

Data Systems Modernization (DSM) Project: Development, Deployment, and Direction



Robert Whitten Jr.



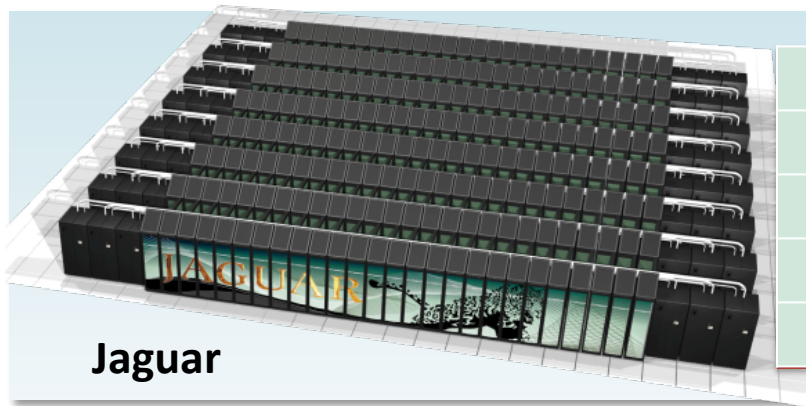
**U.S. DEPARTMENT OF
ENERGY**



OAK RIDGE NATIONAL LABORATORY

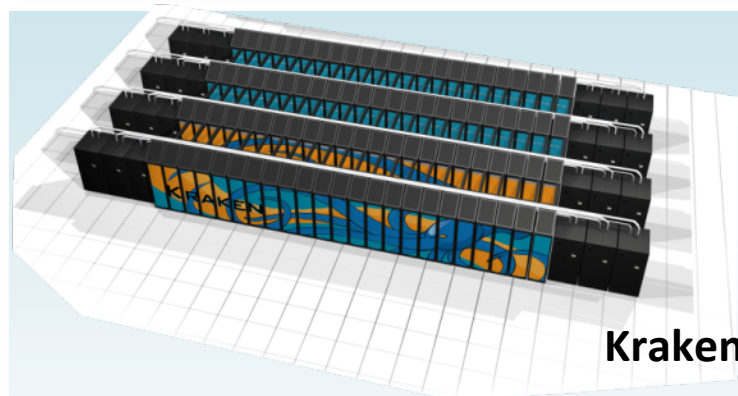
MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

OLCF/NCCS Computing Complex



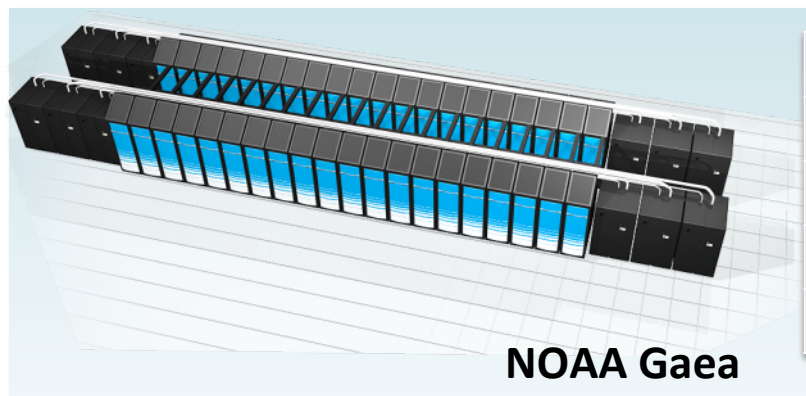
Jaguar

Peak performance	2.33 PF/s
Memory	300 TB
Disk bandwidth	> 240 GB/s
Square feet	5,000
Power	7 MW



Kraken

Peak performance	1.03 PF/s
Memory	132 TB
Disk bandwidth	> 50 GB/s
Square feet	2,300
Power	3 MW



NOAA Gaea

Peak Performance	1.1 PF/s
Memory	248 TB
Disk Bandwidth	104 GB/s
Square feet	1,600
Power	2.2 MW



#2

Dept. of Energy's most powerful computer



#8

National Science Foundation's most powerful computer



#32

National Oceanic and Atmospheric Administration's most powerful computer



What is DSM?

- Data Systems Modernization (DSM)
- Software project to consolidate data sinks
- Business intelligence tool
- Data warehouse
- Extract-transform-load (ETL) tool

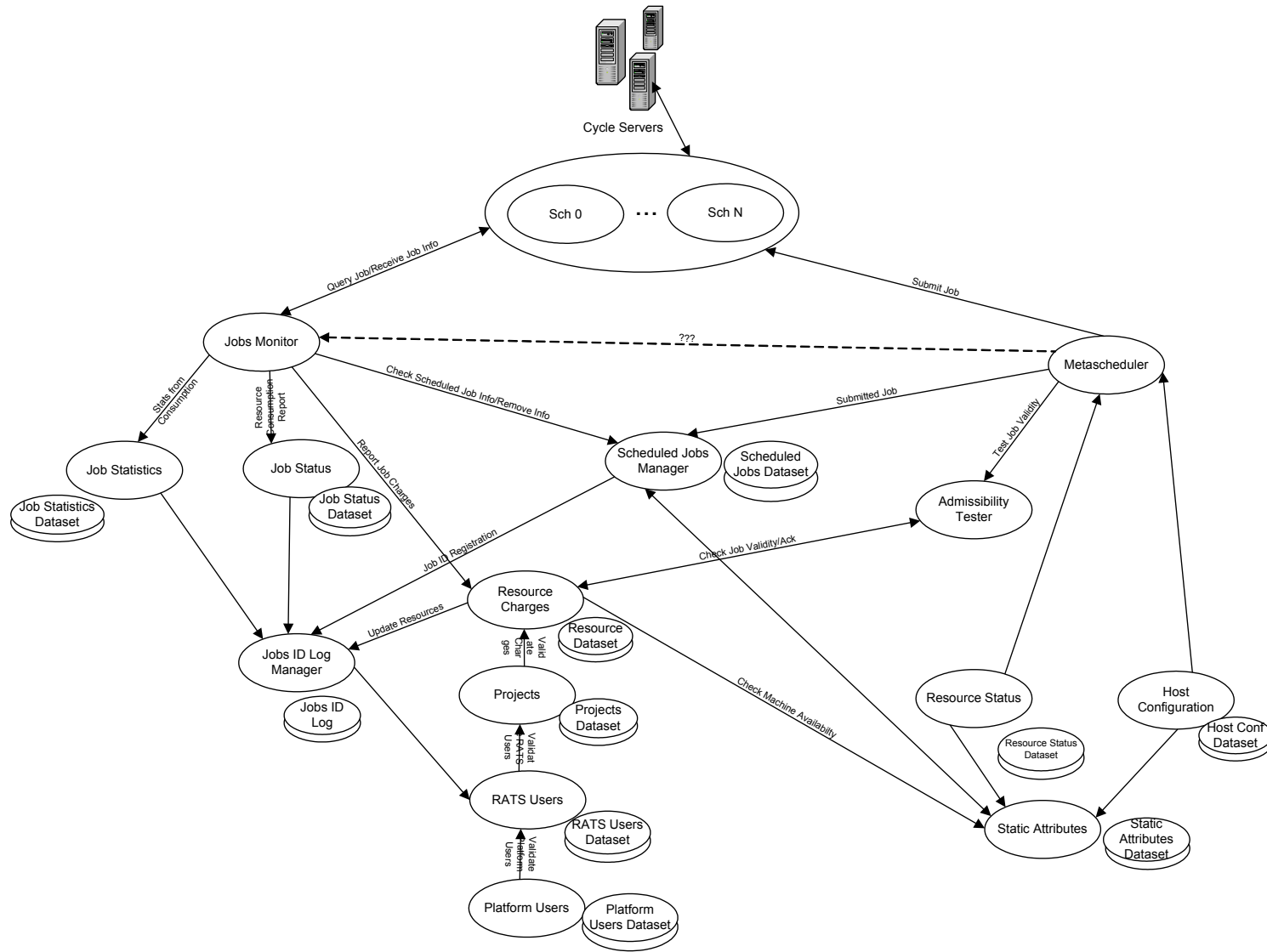
What is DSM? (cont.)

- Resource Allocation and Tracking System (RATS)
 - Projects, users, and allocations
- NACS (New Account Creation System)
 - System accounts (usernames, file system areas, etc)
- DowntimeDB
 - System status
- HPSS stats
 - Archival usage

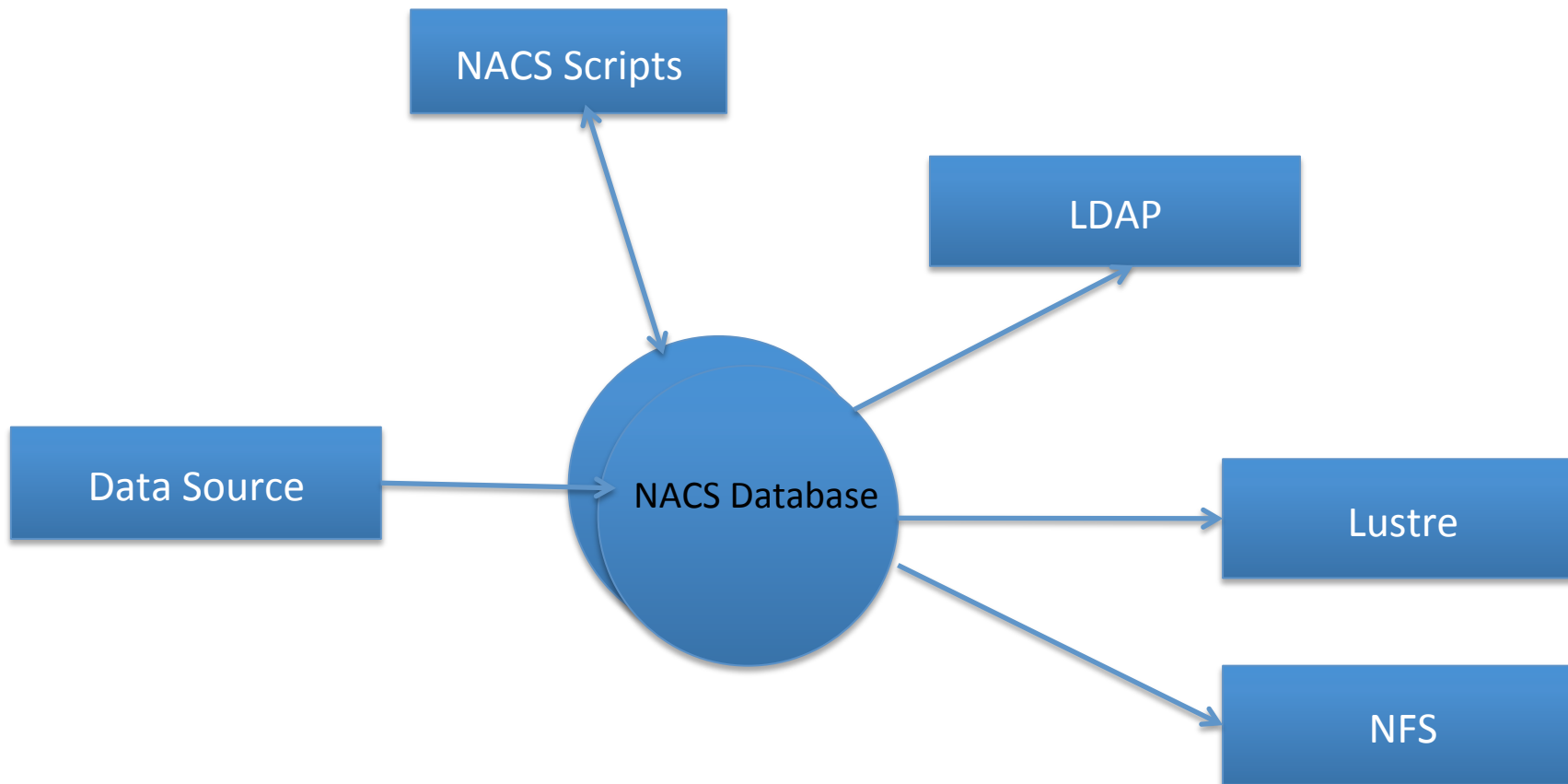
What is DSM? (cont.) Components

- All middle-ware components used combination of:
 - MySQL Database
 - LDAP
 - Accessor / mutator scripts (Perl, Python, etc)
- DSM adds:
 - ProcessMaker
 - LDAP Sync Script
 - Isolation Layer
 - System Sync Scripts (SSS)
 - Interface Scripts
 - LogiXML

RATS

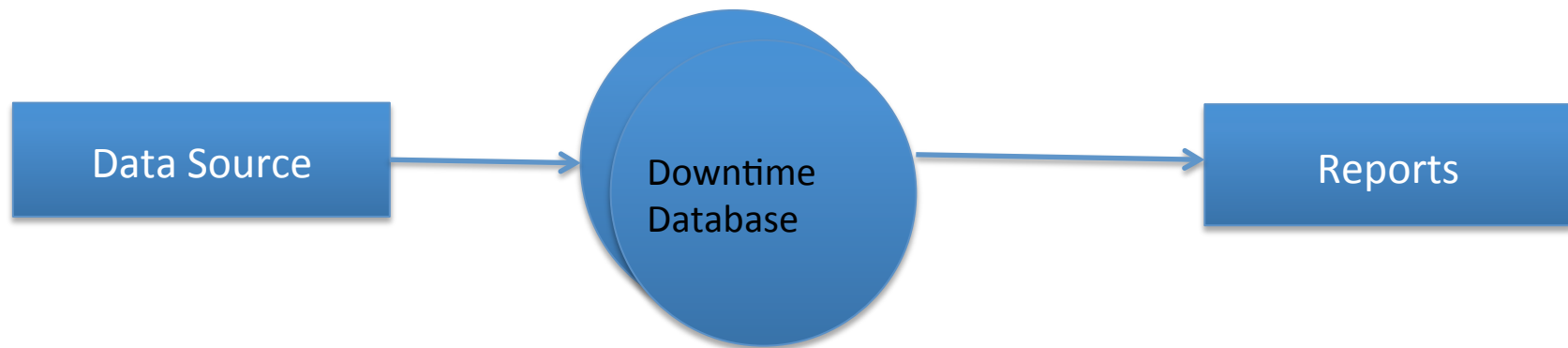


NACS



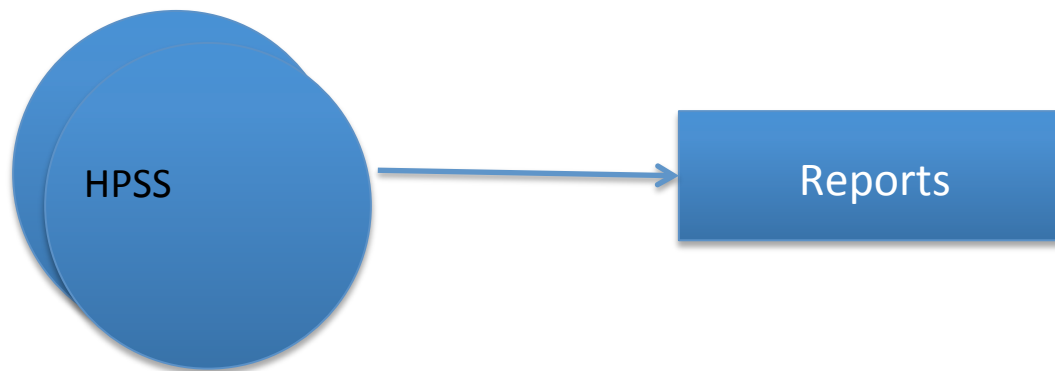
DowntimeDB

- Manual entry of downtime information



HPSS Stats

- Data read directly from HPSS metadata

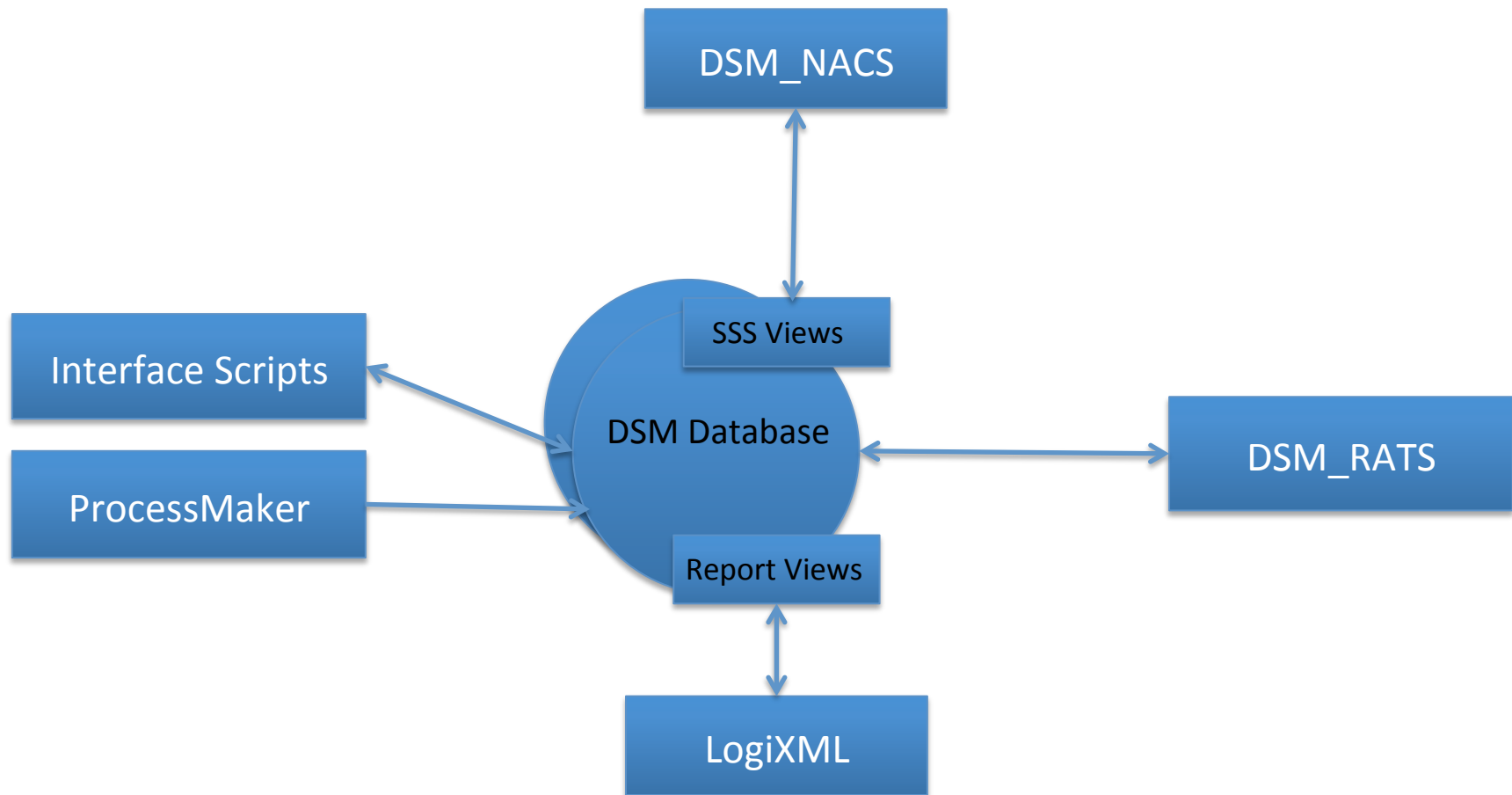


Why DSM?

- Multiple middle-ware applications used
 - To manage allocations (RATS)
 - Projects, Users / PIs, CPU Hours
 - To manage user system accounts (NACS)
 - To track downtime information (DowntimeDB)
 - To track storage usage (HPSS)
- Redundant data
- Inconsistent interfaces
- Difficult report generation

DSM

- Combine best features, remove inconsistencies



ProcessMaker

- ProcessMaker is open source workflow software solution
 - Business process management tool
- Initially using it for account/project creation

The screenshot displays the ProcessMaker website interface. At the top, the logo reads "ProcessMaker® Workflow Simplified". Navigation links include PRODUCTS, SERVICES, SUCCESS STORIES, PARTNERS, COMMUNITY, and ABOUT US. A search bar is located on the right. The main content area features a "Rich Dashboards" section with the text: "Managers can track KPIs and SLAs in real-time thanks to powerful drilldown graphic dashboards." Below this is a green button that says "Read more about this feature". The central part of the dashboard shows a "Reports Repository" with a "Select a Process" dropdown menu set to "Expense Report Process". Below the dropdown are two charts: a pie chart titled "Tasks in Process: Expense Report Process" showing 3 (1.0%) and 7 (24%), and a bar chart titled "Process: Expense" with a y-axis from 5.0 to 15.0.

PROCESMAKER WILL HELP YOU

- Build**
An intuitive, drag-and-drop interface makes it easy for business analysts to model approval-based workflows.
- Run**
Business users can easily complete form-driven processes through automated notifications and a web-based interface.
- Report**
World class business intelligence tools provide managers with KPIs and metrics in reports and dashboards.
- Optimize**
Managers and analysts can continuously improve performance by discovering process bottlenecks and inefficiencies.

Logos of partner organizations are displayed at the bottom of the dashboard view, including TOYOTA, THE UNIVERSITY OF MELBOURNE, GLOBAL RISK PARTNERS, BBVA Previsión AFP, lenovo, ILEX Medical Ltd, and Honeywell.

Interface Scripts

- Developed at ORNL to allow staff to modify user, group, project, etc. attributes
 - Add/remove user
 - Add/remove user from project
 - Create project
- Written in python
- Plan to migrate to ProcessMaker

LogiXML

- Business Intelligence Tool
- Management reports made easy?

LogiXML™ *The Smart Choice For Business Intelligence*

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Nextrials Embeds Logi Ad Hoc and Creates **New Revenue Streams**

Embedding Logi Ad Hoc has unequivocally afforded Nextrials a competitive advantage and a faster ROI.

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The screenshot shows a BI dashboard with several components: a pie chart titled 'Pie Charts', a bar chart titled 'Country Data', a table titled 'Table of Order Data by Country', a bar chart titled 'Products Paid', and a line chart titled 'Lines of Employee Orders'. The table lists countries and their corresponding order values.

Country	Order Value
Austria	\$61,000
Azerbaijan	\$4,200,000
Bahamas	\$2,000,000
Bahrain	\$1,000,000
Bangladesh	\$1,000,000
Belgium	\$1,000,000
Brazil	\$1,000,000
Canada	\$1,000,000
China	\$1,000,000
France	\$1,000,000
Germany	\$1,000,000
India	\$1,000,000
Italy	\$1,000,000
Japan	\$1,000,000
South Korea	\$1,000,000
Spain	\$1,000,000
Sweden	\$1,000,000
Switzerland	\$1,000,000
Taiwan	\$1,000,000
USA	\$1,000,000
UK	\$1,000,000
Other	\$1,000,000

A different kind of Business Intelligence

Logi INFO

WATCH THE VIDEO ▶

BROWSE THE BI RESOURCE LIBRARY

Join our **online workshop** DON'T MISS OUT

FIND AN UPCOMING DATE NOW

SEE WHY **100+** ISVs RELY ON LOGIXML

WATCH OEM OVERVIEW

When?

- Phase 1
 - Deploy on NOAA systems
 - No LogiXML
 - No ProcessMaker
 - Remote LDAP synchronization
 - Completed FY11 Q1
- Phase 2
 - Deploy on DOE systems
 - LogiXML
 - ProcessMaker
 - Target FY11 Q4

Future Plans

- Phase 3
 - Expand role of ProcessMaker
 - Added functionality beyond account creation
 - RATS has an open source descendent
 - DataMux (available on Source Forge)
 - Replace the current isolation layer with DataMux components
 - Consolidate NOAA and DOE instances of DSM

Questions?

