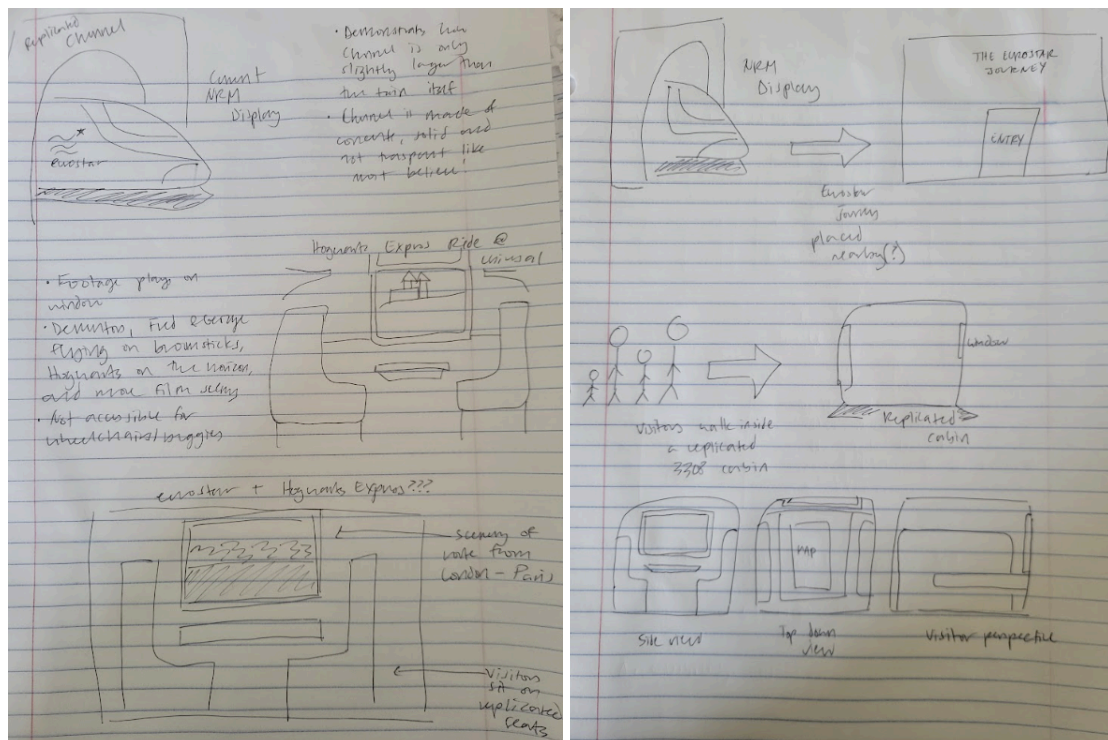
Images 2-3: Preliminary sketches of NRM Eurostar display, Hogwarts Express ride, and concept for The Eurostar Journey. More sketches are included in Appendix D.
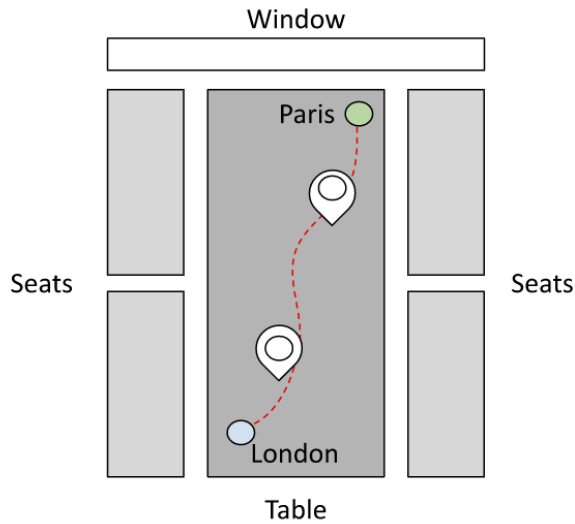
Image 4: A more detailed digital mock up of the inside of the replicated Eurostar 3308 cabin made with Google Drawings.

I determined the three main features of The Eurostar Journey should be the replicated Eurostar 3308 cabin, the interactive map on the table, and the window screen that displays footage based on visitor interaction with the map. After conducting user research by analyzing visitor feedback and statistics for NRM, I took the common complaints and recommendations for improvement I found and used these design requirements to develop a lo-fi prototype with Google Slides. An interactive slideshow demonstrates the basic functionality of the project and the information about the Eurostar that will be conveyed. The design requirements and full lo-fi prototype slideshow is included in Appendix E and H respectively.
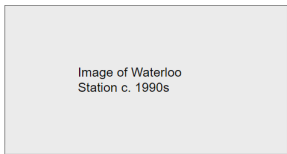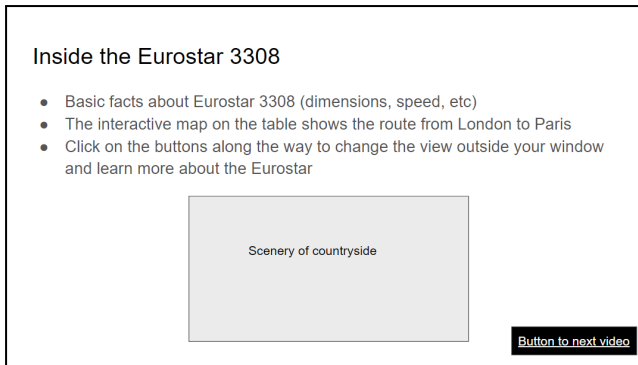
Images 5-6: Slides from the lo-fi prototype. Rough implementation of basic functionality and content in the project. The "button to next video" is a link over a rectangle.

I then created a second early prototype in Processing that was a rudimentary representation of how the interaction would work with the map on the table and the videos being played on the window screen. I chose Processing for these final iterations of my project because implementing videos and interactive GUI is straightforward and simple. I did consider creating a prototype that would be demonstrated through a Wizard of Oz video, but I decided against it. Processing acts as an interactive canvas to display a sophisticated visual representation of The Eurostar Journey rather than a game platform, because my project is not a game.

Images 7-8: Screenshots from the early Processing sketch that was shown to three people for usability testing. This early prototype involves only the bare minimum of interactive elements, like the GUI buttons and map. Please see Appendix I for more screenshots.

I conducted usability testing by having three people interact with the first Processing sketch I made. After introducing the project to the participants, I presented the Processing

sketch to them and asked them to begin the experience. Without any further instruction, I observed how they interacted with the prototype for five minutes and made notes. This allowed me to observe user interaction in an organic and uninfluenced setting. After five minutes passed, I conducted a brief semi-structured interview about the overall user experience and what they think could be improved. A sample of the questions and responses are included in Appendix J. Common recommendations for user experience improvement were to display basic instructions on interaction and present subtitles in a clearer manner.

The final version of the prototype is of a higher aesthetic quality, with more colors and a font that I chose based on its similarity to the original Eurostar logo. The Processing sketch depicts what the inside of the replicated Eurostar 3308 cabin would look like, complete with seats on either side of a table with the interactive map and the window screen for displaying videos and images. GUI buttons are provided for users to progress through the prototype and change what is shown on the window.
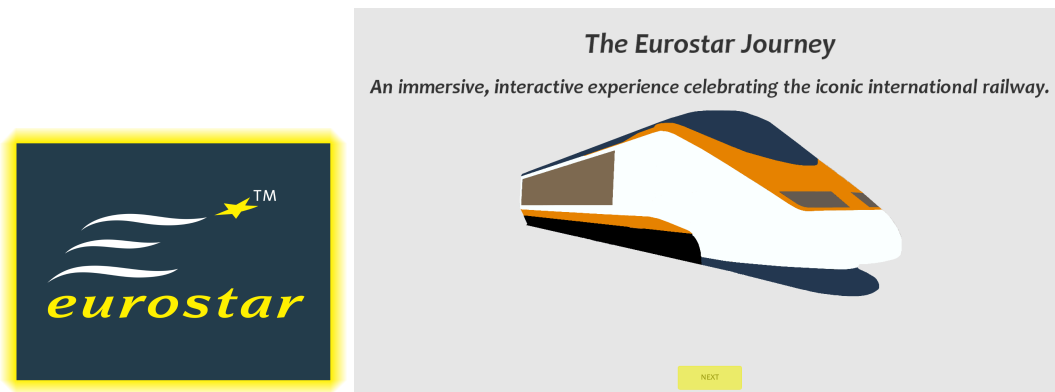
Images 9-10: Original Eurostar logo from the 1990s and an example of the font (Candara) used in the final prototype. The Eurostar logo image is in the public domain. Please see bibliography for full citation. The transparent image of the Eurostar 3308 was made in Photoshop, please see Copyright Appendix for more details.
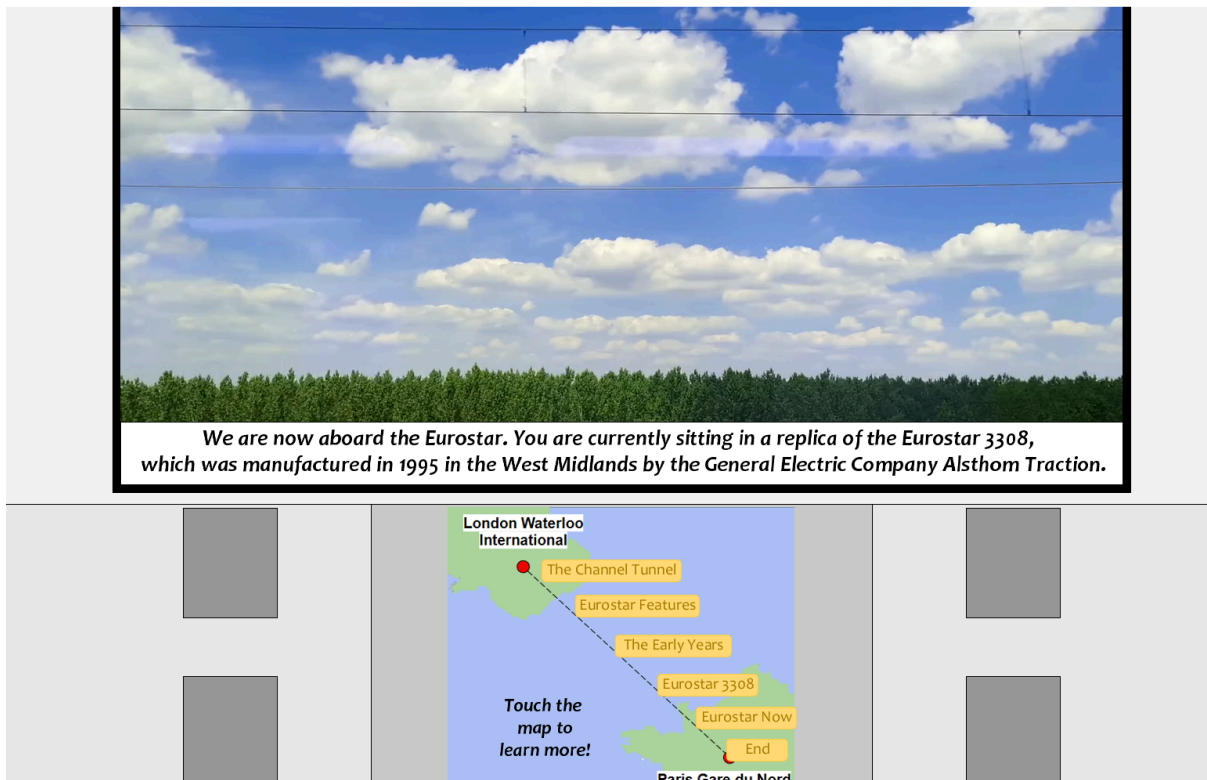
Image 11: Example of a page from the final prototype with a frame around the window, seats, and a message on the map prompting users to interact with it. A white background has been applied for all captions.

Each of the six buttons on the interactive map correspond to one or two videos/images and accompanying information that will be displayed on the screen once pressed. The information provided ranges from basic facts on the beginning of Eurostar rail service in 1994 to the history of the Eurostar 3308 specifically. Ideally all the content displayed by the window would be historically accurate footage from the 1990s in addition to digitally rendered footage for depicting the technical features of the Eurostar, but the prototype consists of mostly photographs from the 1990s and diagrams I created myself. The two videos of moving scenery are from Pixabay and were included to demonstrate how the installation would convey movement despite the replicated cabin remaining stationary during the experience.
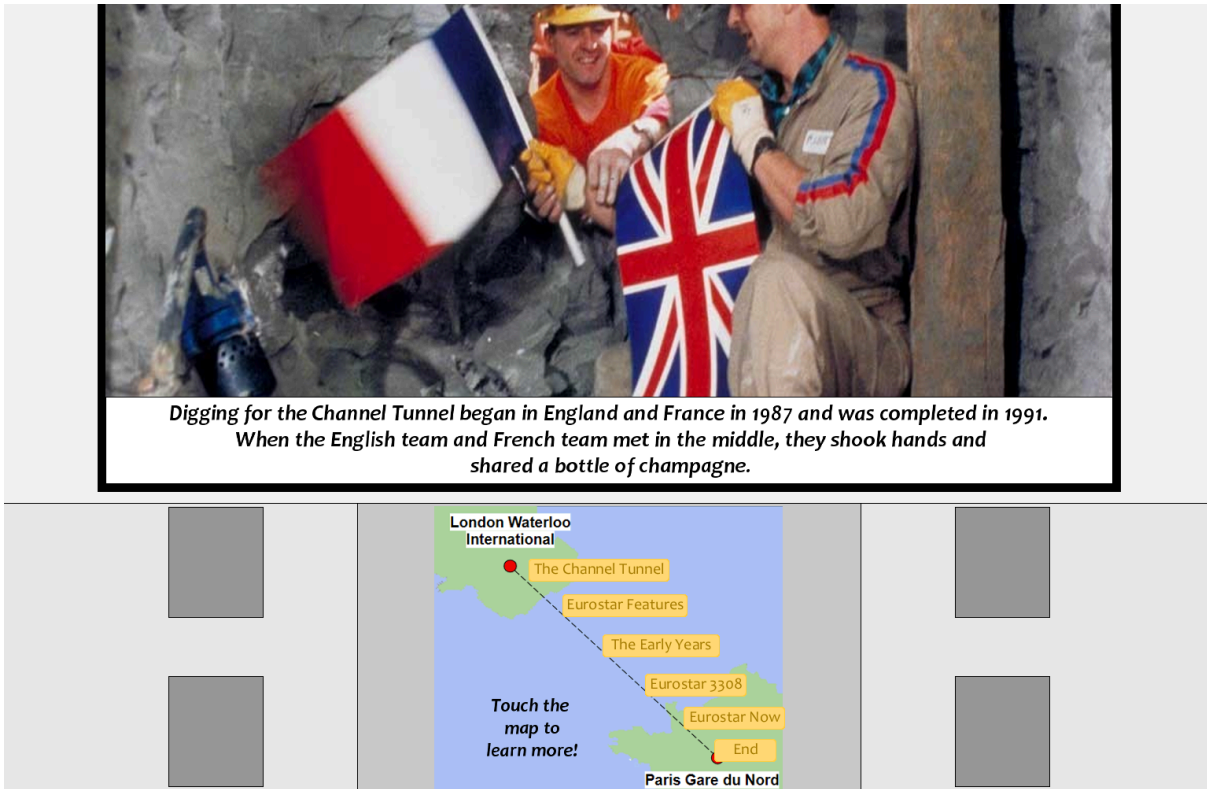
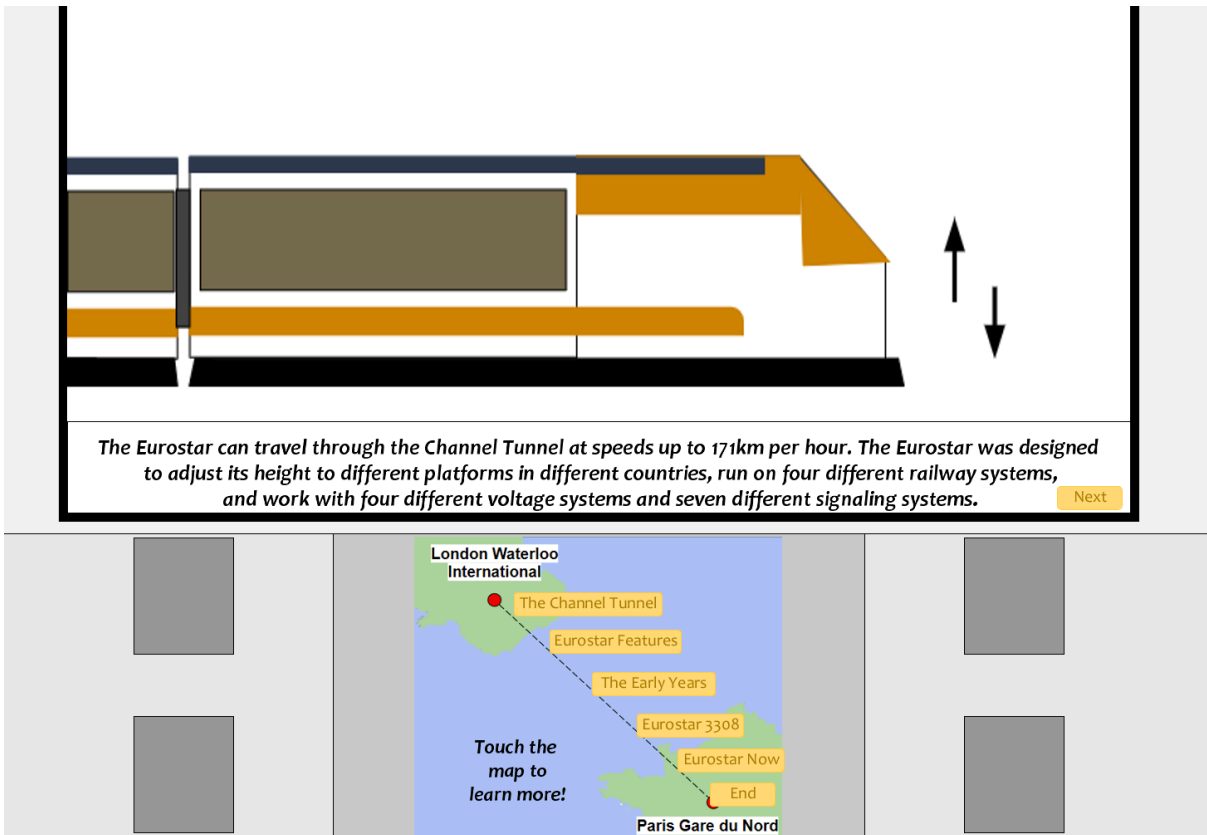*Image 12: Example of historic photograph in the final prototype.*

Image 13: Example of a diagram I created to depict Eurostar technical features in the

prototype. Ideally, the installation would have this as an animated digital rendering or something similar.
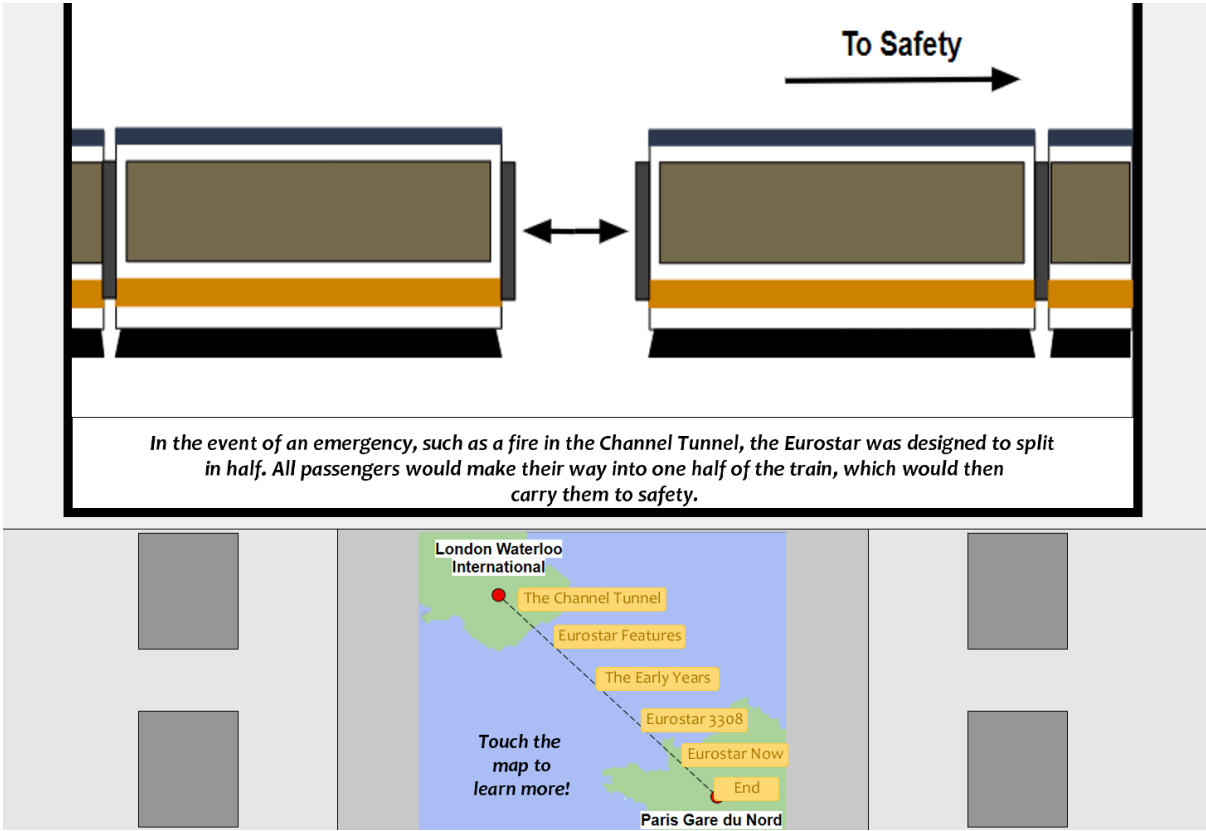
Image 14: The screen shown after clicking the next button in Image 13.

As shown above, some of the buttons involve two images with captions unique to each image. I took this approach because I was unable to implement changing captions in Processing the way you would see in traditional video formats. However, this did allow me to fit in more content and still include some semblance of the user "moving" from screen to screen. Since the prototype begins at London Waterloo, I had the last button represent the end of the experience at Paris Gare du Nord. This brings The Eurostar Journey to an end in a way that aligns with its concept of not just taking visitors on a journey typical of the Eurostar, but showing visitors the evolution of the Eurostar itself from its beginnings to its current state.

CRITICAL REFLECTION:

The prototype makes good use of Processing as an interactive canvas for displaying images and video. The implementation of GUI is largely efficient, however the progression of what is displayed on the window is strictly linear, so users must click through content in the order that the GUI buttons are presented on the interactive map. Although I attempted code that would allow users to click on any button at any time and view its corresponding content, I was unsuccessful. If I could reiterate the prototype, I would add GUI buttons that allow the user to go back an image or view content more flexibly. I would also adjust the prototype so that the GUI buttons change color when selected so that users know exactly what topic they are currently learning about.

In terms of project development, I realized I spent too much time on programming the prototype itself and did not focus enough on usability testing. In the future, this could be improved upon by gathering a larger group of participants and with a wider age range, as the three participants I used were all between the ages of 18-21. This narrow sample size is not representative of some of the biggest age groups that NRM sees, such as school age children and parents. I also felt that the content displayed on the prototype did not meet some of the design requirements I specified, such as evoking an emotional response. A possible solution would be expanding the content displayed in the prototype, such as adding more images and stories about the Eurostar rather than just facts.

Total Word Count (excluding diagrams, tables, captions): 2,467

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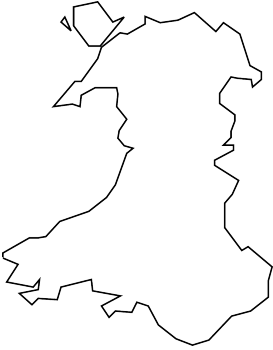
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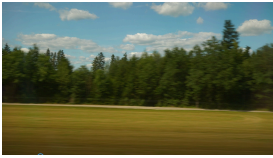
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COPYRIGHT APPENDIX

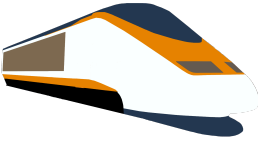| Description of Asset	Source	Location on Prototype	License/Permission
Image of Eurostar 3308 in NRM: Edited with Photoshop to create:	UXD 2023 NRM Materials	START (first page when opening Processing file) REPLICA	Creative Commons license (CC BY-NC-SA 4.0)
Waterloo International, 1996	https://www.geograph.org.uk/photo/2825906	WATERLOO (page reached by hitting space)	Christopher Hilton, Creative Commons Attribution-Share Alike 2.0 Generic License
Moving scenery from train window video 1:	https://pixabay.com/videos/id-120479/	MAIN	Pixabay License
Vector map of U.K. Edited in Photoshop	https://pixabay.com/images/id-149314/	MAIN	Pixabay License (free to use and edit)

for train table map: 			
Vector map of France: Edited in Photoshop for train table map: 	https://pixabay.com/images/id-23502/	MAIN	Pixabay License (free to use and edit)
Image of Channel Tunnel completion: 	https://www.bechtel.com/projects/channel-tunnel/#gallery-2	CHUNNEL2	Used under Illustration for Instruction Principle
Interior of Eurostar, 1990s 	https://www.bbc.co.uk/news/uk-50418077	EARLY	Used under Illustration for Instruction Principle
Eurostar staff at Waterloo, 1990s 	https://www.theguardian.com/business/2019/oct/23/eurostar-sex-celebrity-speed-45-metre-underground-club	EARLY2	Used under Illustration for Instruction Principle

Eurostar 3308 with Channel Tunnel replica in NRM:	https://twitter.com/RailwayMuseum/status/1592098593422610432/photo/1	REPLICA2	Used Under Illustration for Instruction Principle
Moving scenery from train window 2:	https://stock.adobe.com/uk/video/summer-day-salzburg-to-vienna-train-road-trip-passenger-side-window-pov-panorama-4k-austria/321173563?prev_url=detail	NOW	Adobe Stock Enhanced License
Paris Gare du Nord, 1990s:	https://www.flickr.com/photos/71592768@N08/23817798923	END	Used Under Illustration for Instruction Principle

APPENDIX A: Research Ethics Checklist

UNIVERSITY *of York*

School of Arts and Creative Technologies

RESEARCH ETHICS CHECKLIST FOR TAUGHT STUDENTS

FOR PROJECTS USING DEPARTMENT
LEVEL ETHICS PRE-APPROVAL

This checklist is to be used **ONLY** for research work by ACT students who wish to use the Department Level Ethics Pre-Approval to accommodate the ethical risks of their proposed research work.

Students must ensure that their proposed research work can be accommodated by the restrictions in this Checklist. If not, you will be unable to conduct the work without further Ethical scrutiny by the ACT Ethics Committee as the work is considered to have higher ethical risks. To apply for additional Ethics approval, you must submit the Research Ethics Clearance Form for review by the ACT Ethics Committee. However, please note that some modules DO NOT permit students to submit individual Ethics applications.

All students who use the Department Level Ethics Pre-Approval for their work must complete this checklist and include the following as Appendices to their assessment reports:
- This completed Checklist;
- Example Participant Information Sheets and Participant Informed Consent Forms, if appropriate;

Please note that if this Ethics Checklist is associated with an assessment that has an **anonymous submission** (i.e. if you are using your Exam Number, Y123456 for submission) you **MUST** redact your name and any other information that would identify you as an individual from the appendices before submission.

Please note that your assessment markers will compare the submitted assessment work to this Ethics Checklist, Information Sheets and Consent Forms to ensure compliance.

You are also required to conduct this research work in compliance with the General Data Protection Regulation (GDPR). Information on how to ensure compliance is available on the ACT Ethics VLE site.

Before completing this Research Ethics Checklist for Taught Students, please consult the ACT Ethics VLE Site for guidance and further information.

SECTION 1: STUDENT AND PROJECT DETAILS

Box 1A: Student Details	
ALL students must complete this box	
Student Name OR Exam Number for Anonymous Submission	Y3884983
Degree Title	BSc Interactive Media
Stage (e.g. 2nd year Undergraduate)	2nd year Undergraduate
Role in Project (e.g. Team Leader)	

Box 1B: Project Details	
ALL students must complete this box	
Module Title and Module Code	User Experience Design TFT00036I
Project Supervisor Name and Email Address	Sanjit Sammadar sanjit.samaddar@york.ac.uk

Box 1C: Project Details	
ALL students must complete this box	
Project Title	The Eurostar Journey
Project Submission Date	20 April 2023

Please complete Section 2: Research Ethics Concerns

SECTION 2: RESEARCH ETHICS CONCERNS

Box 2A: Checklist of Research Ethics Questions **ALL** students must complete this box	YES	NO
1 Will the project involve conducting work that would typically require NHS Ethics approval? That is, will you be working with any of the following as participants, if recruited specifically due to their involvement with the NHS: - Patients and Users of the NHS, - Relatives or carers of patients and users of the NHS, - NHS staff? OR will you be using or accessing NHS premises or facilities as part of the work?		X
2 Will the project involve conducting work that would typically require His Majesty's Prison & Probation Service Ethics approval? That is, will you be conducting research with staff and/or offenders in prison establishments, National Probation Service (NPS)/Community Rehabilitation Companies (CRC) regions or within His Majesty's Prison and Probation Service (HMPPS) Headquarters? OR will you be conducting research on HMPPS premises?		X
3 Will you be working with vulnerable participants (e.g. those under 18, people with learning disabilities, people with mental impairment due to health or lifestyle, people who are terminally ill or recently bereaved etc.)? Note that if you are unsure whether someone you would like to work with could be considered vulnerable under the circumstances, you are required to discuss your concerns with the module leader, your supervisor and/or Ethics Chair. It is generally expected that any student working with vulnerable groups would submit the longer Research Ethics Clearance form.		X
4 Will you be identifying any of the participants in your outputs?		X
5 Will you be discussing sensitive or potentially upsetting or distressing topics with participants?		X
6 Is it reasonably foreseeable that the work could involve causing physical or emotional distress to participants or researchers?		X

Box 2A: Checklist of Research Ethics Questions **ALL** students must complete this box		YES	NO
7	Is it reasonably foreseeable that the participants could disclose or discuss participation in illegal activities (e.g. drug use)?		X
8	Is it reasonably foreseeable that the participants could disclose confidential or sensitive information (e.g. financial data, sensitive organisational data)?		X
9	Will you be deliberately misleading the participants in any way?		X
10	Will you be filming or making recordings of people without their knowledge and consent (e.g. covert filming of people in non-public places)?		X
11	Will you be researching or discussing issues relating to terrorism or political extremism as part of your work?		X
12	Will you be collecting online data that has been generated by human participants (e.g. social media data) from closed, restricted forums (i.e. from closed communities or those that require approved membership to view, e.g. restricted Facebook groups)?	X	
13	Will you be identifying anyone from online data that has been generated by human participants (e.g. social media data) from either open or closed forums (i.e. by including information that could make the individual identifiable, such as direct quotes or usernames)?	X	
14	Could the work involve potentially damaging property and/or the natural environment?		X
15	Will the work involve animals?		X
16	Is it reasonably foreseeable that the work could result in any anticipated university/institutional risk (e.g. adverse publicity or financial loss)?		X
17	Will you be compensating participants with financial inducements **OTHER THAN** reasonable incentives (e.g. chocolate, cake) for the inconvenience?		X
18	Will you be paying participant expenses?		X
19	Will you be conducting any of the work for this project **OUTSIDE** of the UK?		X

If you have answered "YES" to ANY of the questions in Box 2A: Checklist of Research Ethics Questions:

The Department Level Ethics Pre-Approval together with this Research Ethics Checklist for Taught Students MAY be insufficient to accommodate the ethical risks of your proposed work.

Some lower-risk ethical issues can be accommodated without further Ethical scrutiny provided that you agree to follow a process that is considered appropriate. These situations and processes are described on the ACT Ethics VLE site.

IF there is a suitable procedure to manage this ethics issue, please complete Box 2B to provide further details of how you intend to manage the ethical issues associated with your proposed work in consultation with either the module convenor or your assessment supervisor.

Box 2B: Further Details

Complete this box if you answered "Yes" to any question in Box 2A AND there is an identified procedure to manage the ethical risks in this situation.

Provide details of the nature of the ethical risks that you identified by answering YES to questions in Box 2A and describe the process that you will follow to minimise the risks.

Please note that if you answered YES to Question 17 and/or 18:

Will you be paying your participants? If research participants are to receive any payments, reimbursement of expenses, or any other incentives or benefits for taking part in your research, please give details, indicating what and how much they will receive and the basis on which this was decided.
Payment must follow the [University's policy](). Please note that the policy includes maximum limits and researchers should note that they may pay less than these, as appropriate.

I will be using direct quotes from TripAdvisor, the 2022 National Railway Museum Post Visit Surveys, and the 2022 Monthly Visitor Insight KPI Report in the development of my prototype, such as in Personas. However, I will not be identifying usernames, and the prototype itself will not display any of these quotes.

Alternatively, the associated risks of your proposed work may be sufficiently low risk that an appropriate approach can be agreed with the ACT Ethics chair without requiring submission of the ACT Research Ethics Clearance form. Your supervisor/module convenor may contact the ACT Ethics on your behalf to identify an agreed process on a case-by-case basis. If your supervisor has discussed your proposed work with the ACT Ethics Chair via email, please complete Box 2C: Case-By-Case Agreed Process.

Box 2C: Case-By-Case Agreed Process	YES	NO
Students must complete this box IF they have answered "YES" to any questions in Box 2A AND there is no identified procedure to manage the ethical risks of the proposed work. Note, that most students will need to submit a ACT Research Ethics Clearance form and this case-by-case process approach is ONLY suitable for work that can be considered low risk.		
1 Has your project supervisor or module convenor discussed the proposed work and associated ethical risks with the ACT Ethics Chair via email?		X
2 Was your project supervisor or module convenor able to agree a process to manage the low risks associated with your proposed work?		X
IF YES to BOTH questions please provide further details of the anticipated risks of the proposed work and the process that was agreed with the ACT Ethics chair. Please include dates of the email correspondence AND the name and email address of supervisor/module convenor involved.		

If the associated risks of your proposed work cannot be accommodated through an identified procedure or through a case-by-case agreed process then, provided the module convenor permits it, you will need to submit an application to the ACT Ethics Committee for review using the Research Ethics Clearance Form. But, please note that some modules do NOT permit students to submit individual applications to the Ethics Committee.

Please complete Section 3: Data Protection

SECTION 3: DATA PROTECTION

In order to comply with the General Data Protection Regulation (GDPR) you MUST adhere to the data usage and storage principles described in Box 3A: Checklist of Data Protection Questions.

Box 3A: Checklist of Data Protection Questions **ALL** students must complete this box	YES	NO

1   Will you guarantee that you will inform all people whose personal and/or special category data that you are using:
 	
    ●   What data you will be collecting and why;
 	
    ●   How you will be storing the data;
 	
    ●   The legal basis under which you are storing the data;
 	
    ●   When/if/how the data will be destroyed?
 	
Please note that using a GDPR Compliant Project Information Sheet will ensure you meet these requirements.
	X	

2 Will you guarantee that **IF** you use a portable device to collect electronic data you will transfer that data to your University Google Drive account or University Filestore as soon as possible after the interview **AND** delete it from your personal device?	X	
3 Will you guarantee that the data will **ONLY** be accessible to the project team **AND** that **IF** the project team extends beyond the University of York that you have consulted the University's IP and Legal team to ensure appropriate data protection safeguards are in place?	X	
4 Will you guarantee that you will **ONLY** use Google Forms OR Qualtrics to host online surveys that collect personal and/or special category data?	X	
5 Will you guarantee that you are collecting the **MINIMUM** amount of data necessary for the intended project?	X	
6 Will you guarantee that **IF** you are storing or accessing data from **OUTSIDE** the European Economic Area (EEA) you will access the data through your University of York Google Account connected to the University of York Virtual Private Network (VPN)?	X	
7 Will you guarantee to destroy all physical **AND** electronic data **EITHER** after your module marks have been ratified by the Board of Examiners **OR** 10 years after last requested access?	X	
8 **IF** storing electronic data for 10 years after last requested access, will you guarantee to **EITHER** use a University Google Drive account **OR** an approved data repository service to store the data?	X	

Box 3A: Checklist of Data Protection Questions ALL students must complete this box	YES	NO
9 Have you screened your project against the Data Protection Impact Assessment (DPIA) screening questions **AND** if required conducted a DPIA and submitted a copy to the Data Protection Officer for review?	X	
10 If capturing audio, will you use an encrypted device for recording (e.g. an Apple iOS device or encrypted voice recorder)?	X	
11 Where data is held on an encrypted portable device (e.g. laptop, tablet) will you back it up to a University approved service as soon as possible and perform periodic checks to ensure data is being backed up appropriately?	X	
12 Will you ensure confidential information is encrypted before it is transmitted/shared digitally?	X	
13 Please detail what other protections will be used for digital data (e.g. access/edit permissions, procedural safeguards re downloads/making copies, remote access via VDS/VPN, 2 factor authentication)?	■	■
Give answer here: Access to the data will be restricted to me as this is not a group project. The data will remain in my university Google Drive and will be dealt with accordingly once the assessment has been marked.		
14 Confirm you have reviewed the user commitments under the Policy for the safe use of University information on devices. Detail anything in the user commitments that will pose a challenge in carrying out your proposed research.	X	
Give answer to the second element of question 14 here: N/A		
15 Will you ensure that personal data or confidential data held on paper are stored in a lockable filing cabinet or container, and/or a locked room in secure premises?	X	
16 How will devices be physically protected (e.g. in transit, when not in use or left unattended)?	■	■

Box 3A: Checklist of Data Protection Questions **ALL** students must complete this box	YES	NO
Give answer here: My laptop is password protected.		
17	Will you ensure the device(s), accounts, or storage area(s) used to store data are not accessible to any unauthorised parties?	X	

Box 3B: Checklist of Data Retention Questions **ALL** applicants must complete this box	YES	NO
1	How long will you keep personal data after the project, in what form and for what reason? https://www.york.ac.uk/library/info-for/researchers/data/sharing/		
	Give answer here: Personal data will be kept until after assessment marks have been confirmed. This is for if proof of my research needs to be provided for any reason. However, the data would be presented in an anonymized format.		
2	When will the research data be destroyed, by whom, and how? https://www.york.ac.uk/library/info-for/researchers/data/sharing/#tab-2		
	Give answer here: I will delete the data from my university Google Drive after the assessment marks have been confirmed.		
3	Will any personal or special category data (i.e. data that is not truly and irrevocably anonymised) be deposited in an archive or external repository? https://www.york.ac.uk/library/info-for/researchers/data/sharing/#tab-4 **Move on to Question 5 if you have answered 'no'**		S

Box 3B: Checklist of Data Retention Questions **ALL** applicants must complete this box		YES	NO
4	Where personal data are to be transferred to an archive or repository, please confirm that your Information Sheet will: (i) cover the archiving and reuse of any personal data and participant agreement to this, (ii) explain to participants the benefits of any data sharing, (iii) indicate where possible whether research data will be deposited in a named, recognised repository (e.g. Archaeology Data Service, UK Data Service, York's institutional repository, etc.)		
5	Where you have special category personal data or criminal data, will it be destroyed in line with an agreed retention policy (set by the University, the data provider, or approved by this ethics committee)? **You may enter 'N/A' if you are not collecting this type of data**	N/A	

Before submission of your assessment work, you must complete Section 4: Student Agreement. This completed Checklist must be included as an Appendix to your assessment report, together with examples of your Project Information Sheets and Informed Consent Forms.

SECTION 4: STUDENT AGREEMENT

Box 4A: Student Agreement **ALL students must complete this box.**		YES	NO	N/A
1	I confirm that the work conducted for the above project has met all the statements as expressed in this Research Ethics Checklist.	X		
2	I confirm that the work conducted for the above project was guided by the University's ethical rules and regulations.	X		
3	I have included example Project Information Sheets and Informed Consent Forms as Appendices to my report, if applicable.	X		

4	I confirm that I have adhered to the ACT requirements for storing personal and special category data compliant with the General Data Protection Regulation (GDPR). Note that GDPR compliance guidance can be found on the ACT Ethics VLE site.	X		
5	I confirm that, if applicable, all payments made to personnel in relation to this project have complied with financial regulations.	X		

Student Name **(or Exam Number for Anonymous Submission)**	Y3884983
Date	14 April 2023

The Eurostar Journey

UNIVERSITY *of York*

School of Arts and Creative Technologies

Participant Consent Form

Thank you for your interest in this project. This research activity will be used to gather data on the usability and overall user experience of the prototype I have created. The purpose of the prototype is to create an interactive experience for the National Railway Museum.

Please read the following statements carefully and tick the appropriate box:

	YES	NO
I have read the information sheet about this project		
I agree to take part in this project		
I consent to my anonymized data being deposited in data repository (Google Drive)		
I understand my right to withdraw and/or have my data destroyed from this project at any time		
I understand that my participation in this project will be treated anonymously		
I am over the age of 18		

Participant Name: **Researcher Name:**

_____   _____

Participant Signature: **Researcher Signature:**

_____   _____

Date: **Date:**

___/___/_____   ___/___/_____

If you wish to be informed about the outcomes from this project, please provide your email address:

_____

The Eurostar Journey

UNIVERSITY *of* York

School of Arts and Creative Technologies

Participant Information Sheet –Anonymous Research

Project background

The University of York would like to invite you to take part in the following project: The Eurostar Journey.

Before agreeing to take part, please read this information sheet carefully and let us know if anything is unclear or you would like further information.

What is the purpose of the project?

This project is being conducted by Y3884983 (email:), who is a 2nd year undergraduate student on the BSc Interactive Media at the University of York. This research is being undertaken for the assessment of the User Experience Design module, which is being led by Sanjit Sammadar (sanjit.sammadar@york.ac.uk).

The work is being conducted according to restrictions that have been subject to approval by the ACT Ethics committee. The Chair of the ACT Ethics committee can be contacted on ACT-ethics@york.ac.uk.

For this research project, I am interested in the quality of the user experience provided by the interactive installation I have prototyped. Your participation in this project will involve interacting with the prototype by following the user directions and whatever you feel is necessary given the context (ex: you want to learn more about something, so you click on the correlating button). Afterwards I will ask you some simple questions on your experience interacting with the prototype. Your answers will be stored anonymously in a Google Drive document.

Please note that to comply with the approved Ethics requirements of this work, we do not intend to discuss sensitive topics with you that could be potentially upsetting or distressing. If you have any concerns about the topics that may be covered in the research study, please raise these concerns with the researcher.

Your participation in this project is voluntary. If you wish, we will provide you with access to the edited film and/or the report that we submit after our marks have been confirmed. If you would like to receive access to these, you can indicate as such on the consent form.

Why have I been invited to take part?

You have been invited to take part because you are over 18 and I would like to receive usability feedback from a diverse group of participants.

Do I have to take part?

No, participation is optional. If you do decide to take part, you will be given a copy of this information sheet for your records and will be asked to complete a participant consent form. If you change your mind at any point during the research activity, you will be able to withdraw your participation without having to provide a reason. To withdraw your participation you need to email me and I will delete all of your data as soon as possible.

Will I be identified in any outputs?

No. Your participation in this research activity will be treated anonymously and you will not be identified in any outputs.

Privacy Notice

This section explains how personal data will be used by The Eurostar Journey at the University of York.

For this project, the University of York is the [Data Controller](#). We are registered with the Information Commissioner's Office. [Our registration number](#) is Z4855807.

What is our legal basis for processing your data?

Privacy law (the UK General Data Protection Regulation (GDPR) and Data Protection Act 2018) requires us to have a legal reason to process your personal data. Our reason is we need it to perform a public task.[1]

This is because the University has a [public function](#), which includes carrying out research projects.[2] We need to use personal data in order to carry out this research project.

Information about your health, ethnicity, sexual identity and other sensitive information is called [“special category” data](#). We have to have an additional legal reason to use this data, because it is sensitive. Our reason is that it is needed for

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[1]This refers to [UK GDPR Article 6 (1) (e)](#): processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller

[2] [Our charter and statutes](#) states: 4.f. To provide instruction in such branches of learning as the University may think fit and to make provision for research and for the advancement and dissemination of knowledge in such manner as the University may determine.

research purposes.[3] All research projects at the University follow our [research ethics policies](#).

How do we use your data?

Your feedback will be used to further develop the prototype and polish it to a high level.

Who do we share your data with?

Your data will not be shared with anyone aside from the markers who will be reading about the usability testing conducted for my project in my assessment report.

As well as this, we use computer software or systems to hold and manage data. Other companies only provide the software, system or storage. They are not allowed to use your data for their own reasons.

We have agreements in place when we share data. These agreements meet legal requirements to ensure your data is protected.

How do we keep your data secure?

The University is serious about keeping your data secure and protecting your rights to privacy. We don't ask you for data we don't need, and only give access to people who need to know. We think about security when planning projects, to make sure they work well. Our IT security team checks regularly to make sure we're taking the right steps. For more details see [our security webpages.](#)

How do we transfer your data safely internationally?

If your data is stored or processed outside the UK, we follow legal requirements to make sure that the same level of privacy rules still apply.

How long will we keep your data?

The University has rules in place for [how long research data can be kept](#) when the research project is finished. Your information will be kept until after the assessment

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[3]This refers to [UK GDPR Article 9 (2) (j)](#): processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

marks have been finalized and after this time an anonymised version will be kept. As this will be fully anonymous, it will not be possible to identify you in any way from this data.

What rights do you have in relation to your data?

[You have rights over your data](). This sheet explains how you can stop participating in the study, and what will happen to your data if you do. This information is in the section 'Do I have to take part?'.

If you want to get a copy of your data, or talk to us about any other rights, please contact us using the details below.

Questions or concerns

If you have any questions or concerns about how your data is being processed, please contact Sanjit Sammadar at sanjit.sammadar@york.ac.uk

If you have further questions, the University's Data Protection Officer can be contacted at dataprotection@york.ac.uk or by writing to: **Data Protection Officer, University of York, Heslington, York, YO10 5DD**.

Right to complain

If you are unhappy with how the University has handled your personal data, please contact our Data Protection Officer using the details above, so that we can try to put things right.

If you are unhappy with our response, you have a right to [complain to the Information Commissioner's Office](). You can also contact the Information Commissioner's Office by post to **Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF** or by phone on **0303 123 1113**.

APPENDIX D: Preliminary Sketches
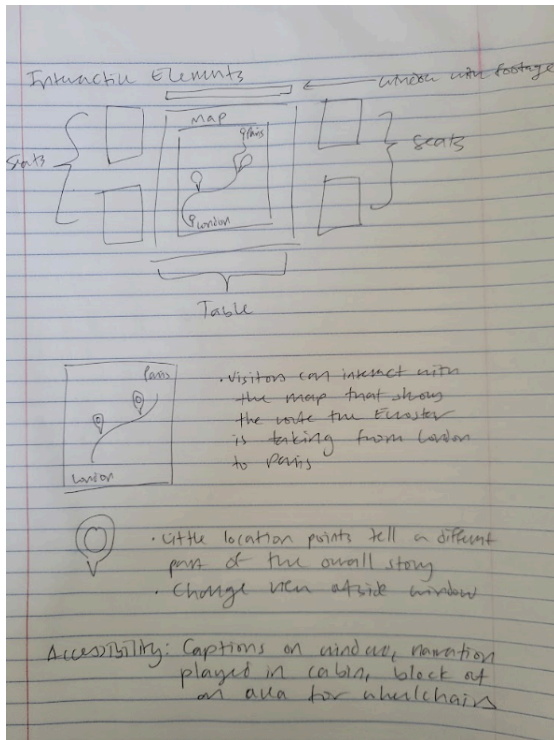
Sketches of interactive elements and accessibility notes.

APPENDIX E: Design Requirements

FROM ASSESSMENT:
- Must be/feel historically accurate to the selected vehicle
- Must be accessible to as broad a range of visitors as possible
- Should be both informative and engaging
- Content must be appropriate for school-age children

FROM RESEARCH:
- Should be engaging to a wide range of ages, including young children (5-8)
- Replicated cabin should be as realistic as possible to make visitors feel as if they really are sitting in the Eurostar 3308, let them feel as "close" as possible to the real thing
- Replicated cabin needs to be accessible: room for wheelchairs and strollers, captions on the footage, narration played in cabin, interactive map has to be color-blind friendly

FUNCTIONAL:
- Replicated Eurostar 3308 cabin with seating around a table, historically accurate to 1990s

- Screen designed to look like a train window, displays different types of footage depending on visitor interaction
- Interactive map on table at seats that shows route from London to Paris with interactive buttons visitors can press to change view outside window
- Different types of footage (historically accurate to 1990s): Waterloo station, Gare du Nord station, countryside scenery, construction of the Channel Tunnel, visualization of technical features of Eurostar (?)

NON-FUNCTIONAL:
- Informative and entertaining
- Conveys the role of humans/creativity/collaboration in the Eurostar
- Demonstrates cultural and technical significance of the Eurostar
- Evoke an emotional response

APPENDIX F: Secondary Persona

Name: Charlie Smith

Age: 10

Occupation: Student

Bio: Energetic middle child of 3 siblings. Easily distracted and requires high level of stimulation/interest in an activity in order to stay engaged.

Goals: Do something fun, don't upset mum.

AdobeStock image by Hero Images

Secondary persona is Joy's second child, Charlie. See bibliography for full image citation.

APPENDIX G: Desk-based Research

Monthly Visitor Insight KPI Report January 2022
- 58% of visitors rated their visit as "Excellent"
- 66% of visitors said they felt "safe"
- 68% would "definitely" recommend visiting to others

January 2022 Post Visit Survey
- 694 responses
- 398 rated visit as "Excellent"
- 226 rated visit as "Good"
- 49 rated visit as "Fair"
- 12 rated visit as "Poor"
- 4 rated visit as "Very Poor"
- "More access to inside of trains. More interactive things like projectors and screens for example."
- "I think a lot of people on the spectrum come here. It's a quiet place and makes me very at ease."
- "Being able to go into some of the carriages to look first hand. Would rather pay an entrance fee and not pay for mallard and miniature railway as extras."
- "More access to the inside of trains"
- "Have more attractions on"

Image: Research conducted using Monthly Visitor Insight KPI Report and Post Visit Survey provided by NRM.

National Railway Museum on Tripadvisor
- Average of 4.5/5 from 18,859 reviews
  - 13,756 rated their experience as "Excellent" (~73%)
  - 4,059 rated their experience as "Very good" (~21%)
  - 804 rated their experience as "Average" (~4%)
  - 150 rated their experience as "Poor" (~0.8%)
  - 91 rated their experience as "Terrible" (~0.5%)
- Popular mentions in reviews:
  - "Free entry"
  - "All ages"
  - "Main hall"
  - "Well worth a visit"
  - "Few hours"
- "Excellent" reviews:
  - "Great for old and young" -March 2023
  - "Being able to be that close puts the genius of the engineering into perspective" -March 2023
  - "Something for everyone from a train enthusiast to someone that just has a passing interest in trains and their history" -February 2023
  - "So much to see I'm a wheelchair user found getting around easy but miss alot of what's in the carriages because I'm too low down" -January 2023
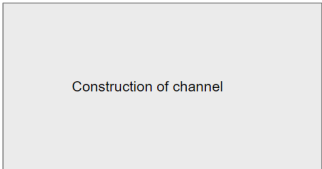
- "Average" reviews:
  - "Also not very inclusive for people of limited mobility, no way to take a person in a wheelchair onto any of the trains that were open, however most appeared to be shut off to visitors so you can only walk around them" -March 2023
  - "All the trains are beautiful, but some are lacking signs or information to tell you more about them. There are some elevated platforms to see into the trains and carriages, but they're not illuminated and again, there is limited information/signage" -February 2023
  - "It needs to be more than standalone engines with occasional peeks into the drivers spot" -February 2023
  - "I felt this was a look don't touch experience" -February 2023
  - "I was also frustrated that there were very few viewing platforms to step on to peek inside the carriages" -February 2023
  - "However, my main gripe - as a Railway man and enthusiast, is that this should be named the locomotive museum. There is hardly any resource allocated to the many other aspects of the railway that are necessary for these machines to operate." -December 2022

- "Terrible" reviews:
  - "Nothing is interactive which is a real shame as this place really does need lifting with a more hands on approach" -February 2023
  - "I was surprised at the lack of information of the exhibits with no real history being explained very poor for a museum which is meant to be world class" -December 2022
  - "You can't get into the actual trains or carriages to see anything. Disappointing for children." -October 2022
  - "I know it's a museum but felt like a car park or train park." -April 2022
- 5,019 reviews listed their visit as being with "family" (~27%)
- 207 reviews mentioning "Eurostar:"
  - "There were exhibits that were new like the Eurostar and the Inter-city 125, but on the whole it looked very similar" -February 2023
  - "There is a lot of history contained within, only downside I found was that it was all behind glass. Eurostar trains, Shinkansen bullet trains and everything else but you can't actually get ON them to see the controls etc." -September 2022
  - "A great example of the Eurostar and Japanese bullet train" -August 2022
  - "the noticeboards attached to each train are OK, but in the multimedia age we live in, surely there could be something more interactive and even multilingual for the many international visitors the museum receives (screens showing the trains on the rails during their heydays? Key facts, figures, dates pertaining to each train?)" -April 2022

Image: Research conducted using TripAdvisor reviews for NRM.

APPENDIX H: Early Lo-Fi Prototype

The other slides from the interactive Google Slides prototype. Notice the second screenshot lacks a "next video" button as it is the last slide.

APPENDIX I: First Processing Prototype

Images: More examples of what the early Processing prototype looked like. Not all of the

screens have been included here for the sake of space and relevance in the report.

APPENDIX J: Samples from Usability Testing

Participant A

Observation:
- Said that the opening screen "looked nice"
- Clicked "next" almost immediately
- Read the Waterloo text quite quickly, but took their time with the main pages
- Clicked on the map buttons in linear order
- At the end tried to click back some of the buttons, but realized it was probably a bug/broken

Interview:
Do you know what the Eurostar is?
   "Yes I do, I have been on it before"
Was the project engaging and informative?
   "It was nice. I liked being able to see pictures alongside facts."
Was the project easy to understand and interact with?
   "Yes, because the "next" buttons were clearly labeled, and the buttons on the map were labeled with their topics, so I knew to click on them. But maybe someone older may not think that."
If there is anything you would change about this project, what would you change?
   "I think maybe more instructions for people so they know what to do. I also think maybe the captions should be formatted differently because right now some of the images make it hard to read. So change the color of the font or highlight the words."

Image: Observation notes and semi-structured interview conducted with Participant A.

Participant B

Observation:
- Went through the project slower than Participant A
- Asked: "Can I click the buttons here?" in reference to the map
- Also clicked on the map buttons in linear order
- Leaned closer to screen to try and read captions
- Asked: "Am I not allowed to go back?" in reference to buttons that have already been pressed

Interview:
Do you know what the Eurostar is?
    "Yes"
Was the project engaging and informative?
    "It reminded me a bit of a slideshow, but the images and videos made it more interesting. I would say it was informative."
Was the project easy to understand and interact with?
    "I think so, but I think having directions somewhere would be good."
If there is anything you would change about this project, what would you change?
    "Including directions on the buttons and stuff. Also maybe add more color."

Image: Observation notes and semi-structured interview conducted with Participant B.

Participant C

Observation:
- Did not ask any questions or say anything
- Went through the project relatively quickly
- Clicked on the map buttons in linear order
- Tried to click back almost immediately, which resulted in the pages being presented slightly out of order/not related to the button

Interview:
Do you know what the Eurostar is?
    "Yes"
Was the project engaging and informative?
    "It was informative."
Was the project easy to understand and interact with?
    "Yes, but users should be able to go back and forth between the slides."
If there is anything you would change about this project, what would you change?
    "Let people click the buttons whenever they want so they can see the slides even if it's in a different order than they're shown on the map. Including some kind of audio would be good too, like music or train noises."

Image: Observation notes and semi-structured interview conducted with Participant C.