

Linking Abstract Plans of Scientific Experiments to their Corresponding Execution Traces

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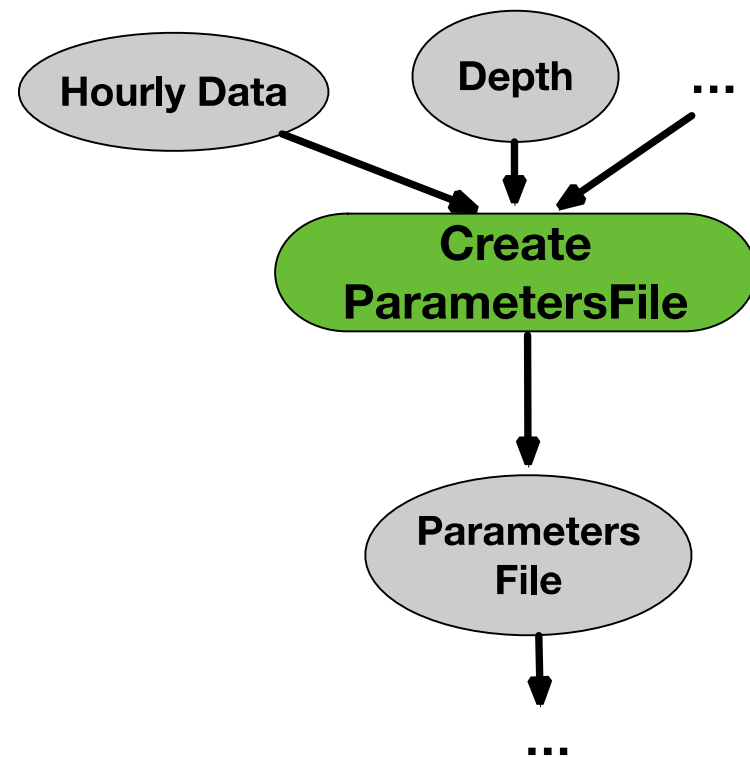
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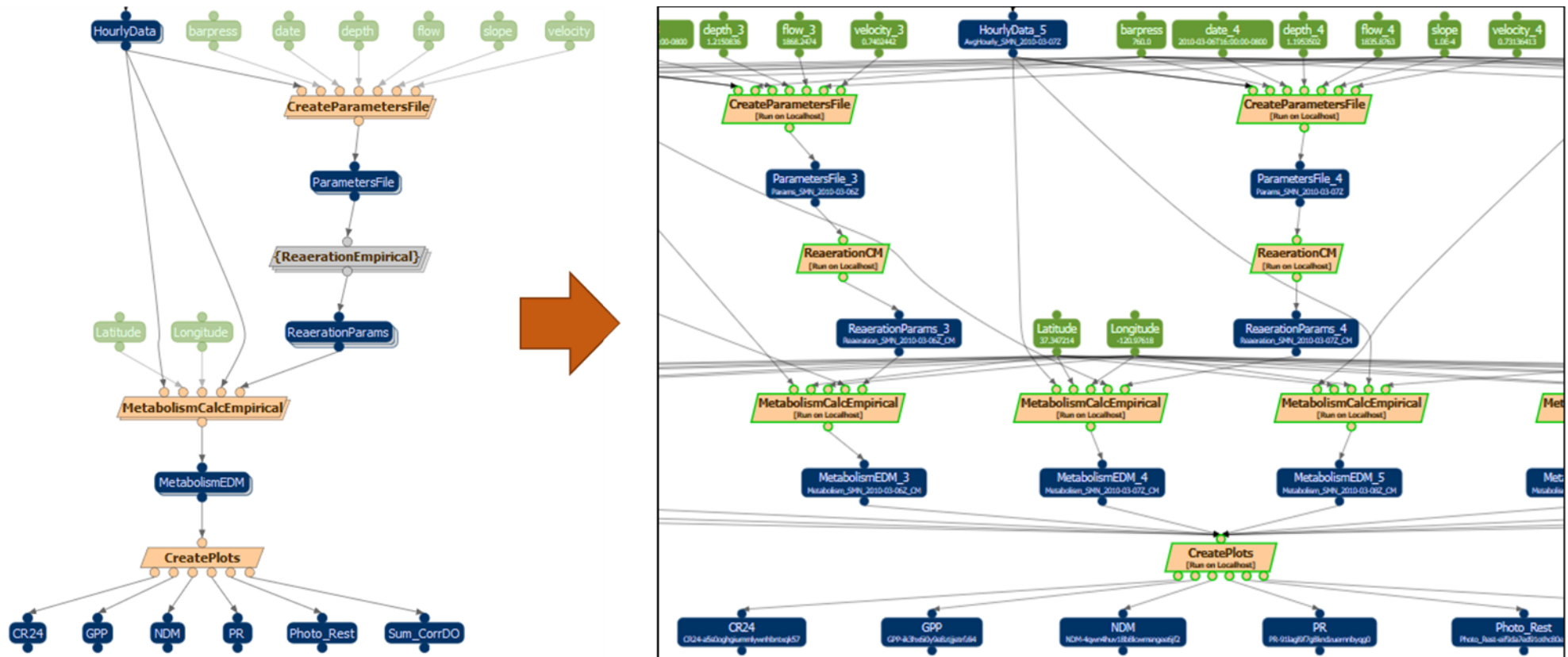


Scientific Workflows

- Computational steps and data dependencies that are necessary to carry out a scientific experiment
- Beneficial for reproducing previous experiments, improving standardization practices in a research lab and educating students on existing methods



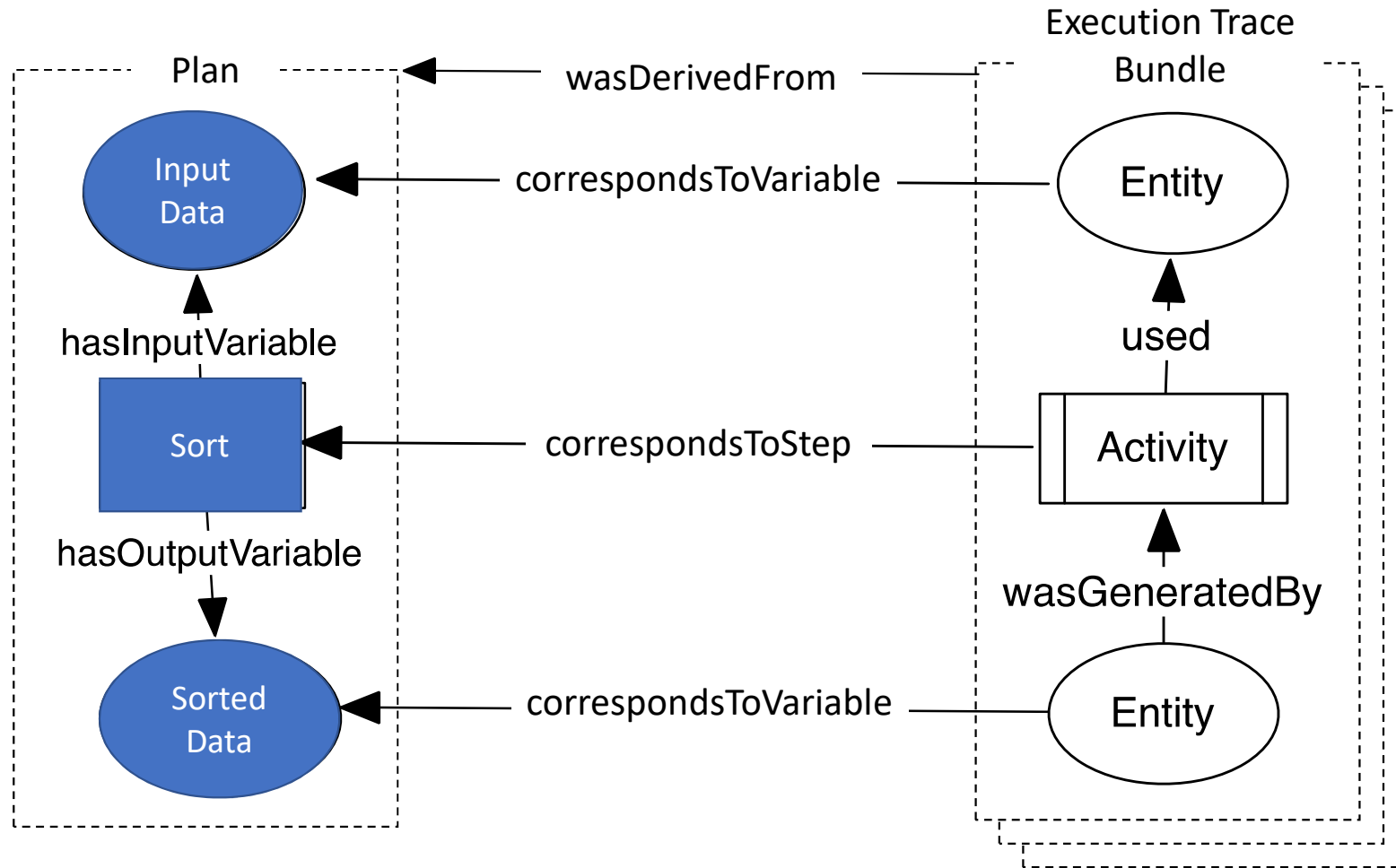
Workflows Abstractions



Current Limitations

- Complex plans are usually simplified into less detailed (abstract) workflows
- Currently, it is difficult to link between high level workflow specifications and low level execution traces

P-Plan & Prov-O

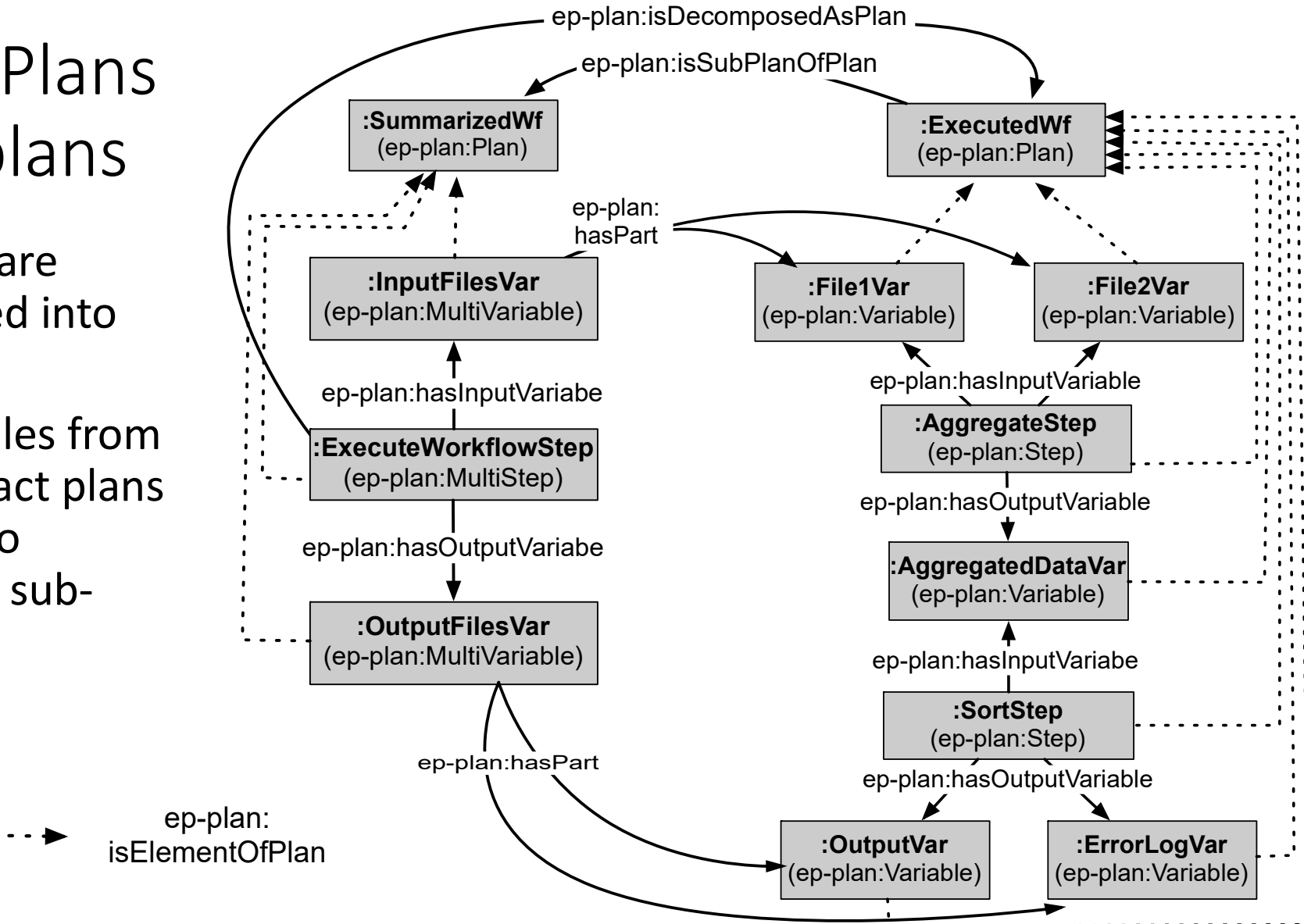


Extended P-Plan (EP-Plan)

- <https://w3id.org/ep-plan>
- New concepts for linking different abstractions of plans and execution traces
- Concepts for additional plan metadata such as constraints, objectives, agents, references to policies, and rationales for individual plan elements
- Intended for cross-domain applications

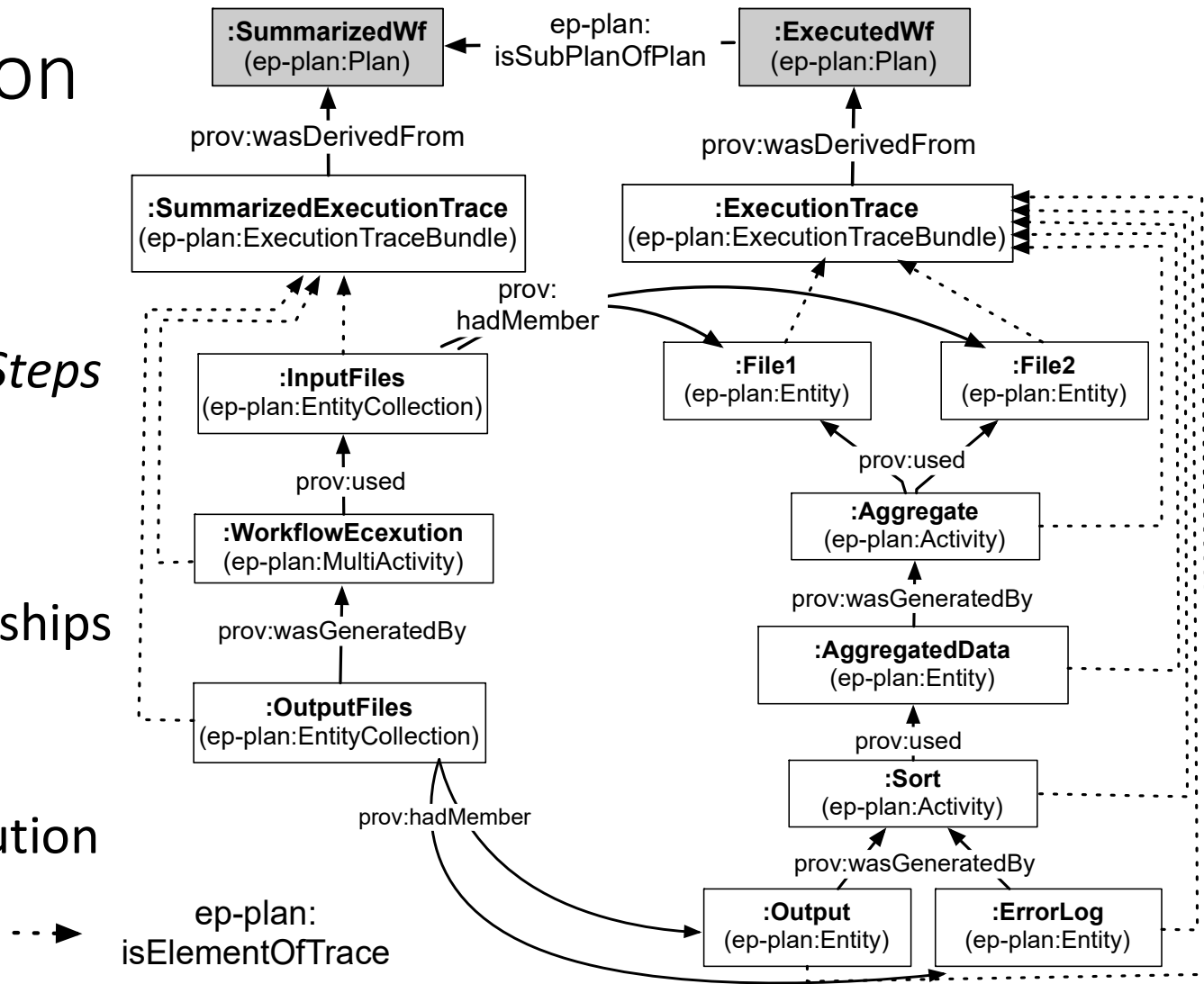
Linking Plans & sub-plans

- Multisteps are decomposed into sub-plans
- Multivariables from more abstract plans are linked to variables in sub-plans



Linking execution traces

- *MultiActivities* correspond to *MultiSteps*
- *EntityCollections* correspond to *MultiVariables*
- *hadMember* relationships link *Entities* and *EntityCollections* between different abstractions of execution traces



Future Work

- Implementation of EP-Plan vocabulary within the WINGS provenance capture mechanisms
- Explore how other concepts supported by EP-Plan (e.g. references to workflow constraints) can be captured within the WINGS platform

Contact & Acknowledgments

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