

SBSD Web Prototype and GPT

Team members: Jacobo Ceballos, Zach Dellimore, Victor Olivar, Nate Swetlow | **Faculty adviser:** John D. Leonard, Ph.D. | **Sponsor:** SBSD | **Mentor:** Morris Willis

What's the Problem

- The Virginia Department of Small Business and Supplier Diversity is developing a chatbot to enhance their website's user experience, making it more intuitive and accessible for their customers.
- The chatbot must comply with Executive Order 30.
- This solution may also serve as a prototype, laying out the foundation for similar developments across other Commonwealth of Virginia websites.

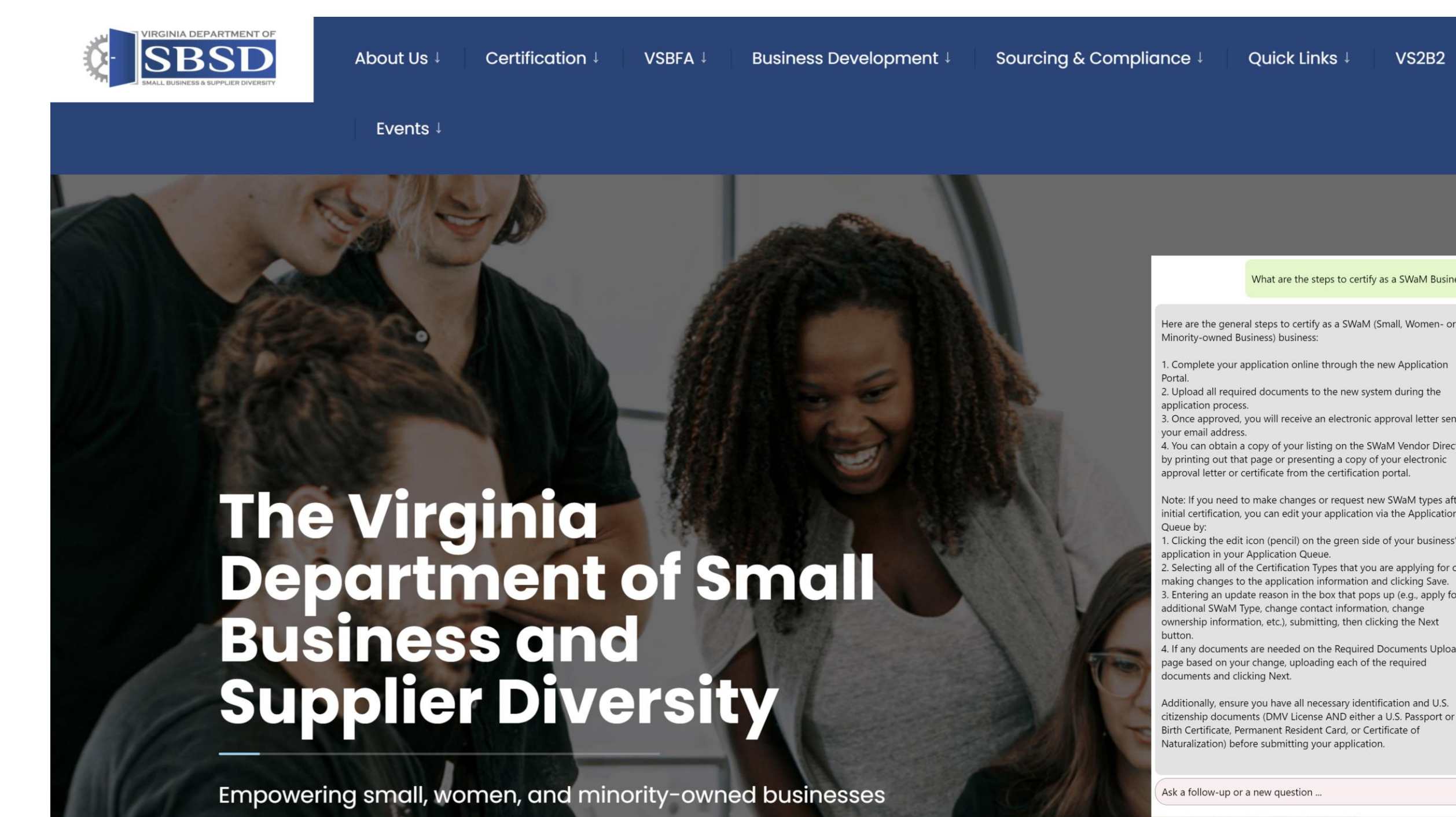
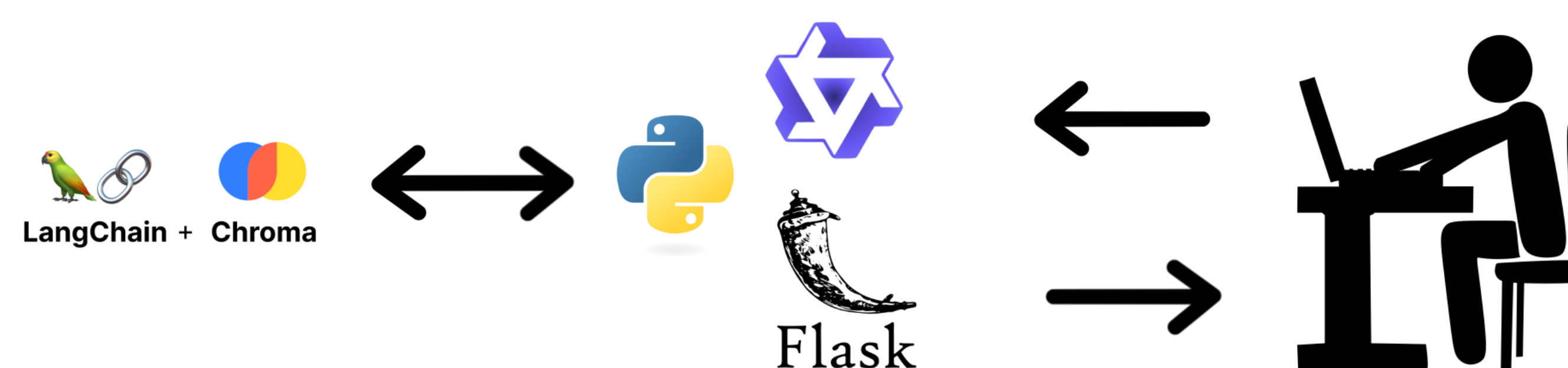
Executive Order 30

- Ensures ethical, secure, and responsible AI use in Virginia state agencies.
- Mandates compliance with VITA standards for transparency and data protection.
- Provides AI guidelines for education and public safety use

Development Process of Solution

The RAG system combines several technologies to deliver precise, contextually relevant responses about SBSD (Small Business Supplier Diversity) data.

- **Data Storage:** SBSD data stored in **ChromaDB** for fast semantic search.
- **Backend:** **Flask** handles queries, integrates with ChromaDB and Ollama.
- **Models:** **Ollama** and **Qwen 2.5** generate clear, accurate responses.
- **Frontend:** **Next.js** with **HTML/CSS** ensures a responsive user interface.
- **RAG Approach:** Retrieval Augmented Generation is a technique that enhances the ability of AI systems to provide accurate and context-specific answers by combining **data retrieval** and **language generation**.



Next Steps

- Implement Llama API in the frontend and backend.
- Dockerize each component to make the solution easy to use
- Figure out what hosting federal departments are allow to use
- Finalizing the frontend that integrates with the website
- Extensive testing of the LLM to ensure accuracy, reliability, and compliance with established guidelines