Overview

- We try to do this. What?
- we try to do that.

Scientific HPC Systems

- Optimized for machine efficiency
- Assumes automated workflows
- Post-mortem analyses

Scientific Workflows Operated by Humans

- Manual inspection
- Manual intervention
- Experimentation and Dynamic updates during execution

Jupyter Interactive HPC

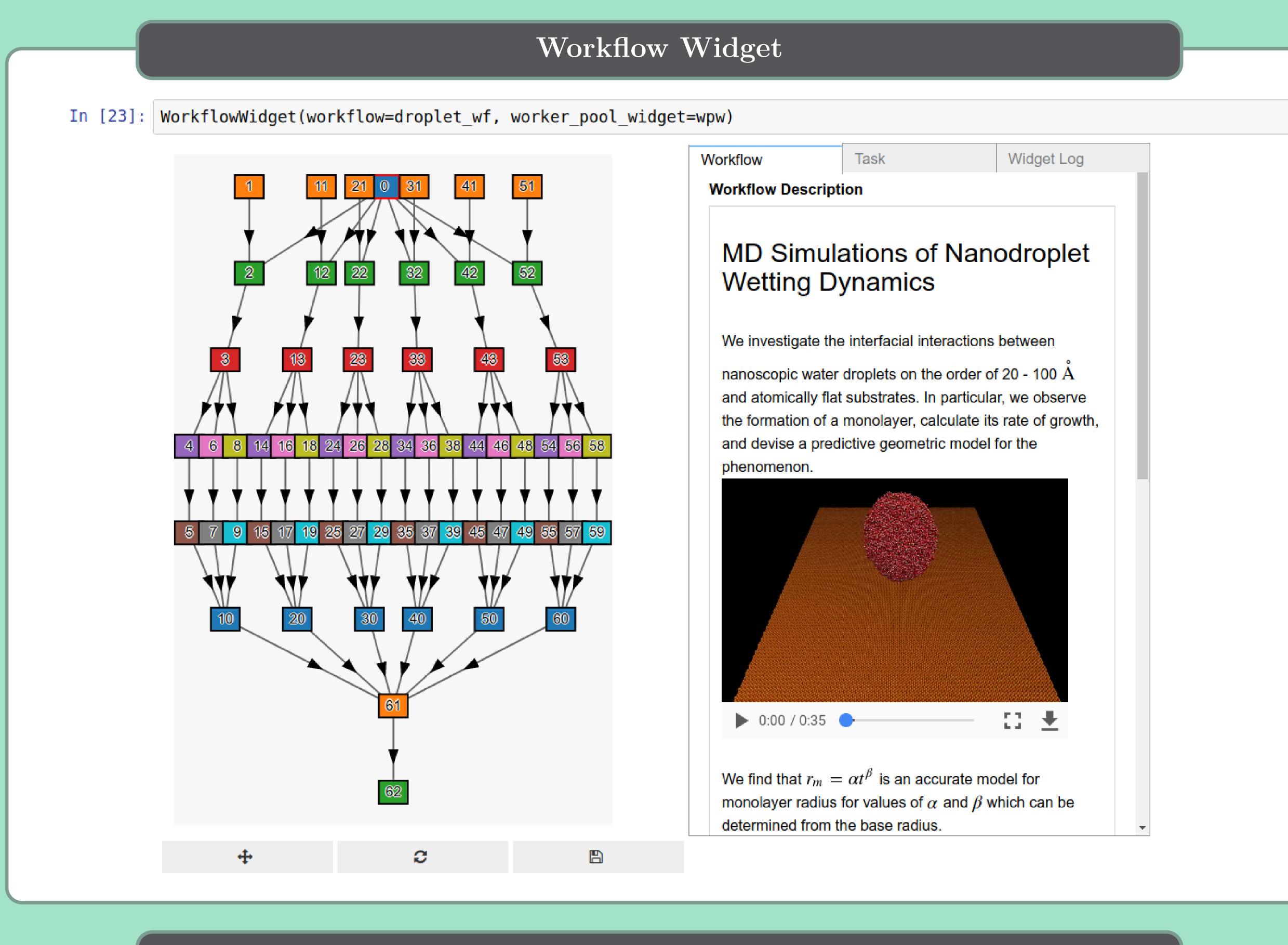
- Realtime Dashboards and Widgets
- -Batch Queues
- -Workflow status
- -Task resource use
- -Task file output
- Workflow Control Center
- Control
- Interact

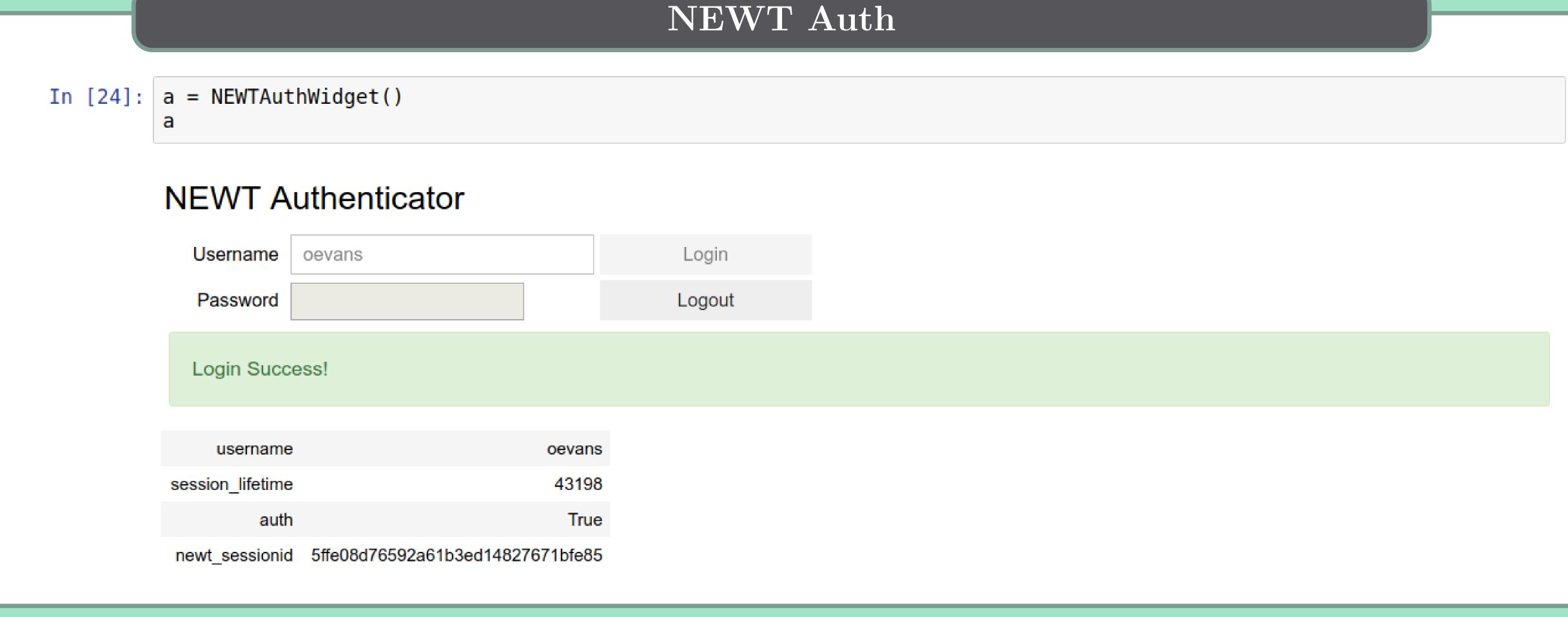
Development Environment

- Development Environment
- Remote kernels
- Resource details for debugging

Science at the Speed of Thought: Enhancing Jupyter for "Human-in-the-loop" Supercomputing

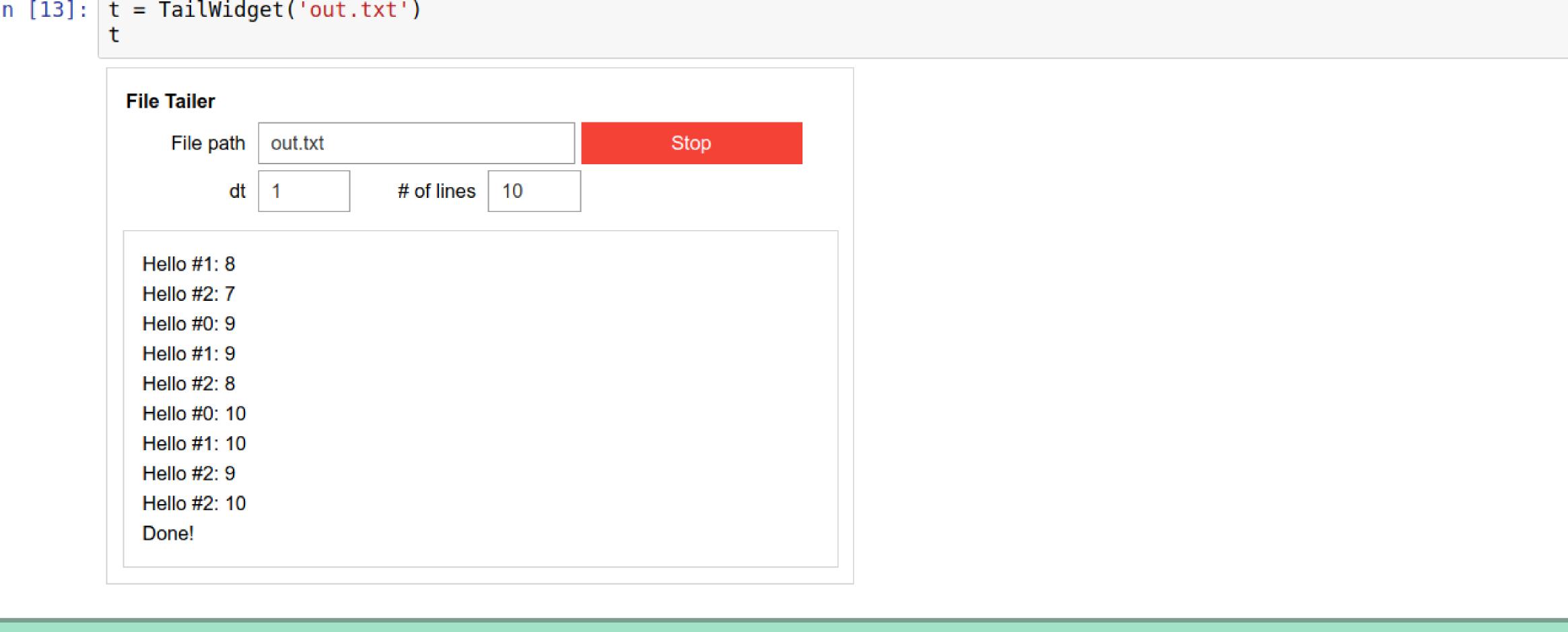
Matt Henderson, Oliver Evans, Shreyas Cholia, Fernando Pérez Lawrence Berkeley National Laboratory





q = q	Queuel	Widge	t(a)										
User		roeva	oevans										
	user	status	qos	name	timeuse	hostname	jobid	queue	submittime	memory	nodes	timereq	procs
0	oevans	PD	debug	big_simula*	0:00	cori	6380576	debug	2017-08-16T15:20:12	0	32	10:00	32
1	oevans	PD	debug	medium_job	0:00	cori	6380580	debug	2017-08-16T15:20:31	0	5	10:00	5
2	oevans	PD	debug	medium_job	0:00	cori	6380610	debug	2017-08-16T15:20:40	0	5	10:00	5
3	oevans	DD	debug	test1n	0:00	oori	6290642	dobug	2017-08-16T15:21:01	0	4	10:00	4

			SSH Auther	ntication
In [18]:	ssh = SSHAu ssh	uthWidget(host='cori.nerso	c.gov', username='d	pevans')
	SSH Aut	henticator		
	Host URL	cori.nersc.gov	Login	
	Username	oevans	Logout	
	Password			
			Watch Live	Output
In [13]:	t = TailWid	dget('out.txt')		



22]: wpw = Worke	erPoolWidget()		
wpw			
Worker F	Pools		
Name	Location	Workers	Action
laptop	localhost	3	Remove
cori	oevans@cori.nersc.gov	1	Remove
	oevans@cori.nersc.gov	→ 1	+