



Paul-Boer Putter

401 Wolroy house, 37 Buitenkant street, Cape Town

T: +27 82 448 7791

E: [p.putter@gmail.com](mailto:p.putter@gmail.com)

### Overview

Paul is a software architect and developer with over twenty years of experience in the software industry. His strengths are in finding innovative algorithms for technically challenging problems, frequently of a highly mathematical nature, and also the design and implementation of intuitive and user oriented graphical user interfaces. He has been involved in software development since 1987. He is 51 years old.

### Career highlights

Profidata AG

2012 - 2013

Senior software engineer working on the development of new functionality and re-engineering existing functionality for software used by investment fund managers in the banking industry. Paul was responsible for back end functionality written in C++.

<http://www.profidatagroup.com/en/home/>

ITS Abacus

1999 - 2011

Paul was the system owner of the o! timetable optimisation system which is marketed to the tertiary education sector. Approximately fifteen universities in Africa and the British isles use the system. His responsibilities included managing the design and maintenance of the entire system. He was also personally responsible for the development of the optimisation algorithms. The system has a web based data collection front end written in C# and ASP.net while the optimiser is written in C++.

<http://www.itsabacus.co.za>

Headcount systems

1992-1997

Head developer and co-owner on the headcount people counting system, an embedded system for counting people in a passage. He is co-inventor on two patents in this regard. The company was sold to a group with an international footprint in the vehicle counting industry. The product is still in widespread use in the retail industry. The embedded software was written in c for 8086 family processors and uses neural net technology.

[www.headcountsystems.com](http://www.headcountsystems.com)

Billcost

1989-1992

Team leader on the redevelopment of a builders costing package for the home construction industry. The development included the development of a bespoke database, as the databases available at the time were too costly for the end users. The software was used well into the late nineties and was developed in Turbo Pascal.



- Skills**
- Development management – 5 years
  - Software design / architecture – 20 years
  - C/C++ development 15+ years
  - Operations research 13 years

### Career chronology

Date	Activity	Position	Comments
1976-1980	Menlopark High School	Scholar	Matriculated with three distinctions
1981-1983	University of Pretoria	Studied BEng (Electronics)	Hospitalized for near-fatal meningitis during mid-year exams, causing him to fail the third year. Never completed the degree
1985-1986	SADF	2 <sup>nd</sup> Lieutenant	Compulsory military service
1987-1989	Various	Contract programming	Freelance programming for various companies, including Learning Technologies and Grinacre Process Control
1990-1992	Billcost	Head of development	Left to pursue own business
1992-1997	Headcount systems	Technical director	Sold the company
1997-1999	Panama Technologies	Development manager	Company closed
March 1999 - December 2011	ITS Abacus	System owner	Left due to insufficient remuneration and wanting to move to Cape Town
March 2012 – April 2013	Profidata AG	Senior software engineer	Retrenched – development team drastically reduced due to financial concerns
July 2013 - August 2013	Go2Africa	Contract developer - Python	Contract ended



### References

Name	Position when working together	Present position	Contact details
Hercules Dreyer	CEO Integrear Abacus	Project manager University of the Free State	+27 83 310 4447
Ivan Meyer	Line manager ITS Abacus	Space manager Queen Margaret University, Edinburgh, Scotland	+44 788 934 2551 imeyer@qmu.ac.uk



## Selected projects

### **Profidata AG: Creation of new caching functionality in order to improve performance**

Several different types of data were added to the global server side cache in order to reduce database access. These were all written in C++ with a small API to enable access from the Java components for clearing the caches when the data is updated. The proprietary internal script language was modified to use the cached data. Paul was the sole programmer on these projects, which were completed over the course of about six months, finishing in March 2013. Paul reported directly to the head of development based in Zürich. The caches were released as completed as part of the standard release cycle of the project.

### **ITS Abacus: O! class and exam timetabling system**

This system was developed over a period stretching from 1999-2011 and went through three major versions.

#### **Version 1 1999 – 2001**

This system consisted of optimising software written in C++ using ILOG optimisation and visual libraries with very limited data manipulation tools developed in VB.net. Data was imported from the university administration system and used mostly unchanged to create class timetables. This was found to be infeasible as the data imported during a few trial at various universities was not of sufficient quality for timetabling purposes.

#### **Version 2 2001-2005**

A data collection system was added. This was initially in VB.net, but was gradually changed to a C#/ASP.net web front end using MSSQL server. Exam timetabling functionality was added and the optimisation was improved over the entire period as more data from different clients became available. Class timetables were successfully produced and used at NWU for the first time in 2001, followed shortly by the first exam timetables.

#### **Version 3 2005-2011**

An almost complete rewrite of the optimisation led to drastic improvements of optimisation results and improved user control of the optimisation process. The data collection software was moved entirely to the web and major new functionality was added. The software went through continuous development over the period as the product was used at several international universities, who often had very different requirements to their South African counterparts.

During the entire time Paul was responsible for the technical lead of the project and the development of the optimisation software. The development team varied between two to three people working closely with the timetabling consultants. Due to the extremely difficult nature of the problem and the huge variations in client culture, the software had to constantly be adapted to new situations. Paul reported directly to management and worked with all the various team members over this period. The system is one of only a handful world-wide, as many have tried and failed to solve the timetabling problem. It is a challenging problem both from a technical and implementation perspective.

### **Headcount people counting system 1992-1997**

Paul was head developer and co-owner on the headcount people counting system, an embedded system for counting people in a passage. He is co-inventor on two patents in this regard. The embedded software was written in c for 8086 family processors and uses a three layer feed forward neural net. Training of the neural nets was critical for accuracy and the system remains one of the most accurate on the market today. For the bulk of this period Paul was the sole developer on the embedded software. Management software was developed by a separate team. The product was first successfully used for a nationwide railway station census in 1995/6 and several more thereafter. It is in widespread use in many malls world-wide, the largest installation being Menlyn mall having over 80 counters.



### **Billcost construction costing software 1989-1992**

Paul was development manager running a team of five programmers to rewrite the pre-existing software. It was written in Turbo Pascal and used a proprietary database for which Paul developed the B+ tree indexing himself. Paul reported directly to the company directors and was responsible for managing and recruiting the entire team. It was object oriented methodology in the very early days. The software went live in 1991 and was still in use in the early noughties.