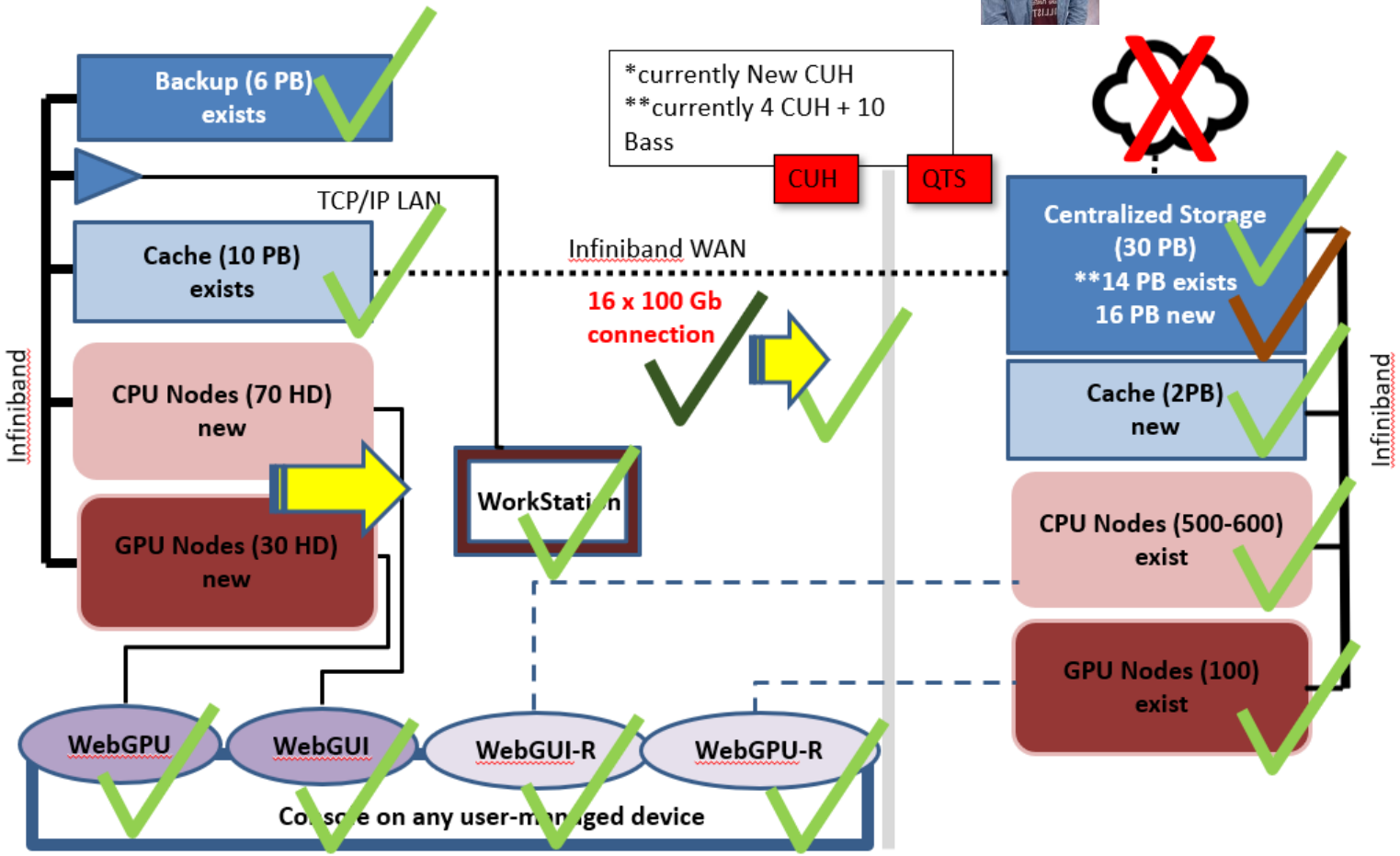
UT Southwestern Medical Center
Lyda Hill Department of Bioinformatics

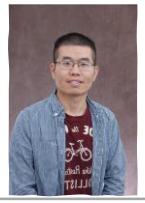
BioHPC

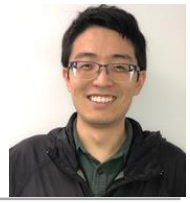
BioHPC Roadmap

Two datahall sites

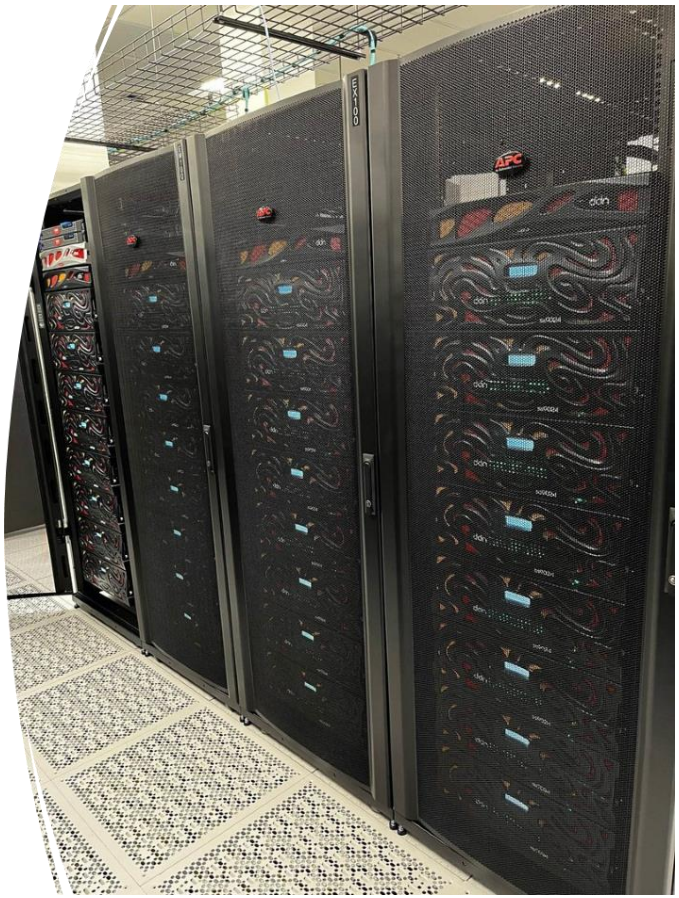




New /project file system and storage roadmap

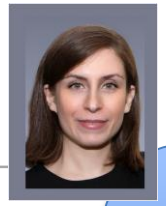
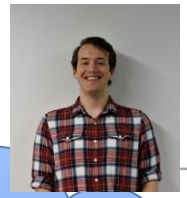


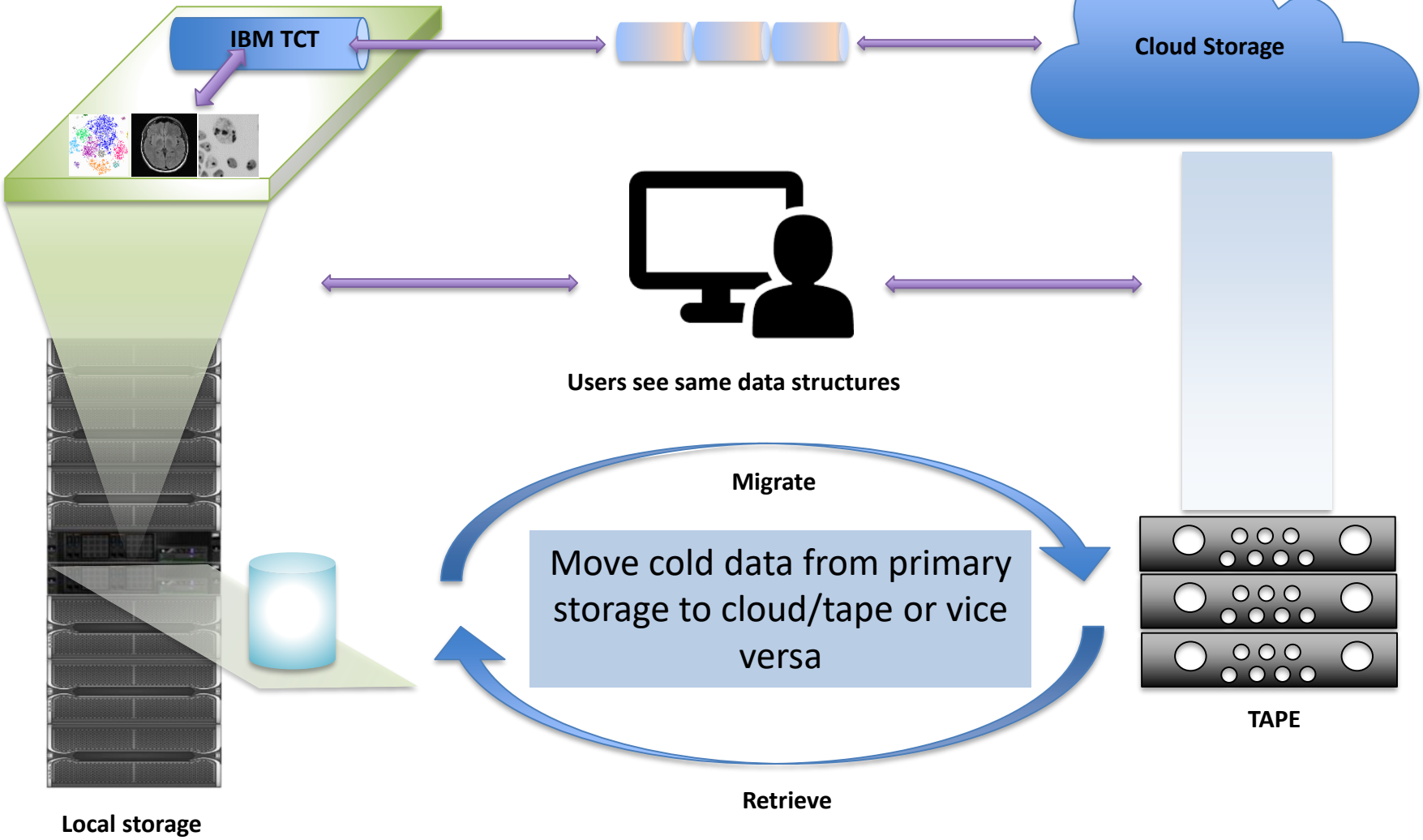
/home2	user profile	two backups per week
/work	important data	one backup per week
/project	scratch data	performance**
/archive	long term archive data	multiple tiers##

** 20 times faster than /work and /archive); No backup (but PI can request)

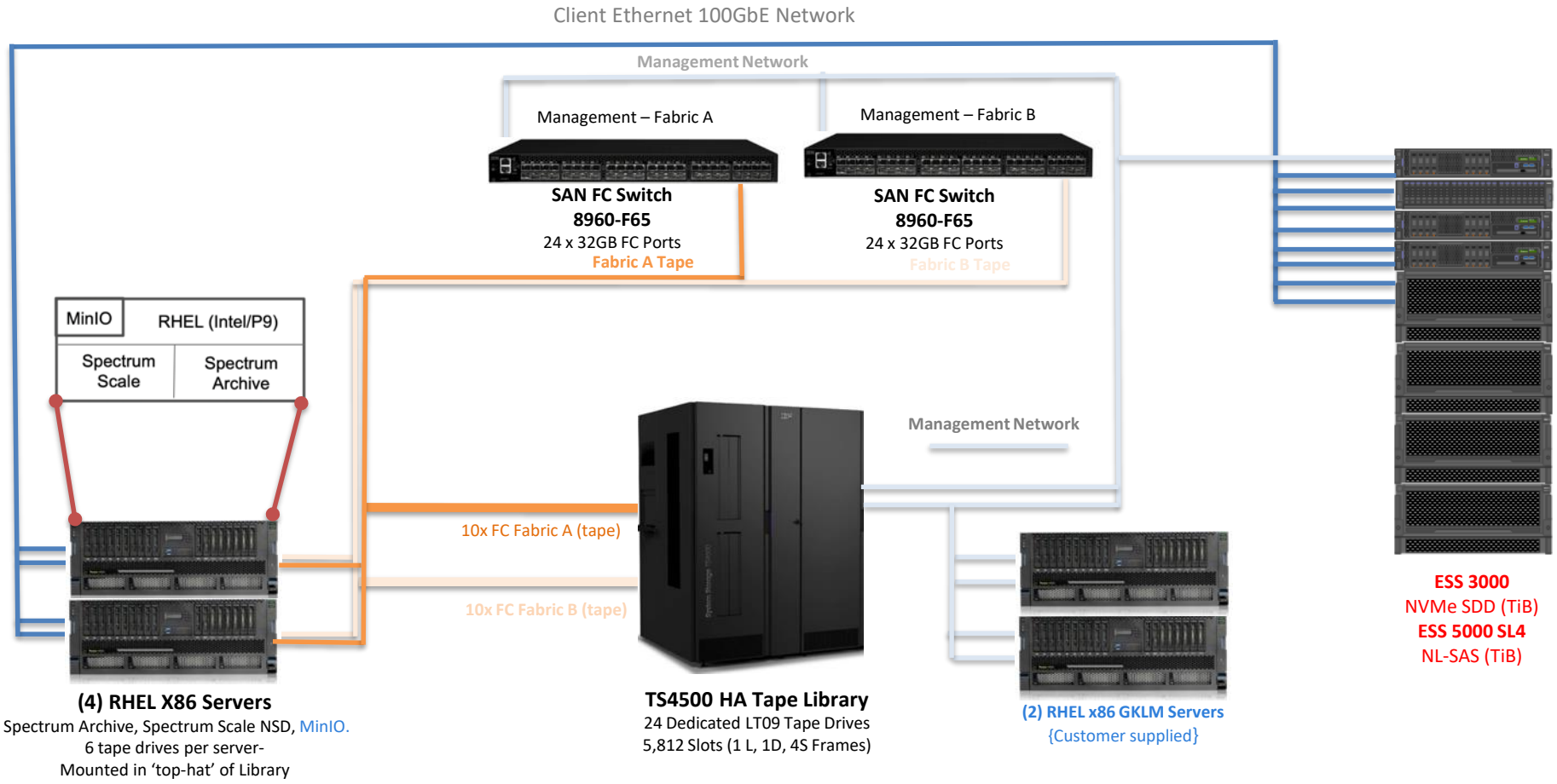
if data didn't R/W for one year, move to tape storage system; No backup(but PI can request)

/archive storage -- Single namespace

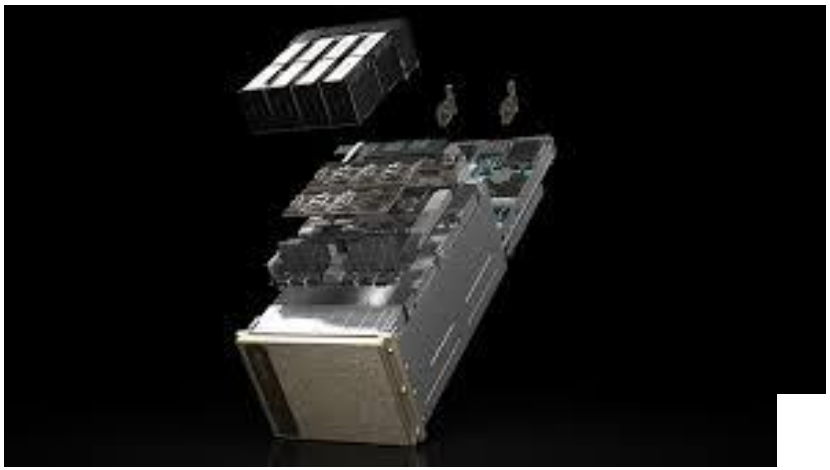



/Archive storage -- muti-tiers

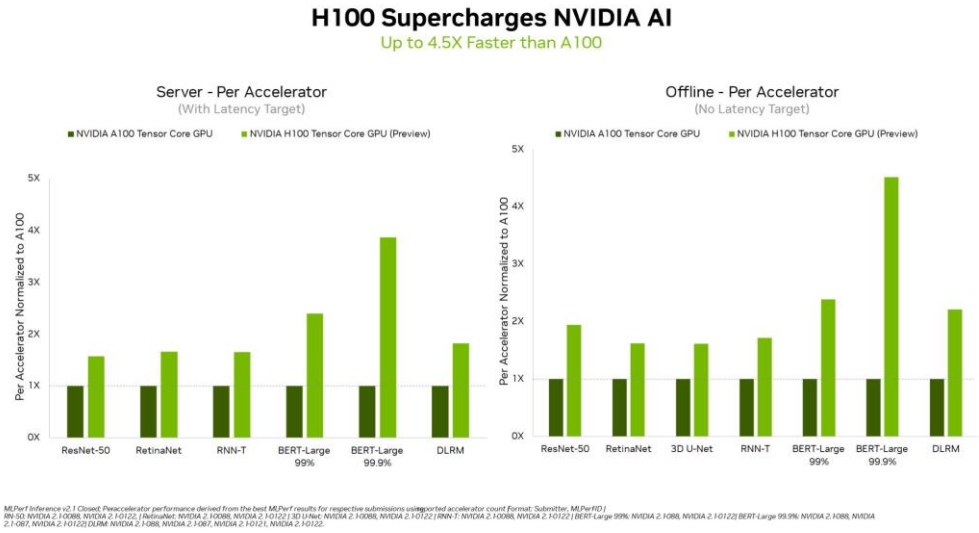


NVIDIA H100 GPU



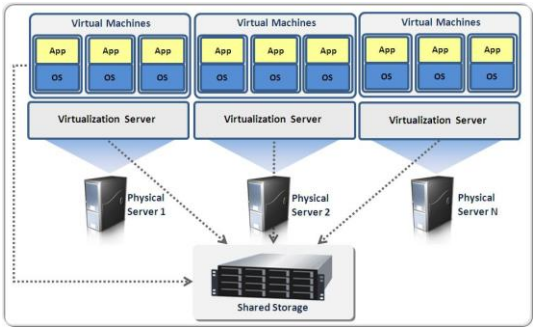



Specs:
Clock speed: 1095 MHz
(boosted up to 1755 MHz)
Memory: 80 GB
Bandwidth: 2039 GB/s

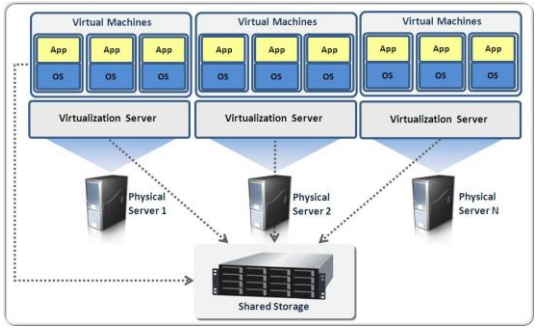


Virtualizing machine farm





DMZ pinhole

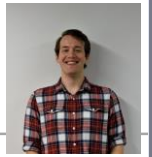
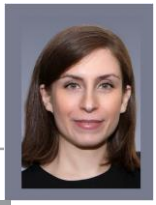


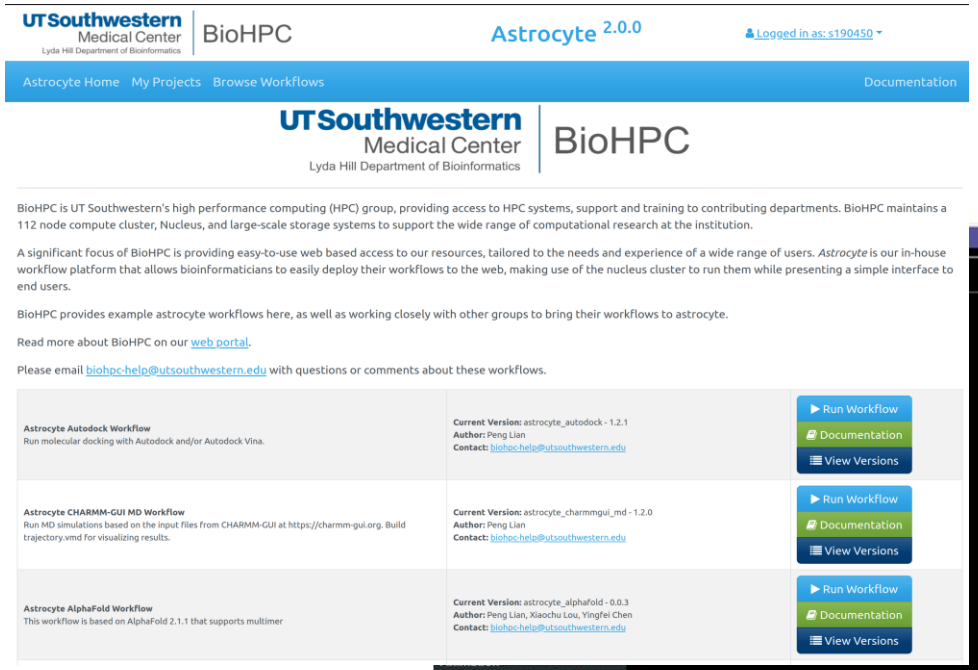
Campus

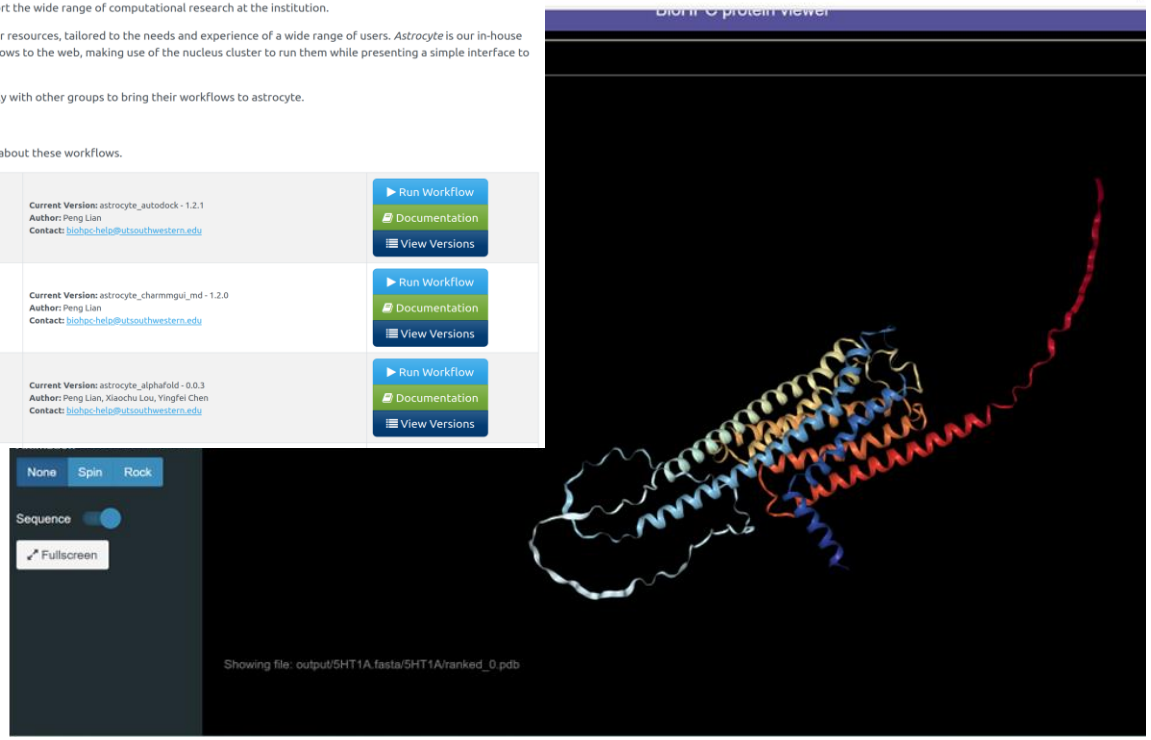
DMZ

- For flexible projects that don't require full nodes
- Getting your research tools out into the publicly-accessible network
- Improving service reliability, frequency of updates, shortening downtimes
- Virtual GPUs, other passthrough hardware available
- Please ask IR security for the Approval

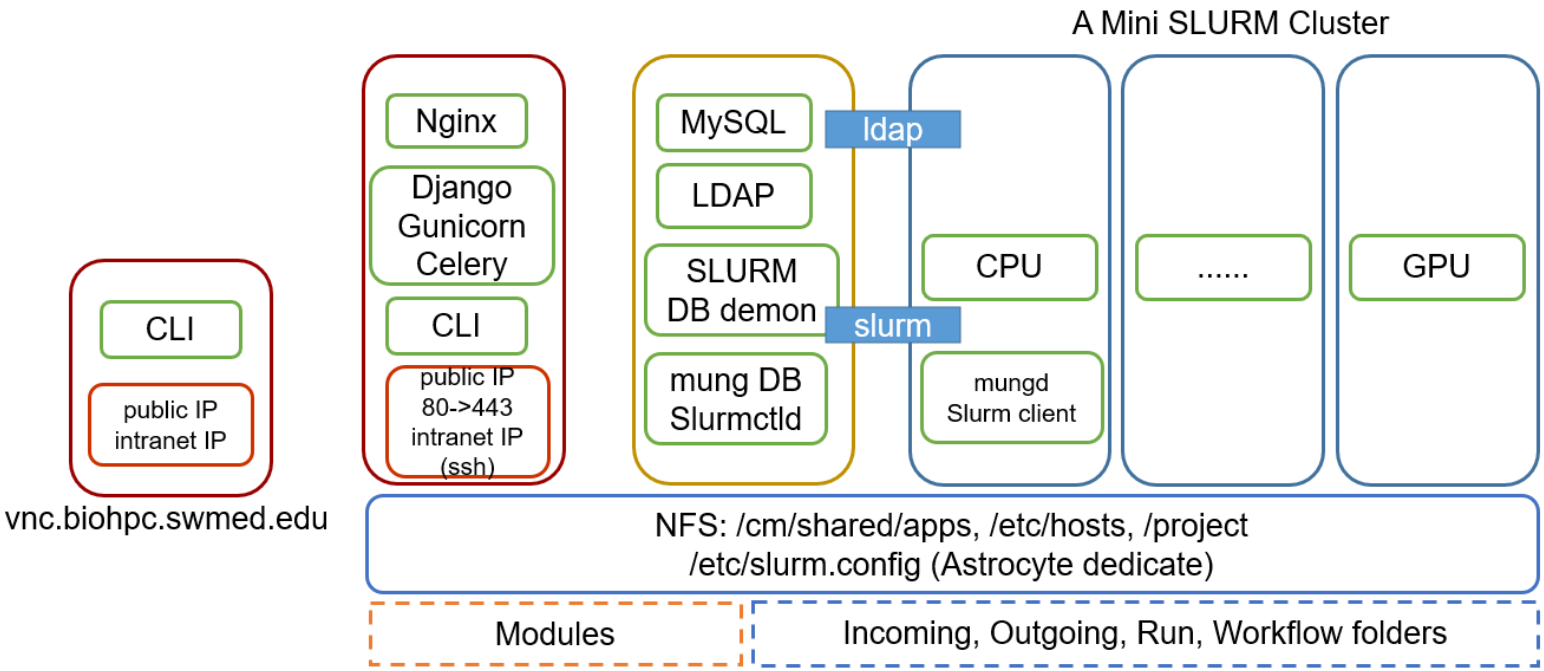
Public-accessible workflow system -- Astrocyte

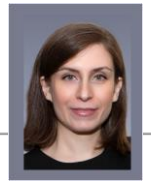



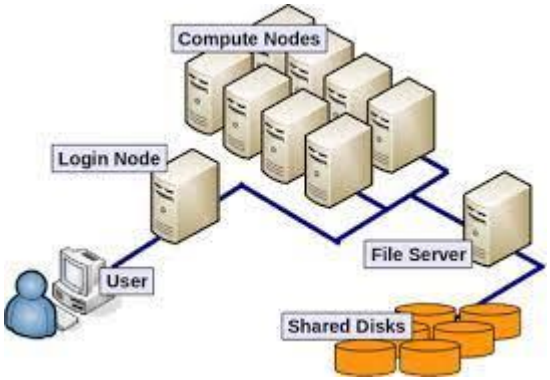


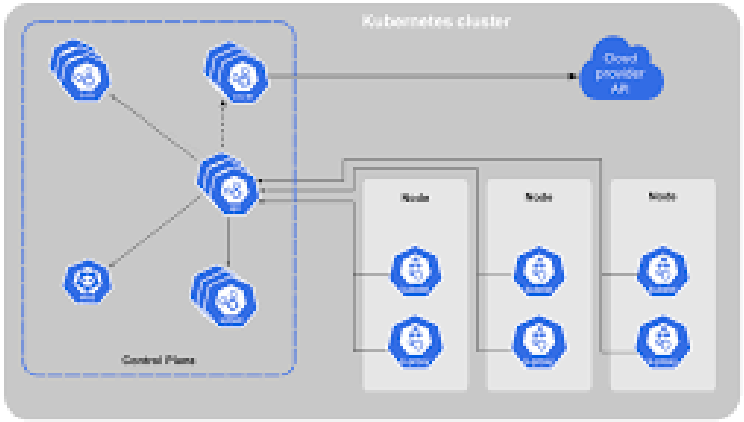
The Astrocyte DMZ Cluster

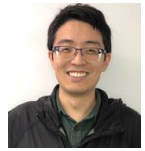


Hybrid HPC



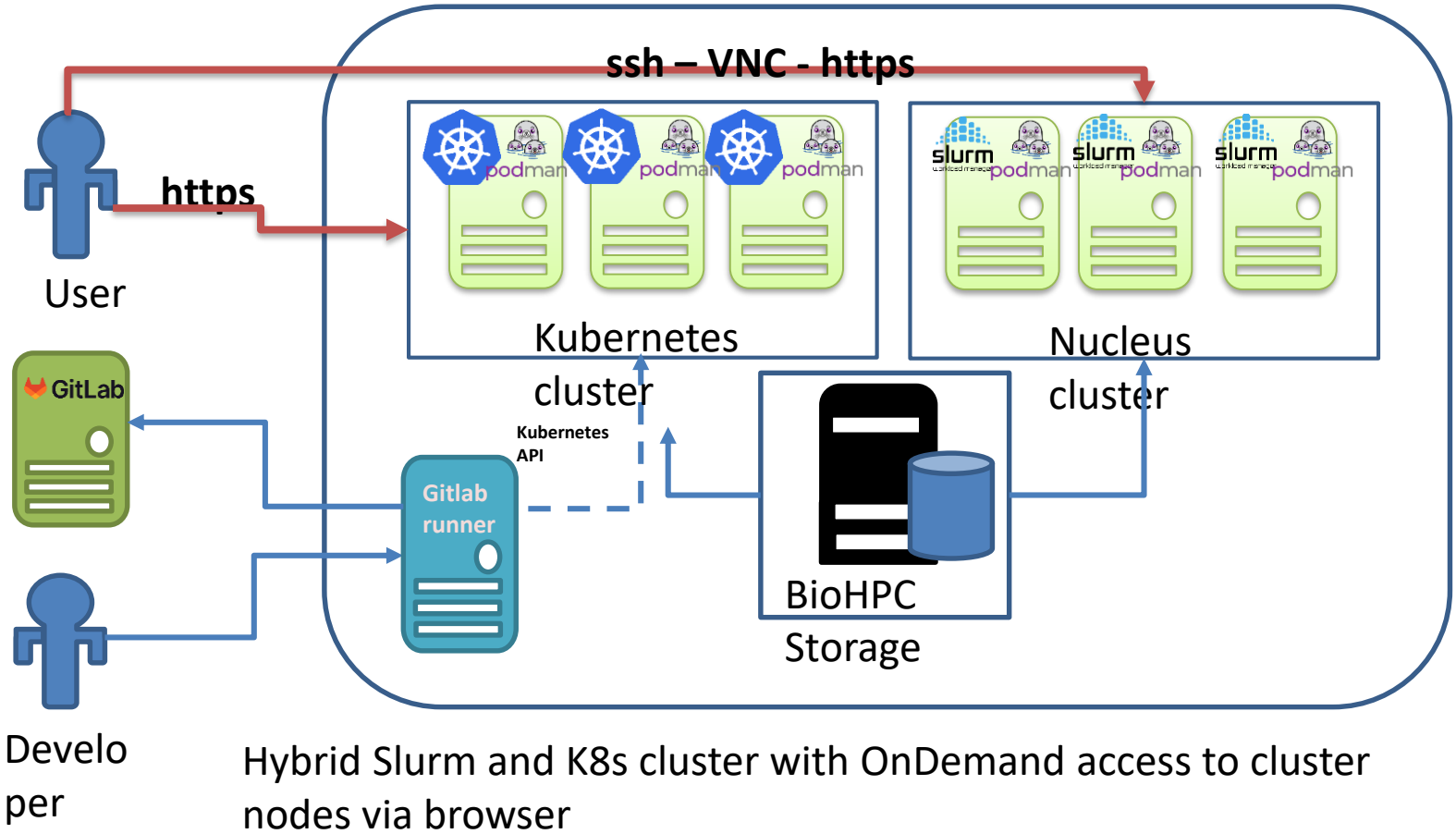







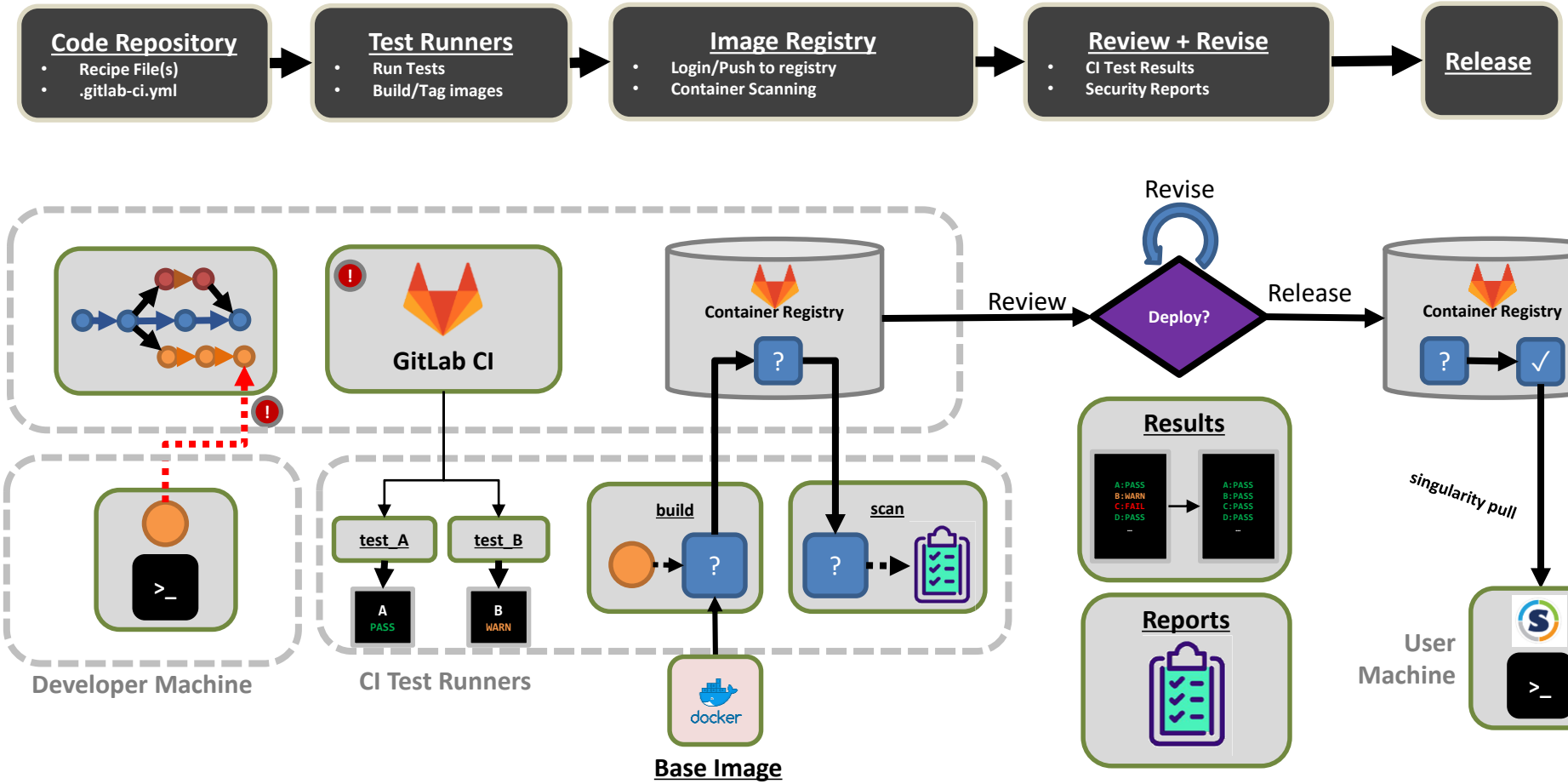
podman

A modern biomedical data management and processing workflow using Kubernetes cluster: Flywheel project



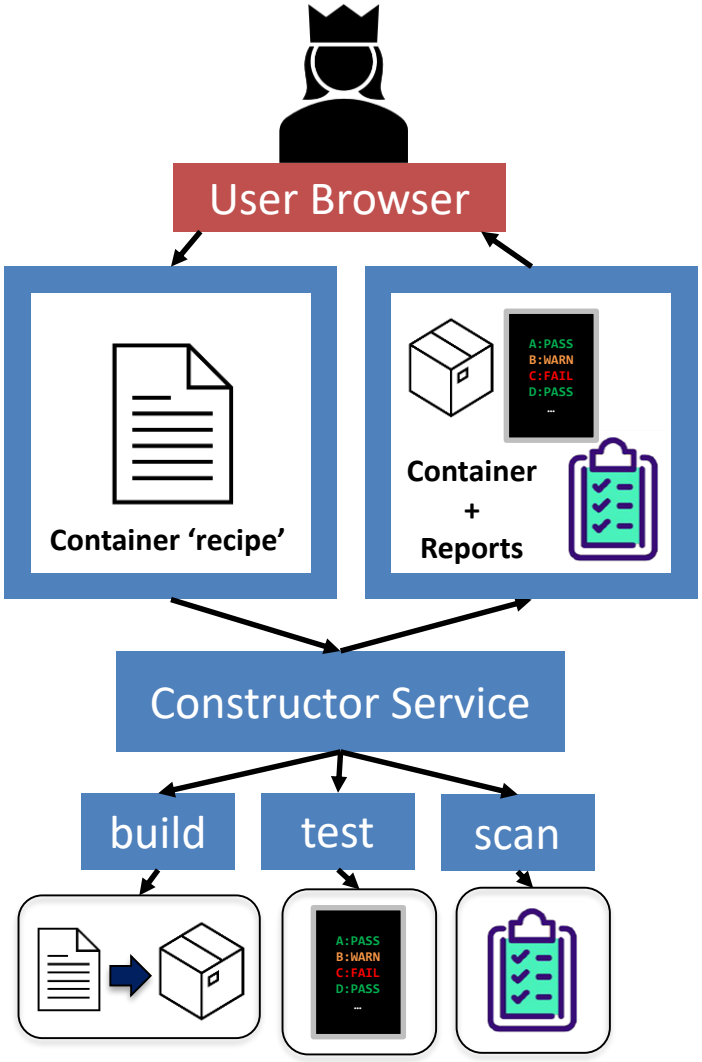
Hybrid Slurm and K8s cluster with OnDemand access to cluster nodes via browser

Extending Container Infrastructure



Container Constructor (Coming soon!)



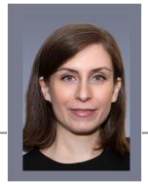


Web-based front end
- Like Web Job Submission or Astrocyte

Enable users to familiarize themselves with containers

Over time:
- Debugging interface
- Export to e.g. DockerHub, other image registries

BioHPC internship and fellowship program



	Fellowship	Internship
Intended Eligibility	UTSW graduate students, post-doc and trainee scientists – HPC-enabled research projects	Outside (non-UTSW) candidates – less experienced (BS/MS/fresh PhD)
Focus	Developing computational skills/tools to further their lab's research	Exploring and gaining more work experience in HPC – engineering projects
Time	1 day/wk with BioHPC	Full time
Expected Duration	1 year, annual renewal	3 to 6 months

Introducing BioHPC v.2.0

- Townhall for Department Chairs and Administrators Institutional perspective of BioHPC, including revised cost sharing model (Joan C)
  - Founder's perspective of BioHPC, what it is and is not meant for (Gaudenz D)
  - Technical Roadmap (Liqiang W.)
  - BioHPC vis-à-vis RaaS (Russ P.)
  - Administrative procedures (Rebekah C.)

Thank you