

# *Joaquin Miller*

Joaquin Miller is a software architect with forty years experience. He has worked as a programmer and architect, as a project troubleshooter and architecture reviewer, as a standards author and editor, and as a book and article editor and reviewer.

Currently an independent consultant working with The MITRE Corporation. Until recently, Industry Evangelist with NetMesh. Before that, Chief of Architecture Review with X-Change Technologies (a Wall Street trading technology firm). Worked as the Chief Architect of Financial Systems Architects (a Wall Street software architecture firm), as a chief architect for Systemhouse (a large system integrator), and in the system integration business of ABB (a global industrial company) and Combustion Engineering. Founded and managed software product companies producing operating systems, a relational database management system and communications protocol software.

Works with teams to: Build architectures to enable specific architectural qualities. Recover architectures from existing applications and development projects. Use models of architectures to drive design and development. Practice model driven development. Generalize architectures for understanding, developer training, and reuse. Develop product line architectures. Develop portable and reusable models.

Works with troubled projects to identify project and technical problems, review architectures and prepare change plans.

Experience with distributed, high throughput, very high availability and reliability, transaction systems, using object and component technology, and with systems with stringent regulatory requirements (including Federal Reserve, Grain Inspection Service, and Food and Drug Administration regulations).

Customers have included Visa International, Cargill, Bank of New York, Citibank, MCI, Levi Strauss, AAA, the United States of Mexico, the New York City Police Department, Spartan Mills, the Software Engineering Institute (SEI) of Carnegie Mellon University, Nations Bank, J P Morgan, Charles Schwab, Thompson Financial, Noranda, Bell Canada, Northern Telecom, Schlumberger, Kaiser Permanente, U S Public Health Service, the State of California, Sonoma County, Stanford University, and the University of California at San Francisco and at Berkeley.

Editor of the Yadis specification. Served as chair of the OMG Architecture Board subcommittee responsible for the Model Driven Architecture. Editor of the OMG Model Driven Architecture (MDA) Guide. An author of the Unified Modeling Language (UML) and served as a member of the UML and MOF finalization task forces. Served as chair of the Object Management Group Finance task force. Member of the Stewards Council of the Identity Commons.

A leader of the development of the Reference Model of Open Distributed Processing, (RM-ODP) an International Organization for Standardization (ISO) standard for specifying distributed architectures. Project Editor of the ODP Enterprise Language, X.911.

A reviewer for Addison-Wesley and O'Reilly editors and for ACM Computing Reviews and IEEE Software. Editor of technical books. Guest editor for Communications of ACM.

## **Experience**

**Independent Consultant** **2003-present**

**NetMesh** **2005-2007**

Industry Evangelist, reporting to the CEO

Represented NetMesh in the Internet Identity community, the development of the Yadis protocol, and the OSIS project.

**X-Change Technologies** **2003-2005**

Chief, Architecture Review, reporting to the CEO.

Review architecture of X-Change software products and customer projects.

Represented X-Change Technologies in the standards development processes for UML, MOF, MDA, and ODP.

**Financial Systems Architects** **2000-2002**

Chief Architect, reporting to the CEO.

Responsible for architecture of all customer projects.

At Visa International, prepared and presented to the CIO a system architecture for a new system to replace the existing credit card authorization and settlement system.

Visa was faced with the dilemma that commercial authorization and clearance software does not provide the required reliability, throughput, scalability, and other architectural qualities, while development from scratch loses the benefit of using field-tested commercial software and the experience of the commercial vendors. The solution prepared for Visa International makes it possible to embed the commercial application software in a system architecture that provides the required architectural qualities.

Then worked as part of a Visa International team visiting software vendors. The team prepared product analyses and recommendations on the selection of a commercial software package to provide a starting point for the authorization capability of the new system. The recommendations included discussion of how each candidate package would fit into the solution prepared for Visa International.

Visa International is currently building the authorization system.

Represented Citibank as application architect on a project to replace the Citibank global funds transfer system, in dollar volume the largest private funds transfer system. We recommended that the project, being managed by two software vendors, be terminated.

At Bank of New York, application architect of a project that developed a design, project plan and cost estimate to replace the bank's US Treasury security clearance system. This system is one of the two largest; each cleared about forty percent of all US Treasury security trades. The system cleared about \$400 billion US each day for bond traders.

The design enables rapid matching of each incoming security clearance confirmation or security receipt instruction with the many outstanding security delivery instructions and clearance reports. It meets unusually strict requirements for rapid response, high reliability, and extreme resilience in the face of failures.

Bank of New York has chosen the X-Change Technologies clearance engine to use in this system.

Studied the Bank of New York funds transfer system.

Worked with a team developing for Thompson Financial a modeling technique to be used in specifying their system modifications and new systems.

Represented Financial Systems Architects in the standards development processes for UML, MOF and ODP.

### **MCI Systemhouse**

**1991-2000**

Chief Architect--Objects & Models, reporting to the CTO.

At Cargill, a major agricultural commodity dealer and processor, chief application architect of a multi-year project that built a distributed system for buying, handling, and trading commodities. Lead the team of software architects who prepared the object model and application design, and who supervised its construction. This is a large distributed object system, with 700 users at 150 locations, 3,500 classes and 4,000 database tables. A sophisticated data replication scheme keeps data distributed across the 150 sites, with primary copies moved to where they are needed. In addition to leading the software architecture team, developed the data model of contract settlement and financial accounting with supporting models of business structure, relationships, and geography. Also developed a technique that imbeds a working model of the object architecture within the development environment. The staff of this multi-year project reached 150 persons. Deployment of the system began in 1995; it remains in use as the main operational system of the Cargill Grain Division.

For MCI, designed a system that solved the problem of rapid testing and deployment of changed calculation procedures without rebuilding the application. This was an application for sales commission calculations, but the design is general purpose and applicable to any business need calling for frequent changes in methods of calculation on short notice, such as for newly designed derivative instruments or changed risk management procedures. In this system, calculation specifications are entered, tested, and deployed by the commission planning specialists with no programming experience. The system also includes a completely comprehensive capability to correct past data, recalculate using original and corrected data and plans from a specified date in the past, calculate before and after results, and generate accounting entries for corrections. Other user interfaces enable managers and salespersons to review and request corrections to commission data. When WorldCom purchased MCI, this system was abandoned, since WorldCom has only a few, very simple and rarely changed sales commission plans.

Served as a project troubleshooter, advising project managers and business executives at Systemhouse projects and, for Systemhouse customers, at projects of those customers or their software suppliers.

Lead a project that designed a configurable software development process for use by Systemhouse projects using object technology and another project to prepare a handbook for software architects.

Worked on projects that include:

- new call center system for insurance claims and customer service,
- fasteners e-commerce system
- automatic data network provisioning system,
- real estate multiple listings search,
- long distance billing system,
- route planner for less than truckload lot shipping,
- environmental prediction,
- steel ordering system...

Represented Systemhouse in the standards development processes for UML and ODP and the X3H7 Object Models study.

## **Previous Experience**

<b>ABB and Combustion Engineering</b>	<b>1987-1991</b>
<b>X.Dot Corporation and Pacific Software</b>	<b>1981-1986</b>
<b>Lovelace Computing</b> (independent consultant)	<b>1972-1980</b>
<b>University of California, San Francisco</b>	<b>1969-1971</b>
<b>Stanford University</b>	<b>1966-1969</b>
<b>University of California, Berkeley</b>	<b>1965</b>

## **Education**

### **Additional**

UC Berkeley, Stanford and Oregon Graduate Institute, Computer Science courses and seminars

Industry seminars and training courses, Object Technology, Communications Protocols, Database Management Systems, Object Analysis and Design, and Mathematical Foundations of Object Models and Languages

Total Quality, Business Process Reengineering, Object Oriented Project Management

### **Expertise**

Technical expertise:

- software architecture (structuring software to provide needed qualities; use of patterns and frameworks; supervision of software construction)
- object technology (object analysis, modeling, design, and construction; patterns; frameworks; object databases)
- information system modeling (development of UML and RM-ODP; object methods)
- model driven development (use of models to specify system, guide development, and generate code; OMG model driven architecture (MDA))
- business modeling (work process modeling; information flow modeling; object modeling of businesses; enterprise data modeling; business process engineering)
- database technology (using database technology to meet business needs; application data modeling; integrating object programs with relational databases (object-relational mapping); DBMS product design and construction; relational and object database managers)
- communications (data communications protocol software design; communications product design and construction).

Experience with technologies:

- components (including J2EE), database managers (including Oracle, DB2, SQL Server, and GemStone), languages (including Java and Smalltalk), modeling (including UML and ERD), distribution (including CORBA and RMI).
- database management systems (using database technology to meet business needs; application data modeling; integrating object programs with relational databases; DBMS product design and construction)
- communications (data communications protocol software design; communications product design and construction; computer-telephone integration; X.25, TCP/IP, EDI).
- internet technology (XML, HTML, SOAP, ...)
- application development and deployment environments (integrated development environments; application servers; model transformation and code generation systems)
- programming (C, C++, Smalltalk, Java; Windows, Unix, Linux, MVS)

Member of the Association for Computing Machinery and the IEEE.

## Career

Mr. Miller began his career at the University of California Berkeley Computer Center as a system programmer. At Stanford University, he participated in the design, construction and operation of one of the first interactive operating systems and compilers. This system was used at the Stanford Medical Center both in medical research and in surgery, and was highly successful in introducing the use of computers to many new areas of medical research and medical care delivery. At the University of California San Francisco Computer Center he worked as a system programmer and user consultant.

He then worked as an independent consultant. Miller designed a clinical office medical record system for the University of California and prepared a cost benefit analysis and budget for the system. He designed and built one of the first portable microcomputers. The computer, using circuit cards from a conventional computer, was disguised inside a briefcase, and was used by option arbitrageurs who did not want others on the exchange floor to know they were using computers in making arbitrage decisions.

He edited technical books by Adam Osborne (programming languages) and Gio Wiederhold (data management).

In the 1980s he was a founder and manager of a startup software company, Pacific Software, building operating systems and a relational database manager with a visual user interface and integrated word processor, and another startup, X.Dot Corporation, specializing in data communications software.

In 1988 he joined Combustion Engineering (which was purchased by ABB). He worked as Technology Manager of the process industry system integration business, reporting to the Vice President managing that business.

In 1992 he moved to Systemhouse, a Canadian system integrator. He was promoted to Chief Architect – Objects and Models, and worked as chief application architect on large projects and as an outside project architecture reviewer and project trouble shooter.

During this time he prepared detailed reviews of technical books for the authors, James Odell, Len Bass and Fred Cummins.

In 2000 he was appointed Chief Architect of Financial Systems Architects.

In 2003 he joined X-Change Technologies and its predecessors as Chief, Architecture Review

Currently he works as an independent consultant with The MITRE Corporation.

Mr. Miller is an international leader in standards.

- Identity standards: A founder and served as a member of the Stewards Council of the Identity Commons. Editor of the Yadis specification.
- Object Management Group: Served as chair of the Object and Reference Model Subcommittee of the Object Management Group Architecture Board; as a member of the Analysis and Design task force; as chair of the Financial Services task force.
- Unified Modeling Language: One of the UML partners who developed the UML 1 submission adopted by the OMG. Principal author of the 3C submission for UML 2. A co-submitter of the UML 2 specification adopted by OMG.

- ISO and US standards: Convened and served as Project Editor of the ISO work item to expand the Enterprise Language of the Reference Model of Open Distributed Computing (RM-ODP), recently adopted as International Standard 15414 and ITU Recommendation X.911; served as Chair of Standards Technical Committee H7 and Vice-Chair of T3 (ANSI NCITS); prepared the study and report on object models in analysis and design methods for the H7 report.

He is also active in international information technology conferences:

- Practitioner Reports Chair of OOPSLA 2000, a member of the Program Committee of OOPSLA 1999. An OOPSLA workshop organizer since 1995.
- Program committee member, UML and Enterprise Integration, MASPHEGI, WODPEC, and several conference workshops.
- Session chair, panelist, tutorial presenter, or speaker at conferences including the UML, Enterprise Distributed Object Computing (EDOC), UML and Enterprise Integration, and TOOLS conferences.
- Invited speaker at OMG Workshop on OMA/ODP Convergence; invited panelist at Object/Internet Primer; keynote speaker at TOOLS, panelist at several OOPSLA conferences.

## Some Publications

The Yadis Specification, 2006.

MDA Tutorial, OMG, 2003.

Joaquin Miller and Jishnu Mukerji, The Model Driven Architecture Guide, OMG, 2003.  
[www.omg.org/cgi-bin/doc?omg/03-06-01.pdf](http://www.omg.org/cgi-bin/doc?omg/03-06-01.pdf)

Guest Editor, What UML Should Be, Communications of ACM 45 (11), November 2002.

3C UML, Clear, Clean, Concise, OMG, 2002.  
[www.omg.org/cgi-bin/doc?omg/02-09-15.pdf](http://www.omg.org/cgi-bin/doc?omg/02-09-15.pdf)

Using UML and ODP for Enterprise Architecture, OMG, 2002.

Project Editor, X.911, ODP Enterprise Language standard, ISO and ITU, 2001.

Joaquin Miller and Rebecca Wirfs-Brock, How Can Anything be Both a Classifier and a Package?, Second International Conference on the Unified Modeling Language, 1999.

Jeff Sutherland, Dilip Patel, Glenn Hollowell, and Joaquin Miller (Editors), Business Object Design and Implementation I, II, and III, Springer, 1997, 1998, and 1999.

Help! What about force? Proceedings OOPSLA'99 Workshop on Behavioral Semantics, Northeastern University, 1999.

Haim Kilov, Peter Linington, Joaquin Miller, Kerry Raymond, and Bryan Wood, Types, invariants, and epochs: specifying changes in the RM-ODP information language, Proceedings OOPSLA'97 Workshop on Object-oriented Behavioral Semantics, Technische Universität München, 1997.

Help! How to specify policies? Proceedings OOPSLA'97 Workshop on Object-oriented Behavioral Semantics, Technische Universität München, 1997.

Object Models of Analysis and Design Methods, in Frank Manola, editor, Object Model Features Matrix, NCITS, 1997.

Objects, Relations, and Real Systems, Technology of Object-Oriented Languages and Systems (TOOLS), Prentice Hall, 1996.

Relationship of the Unified Modeling Language to the Reference Model of Open Distributed Processing, OMG, 1996.

Sequitur, a QBE database manager, Proceedings of WESCON (1981).

Family Practice Medical Record System, Lovelace Computing (1972).

W. J. Sanders, G. Breitbard, D. Cummins , R. Flexer, K. Holtz, J. Miller and G. Wiederhold, An Advanced Computer System for Medical Research, Proceedings of the FJCC (1967).