

Summary of and Musings About 1998 DOE Workshop on Interoperability

October 28, 2004

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with help from Friends at

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Outline

- **The 1998 Workshop**
 - Historical Context, Purpose, Findings & Recommendations.
- **Between Then and Now**
 - Interoperability Activities 1998-2004
- **Looking Forward**
 - The Coming “Train Wreck,” Desired Outcomes.

The 1998 Workshop – Outline

- **Historical Context**
- **Purpose**
- **Attendees (Stakeholders)**
- **Findings**
- **Recommendations**
- **More info:**
vis.lbl.gov/Events/DOEworkshop-98/

The 1998 Workshop – Historical Context

- Component-based frameworks & toolkits widely used.
- Nascent remote, distributed and parallel visualization efforts.
- The “data problem,” the “distributed computing problem.”

The 1998 Workshop – Purpose & Stakeholders

- **Purpose:**
 - Find ways to leverage work.
- **Stakeholders / attendees:**
 - National Labs.
 - NSF: NCSA
 - Academia: Georgia Tech
 - DOE-MICS/HQ

The 1998 Workshop – Findings

- **No existing framework (circa 1998) suitable for program-wide interoperability.**
- **Without “a formal mechanism,” program-wide interoperability unlikely.**
- **What is Interoperability? (Next slide)**
- **Better communication, commerce.**
 - “The Facilitator,” “The Repository.”

The 1998 Workshop – Findings, ctd.

- **What is Interoperability?**
 - “... working independently, developers can create components and contribute them to a central repository, and that others can obtain said components and combine them to create applications.”
- **Data File Interoperability, Software Component Interoperability, Resource Sharing.**

The 1998 Workshop – Findings, ctd.

- **Facilitating interoperability.**
 - “Standard” data models, “standard” interfaces.
- **Where interoperability is required.**
 - Comparative and integrative studies.

The 1998 Workshop – Recommendations

- **Track and possibly adopt DMF's VB from ASCI.**
- **DOE Focus on Interoperability.**
 - “The Facilitator.”
- **Interoperability Research.**
 - Visualization frameworks, common data models, “multi-use” visualization components, large & multidimensional data visualization, infoviz, etc.

Musings: Between Then and Now

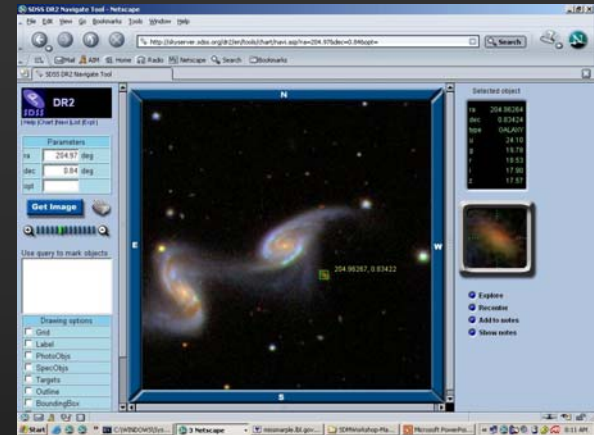
- Follow-up on 1998 Workshop Recommendations.
- Interoperability Efforts/Progress.
- Programmatic Unity (or lack thereof).
- Feature creep?

Musings – Follow-up on Recommendations

- **ASCI/DMF.**
- **Funding/grants tend to focus on point solutions. I.e., no Visualization Facilitator.**
- **Little impetus for interoperability research or engineering.**

Musings – Interoperability Activities

- **Where are successes?**
 - Community-focused science activities.
- **What Drives Success?**
 - IEEE Vis paper?
 - Relevance to science?
- **“Islands” Grow Larger, Further Apart**
 - VTK vs. AVS/Express vs. Ensight



Musings – Interoperability Activities, ctd.

- **“The Grid”**
- **Focused efforts:**
 - CCA (component interface technology)
 - TSTT (data modeling)
 - APDEC, TOPS (solvers)
 - ESG (federated data stores and computing)
- **Funding/programmatic emphasis?**

Musings – Programmatic Issues

- **Current research model promotes isolationism.**
 - No Glory in Interoperability.
 - No time to work on infrastructure.
- **The needs of a community drive interoperability evolution.**
- **Open Question: how to programmatically foster interoperability?**

Musings – Feature Creep

Shaky City



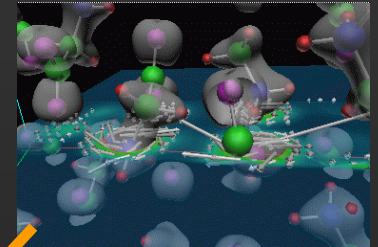
Data Caches



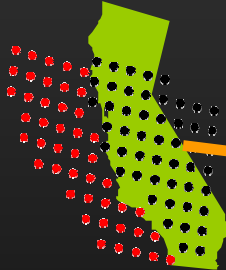
HPC Resources



Simulations



Sensor Nets



Collaborators

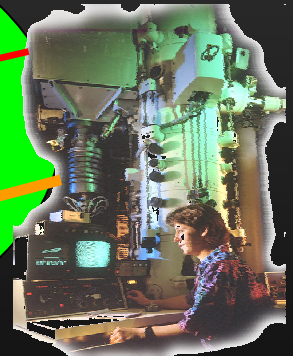


Dr. Jane



Handheld Devices

STM



Looking Forward

- **The Coming “Train Wreck.”**
- **Desired Outcomes, Anticipated Benefits.**
- **Suggested Approaches.**

Looking Forward – The Train Wreck

- **Products of Visualization research programs are often not useful to scientific research.**
 - Why have visualization research programs at all?
- **Science communities evolve without the visualization community.**
 - Why have visualization research programs at all?

Looking Forward – Desired Outcomes

- Visualization research, development and engineering is an indispensable part of scientific research.
- Minimize reinventing infrastructure; more efficient R,D&E practices.
- Reduce/eliminate barriers: resources, programs, technologies.
 - Keyword: *Fungible*.

Looking Forward – Suggested Approaches

- **Federated visualization efforts.**
 - Interoperability is part of the mission.
- **Embedded visualization staff.**
- **Raise awareness, esp. in Washington.**
- **Submit proposals that include interoperability as a theme.**
- **Broad programs – rallying points.**

Conclusions/Summary

- **Some but not much progress on interoperability since 1998 Workshop.**
- **Community-centric focus (bottom-up) seems to work.**
- **Related, having a strong program mission will provide substantial impetus for participants to move towards interoperability.**

The End