Pete Woods

Software Engineer

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"Pete takes broken pieces of software and consistently works to bring them to a very solid state by creating testing infrastructure and coverage when needed, then applying careful refactoring and cleanups before adding any features. This is an uncommon trait in our field, where many just want to rewrite things from scratch, and it's something that sets him apart as a great role model." — Spotlight Award, 2016

About me

I won a *Spotlight Award* at Canonical (quoted above) in 2016 for my technical leadership over several projects that had previously failed to deliver. I have been described by my manager as having the rare quality of combining 'innovator' and 'finisher' roles. I do an excellent job of sharing knowledge and guiding others to do things correctly, or simply helping to solve their problems. I possess a deep understanding of the technical details, whilst also having an appreciation of the wider business context.

I am considered a role model for the quality of my work (code quality, QA, testing), which informs and inspires my teammates. I am an extremely fast learner, getting productive in new areas / technologies very quickly. I can be put on almost any project and reliably deliver, and always prioritise company goals or ways of working over personal preferences.

I thrive working in a team, and willingly go out of my way to help my co-workers. Despite working remotely, I have developed close working relationships with my colleagues.

Skills

Languages	C/C++, Java, GoLang, Ruby, Python, BASH, JavaScript
Technology	REST, TCP/IP, Qt/QML, Linux, Git, Perforce, Jenkins, Oracle, MySQL, PostgreSQL
Techniques	Agile, SCRUM, test driven development, continuous integration

Experience

Canonical Ltd. — Remote worker, UK

2012–present **Senior Software Engineer**, *Ubuntu Touch.*

I worked on various components of Ubuntu Touch.

- **Testing enabler** I developed several C++ libraries (libqtdbustest, libqtdbusmock, unity-scope-harness, gmenuharness) to enable testing of projects that previously weren't testable at all, or only in a limited way. Here are examples of extremely readable tests using these libraries: indicator-network, indicator-sound.
- **Security** Unity8 is the first Linux shell that supports untrusted applications from an app store. Therefore it requires hardened code (e.g. decoding untrusted data externally). I applied these practises in the localisation of the lock screen and in the notification center daemon.
- **Projects** I developed the lockscreen infographics from backend to presentation. I developed the voice control system, writing scripts to train CMU's Sphinx against the VoxForge speech corpus, creating language models for use in a simple command and control library. I worked extensively on the network management indicator to improve its quality.

BAE Systems: Applied Intelligence — Cheltenham, UK

2010–2012 **Principal Consultant**, *Electronic Systems Group*.

- **DevOps** I led the Agile development of an automated system for continuous deployment of a large and complex software stack based on RHEL using Ruby, Puppet, RSpec, Cobbler and RHEL Anaconda. I created new testing tools to enable test driven development of Puppet modules. This meant that each pull request triggered a new CD image and complete system deployment in addition to running RSpec-based unit tests on Puppet modules.
- **High performance C++** I implemented high performance data structures (e.g. the SNOOPy calendar queue) using STL and Boost. I carried out performance tuning using a mixture of callgrind/KCachegrind and VTune. I optimised the product's test suite, reducing a complete run to under 5 minutes, down from over an hour.
- **Project infrastructure** I managed the project infrastructure, both the physical assembly and software provisioning. I used Foreman as the front end to a Puppet-based deployment system. I deployed a Gerrit/Git/Jenkins based system for my team to facilitate great testing and review practises.

2008–2010 **Senior Consultant**, *Systems Integration Business Unit*.

- **Team leadership** After becoming the tech lead of a data fusion and visualisation platform, I instigated the use of Agile methods (SCRUM and TDD) to restore stability to a rapidly growing codebase (~1 million LOC) and team (25 engineers). This codebase is now integrated into BAE Systems' AML Compliance offering.
- **Customer relationships** I worked closely with customers and stakeholders from different organisations to ensure the product headed in a direction that met all their needs.
- **High performance Java** Being a data fusion platform, scalability and performance was of paramount importance. The initial naive graph implementation used standard HashMaps to store link and attribute data. Following several iterations and thorough research, I finalised on using GWT's HashMap. Combined with other optimisations, I was able to achieve memory savings of around 80%. I also used toolkits such as YourKit and VisualVM to inform optimisations such as the removal of virtual function call overhead inside performance-critical classes offering around 10× performance improvement.

2006–2008 **Consultant**, *National Security Business Unit*.

- **Data migration** I led a small team developing and deploying a data migration solution using Java and Oracle PL/SQL.
- **Oracle tuning** I spent time performance profiling the database design and making improvements using Oracle's query plan analyser. With the right selection of indexes and SQL query design I was able to improve queries that were taking hours to complete in minutes.
- **Data security** The data originated from several different systems and user groups with differing levels of access privileges. The migration solution had to preserve this compartmentalisation, while allowing users to confirm the data's integrity.

Education

2004–2005 **MSc in Mathematics**, *Distinction*, University of York.

- **Content** Entitled "Data Analysis, Networks & Non-linear Dynamics", this course taught important techniques in data visualisation, network modelling and dynamical systems.
- **Thesis** I researched automated methods for solving variable demand equilibrium network models. I compared generic classical methods, including simplex downhill search and simulated annealing, to more modern experimental and domain-specific methods. I presented the results at the national conference for *Mathematics in Transport*.

2000–2004 **BSc in Mathematics & Computer Science**, *1st*, University of York.

- **Dissertation** I studied use of the *Syndrome Decoding Problem* as the core of a cryptographic system. This involved attacking it with nonstandard heuristic search techniques, some of which I had learned during my industry placement at BAE's *Advanced Technology Centre*.

References

Available on request.