



## Secure Messaging Platform

Technologies: C++11, Couchbase, Sqlite, Boost.Asio, OpenSSL, Jenkins

Developed a platform for messaging with a security feature protecting user messages and data from any third party, including the owner of the servers and the platform itself.

Utilized asymmetric cryptography to create this feature. Created a highly scalable multithreaded server for the platform and a distributed multiserer backend based on a Couchbase distributed NoSQL database cluster.



## Casino Platform Backend

Technologies: C++, Node.js, ACE, gSOAP library, SOAP, JavaScript, G2S protocol, Ubuntu, NetBeans

Duration: 1 year

URL: <http://www.oneliveinc.com>

Development of a casino account management system acting as a bank, with high security, detailed reporting and the US standards compliance. Providing interfaces for casino games both in kiosks and mobile/web platforms.

Interface component allowing to establish communications between Account Based Gaming System and Game Server was also implemented. Account Based Gaming System is the account based wagering system that allows patrons to have a wagering account for a gaming system. Game Server is the game program which is written in JavaScript and working on Node.js server



## Domain Registrar Backend

Technologies: VS 2012, C++, epp2, JSON, COM , GCC , boost, log4cpp, jsoncpp, cpp-netlib, OpenSSL, MySQL

Duration: 6 months

Developed cross-platform backend system, including two main functional components:

- an EPP protocol client communicating with top domain registrars such as Verisign to purchase and setup domains;
- a drop zone “catch” algorithm, allowing the system to catch the domain names getting into dropzone as quickly as possible, thereby competing with other domain registrars for them;

Implemented both components in an asynchronous model, allowing multiple operations called operation completion handlers to be executed simultaneously. Enabled the system to choose registrar, tune connection settings, and set up timeframes and interception mode.



## Open Street Maps algorithm for the vehicles

Technologies: C++, Boost, Ubuntu

Duration: 6 months

The project solves the problem of finding routes for watering machines and similar mechanisms. An advanced routing system was developed that is based on the Open Source Routing Machine (OSRM). The system is designed to search for a number of routes that begin and end at the same point and cover all the necessary roads inside the selected area. During the implementation the following tasks have been solved:

- avoiding of left turns for the roads with right-hand traffic;
- avoiding of right turns for the roads with left-hand traffic;
- start and stop of the routes on a specific side of the road;
- traversal of intersections of roads from every direction;
- traversal of all the roads inside a free-form polygon;
- integration of traffic data.



## Middleware Interaction and Data Transformation Platform

Technologies: C++, ACE, boost, OpenSSL, libcurl, libetpan, EasySoap++

Duration: 3 years

Analyzed, designed, coded and provided project management for the following portable multithreaded components:

- distributed messaging system similar to JMS (<http://java.sun.com/products/jms/>) but with many additional features and strong performance;
- BPEL (Business Process Execution Language), which validates parser with WSDL integration and supports XPath 1.0 expressions;
- WS-ReliableMessaging protocol client and server based on SOAP 1.1 with WS-Addressing support and SQLite-based persistent storage for messages;
- HTTP/1.1, HTTPS server component, based on the use of ACE cross-platform library for networking and multithreading;
- SMTP protocol server implementing several concurrent strategies, supporting SSL and several authentication methods;
- several FireFox and Internet Explorer (IE) plug-ins.



## Backend Part of a Network Mobile Game

Technologies: C#, SQL, Google Protocol Buffers, MySQL, Mono, Windows, Linux, Visual Studio

Implemented game logic for a network mobile game. Developed a multithreaded high-load server allowing hundreds of simultaneous connections.

The server was originally developed in .NET and then ported to Linux on Mono. Modifications were made to Mono to allow the windows code to run successfully on Linux.



## Video, Audio, and Text Messaging Platform

Technologies: C++11, Jenkins, boost, WebRTC, Qt, gcc

Duration: 4 months

Developed a platform for messaging, which supports text messaging, audio calls, and video calls in two modes: 1-1 and in groups (rooms).

Platform provides a framework (with bindings available in many programming languages) that allows client to add social messaging features to any application on any platform (iOS/Android, Windows/Linux/Mac) rather than providing end-user client applications.

Based platform on the WebRTC framework and included a sophisticated, highly scalable audio and video streaming backend based in a cloud, integrated with NoSQL storage for accounts and other data. Developed a client-side C++-based library, providing C interface for language bindings and the development of a sample UI application for Windows/Linux showing the framework functionality based on the Qt framework.



## Automotive Routing Quality Assessment Software

Technologies: Python, MySQL, SQLAlchemy, GEOAlchemy, nosetests, git

URL: <http://www.maps.yandex.com>

Duration: 1 year

The quality evaluation system has been developed, which is now being used to make decisions about making changes in the routing service. If the quality has dropped down, then the changes are not made. If the quality has increased, then there is a green light for launching of new data/software making effect on the QoS. The elements involved in the development:

- Yandex's mapreduce cluster computations technology;
- statistical modelling, including analytical and computational approaches, bootstrapping, resampling and Monte-Carlo methods;
- SQLAlchemy, GEOAlchemy ORMs.



## Video Surveillance and Security Software

Technologies: C++, windows API, SQLite, Qt, JSON, TCP, UDP, XML

Created a video surveillance and security application for monitoring protected areas.

Software uses different hardware such as IP cameras, imager, motion sensors, etc. The project involved multithreading, WinAPI, winsocks, WinPcap, Network protocols (TCP, UDP), client server architecture, and Qt for GUI implementation.



## Web Crawler

Technologies: C++, gcc 4, ACE, boost, libcurl

Duration: 1 year

Designed web crawler (spider), which indexes the whole Internet and parses each web page to find phone numbers and associated information such as keywords and environment.

Coordinated the system to work on a distributed network of computers with a dedicated master server managing task distribution, to provide a variety of filters to exclude specific URLs and URL patterns from parsing, and to manage a list of IP networks and countries to be processed.