

# Alexey Omelchenko

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## SENIOR SOFTWARE DEVELOPER

### SUMMARY

- Over 18 years of software development experience.
- Design and development of multi-tier enterprise level systems.
- Leading teams, implementing software development concepts, supporting live systems.
- Applications performance analysis and optimization.
- Excellent object oriented programming using C# and C++.
- Proficiency in industry standards, libraries and technologies.
- Strong skills in cross-platform distributed software development on Windows and Linux.
- Comprehensive knowledge of data modeling on physical and logical levels.
- Over 10 years of software systems development for major financial institutions in USA and Europe.
- Understanding of banking, investment, and financial services industry needs and transactions.
- Excellent problem solving skills.
- Excellent communication and interpersonal skills, leadership and teamwork.

### SKILLS

Programming languages: C#, .Net, C++, Objective-C, SQL, Python

Libraries & technologies: Tibco RV, Syncfusion, STL, Boost, Win32 API, MFC, ATL, WTL, COM, Intel TBB, FIX, ZeroC ICE, ZeroMQ, P/Invoke, JNI, Posix

Architecture & design: UML, Design Patterns

Web technologies: HTML, XML, XSLT, CGI, SOAP, REST

Databases: Oracle Database, MS SQL Server, MySQL, Sybase ASE, MongoDB, Redis, Aerospike

Software platforms: Windows, Linux, Solaris

Development tools: Visual Studio, Git, CVS, SVN (Subversion), Clearcase, Source Safe, GCC, PyCharm, NUnit, Junit, Jira, Bamboo, Bitbucket

Performance tools: AppDynamics, Visual Studio Profiler

Hardware platforms: x86, x86-64 (AMD64), Itanium, XScale

Virtualization: VMware, Xen, OpenVZ, VirtualBox

Cloud Platforms: PCF

Development process: Agile, Iterative methodologies, Scrum, TDD, FDD, PSP, TSP, XP

### EXPERIENCE

**2016 – Present, Lead Software Developer, Charles Schwab ([schwab.com](http://schwab.com)), Austin, TX**

Systems: Enterprise Data Bus, Market Data and Quotes Gateways, Document Flow Automation  
A set of middleware services and protocols that provide various financial and markets information to front office and client facing applications. The EDB is a high performance, secure and robust transport solution for data streaming across multiple systems inside the company and for external client applications. It is built on top of MQTT protocol.

- Participated in development of Enterprise Data Bus - a complex solution built around Solace messaging system and MQTT protocol.
- Implemented core component of the solution - Subscription Manager.
- Implemented LDAP protocol and LDAP server – another core component.
- Implemented plug-ins API, SDK and debugging tools for the plug-ins development.

- Analyzed performance and scalability. Identified bottlenecks and formed a list of strategies to eliminate them.
- Improved performance by factor of at least 100.
- Assumed the role of an interface for external teams, consulted them about development of their applications, discussed business and technical requirements for the data bus.
- Worked with Solace to add new authentication features to their product, e.g. OAuth token authentication.
- Participated in defining the minimum viable product with the business departments.
- Worked with architecture team and local governance to get approval for the proposed solution.
- Mentored my team about tools and technologies necessary to build the reliable, secure, fast and scalable system.
- Migrated several services to the new messaging solution as a proof of concept.
- Implemented multiple RESTful WebAPI services that provide data for Schwab web site.
- Supported ~30 legacy applications. Retired some of them.
- Supervised secure coding compliance for the department of ~50 people, ~80 applications.
- Used formal Scrum methodology.

Environment: C#, Powershell, MS SQL Server, Redis, Aerospike, TFS, Git, JIRA,  
Confluence, Bamboo, Bitbucket, Windows, Linux, OAuth, SAML, MQTT.

**July 2013 – Present, Senior Software Engineer, NCBI ([www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)), Washington D.C. Metro Area**

System: NCBI Authentication System

A Federated Authentication System which integrates authentication systems from hundreds of universities all over US as well as NASA, Google, PayPal and others. Core component of the system is deployed in similar organizations in Canada, UK and Korea. The system is implemented as a set of modules written in C++, C# or Python. Core components are multithreaded and cross-platform and can be built on Windows and Linux. The system processes 20 million transactions per week.

- Assumed responsibility for the authentication system development and engineering support.
- Worked with multiple scientific and engineering teams to implement NCBI authentication for their projects.
- Redesigned Database Layout to improve performance of the system.
- Improved reliability of the system through analysis of performance bottlenecks, memory management issues, opportunity for data caching.
- Implemented several modules from scratch.
- Communicated to dozens of institutes' IT services to establish new or repair/upgrade existing integrations with NCBI authentication.
- Worked with UK, Canada and Korea teams to adapt their installation of the system and help with data migration.
- Implemented automated monitoring and statistics reporting, ensured the system stability.

Environment: .Net, Posix, C#, C++, Python, STL, Boost, MS SQL Server, SVN, Git, SOAP, Pthreads, gcrypt, OpenSSL, Jira, OAuth, SAML, CGI, FastCGI, Windows, Linux

**December 2010 – July 2013, Lead of Development Team, Otkritie ([www.open.ru/en/](http://www.open.ru/en/)), Moscow, Russia**

Systems: Internet Banking, SugarCRM, OTRS, CreditRegistry, Accounting System, SMS Information Service

A set of systems designed for needs of Bank's corporate clients and VIP oriented business. Different systems are integrated. Some services are written from scratch, another modified and adapted from open source projects.

- Headed development and integration of in-house enterprise level information systems and open source solutions.

- Implemented multiple corporate level middleware and backend solutions and integrations.
- Participated in customization of SugarCRM to internal needs – set of integrations and custom improvements for the systems: Internet Banking, Accounting System, Analytic System and United Data Storage.
- Implemented real time performance monitoring for business critical systems using Nagios.
- Obtained solid knowledge of corporate banking services.

Environment: C#, C++, Python, Perl, PHP, STL, Boost, Oracle, MS SQL Server, MySQL, SVN, ZeroC ICE, NUnit, CppUnit, UML, Redmine, Windows, Linux

**June 2009 – September 2010, Senior Software Developer (AVP), Deutsche Bank ([db.com](http://db.com)), Moscow, Russia**

Systems: ARIS, Score

Two automated risk management systems that value more than 1M trades daily. They are written in C#, use external risk engine written in C++, running on DataSynapse grid. DBMS – Oracle. For some types of reports FireBird is used.

They are deployed to 2 Citrix boxes, 10 application servers and pool of 3k DataSynapse engines.

- Supervised system development as technical owner.
- Delivered 4 major releases of the systems without issues.
- Coordinated work of development team in Moscow and business in London, Singapore and South America.
- Obtained knowledge of valuation of asset derivatives - FX, Money Market, FI, IR Swaps.

Environment: C#, C++, STL, Boost, Python, Oracle, DataSynapse, SVN, UML, Jira, Confluence, Windows

**October 2007 – June 2009, Senior Software Developer, UBS ([ubs.com](http://ubs.com)), Moscow, Russia**

System: Termini

Solution designed for securities trading, pricing, order management, trade audit and much more. It is used for trading of different derivatives. Termini is composed of a large number of processes; a huge number of batch jobs, scripts and cron jobs; and at least 3 databases.

- Transferred ownership of the system from another external team in 1.5 months.
- Supported the system until its total decommission.
- Assisted in step-by-step migration of dataflow into other new systems.
- Maintained legacy code in C, C++, Objective C, Perl.
- Obtained knowledge of pricing of FI, FX derivatives.

Environment: C++, C, Objective C, Perl, FIX, TCP/IP, Socket, Crontab, UML, Oracle, Sybase, MS SQL Server, C Shell, Jira, Confluence, Solaris

System: Ultrabond

Solution for Mortgage-Backed securities data analysis designed as client-server software. Client side has Excel-like interface with tables, figures, charts and support of data import and export to common formats. Platform: C#, Windows. Server side is distributed scalable computing system with single front-end and multiple back-ends, written in C++ for Solaris and Linux. Communication layer is Tibco Rendezvous and ZeroC ICE.

- Integrated the system with new data feeds – an external database, Oracle
- Developed Perl script for conversion and import of historical data from a set of files
- Ported server side software for Windows – the code became cross-platform – Solaris, Linux, Windows
- Obtained knowledge of valuation of fixed income and in particular Mortgage-Backed securities

Environment: C#, C++, Perl, STL, Boost, Threading, Syncfusion, Tibco RV, ZeroC ICE, Sybase, Oracle, CppUnit, NUnit, Clearcase, UML, Jira, Confluence Linux, Windows, Solaris

**August 2006 – October 2007, Senior Software Developer, CQG ([cqq.com](http://cqq.com)), Moscow, Russia**

Product: CQG for Windows

Solution for all professional trader needs. It includes market coverage for futures, options, fixed income, foreign exchange, equities and indexes. It incorporates several different interfaces – depth-of-market order book views, charts, spreadsheets.

- Guided development team of 4 people as a team lead.
- Performed performance analysis of the application, found several sources performance bottlenecks.
- Designed event based data provisioning for multithreaded user interface.
- Reviewed source code for multiple teams.
- Obtained remarkable knowledge of financial market terminology and business processes.

Environment: C#, C++, COM, ActiveX, STL, Boost, WTL, MFC, CVS, UML, Windows

**December 2004 – August 2006, Software Developer, ABBYY ([abbyy.com](http://abbyy.com)), Moscow, Russia**

Product: ABBYY Recognition Server ([http://www.abbyy.com/recognition\\_server/](http://www.abbyy.com/recognition_server/))

Server-based OCR solution for automated document processing designed for high volume workload with transparent scalability and fault tolerance.

- Designed and implemented GUI management console for the server.
- Improved scalability for huge-size multipage documents processing.
- Ported OCR Engine from Windows to Linux.
- Released first version of the Recognition Server.

Environment: C++, STL, MFC, ATL, COM, RPC, MMC, Windows Service, VSS, UML, Windows, Linux

**March 2001 – November 2004, Software Developer, Intel ([intel.com](http://intel.com)), Nizhny Novgorod, Russia**

Product: Intel Performance Libraries (<http://software.intel.com/en-us/articles/intel-ipp/>)

Highly optimized cross-platform software functions for multimedia, data processing, and communications applications.

- Obtained outstanding experience in software performance analysis and optimization.
- Implemented and highly optimized diverse functions for processors: Pentium 4 and Itanium.
- Implemented algorithms for matrix processing, video processing, cryptography, big number arithmetic, XML processing.
- Performed competitive performance analysis of MySQL engine built with GCC vs. Intel C++ Compiler. That was done for joint project of Intel Compiler team & MySQL.
- Designed several libraries including cryptography and XML processing.
- Acquired deep knowledge of cross-platform software development.
- Honored with a Very Special Thanks Award.

Environment: C, C++, C#, Java, P/Invoke, JNI, Assembler, VSS, CVS, StarTeam, BitKeeper, NUnit, JUnit, Rational Purify, Intel VTune, UML, Windows, Linux, Agile, XP

**EDUCATION & CERTIFICATIONS**

2008 – C++ Programming, International Knowledge Measurement, Score 99%

2001 – MS in Physics, Moscow Institute of Engineering Physics, Russia

EXCELLENT REFERENCES AVAILABLE UPON REQUEST