

Material Atlas For Coastal Construction

Students: William Duran, Jacob Schuster, Owen Weng

Mentor: Di Wu, *Doctoral Candidate, Researcher, Florida International University*

Instructor/Faculty: Dr. Masoud Sadjadi, *PhD, Florida International University*

PROBLEM

Coastal regions are confronting a series of environmental challenges that have far-reaching implications for ecosystems and human populations alike. The continuous rise in sea levels poses a threat of flooding and erosion, jeopardizing coastal infrastructure and habitats. This threat is compounded by a significant loss of biodiversity, which undermines the ecological balance and resilience of marine environments. Furthermore, many coastal areas suffer from poorly designed infrastructure that detracts from the natural beauty and fails to meet functional requirements, impacting the well-being of both local communities and the health of the ecosystem. These issues highlight a critical need for sustainable and effective solutions in coastal planning and development.

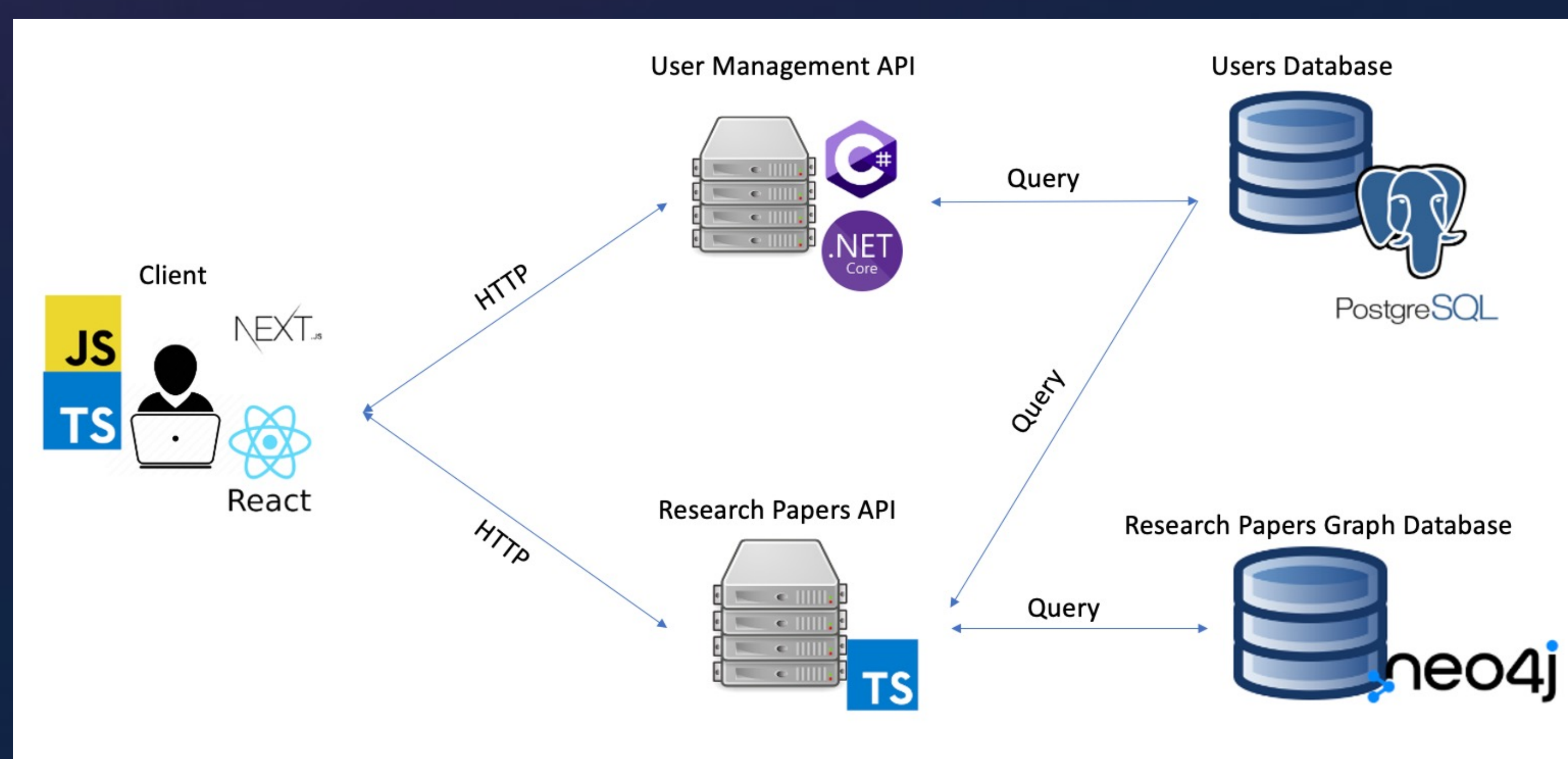
CURRENT SYSTEM

We were presented with a novel challenge, a blank canvas: there was no existing system or preliminary framework to build upon or refine. This project began from scratch, tasking us with the responsibility to establish the first generation of a comprehensive solution from the ground up. It presented a unique opportunity to innovate and define the direction of research and development in this domain.

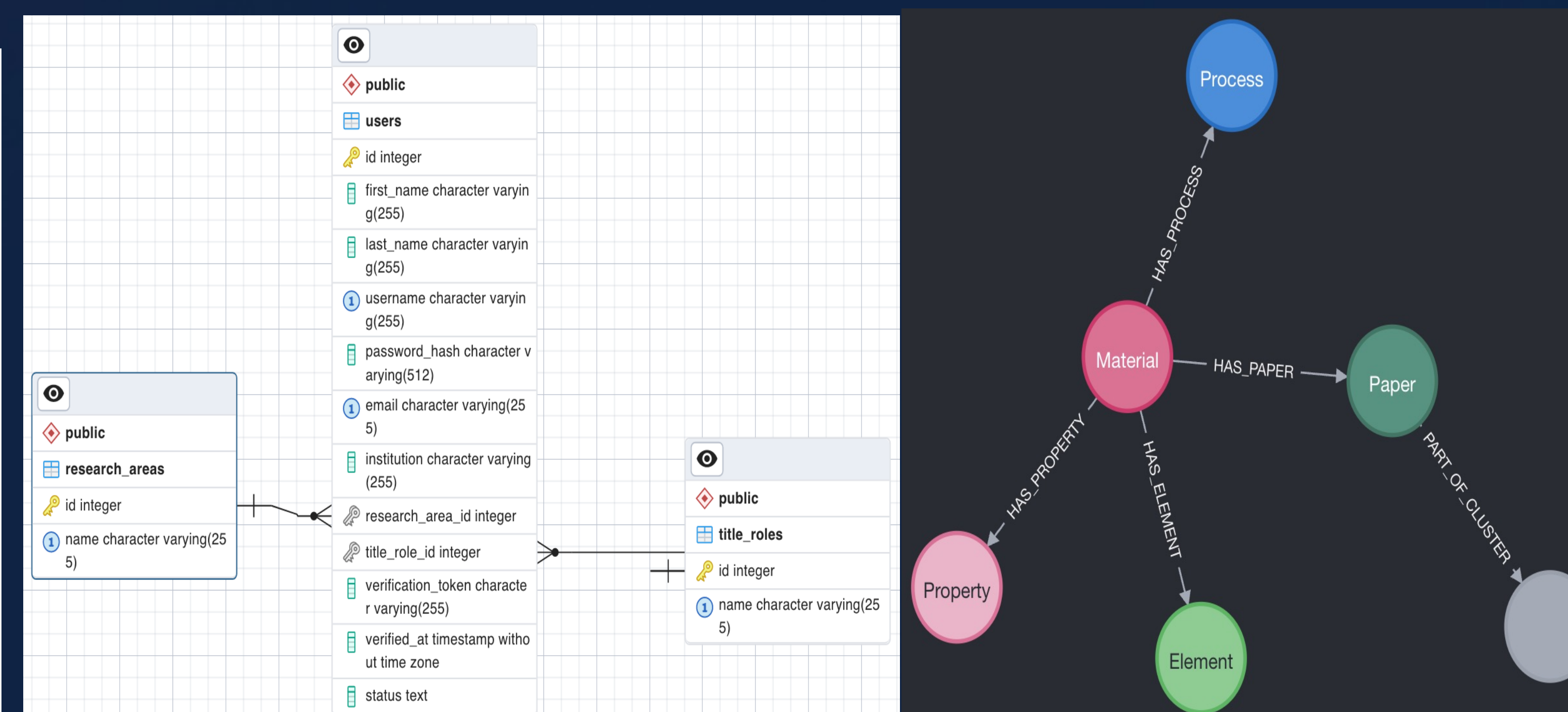
REQUIREMENTS

- The users can search for materials, applications, properties, research area, processes.
- Users can register and login with institutional emails.
- User email must be verified.
- Only verified users can upload content to the platform.
- Users can visualize the relationships between materials, elements, properties, applications and processes.

SYSTEM DESIGN



OBJECT DESIGN



IMPLEMENTATION



SUMMARY

As part of the senior design team at Florida International University, we developed the "Material Atlas for Coastal Construction" to address the urgent need for sustainable coastal development. Our project introduces a comprehensive, user-friendly platform for researching and sharing data on construction materials suited for coastal environments. Leveraging technologies like React and Neo4j, we aim to support the resilience of coastal infrastructures against climate change, contributing to safer, more sustainable coastal communities.

REFERENCES

- <https://nextjs.org/docs>
- <https://learn.microsoft.com/en-us/dotnet/>
- <https://www.postgresql.org/docs/>
- <https://neo4j.com/docs/>
- <https://docs.github.com/en>

ATTENTION: Subheadings shown above is a recommended structure for a research/scientific poster. Main elements of a poster are Introduction, Research and Conclusion. Researchers can customize the section headers based on their projects' needs. REMOVE THIS TEXT ONCE YOU START WORKING ON YOUR POSTER

ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by XXXXX (name of the project sponsor: federal, state or local government, or corporate partners, where applicable). We/I thank XXXX for his/her/their assistance and mentorship that I/we received throughout the senior design project.