

Brief Bio and (PR)²: Problems & Pitches – Rants & Raves by *Justin Almquist*

Self Introduction



Justin is a seasoned software engineer with 13+ years experience in Java technologies, software architectures and middleware development. He is an effective leader and team builder utilizing agile software development methodologies. He has participated in and led a wide variety of projects including major research initiatives and business-critical web applications with thousands of users.

Publications

1. Gosney A, CS Oehmen, AS Wynne, and JP Almquist. 2010. "*An Adaptive Middleware Framework for Scientific Computing at Extreme Scales.*" In The 2010 IEEE International Conference on Information Reuse and Integration (IRI 2010), pp. 232-238. IEEE, Piscataway, NJ.
2. Chase JM, I Gorton, C Sivaramakrishnan, JP Almquist, AS Wynne, G Chin, Jr, and TJ Critchlow. 2009. "*Kepler + MeDICi - Service-Oriented Scientific Workflow Applications.*" In 2009 IEEE Congress on Services - Part I (Services-1 2009), pp. 275-282.
3. Gorton I, AS Wynne, JP Almquist, and J Chatterton. 2008. "*The MeDICi Integration Framework: A Platform for High Performance Data Streaming Applications.*" In WICSA 2008. 7th IEEE/IFIP Working Conference on Software Architecture, Feb. 18-22, 2008, Vancouver, Canada, pp. 95-104. IEEE Computer Society, Los Alamitos, CA.
4. Oehmen CS, LA McCue, BJM Webb-Robertson, ST Dowson, JP Almquist, and JE McDermott. 2008. "*Interactive HPC-driven visual analysis for multiple genome datasets.*" In Supercomputing 2008.
5. Thurman DA, JP Almquist, I Gorton, AS Wynne, and JB Chatterton. 2007. "*SIFT - A Component-Based Integration Architecture for Enterprise Analytics.*" In International Conference on COTS-Based Software Systems (ICCBSS 2007).

Tools and Services

- <https://eus.emsl.pnl.gov/Portal/>
- <https://www.lightingsolutions.energy.gov>
- <http://medici.pnl.gov>
- http://supercomputing.pnnl.gov/demos/sc11/Norbeck_SC11_booth_demo.pptx

General Questions

1) What are your main interests in attending the workshop?

To learn how to utilize CISHell/Sci2 as the framework for PNNL's IMPROV tool for visualizing integrated data. Currently the tool is written as a standalone Eclipse RCP application that relies heavily on the Prefuse Visualization Toolkit. The hope is to delegate most of the plumbing and integration problems to CISHell/Sci2 in order to focus on creating useful visualizations. Similarly, we are hoping to either use the myriad of existing plugins directly or possibly extend them for use in IMPROV.

2) What are the tools or services you would like to share at the workshop?

I can share our current implementation of IMRPOV, which enables scientists to view and analyze proteomics data. The application is currently written as an Eclipse plugin and leans heavily on the Prefuse Visualization toolkit. We would like to re-write the tool to utilize CShell/Sci2.

3) Please list three features or functions of your tools or services that are most important for the users.

1. Ease of use
2. Documentation
3. Stability

4) What are the major concerns for the architect design of the tools and services?

- + Separation of Concerns (reduce coupling)
- + Single Responsibility Principle (high cohesion of modules)
- + Principle of Least Knowledge (abstraction & defining contracts across modules)

5) Are you aware of especially innovative approaches to plug-and-play feature where algorithms and plugins can be shared between different tools? If yes, please list down the approaches.

The most successful integration efforts across tools usually follow Enterprise Application Integration patterns (<http://www.eaipatterns.com>).

6) What are the challenges in developing the tools and services?

Predicting how tools/services will be used in the future (i.e. Requirements).

7) Are you or your group working on any of these challenges? If yes, please explain.

Not really since we have fairly well-defined requirements for IMPROV.

8) Does your development team contain volunteer developers? If yes, please explain how they are involved.

No

9) What would you like to learn and achieve at the workshop?

How CShell can help us build a quality application by utilizing existing plugins, as well as developing new ones to meet the project's requirements.