Developing a Vision for Heliophysics Infrastructure: The LIKED Resource and the DIARieS ecosystem.

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AGU Abstract:

Heliophysics data and computational infrastracture are not equipped for 21st science, suffering from holes in the know-how to build better systems. Without a clear vision, efforts to improve the infrastructure have been incremental and incoherent. This poster presents both the vision and the technology required: an online LIbrary KnowledgE and Discovery (LIKED) resource for discovering and implementing knowledge, data, and infrastructure resources; and an online analysis ecosystem to simplify Discovery, Implementation, Analysis, Reproducibility, and Sharing (DIARieS) of scientific results and environments. The LIKED and DIARieS solutions adopt FAIR data principles and the best practices from the budding field of open science. The proposed new infrastructure components will close many of the current gaps in heliophysics' infrastructure, such as the ability to search for data and knowledge by phenomenon across domains, and to find software and examples relevant to the desired data set (including model data). Further, these components will enable community members to more efficiently use the resources already present and improve upon the content via a community-curated and trusted library. Combining these solutions lowers the barriers to heliophysics resources for all, increasing the return on our investments. Finally, the structure behind these ideas are topic-agnostic, so they are fully extensible to other fields, leading to invaluable connections to other disciplines. Just as with the development and construction of a long-term satellite mission, we must work together as a community to build a vision of the infrastructure that will most benefit the community, and then collaborate to construct, assemble, and test all the necessary pieces individually and as a unit. Our purpose in presenting this work is to not only describe the proposed vision, but also to gather feedback from the community on this topic.

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