



Interface-based Support for Model Coupling

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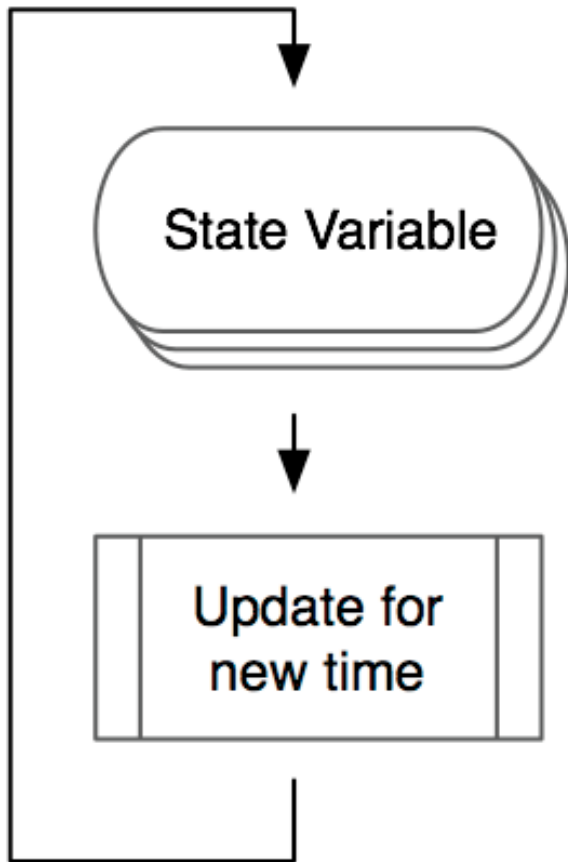
University of Oregon

Graduate Research Forum

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What Are Computational Models?



represents a
physical quantity at
some point in time

Physical Quantity



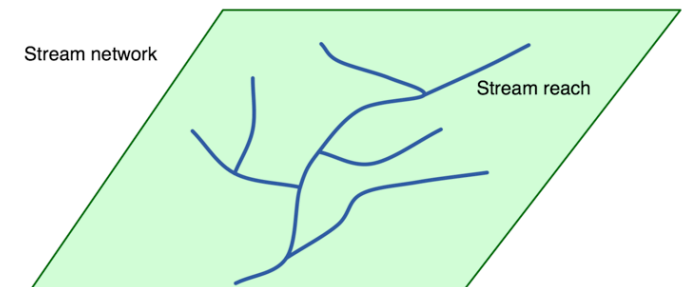
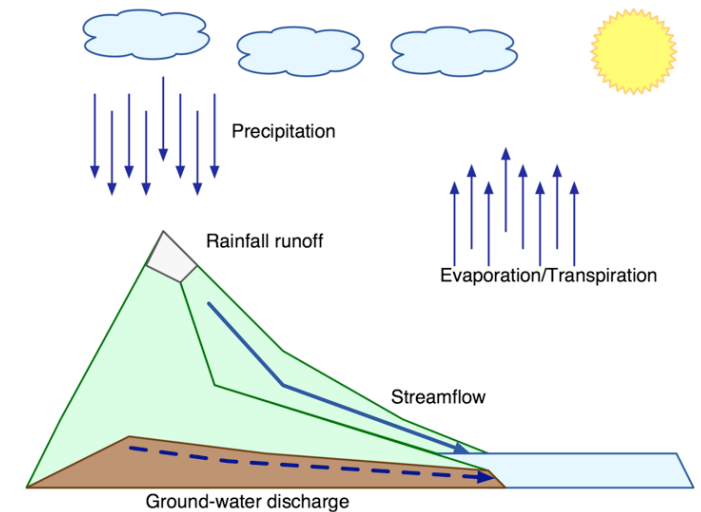
Motivation: Why Couple?

How to improve the accuracy of models?

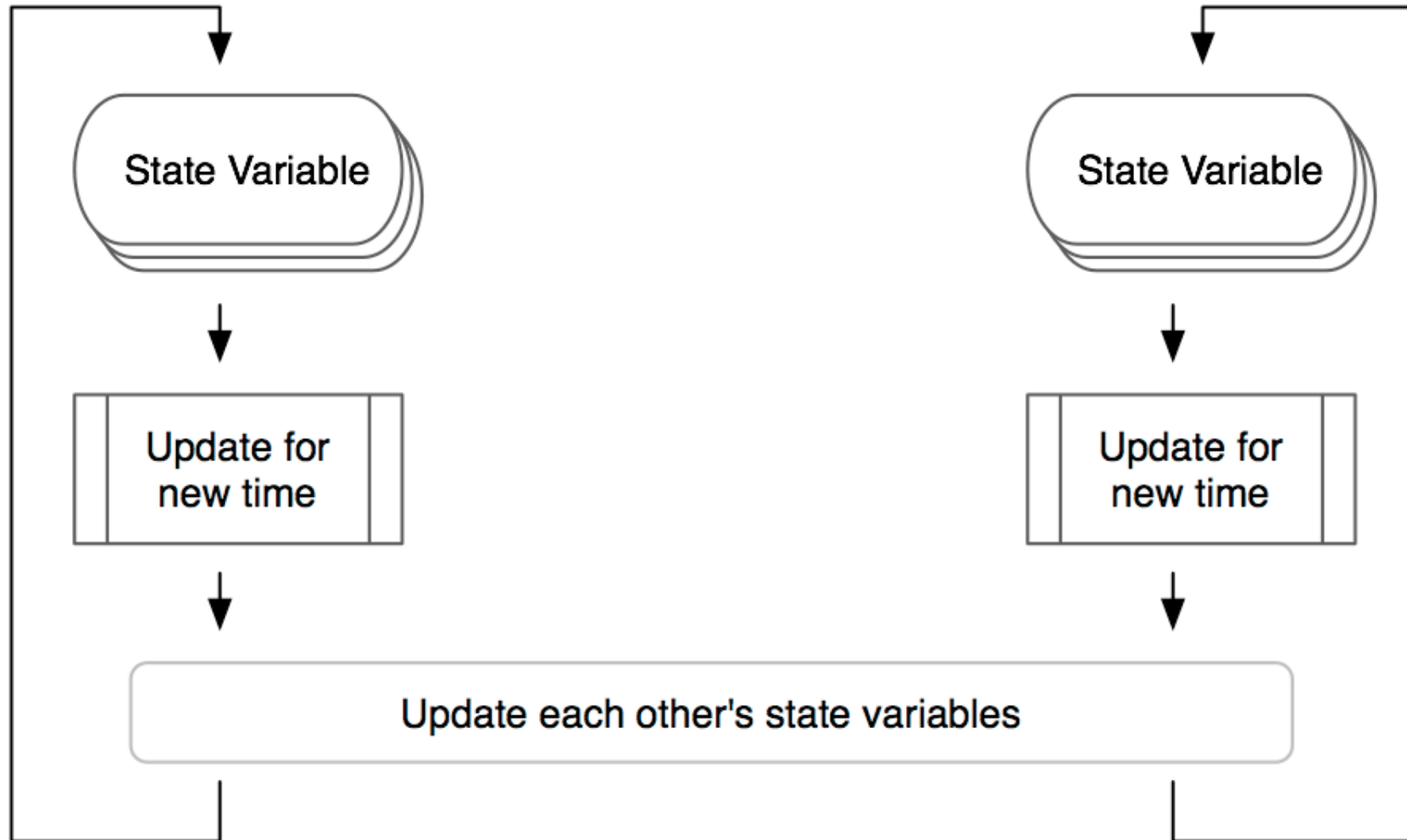
1. Model more processes of the system
2. Model a wider area

Both require more complex models, how do we build these?

Coupling models together is one way...



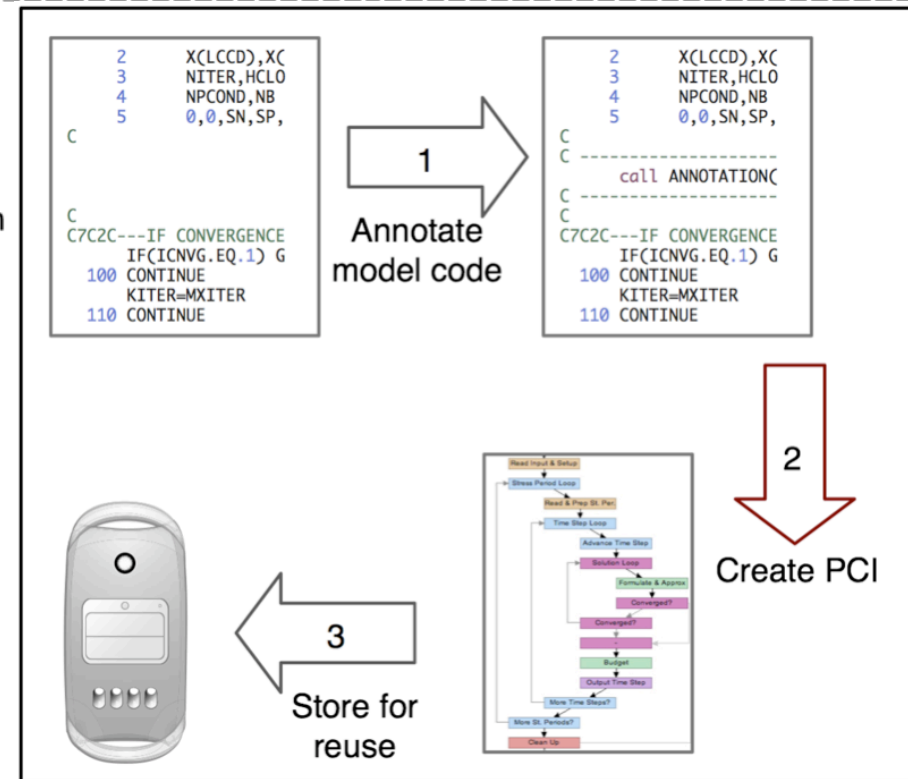
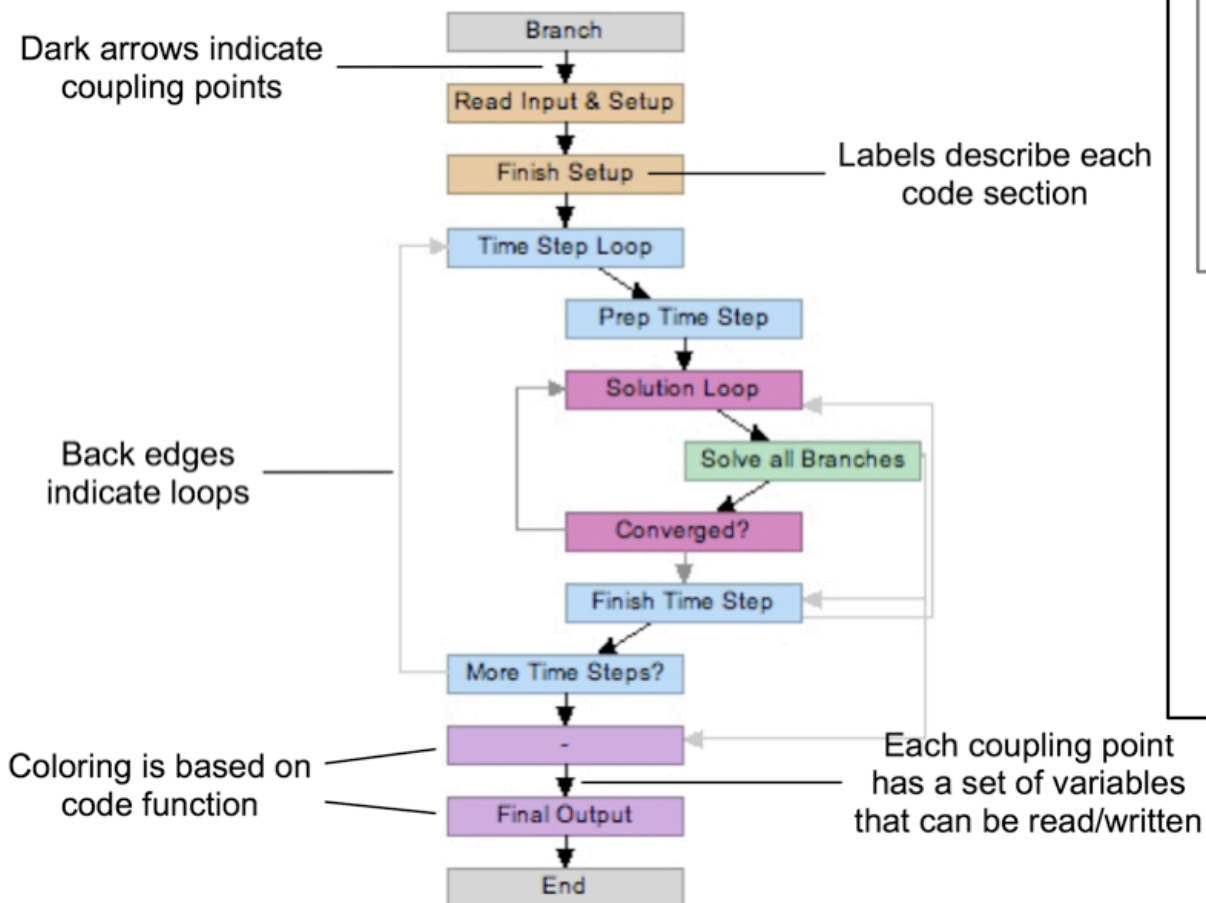
What Is Coupling Exactly?



Existing Approaches to Model Coupling

- ❖ Take the 2 model source codes, and rewrite/combine them into a single big source code
- ❖ It is sometimes done, but usually not
- ❖ Our hypothesis: difficulty with dealing with code is the problem, and a more appropriate representation of a model would facilitate model coupling

The Potential Coupling Interface (PCI)



Coupling Description Language

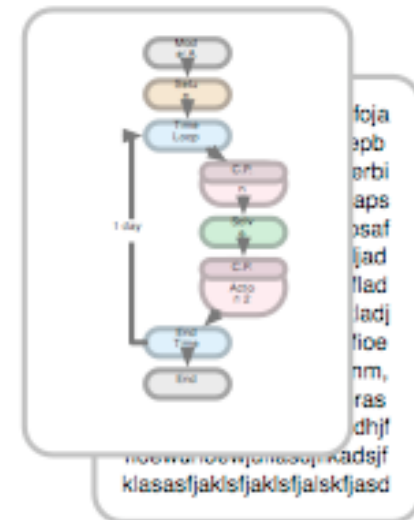
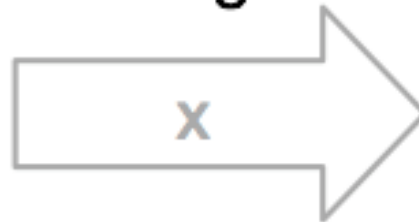
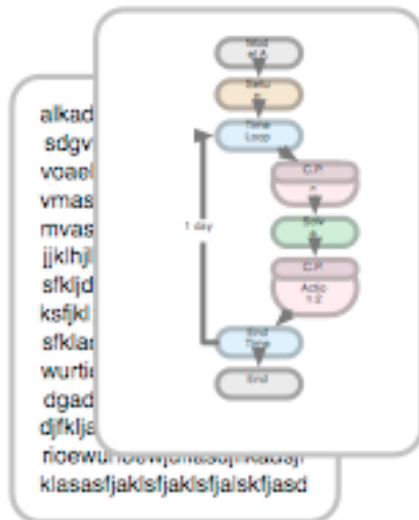
[x=y]

Change Data

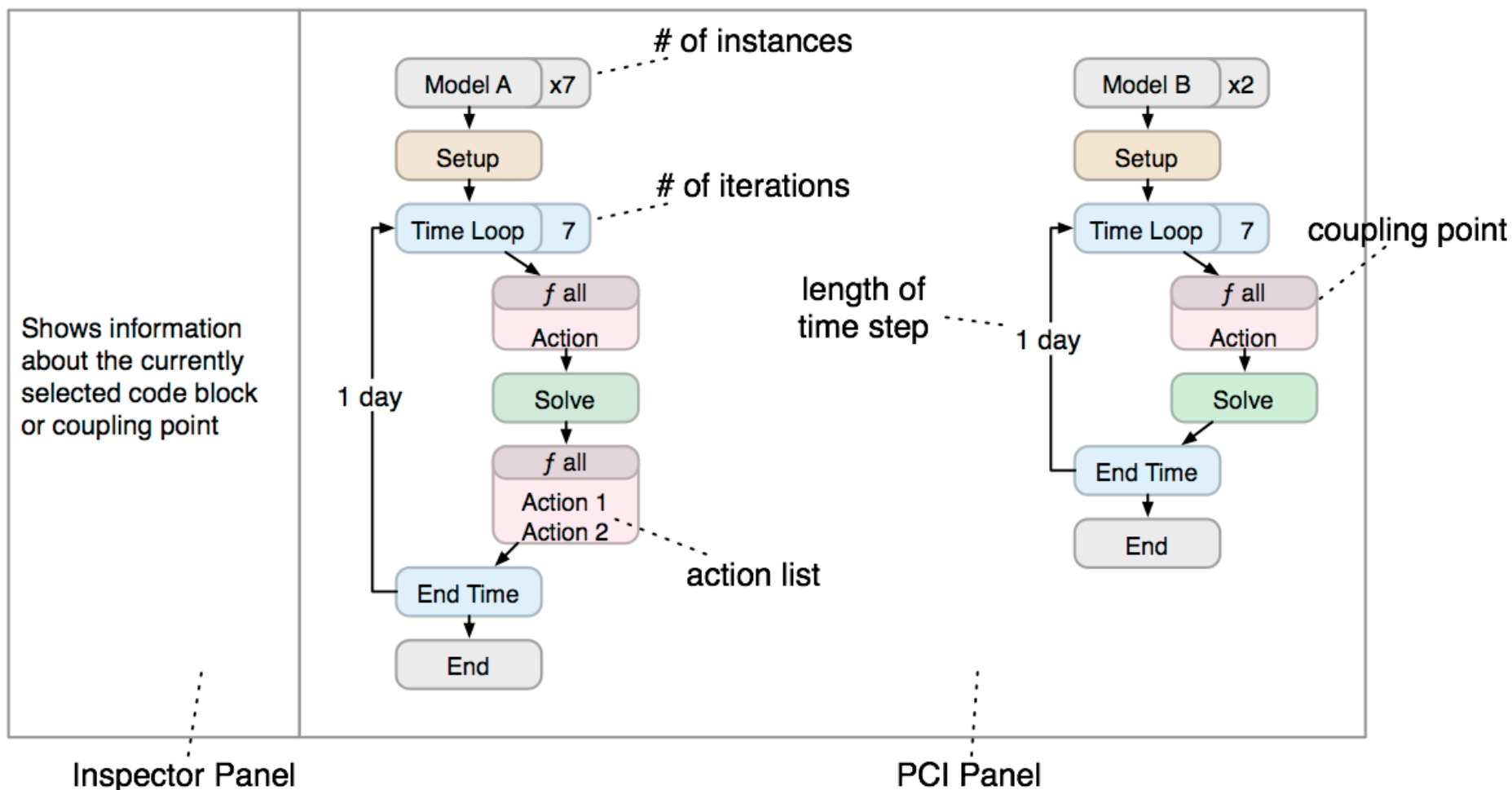
Store Data



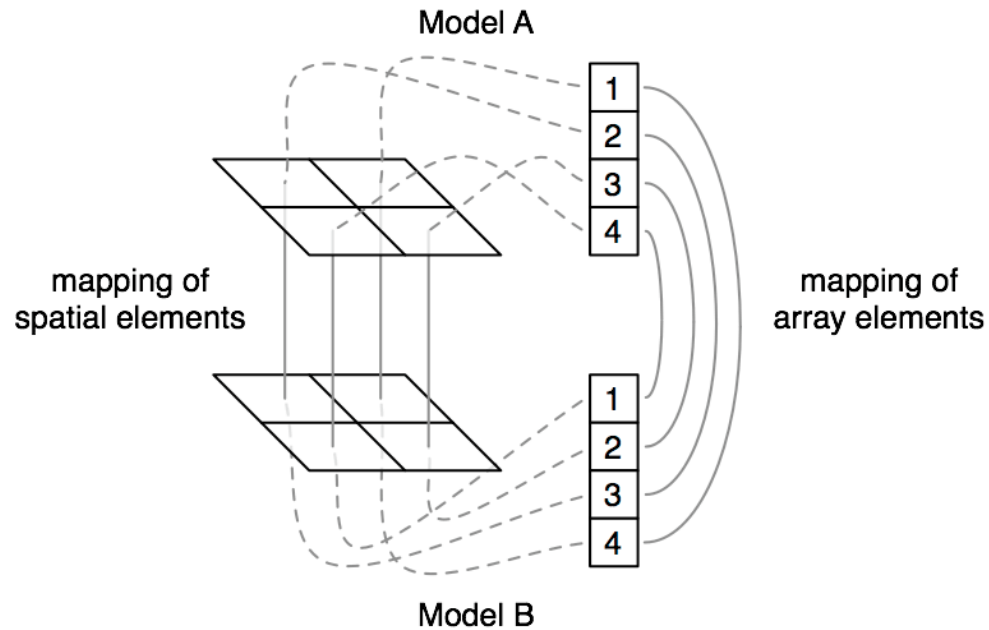
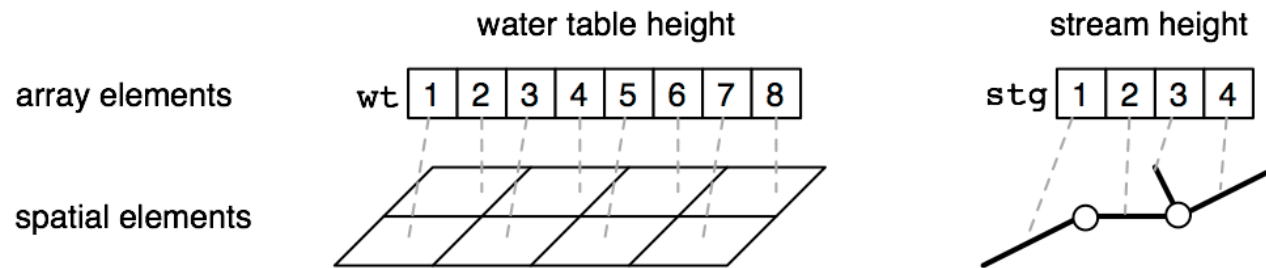
Exchange Data



Coupling Description Language

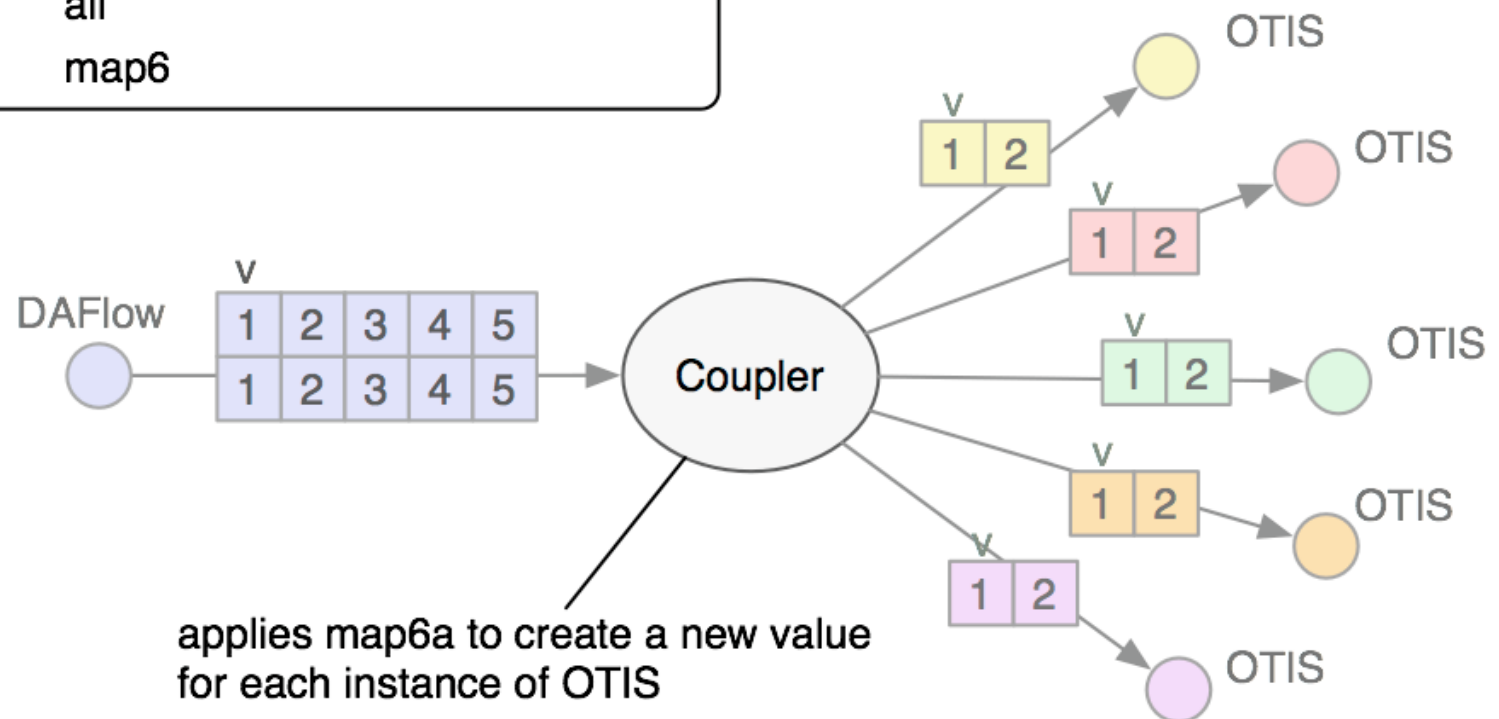


Data Mapping



Implementation Design

Point: A	Action 1: Send
Variable Name: v	
Frequency: all	
Map: map6	



Discussion

The PCI?

The implementation?



Case studies?

The Coupling
Language?

