

Mini-Project

Palestine-Israel Conflict Fatalities

Iteration #2

Information Visualization

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TP3 Class

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1. Contextualization

- The Israel-Palestine is a complex conflict over the establishment of a Palestinian state in the West Bank and Gaza Strip
- It is a conflict with over a century
- The conflict escalated in October 2023 between Israel and Hamas resulting in hundreds of deaths



2. Project Objectives

- Build a platform where anyone can visualize and learn more about the conflict between Palestine and Israel.
- Discover answers for questions like:
 - What are the **patterns of fatalities** across different cities and regions within the conflict zone.
 - In what ways has the **intensity of the conflict** varied in different locales and times?
 - What **types of weaponry** and **violence** have resulted in fatalities, and how does this vary by region and over time?

3. Users

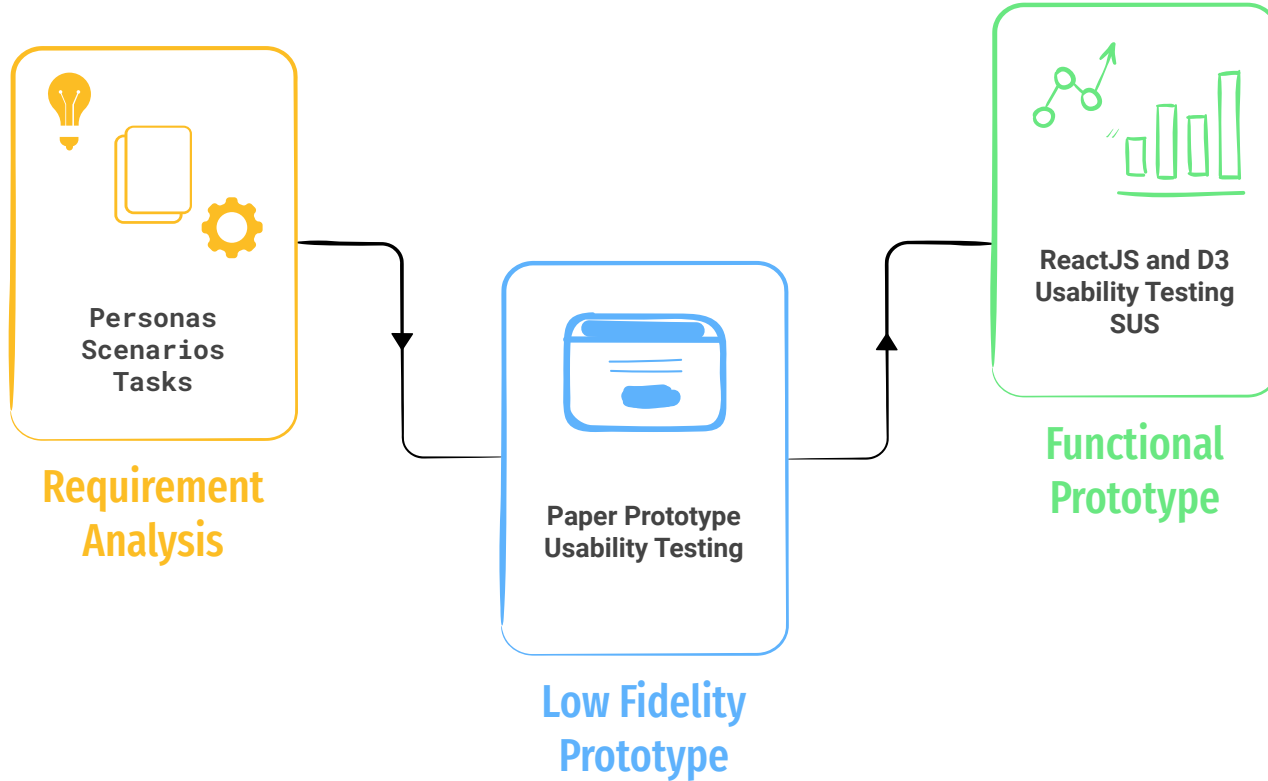
The platform will serve a diverse group of users such as:

- **Academics** and **researchers** focused on Middle Eastern politics and conflict resolution
- **Policy-makers** and diplomats working in related areas
- **Educators** and **students** looking to grasp the historical and present aspects of the conflict will benefit from it
- **Journalists** and **media professionals** needing accurate information for reporting will also find it valuable

4. Data Analysis

- The dataset selected comes with more than **11k of entries** on each represents a person that died due to this conflict between **2000** and **2023**
- Some of the fields to highlight are:
 - **Citizenship**
 - **Death Location**
 - **Took Part in the Conflict**
 - **Who killed**
 - **Type of ammunition**

5. Methodology

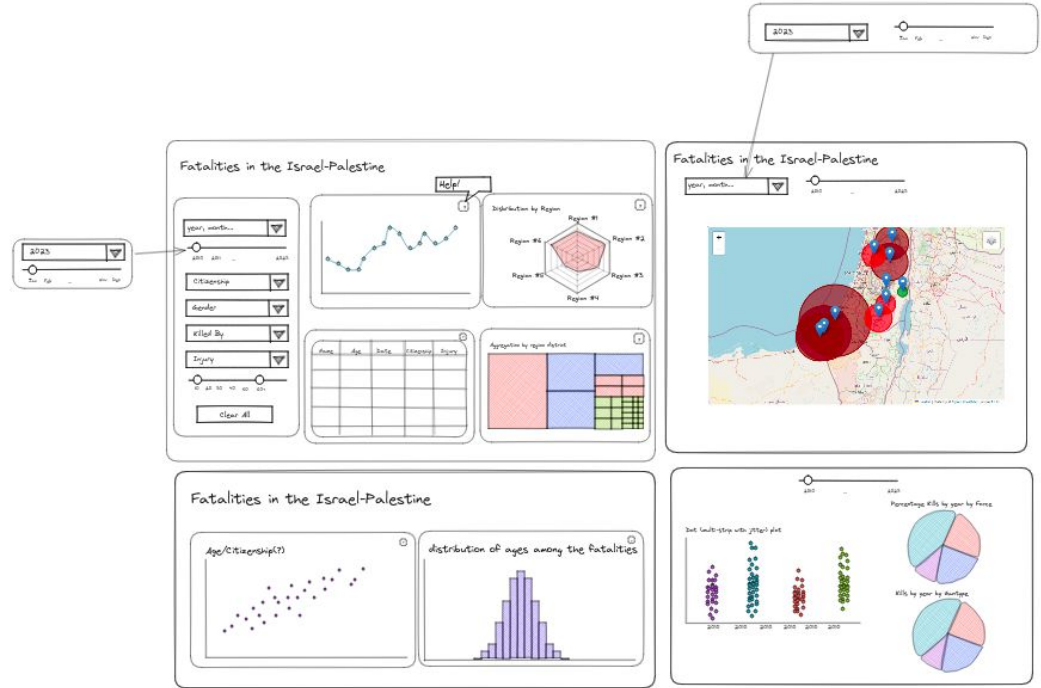


6. Visualization Solution

With this application we want to provide a way to visualise:

- fatalities through **time frames**
- differentiation between the **different regions** of the conflict
- fatalities caused by the **different participants**
- fatalities differentiated by **gender**
- number of fatalities that a **type of ammunition** caused
- number of fatalities caused on people in their **place of residence**

7. Low Fidelity Prototype



Page #1



Filtering

On the main page you can apply filters in order to change the current visualisation

Page #1

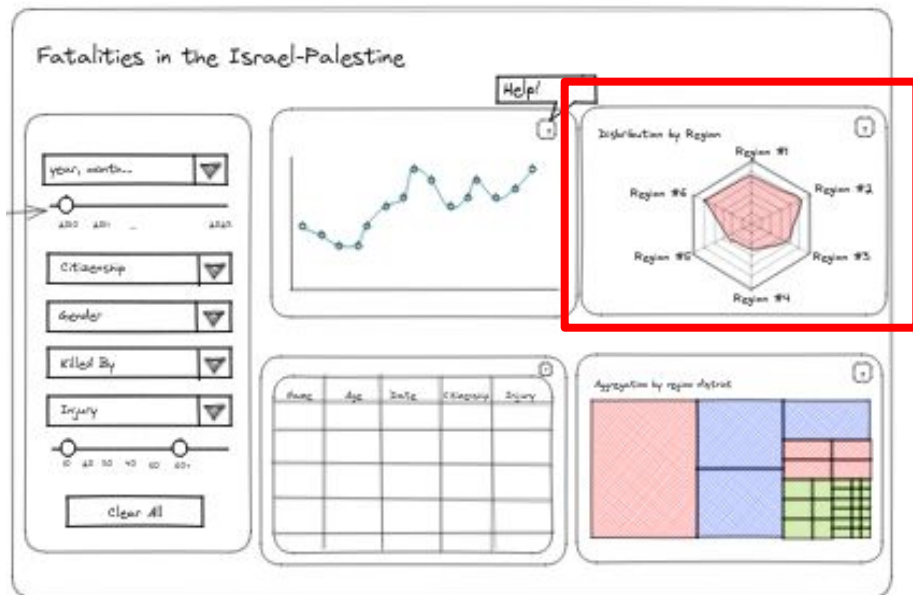
Fatalities Over Time

This chart provides a visualisation of the fatalities during the conflict. It will provide a simple way to check the fatalities over time.



Page #1

Fatalities by Region



The spider plot of the region allows the visualisation of fatalities over each region during a certain period of time.

Page #1

Fatalities Table

The visualisation of each data entry individually is reliable because of the characteristics of the data set where each entry is a person.



Page #1

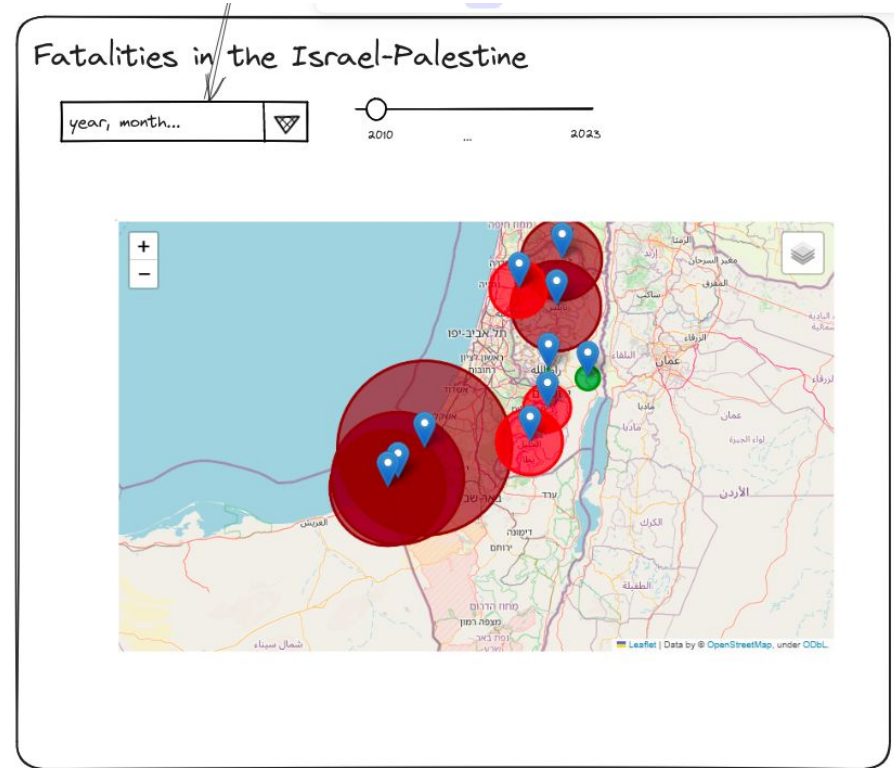
Fatalities by District of Residence



To check where the place of residence of the involved people the tree map is a good way to visualise the people most affected with the conflict.

Map

The map visualisation provides an overview of the conflict and enhanced with the date filtering, a more accurate view is achieved



Page #3



Scatter Plot

The Scatter plot of Age by Date of Death provides a unique way to understand how the conflict evolved.

Page #3

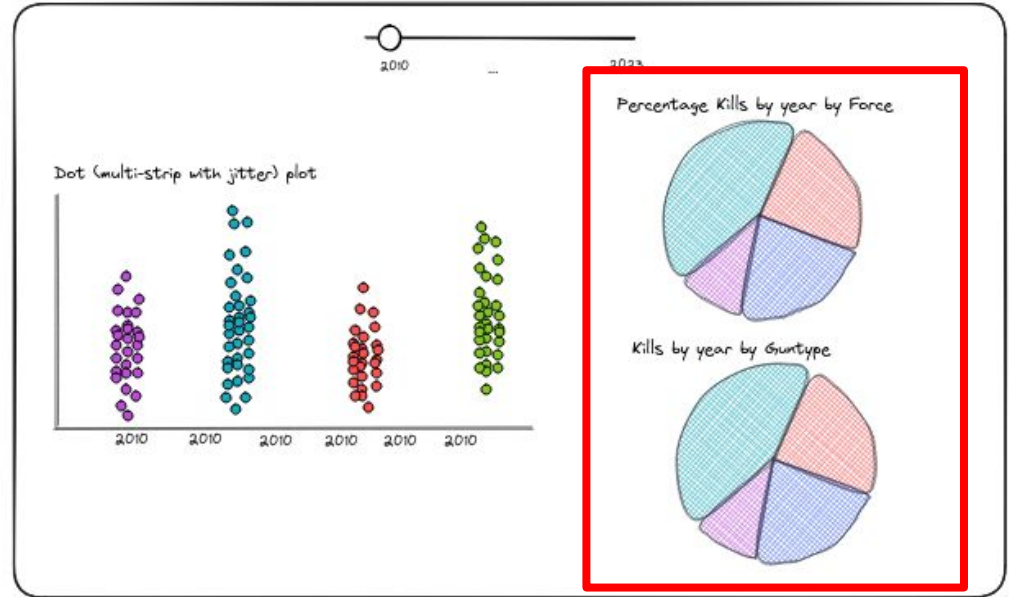


Histogram

The Histogram for age with hue gender provides a way to visualise the most affected age group and with the separation between genders we can take some conclusions.

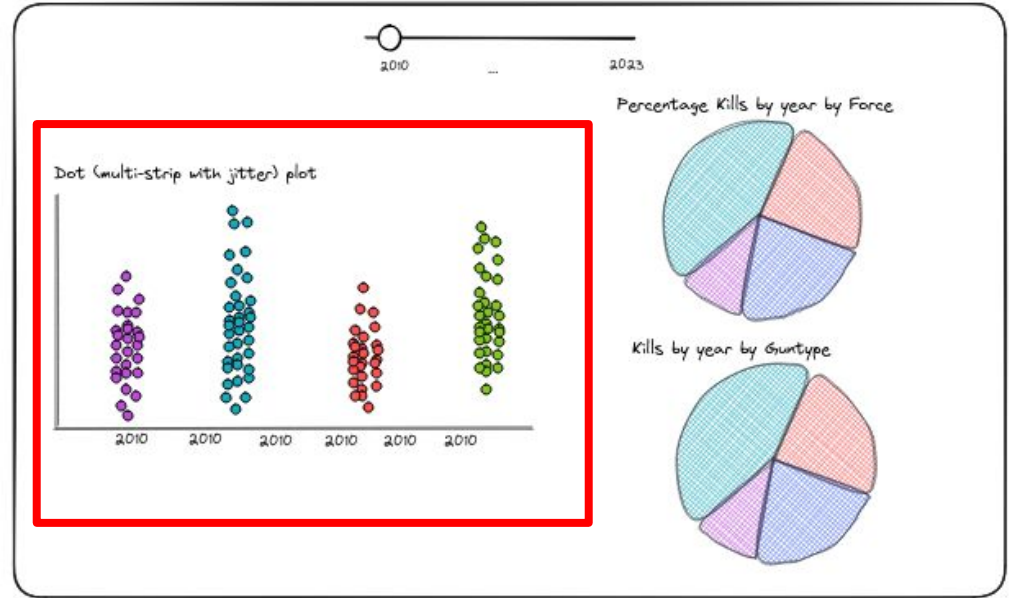
Pie Charts

The pie charts allow the visualisation of the impact of the Military Forces and the Gun Types in the conflict. By filtering through time we can see the military and weaponry evolution.

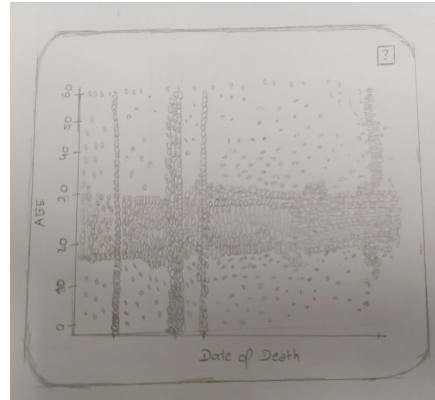
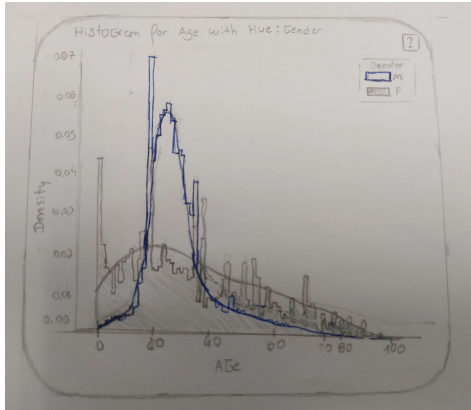
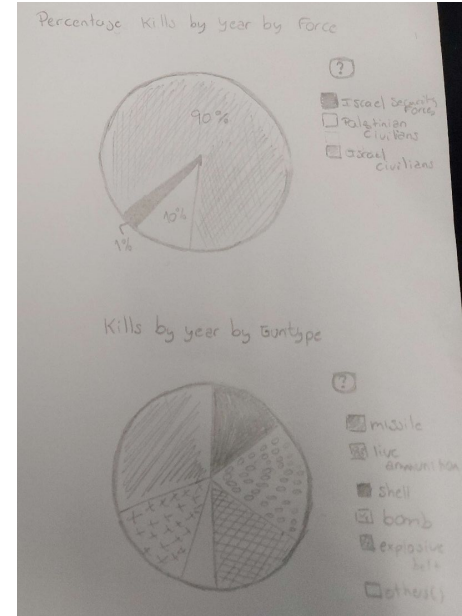
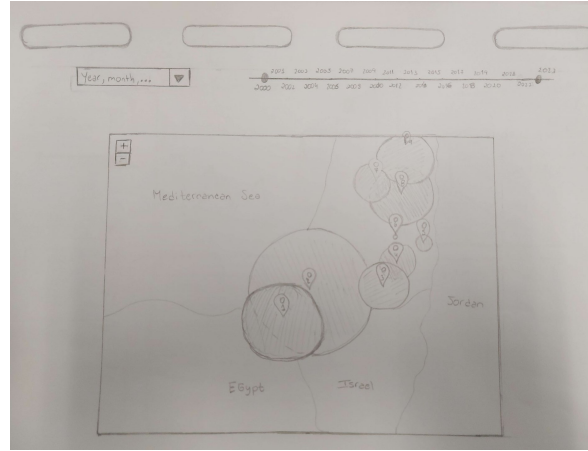
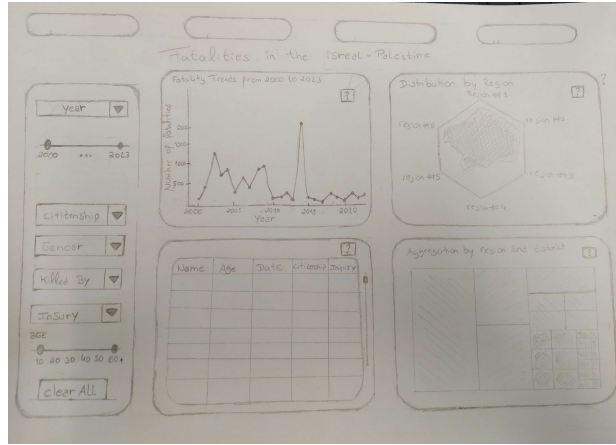


Scatter plot

This visualisation allows us to see the age death by location and nationality and with the year filtering we can check the evolution of the fatalities over different locations.



Paper Prototype



8. LFP User Evaluation

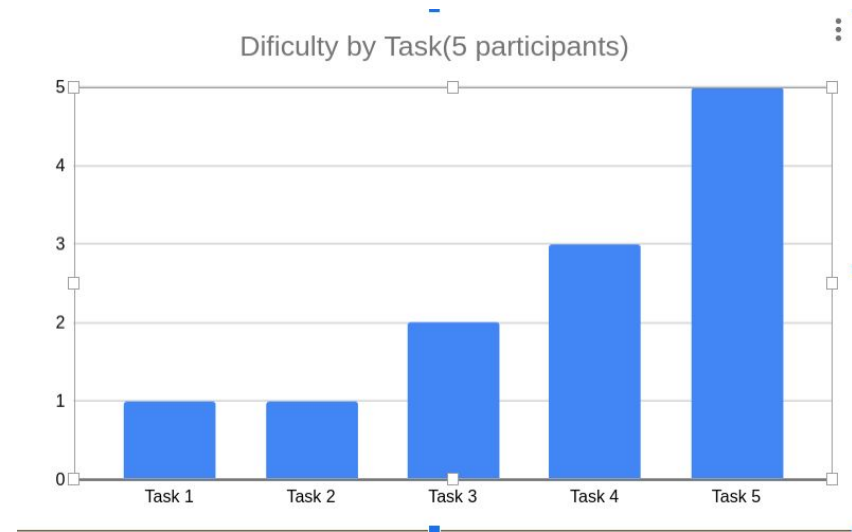
Task 1: Identify the force with the most associated fatalities.

Task 2: Identify the year with the highest number of fatalities.

Task 3: Identify the types of weapons used in a given year.

Task 4: Identify the most affected age rates.

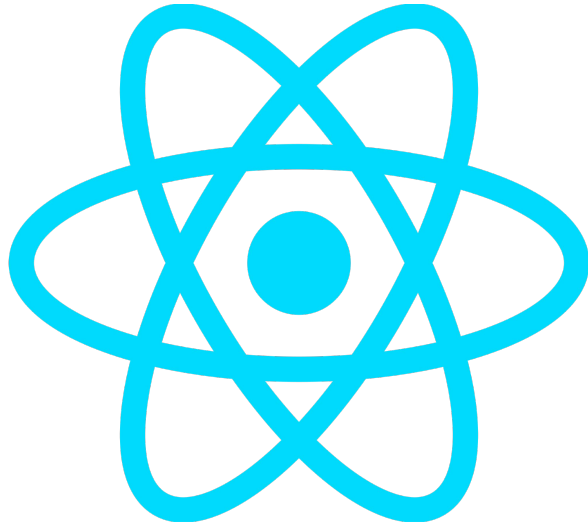
Task 5: Identify possible catastrophic events.





9. Functional Prototype

Technologies



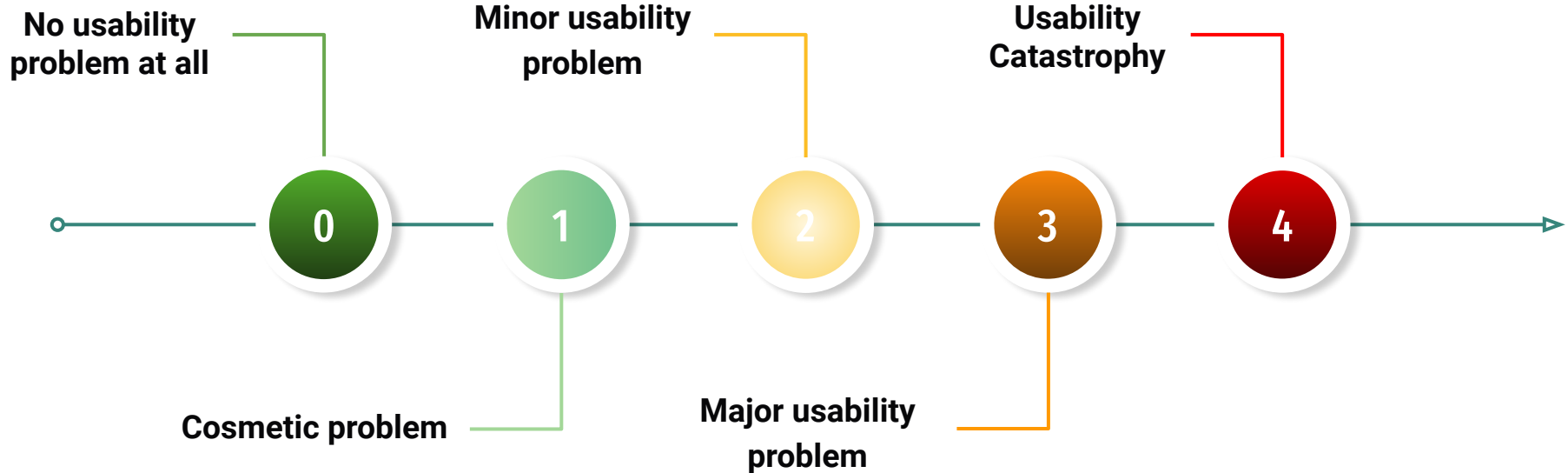
React



D3

Heuristic Evaluation

Jakob Nielsen's 10 Usability Heuristics for UI Design, using the severity rating scale proposed by Nielsen:



Heuristic Evaluation

01.Visibility of System Status

Issue: Filters do not follow page scroll, hindering interaction.

Severity Rating: 2

02.Match Between System and the Real World

No issues identified.

03.User Control and Freedom

Issue: The information modal lacks a clear exit option.

Severity Rating: 2

04.Consistency and Standards

No issues identified.

05.Error Prevention

Issue: Missing information when illegal values are entered for dates.

Severity Rating: 2

06.Recognition Rather Than Recall

No issues identified.

07.Flexibility and Efficiency of Use

No issues identified.

08.Aesthetic and Minimalist Design

Issue: Types of Weaponry pie chart was hard to identify the different weapons

Severity Scale: 3

09.Help Users Recognize, Diagnose, and Recover from Errors

Issue: Insufficient information about filters and error resolution.

Severity Rating: 3

10.Help and Documentation

Issue: Absence of an 'About' page.

Severity Rating: 3

System Usability Scale (SUS)

Participant ID: _____ Site: _____ Date: ____/____/____

System Usability Scale

Instructions: For each of the following statements, mark one box that best describes your reactions to the website *today*.

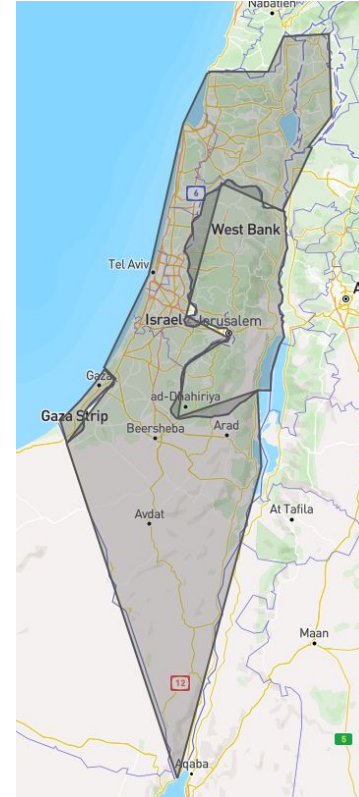
		Strongly Disagree				Strongly Agree
1.	I think that I would like to use this website frequently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	I found this website unnecessarily complex.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	I thought this website was easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	I think that I would need assistance to be able to use this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	I found the various functions in this website were well integrated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	I thought there was too much inconsistency in this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	I would imagine that most people would learn to use this website very quickly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	I found this website very cumbersome/awkward to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	I felt very confident using this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	I needed to learn a lot of things before I could get going with this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any comments about this website:

- We asked colleagues to explore our application and fill in the questionnaire;
- We had **10 participants** answering the questionnaire;
- The average SUS score value was **92** > 80.3.

Implementation Problems

- It was not possible to implement the desired visualization of the map due to the **lack of geoJSON** mapping data of the region.
- Most of the encountered solution worked as a **big picture of the region** or just has part of the map either Palestine or Israel



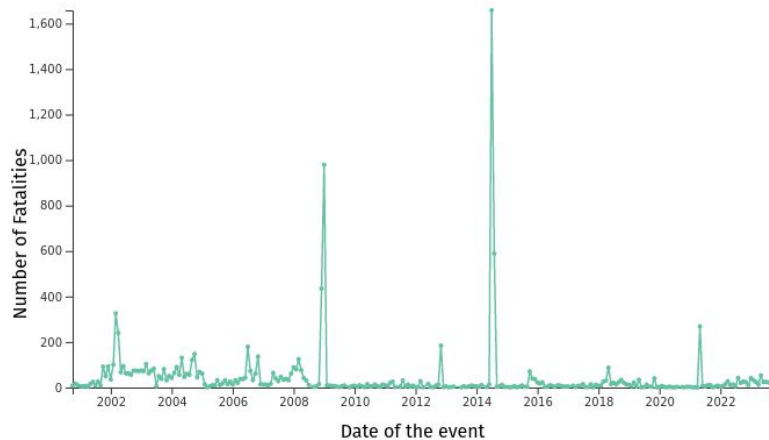
Functional Prototype: Demo

<https://mei-vi-p1.pages.dev/>

Functional Prototype: Future Work

- **Implement a zooming feature** in the plots with more information displayed
- Address the issue of the map by making your own GeoJSON of the region
- Optimise the **filter performance** and add more of them

Fatalities over Time



Thanks!

Do you have any questions?