On-Demand Workflow

From DEM to Simulation Results

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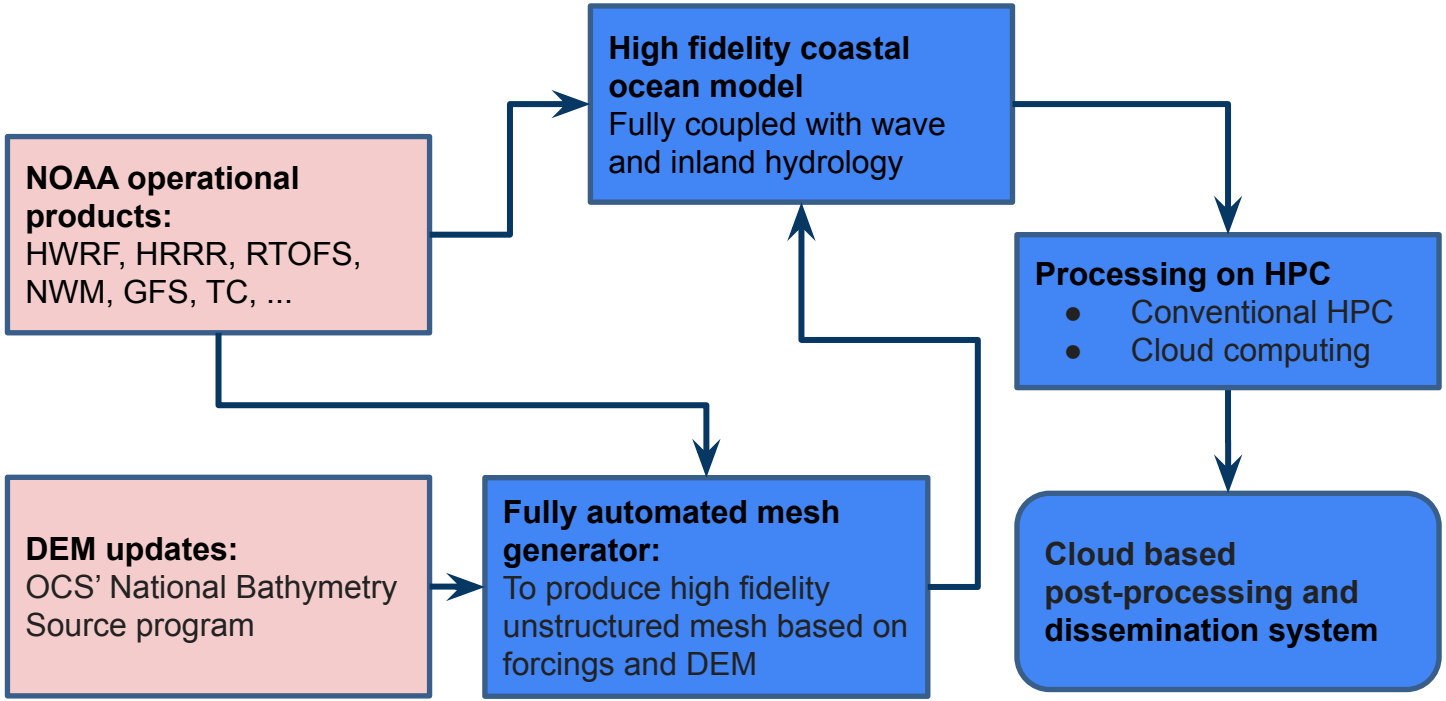
Modeling process



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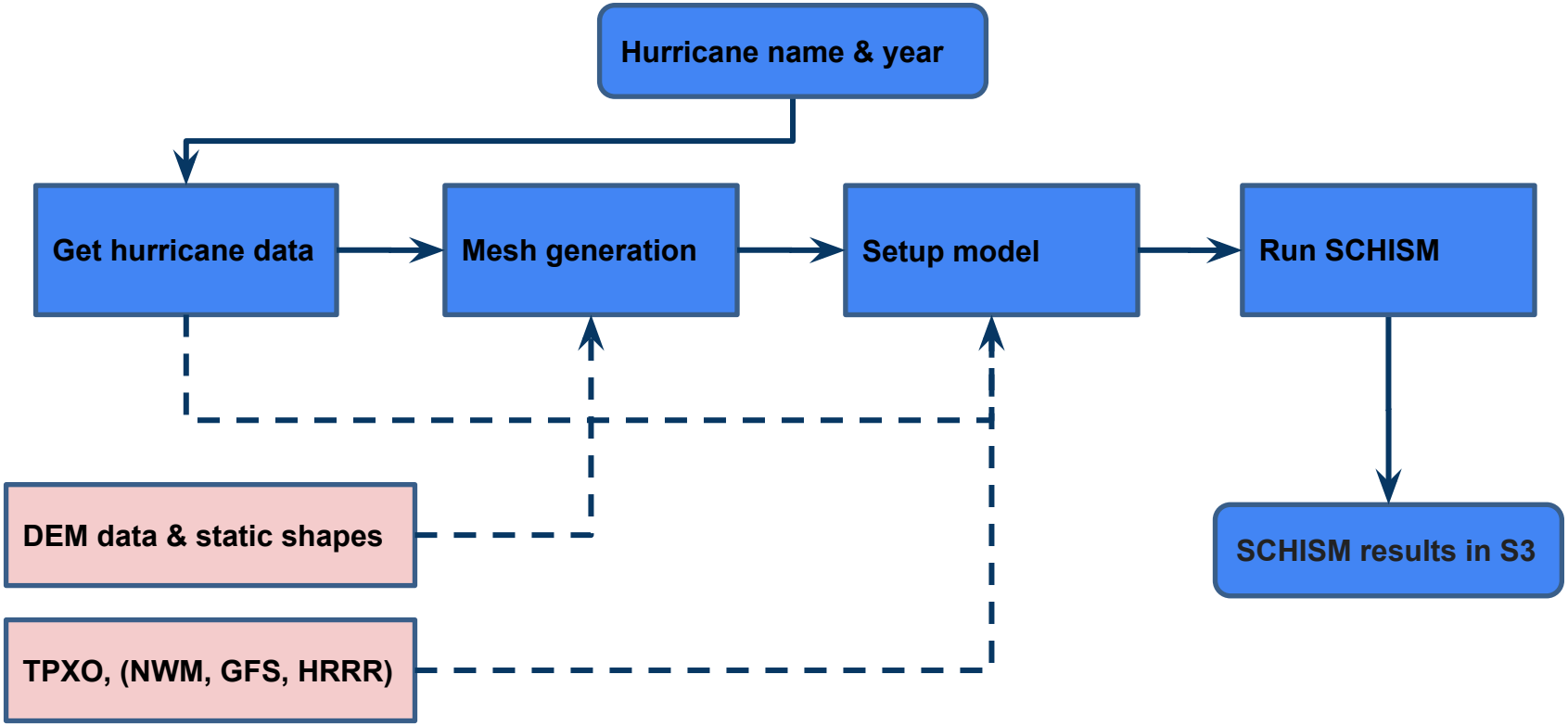
Minimum viable product



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Docker images

Get hurricane data	Mesh generation	Setup model	Run SCHISM
- Conda-alpine based env - COOPS station data - Hurricane best track - *Hurricane wind forecast	- Geomesh - Conda-alpine based env - Meshing script - Meshing specification	- PySCHISM - Conda-alpine based env - Extract station script - Setup model script	- SCHISM - Ubuntu based - GNU compilers

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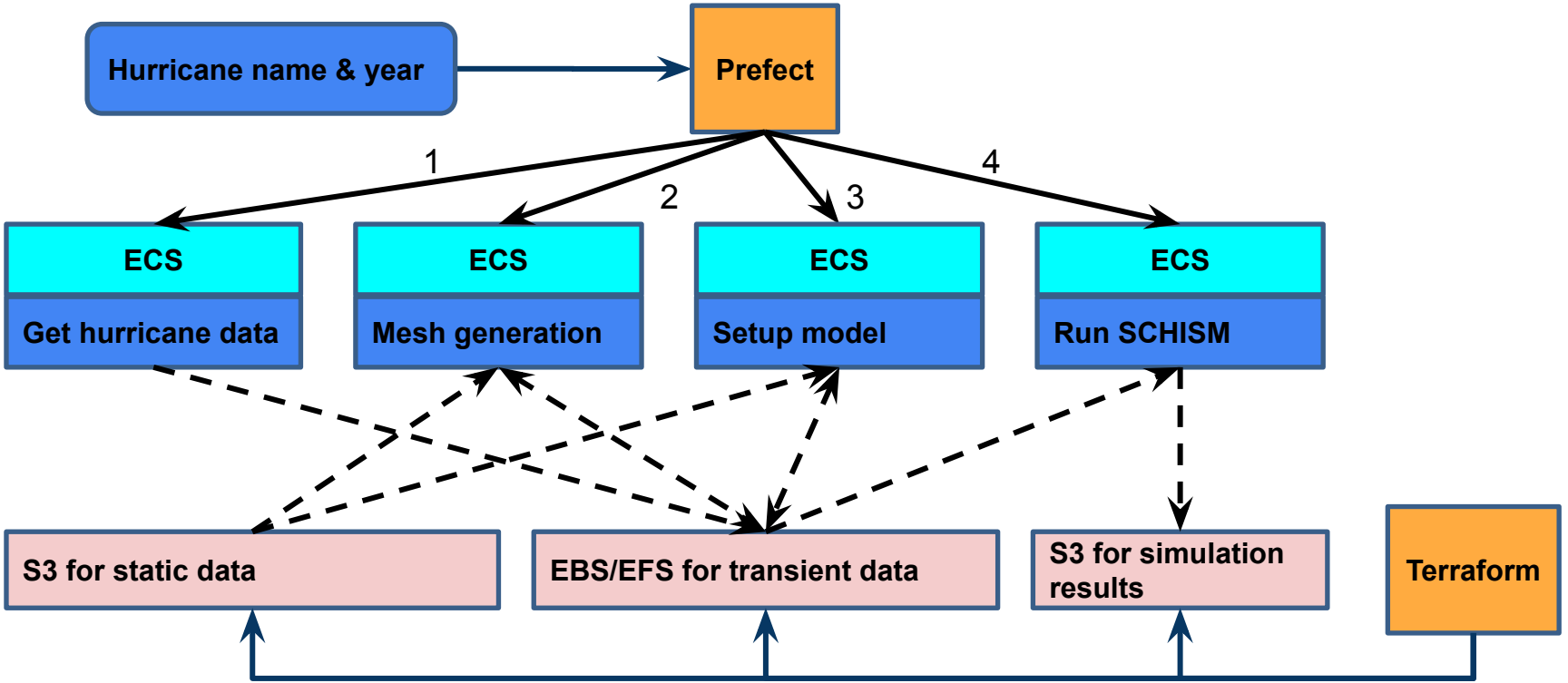
Provisioning and Workflow and Data Access (Simple)



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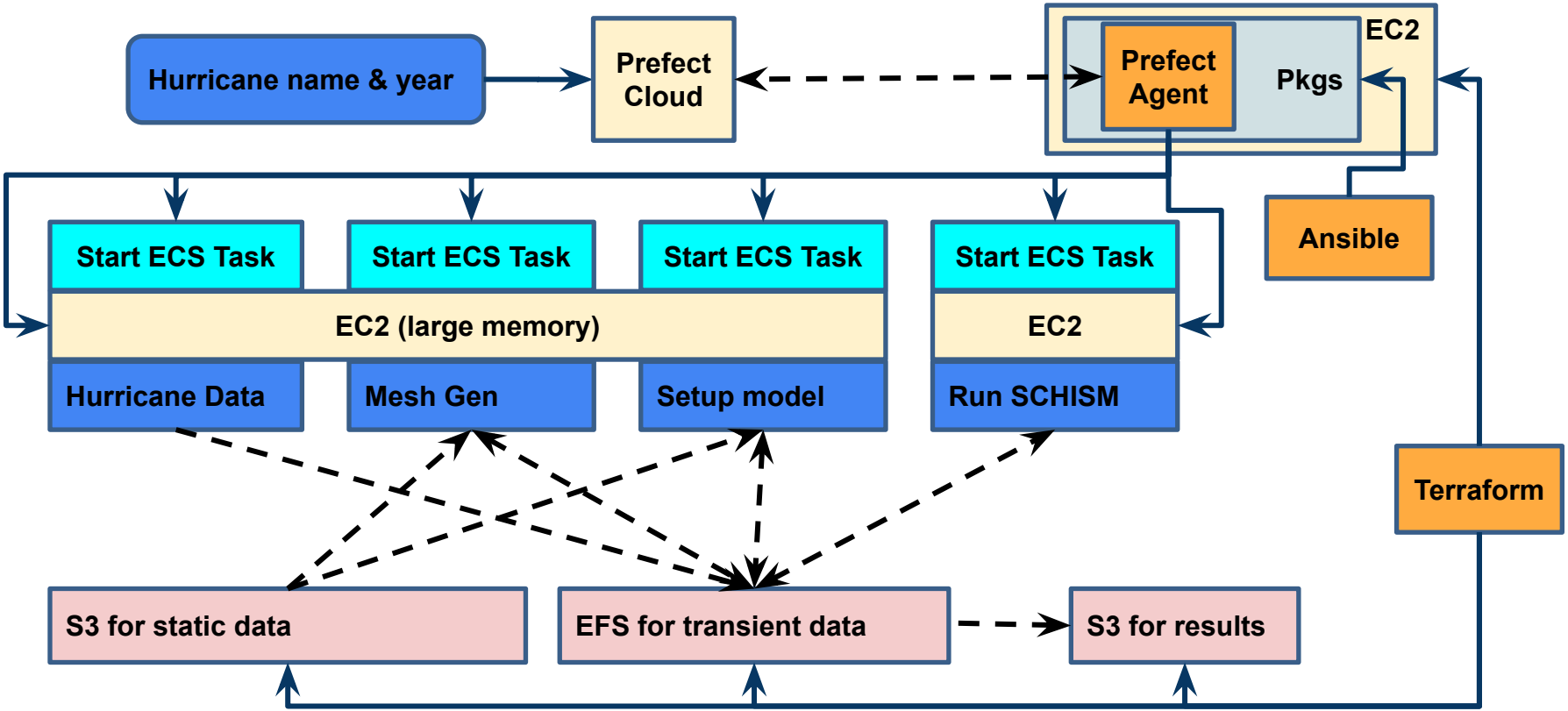
Provisioning and Workflow and Data Access (Detailed)



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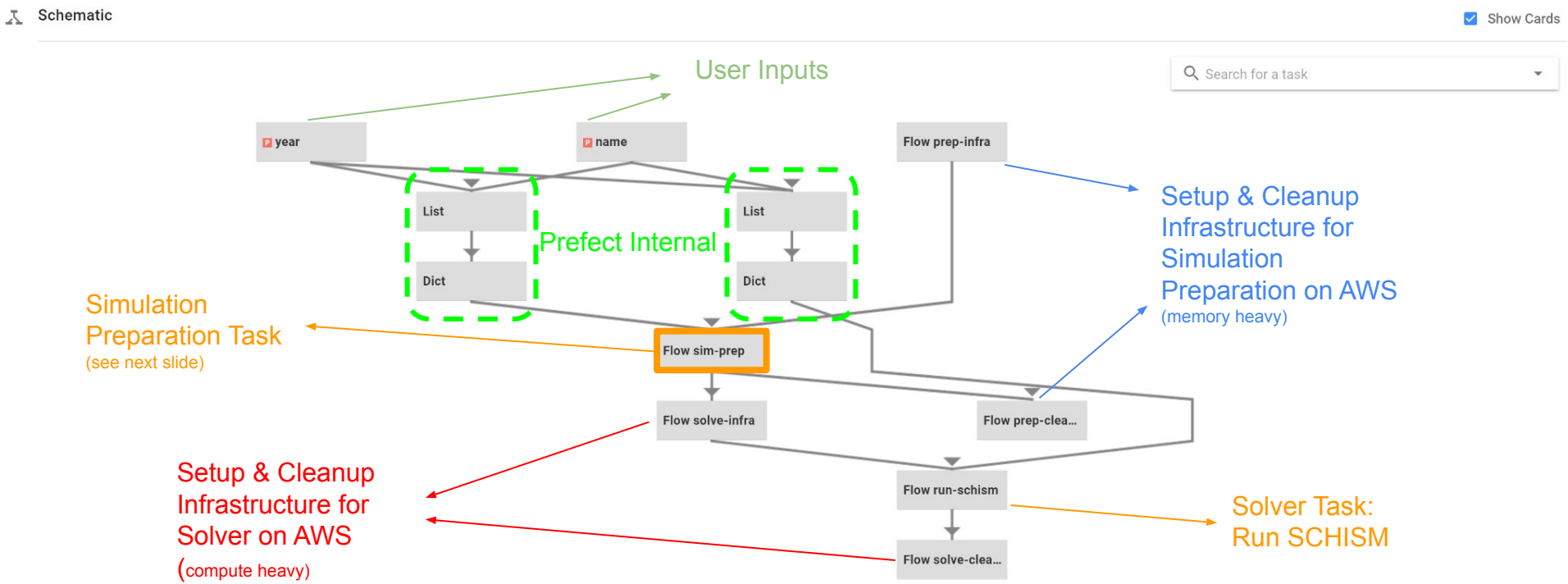
Existing End to End Workflow (Prefect Diagram)



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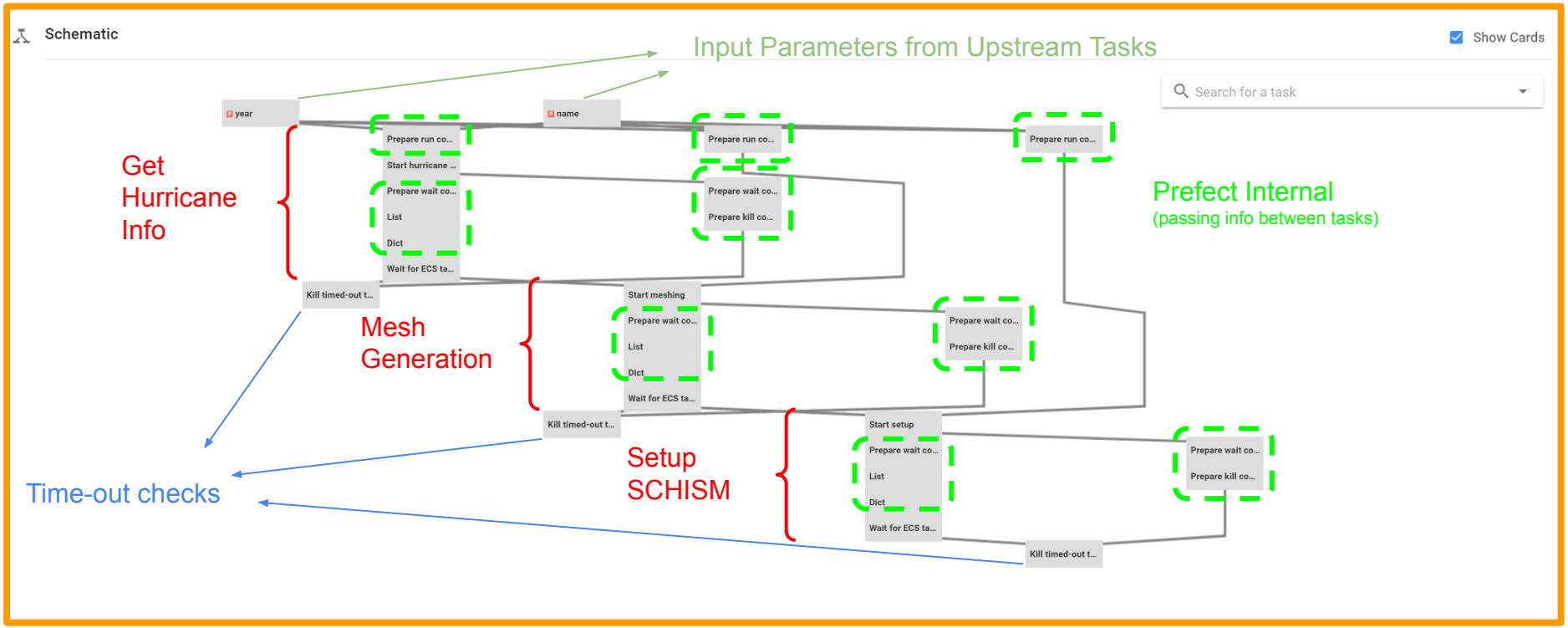
Simulation Preparation Task Details (“Flow sim-prep”)



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Hybrid Workflow [Draft]

- Workflow management still be done using **Prefect**, from outside ParallelWorks infrastructure
  - The existing workflow management tool
- Run mesh and SCHISM steps on ParallelWorks HPC (**no** containerization)
  - **Swap** the Prefect “tasks” that run **AWS ECS** task with ParallelWorks **API calls**
  - Two **preconfigured** PW HPC **environments** for mesh and SCHISM.
  - The API-calls **start HPC** and **run a command** / start PW workflow
- Data is shared between outside (e.g. TACC) and PW HPC using **S3** or **EFS**
  - Either PW creates a S3 that is accessible by outside account
  - Or an S3 bucket from another account needs to be attached in PW HPC environment

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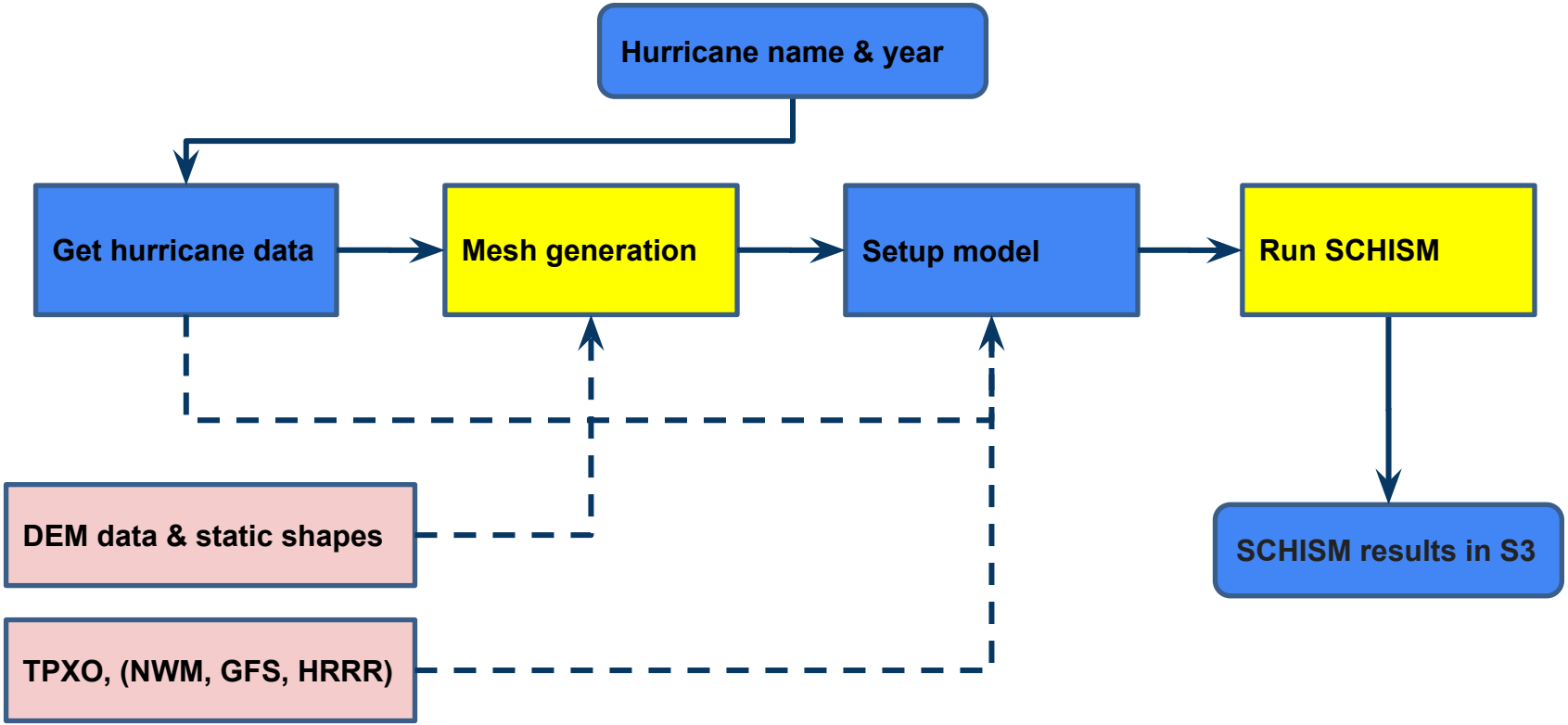
Can Benefit from Existing Infrastructure



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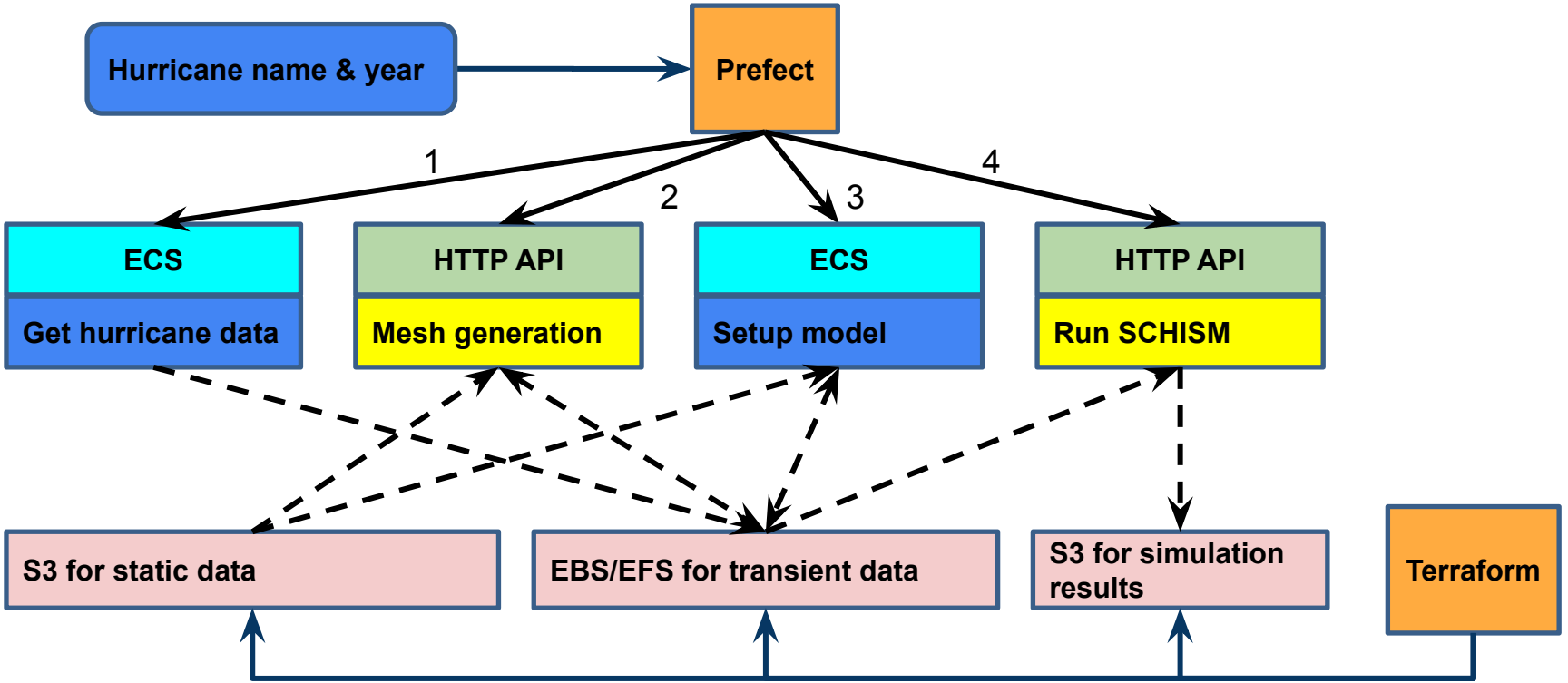
Hybrid Workflow



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