



**OULUN SEUDUN  
AMMATTIKORKEAKOULU**

Raahen tietokonealan yksikkö

Janne Ohtonen

PaKal: Packing Material Book-Keeping

24.02.2003

Degree Programme in Computer Engineering  
Raahen Institute of Computer Engineering and  
Business, Oulu Polytechnic

## FIRST WORDS

This bachelor's thesis was ordered by Valmet Automotive. This final thesis is part of a larger Internet application that includes the portal, quality reporting and packing material management. Thus, this thesis concerns only the part that is implemented by CCC Industry Oy.

This final thesis is confidential for three years beginning 2002.

This final thesis is written by Janne Ohtonen (janne@ohtonen.net)

Raahe, 24.02.2003

*Janne Ohtonen*  
Janne Ohtonen

## **ABSTRACT**

Done by: Janne Ohtonen DPC-9SN (DCE-99)  
Name of the final thesis: PaKal - Packing Material Book-Keeping  
Year: 2003  
Wideness: 10 credit units  
Length: 91 pages  
Institute: Raahe Institute of Computer Engineering

Packing Material Book-Keeping is an Internet application done with J2EE technology. It is part of a larger Internet extranet system used by a car factory's personnel and vendors. The purpose of this thesis is to produce an application that gives the possibility to control packing material logistics.

To design this system we will use J2EE Design Patterns and to develop it we shall use Oracle's and open source tools. The basic flow of the work is to first design, then implement and after that to test the application. After the customers approval it will be taken in to use.

This topic was chosen because it has many new aspects in it. J2EE technology is still quite young and the customer did not have any previous experience from such a web technology. Thus, it was an interesting subject to evaluate.

J2EE was found to be good new technology for developing complex Internet application with database connections.

Keywords: Java, J2EE, EJB, Internet application, material logistics, database

## ABSTRACT

Pakkauskaluston kirjanpito, PaKal, on Internet sovellus, joka on toteutettu J2EE teknologialla. PaKal on osa suurempaa kokonaisuutta, joka sisältää myös portaalin ja laadunvalvonta sovelluksen. PaKalia tulee käyttämään erään autotehtaan henkilökunta ja tavarantoimittajat.

Tämän dokumentin tarkoituksena on tuottaa kattava kertomus siitä, kuinka tämä sovellus on suunniteltu, toteutettu ja testattu. Myöhemmin tätä dokumenttia tullaan käyttämään soveltuvin osin PaKalin ylläpidossa.

Järjestelmän suunnittelemisessa on käytetty J2EE standardin mukaisia Design Patternseja. Niiden avulla käytetään muiden jo hyväksi havaitsemissa tekniikoita ja toteutustapoja. Työkaluina on Oraclen ja avoimen lähdekoodin tuotteita.

Valitsin insinööriyöni aiheeksi J2EE Internet sovelluksen, koska kyseinen tekniikka on vielä melko kehittymätöntä eikä asiakkaalla tai minulla ollut aiempaa kokemusta asiasta. Siksi PaKal tuntui hyvältä vaihtoehdolta oppia uutta Internet sovelluksista, joista olen ollut kiinnostunut jo vuosia.

Pienten alkuvaikeuksien jälkeen J2EE teknologia osoittautui hyväksi Internet sovellusten tekoon. Tulevaisuudessa kunhan teknologia kehittyy entisestään uskoisin, että on mahdollista tuottaa monimutkaisiakin Internet sovelluksia helpoilla työkaluilla ja -tavoilla.

Avainsanat: Java, J2EE, EJB, Internet sovellus, materiaali logistiikka, tietokanta

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# **1. GENERAL**

The first pilot version of the Extranet Internet application was done for Valmet Automotive in 2001 by CCC Industry Oy. It was coded by Antero Peippo who is also involved in this project. He did the pilot version with Oracle Forms 6i which is a Java compatible client / server environment.

The pilot version was found to be insufficient in efficiency and it used too much bandwidth from the network. Therefore, alternative choices were needed to make the Extranet lighter and faster to use.

## **1.1. Background for this final thesis**

Since CCC Industry did not have so many employees who have knowledge about Internet technologies, I was hired in the beginning of 2002. They thought that my knowledge of Internet WebPages would come in handy later on. That was proven right from the beginning I discovered that I didn't actually know anything about J2EE technology. Before that I had used only HTML and PHP languages.

A golden opportunity to get familiar with J2EE was offered to me when re-evaluating possible techniques for this Extranet system. Some people in CCC had done a similar project with Java tools and they recommended it. So, since other techniques had some lacks compared to Java, we decided to learn this new technology. On the way to this idea about J2EE technology I saw the possibility to do my final thesis on this subject.

## **1.2. Customer's view**

When the customer was evaluating possible techniques and systems to realise their Extranet system I had a key role in presenting J2EE technology to them. I made a two-layer J2EE application that used their machines to present data from a database. This helped customer to see a demo version of the technique to be offered to them.

The demo version was proven to be much faster and more efficient compared to pilot version of the Extranet. So, after a presentation and evaluation round they decided to take the J2EE technology as their Extranet base.

From the customer point of view this thesis will provide them with the first version of an Internet application done with Java. They also want to make a solid base for new applications to come from.

This Extranet currently consists of three parts at the moment with options for more parts. The base application is the portal. Then all the other applications

are attached to this portal. The customer decided to let us do the packing material logistics and the portal is done by another software vendor.

### **1.3. Software Vendor's view**

From the vendor's point of view this was great opportunity to offer me a final thesis and get new software developing techniques into the company. It also presented quite a risk for the company because not so many people had experience in these techniques at that time. Therefore it was taken into consideration that the project may exceed the planned quantity of work.

### **1.4. Literature**

From the very beginning of this project I have been reading a lot of material concerning Java ideology. There are many good books on the Internet for one to read but here are some important ones:

J2EE Design Patterns (<http://java.sun.com/designpatterns>)

Enterprise JavaBeans (<http://java.sun.com/ejb>)

JavaServer Pages (<http://java.sun.com/products/jsp>)

Servlets (<http://java.sun.com/products/servlets>)

HTML standard (<http://www.w3.org/MarkUp/>)

One can also find good books from the local library to read about J2EE technology.

## SOURCES

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