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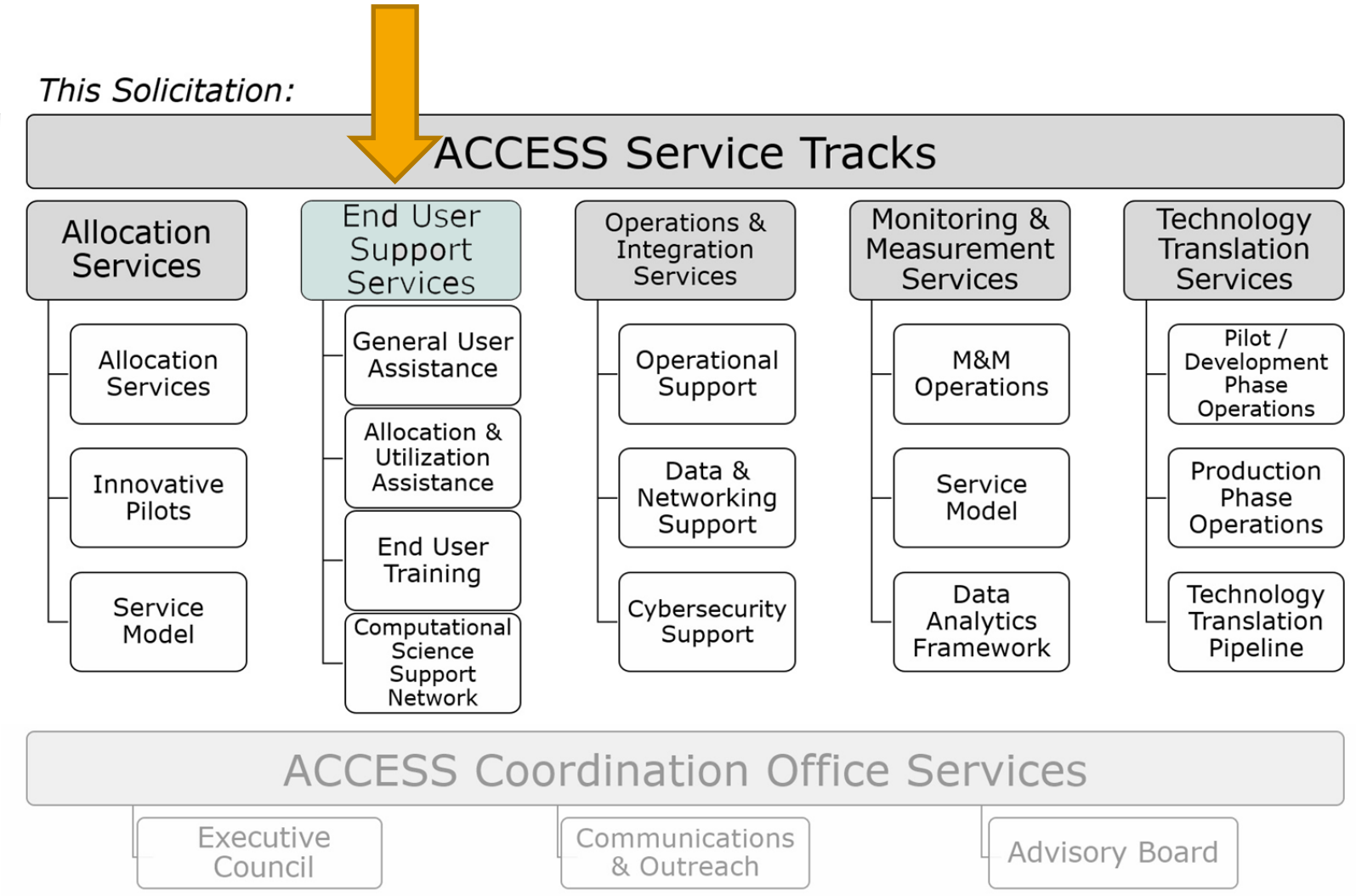
**University of Kentucky, University of Southern California, Ohio Supercomputer Center, and Massachusetts Green High Performance Computing Center (MGHPCC)**

# You Are Here

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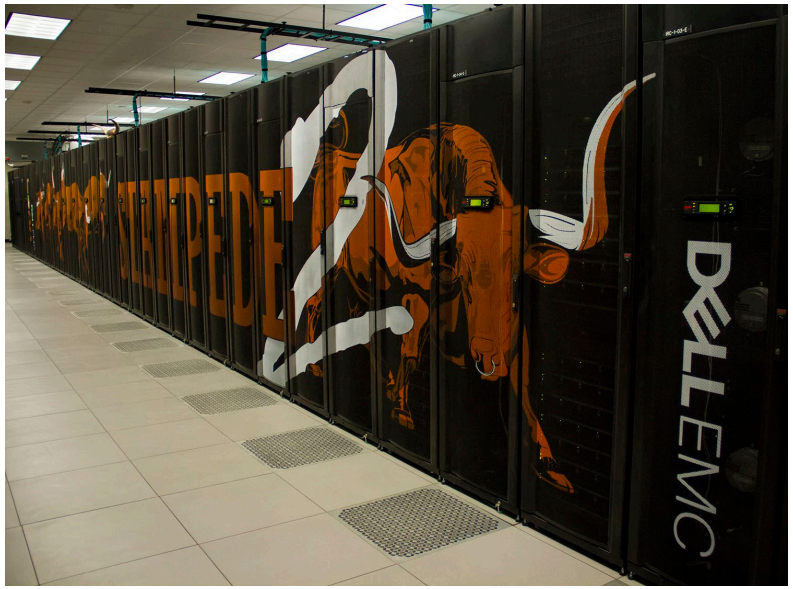
# Multi-tier Assistance, Training, and Computational Help (MATCH)

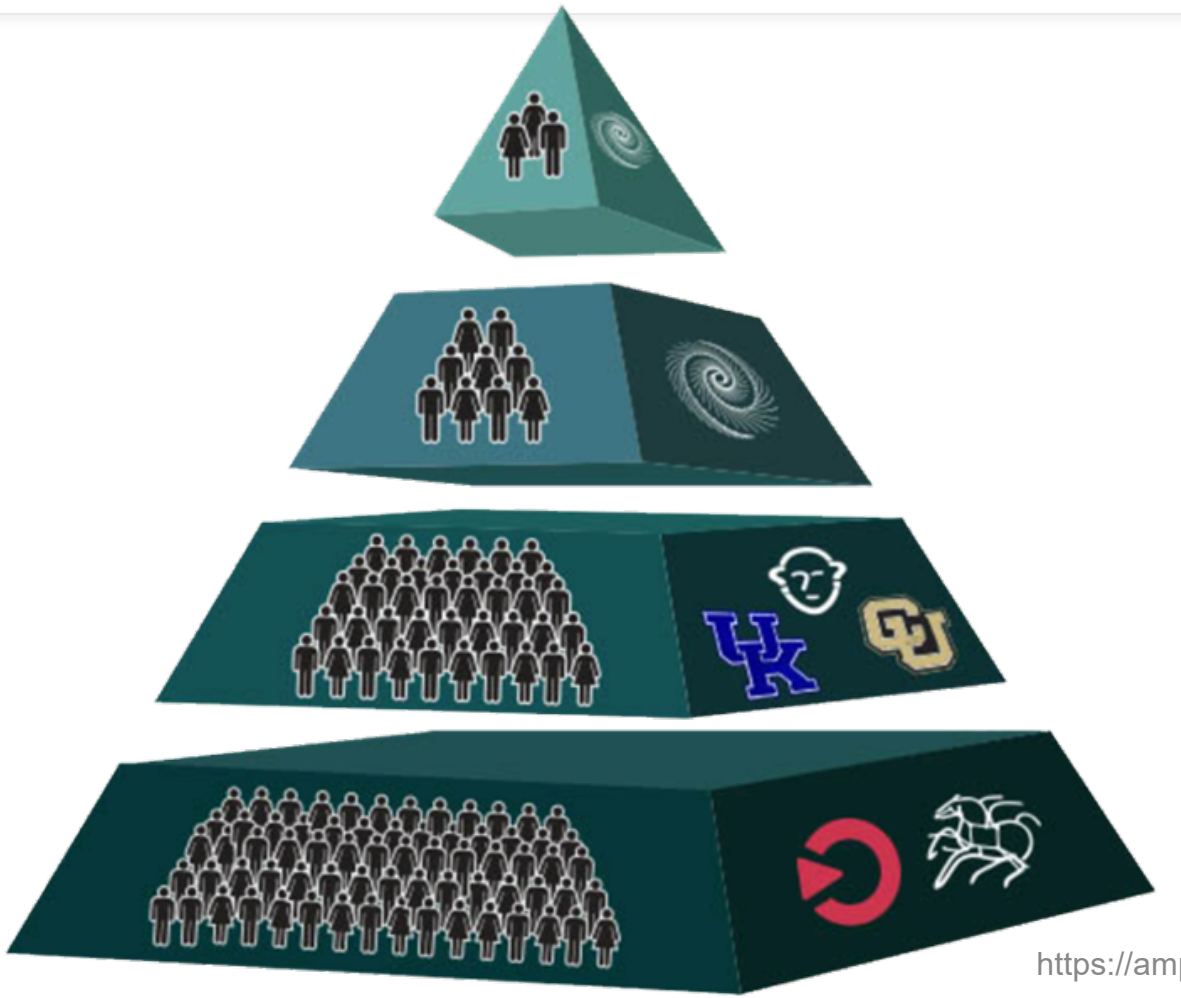
- Goal for NSF: To provide democratized and equitable access to NSF's advanced cyberinfrastructure ecosystem

- MATCH Theme: providing equitable, scalable support to best enable research on NSF funded cyberinfrastructure




Stampede2 at the Texas Advanced Computing Center.
From xsede.org

# MATCH Services



TIER 4 **MATCH-Premier**
LONG-TERM EMBEDDED SPECIALISTS

TIER 3 **MATCH-Plus**
SHORT-TERM SUPPORT PARTNERSHIPS

TIER 2 **Curated Knowledge Base**
COMMUNITY EXPERTS

TIER 1 **Easy to Use Tools**
ACCESS ONDEMAND AND PEGASUS

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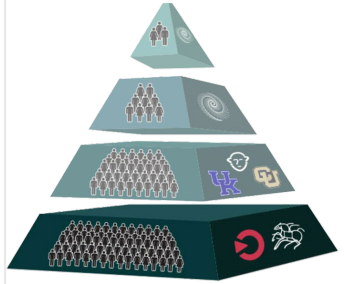
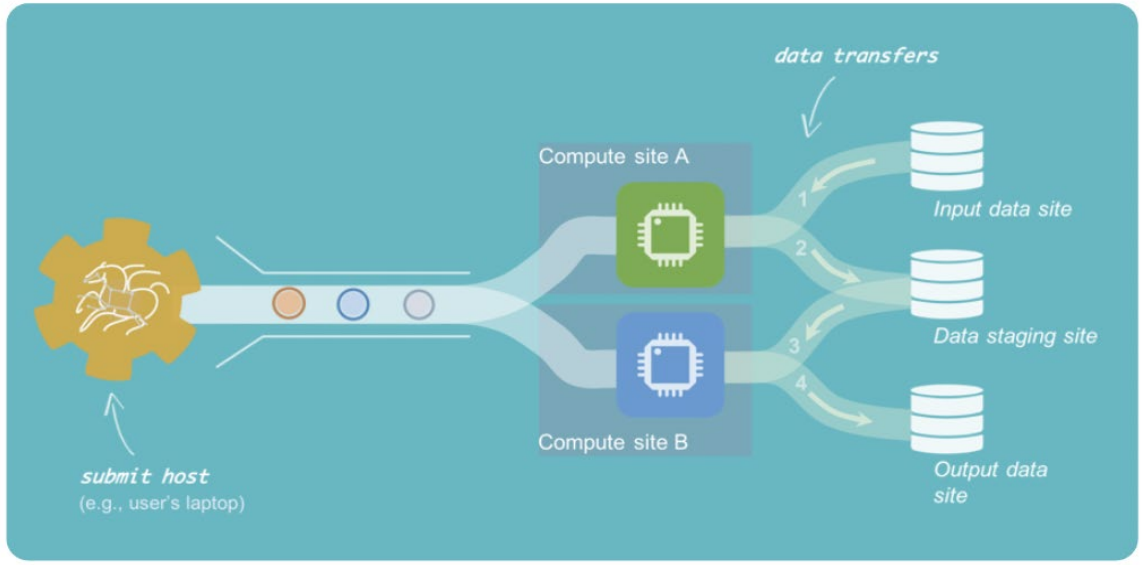
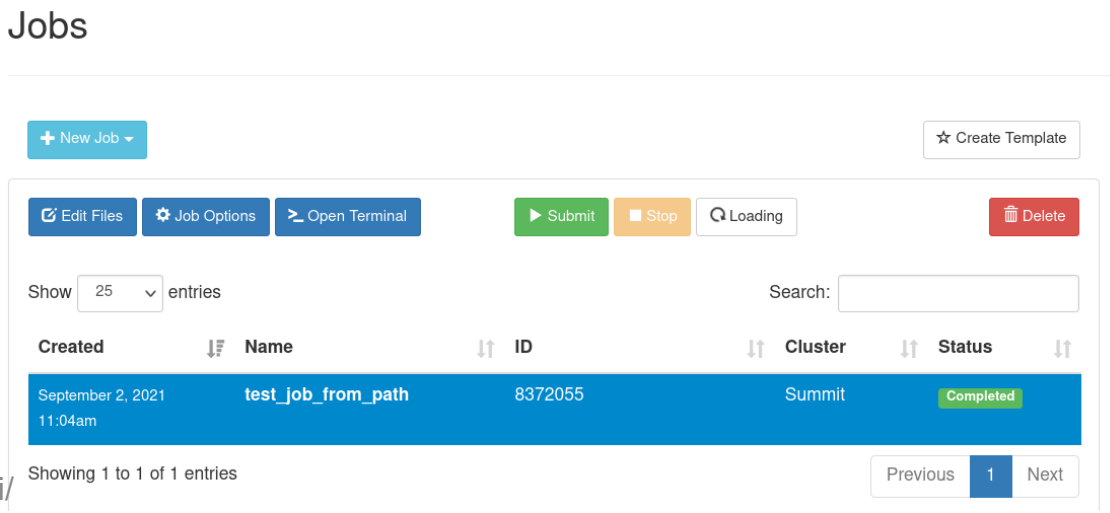


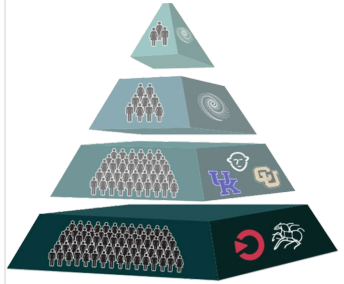
# Tier 1 – Pegasus and Open OnDemand




- Pegasus
  - Workflow manager
    - Input data -> Compute Job -> Output data
    - Complex data workflows
    - Reproducible
    - Provenance, ensures data integrity

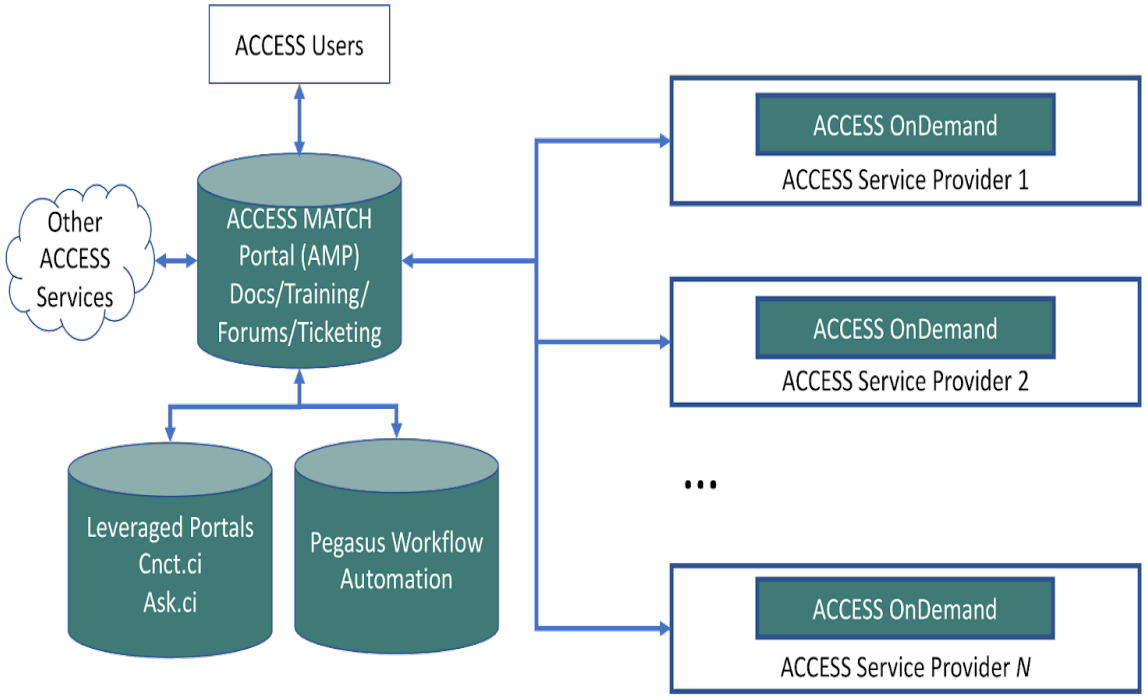
- Open OnDemand
  - Improve user experience with easy-to-use interface to access complex cyberinfrastructure
  - Templates to run jobs, transfer data, etc





# Tier 1 – MATCH Approach

- Integrate Pegasus and OnDemand platforms with the ACCESS MATCH Portal
  - Connect.CI (https://Cnct.CI) underpinnings
    - Northeast Cyberteam, 6 Cyberteams and Campus Champions
    - Support all tiers
- Provide ACCESS wide tools with full integration
- Support Resource Providers




**In MATCH use Pegasus to automate user workloads, use as is + integrate with AMP and OOD**

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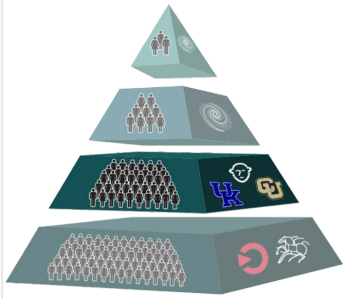

# Tier 2 – Knowledge Base

- Problem/Need
  - Support for allocations for NSF CI
  - New documentation/tutorials needed
    - Gaps, many disparate resources
  - So many resources – which is best for the users?

- MATCH Approach
  - Leverage experience with allocation request process
  - Create affinity groups
  - Resource existing trainings and documentation
  - Define gaps and create new materials
  - Community grants

# MATCH Computational Science Support Network (CSSN)

- The CSSN is about coordinating the community around providing resources to support users using large ACCESS systems
- Recruitment to support trainings, documentation, responding to discussion forum questions, and general issues
- Financial incentives, travel grants

Anvil, Purdue University
From purdue.edu


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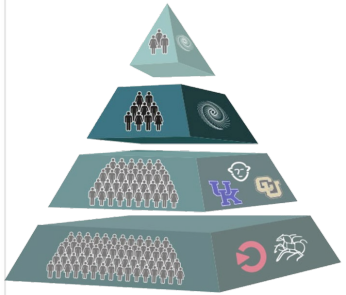
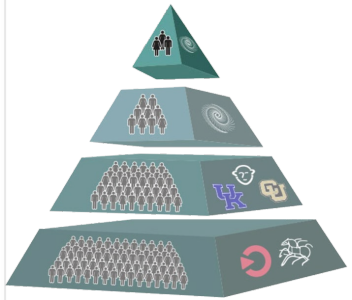


# Tier 3 – MATCH Plus

- Problem/Need
  - Users often need short-term assistance transitioning to a new resource (e.g local cluster to ACCESS resource), or removing a roadblock (e.g. replacing a stage in a workflow to better performance/scale)
- MATCH Approach
  - Follow the cyberteam model, matching each project with a student and an experienced mentor for a ~6 month engagement
  - Build on experience managing complex collaborative projects with distributed teams
  - Facilitate regular touch points

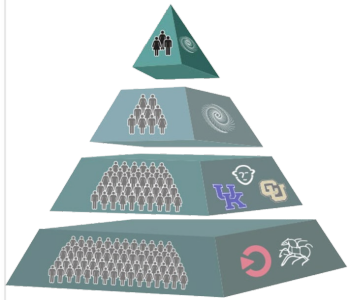


# Tier 4 – MATCH Premier

- Extensive collaborative engagements
  - Optimize applications
  - Improve workflows
  - Parallelize codes
  - Other extended projects where a longer term, consultative resources (expert) is needed
- MATCH Approach
  - Researchers request support six months in advance
  - Consultants recruited from CSSN (facilitated by AMP Tag Taxonomy)
  - Researchers fund consultants out of grant funds or supplements
  - Consultants meet monthly, initially with Tier 3 teams until we have critical mass, to exchange project information and share best practices, war stories

# Why Is This Significant?


- Moving into the next phase of supporting cyberinfrastructure
- Serving all groups with equitable and scalable support
  - “Traditional” High Performance Computing workflows
  - High Throughput Computing workflows
  - Underrepresented groups
- Creating connection points across the community to best support and enable cutting edge research nationally



# Thank you!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- Ewa Deelman, Mats Rynge, University of Southern California
- David Hudak, Alan Chalker, Ohio Supercomputer Center
- John Goodhue, Julie Ma, Massachusetts Green High Performance Computing Center (MGHPCC)

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# Let’s go!

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