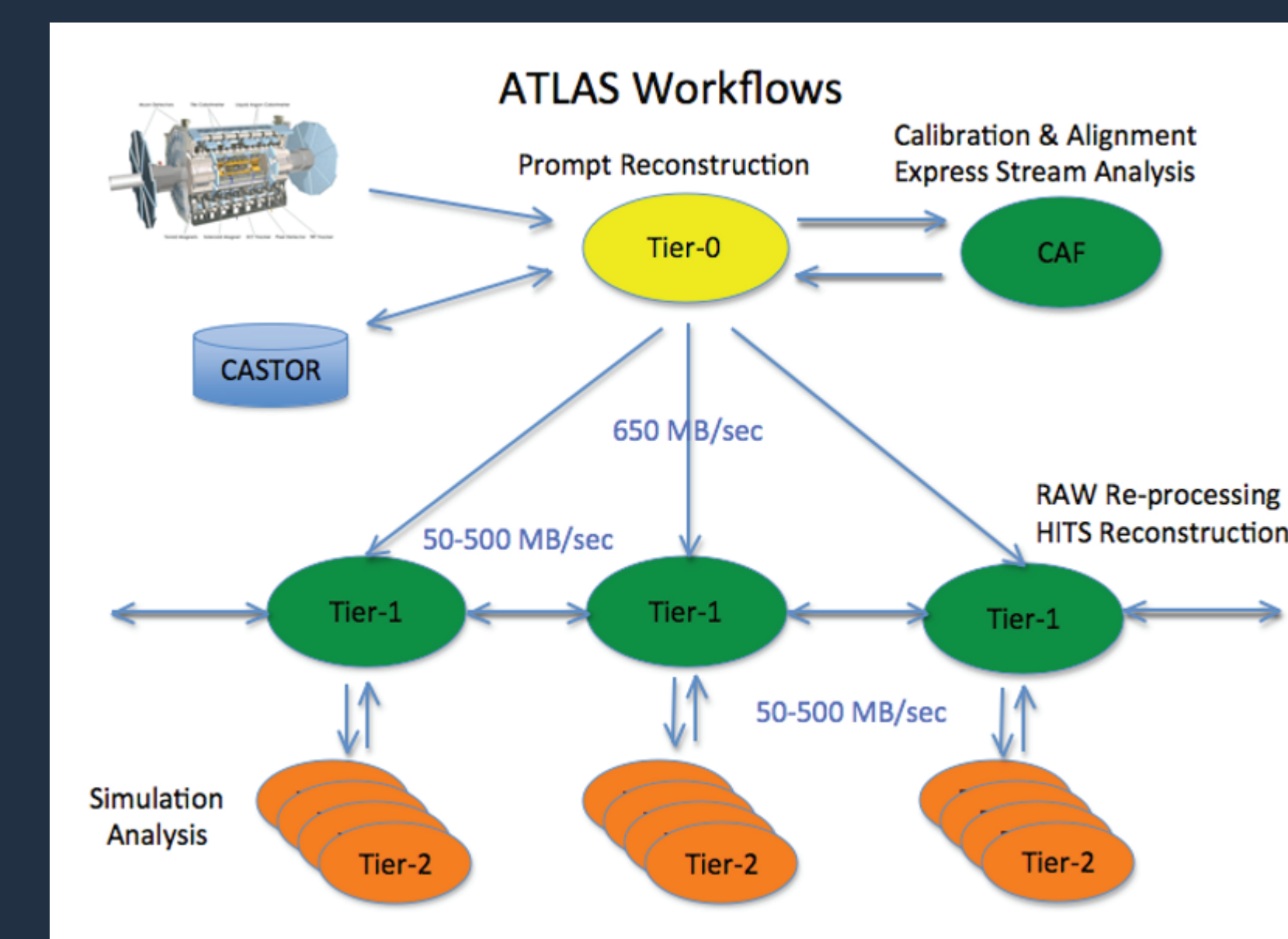


ATLAS Computing and Muon Calibration Center

UM Personnel: Shawn McKee (Director) Bob Ball (Tier-2 Manager) Ben Meekhof (Tier-2 Admin)  
MSU Personnel: Chip Brock (Co-Director) Tom Rockwell (Tier-2 Admin) Philippe Laurens (Tier-2 Admin)

ATLAS Computing

ATLAS Great Lakes Tier 2 at the University of Michigan and Michigan State University provides more than 4500 CPU cores and 2.2 Petabytes of storage for the ATLAS Collaboration as part of the Worldwide LHC Computing Grid(WLCG). The site is primarily managed here at UM but physical resources are located both here and at Michigan State University. To outside users of our site we appear as one entity. Thanks to the collaboration between our universities we are able to provide greater resources to ATLAS.



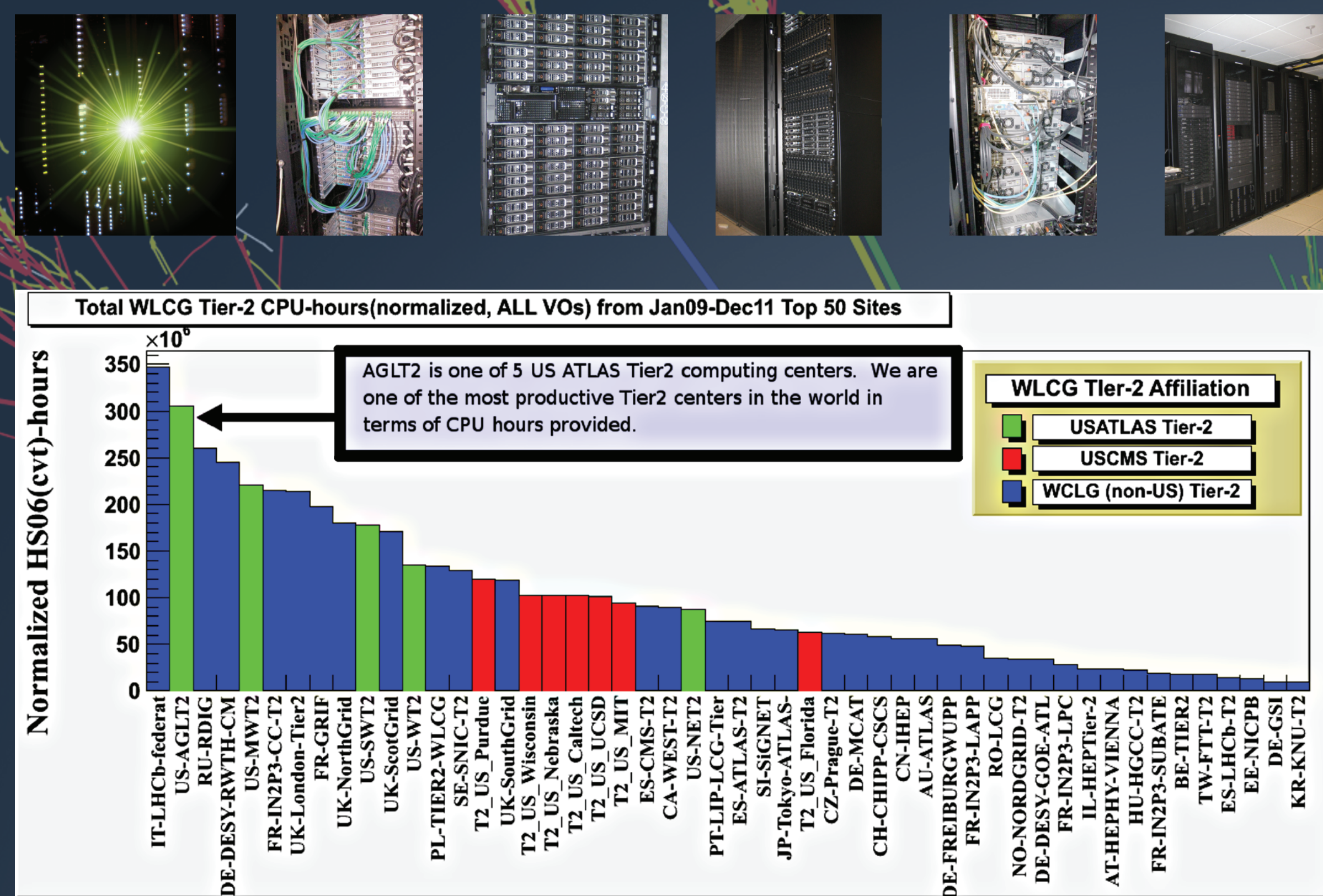
ANSE Advanced Network Services for Experiments

Building on the successful deployment of the DYNES instrument at dozens of campuses, the newly funded (summer 2012) ANSE project will complete the network integration with end-user applications and in particular the software stacks of the HEP experiments.

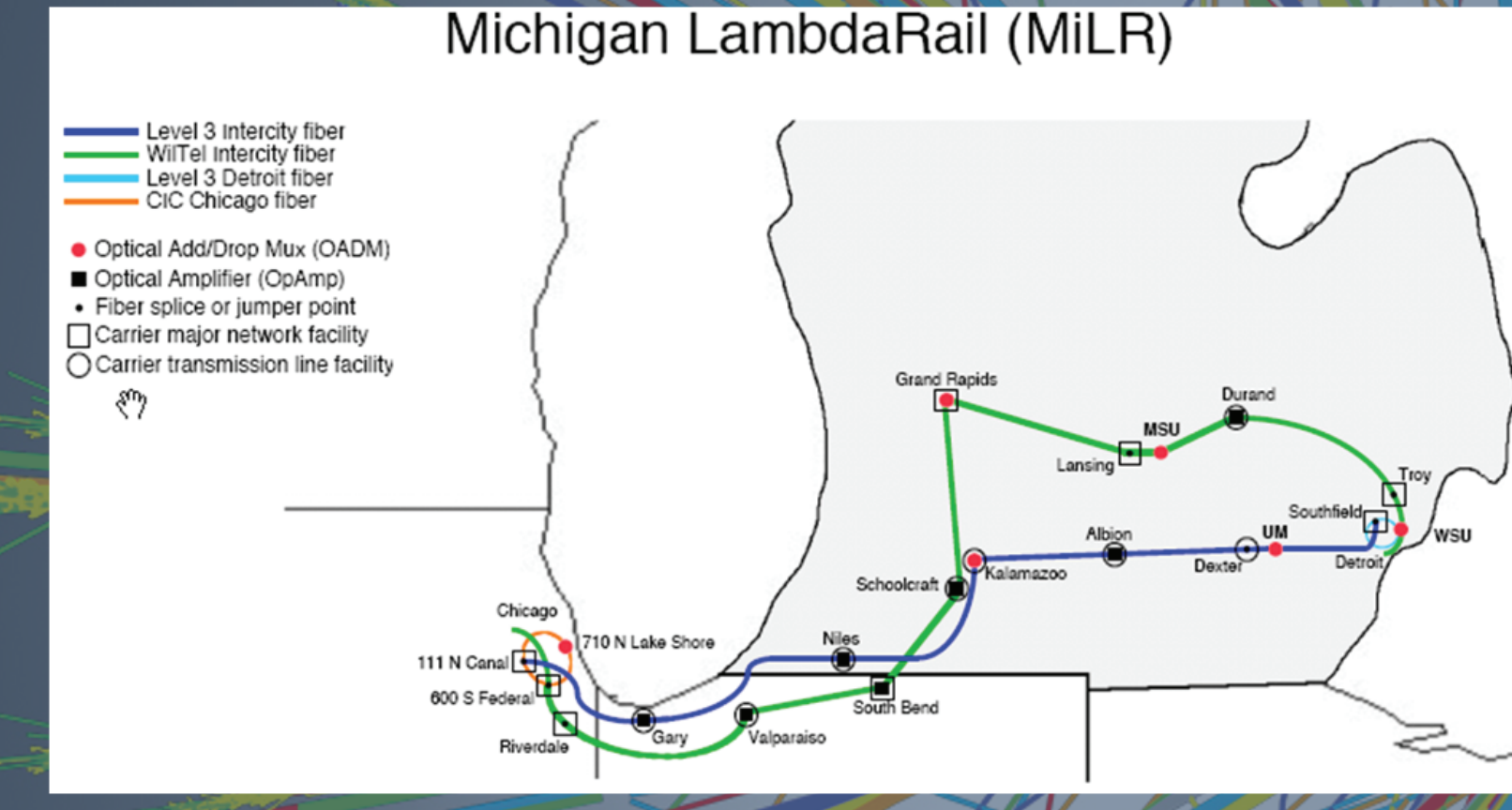
The ATLAS specific part of the project includes integrating a "network element" into PANDA, the ATLAS workload management system, and enabling scheduling of network resources in conjunction with the scheduling of other resources currently handled by PANDA.



The project is a collaborative effort between Caltech, University of Michigan, University of Texas Arlington, and Vanderbilt University.



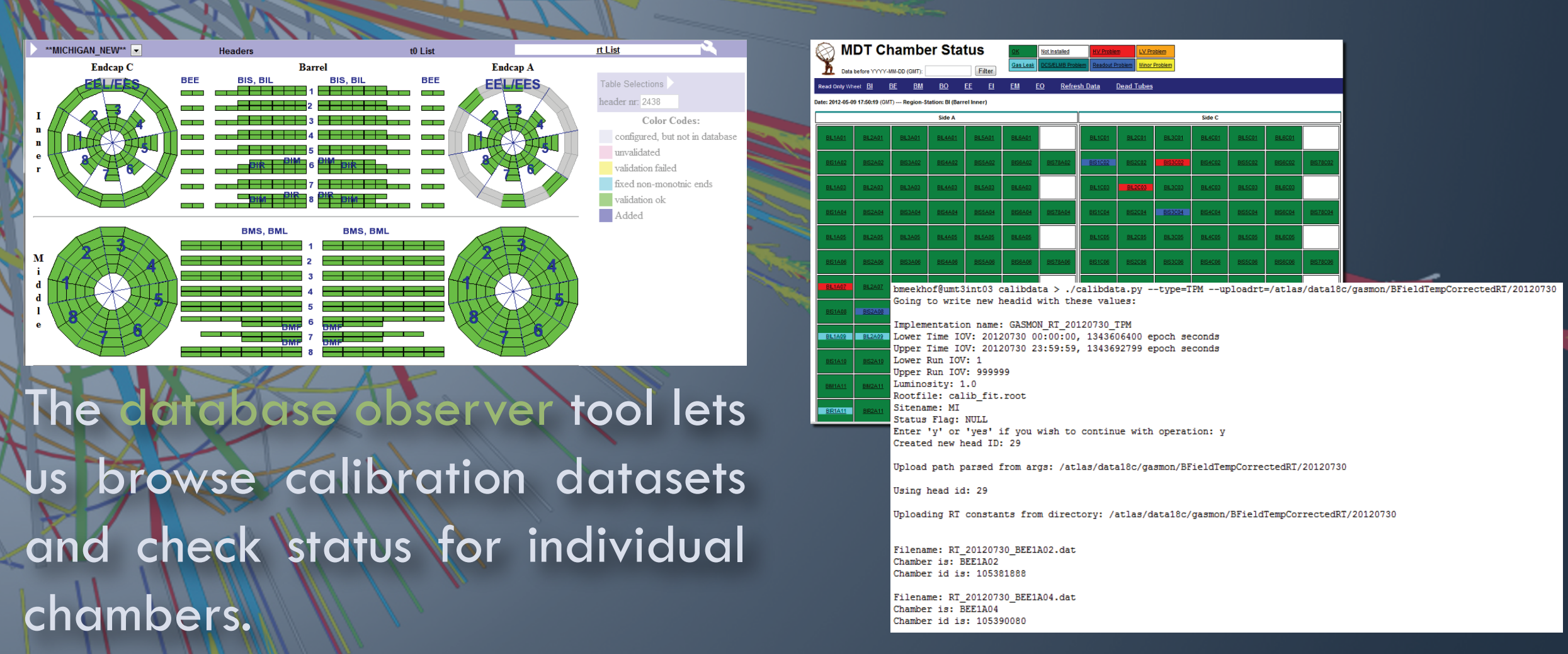
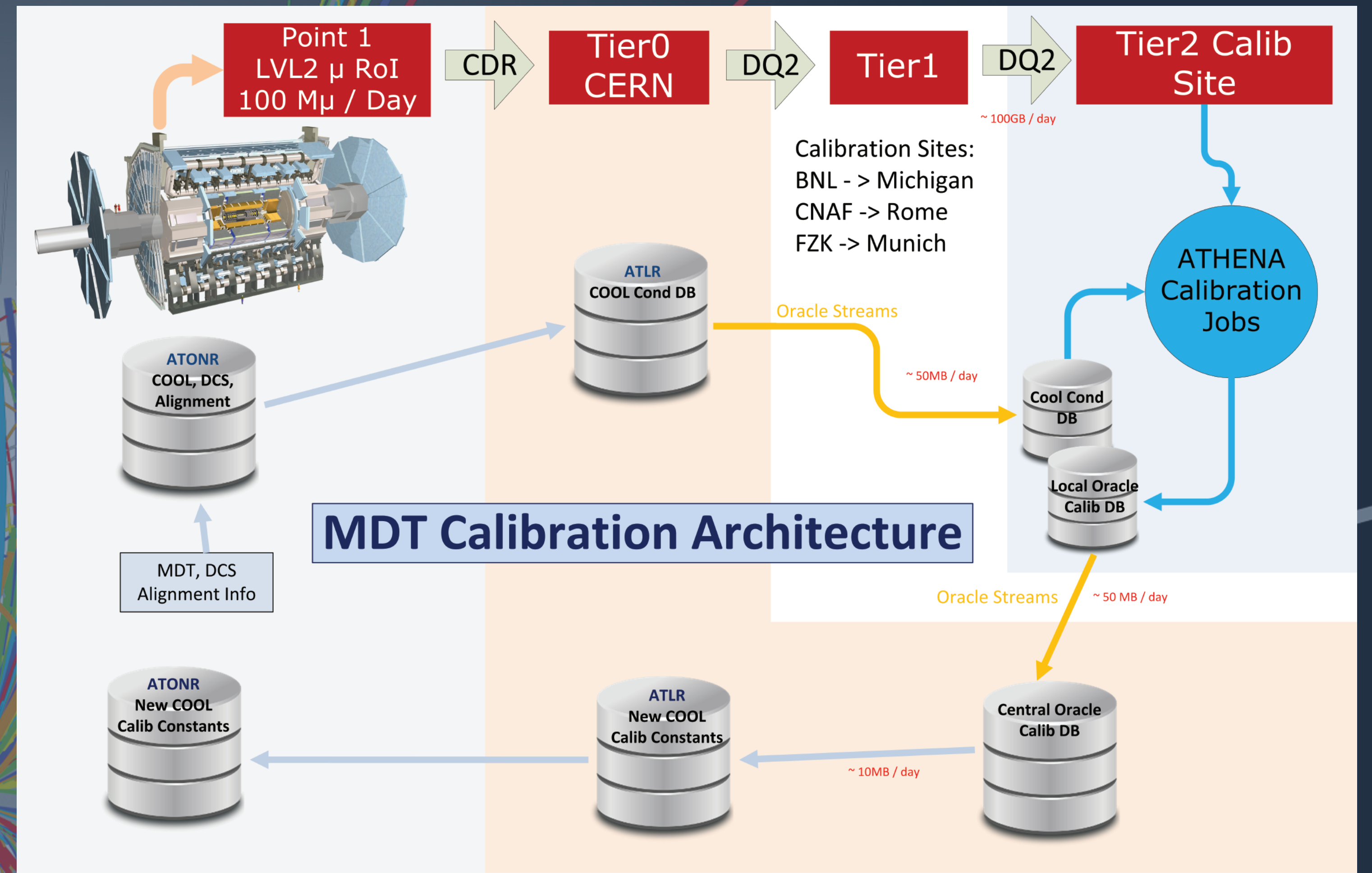
The ATLAS grid is designed in a tiered infrastructure where each higher tier focuses on preparing the massive amounts of data for efficient use in simulation and event analysis by the Tier 2 sites such as ours.



UM and MSU sites are interconnected on the Michigan Lambda Rail (MiLR) - a fiber infrastructure capable of supporting many 10 gigabit per second wavelengths. AGLT2 has three 10Gbps wavelengths for its use between Chicago, Ann Arbor and East Lansing giving us resiliency and 20 Gbps wide-area connectivity during normal operations.

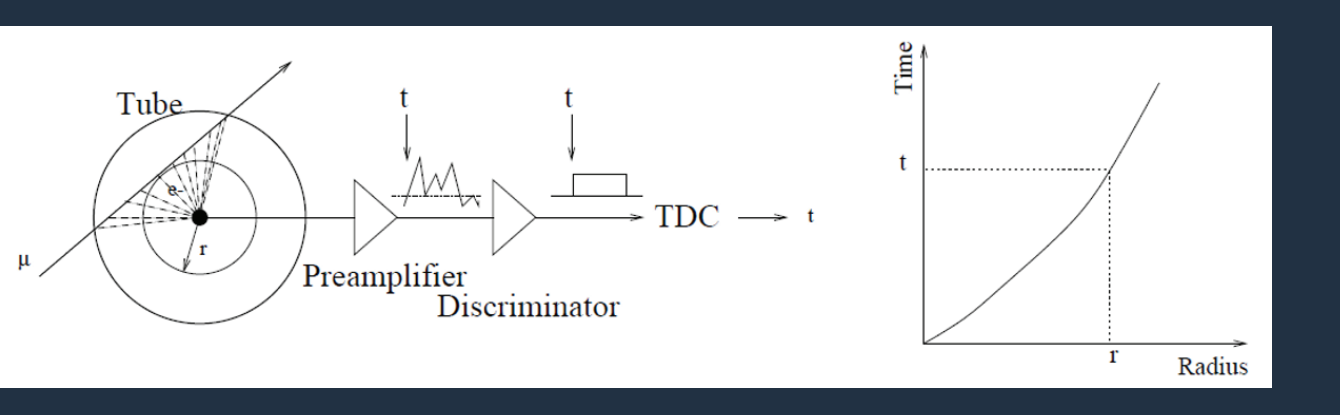
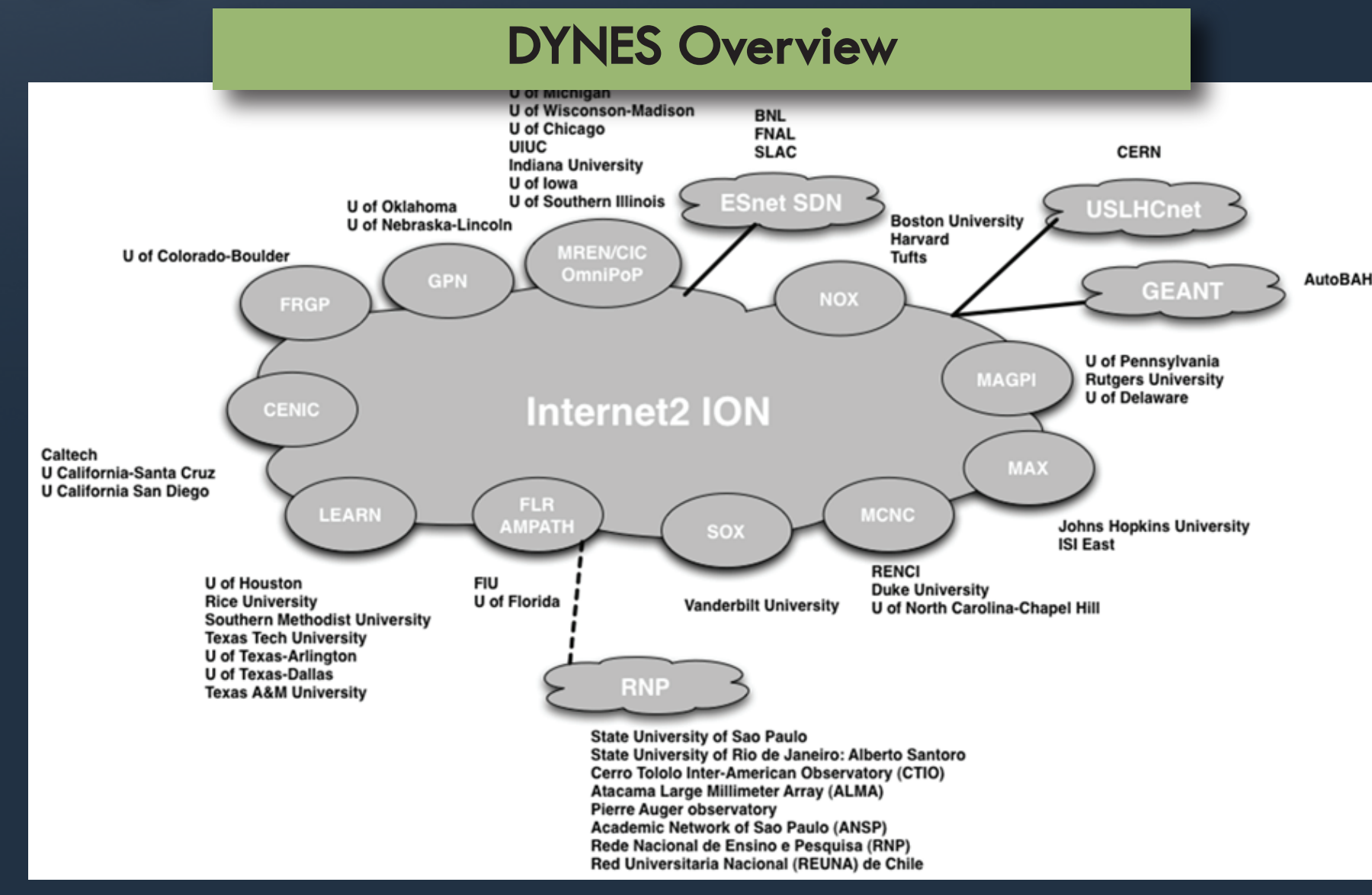
ATLAS Muon System Calibration

For high quality calibrations of the ATLAS Monitored-Drift Tubes a special high statistics calibration data stream is extracted from second-level trigger processors and sent for processing at three calibration centers at Michigan, Rome, and Munich.

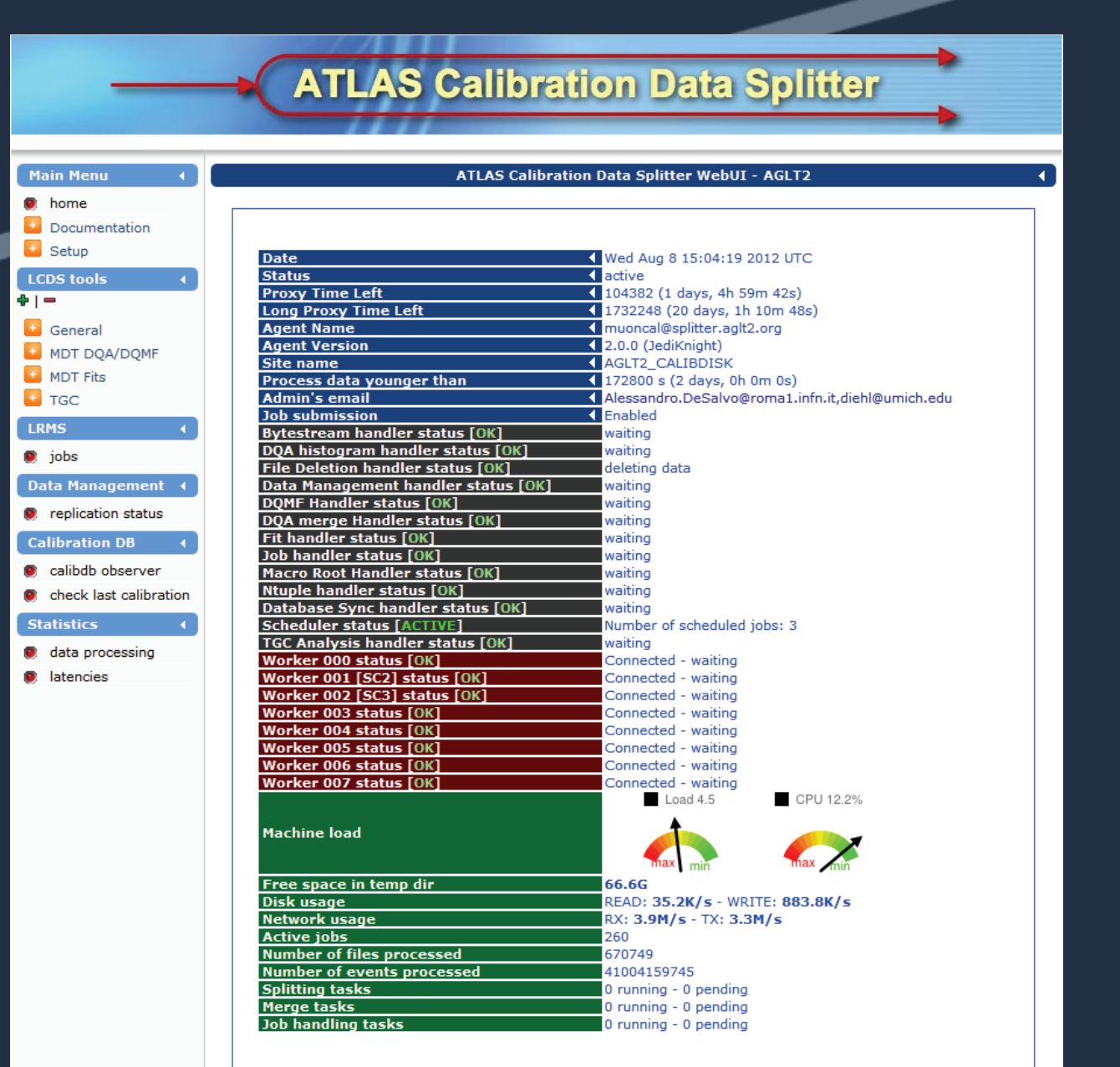


DYNES Dynamic Network System

DYNES is a nationwide cyber-instrument spanning about 40 US universities and 11 Internet2 connectors. A collaborative team including Internet2, Caltech, University of Michigan, and Vanderbilt University will work with regional networks and campuses to support large, long-distance scientific data flows in the LHC and other leading programs in data intensive science.

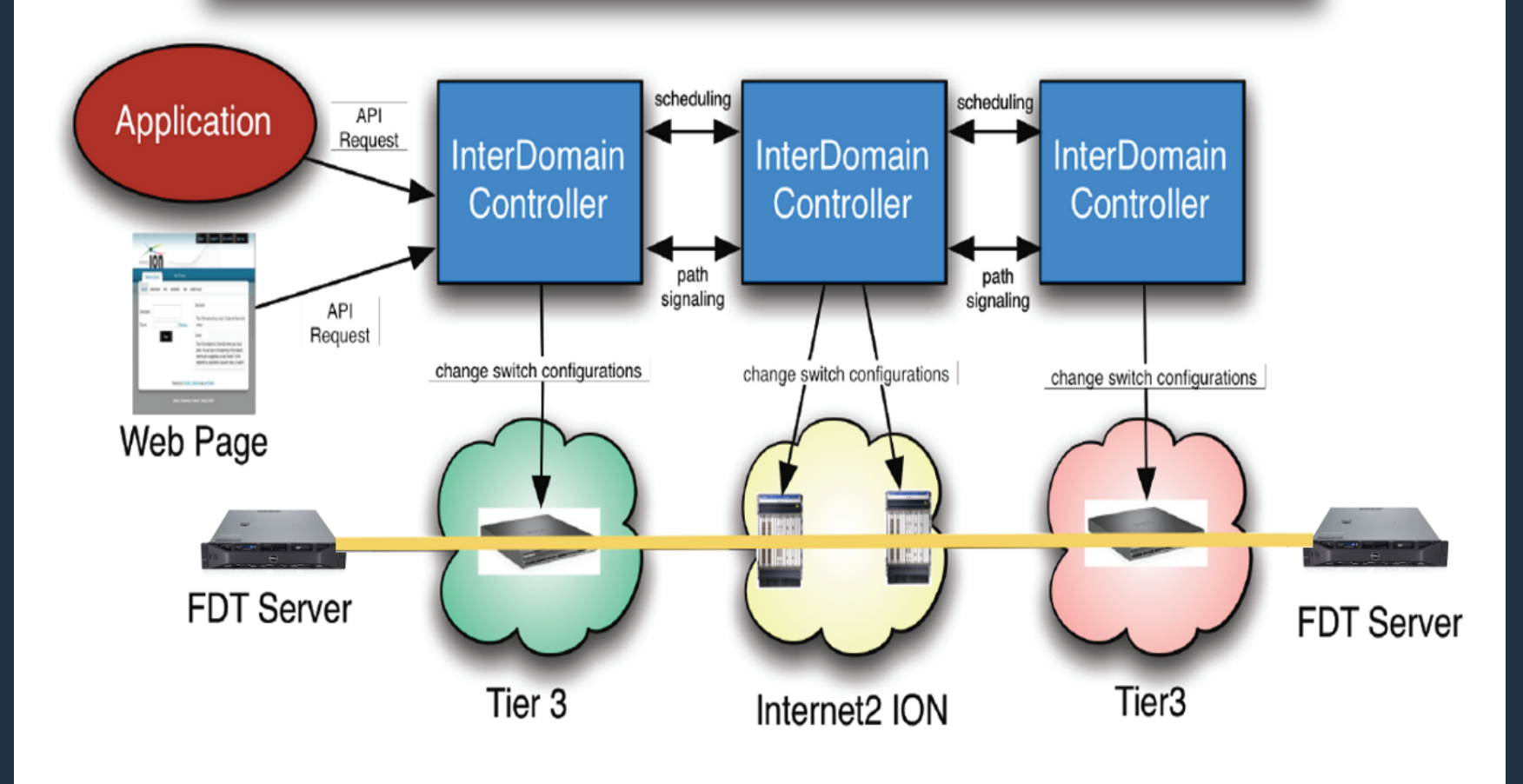


At our site we run special calibration stream splitting software to process the calibration stream that runs in conjunction with dedicated computing to process the data and produce constants. These are then loaded into a database replicated to CERN.



We also have our own custom authored CLI tool for inserting data and interacting with the calibration datasets. This tool is used in particular to load calibration constants derived from monitoring the MDT fill gas system. AGLT2 is also responsible for an application used at CERN during tube commissioning to track MDT faults.

DYNES Virtual Circuit Instantiation



At UM our roles in the collaboration include designing provisioning systems for network switches and computer hardware, purchasing and provisioning network hardware for sites, and centralized monitoring/control infrastructure.

We leverage tools such as Redhat kickstart, configuration RPM packages, Nagios, Rancid, and SSH key distribution. It is all tied together by extensive scripting to generate configurations for switches, hosts, and support tools for over 40 sites.