[MRD] MgRavens

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Challenge:

In an ideal world, computational modeling to support the planning and design of microgrids would be completely modular; it would give users, from researchers to utilities, the ability to seamlessly pick-and-choose their preferred model for each piece of the process. Current state-of-practice in microgrid planning and design tools has yet to meet this aspirational state, and this project seeks to address this challenge. The realization of this goal is complicated by the observation that planning and design processes are different for each user, meaning that software composability and data exchange is critical for aiding in the creation of custom workflows specific to each user's use case and is the key enabling paradigm of this project.

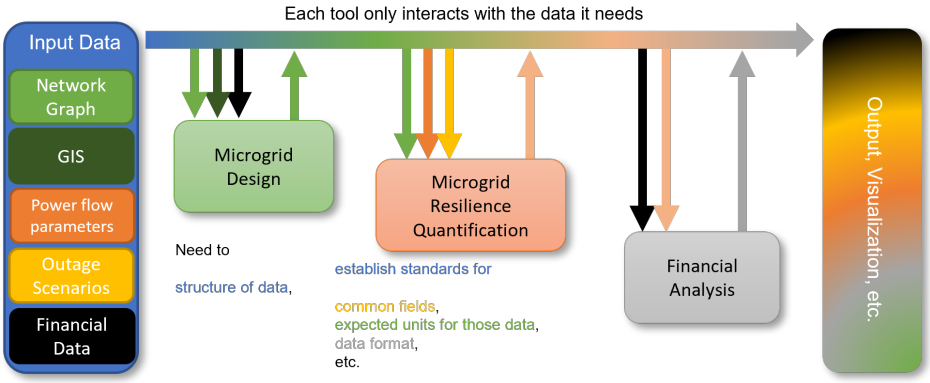

Figure 5-10: MGRavens schematic of use case inspired interoperable and composable workflows for supporting microgrid investment and operational planning.

Technical Approach:

MgRavens tackles the problem of solving data interoperability to achieve improved software modularity in the microgrid modeling arena by developing a core data Application Programming Interface (API) for a particular set of use cases. The improved modularity will be demonstrated by deploying tools on an open-source and free-to-access planning and management framework – the Open Modeling Framework[10], maintained by the National Rural Electric Cooperative Association – available to utilities for modeling, followed by testing and incorporating feedback by a user group directed by a governance board composed of developers at the laboratories, from universities, and from utilities and industry.

Impact:

By investing in software standardization, the DOE Microgrid program and the MgRavens provides its considerable history of capabilities to a broader audience by removing hurdles to technology adoption by stakeholders. This project also specifically impacts the DOE goals in clean energy and energy justice by defining microgrid design use cases that consider social vulnerability metrics in the design phase and evaluate the resilience benefits using the microgrid planning tools.

[10] `https://omf.coop`