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In this fascinating article this month's contributor, Sameer Verma, provides a provocative glimpse into the importance of code, the world of software licensing, and the practical implications of moving toward adoption of free or open source software. This is especially meaningful for those working in the ecommerce and Web realms, where content is drawn from many sources, often in a dynamic way. Along the way, Sameer provides an overview of the meaning of code, who should own it, who should license it and how, and what the meaning of all of this is for businesses, software developers, and authors. Sameer raises many important practical and theoretical research questions, including how our software needs as academics and authors may be well served through the use of non-commercial, non-proprietary software. [Kenneth E. Kendall, Feature Editor]

The Law of Code

by Sameer Verma, San Francisco State University

In 1994, when I was still a graduate student at Georgia State University, I co-authored a paper (Fazlollahi & Verma, 1994) that I presented at the 1994 Annual Meeting of the Decision Sciences Institute in Honolulu, Hawaii. (This paper eventually led me to taking up the academic profession, but that's another story.) The paper in question had an interesting concept, and I wanted to use something similar in another study I was involved with, over the summer of 2007. So, I went back into my archives and dug up the paper. It had the .wpd extension on it; this paper was authored in Word Perfect for DOS. I no longer have DOS on any of my computers, or for that matter, Word Perfect. So, I tried opening it with Microsoft Word, but that did not work. As a last resort, I fired up OpenOffice.org's Writer and sure enough, the paper opened up, complete with figures and references. Without losing a moment, I saved it under OpenOffice.Org's native format—the Open Document Format—an ISO standard that does not risk vendor lock-in (Weiss, 2006).

This exercise was interesting for several reasons. (1) I realized that we, as researchers, give little thought to document formats when we archive

precious work. (2) My document in Open Document Format was now unencumbered by some vendor's archaic format lock-in. (3) A non-commercial, non-proprietary software title had trumped its commercial, proprietary cousin. I had a suite of capable software that did not cost me a dime.

Looking past my victory over document formats and saving many dimes, why should one care about open source and open standards? Let's take a slight detour to build an analogy that helps us think about technological innovations and human progress.

Language is often cited as one of the features that separates humans from the rest of the animal kingdom (Knight, 2000). Its not just the ability to communicate, but to communicate effectively and in a rich manner. Language has evolved from a privilege of a select few, to one spoken and written by the masses. History has borne witness to this evolution, be it a transition from Latin to English, or Sanskrit to Hindi. Once the works were made available in commonly written (and spoken) languages, the intellectual property became a matter of public commons. Think of this evolution as *Language 1.0*—the first stage of an evolution where we witness



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the creation of public commons through language.

Fast-forward to the current time, where analog works are moving over into the digital domain. Books, music, movies are all being translated into digital files. They are no longer reams of paper, or spools of celluloid, but a veritable stream of bits—zeros and ones—with purposeful pattern. This digital representation of our society is a manifestation of our expressions in binary integers. All of this digitization is being created only to be processed by our laptops, desktops, PDAs, and computer clusters in order to do our will. We want these binary machines to process our intent. In the digital domain, we typically express our intents in two ways—*software* and *content*. Software is the instruction set that processes the content. One without the other is meaningless.

Now, imagine your collection of literary works, where, say, verbs become proprietary. What if your books refused to reveal their pages every 10 years or so because the publisher went out of business? Of course, all this sounds downright silly in the context of analog media, but digital media brings with it possibilities of encryption, lock-ins and DRM—Digital Rights Management. It remains to be seen as to whose rights are being managed.

Code as Expression

Let's look at the business of software a bit further. Before we use software, someone has to write the code. How would we define "code?" In our context, code is a collection of instructions for a binary machine. For the person who writes it, though, code is an expression of the author's thoughts. Our expressions take on different forms. Some may write a limerick in English, while others may prefer C++ when expressing themselves. Just like any work of expression, the resulting work gets automatically copyrighted as per the Berne convention (Besen & Raskind, 1991). Copyright is a form of protection provided by the laws of a country to the

authors of original works, including literary, dramatic, musical, artistic, and certain other intellectual works. In the U.S., copyright is defined by title 17 of the U. S. Code. Copyright defines ownership, but it does not define use. The legal way in which a copyright owner grants permission to others to use his intellectual property is described by a license (Rosen, 2004). At this point, I must disclose that I am not a lawyer, so I will wholeheartedly stand on the shoulders of giants when writing about the law of code.

In the context of software, licensing becomes very important. Those who write code have an intent that goes with it. Code has capabilities, but these capabilities may only be used as per the intent of the copyright holder, and that intent is expressed by a license. For example, in the case of proprietary software, the license expresses the intent of the copyright holder about the use of such software. If you obtained a copy of proprietary software for, say, academic use, then you may not use it to run your company, or for that matter, to make posters for your neighborhood block party.

This is where Free and Open Source Software (FOSS) licenses are different. Instead of smithing away at their own licenses, each FOSS project gets to pick one of several approved licenses. The current set stands at 58 licenses and includes licenses recommended by the Free Software Foundation and those approved by the Open Source Initiative. So, to call your work "free software" or "open source software" you have to use one of these 58 licenses. In practice, though, no more than a dozen licenses are typically used.

The Many Faces of Free

You may come across several similar terms when reading about free software or open source software. One is FLOSS, or Free/Libré Open Source Software. Another is FOSS or Free and Open Source Software. Yet others are Open Source Software (OSS) or Free Software (FS). Largely speaking, all these terms

are quite compatible with each other and deliver the same assurance: freedom and openness of expression via software. The following are some specifics.

- **Free Software Foundation:** Free Software Foundation is an organization founded by Richard Stallman as a way to further his efforts in the area of software freedom. The primary licenses that FSF is an umbrella for are the GNU General Public License (GPL), the Lesser GPL (LGPL), and the GNU Free Documentation License (GFDL). GPL and LGPL are widely used for software, while GFDL is most widely used for Wikipedia content.
- **Open Source Initiative:** The Open Source Initiative (OSI) was started in 1998 to disambiguate the meaning of free (free as in freedom versus free as in zero cost). The OSI goes beyond the FSF list of licenses and includes a list of 58 licenses that are considered compliant with the Open Source Definition.

Both organizations essentially advocate similar ideologies but differ in perspective. FSF's goal is freedom based, while OSI's goal is wide use of such software.

Licensing Taxonomies

Given that the domain of FOSS licenses is so large, it helps to classify the licenses in terms of how they came about and what they do. Larry Rosen (2004) does a great job of describing these different types of FOSS licenses:

- **Academic licenses:** These types of licenses were originally created by academic institutions. The Berkeley Software Distribution (BSD) of the original AT&T UNIX is one such example. BSD Unix is the code that University of California created and made available as public commons. Typically, academic licenses are least restrictive in that they allow for creation of public as well as proprietary commons from the code. For example, the TCP/IP stack in Microsoft Windows 9x series, a proprietary operating platform, originally came from BSD Unix (Gomes, 1991). Similarly, the core of

MacOSX platform from Apple Computers is based on a variant of the FreeBSD project (Jepson & Rothman, 2005).

- **Reciprocal licenses:** Such licenses allow software to be used for any purpose, but have a requirement to reciprocate—derivative works must be redistributed and must be done under the same license. Case in point is the Linux kernel, which is released under the GPL and any changes that are made to Linux are put back into the public commons under GPL. Even in cases where companies such as Cisco (parent of Linksys) used Linux in their routers, the GPL required them to release their implementation back to the public commons under GPL (Creeger, 2007).

Rosen (2004) also mentions two other categories, but they apply to standards and content as opposed to code. These are:

- **Standards licenses:** These licenses are designed to ensure open access to industry standard software so that standards may evolve if necessary and not be subject to vendor lock-ins.
- **Content licenses:** This variety of licenses are ones that govern the use of content such as music, art, film, literary work etc. and ensure that content be available for any purpose whatsoever. A very popular example of content licenses are the creative commons licenses. More on that in a bit.

Business Models

As I mentioned earlier, I am not a lawyer. However, I do have an interest in the economics of software and that is where licenses come into play. Licenses are very important from a business perspective. They influence what organizations are permitted to do with software. If the organization's business model is dependent on using the software to provide services (as is the case with Google) or reselling software (as is the case with Red Hat), then the terms and conditions as put forth in a license will strongly affect the business model.

A business model is often defined as a set of concepts that are enabled by capabilities of a firm in order to produce a value add for the customer (Applegate, 2005). While a business model is more encompassing than just a license, technology companies will find that software sits at the core of their business processes, and the limits set forth by software licenses will influence their capabilities. Value has to be produced and delivered to the customer, but it has to be done within the ecosystem, and law is an important part of that ecosystem. The interactions that licenses have with business models provides for an interesting area of research.

From Code to Content

Related to the matter of copyrights and intellectual property of software is the issue applied to content. Licenses such as GPL were designed specifically for code. What if I wanted to release photographs I took for use in other contexts? This is where we see a similar effort in action, but applied to content. This is the Creative Commons Project, a non-profit organization that has come up with a set of content licenses usually referred to as CC. The Creative Commons Project was the brainchild of Larry Lessig, a law professor at Stanford University. In concept, what CC does is simple. It is similar to what the Free Software Foundation does, but CC applies to content. I had the opportunity to use CC in my classroom a semester ago. This was a course on multimedia applications for business. We used ccmixter.org, a site that releases audio content under very permissive licenses so that people may take songs, beats, drum loops, and even a capella pieces and remix them in ways to create new content. I can tell you, my students had a great time—they all became disc jockeys for a day! They also learned about the nuances of using someone else's content, be it text, audio, video, or graphics. CC licenses are widely used in content sites such as Flickr.

As you can see, both software and content can immensely benefit from a free and open process. Projects like Wikipedia have grown to a significant level of prominence because its content is public commons—content owned and maintained by the public at large. Another project—One Laptop Per Child—is starting to take shape because it relies on an open process for hardware design, software development and content creation. We are witnessing a second coming of the language evolution. In many ways, this is *Language 2.0*, and we are all stakeholders in this IPO.

This article is authored in OpenOffice.Org's Writer. It is archived in the Open Document Format (ODF), so that 10 years from now, if for some reason, I decide to revisit this article, I won't have to go fishing for software to open it. ODF is unencumbered by proprietary lock-ins—it can be edited in *any* text editor.

So, whether you decide to conduct research on the economics of FOSS, create presentations for your business, or simply create posters for your neighborhood block party, feel free (pun intended) to use free and open source software without the fear of infringing.

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now considered an important journal in their area of research by survey respondents (47.7 percent) with 41.5 percent reading at least one article every issue. In the last three years, 8.2 percent have published at least one article, 14.1 percent have submitted an article, and 7.3 percent reported reviewing for *DSJIE*. Furthermore, 89.6 percent "Agree," "Strongly Agree," to "Very Strongly Agree" with the statement that *DSJIE* publishes high quality articles. Not to be left out, 6.4 percent have published at least one article and 6.6 percent have submitted an article to *Decision Line*.

Since this is the first survey where we have asked these questions, it is difficult to interpret them, but we believe these percentages reflect the quality and level of effort needed to publish in top-tier peer reviewed publications. And, as with all the DSI publication, editors are working with publishers and the Institute to improve the speed and fairness of the review process.

Future Directions

What happened to the survey data? An initial evaluation of the data was undertaken and included in the Members Services Annual report to the DSI Executive committee. The initial findings were discussed at the executive Board Meeting in January 2006. Besides further study of the data, the recommendation from the Member Services Committee for DSI to incorporate website features and capabilities as ranked by the members was approved. Further, the committee was charged to develop a process for recruiting members willing to maintain website pages and sections.

Importantly, survey data is shared with other committees with their own charges and responsibilities. More recently, a strategic survey was conducted in the summer of 2007 to look hard at the direction our organization is headed. As the 2008 national convention approaches, your Members Ser-

vices Committee will be asking your help in supporting and maintaining an organization that for many is the professional organization of choice for members who are establishing or reestablishing research careers. Further, we need to encourage Ph.D. students to not only join but participate in DSI activities. Since we have a number of charges related to improving the organization, feel free to share and express your opinions and ideas. ■

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realities faced by individuals, groups, and institutions.

Perhaps most importantly, the book fails to adequately address one of the primary purposes, that is, to better explain when and if to actually trust our gut feelings or when to fall back to more complex rational decision-making models. However, although the limitations are at times frustrating, they do not sufficiently diminish the overall value of the book.

Conclusion

Gigerenzer invites the reader on a voyage of exploration that challenges assumptions about rational choice, and in that regard he delivers, providing a thought-provoking overview of an exciting, emerging paradigm of how decisions are actually made and how we can improve those decisions. His theory of gut feelings, resonates with our ex-

perience, is simple to understand and apply, and is elegantly efficient and effective. Overall, *Gut Feelings* is well worth the time and effort to explore, with opportunities for personal and professional growth for those willing to take the journey. ■

DSI members are invited to suggest books that should be reviewed in this column and reviewers to review them. Responses, suggestions or letters to the Feature Editor may be sent to: Peter T. Ittig, Feature Editor, Peter.Ittig@umb.edu.

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