Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

CS3012 Software Engineering
Assignment #3: Biography of an influential software engineer

Jevgenijus Cistiakovas, Std# 17325426

October 13, 2019

Contents

1 Introduction

This document is a biographical essay of a key software engineer. In particular, the subject of this biography is **Howard G. "Ward" Cunningham** - an American software engineer who developed the first wiki - a Web-based software application that allows users to collaboratively contribute and edit articles on various topics.[2] He also pioneered in design patterns and extensively contributed to the field of programming methods, including the use of design patterns that became known as "extreme programming".

2 Howard G. "Ward" Cunningham - Biography

2.1 Early life

Born on may 26, 1949, in Indiana, Cunningham grew up in an era before the Internet. He was however fully engaged with amateur radio - the next-best communications medium of that era. In particular, he was fascinated by the creativity of global community that gathered around the ham radio. Cunningham learned to program in high school, which had a special program to provide students access to mainframe computers at the Illinois Institute of Technology.[5][4] He then attended Purdue University, where he received a bachelor's degree in electrical engineering and computer science and then a master's in computer science. After graduation Cunningham worked as a researcher in microcomputer systems for Tektronix. [2]

2.2 Wiki

At Tektronix, Cunningham was assigned to keep track of projects, a task similar to what Berners-Lee faced when he went to CERN. To do this he modified a superb software product developed by one of Apple's most enchanting innovators, Bill Atkinson. It was called HyperCard, and it allowed users to make their own hyperlinked cards and documents on their computers. Apple had little idea what to do with the software, so at Atkinson's insistence Apple gave it away free with its computers.[4]
Using HyperCard, Cunningham built an application that allowed users to add free-form data to a database and link it to other entries by clicking a button. Users who tried it were fascinated by its potential. Cunningham then wanted to expand it so users could access it over networks.[2] However, he was unable to develop a networked version of his HyperCard application. One colleague suggested using the World Wide Web, and he created an Internet version of his HyperText program, writing it in just a few hundred lines of Perl code. The result was a new content management application that allowed users to edit and contribute to a Web page. Cunningham used the application to build a service, called the Portland Pattern Repository, that allowed software developers to exchange programming ideas and improve on the patterns that others had posted.[4] As any tool, it needed a name. At first he thought of calling it QuickWeb. He then remembered hearing the phrase wiki wiki or "quickly, quickly") in Hawaii, and he decided to call his system wikiwikiWeb. Today, it is just known as a wiki.[2]
WardsWiki (as it became known) allowed anyone to edit and contribute, without even needing a password. Previous versions of each page would be stored, in case someone botched one up, and there would be a "Recent Changes" page so that Cunningham and others could keep track of the edits. But there would be no supervisor or gatekeeper preapproving the changes. It would work, he said with cheery midwestern optimism, because "people are generally good." It was just what Berners-Lee had envisioned, a Web that was read-write rather than read-only. "Wikis were one of the things that allowed collaboration," Berners-Lee said. "Blogs were another."[4]

2.3 Wikipedia

Like Berners-Lee, Cunningham made his basic software available for anyone to modify and use. Consequently, there were soon scores of wiki sites as well as open-source improvements to his software. But the wiki concept was not widely known beyond software engineers until January 2001, when Wikipedia was lauched by Kimmy Wales and Larry Sanger.[4][10]
Wikipedia became to Web content what GNU/Linux was to software: a peer-to-peer commons collaboratively created and maintained by volunteers who worked for the civic satisfactions they

found. It was a delightful, counterintuitive concept, perfectly suited to the philosophy, attitude, and technology of the Internet. Anyone could edit a page, and the results would show up instantly.[4]

2.4 Design Patterns

Ward Cunningham has contributed to the practice of object-oriented programming, in particular the use of pattern languages and (with Kent Beck) the class-responsibility-collaboration cards. He also contributes to the extreme programming software development methodology. Much of this work was done collaboratively on the first wiki site. Cunningham is also an important figure in Agile movement. As a key figure in extreme programming he was one of the seventeen reputable software engineers that came up with a *Manifesto for Agile Software Development*. The Manifesto played an important role in popularizing the Agile approach to software development. [1][9]

2.5 Open Source

Cunningham was and is an important figure in Open Source. He never patented his main creation - wiki. Instead he made the wiki software open and available to everyone. He was happy to see Wales and Sanger adapting his software for such an ambitious project as Wikipedia.[4] Cunningham worked for a few years on open-source projects at Microsoft. Later he held the position of Director of Committer Community Development at the Eclipse Foundation - a non-rpofit organisation that oversees development of an open-source development environment Eclipse.

2.6 Present

As Cunningham & Cunningham Inc., Ward and his wife consult people in the area of object oriented programming.

3 Discussion

Ward Cunningham is undoubtedly an influential figure in software engineering, who is unfortunately not well known by the people outside of software engineering. Despite having being a user of wikis and Eclipse for long time and knowing about extreme programming and design patterns, I only learned about Ward Cunningham as one of the authors of the Agile Manifesto. The fact that I have used, learnt about and practised his inventions and ideas was a direct indicator to me of how influential person he is.
The impact of the "products" on which Cunningham had worked is enormous. According to multiple surveys[7][3][8], most of the companies nowadays that develop software, as well as those that do not, make use of at least some practices of Agile development, including the extreme programming implementation of agile values. This includes but is not limited to short development cycles, extensive code reviews, unit testing of all code, etc. With respect to design patterns, Cunningham was the chairperson of the first ever conference on pattern languages at the University of Illinois at Urbana Champaign in 1994.[2] The purpose of this conference is to develop and refine the art of software design patterns. The biggest product of Eclipse Foundation - Eclipse IDE is one of the two most widely used IDEs for Java with proprietary IntelliJ IDEA being its main competitor.[6] Similarly, the biggest implementation of wiki concept - Wikipedia is ranked as the 9th most visited site on the web by Alexa rankings. Wikipedia has hundred thousands active editors[11], with almost all of them being volunteers, exactly as Ward Cunningham has envisioned. Finally, the work of Cunningham, being it wiki or agile practices always motivated people to collaborate in order to achieve the greater result.

What fascinates me in Ward Cunningham is that unlike many of software engineers he was never driven by financial gain. His main creation - wiki - is free and open for all. Eclipse Foundation is a non-profit corporation. Design patterns, extreme programming and agile are generic practices intended for anyone to use. I think that there is an explanation to that. It looks to me like Cunningham's interest to open source is due to his involvement in amateur radio back in his childhood. When making wiki being a platform that free and where everyone can contribute, he could have been recalling the global amateur radio community.
The story of Ward Cunningham is also an example of importance of introducing children to technology at an early age. Cunningham interest in computers and software was conceived back in high school, when his teacher allowed him and other children to play with a mainframe via Teletype.
I strongly believe that people like Cunningham should be examples for generations of new software engineers.

4 Sources

Most of the information about the life of Ward Cunningham and history of wiki is taken from [4] [5] [2] as well as from the Wikipedia website.

References

[1] The Agile Alliance. Manifesto for Agile Software Development, October 2019.

[2] Harry Henderson. *Encyclopedia of Computer Science and Technology.* FACTS ON FILE, 2008.

[3] Project Management Institute. 9th global project management survey, 2017.

[4] Walter Isaacson. *The Innovators: How a Group of Hackers, Geniuses and Geeks Created the Digital Revolution.* Simon and Schuster, 2014.

[5] Andrew Lih. *The Wikipedia Revolution: How A Bunch of Nobodies Created The World's Greatest Encyclopedia.* Aurum Press UK, 2009.

[6] Rebellabs. Rebellabs developer productivity report, 2017.

[7] HP report (2015). Agile is the new normal: Adopting agile project management, May 2015.

[8] CollabNet VersionOne. 13th annual state of agile report, 2019.

[9] Wikipedia. Ward Cunningham, October 2019.

[10] Wikipedia. Wikipedia, October 2019.

[11] Wikipedia. Wikipedia community, October 2019.