Diploma Thesis

Map Animation of Shipping Traffic in Adobe After Effects from GIS data

Objectives

Despite continuous improvements, **the possibilities for creating cartographic animations in GIS software are limited** compared to dedicated animation tools. The software Adobe After Effects is considered an industry leader when it comes to motion graphics, visual effects and the creation of professional animations. This thesis aimed to **combine the value and power of spatial data with the sophisticated visualization capabilities of Adobe After Effects**.

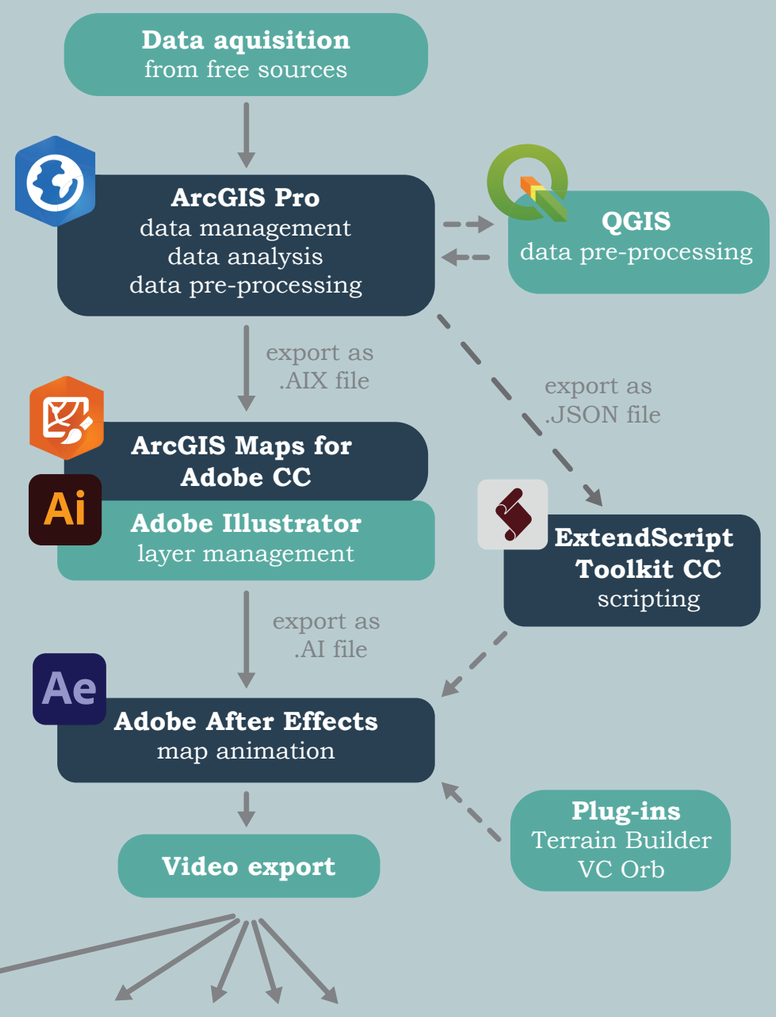
A set of five map animations was created on the common theme of shipping traffic, but each visualization constitutes of a unique dataset and animation style. Workflows to animate GIS data in Adobe After Effects were explored and documented. The quality of the animation output was assessed on the basis of user testing. Lastly, Adobe After Effects was evaluated as a tool to visualize spatial data.

Methodology

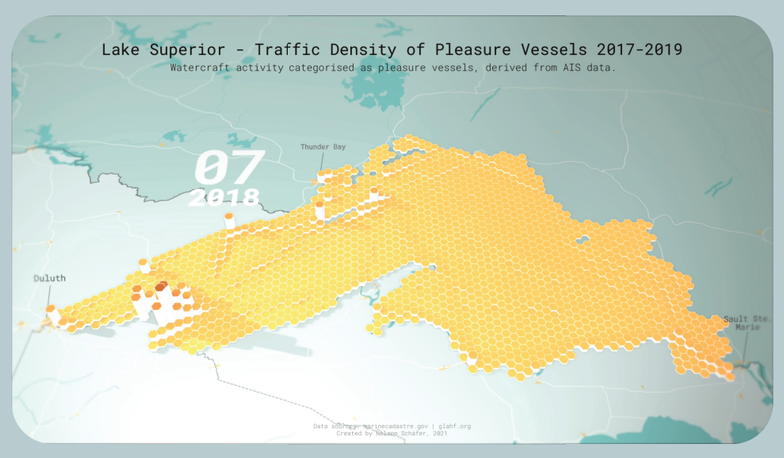
Among many others, the main type of input datasets for the animations were **AIS ship positions**, which were **pre-processed in ArcGIS Pro**. GIS software was used to prepare the input data to meet requirements that allow the creation of animations in the later steps. Since **Adobe After Effects does not natively support the import of any spatial data**, a workflow was developed to resolve this limitation.

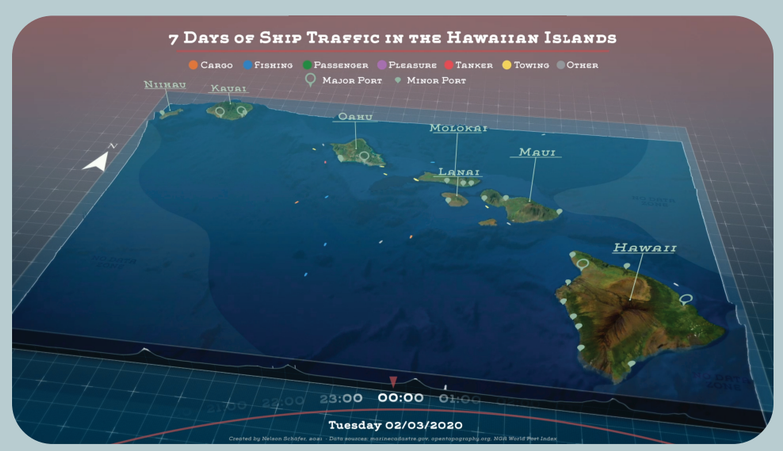
To transfer the spatial data to Adobe After Effect the **data was split up into a JSON file for the attribute values** and **Adobe Illustrator files to transfer the geometries** to Adobe After Effects. By using the capabilities of **scripting** tools, the geometry objects of were animated through utilization of their decoupled data attributes in the JSON file.

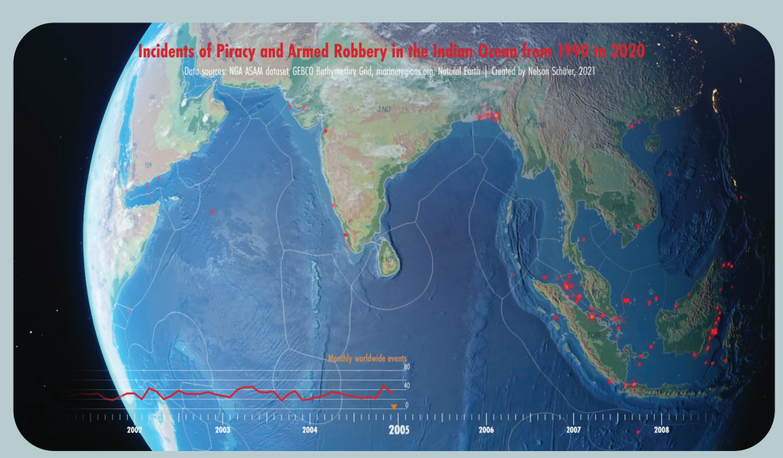
Lastly, the advanced animation abilities of Adobe After Effects were employed to add effects and to add auxiliary elements. Titles, legends, charts, time indicators, lights, shadows, camera movements and more are included in the animations. The output of this work are **five map animation videos on different phenomena of ship traffic** with durations between 30 and 140 seconds.



Results



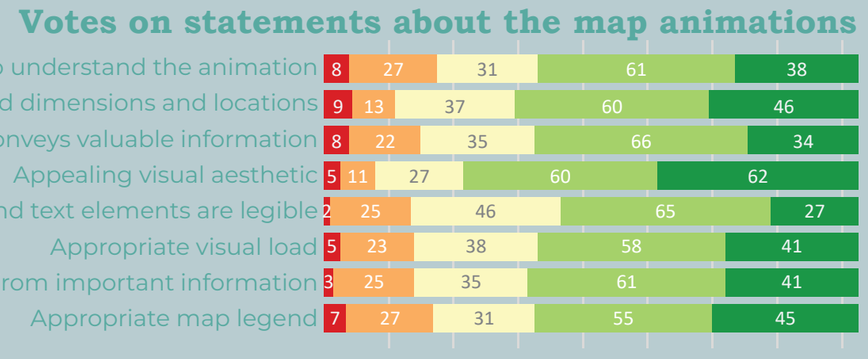




WATCH THE MAP ANIMATIONS HERE!

User Testing

To evaluate the quality and effectiveness of the created map animations an **online survey was conducted**. The evaluation results showed that the animations made a **largely positive impression** on the survey participants. However, **the most frequent point of criticism was overwhelming or confusing information load** due to too many elements, too small elements, or too quickly moving elements in the animations.



Conclusion

Compared to animation tools in GIS software, the advantages of working with spatial and temporal attributes that are tightly integrated in the program logic is missing in Adobe After Effects and requires custom solutions. Additionally, **the development of scripts and extensive manual labour is time consuming**, and the number of animated objects is limited due to **heavy processing loads**.

However, with the knowledge of the strengths and weaknesses of the software, unique animations can be created, which **clearly stand out from the standard solutions** from other animation tools. The amount of effort required to create an animation is well worth it if the purpose of the animation is to create **visually impactful animations that attract attention, are visually enjoyable and that possibly introduce uninterested people to explore the visualized topic.**

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