**2.0. Description**

**2.1.\* Abstract or synopsis of the invention. Be as specific as you can be in denoting the inventive features.**

* Foresight is a cutting-edge software visualization tool designed to tackle the challenges of managing complex and exponentially growing scientific data outputs.
* It provides a Single Point of Access with landing pages for datasets and papers, offering a comprehensive suite of insights across various domains like water, energy, land, and emissions.
* Community engagement is seamlessly integrated, enabling sharing of figures and pages, as well as soliciting feedback and comments to drive continuous improvement.
* Foresight strives to achieve the Gold Standard of Visualization, developing exceptional and interactive figures that employ minimalistic and effective visualizations such as chord diagrams, Sankey diagrams, and interactive maps.
* By prioritizing clarity and simplicity, Foresight empowers users to access, curate, and effectively communicate complex data.
* As an online community platform, Foresight enables scientific teams to navigate, analyze, and share key insights from the extensive ecosystem of human-Earth system dynamics tools and models within the Global Change Intersectoral Modeling System (GCIMS).

**2.2.\* Background of Problem or Need. Was the invention conceived or developed to solve a specific problem or for a specific outcome? What was the origin of the work, and why did it result in this invention?**

* Foresight was developed to solve the specific problem of managing complex and exponentially growing scientific data outputs.
* The origin of the work was the increasing complexity and size of scientific model outputs and datasets.
* The goal was to create a tool that simplifies data management, analysis, and communication while ensuring transparency and reproducibility.
* Foresight resulted from recognizing the need for effective visualization to convey scientific findings.
* Continuous feedback from the scientific community is being incorporated to align the tool with their specific needs.
* The invention aims to strike a balance between simplification, transparency, and reproducibility in managing and visualizing complex scientific data.

**2.3.\* Solution to Problem or Need. How does it solve the problem?**

* Foresight simplifies data management, analysis, and communication for complex and growing scientific data outputs.
* It provides a centralized solution for handling the increasing complexity and size of scientific model outputs and datasets.
* The tool ensures transparency and reproducibility in data handling and visualization.
* Foresight addresses the need for effective visualization to effectively convey scientific findings.
* Continuous feedback from the scientific community shapes and aligns the tool with their specific needs.
* It strikes a balance between simplification, transparency, and reproducibility, facilitating the management and visualization of complex scientific data.

**2.4. How is this solution different from what others have done to solve the problem (please list appropriate articles and patents or inventions of others)?**

**Will add examples of existing dashboards and solutions**

* Foresight offers a comprehensive suite of insights across various domains, providing a holistic understanding of interconnected factors. This sets it apart from solutions that may focus on specific aspects or domains:
  + Eurostat Energy Dashbaord: <https://ec.europa.eu/eurostat/cache/infographs/energy_dashboard/endash.html>
  + WWF Water Risk Filter: <https://riskfilter.org/water/explore/scenarios>
  + WRI Global Forest Watch: <https://www.globalforestwatch.org/map/>
* The emphasis on community engagement, including sharing figures and gathering feedback, distinguishes Foresight as a collaborative platform for continuous improvement.
* Foresight's aim to achieve the Gold Standard of Visualization through exceptional, interactive figures and a focus on clarity and simplicity sets it apart in terms of visual representation.
* The integration of feedback from the scientific community ensures that Foresight aligns with specific user needs and requirements, differentiating it as a user-centric solution.
* Foresight will also allow PNNL to compete with efforts from other institutions and organizations who are using similar dashboards to connect with the community and capture citizen, political and general audiences:
  + Systems Change Lab: <https://systemschangelab.org/>
  + IIASA: Hotspot Explorer: <https://hotspots-explorer.org/explorer>

**2.5. If known, describe the industrial applications and competitive advantages of your invention over what exists in the market today:**

**Potential Industrial Applications:**

* Scientific Research: Foresight can be applied in various scientific research fields where complex data outputs need to be managed, curated, and visualized effectively.
* Environmental Modeling: The tool can find applications in environmental modeling, allowing researchers to explore and analyze data related to water, energy, land, emissions, and other factors.
* Policy Making: Foresight can assist policymakers in understanding complex scientific data and its implications, enabling evidence-based decision-making.
* Climate Change Analysis: The visualization capabilities of Foresight make it suitable for analyzing and communicating the impacts of climate change, facilitating informed discussions and actions.

**Competitive Advantages:**

* Comprehensive Insights: Foresight stands out with its comprehensive suite of insights across multiple domains, providing a holistic understanding of complex data outputs.
* Community Engagement: The integration of community engagement features sets Foresight apart, allowing for feedback, sharing, and collaboration, leading to continuous improvement and enhanced usability.
* Gold Standard Visualization: Foresight's focus on achieving the Gold Standard of Visualization differentiates it by providing exceptional, interactive figures that effectively communicate complex information.
* User-Centric Design: Incorporating continuous feedback from the scientific community ensures that Foresight aligns with specific user needs, giving it a competitive advantage in terms of usability and functionality.