



# Open Science Grid

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# The Open Science Grid vision

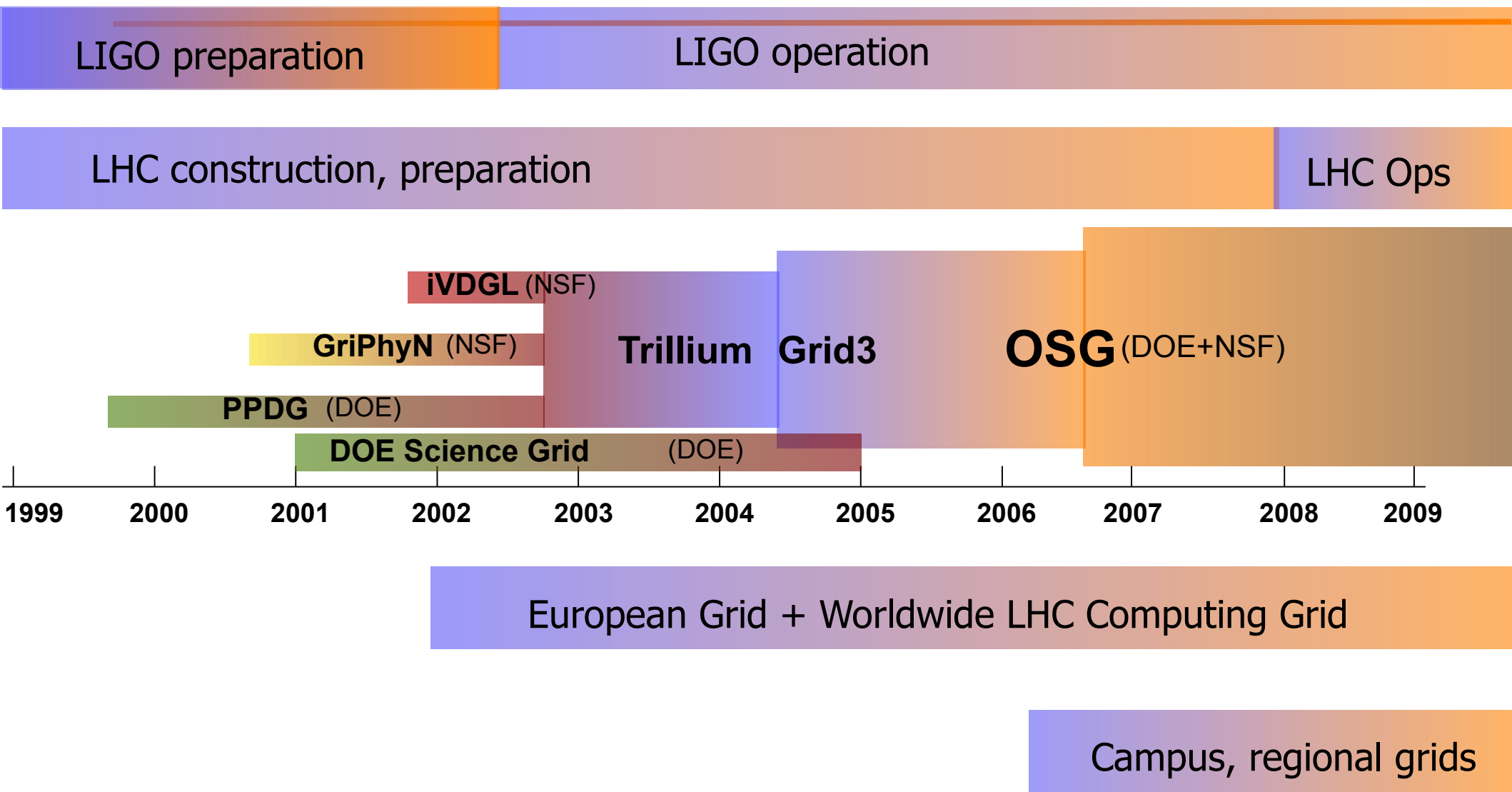
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**Transform** processing and **data** intensive science through a cross-domain self-managed **distributed** cyber-infrastructure that **brings together** campus and community infrastructure and facilitating the needs of **Virtual Organizations (VO)** at all scales

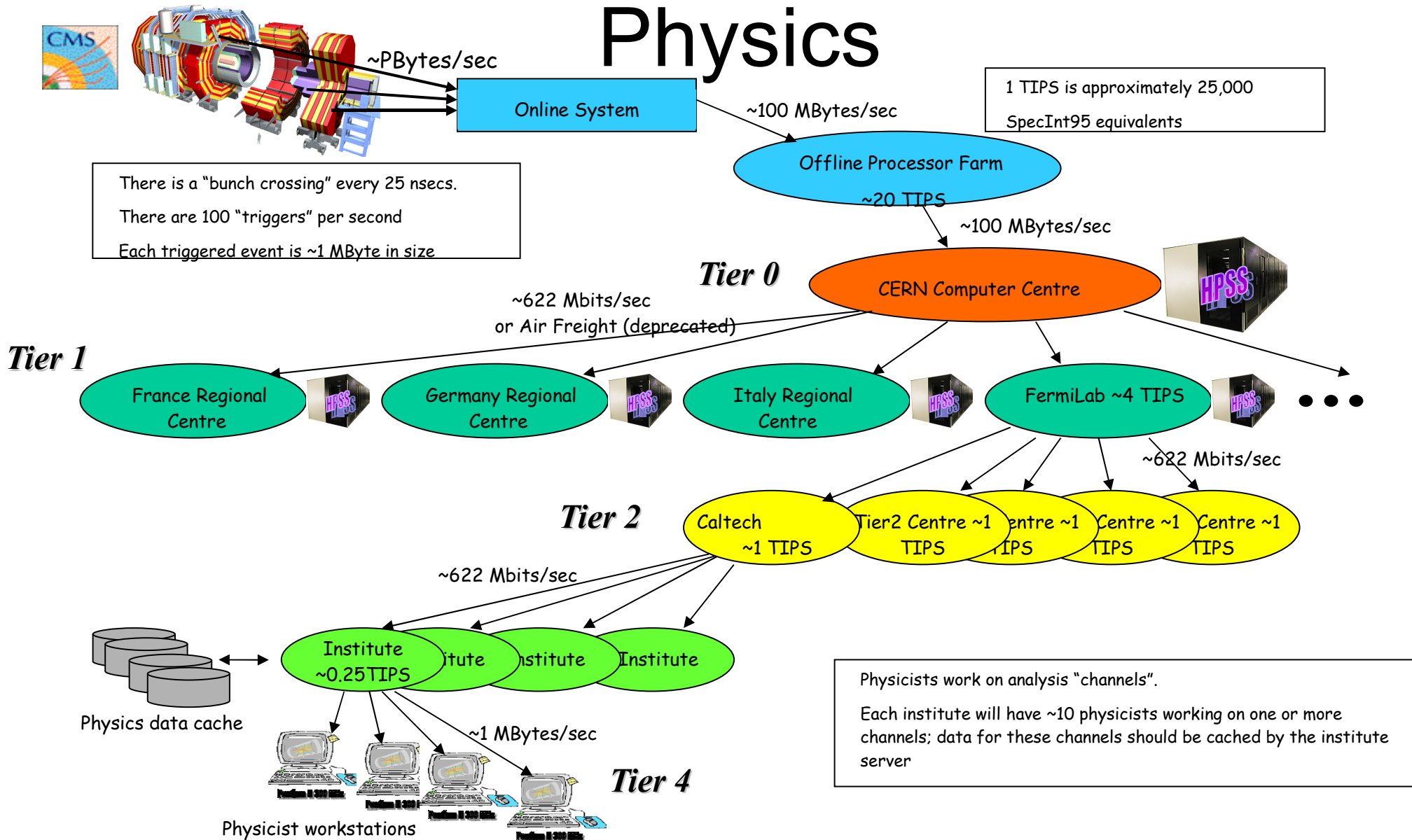


Open Science Grid

# The Evolution of the OSG



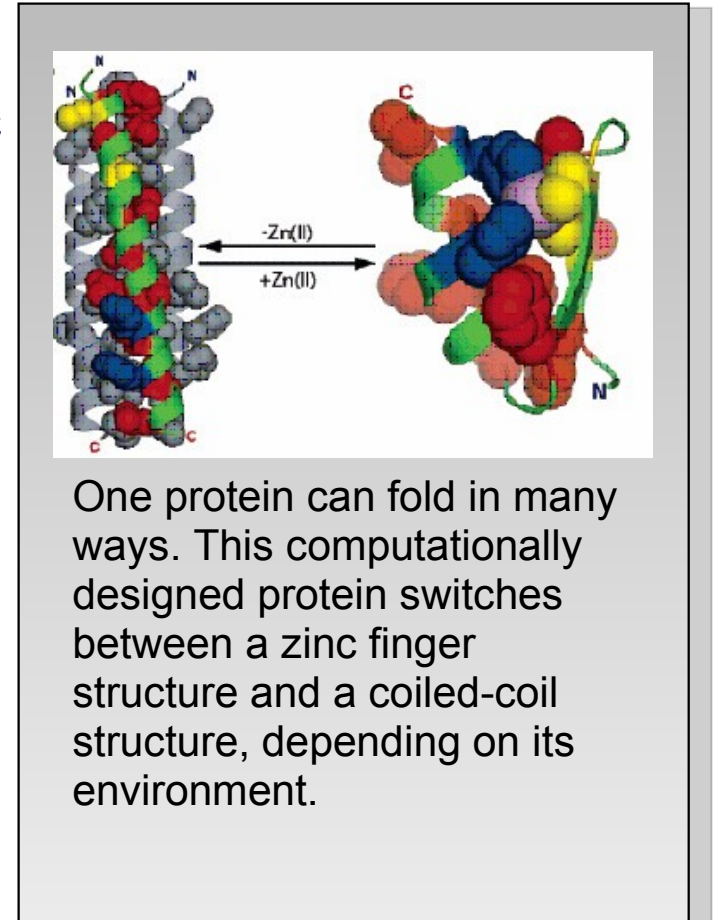
# Initial Grid driver: High Energy Physics





# Kuhlman: Biology

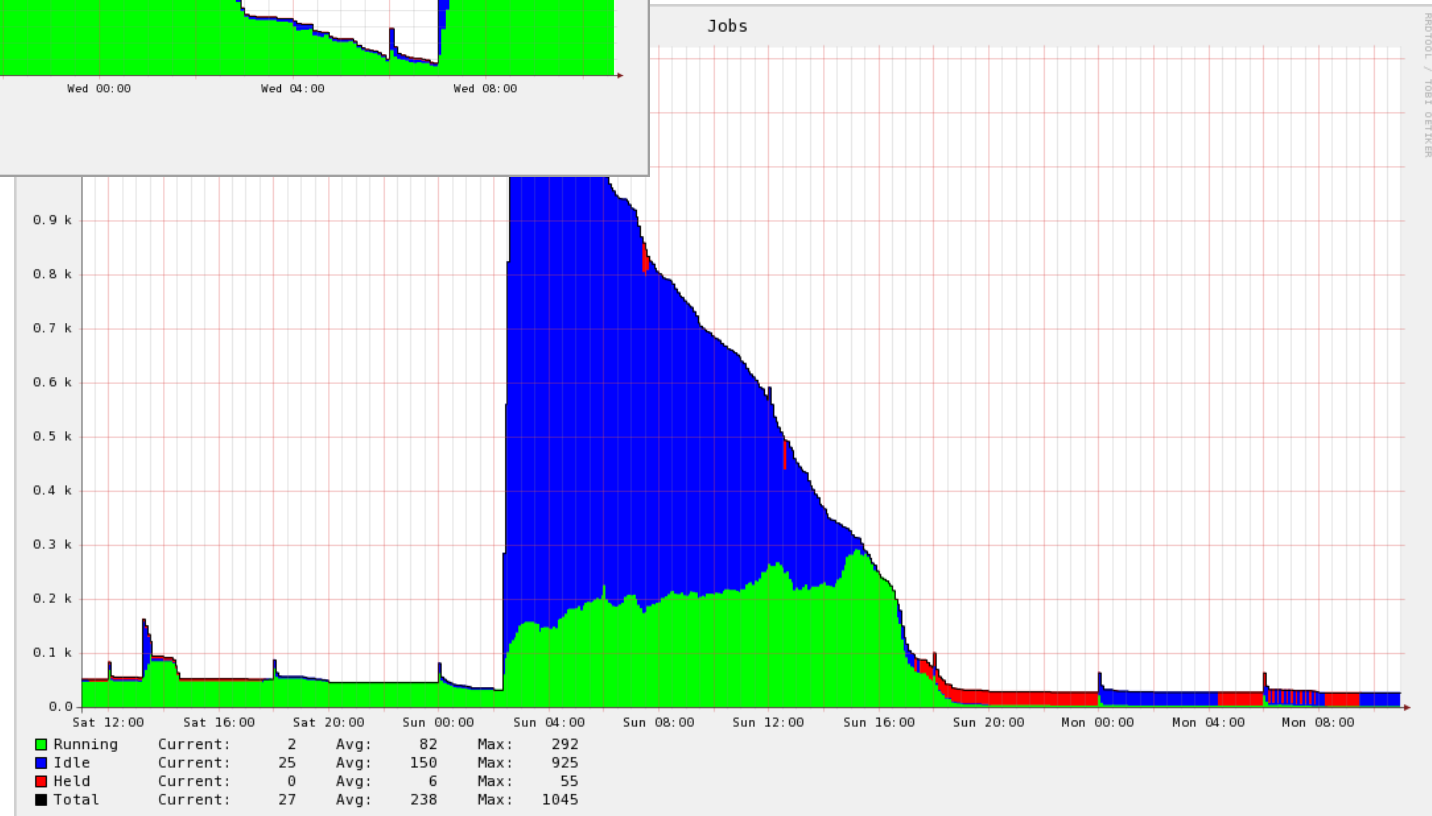
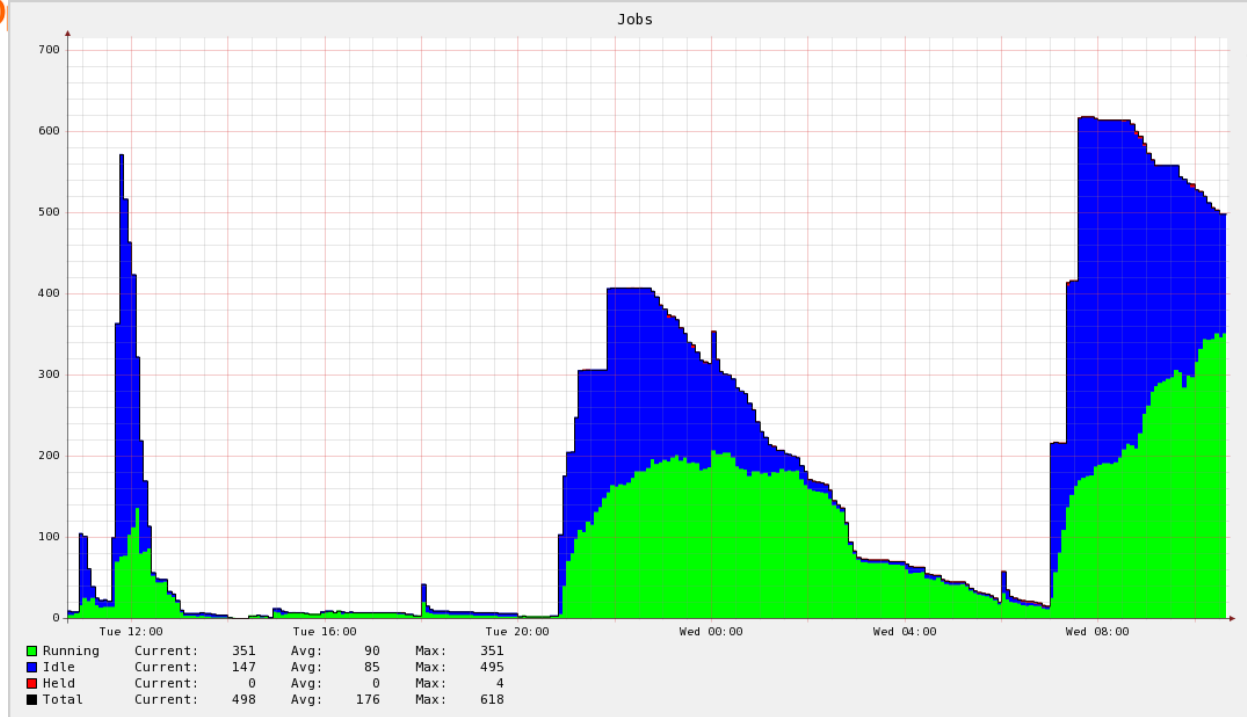
- Designing proteins that fold into specific structures and bind target molecules
- Millions of simulations lead to the creation of a few proteins in the wet-lab
- Brought to OSG's attention by local campus research computing group that was being overwhelmed
- Assistant Professor and a lab of 5 graduate students
- 





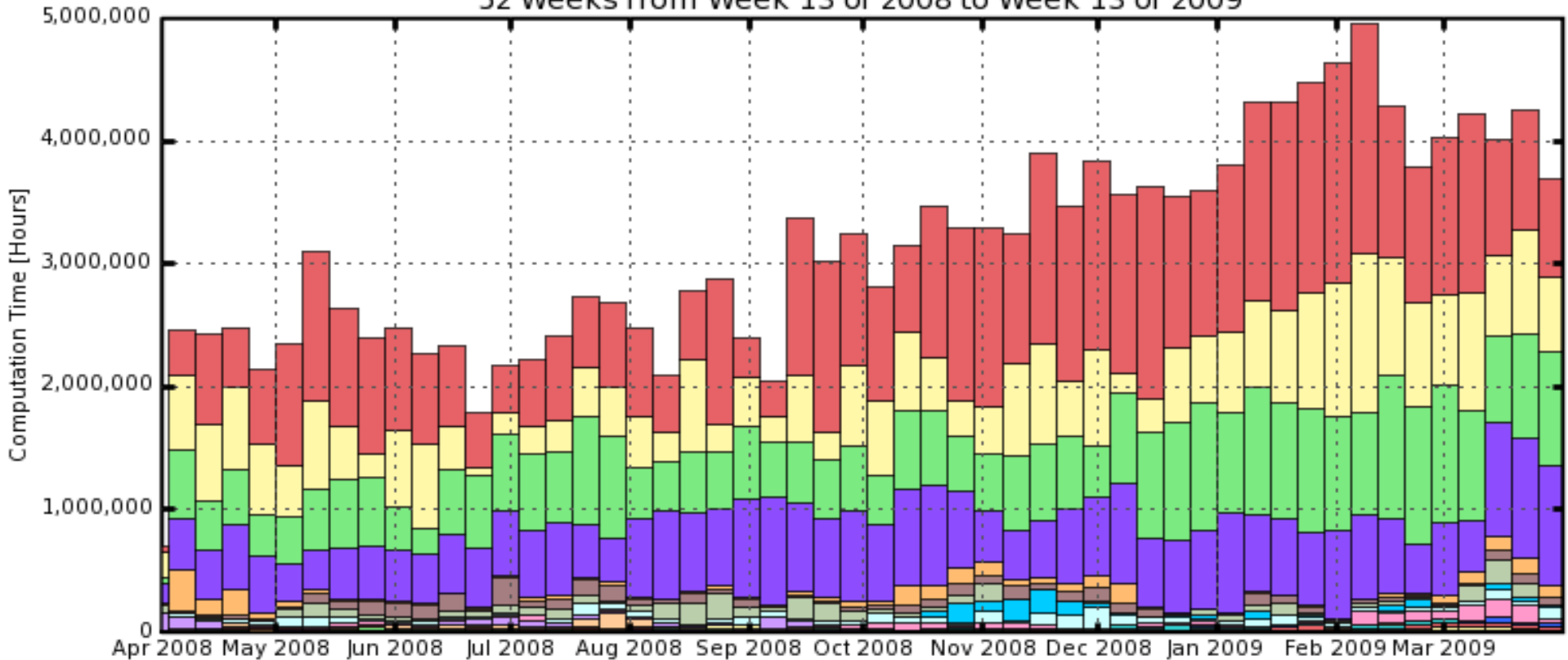
# Designing proteins in the Kuhlman Lab

For each protein we design, we consume about 5,000 CPU hours across 10,000 jobs,” says Kuhlman. “Adding in the structure and atom design process, we’ve consumed about 250,000 CPU hours in total so far.”



# Hours Spent on Jobs By VO

52 Weeks from Week 13 of 2008 to Week 13 of 2009

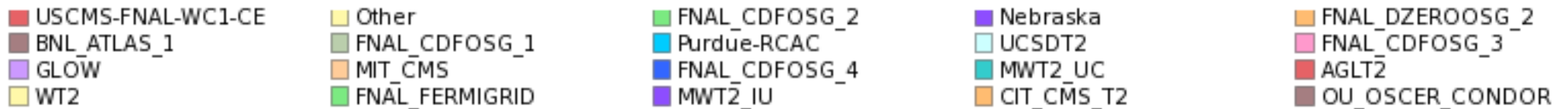
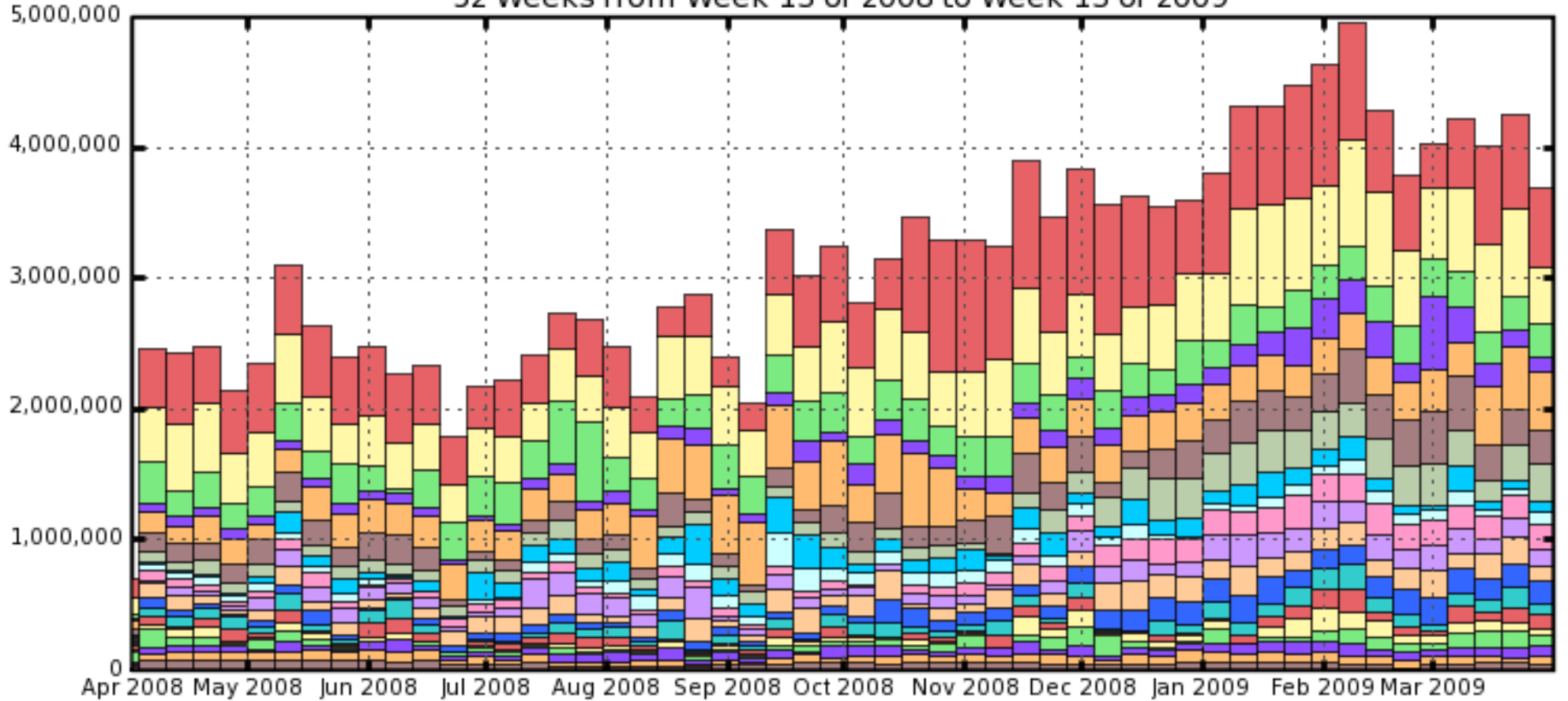


Maximum: 4,956,523 Hours, Minimum: 693,115 Hours, Average: 3,127,141 Hours, Current: 3,700,284 Hours

- $1.6 * 10^8$  CPU-hours/year, 5 CPU-hours/sec
- [http://www.opensciencegrid.org/Usage\\_Stats](http://www.opensciencegrid.org/Usage_Stats)

# Hours Spent on Jobs By Facility

52 Weeks from Week 13 of 2008 to Week 13 of 2009



Maximum: 4,956,523 , Minimum: 693,115 , Average: 3,127,141 , Current: 3,700,284

Example: UJ cluster can provide ~10k CPU-hours per week right now, planned 32k



# What OSG would like...

- Involvement as users:
  - application users at UJ making use of other OSG resources – use UJ cluster and through that develop grid-scale applications
  - resource provision – other OSG users use space compute capacity here