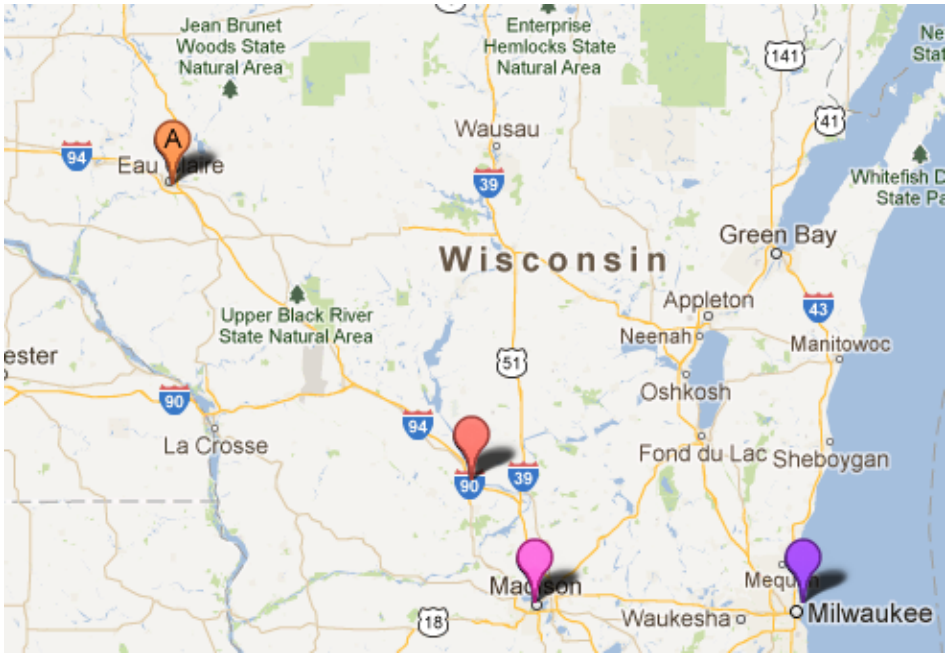
Using HTCondor for Teaching and Research at UW-Eau Claire

Peter Bui

University of Wisconsin - Eau Claire

Liberal arts primarily **undergraduate** institution



UW System Center of **Excellence** for Faculty and Undergraduate Student Research **Collaboration**

HTCondor Infrastructure

DPL Cluster

- 36 Cores

EB Wilson Cluster

- 96 Cores, 2 GPUs

LittleFe

- 12 Cores, 6 GPUs

Key HTCondor Features

- Dynamic Slots
- Condor Connection Broker
- UID_DOMAIN
- Flocking

Future HPC Infrastructure

Blugold Commitment SuperComputer

- **$100,000 Hardware**
  - 100-200 CPUs
  - 2-4 GPUs
- **$20,000 Software**
  - Specialized compilers
  - Domain specific applications

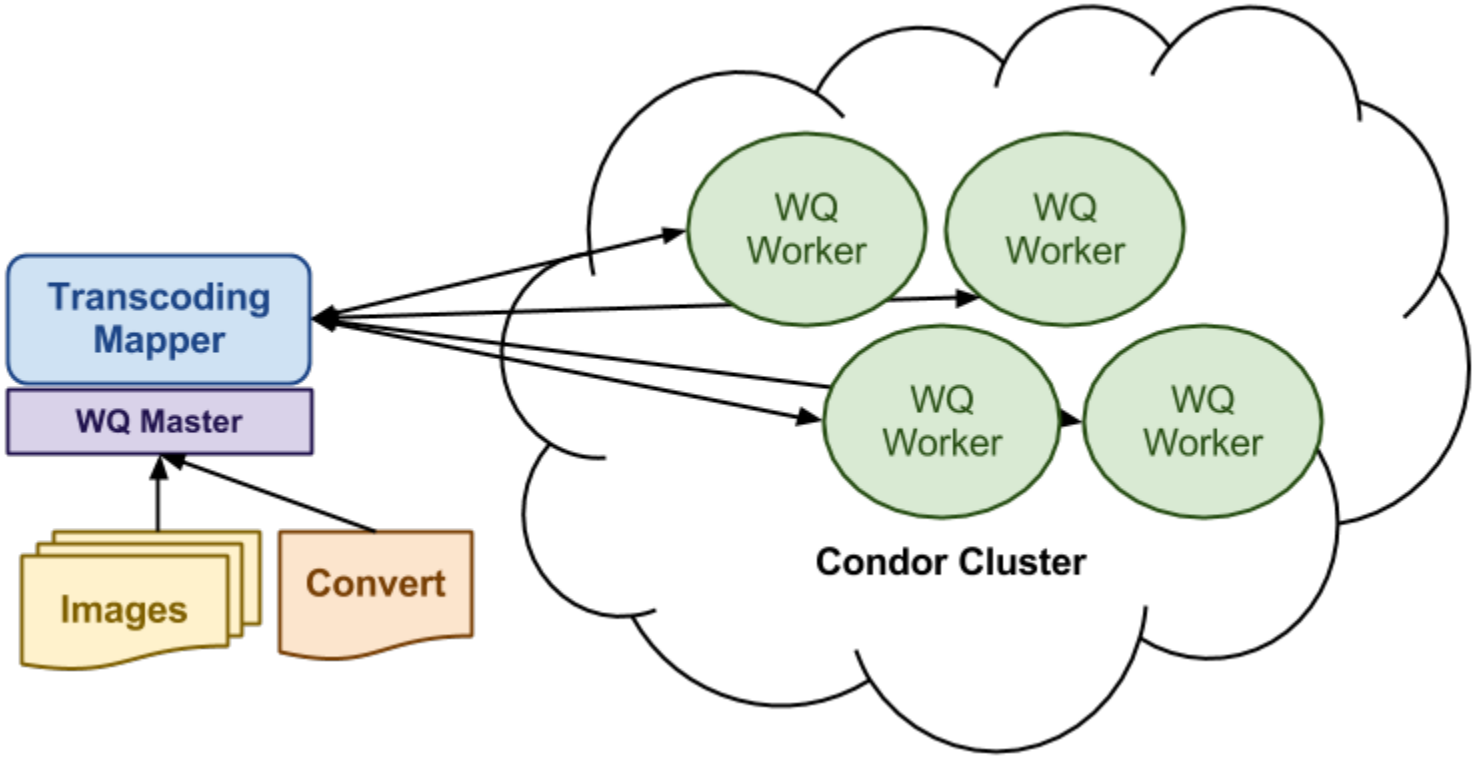
Computational Science Working Group

- **Interdisciplinary** collaboration
- **Consolidate** management and administration
- **Promote** HPC research and teaching

General Purpose HPC cluster and a supportive computational science community.

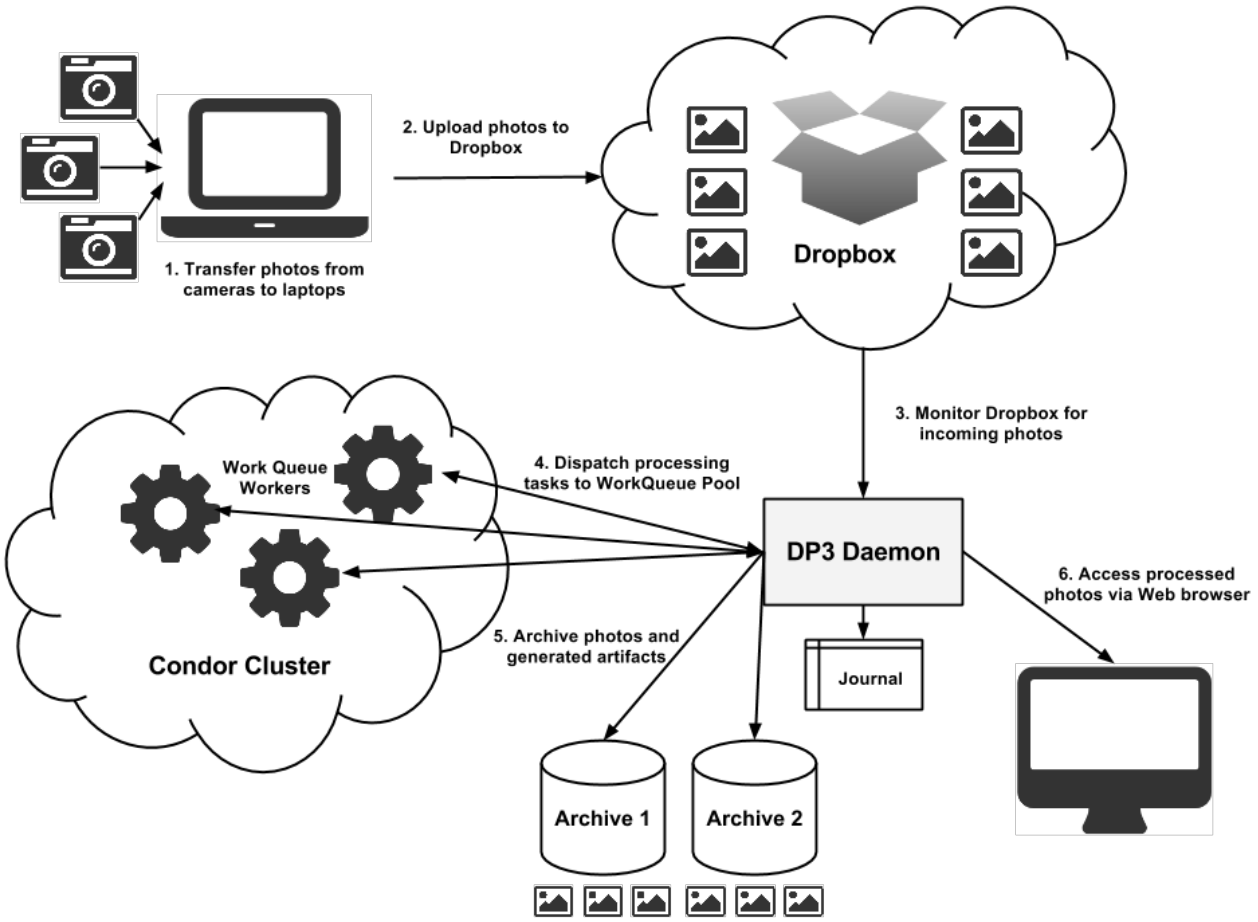
HTCondor in Research

Image Transcoding



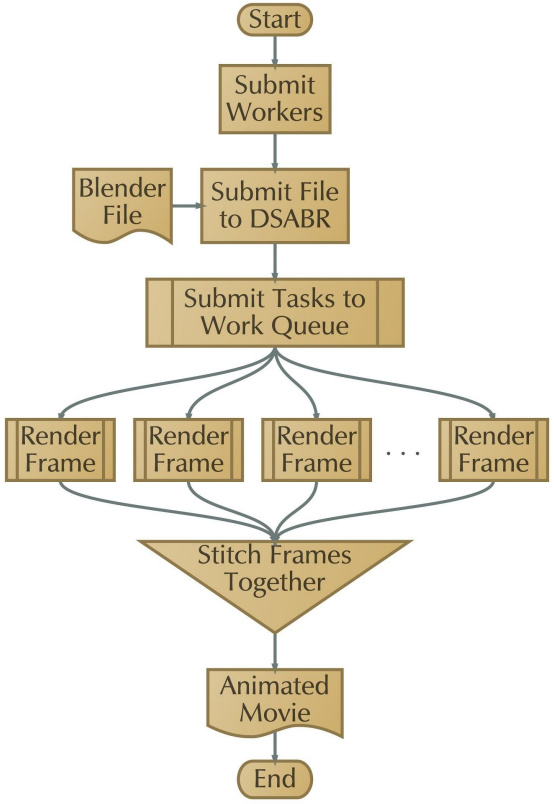
HTCondor in Research (Continued)

Distributed Photo Processing Pipeline (DP3)



HTCondor in Research (Continued)

Distributed System For Automated Blender Rendering (DSABR)



HTCondor in Teaching

- **CS 252 Computer Systems**
  MPI Scheduler

- **CS 352 Computer Organization & Design**
  Distributed Computing

- **CS 485 Software Engineering**
  Continuous Integration

- **CS 491 Cloud Computing**
  WorkQueue MapReduce

Future HTCondor Projects

- HTML5 Cluster Visualization.
- RESTful Cluster Web Service.
- Cloud provisioning system.
- Curriculum modules for distributed computing.

Concluding Observations

- **HTCondor** enables ***connecting*** multiple distributed systems.
- **HTCondor** is a ***low-level component*** in distributed system stack.
- **HTCondor** is ***powerful***, but also ***complex***.
- **HTCondor** needs an easier ***API*** for third party extension.

Questions?

Acknowledgments

Office of Research and Sponsored Programs