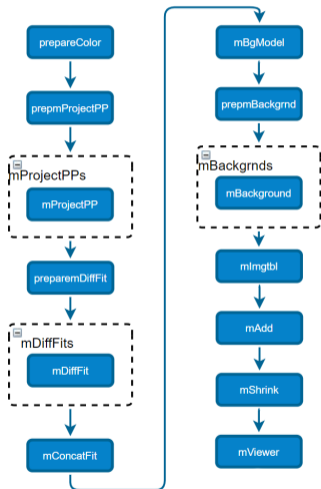




Simulate Data-Aware Serverless Workflows in Federated FaaS with *SimLess*

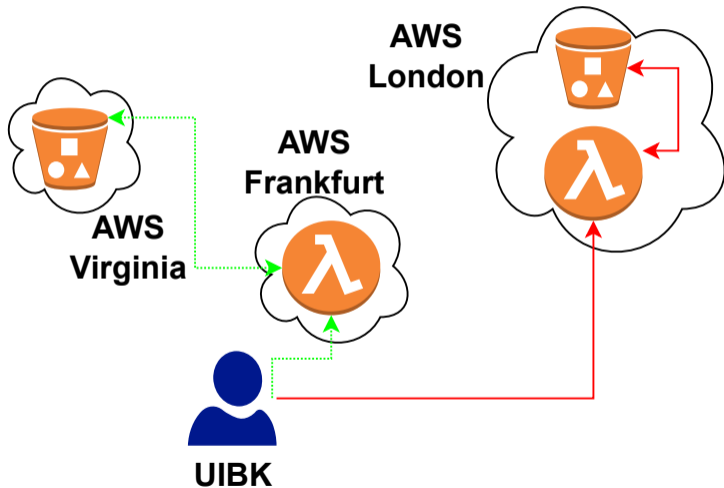
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Montage Workflow



<i>Function</i>	<i>Instances</i>	<i>Download</i>		<i>Upload</i>	
		<i>files</i>	<i>data [MB]</i>	<i>files</i>	<i>data [MB]</i>
prepColor	1	–	–	1	0.01
prepmProject	1	–	–	–	–
mProject	30	2	1.39	2	7.90
prepmDiffFit	1	31	41.81	2	0.02
mDiffFit	141	5	15.80	–	–
mconcatFit	1	144	0.07	2	0.03
mBgModel	1	2	0.05	1	0.01
prepmBackgr	1	1	0.01	–	–
mBackground	30	4	7.92	1	3.95
mImgtbl	1	30	118.51	1	0.02
mAdd	1	32	118.53	1	116.05
mShrink	1	1	116.05	1	51.58
mViewer	1	1	51.58	1	2.31
<i>Total</i>		1,127	2,953.71	241	526.94

Scenario



AFCL Configuration Example



```
- function:
  name: "mAdd"
  deployment: "AWS_eu-central-1_2048"
  ...
  properties:
    - name: "resource"
      value: "arn:aws:lambda:eu-west-2:XXX:function:m_Add_2048"
    - name: "service"
      value: "DT_REMOVE:eu-west-2:32:118.53"
    - name: "service"
      value: "UT_REMOVE:eu-west-2:1:116.05"
    - name: "service"
      value: "FILE_DL:us-east-1:32:118.53"
    - name: "service"
      value: "FILE_UP:us-east-1:1:116.05"
```

Live Demo

Results



- Learned from AWS Lambda London to S3 London (red)
- Execution (green) and Simulation (dashed green) from AWS Lambda Frankfurt to S3 North Virginia
- 97% simulation accuracy for the complete workflow makespan