Objectives

- **Expand NREN Participation:**
  Encourage and increase the participation of NRENs in GNA-G GREN Map Working Group, promoting collaboration and ensuring the continuous and efficient exchange of topology data.

- **Improved Visualization:**
  Work on incremental enhancements to the current GREN Map visualization component and look for other existing tools that can be incorporated or used as inspiration to provide a more engaging experience for a diverse audience, ranging from technical users to managers and decision-makers.

Vision and Contributions for 2025-2206:

- **Map Visualization Enhancement**
  During our experience as developers for GREN Map, we focused on building a robust software framework capable of incorporating NREN data and resolving conflicts within a hierarchical database. Now, to further engage the networks, we believe the next step is to make the visualization more appealing and impactful. Our proposal is to invest in the development of improvements to the visual design, aiming to create an experience that captivates both technical users and decision-makers, including marketing professionals and NREN executives. Taking inspiration from solutions like **GLIF Maps** and **Submarine Cable Map**, we will prioritize clear and visually apeeling representations. This enhancements will also help communicate the value of collaboration within GREN Map to strategic stakeholders.

- **Incorporation of Public Information**
  To further enrich the GREN Map, we propose utilizing the data already available from Latin American academic networks, with support from CANARIE and provide useful visualizations to increase the perceived value of other interested NRENs. Additionally, we plan to appoint points of contact per continent to articulate with national and regional networks to contribute with new data and curate already open and publicly accessible topology information, such as submarine cable data and other REN diagrams. This approach will expand the map's scope and usefulness, providing a more comprehensive view of regional and global network connections.

Longer Term Activities:

- **Simplification of Information Management**
  Currently, GREN Map uses a hierarchical database model, requiring each NREN to instantiate and manage its own database. This model demands dedicated infrastructure or third-party resources, which can pose challenges for network participation. To optimize this process, we propose implementing a software solution

that allows for logical database segmentation directly within the platform. With this approach, a central node would facilitate the addition and updating of information by various NRENs, such as RNP and CANARIE, independently. Each network could manage its own topology without needing to maintain dedicated infrastructure. At the same time, a global administrator would have access to tools to monitor, consolidate, and manage overall visualizations, ensuring efficient and integrated supervision. This solution would make GREN Map more accessible and attractive to new NRENs by simplifying the participation process and fostering broader collaboration. Additionally, it would reduce operational costs and allow academic networks to focus on updating and sharing data rather than maintaining servers and local systems.

- **Automation for Data Collection**
  After enhancing GREN Map's visualization, our next step will be to explore methodologies and tools to automate the collection of data from NRENs. We acknowledge that each network may store its topology information in different formats, making it essential to develop flexible and adaptable solutions. Through automation, we aim to minimize manual effort, ensure faster updates, and improve the accuracy of the information displayed on GREN Map.

Past Experiences

- Our team has extensive experience in network visualization projects, including **MEICAN** (GitHub - MEICAN) and **ChameleonMap** (GitHub - ChameleonMap), both developed with RNP's participation. These initiatives have provided us insights into network monitoring and visualization solutions. As references, here are some examples of maps developed using ChameleonMap:
- **RNP Network Map:** mapas.rnp.br
- **Network Observatory:** https://mapa.observatorioblockchain.org.br/