

Петрозаводский государственный университет

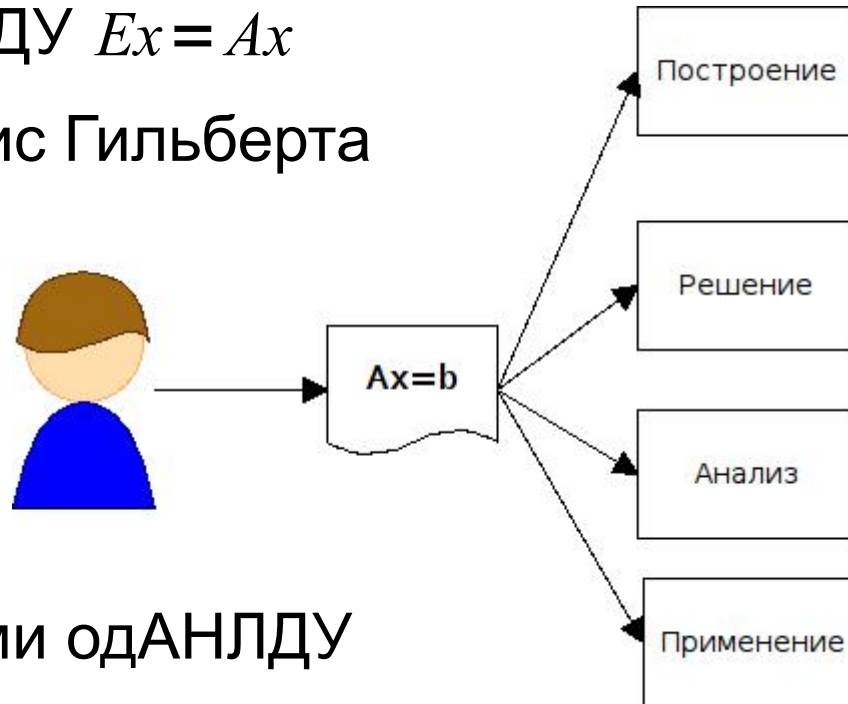
Проект Web-SynDic

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Дмитрий Корзун

<http://websyndic.cs.karelia.ru>

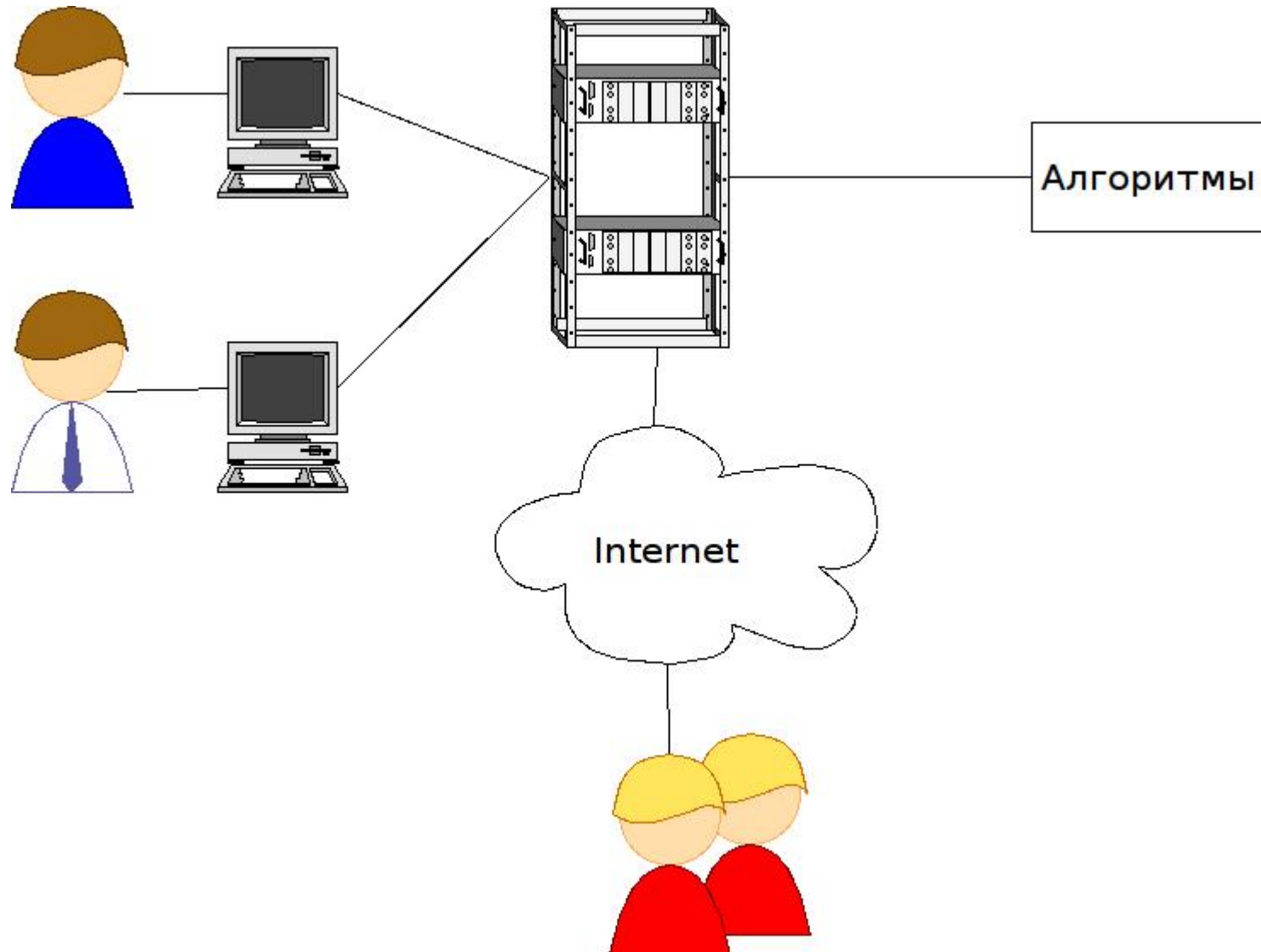
Актуальность

- Система одАНЛДУ $Ex = Ax$
- Решение — базис Гильберта



- Работа с системами одАНЛДУ
- Доступ к алгоритмам и безопасность
- Простой интерфейс и работа из любой точки Интернет
- Инструмент исследования компьютерных сетей (MPLS, P2P, Cisco Netflow)

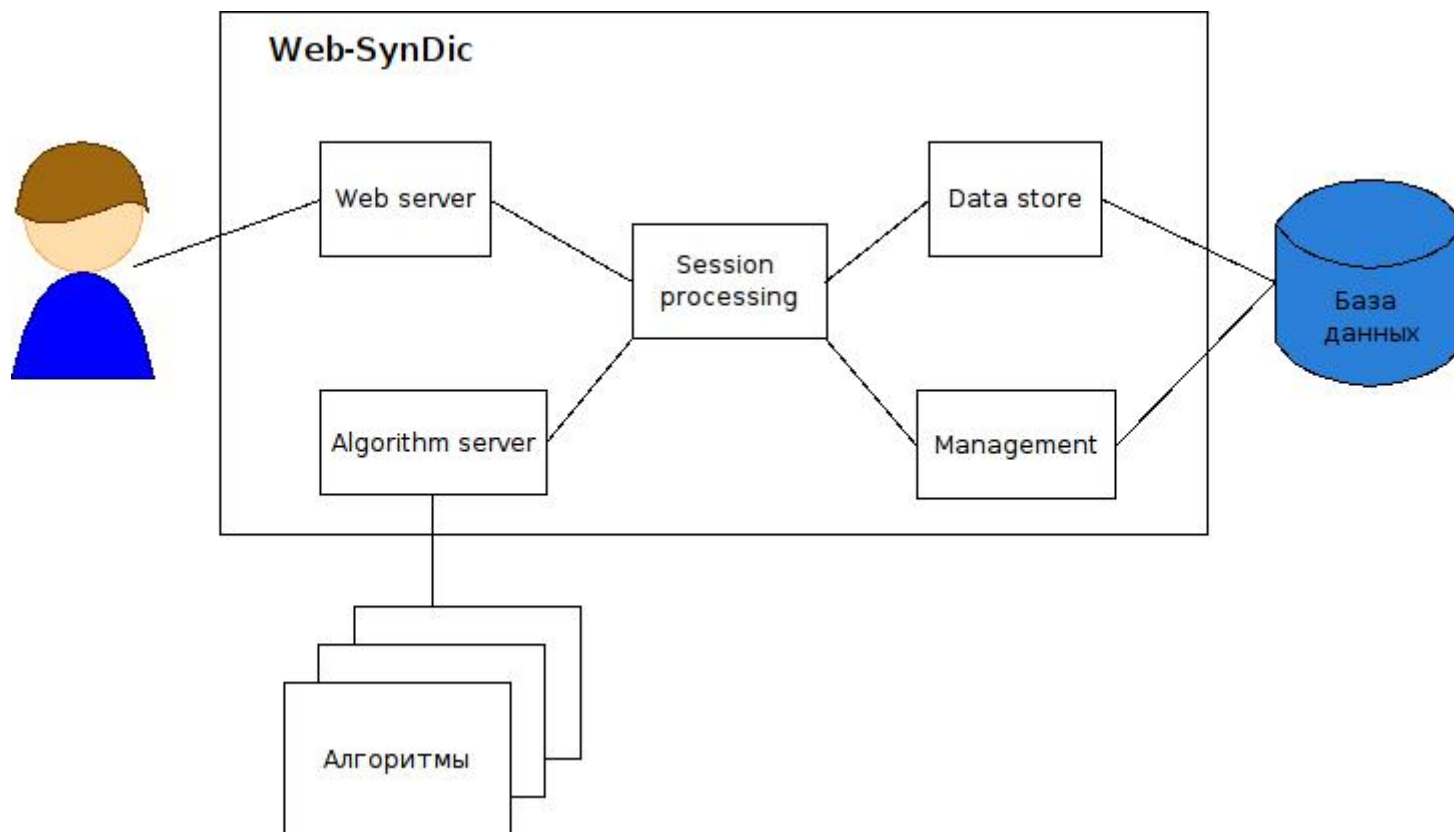
Решение поставленной задачи



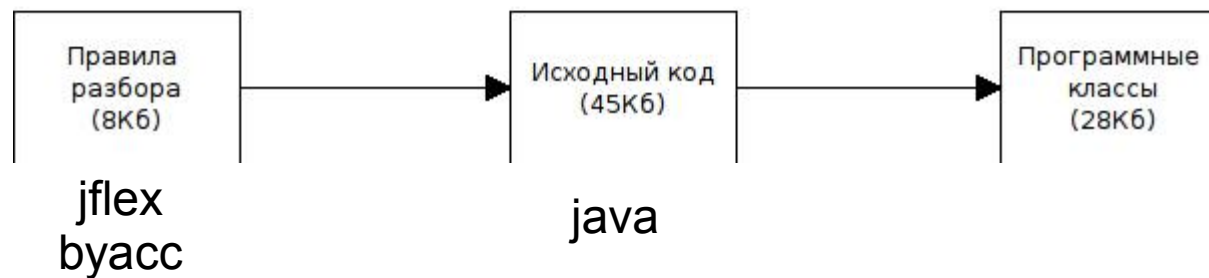
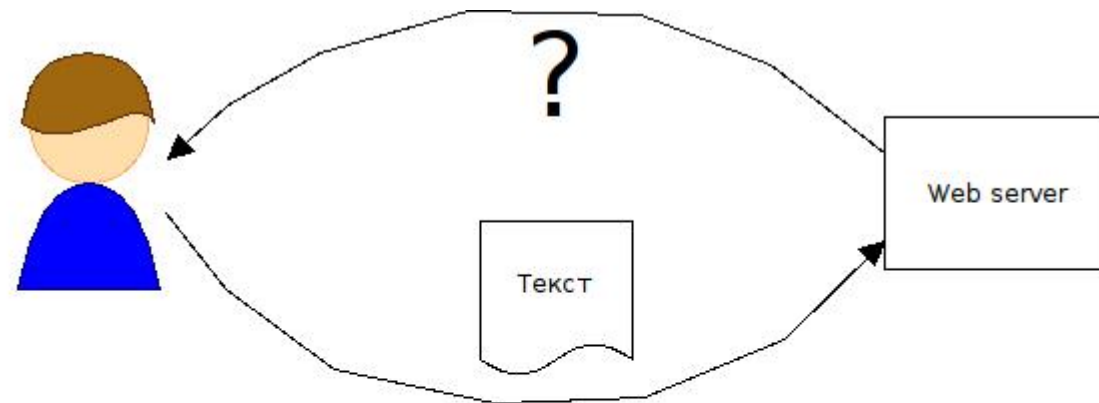
Концепция системы Web-SynDic

- Технология клиент-сервер
- Работа с одиночной системой
- Работа с набором систем
- Регистрация и учет пользователей
- Конфигурация параметров решения и генерации
- Статистическая информация об использовании системы

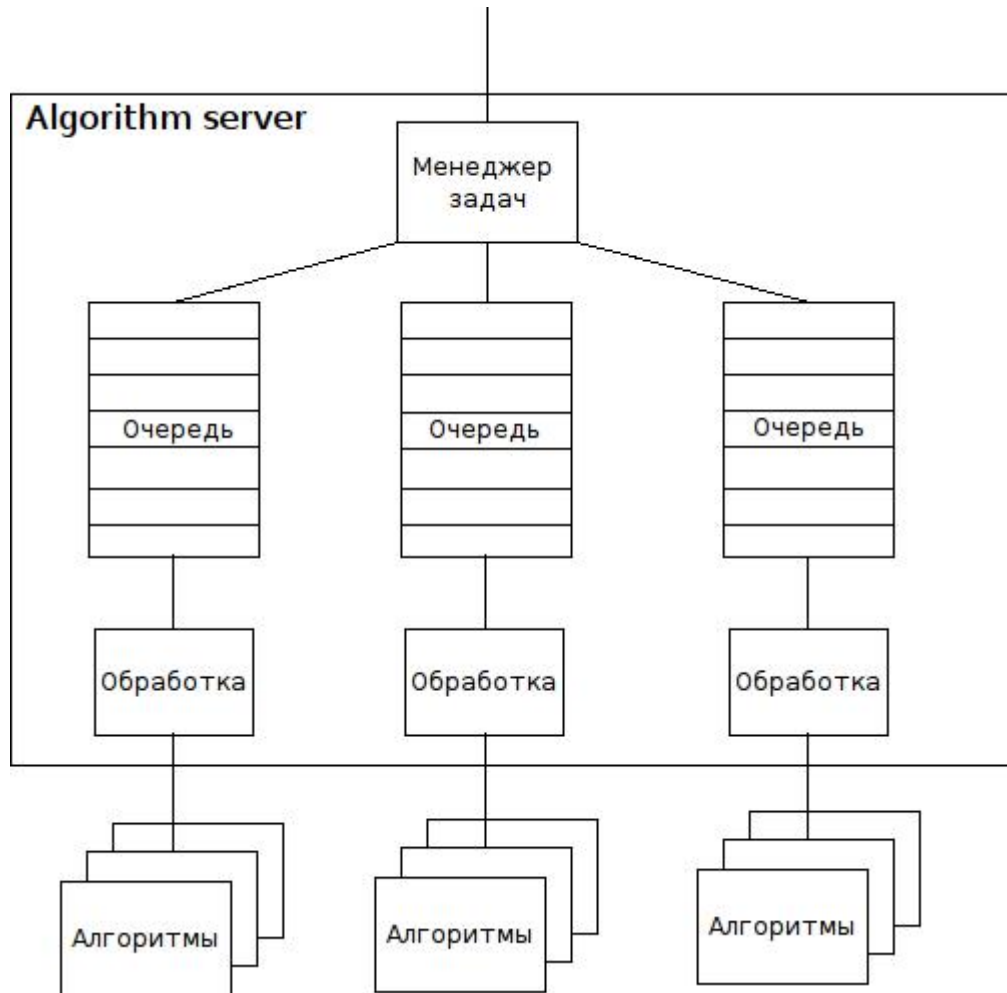
Архитектура



Анализ данных пользователя

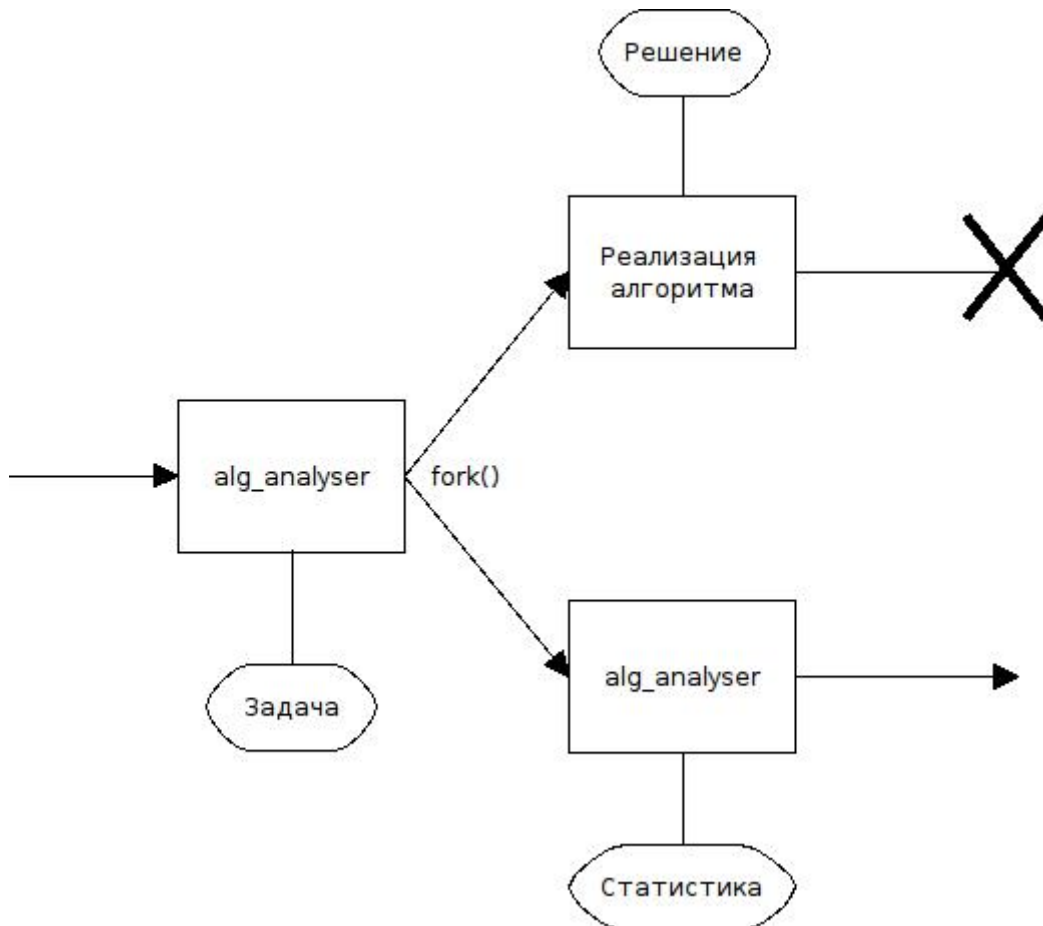


Работа с алгоритмами



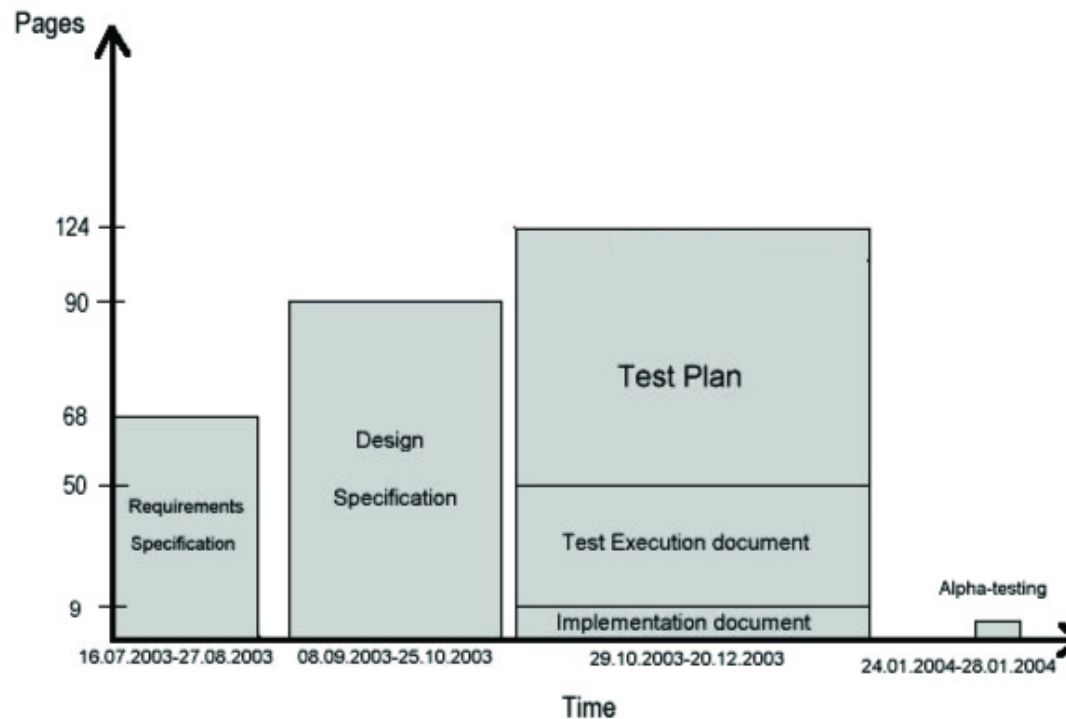
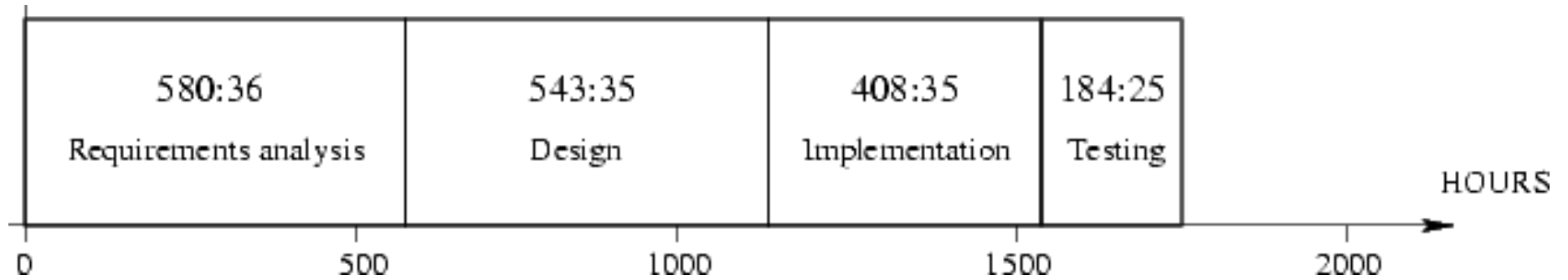
- Параллельные процессы
- Нити
- Очереди
- Работа с внешним ПО

Анализ работы алгоритмов



- Параллельные процессы
- Программирование в ОС Unix
- Автономная работа

Метрики проекта

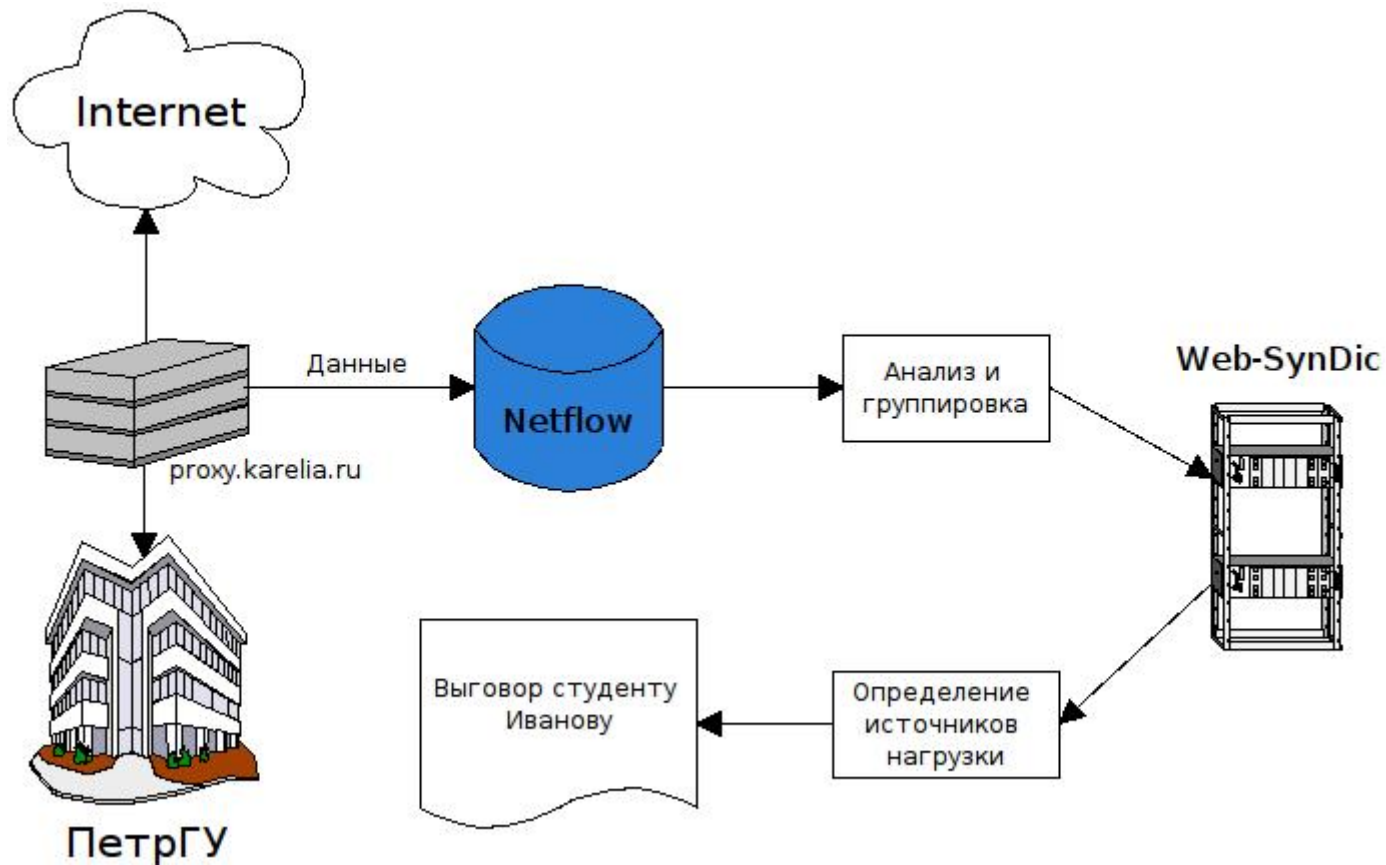


Реализация и тестирование

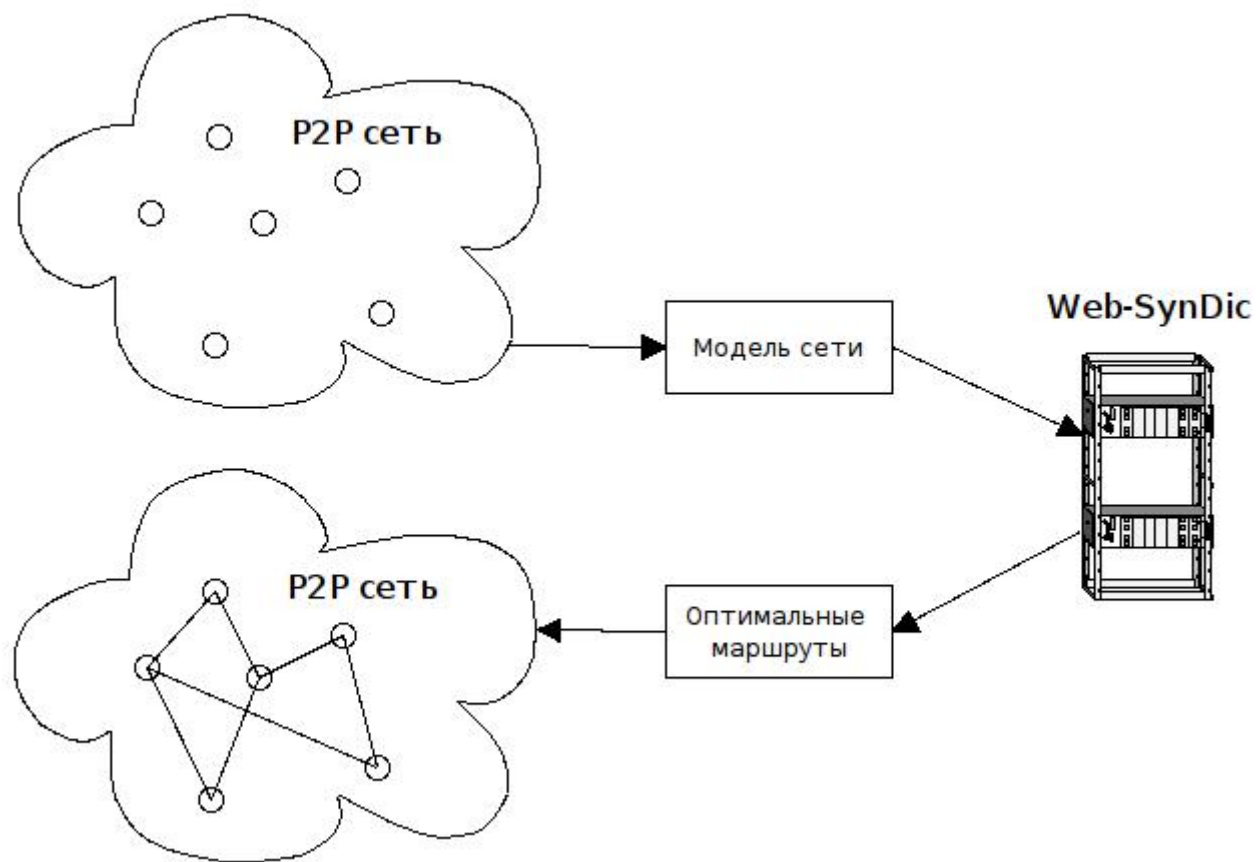
Subsystem	Programming language	LOC	%
Web-server and Session processing	Java + JSP	1800 + 2000	19 + 21
Algorithm server	Java	3600	38
Data store	Java	450	6
Management	Java	640	7
Statistics	Java	870	9
Total size		9360	100%

Testing subphase	Number of tests	Errors found	Errors/Tests
Unit testing	217	37	17%
Integration testing	117	25	21%
Total: unit & integration	334	62	19%
Alpha	58 students × 1.5 hours = 15 flaws found		

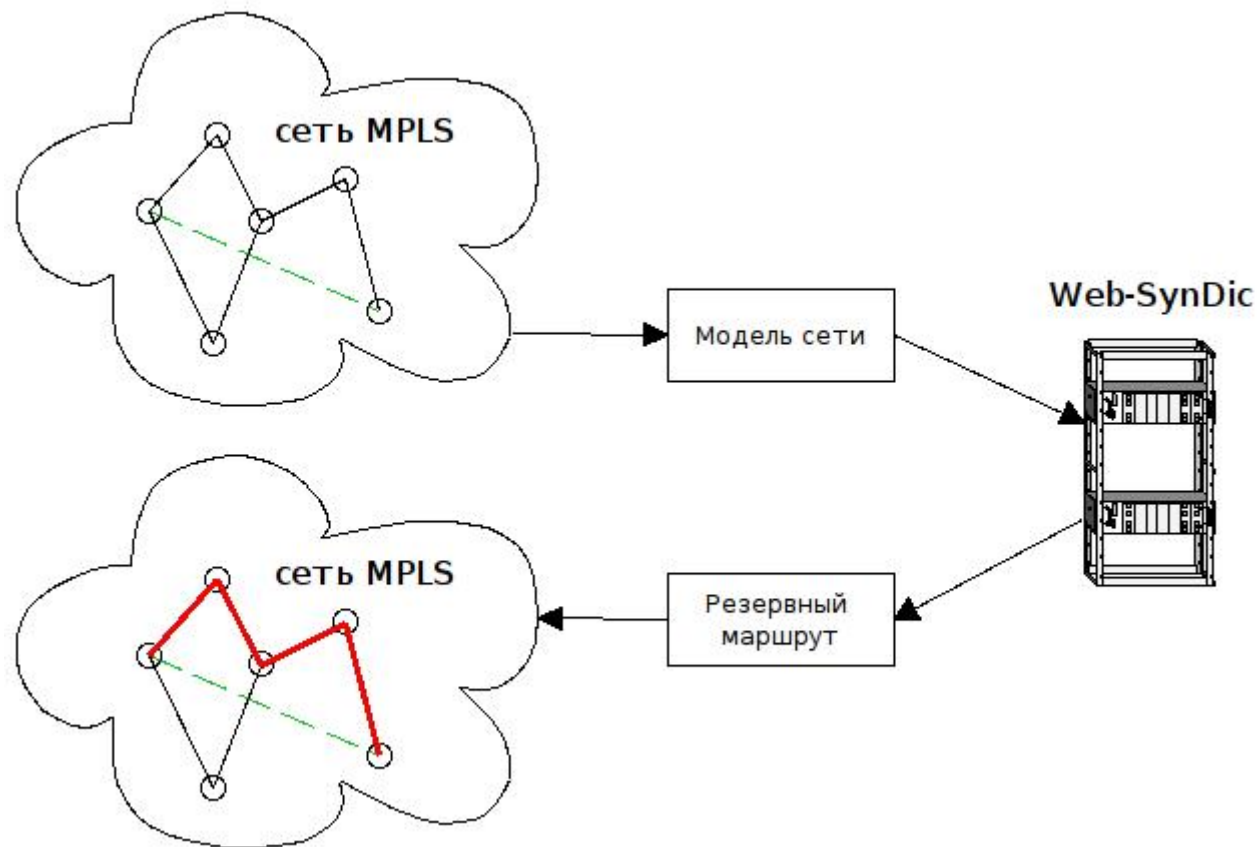
Анализ потоков в сети



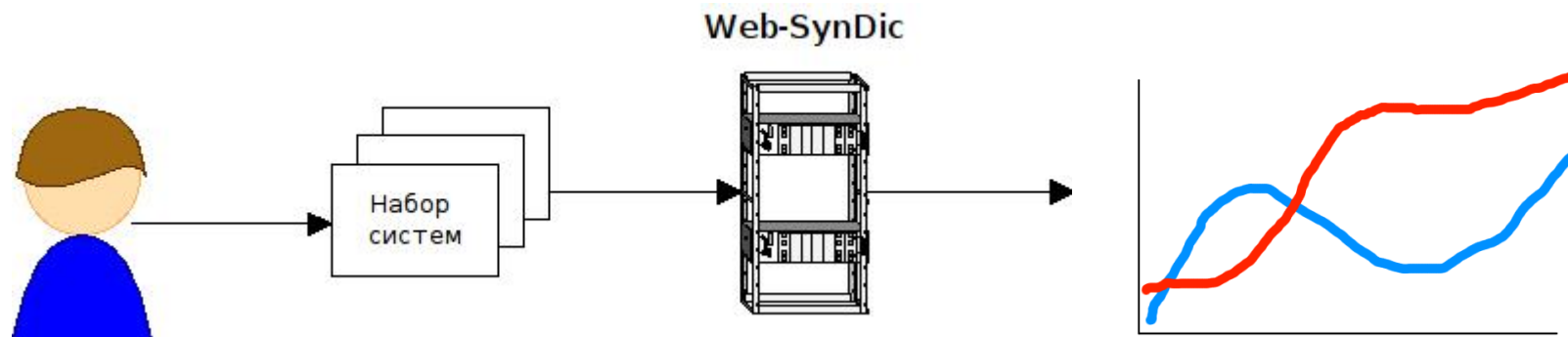
Маршрутизация в P2P сетях



Построение резервных маршрутов в сети MPLS



Анализ работы алгоритмов



Новая архитектура





PETROZAVODSK STATE UNIVERSITY

Department of Computer Science

WEB-SYNDIC

- Process:
- [ANLDE System](#)
 - [Set of ANLDE Systems](#)
- Documentation:
- [ANLDE Theory](#)
 - [User Manual](#)
- [Send Notes](#)
- [Algorithms configuration](#)

Log In

Nickname:

Password:

(you may also continue working as anonymous user, but your profile and limits information will not be saved)

Server Load

2 active users
0 registered users
0 solver tasks
0 generator tasks

Version 1.0

Web System for Demonstrating the Syntactic Algorithms for Solving Linear Equations in Nonnegative Integers

Dear Visitors!

It is my pleasure to present to you Web-SynDic, a student software engineering project. Web-SynDic creates a web system to demonstrate and to distribute independently the testing of a novel syntactic algorithm for finding integer nonnegative solutions (Hilbert basis) of a Linear Diophantine system of Equations with integer coefficients (Nonnegative LDE or NLDE).

Web-SynDic was the first student team project based upon the required "Software Engineering" lecture course in the computer science program. Researcher, Dr. Dmitry Korzun, developed, proved, and implemented the algorithm independently beyond the framework of the project and postgraduate student, Kirill Kulakov, widely tested the implementation. The project began in June of 2003 and the team implemented it in two phases: June 2003—March 2004 and August 2004—November 2004.

We have now decided to publish the results of the project to foster its testing in a worldwide community of scholars. Before doing this, we would like you to experiment with our results. We sincerely appreciate your remarks regarding the algorithm as well as the software. Kindly direct your comments to Dr. Dmitry Korzun at the address: dkorzun@cs.karelia.ru

Dr. Yury A. Bogoyavlenskiy
Head of the Department of Computer Science
Petrozavodsk State University
Email: ybgv@cs.karelia.ru

[The Web-SynDic system overview](#)

Спасибо за внимание!