Technology Benefiting Humanity

Memo to the new generation of tech philanthropists: Apply the same intellect and discipline to your philanthropy as you employ in business.

By Jim Fruchterman

Technology is all about helping people. However, technology development is not driven to maximize all of society's goals. Applications that make money get built, while applications that don't make money don't get built. Bridging the gap between the possible and the profitable in socially beneficial applications of technology is critical, and it's an important effort that requires the attention of the technology community.

The social sector needs more technology tools, and the barriers to using technology in this sector are shrinking daily. Market failure is not the final word: just because something isn't financially lucrative is no reason not to do it. Technology is quite easy to replicate cheaply: that's why software companies are often so profitable. This same leverage can be put to use in social applications of technology. The need is acute for nimble social entrepreneurs to bridge these gaps: between possibility and profitability, between business and government, and between technologists and disadvantaged communities.

The opportunities are many and the needs are great. Technologists love to solve problems; it's what they do best. We need to provide new models for how to accomplish great things with technology. How many innovators have placed their ideas back on the shelf when it became apparent that their great social idea was not a great business idea?

Technology has generated tremendous wealth through the financial leverage of technology. For those of us who have achieved financial success, there is frequently a need to give back. We want to support the institutions and systems that made that success possible and create new opportunities for future generations. Although much technology philanthropy will be of a traditional sort, the drive to innovate doesn't and shouldn't stop. The socially beneficial applications of technology offer these philanthropists a new option to apply their wealth and the lessons of technology enterprise to new needs. Looking at the social sector as valued customers for technology tools changes the dynamic from charity to engagement: helping disadvantaged communities help themselves.

Please join this exciting movement in its early days. The world will be a much better place if you do.

Technology in the Social Sector

Every segment of the social sector is a technology consumer. From planning the logistics of feeding thousands of refugees, to delivering vaccines, to providing education, to creating job opportunities or to advocating for human rights,

technology tools are used to improve the outcomes and often directly deliver the social benefit.

In many cases, standard commercial technology serves admirably to support the social sector. Modern telecommunications and transport networks are essential and invaluable in meeting social needs. Off-the-shelf information technology is important in nonprofit organizations to meet many of the same needs as exist in other sectors: a word processor comes in handy across the spectrum!

However, mission critical needs that exist only in the social sector are often weak commercial opportunities for business. The people who most need certain kinds of technology are least able to pay for them. These cases of market failure must be addressed.

Current market failures come in two varieties. The first is the decision to go after only consumers at the top of the economic pyramid. Intellectual property-based technology companies calculate their economic returns on the basis of pricing decisions, essentially on what prices they deem the market will bear. A given product may cost $3 in manufacturing costs to make, but may be sold at over $100. If the product provides enough value (for example, a drug that cures a deadly disease affecting many populations, including the affluent), there may be customers who can afford the price and willingly pay it. As a consequence, the product becomes unavailable to those communities that cannot afford the set price, and, therefore, their needs remain neglected.

This is not to say that these companies make 97 percent profit margins. Often there are incredible sums risked in the creation of new technology, and those investors need their return. The costs of marketing and distributing to affluent customers typically far exceed the manufacturing costs. These marketing and distribution systems are unable to serve disadvantaged communities.

The second market failure occurs with niche products: those that solve specific problems but lack lucrative markets. These products generally do not get built or brought to market. To continue the analogy, a drug that cures a deadly disease affecting only the poor in India will never be brought to market by a Western pharmaceutical company. It simply will never pay for the cost of the drug approval process. The company makes the responsible decision for its shareholders and drops the product, frustrating the potential users of the drug and the innovators who created it to save lives.

Looking at the social sector from an information technology background brings some unusual insights. Dr. Patrick Ball, a leading human rights statistician, has outlined a view of the human rights movement as an information processing industry, also organized as a pyramid. Grassroots groups around the world are the base of the pyramid. They gather the raw materials of human rights: the stories of individual suffering and loss. National and issue groups are higher up the pyramid. They process this information into more refined products, building the larger case that there are patterns of human rights abuses that require reform, justice and change. Finally, at the top of the pyramid are the major international human rights groups like Human Rights Watch and Amnesty International. Human Rights Watch produces carefully crafted research reports that refine the work of the groups and activists in the field.

The human rights field is therefore an information processing industry. Unlike information processing industries in business, mortgage processing for example, human rights is not enough of a market to drive the creation of products designed to meet industry specific needs. As a result, the information technology tools used are mainly the generic software applications such as e-mail, Web pages and word processors. Only the handful of groups at the top of the pyramid have their own IT departments to create mission-critical applications. Consequently, an entire sector processing critically important information makes do with tools that only do part of the job.

The social sector is a major new market for a wide variety of technology services, applications and products. Because of the definition of the sector as serving society's disadvantaged communities, market forces do not provide enough incentive to meet these needs. At the opposite end of the spectrum of pure business is pure charity. Technology rarely meets the classic needs of people for charity: basic food, shelter and healthcare. Technology applications in the social sector are often more appropriately served through a hybrid mechanism that combines social motivation with business discipline: the social enterprise.

Social Enterprise

The model of social enterprise helps address market failures. Social enterprises are hybrid organizations with two bottom lines: social and financial. By having a social bottom line, these businesses choose to serve the underserved, even when these communities may not offer a significant financial return. Social enterprises do face challenges caused by market economics. Many social enterprises work in the area of job creation, generating ventures that employ people typically ignored by mainstream business. The people running these enterprises are social entrepreneurs, with many characteristics in common with business entrepreneurs. Not only do they need to do all the things a business entrepreneur does to create a viable business, but they add the additional challenges of meeting important social objectives at the same time.

Technology social enterprises present exciting options. The development of technology grants advantages of leverage that are exploited by high technology business and should be further exploited by the social sector. The first is high margins. Creating the original unit incurs the majority of the cost of a technology-based product: every additional unit has relatively low manufacturing costs. The second advantage is ease of replication. Technology products are relatively easy to replicate worldwide. If the unit of service for a social enterprise is a piece of information or a technology product, as opposed to an hour of human time, the possibility of going to scale is greatly enhanced.

There are some significant challenges that counterbalance these advantages. Technology projects tend to cost more to create than typical nonprofit projects. This can be partially mitigated by building social technology projects on top of existing technology infrastructure. Marketing these technology tools is also a tremendous challenge. Jonathan Peizer of Soros' Open Source Institute wrote a fascinating paper that examines some of the issues related to marketing technology in the nonprofit sector, where he emphasizes the increased importance of word of mouth and trust networks in the sector.

The goal of a technology social enterprise is to maximize social impact while breaking even financially. This is a much easier standard to meet than that of the typical for-profit high technology company that needs to aim for a $50 million market and deliver a 30-40 percent annual return on investment. These double bottom line enterprises can fill the gap between what's possible and what's profitable in the social applications of technology.

Concrete examples illustrate how social enterprises can respond to market failure. Aurolab in India sells the intraocular lens inserted in cataract operations for $4 -- the U.S. price is more than $100. As a nonprofit attached to a famous Indian eye hospital, Aurolab has become the second largest maker of these lenses by unit volume and actually makes money. OneWorldHealth is a nonprofit pharmaceutical company in San Francisco, aiming to develop drugs to treat diseases of the world's poor. It utilizes important drugs dropped by major labs when it becomes clear that the market opportunity isn't sufficient. OneWorldHealth takes the drugs through the clinical trial process, gets them certified and then takes them to market.

A programmable hearing aid costs roughly $1600 in the United States. The manufacturing cost is $45. Project Impact, a California-based social enterprise, has designed and built a programmable hearing aid and plans to sell it for between free and $600 depending on ability to pay in different markets.

In the information technology sector, there are a growing number of social enterprise examples. Groundspring.org develops eBase, a database tool to meet the needs of the social sector. Techsoup.org offers discounted software products to nonprofits. Many organizations deliver technology-related services, making sure that nonprofits have access to the core tools of a modern enterprise: networks, the Web, e-mail and databases.

My organization, Benetech, has several social enterprise projects based on software applications and Web-based services and content in the disability, literacy and human rights fields. We started by building the Arkenstone reading machine, which was a spin-off from a venture capital backed Silicon Valley startup. The original for-profit could not afford to go after the tiny market for reading machines for the blind, which was estimated to be $1 million per year. By using standard PCs and components, we were able to drop the price of a reading system by a factor of five over ten years, and build a $5 million a year social enterprise. We sold the product line to a for-profit company in 2000 and used the proceeds to start new projects.

Not only is technology replicable worldwide, but also it often has far more cost-effective delivery mechanisms than the alternatives. For example, talking books for the blind are traditionally delivered on a stack of four-track audiotapes through the mail; Benetech's Bookshare.org online library delivers accessible talking books over the Internet. The actual cost of these accessible e-books is negligible, and the cost to deliver them is a tiny fraction of the traditional alternative. The user listens to the digital book on a PC with voice synthesis software, or loads it into a Braille display for portable reading.

After hearing Dr. Ball's analysis of the human rights field as an information processing industry with little purpose-built information technology, we decided to build the Martus software. We gathered key requirements from groups in such varied regions as Sri Lanka, Cambodia, Guatemala and Russia. Aimed at a grassroots activist with the skills to use e-mail and the Web, we created a simple and secure

application for gathering, organizing and backing up the documentation of human rights abuse. In addition, any information earmarked as public is published to a human rights information search engine on the Web.

In addition to building this basic client solution for just about any social justice group documenting and monitoring violations, we have a high-end database solution designed for doing statistics on large-scale human rights issues. We serve truth commissions and international courts with the analysis of what happened in a country, helping that society answer the crucial questions for moving forward following a period of tremendous suffering: how many people died, was it genocide, who was responsible?

For every project taken on by like-minded social entrepreneurs, there are dozens if not hundreds of needs that are not being met. We have the technology, but will we use it to fully serve all of humanity?

The Philanthropic/Social Opportunity

The technology community has generated tremendous wealth over the past 20 years, notwithstanding the collapse of the dot com bubble in 2000. As a group, technology entrepreneurs are just beginning to explore their interests in the larger society. In the last decade, a formerly apolitical community has been exercising its increasing muscle. The great example that Hewlett and Packard set with their philanthropic commitments sets the stage for increased involvement by the high technology entrepreneurs in society's larger issues.

Like many people successful in business, technology entrepreneurs want to give back to their local community. The difference for people from the tech sector is that their local community is the world. Technology has shrunk the distances between different countries, and Silicon Valley itself is a multiethnic microcosm of the entire world. The wealth of Silicon Valley has been generated from the world. San Jose is not rich because of sales to Sacramento and Bakersfield!

I assert that one of the most powerful actions the new generation of tech philanthropists can take to improve the world is to apply the same intellect and discipline to their philanthropy that they employed in business. This is not an attempt to remake the social sector in the image of Silicon Valley; such a direct transfer approach will rarely work. But, the underlying principles of venture capital investing apply well to the social sector. Spend the time as an investor to understand the market environment for new enterprises. Find the most capable entrepreneurs in a segment and help them build a strong team. Look for people who have a new value proposition: a concept that offers unique benefits that can replicate widely. Make sure they understand their customers and their advantages. Provide the resources they need to go to scale. This new approach of venture philanthropy is still young. Like venture capital, it involves taking larger risks in the hopes of larger payoffs.

A handful of foundations and philanthropists are actively supporting this new model, and momentum is growing. Jeff Skoll, one of the founders of eBay, has created his foundation with the primary focus of supporting social entrepreneurship, both by funding leading social entrepreneurs in Silicon Valley and around the world, as well as by supporting more academic research in the field and getting the word out in the media. Klaus Schwab, the founder of the World Economic Forum, established his foundation to recognize social entrepreneurs and get them involved as peers with

world business and political leaders at the Forum. The Gates Foundation is providing major support to OneWorldHealth so that its nonprofit pharmaceutical social enterprise can bring life saving drugs to the global poor.

In addition to taking this new approach to philanthropy, I believe that increased investment in technology that directly supports the social sector will offer strong results for society. The social sector lags the for-profit sector in adopting technology tools that could significantly enhance the effectiveness of the sector. With an incremental investment equal to one or two percent of the current funding flowing to the philanthropic sector, it seems clear that the sector could become five to ten percent more effective with the same amount of resources.

Technology Opportunities

We have the technology, without a doubt. Just a short sampling of applications that fall into the market failure gap should provide a hint of how much more we could be doing.

The cellular phone and its handheld computing cousins already have a major impact on the global poor. Inexpensive cell phone handsets and service have brought effective telecommunications to hundreds of millions, if not more than a billion people. But, the possibilities are just beginning to be explored. A Palm handheld has the MIPS of a Pentium II PC or better. In the next few years, cell phones will have the processing power to do all kinds of pattern recognition, plus have the ability to tap network resources. The relentless decrease in prices will mean that a cell phone with a camera, GPS capability and a good amount of memory will be available new for less than $100 and within a year or two after that, used for $10. If a new capability can be placed on that device with software, the marginal distribution cost is tiny.

It is easy to imagine cell phones that will see for those who cannot see, read for those who cannot read, listen for those who cannot hear, translate for those who cannot understand, find those who are lost and remember for those who cannot remember.

A brainstorming session we held at Benetech with top technologists generated more than 50 social applications of handheld wireless devices. One is the ReadingCam: a device with a camera that reads signs to the blind, illiterate or people who do not speak the language. Some of these capabilities have already been demonstrated by IBM, HP and SRI: but aren't on the market yet. Another is NaviTalker, a standard cell phone with e911 GPS capability that tells a blind person their current location.

A particularly poignant example of market failure is mine detection for humanitarian demining projects. The Department of Defense has funded mine detection instrument research and development for years, and has come up with at least two major technology breakthroughs: ground penetrating radar (GPR) and quantum magnetic resonance (QR). But, these technologies aren't practical to bring to the humanitarian groups: the market demand is insufficient. Benetech is working with the military and their key supplier to find a way to develop the humanitarian application of this technology as a social enterprise.

The list could go on. Inexpensive medical instruments and diagnostic tools could change the face of health care for the poor. Better access to educational technology

and content (such as MIT's OpenCourseWare Initiative) could have a major impact on access to economic and social outcomes. The inventiveness of technologists need not stop at the maximum profitability line.

Conclusion

We are at a critical intersection in the evolution of technology and social enterprise. Working together, the technology, nonprofit, philanthropic and prospective user communities can ensure far-reaching success in the long-term effort to fulfill the social potential of technology. These collaborations strive to take the technology community -- including its developers, beneficiaries and promises of the future -- to the next level of human and social innovation. And, at that next level, we can demonstrate the power of collaborative successes on the global stage, using these exciting projects to catalyze the creation of technology social enterprises around the world.

Now is the time to together move confidently toward that future.

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Partial list of resources

Jonathan Peizer, OSI, The Trusted Source Relationship, http://www.soros.org/initiatives/information/articles_publications/articles/relationship_20010515

Aurolab, nonprofit maker of affordable medical products, http://www.aurolab.com/

The Institute for OneWorld Health, nonprofit pharmaceutical company, http://www.oneworldhealth.org/

ebase database software for nonprofits, http://www.ebase.org/

TechSoup, discounted software for nonprofits, http://www.techsoup.org/ , http://www.techsoup.org/DiscounTech/

The Benetech Initiative, http://www.benetech.org/

Bookshare.org, on-line accessible ebooks for the disabled, http://www.bookshare.org/

Source: Ubiquity, Volume 5, Issue 5, March 31 - April 6, 2004, http://www.acm.org/ubquity/