Deploying the NLP model using Flask, AWS (Elastic Beanstalk), and Dockers:

**1. Model Preparation:**

Ensure you have the trained NLP model and any necessary files (weights, configurations, tokenizers) ready for deployment.

**2. Flask Application Development:**

Create a new Flask application by installing Flask (pip install flask) and creating a Python file, e.g., app.py.

Import Flask and define your API endpoints/routes.

Implement the necessary functions for translation and textual entailment using the NLP model.

Test the Flask application locally to ensure the functionality is working as expected.

**3. Docker Configuration:**

Create a Dockerfile in the same directory as your Flask application.

Define the base image (python:3.8-slim-buster) and install the necessary dependencies.

Copy your Flask application and model files into the Docker image.

Specify the command to run the Flask application (CMD ["python", "app.py"]).

**4. Docker Image Creation:**

Build the Docker image using the command: docker build -t nlp-app . (Replace nlp-app with your desired image name).

Verify that the Docker image is created successfully by running: docker images.

**5. AWS Configuration:**

Sign in to the AWS Management Console and open the Elastic Beanstalk service.

Create a new application and environment in Elastic Beanstalk.

Select Docker as the platform and upload your Docker image.

Configure the environment variables and any additional settings required by your application.

Review and launch the environment.

**6. Deployment to AWS Elastic Beanstalk:**

Use the AWS CLI or the Elastic Beanstalk console to deploy your application.

Monitor the deployment process and ensure it completes successfully.

Access the provided endpoint to test your deployed NLP model.

**7. Scaling and Load Balancing:**

Configure scaling options in AWS Elastic Beanstalk to handle increased traffic and ensure high availability.

Adjust auto-scaling settings based on your application's performance requirements.

**8. Continuous Integration and Deployment (CI/CD):**

Set up a CI/CD pipeline using tools like AWS CodePipeline or Jenkins to automate the deployment process.

Configure the pipeline to build the Docker image, deploy it to AWS Elastic Beanstalk, and run any necessary tests.

**9. Documentation and Support:**

Create documentation that explains how to use the deployed NLP model, including API endpoints, request/response formats, and authentication mechanisms.

Provide support channels for users to ask questions or report issues, such as a dedicated email address or a forum.

In conclusion, the project's application of Natural Language Processing (NLP) technologies, specifically aimed at translating Icelandic books into English and establishing relationships between characters through textual entailment, holds significant promise for enhancing the education system in Iceland. By leveraging ICE-Bert, an Icelandic NLP tool, the project addresses the challenge of comprehending and analysing complex literary works in a foreign language, thereby improving reading skills and fostering a deeper understanding of the texts. This approach opens up new avenues for students and educators alike, allowing them to explore Icelandic literature without language barriers.

The generation of relational graphframes summarising the relationships between characters and action graphframes highlighting significant events, such as murders, emotional entanglements, and divorces, provides a valuable visual representation of the narrative structure and plot dynamics. These graphframes offer a concise and accessible means to grasp the intricate connections and developments within a story, enabling students to analyse and interpret the text more effectively. By leveraging NLP techniques, this project not only supports reading comprehension but also encourages critical thinking and literary analysis skills among students.

Furthermore, the proposed implementation plan demonstrates a systematic and well-thought-out approach to the project. By utilising ICE-Bert, the project can leverage existing Icelandic NLP resources, ensuring a solid foundation for accurate translation and character relationship analysis. The project's focus on the education system in Iceland demonstrates a forward-thinking perspective on utilising technology to enhance learning outcomes. Overall, this work has the potential to significantly contribute to the educational landscape in Iceland, empowering students to engage with Icelandic literature in a more comprehensive and meaningful way.