

2010-?: Technebies, JCAT (*in progress*)

JCAT is an application for automating the evaluation of Java programmer skill tests. A prototype for the test evaluation was made by Simula Research, as part of work on a PhD degree.

Technebies was started to develop professionalize and continue development of JCAT to such a level that the evaluation of the candidates that take the skill tests is fully automated, performed over the internet and of high quality.

As CTO of Technebies, the tasks are many and varied:

- Create a production-ready professional application, based on an existing prototype
 - desktop client for automated upload/download of tests
 - web service interface
 - scalable automated test evaluation
 - integrate automated CAT (computer adaptive testing) algorithms
 - back-office functionality
- Write new skill tests
- Set up internal infrastructure (version control, wiki, encryption of sensitive data, continuous integration)
- Set up production environment (java, tomcat, jcat)

Technology and tools: Tomcat, Java, Groovy, Grails, Griffon, Gradle, Cygwin, BASH, IntelliJ IDEA, Aqua Data Studio, Git, XWiki, TrueCrypt, Kanban

2010-?: Telenor Mobile, Mobile Platform Upgrade (*in progress*)

The main focus for this project is upgrading; hardware, software, OS, 3rd party applications and libraries, for both the client and server side. I'm part of a team of 4-5 people working with the upgrades of COS, the middleware platform in Telenor Mobile.

My work has focused around the following issues:

- Java & Weblogic upgrade
- Programming environment upgrade
- Build system upgrade from Maven 1 to Gradle

Technology and tools: Java, Groovy, Gradle, Weblogic, Bamboo, Cygwin, BASH, IntelliJ IDEA, Aqua Data Studio, MKS, Kanban

2010: Telenor Mobile, OFM task force

I was part of a task force to ensure that OFM (the application used by Telenor Mobile dealers) was able to handle the increased workload that was expected in December (Christmas sales). The application was having performance problems, which originated in different parts of the value chain (app, middleware, db). Downtime and technical problems would lead to loss of sales.

Technology and tools: Java, Weblogic, IntelliJ IDEA, Aqua Data Studio

2009: Telenor Mobile, Flexible Campaign - PACMan 3.4

The Flexible Campaign projects started out in 2006, and this is not the first time I've been involved (see below, dated 2006-2007). Now, flexible campaigns that can

take effect tomorrow, have been in place in Telenor Mobile since 2006. Later projects contain ever more refinements and campaign definitions. This time, much of the focus was on performance.

The main task assigned to me in this project was to implement an easy to use framework for distributed caches. The framework should only consist of a thin wrapper above a 3rd party implementation, and was set to replace a multitude of “home-grown” solutions that has been written over the years. A small web application for flushing of single elements or the entire cache, as well as show different cache statistics was also implemented.

In addition, I worked with tuning and performance of key methods.

Technology and tools: Java, Ehcache, Drools, IntelliJ IDEA, Aqua Data Studio, MKS, Scrum

2008-2009: Telenor Mobile, COS Restructuring

This project consisted of many different smaller parts, with the purpose of simplifying maintenance of COS, the middleware platform in Telenor Mobile. Its main parts were:

- Rules engine integration with COS
- Exit CORBA clean-up
- Separate vertical domains
- Tool for Log analysis
- Improve the functional test framework
- Improve the performance and stability of the COS build

I was involved in this project from an early phase, contributing to the architecture outline, analysis and solution development. I was Scrum Master of the project.

Technology and tools: Scrum, Java, Drools, Splunk, Bamboo, Maven, EJB, SQL, IntelliJ IDEA, Aqua Data Studio, MKS

2008: Simula Research & University of Oslo, External Examiner

I was the external examiner for a Master Thesis delivered by one of the master students who worked on the JCAT application at Simula Research (see below).

2008: Simula Research, JCAT - a Computer Adaptive Test Application

The JCAT application was as a tool for automatic evaluation of submitted solutions to a set of Java Skill Tests (see below). The purpose of the application was to enable a PhD student to automatically evaluate skill test results from a variety of developers and plug the results in to different evaluation and prediction models.

Work on the application was started by two Master students at Simula Research before I took over responsibility for it. The application was in bad shape when I started working on it, so much so that I had to completely rewrite most of it order to incorporate the requirements. In addition I wrote a commander Swing GUI to simplify test evaluation set-up and executions towards the submitted solutions.

Technology and tools: Java, Swing, Maven, SubVersion, IntelliJ IDEA

2007: Simula Research, Java Skill Tests

As part of background work for a PhD student at Simula Research, who develop models for computer adaptive testing (CAT), I worked on the Java skill tests that would be given to a series of test candidates around the world.

My work consisted of QA of tests developed by others, as well as developing new tests.

Technology and tools: Java, Swing, IntelliJ IDEA

2007-2008: Telenor Mobile, Web in Norway

Web in Norway (WiN) was a project for developing two web-based applications to replace existing legacy applications, one for the consumer market and one for large corporate customers. Only the latter application was actually developed and I got involved rather late, many months into the project, in the work necessary for the middleware platform (COS).

Problems with the source control system (MKS) led to 8-9 months of separate development in this project and the rest of COS in different branches with no merging performed. My first task in this project was to clean up this mess.

After finishing this initial merge, I could finally work as a normal mobile MW developer again, writing solutions for customer consent by SMS / email, SIM-card activation and inventory, etc.

Technology and tools: Java, EJB, JMS, Ant, Maven, XML, SQL, XP, Scrum, IntelliJ IDEA, Aqua Data Studio, MKS

2007: Telenor Mobil, Telemetry

The Telemetry project started up because the post and telecommunications authority in Norway imposed a new demand for all mobile operators. A new number series (phone numbers starting with 59) was restricted to telemetry (machine to machine) usage. Furthermore, all new telemetry subscriptions had to take advantage of the new number series.

Naturally, there was no logic in the existing subsystems for this. I participated in this project as one of two middleware developers.

Technology and tools: Java, EJB, SQL, Agile, Scrum, Pair Programming, IntelliJ IDEA, Aqua Data Studio, MKS

2007: Telenor Mobile, COS Maintenance

See the "COS Maintenance" description for 2003-2005 for general description.

After a couple of years working in projects, I was back in the maintenance team for a while. In addition to the usual support issues, problem solving, and different analysis issues, I worked with a couple of major issues for the maintenance team.

- **Code Restructure:** A major restructuring of a very large code base. Major issues with the source control system were discovered as part of this process.

Technology and tools: Perl, BASH, MKS

- **Quality Assurance:** Developer replacements in large software environments are natural, but this time it happened all at once. Many experienced COS developers disappeared and new developers were hired. Due to a larger portion than normal of developers new to COS, a specialized QA group was put together. I was one of 4-5 people in this group who

performed QA of everything from analysis to implementation to ensure that the level of quality in the deliveries were as expected.

- **Load Balancing:** While waiting for a hardware solution I was given the task of writing a software solution to address load balancing problems in production. An algorithm able to take cluster member usage into account has now replaced the simple algorithms delivered by BEA. I also wrote a simple Swing application for test purposes. This solution is still in use (as of June 2010); the hardware solution has still not manifested itself.

Technology and tools: BEA WebLogic, Java, Swing, IntelliJ IDEA

- **AA:** No, it's not alcoholics anonymous, it is architects anonymous! If you're labeled as an architect in Telenor Mobile, your role is significantly changed. First and foremost, you can forget about programming. Meetings, PowerPoint, word and excel will constitute your new weekday. Hence, architects anonymous. As part of a 6 man team, I participated in directing the course for COS.

2007: Open Source Project, MaiPenRai (*ongoing*)

Mai Pen Rai is Thai for "no problem" (as well as a few other meanings), which is well suited for this project. I started working on it while on holiday in Thailand and got pretty far in a short time (a few weeks).

The project is a Java library for simple persistence of Java objects and their relations. For more details, see <http://maipenrai.sourceforge.net/>

So far, I am the only developer, and unfortunately I've not been able to update the site for a while. An ever increasing family, as well as more "spare time" projects, has regrettably slowed down work on this pet-project.

Technology and tools: Java, JDBC, IntelliJ IDEA, HSQL, MySQL

2006-2007: Telenor Mobile, Tailor Plans

Parallel with the Flexible Campaign project, Telenor Mobile started a related project directed towards customers with prepaid subscriptions. A Tailor Plan is a *variant* of a prepaid subscription where the customer can choose between different predefined discounts in return for letting a constant sum being withdrawn from their prepaid account every day. Different tailor plans yield different discounts, so that the customer may choose the best suiting plan according to their own usage pattern. The discounts are typically reduced calling price, a number of free minutes for a period, discounted SMS, etc.

The two projects ran in parallel since a tailor plan is easily implemented as a "constant campaign".

My role in the project was mainly in the analysis phase, as well as development work related to the Flexible Campaign project. In the middleware subsystem, the two projects were handled by the same development team.

Technology and tools: Visio, Java, EJB, JMS, Ant, Maven, XML, SQL, XP, Scrum, Pair Programming, IntelliJ IDEA, Aqua Data Studio, MKS

2006-2007: Telenor Mobile, Flexible Campaign

Flexible Campaign was a project that had been in progress for a while when I entered. The delivery was mainly for the market department, enabling them to carry out a campaign within a very short timeframe, only one day. This was in sharp contrast with the situation before, where they had to set up a project spanning several sub-systems, and had to expect a development time of 3-6 months. A separate application for setting up a campaign was also part of the project.

I entered this project in phase 2 and worked with the rules engine, generalization of price overrides, and partly with agreements. The development team consisted of 8-10 persons.

Technology and tools: Java, EJB, JMS, Ant, Maven, XML, SQL, XP, Scrum, Pair Programming, IntelliJ IDEA, Aqua Data Studio, MKS

2006: Telenor Mobile, Common Voice Mail Service

The post and telecommunications authority has imposed mobile operators in Norway to use one common voice mail number, instead of assigning one number to each subscriber. The reason for this is that number series are almost used up; we are running out of free numbers. This way a few million numbers are freed.

I entered this project rather late and worked mainly with testing and bug fixing. The project was quite interesting though, due to its comprehensive nature. Every system in Telenor Mobiles value chain was somehow involved, which made rather big demands on thorough value chain- and integration testing.

Technology and tools: Java, Swing, EJB, JMS, Maven, XML, TestDirector, XP, Scrum, Pair Programming, IntelliJ IDEA, Aqua Data Studio, MKS

2005-2006: Telenor Mobile, SIM Nordic

To achieve synergy effects from Telenors acquisition of Sonofon in Denmark, a number of projects were established to co-ordinate the value chains. SIM Nordic was one of the few projects that were run to its conclusion. The purpose of the project was to let the Telenor SIM department in Oslo take over SIM-card production for Sonofon, which was outsourced to two external subcontractors. The cost-reduction has been considerable, almost double of its estimate.

I was one of four developers working with implementing the adaptation of the two different SIM-card order value chains, as well as with adapting the SIM-departments Swing-based administration GUI.

Technology and tools: Java, Swing, EJB, JMS, Maven, XML, Axis WebService, SQL, FTP, Shell-script, XP, Scrum, Pair Programming, IntelliJ IDEA, Aqua Data Studio, MKS

2005: Telenor Mobile, Total Customer

The Total Customer concept is borrowed from the banking/insurance business. For instance, if a customer might be defined as a total customer if he/she has a loan, a savings account and a credit card in the same bank. A Total Customer in Telenor will receive 5% discount on all bills and is defined to be any customer with fixed net subscription, mobile subscription and ADSL delivered by Telenor.

I was the only developer in the middleware application (COS) for this project.

Technology and tools: Java, EJB, Maven, XML, Axis WebService, IntelliJ IDEA, MKS

2003-2005: Telenor Mobile, COS Maintenance

COS is the middleware layer for most of the business logic in Telenor Mobile, the largest Telecom company in Norway. COS presents a uniform API for client applications, using the Bea WebLogic J2EE application server.

COS Maintenance is a team of developers who handle small and large development tasks in the system based on change requests and bugs that do not involve more than two systems in Telenor Mobile. Changes involving more than two systems are handled by separate projects.

The focus for the maintenance team is to maintain high quality in the system over time.

My tasks in COS in this period were many and varied.

- **Pareto:** A pure COS project focusing on improving the quality of COS. Both regarding the system up-time and general quality, but also with regard to the speed of development and "Time to Market".

My main tasks in this project was:

- Further development of XRadars: XRadars is an open-source project developed and driven by Telenor Mobile for system analysis of Java-projects, with powerful reporting. It involves both static analysis (code quality, module dependencies, etc) and dynamic analysis (project development over time, based on static analysis of several releases). The analyses are presented as a combination of HTML pages with SVG graphics.

See <http://sourceforge.net/projects/xradars/>

I worked with development of new static and dynamic analyses, as well as a plugin for IntelliJ IDEA.

- Introduction of Maven: COS is a large system, consisting of many thousand classes. It used to be contained in one huge Ant project, with the advantages and disadvantages that entailed. To clean up cyclic dependencies and avoid them in the future, the project was split up into many small Maven projects with project dependencies where cycles are illegal.

I worked with the introduction of Maven in COS, by extracting smaller independent parts into separate projects, resolving cyclic dependencies and writing build scripts along the way.

Technology and tools: Maven, XML/XSL, HTML, SVG, Java, XMLSpy, IntelliJ IDEA, XP, Scrum, Pair Programming, MKS, CVS

- **COS Support:** To shield developers from all kinds of COS related requests from outside systems (typically clients), a mailbox for COS support is created. Typically will one experienced COS developer get the responsibility of handling incoming requests, analyze these, and if necessary assign them to the right person.

I've had responsibility for COS support in several periods, and worked with streamlining the COS supports process.

Technology and tools: Java, EJB, JMS, SQL, IntelliJ IDEA, DBArtisan, MKS

- **Miscellaneous:** As a part of the COS maintenance team, I worked with several smaller change requests and bug fixes. Everything from trivial to more complex changes (like performance problems, etc).

Technology and tools: Java, EJB, JMS, SQL, IntelliJ IDEA, DBArtisan, XP, Scrum, Pair Programming, MKS

2003-?: JGenetic, Genetic Programming Framework (*ongoing*)

Genetic Programming is one of the most promising fields within Artificial Intelligence (AI). JGenetic is a full-blown framework in Java for automatically creating strongly typed programs. A rich set of genetic operators are given, such as several mutation operators, crossover, reproduction and features for automatically defining functions, iterations, loops, recursions, and storage access. Target language is Java, but by providing templates for all operations, virtually any language can be used as target language. A rich set of test cases are provided.

This is an ongoing project developed privately in my spare time. It may be converted to open source sometime in the future, if I feel like it. All work is performed by me.

Technology and tools: UML, Java, Visio, IntelliJ IDEA, CVS (now SubVersion)

2003: SMSWorld, SMS information system

A system for bulk-sending of SMS messages to matching subscribers. Incoming information is manually evaluated and, if approved, sent as SMS messages to all subscribers of matching information category. A Swing-based administration module has also been implemented for this system.

Development was performed by me.

Technology and tools: UML, Java, Swing, JDBC, MySQL, Ant, Visio, IntelliJ IDEA, CVS

2001-2002: Telenor Mobile, COS and Compass Billing

COS is the middleware layer for most of the business logic in Telenor Mobile, the largest Telecom company in Norway. COS presents a uniform API for client applications, through the Bea WebLogic J2EE application server. It used to be CORBA based, but is now ported to J2EE.

Compass Billing is a large project to introduce a new Billing system in Telenor Mobile.

- **SIM & Number Management:** A total rewrite of the SIM & Number related services, moving the desired functionality from Telenor Mobile backend systems and into COS. A completely new design, with a Java based Swing GUI, utilising J2EE technologies in COS and a new DB design.

This was a large project finished within a short time-frame by a small team that handled everything, including requirements, analysis, design and implementation.

Technology and tools: UML, Java, Swing, Ant, WebLogic, EJB, JMS, JDBC, XML, SQL, Sybase, IntelliJ IDEA, TogetherJ, Visio, DBArtisan, PVCS

- **Network Service:** Asynchronous service in COS for communication towards the telecommunication network. For instance, to activate a SIM card, change operator for a given number, get status for a number, etc. We were two people who designed and developed this service.

Technology and tools: UML, Java, Iona CORBA, JDBC, XML, SQL, Sybase, MQ, IntelliJ IDEA, TogetherJ, Visio, PVCS

- **Compass Billing Release 1a:** For the first release of Compass Billing, some changes were made in COS, and several new services were developed. I was one of two developers to analyse, design and implement services for: Invoice, Billing and a Daemon Batch job involving large amounts of data.

Technology and tools: UML, Java, Iona CORBA, JDBC, Sybase, SQL, XML, MQ, IntelliJ IDEA, TogetherJ, Visio, PVCS

2002: Mogul Technology, Course Instructor in J2EE essentials

Course instructor in The Middleware Company's course J2EE essentials. The Course used Bea WebLogics application server. The course lasted one week and was arranged by Mogul Technology.

I was instructor in this course several times in 2002.

Technology and tools: WebLogic, Servlet, JSP, RMI, JNDI, JDBC, EJB, JMS, SOAP

2001: Mogul Technology, Course Instructor in OOAD

Course instructor in Rational's OOAD course. The course lasted one week and was arranged by Mogul Technology.

I was instructor in this course several times in 2001.

Technology and tools: UML, RUP, Rose

2001: Nextra, Preload-TNB

Developed AppRunner, a generic, small application for simple installations that are distributed on the Internet. All work performed by me.

Technology and tools: C++, Visual Studio 6.0

2001: Arctura, Rastafa – phase 1

The web-application Rastafa was developed internally in Arctura. It is an application for registering consultant work hours and billing the customers. It was mainly developed for the purpose of comparing equivalent web-application technologies.

- **J2EE-based prototype:** We were two developers who implemented a prototype of a subsystem in Rastafa to compare development time, performance and stability with the Microsoft .NET version of the same subsystem.

Technology and tools: Tomcat, Java, JavaBeans, JSP, JDBC, JavaScript, SQL Server

- **.NET implementation:** I participated in the first phase of the project as a technical project manager, system-architect and partly as a developer.

Technology and tools: UML, MagicDraw, C#, ADO+, Visual Studio.NET, SQL Server

2001: Arctura, Web pages

Simple framework for generating static web-pages, and design of these.

Technology and tools: HTML, C++, Visual Studio 6.0

1997-2000: Det Norske Veritas, Sesam Workflow Manager (WFM)

The Sesam portfolio from DNV contains several applications for modelling offshore constructions, and performing computer tests, simulations and strength calculations on these. Typically on an oil platform. WFM is a graphic tool to visualise and model the computer workflow for the calculations.

I worked almost four years on this project and had many, varied tasks.

- **Information Manager:** System handling the large amounts of information that a WFM network consists of. The system has several purposes; file and flow version control system, support multi-user environment, security of data, audit log, handle both files and objects.

I was responsible for the Information Manager and been the main analyst, designer and developer. Working in all software layers, GUI, middleware with business logic and the database.

Technology and tools: COM, MTS, SQL Server, XML, C++, Visual Studio 6.0, UML, Rational Rose, Perforce, Silk Radar, Purify

- **WFM Setup:** Installation of WFM. Developed entirely by me.
Technology and tools: InstallShield
- **BRIX Software Factory Setup:** A generic system for installing, setting up and easily switching between different development environments. Developed entirely by me and became later a part of the BRIX framework.
Technology and tools: InstallShield
- **Porting:** In an early phase, parts of BRIX and WFM were ported from MS Windows to UNIX (Solaris) using Bristol Wind/U. It proved too costly though, so we chose making a bridge to UNIX based systems using FTP on TCP/IP. I did the initial porting.
Technology and tools: COM, C++, Visual Studio 6.0, Wind/U, UML, Rational Rose, Perforce, Silk Radar

1997: Gjensidige Bank, Autosøk

Autosøk is a web-based automatic credit evaluation system, used today by a variety of chain-stores and credit companies. A customer fills out an online application form and gets a reply at once. I worked on the client side on this application.

Technology and tools: Java, JavaScript, HTML, Visual Cafe, Visual Interdev

1997: Numerica, The Handbook

The Handbook was the intranet in Numerica and later Numerica-Taskon. I made some pages gathering information from the database in TimBa, Numerica-Taskon's time and customer management system.

Technology: JavaScript, HTML, SQL, ASP