

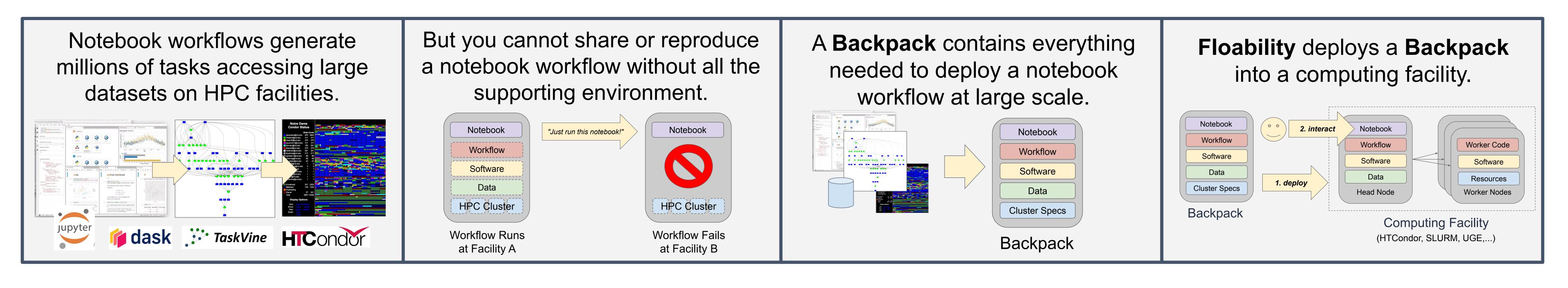
From Notebook to Workflow and Back Again CSSI Frameworks #2411436

https://floability.github.io

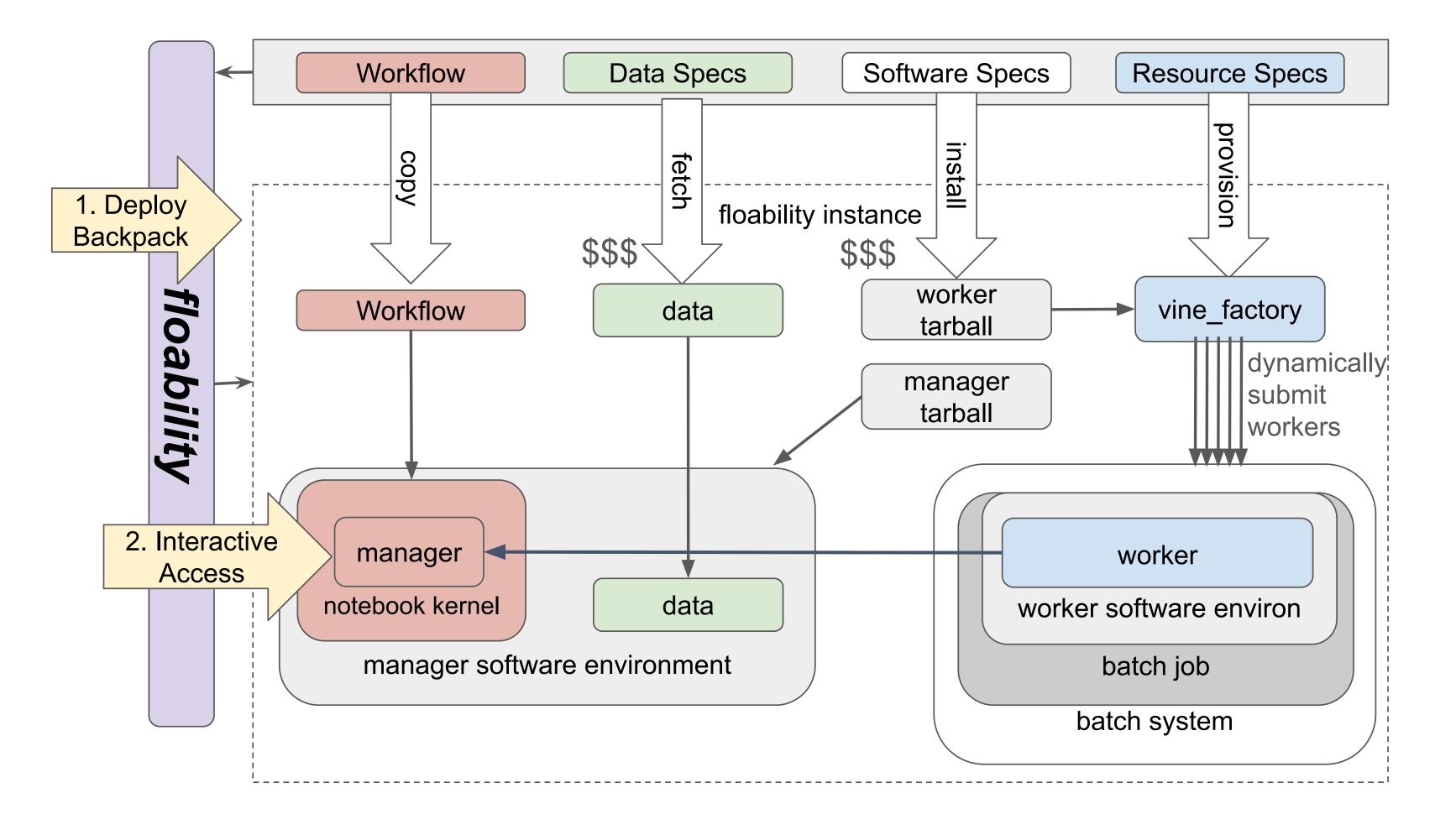
Douglas Thain and Kevin Lannon, University of Notre Dame Tanu Malik, University of Missouri - Columbia Shaowen Wang, University of Illinois - Urbana-Champaign



The **Floability Project** aims to enable the rapid and reproducible deployment of notebooks expressing complex scientific workflows across a wide range of cyberinfrastructure.



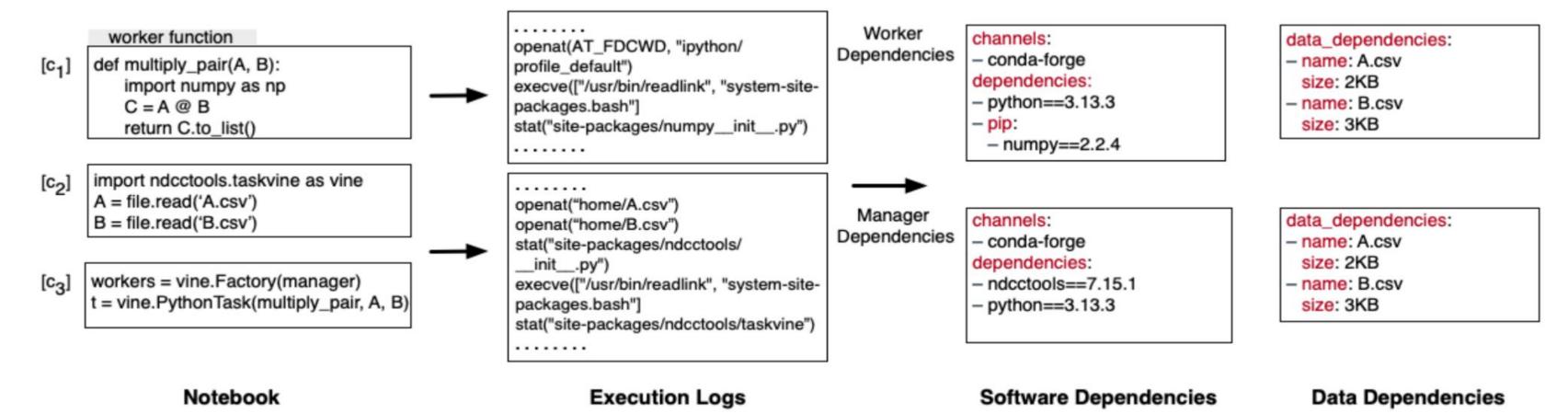
Deploying a Backpack



Reproducibility in Floability



End-to-End Process for Capturing Notebook Dependencies in Floability



Results

Static Properties of Application Workflows Used in Cross-Site Evaluation

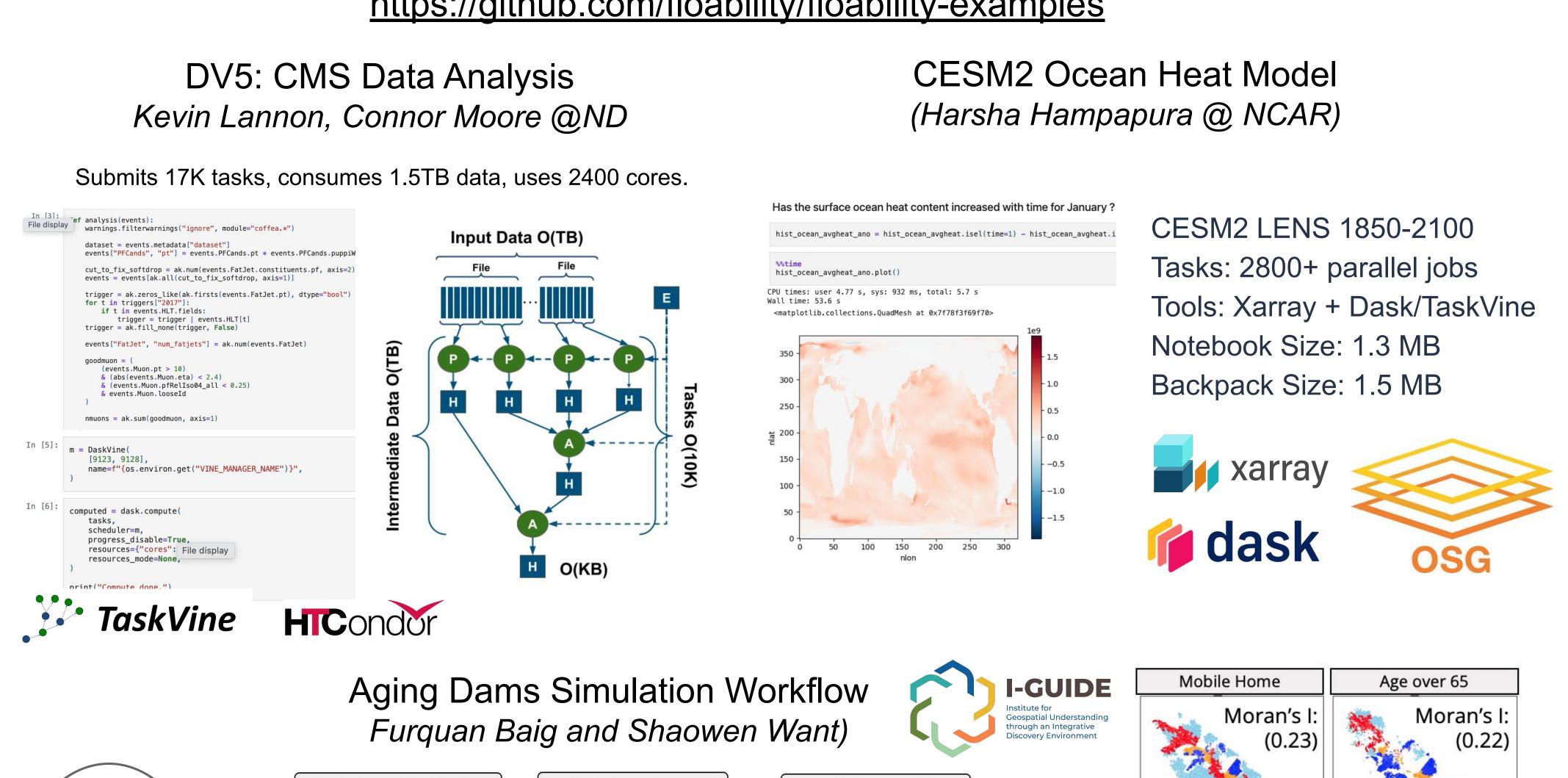
Workflow	Backpack Size (MB)	#Tasks	Manager Env (MB)	Worker Env (MB)	#Workers
DConv	2.7	1024	564	82	5 – 10
CTrend	30	335	631	150	5 – 10
DV5	2.1	16	610	566	2 - 5

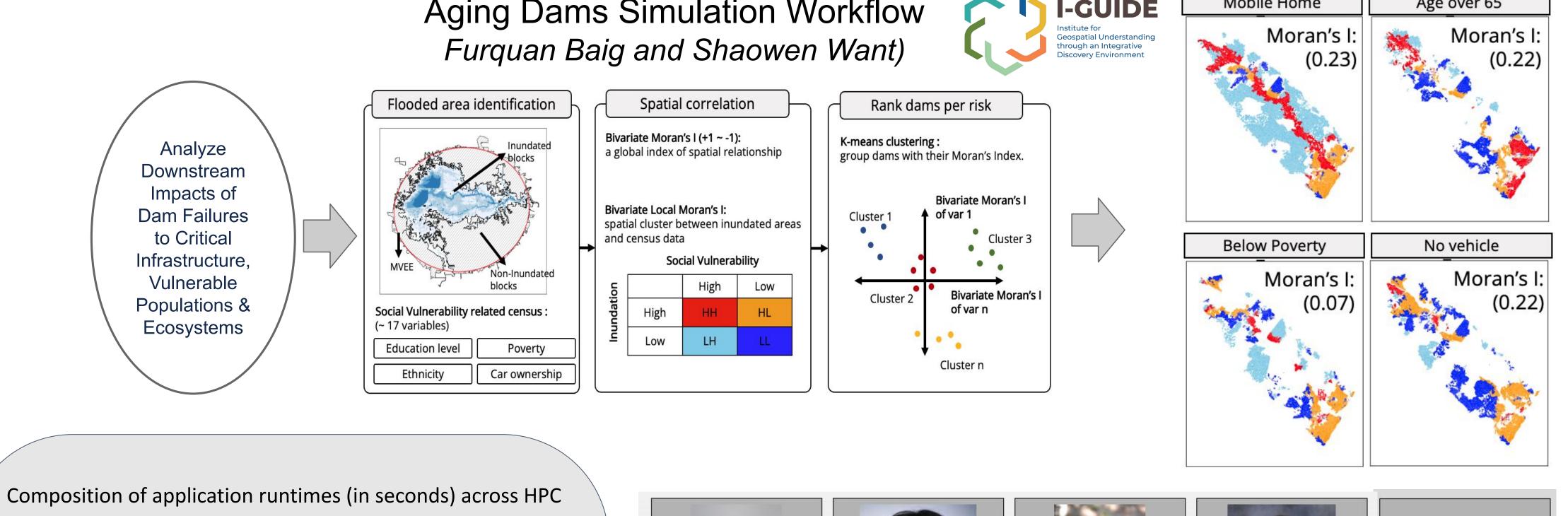
Execution time in seconds taken for plain notebook execution compared with notebook executed using interactive application virtualization (AV) method and executed with the backpack generation code. The last two columns show the number of dependencies for the manager and worker that are captured for each application.

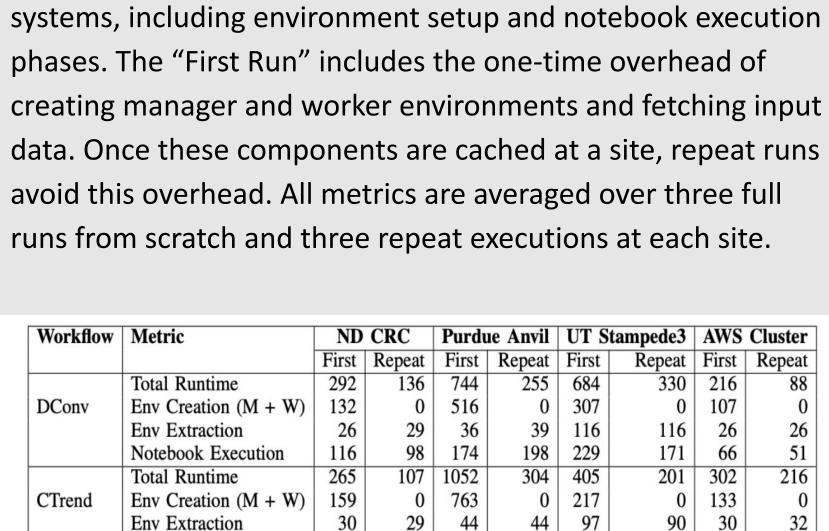
App.	NB Only	Int. AV	Backpack Gen.	# Mgr. Deps.	# Wkr. Deps.
DV5	19.59	22.45	23.31	77	61
DConv	183.58	183.13	212.61	93	4
CTrend	29.00	38.72	43.32	88	54

Example Backpacks

https://github.com/floability/floability-examples







25 28 172

217 | 103

Notebook Execution

Notebook Execution

Env Creation (M + W) 303

Total Runtime

Env Extraction

172

115 215

