Dr. Michael G. Abbott

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Born 25th March 1960

I am an experienced Software Engineer with a deep understanding of theoretical issues combined with strong practical skills and a creative approach to problem solving.

As a developer I led successful small teams in both developing new products and system maintenance, and I have enjoyed coaching and mentoring. My experience covers Reuters financial data feeds, aerospace testing, automated production and laboratory instrumentation, with a focus on creating well behaved and reliable systems.

My recent PhD addresses an important topic in the semantics of datatypes in computer languages and is a contribution to the problem of creating reliable software.

Key Achievements

My PhD summarises successful research into data type semantics using dependent types and category theory: a class of abstract data type representing "storable data", the *container*, was identified and key semantic properties were proved.

Have developed systems using a variety of programming languages (C, C++, Pascal, Python, Assembler) in a variety of environments (Microcontrollers, DSPs (Digital Signal Processors), Win32, VAX/VMS, Unix).

Has been particularly successful in transforming existing but poorly behaved systems into highly reliable products, and rescuing failing systems via specific focused intervention.

- Took responsibility for the Personal Data Dictionary (PDD, a Windows specific bridge to real time Reuters financial data), ported it from Windows 3.1 (16 bits) to Windows NT (32 bits) and transformed it into the highest performance and most reliable DDE (Windows "Dynamic Data Exchange") server on the market.
- As team leader for the PDD development with a team of about half a dozen people, was promoted to division manager. Successfully managed the RTD (Real Time Datafeeds) division for several years while supporting and enhancing PDD.
- "Scan 10" was a ten axis scanning and data capture system for Non-Destructive Testing (NDT). Developed the algorithms, the geometry and the DSP and Microcontroller software used to drive this system. A Scan 10 installation is still running at the BP factory in Avonmouth.

PhD and Research **2002–2004**

- PhD on "Categories of Containers". Identification of the *container* as a key data type and applications of containers to algorithms for navigating inductive data structures.
- Publications on containers and related topics with Drs. Altenkirch, Ghani and McBride. Two refereed papers presented at conferences in 2003.
- Presentation of research in progress to research meetings and to research groups at Oxford and Cambridge.

RCP Consultants Ltd, Blewbury & Didcot, Oxon. **1988–2002**

Joined as Senior Software Engineer, later promoted to Consultant and then Division Manager. Development was largely in C or C++ under DOS, Windows or Windows32. Have recently worked on BSD ("Berkeley Standard Distribution") Unix (FreeBSD) and have some familiarity with Linux.

- “WebIDN prototype”: a server application (written in Python) which provides Reuters real time financial data to a Java display application for viewing Reuters data over the web.
- Reuters Terminal (RT) performance enhancement. Reuters reported “locking up” of their principal financial display application under heavy load. Tracked this problem down to a design error in the data processing core and replaced this core while maintaining full compatibility with the rest of the system.
- “Personal Data Dictionary (PDD)”. Transferred PDD from Windows 3.1 to Windows NT, made it more reliable and boosted its performance and capacity substantially. Promoted from team manager to division manager towards the end of the life of PDD. Maximum size of division about 8 people.
- “Terminal Server”: a project to emulate a “dumb terminal” based General Practice medical management system using PCs. Worked as team leader and system architect. System developed in C++ on Windows 3.1.
- “Formatted Dealing”: a prototyping project in Visual Basic for a Reuters currency trading system (Dealing2000).
- “Non Destructive Testing (NDT)”. Maintained a 2-axis and then developed a 10-axis ultrasonic scanning system. For Scan10 developed complex curve following software on Windows 3 and on a Motorola 56001 DSP; also wrote a controller in 8051 assembler.

Meta Machines, Abingdon, Oxon. **1986–1988**

Software Engineer, working on vision algorithms for guiding robot welding, in particular part of the system used to build rocket motors for Ariane 2. Also wrote a DDCMP (Digital Data Communications Message Protocol) implementation.

Pye Unicam, Cambridge, Cambs. **1984–1986**

Software Engineer, working on development of PU8700 UV Scanning Spectrophotometer. Developed embedded software for data capture in Pascal and Z80 assembler.

- Developed a tiny (8k bytes) Real Time Kernel on the 68000 used as the heart of the development of the PU8700.
- PU8700 performance enhancement. When development of this product was nearly complete a number of serious performance and stability problems were encountered. Tracked these down and fixed them. Is proudest of tracking down, diagnosing and proposing a fix to an interrupt race condition.

Education

- PhD *“Categories of Containers”* in the categorical semantics of types in Computer Science with Dr. Neil Ghani at Leicester University, 2000–2003.
- A variety of training courses in Management Development, Object Oriented Design, Unix Software Development, Real Time Programming, etcetera.
- First in Computer Science (part II) and Mathematics (part IA) at Cambridge University, 1980. Scholarship to Pembroke College, Cambridge, 1977.
- 4 grade A and 2 distinctions at A-level (1976). Attended school at the British School of Brussels, Belgium (1971–1975) and the City of London School (1969–1971).

Leisure

Studying type theory (a mathematical branch of computer science with fascinating connections with logic). Yoga: qualified as an Iyengar Yoga teacher in 1991. Reading about life sciences with a particular interest in evolutionary relationships. Runs and maintains a FreeBSD server at home.