Linking Abstract Plans of Scientific Experiments to their Corresponding Execution Traces

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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
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
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