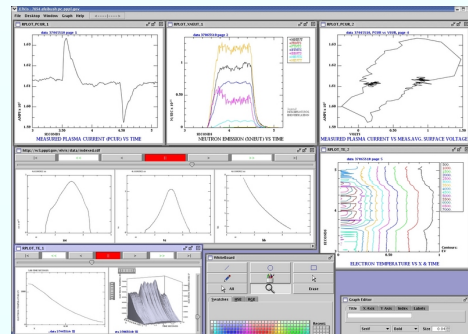


# 1. Visualization Client

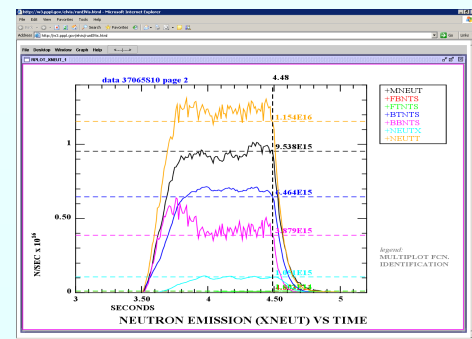
Compare experiments to simulation data.

Java application. Runs internal browser.

Requests data from server running legacy Fortran application.

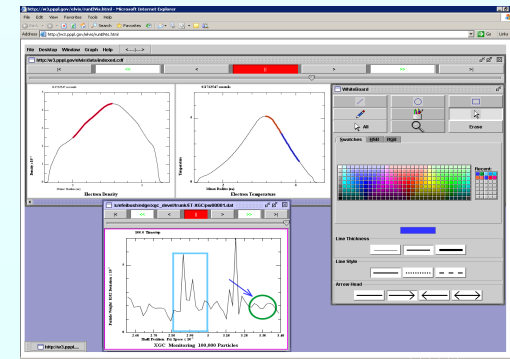


Multiple Graph Windows

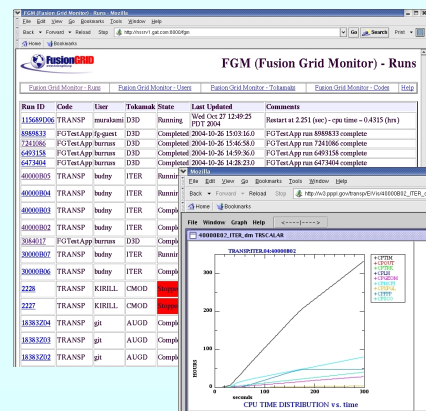


Explore Data Interactively

## Animation & Whiteboard



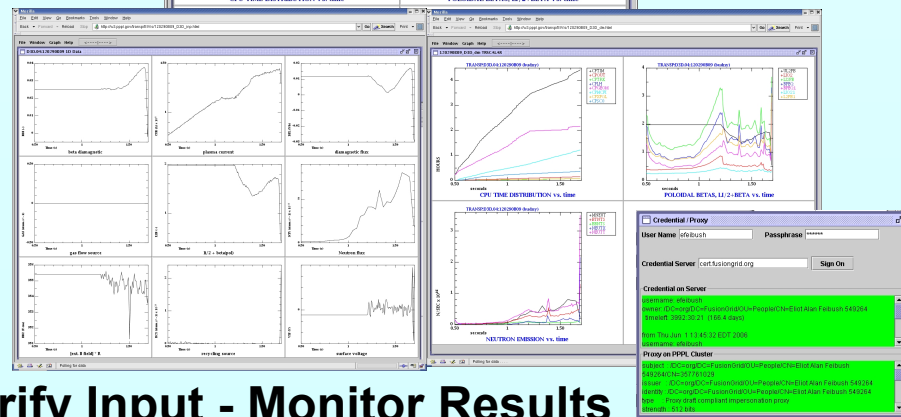
Animate multiple variables. Data highlighter tool displays colored traces in data space for each time step in animation. Zoom & scroll with view.



## Data Monitoring

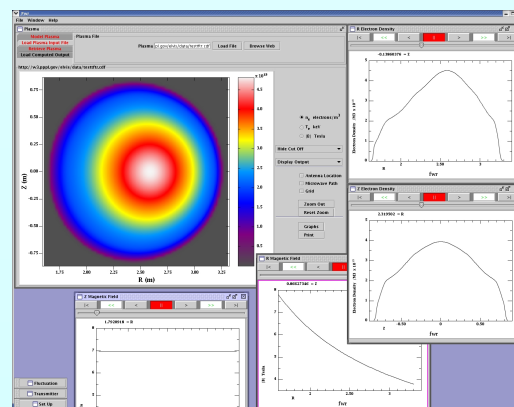
Subset of total output is stored as URL.

Client polls the URL, appends new data to graphs.



Verify Input - Monitor Results

Security Panel



Encapsulated Methods

# ElVis: A Portal for Scientific Graphics

Eliot Feibush

Douglas McCune

Princeton Plasma Physics Laboratory



## Multi-Tier Architecture Distributes Functionality

## 2. Tomcat Servlet Container

Receive requests from visualization clients.

Run scripts & programs on server side.

Submit jobs to batch queue.

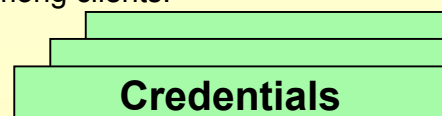
Create & return graphs.

Register sessions.

Manage credentials for off-site users.

Collect run history.

Collaboration among clients.



## Visualization Servlet

Verify Off-Site Users

## Applications

Java & Jython programs import ElVis graph classes and gain all encapsulated methods for interaction & display.

## 4. Compute Services

### Command Line I/O Controller

Buffering of standard I/O prevents trivial Linux pipe.

Master  
Pseudo-Terminal  
Slave

Special interprocess communication channel sends text between master & slave processes. Master forks slave which execs legacy plotting code.

### Transport Analysis Legacy Code

Used at several institutes world-wide. New physics models being added but still using legacy plotting code. Access analysis runs stored in database. Scripted to formulate graphs of fusion data. ElVis API sends data to visualization client with minimal changes to Fortran code.

### ElVis API

ElVis XML

User Files

## 5. Data Server

Acquired Data  
Analysis Runs

MDSplus Database

## 3. myProxy Server

X.509 Certificates

Certificates stored on remote myProxy server.

Convenient for user: enter name and password in security panel instead of managing files.

<http://w3.pppl.gov/elvis>