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**Nov 26**  
**2012**

# HST Data Processing

Operations and Engineering Division

Data Systems Branch

Mark Kyprianou



# Highlights - Infrastructure

- Deployed database clustering technologies to DADS/OPUS systems
  - Internal and Public databases
  - Improve uptime, reliability and performance
- Updated/added new web servers
  - 3 independent environments:
    - Dev, Test and OPS
    - Allows for isolation in the software life cycle





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# Highlights - Instruments

- Science data processing enhancements
  - Astrodrizzle (ACS and WFC3)
  - CALACS w/CTE
  - COS reprocessing/cataloging enhancements
  - CALCOS with no IRAF
  - STIS flight software problem with time tag data
  - STIS Reprocessing to create valid CCI files for post-SM4 data

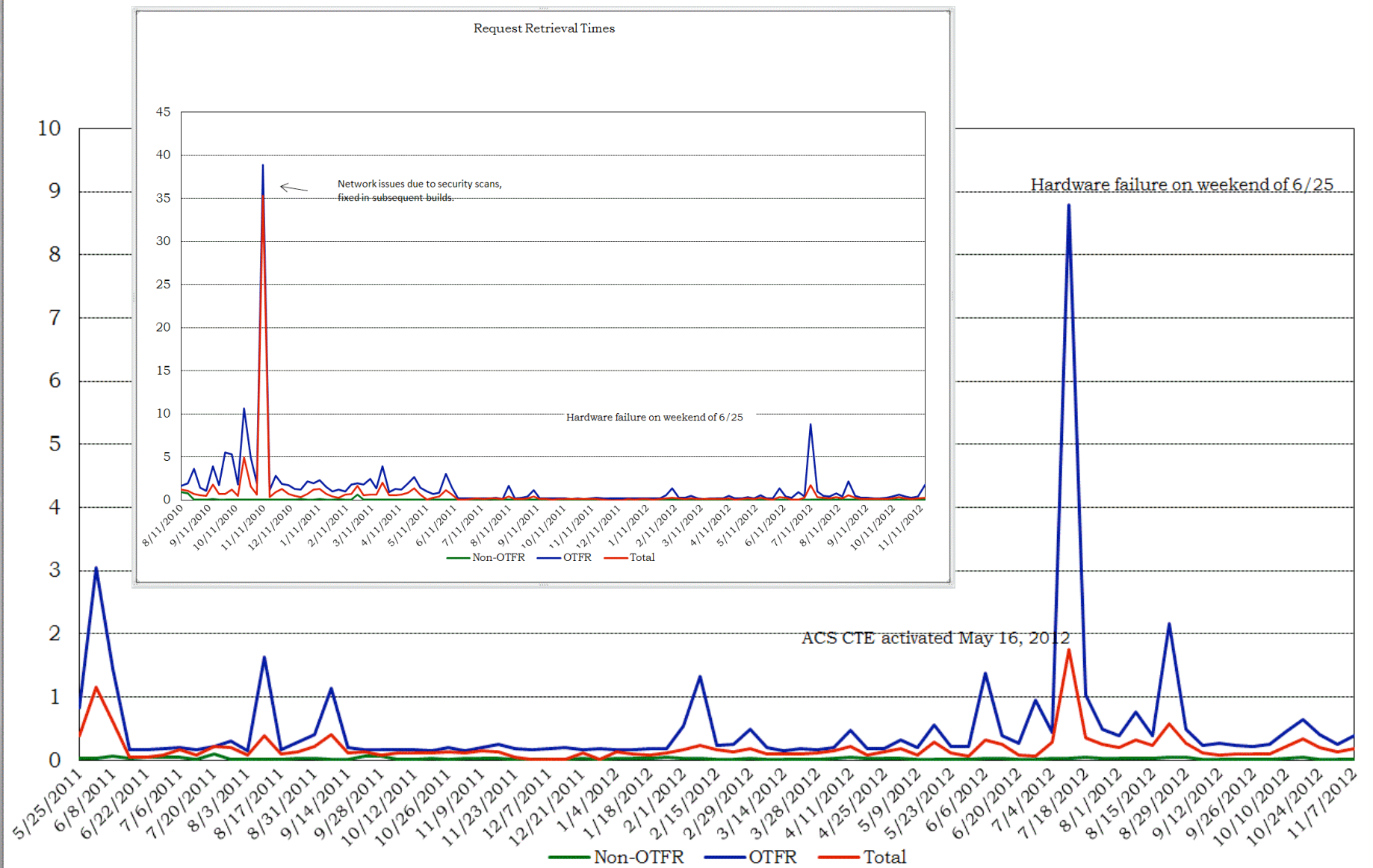


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# Retrieval Times

## Linux Request Retrieval Times







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# Future Development



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# Future Development

- Infrastructure
  - Red Hat OS upgrade for DADS/OPUS servers
  - Purchased NAS storage (EMC Isilon)
    - Very scalable for Big Data
    - Blades support
      - High IOPS
      - CPU processing
      - Storage



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# Future Development

- Instrument Data Processing enhancements
  - Keywords
  - Algorithmic enhancements
- Reprocessing planned for ACS, WFC3 and COS
- Iraf Free: WFC3 and STIS
  - In test





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# HST Upgrade Projects





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# HST Upgrade Projects

- Background Automated Reprocessing (BAR)
  - Integrated reprocessing
  - Online cache
- Workflow Manager (WFM)
  - Technology refresh for work flow processing
- Calibration Reference Data System (CRDS)
- Driven by analysis of current systems targeting JWST
- HST Mission Office elected to adopt these enhancements



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# Background Automated Reprocessing (BAR)

- Handle reprocessing activities in an integrated fashion
  - Use prioritization scheme to control processing sequence
- Provide online access to files
- Enhance tiered file storage sub-system
  - Store data to provide direct access
  - Rework file handling to be mission independent





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# Work Flow Manager (WFM)

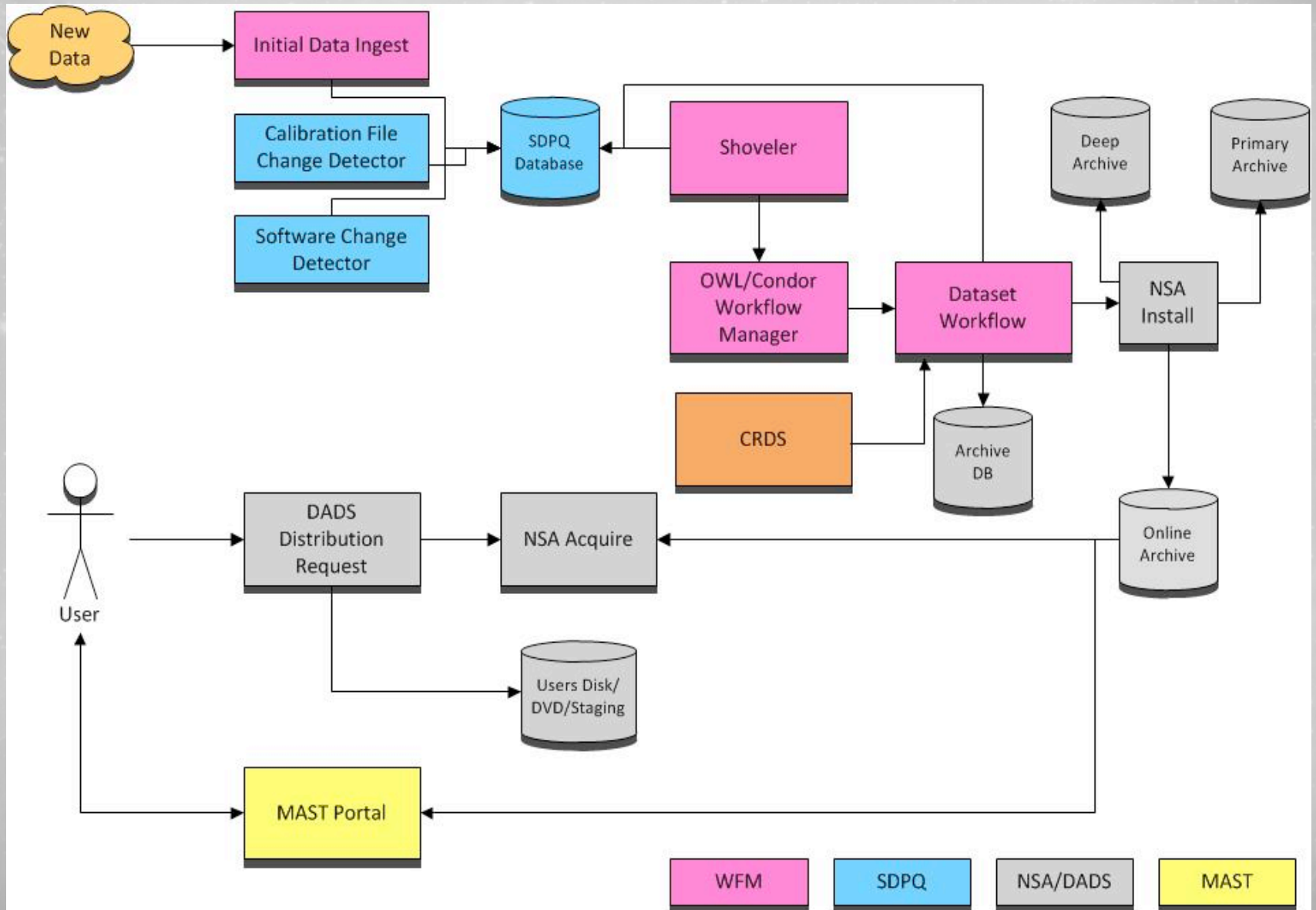
- Upgrade workflow processing
  - OPUS technology refresh is over due
  - Limited functionality for expansion (cloud computing, additional compute resources)
- Condor: Open source, high-throughput computing software framework has been selected
  - Allows to access compute resources on different levels/rules



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# Overview: BAR/WFM/CRDS







# Current Status

- **BAR**
  - SDPQ - complete
  - File Storage to online cache – in progress
  - Working on distribution updates
- **WFM**
  - Condor
    - Enterprise level, Open source workflow package
    - Open Workflow Language (OWL)
      - Blackboard, template for data centric processing
  - Shoveler - complete
  - Prototype CALACS pipeline
- Continued development thru FY13



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# Questions/Comments