Vladimir Mencl, Ph.D. CS

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Professional Experience

E-Research Services and Systems Consultant, BlueFern Supercomputing Services, University of Canterbury, Apr. 2009 — current.

Advanced Technology Systems Developer, University of Canterbury, Nov. 2006 — Mar. 2009.

Visiting Researcher, International Institute for Software Technology, **United Nations University** (UNU-IIST), Macau Sep. 2005 — Aug. 2006

Researcher, Instructor, Research Assistant, Department of Software Engineering, **Charles University**, Czech Republic, fulltime position Oct. 1998 — Aug. 2005.

Teaching & Research Assistant, Department of Computer Science, **University of New Hampshire**, Durham, NH, U.S.A., Jan. 2002 — Dec. 2002

System Programmer, Czech On Line, a.s. (major ISP in the Czech Republic) and Ax, s.r.o, on external contracts, 1997-2001.

Systems programming in C on FreeBSD, HP-UX, Linux; Sybase and Oracle databases; perl+CGI.

Education

Ph.D. in Computer Science (2004), Department of Software Engineering, Faculty of Mathematics and Physics, Charles University, Czech Republic.

Mgr. (MS equivalent) in Computer Science (1998), Department of Software Engineering, Faculty of Mathematics and Physics, Charles University, Czech Republic.

Key Projects

Federated Identity Management : SAML/Shibboleth.

I have been the main technical resource in building Tuakiri, the New Zealand Access Federation. I have been involved in the Federated Identity Management space since 2007 (when I received the initial training at one of the workshops run by MAMS, the predecessor to AAF). I was collaborating with the MAMS project on deploying the first IdPs and SPs in New Zealand - initially linking them into the federation run by MAMS. Then I was managing the NZ side of the transition from the MAMS federation into the new federation setup by AAF. And since 2010, I have been the Technical Architect for Tuakiri, deploying the Tuakiri infrastructure based on the successful recipe developed by AAF, and continuously collaborating with AAF on deploying new services and improvements to existing services. An essential part of this work has been assisting Tuakiri subscribers in registering their new and existing services into Tuakiri. Alongside this, I have deployed Identity Provider systems for a number of institutions (universities and CRIs) around New Zealand.

Data Grid : iRODS, GridFTP, Globus Toolkit, and Globus.org.

I have been involved in projects aimed at providing storage to NZ researchers since 2008. In 2010, I deployed the BeSTGRID DataFabric (now operated by NeSI), based on the solution designed by the Australian Research and Collaboration Services (ARCS), who I closely co-operated with. I am still the technical lead for the New Zealand DataFabric project and I am currently working on projects aimed at tranferring data among the NeSI HPC sites and the DataFabric.

Skills, Languages & Technologies

Distributed and component-based systems: CORBA, CCM, EJB, RMI, Fractal, Jini.

CORBA: I was teaching CORBA-oriented courses for several years.

Programming languages: Java, C/C++, php, perl, python

C: systems programming, experience teaching C course at the Charles University.
4th place in the ACM International Collegiate Programming Contest national round (1999).

Java: almost 20 years programming in Java (since 1996), including experience with byte-code manipulation, class loaders; teaching *Advanced Java* course over a number of years (2001-2005).

Systems Programming Skills:

Operating systems: Linux, AIX, (past experience also with FreeBSD, Solaris).

Multithreaded programming, parallel processing, inter-process communication (IPC), Message Passing Interface (MPI), synchronization.

Networking: TCP/IP, iptables, NAT, Apache & Tomcat configuration.

Security: X509 certificates, PKI, OpenSSL configuration.

Databases: MySQL, PostgreSQL, SQL interaction from scripting languages (python, perl, php), JDBC.

Development tools: git, svn, Eclipse, Ant, CVS, make, automake, autoconf.

Scripting Languages: Perl, PHP, Python.

Other Project Experience

Component Reliability Extensions (CRE): In this project between Charles University and France Telecom R&D, I developed extensions of the Fractal Component Model to integrate tools for runtime and static behavior analysis; an important task was to use bytecode instrumentation to monitor calls on component interfaces. The resulting platform allows France Telecom to construct reliable component-based software for its applications, thus maintaining its high quality of service in new products and services.

TACACS+/RADIUS authentication server: I designed, developed, wrote training material, conducted training seminars, updated and maintained an authentication server for the million customer system of Czech On Line, a.s., the largest ISP in the Czech Republic. The system was designed to sustain high volume of authentication and authorization requests (a single point of authentication for the whole country) and to maintain fast response times. Initially, the system

was developed in C on HP-UX, interacting with Sybase database; later the system migrated to FreeBSD, switched from TACACS+ to RADIUS protocol, with an in-memory user database. Continuously, new features were added into the system (IP address pooling, per-user line configuration). The system resulted in significantly lower operating costs while increasing customer satisfaction by solving problems of dual logins and unique customer login requirements. The system also allowed the company to sustain its rapidly increasing volume of connections during a major expansion and conform to newly enacted legal provisions.

My other projects for Czech On Line include a RADIUS-based authorization server for VoIP telephony, and a Perl webmail system. In addition, I worked on network security, testing and strengthening IT infrastructure.

Asbaco: Aspect Based Controllers: a research project I started at the Charles University. I designed and implemented a component model to capture the internal structure of component controllers and to define consistent extensions of control functionality. Prototype implementation in Java is based on the Julia reference implementation of Fractal [MB05].

Analyzing Textual Use Cases: As a part of my doctoral thesis, I have developed a conversion scheme to derive behavior specifications from textual use cases [Mencl04b]. I afterwards supervised and coordinated a student software project developing an interactive environment for requirement specification based on this scheme, the *Procasor Environment*. The project was implemented in Java; technologies used include Swing, JAXP, and JAXB. A part of the project was also to integrate third party natural language processing tools. The environment allows to increase productivity by constructing a behavior specification while writing textual use cases at no additional cost.

Academic Experience: Selected Publications

All publications are available from `http://dsrg.mff.cuni.cz/publications.phtml`

[MP06]   Mencl, V., Polak, M.: *UML 2.0 Components and Fractal: An Analysis*, 5th Fractal Workshop (part of ECOOP'06), July 3rd, 2006, Nantes, France, Jul. 2006

[MB05]   Mencl, V., Bures, T.: *Microcomponent-Based Component Controllers: A Foundation for Component Aspects*, in Proceedings of 12th Asia-Pacific Software Engineering Conference (APSEC 2005), Dec. 15-17, 2005, pp. 729-737, Taipei, Taiwan, ISBN 0-7695-2465-6, ISSN 1530-1362, IEEE Computer Society Press, Dec. 2005.

[Mencl04a] Mencl, V.: *Specifying Component Behavior with Port State Machines*, in *Electronic Notes in Theoretical Computer Science*, 101C:129–153, Proceedings of the Workshop on Compositional Verification of UML Models (CVUML, part of UML 2003), Elsevier, Nov. 2004.

[Mencl04b] Mencl, V.: *Deriving Behavior Specifications from Textual Use Cases*, in Proceedings of Workshop on Intelligent Technologies for Software Engineering (WITSE04, part of ASE 2004), Linz, Austria, pp. 331-341, Oesterreichische Computer Gesellschaft, Sep. 2004.

References

Available on request.