

“J’accuse ...”

The lengthy, protest-friendly system at the European Patent Office has created a brain drain that is causing some of Europe’s most gifted entrepreneurs and scientific minds to head west to the innovation-friendly United States

By **Pat Kennedy**

While many Europeans suggest that the quality of EPO-issued patents surpasses those issued by the US Patent and Trademark Office (USPTO) – an assertion that may be correct – others argue that the EPO’s painstakingly slow and expensive process affords the United States significant competitive advantages.

As co-founder and CEO of a US-based SME, Cellport Systems, I have met nearly a dozen EPO patent examiners since the early 1990s. They seem well educated, technically skilled and competent, much like many of their counterparts in the United States. It is not at the human capital level where the EPO and USPTO diverge; the difference lies in policies and politics.

Cellport: a case study in innovation, patent filing and financing

Cellport has been fortunate to survive against the odds, to pioneer essential technologies, to secure requisite patents and become the leading licensor in the burgeoning global market of telematics systems. Our numerous near-death experiences and survival are a credit to the tenacity of our founding team and support from numerous strategic partners. When the company was founded in 1993 in Boulder, Colorado, the combination of quality human and financial capital, the

choices of our business charter – which called for art-of-the-possible innovation focused on the arcane world of “wireless to vehicle networks”- and basing our business in the United States greatly improved our odds of avoiding the crowded graveyard of technology entrepreneurs. What has made me increasingly grateful to be based in the United States is the startling contrast between the invention opportunities on either side of the North Atlantic.

During Cellport’s 17 years of technology developments, we limited our patent filings to a maximum of a few to none per year and filed patents only on essential connectivity advancements in the wireless-to-vehicle network space. This monk-like focus helped us to build the company’s two contiguous patent portfolios of essential inventive art in telematics. The first portfolio, handset connectivity systems, is licensed to 10 suppliers of the popular phone-specific cradle to a vehicle-based universal docking station and is offered in many European-produced vehicles. Our second licensed patent portfolio, mobile network technologies (MNT), has led the revolution that is turning vehicles into web-savvy nodes. As a result, today’s internet-connected vehicles reduce warranty costs, enhance occupants’ safety and deliver a range of cloud-based applications, such as navigation, traffic flow updates, browser-based search features and streaming music. Happily, Cellport agrees with the automotive analysts who predict that the next decade in automotive advances will be shaped predominantly by cloud-connected vehicles and alternative energy solutions.

Securing patents

Cellport’s seminal MNT patent portfolio got an early start in 1993 with the filing of our Digital Bus patent application, followed

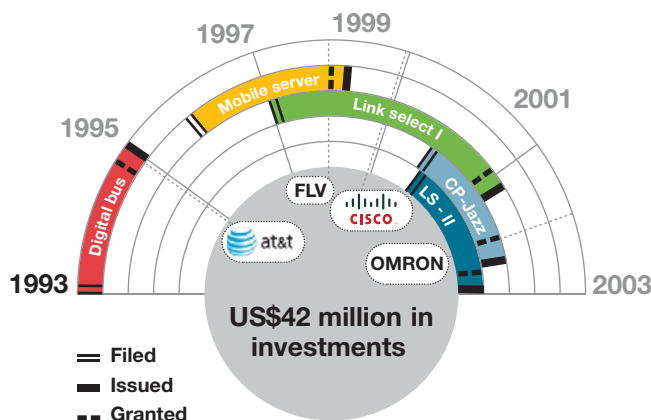
by five more patent applications through 2003. During these 11 years of developing the MNT patent portfolio, Cellport's team of architects and engineers spent a great deal of time and money pushing the proverbial corners of the envelope based on challenging, what-if? questions. Delivering the first web-connected vehicle systems as early as 1996 to dozens of projects with advanced development teams at Mercedes, Motorola, GM, Cisco, John Deere and the US military kept us challenged. In developing the MNT portfolio alone, Cellport invested over US\$20 million in diverse technology advancements that resulted in filing six essential and contiguous patent applications. With only six US-issued patents in the MNT portfolio, this put a hefty price tag of over US\$3 million invested per issued US patent.

Key to Cellport's success was the company's ability to raise investment capital for research and development. Between 1995 and 2002, we raised US\$42 million from mainly four strategic investment funds tied to corporations such as AT&T-Wireless, Cisco and Omron Corp. Each strategic investor had a keen business interest in our success and was convinced of our design credibility, given Cellport's success in securing issued patents for core advancements in telematics from the USPTO.

Figure 1 depicts the timeline, from 1993 to 2003, of Cellport's MNT patent filings to the USPTO and the respective issuance dates. The efficient process through both the filing and issuance periods was critical in consummating the equity funding from four primary strategic investors, which provided necessary development capital. It's no small coincidence in Cellport's history that the equity capital raised between 1995 and 2002 happened during a most robust patent filing and issuance period with the USPTO. The alignment between risk investment capital and an efficient patent process is profound. Until the EPO's protest system is eliminated, Europe's entrepreneurs, financiers, tax offices and citizens will suffer due to this major competitive disadvantage with innovation development.

Large sums of risk capital are as vital to long-term technology development successes as oxygen is to life itself. Cellport's ability to raise large amounts of risk capital from investors was closely related to a USPTO system that prosecuted our MNT portfolio patent applications and gave us final patent issuances in 31 months on average. Being able to show each strategic investor the build-up of Cellport's

Figure 1. Cellport's MNT patent and financing timeline



contiguous patent portfolios provided us with critical credibility. Our success would not have been possible if we had waited on the EPO system to issue our MNT patents.

Figure 2 contrasts our US patent and investment successes with the lengthy timeline and expensive hurdles we encountered at the EPO. Although many of our EPO applications were indeed issued, they took four times as long from filing to issuance, and legal fees were over three times as expensive – all due to the EPO's SME-unfriendly opposition system.

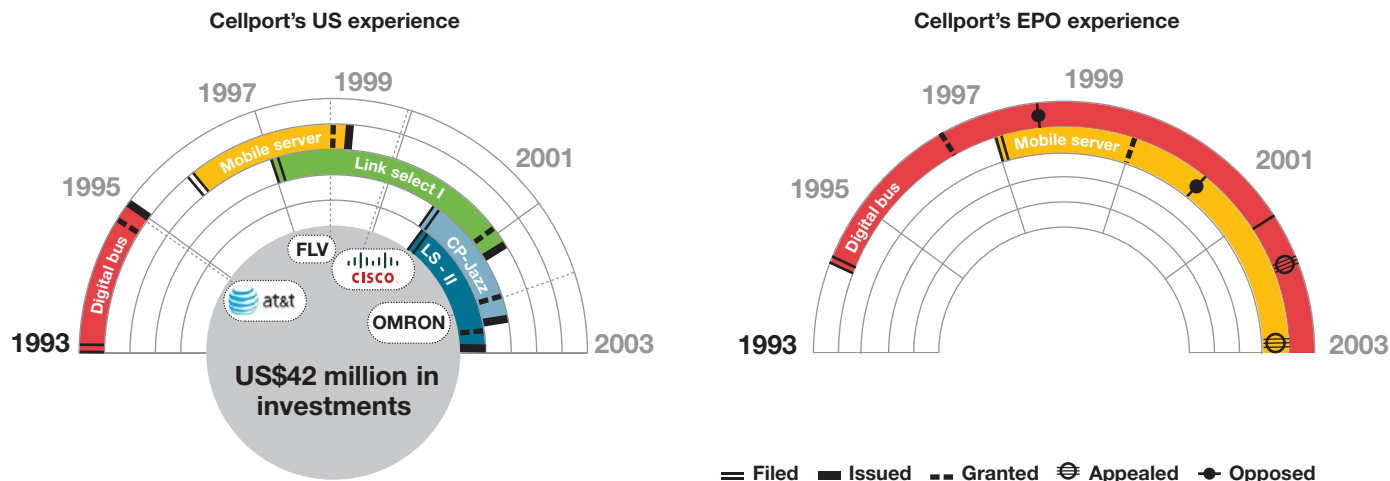
USPTO v EPO

Why the disparity between the USPTO and the EPO's initial application-to-filing issuance times for the MNT portfolio? In the United States, traditionally, when a patent grant is awarded to the applicant, an issuance fee is paid and then the patent is issued, sans a protest opportunity. In Cellport's case, the period from filing to issuance averaged 31 months, which was helpful in allowing us to increase our momentum. Interestingly, the EPO system of filing an application and receiving a patent grant runs about the same period. But this is where the EPO rules change and unfortunately turn strongly against SME inventors with essential patent contributions.

Club Germany

The rules of the Munich-based EPO allow any entity to oppose a granted patent in what is basically a two-step opposition process that both is costly and causes a five-year-plus issuance delay. The first step of the opposition period starts within nine months of the patent grant date. If the

Figure 2. Patent filing processes



patent is opposed, as most of ours have been, then typically the initial opposition period takes another two to three years to reach a formal opposition hearing at an EPO facility. If the opposing parties fail in their patent issuance protest, they can appeal the opposition ruling within three months and restart the multi-year delay in issuance, and thus drive up more legal and business expenses for the SME – hurting young, more disruptive firms the most.

The majority of Cellport's European filings have been subjected to multi-level protests by a handful of German companies that are either competitors or potential customers, costing us years of delay and hundreds of thousands of dollars in expenses, management time and market opportunities. When discussing this phenomenon with our European lawyers, we were informed that more than 80% of the opposition cases they handle are filed by German firms that use only German lawyers.

For technology-centric SMEs, quality human capital, ample funding and speed are three key variables that lead to success, especially in today's digital world. Hence, the EPO policy of allowing this multi-layer opposition/appeal process to drag on for years is the equivalent of choking off the oxygen supply of SMEs; the prognosis for entrepreneurs is not promising.

Some advocates in favour of the EPO opposition and appeal system believe that the process delivers higher-quality patents and reduces oversight mistakes by patent examiners. Others are competitors or customers that try to obstruct a disruptive innovator's success. The unintended – or

maybe fully intended – consequence of the EPO's opposition and appeal periods enables market oligarchs to hinder the funding and launch prospects of innovative, market-disrupting technologies by SMEs such as Cellport. At an opposition hearing several years ago, when I asked an opposing party's lawyer why they continued to protest Cellport's patent grants at the EPO, his answer was swift and direct: "We don't want Cellport to become the Qualcomm of the telematics market."

Insights on entrepreneurship from Schumpeter

The cadence of today's internet-speed global commerce has helped the world to appreciate better the insightful creative destruction economic theory of Austrian-born Joseph Schumpeter (1883-1950). Schumpeter's theory was relatively simple, yet nevertheless brilliant. Creative destruction is a process through which the old ways of doing things are endogenously destroyed and replaced by improved methods. Schumpeter contributed his creative destruction concept to the field of business cycles; today, it is an important consideration in economic modelling of both a company and national economies.

Examples of creative destruction occurring within a 20-year cycle abound:

- Vacuum tubes were replaced by semiconductors that provided orders of magnitude more capabilities for less cost and are now the bedrock of all things digital.
- The internet backbone of TCP/IP managed by routers and transported over fibre

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optics has essentially destroyed the telephone central office switch business, which a mere 20 years ago was one of the mainstay products of giants such as Alcatel-Lucent, Ericsson and Nortel.

- Genetically engineering cells to produce human substances has altered the opportunity horizon of the global pharmaceutical industry. Only a few decades ago, biotech start-ups were regarded with scepticism by the big pharmaceutical firms; today, they are the darlings of the drug industry.
- In the 1990s wireless oligarchs of the day, such as Motorola, Ericsson and Nokia, were evolving from analogue to digital by proposing the then-logical step of using time division multiple access technology. When US-based SME Qualcomm pioneered a new code division multiple access (CDMA) approach, it too was criticised for its disruptive nonsense. Today, versions of CDMA are *de facto* in global cellular markets and Qualcomm is knocking on Intel’s door of chipset leadership in the burgeoning mobile space.
- Nano tubes are now creating entire new material markets that will probably disrupt the world’s steel, speciality metals, silicon semiconductors and plastic suppliers. In the near future, we should not be too surprised if nanotechnologies disrupt entire material-based ecosystems, from silicon solar collection panels to drug delivery systems.

Given that SMEs are the typical launchers of disruptive technologies and/or business models, Schumpeter, were he alive today, might postulate the following question: when the gusty internet-driven winds of creative destruction destroy businesses of old at a faster rate, is the EPO’s obsession with patent

quality appropriate, as against the encouragement of rapid and well-funded market launches by SMEs? It appears that Schumpeter anticipated an EPO-like entity in some of his writings concerning how governments are likely to interfere with the birth of dynamic new entities that cause the destruction of older and less efficient processes.

In today’s market, where talented scientists have global opportunities, numerous European-born and educated nanotech scientists pack their bags for the more SME-friendly shores of the United States. These dreamers of our nano-based material future know that they have plenty of hurdles to accomplish; do they really need to live through today’s material oligarchs in steel, plastics and silicon protesting their innovative patent applications at the EPO, and be subjected to the opposition and appeal processes while their funding dries up and global competitors advance into the market? Schumpeter argued that capitalism’s collapse will come from within, as democratic majorities vote for restrictions upon entrepreneurship that will burden and destroy the capitalist structure. The cost burden and lengthy issuance process that the Munich-based EPO imposes on SMEs (the entrepreneur class) are prime examples of Schumpeter’s theory in action.

Europe’s shortage of disruptive innovators

Enhancing quality of life and building societal wealth are driven by many factors that are not lost on Europeans. Quality education is fundamental; incremental innovations are essential to maintain market leadership; product brands representing reliable quality and rewarding for innovation in the arts or sciences beget more opportunities and progress for all.

Many established European companies are disciplined and skilled at the process of essential incremental innovation, but it's the young, more risk-oriented SMEs that typically create the next big disruptive thing, and this is a significant gap that Europe must work to address soon.

The rise in street protests in Madrid, Paris and Brussels by underemployed 20-year-olds is a partial outgrowth of the well-intended EPO patent opposition policy gone badly wrong. Creative destruction challenges every established firm worldwide, and over time a certain number of them fail to survive. Europe's lack of disruptive SMEs is partially caused by the loss of many of its human capital innovation stars to the more efficient and welcoming US system, thus causing Europe to have a lack of disruptive innovators, which are critical in starting SMEs to replace the private sector employers that have died off.

Gilles Saint-Paul, in his 2004 paper *The Brain Drain: Some Evidence from European Expatriates in the United States*, presents strong evidence for European-wide concern regarding the loss of some of its most important human capital resources. In one of Saint-Paul's analyses, the star people (those who exert significant externalities of innovation and firm creation) are in the top 5% of PhDs. Further, Saint-Paul concludes that the ability of the United States to draw European star-power PhDs provides the United States with between 40% and 80% of Europe's exceptionally gifted doctors.

US firms create world's top brands

One key indicator of healthy economic vitality for the replacement of the business and employment losses, per Schumpeter's creative destruction theory, is the development of new businesses and the traction of their brands. Brandirectory.com's 2010 report *Brand Finance Global 500* is a listing of the world's top brands. Based on the top half of this brand ranking list, over the past 20 years five top brands have been created by US-based SME start-ups, while zero have been created in Europe (Figure 3). European start-up company Skype would likely have landed on the European list, except that San Jose, California-based eBay bought Skype in 2005.

Here are a few ways in which the listed US-based disruptive brands impact on markets:

- Amazon – Amazon's model is credited with delivering great prices and service to consumers for both new and used books. Yet Amazon can easily be blamed

for putting hundreds, if not thousands, of bookstores out of business worldwide.

- eBay – founded in 1995, eBay was the first large internet-based marketplace that enabled thousands of new businesses to form around its various market definitions and created thousands of high-paying jobs; it has also redefined competitive product pricing and diminished the prospects for many in the retail trade.
- Yahoo! and Google – these two internet companies have created tremendous wealth and jobs, mostly in the United States, through their game-changing search capabilities, advertising and free email hosting; they have also redefined media revenue streams. At the same time, they have caused a precipitous drop in revenue at newspapers throughout the world.
- Facebook – with more than 500 million users, Facebook has become the global market leader in social networking and has reshaped relationship communication as radically as cellular communications. The impact of Facebook's social networking influence and target advertising capabilities is classic of a real market disruptor.

These top US brands are symbolic of the level of disruptive building that is part of a less-hindered entrepreneurial community that gathers in the United States for both rapid launch opportunities and financing purposes (such as when Cellport provided its strategic investors evidence of meaningful progress on patent issuance). Today more than ever, investors want comfort that filed patents have assurances for timely issue or other civil protections.

While the top US brands have delivered creative and efficient services to Europeans, they have created over US\$300 billion of equity wealth and tens of thousands of good-paying jobs – mostly in their host country, the United States. Yet each successful company is a disruptor and has put countless numbers of companies out of business or diminished their profit margins in the United States, Europe and the rest of the world.

Preserving human capital

In our new, flat world of internet competition, if a region does not promote an environment to foster innovative SMEs, it is likely to suffer a faster pace of decline due to the global reach of creative destruction of its historic industries. And the lack of new SME creation will diminish

employment and prosperity opportunities for its citizens.

Examples of Europe losing top-tier human capital to US SMEs are numerous and cover a number of important new business areas. Below is a sampling of Europeans who moved to the United States either to found or to lead important tech companies:

- Andy S Grove (Hungary) – Intel Corp.
- Alberto L Sangiovanni-Vincentelli (Italy) – Cadence and Synopsys.
- Jean-Jacques Bienaime (France) – Biomarin Pharmaceutical and numerous others.
- Andy Bechtolsheim (Germany) – Sun Microsystems, Google and numerous others.
- Philippe Kahn (Switzerland/France) – Starfish Technologies and numerous others.
- Alain Rossmann (France) – Phone.com and numerous others.

Certainly, the United States has sub-optimal human capital policies as well. A particularly foolish policy is the current stance of granting a very limited number of work visas to the intellectually gifted international students who finish graduate-level studies at US universities. After providing exceptional exposure and research opportunities to these students, the United States promptly sends many of them home upon graduation. Although there is a renewed effort to address the shortage of visas for these freshly minted and valuable foreign graduates, the US government still denies thousands of highly capable students the opportunity to pursue research and development at US companies.

There is ample evidence that the enforced intellectual property of issued patents, trademarks and copyright protections affords technical inventors, designers, brand managers and artists a greater ability to earn higher profit margins to compensate them for their risk taking, along with investments in skill building and their respective inventive work. From a creator's standpoint, intellectual property tends to have two exciting periods. The first is the epiphany of a breakthrough idea or design; the second is the development of the technology or art that will ultimately be delivered to the market. But the major disheartening event for these creators is when they discover that an idea-jacker or counterfeiter has stolen their invention or creative work, which compromises their future prospects.

Roberto Saviano's book *Gomorrah* (2006) provides street-level insights and a most disheartening story of how the Italian

Figure 3. Disruptive companies and brands launched in last 20 years



port of Naples is fraught with customs corruption, enabling massive IP fraud. By Saviano's account, as much as 40% of the goods arriving in Naples escape customs inspection, and thousands of containers disappear into the growing grey markets of Europe. What percentage of those goods that arrive at the porous port of Naples or other European ports of entry violate issued patents or are counterfeit brands? Who compensates the patent owners, artists and brand designers for lax enforcement by government officials?

Recommendations for Schumpeter-like disruption at the EPO

If the surge of counterfeit material goods, digital content and programs does not abate, Europe, the United States and much of the rest of the world will become less trusting and prosperous societies, with spiralling economic challenges. The Chinese have taken the lead in the global market for idea-jacked and illegal goods, and in turn have delivered a world-class opportunity. For centuries, economists have written that wars and intense political friction between nations catalysed the development of new technologies and equipment to respond to threats. If Europe took the lead in rapid patent issuance and IP protection with a well-funded and large pool of talent from the EPO, giving it a 1960s NASA-like mandate to develop technologies and security systems for enhanced IP and safe goods integrity, the business opportunities should be fabulously helpful and positively disruptive.

If the EPO were to adopt a more competitive and pro-SME policy of issuing or rejecting a patent application within 30 months by eliminating the oligarch-friendly opposition and appeal processes, suddenly the European Union would have a surplus of human capital talent of EPO examiners. Today, the EPO has approximately 7,300 employees, many of whom are well-trained and talented mechanical, electronics and software engineers and scientists. Redeploying several thousand of these bright, well-studied and detail-oriented EPO engineers and scientists to Europe's most porous ports of entry would likely have two important consequences. The first mandate would be an improvement of all IP rights enforcement at the ports of entry. The second, and potentially most positive, benefit for Europeans from this reallocation of talented EPO technologists would be the creation of new security capabilities and business methods in the commercial goods and data industries. Businesspeople and consumers alike want greater integrity in the trading of goods; hence, a wide-open market exists for disruptive enhancements for traceability and security of both material goods and digital content.

By reassigning several thousand EPO engineers and scientists to a dozen of Europe's most porous ports, with an art-of-the-possible invention challenge and development capital for the creation of a new generation of security technologies and systems, an exciting industry leadership should emerge in Europe. These new security companies, whose charter is to deliver comprehensive origin tracing of all materials, products and data, not only would have a large market in Europe, but could also compete in the multibillion-dollar global market for more secure goods and content. The likely outcome of this critically needed capability to trace material and data would deliver to Europe:

- New security technologies.
- Leadership in security and tracking systems.
- Higher tax revenues.
- Increased employment.
- Exportable security goods and services.
- Better-protected and more prosperous artisans, brands and inventors.
- An increased likelihood of European-based disruptive innovators.

If the EPO does not create a disruptive model that delivers greater value by delivering better security of goods, new entrepreneurially led employment opportunities and greater prosperity for

Action plan



It is time for the EPO to deliver a two-way bargain:

- Eliminate the EPO opposition and appeal process.
- Reject or approve all patent applications within 30 months.
- Help to reduce counterfeiters and blatant patent violators.
- Redeploy 1,000 to 2,000 patent examiners to European ports of entry to improve IP rights enforcement.
- Offer business and entrepreneurial education classes to EPO examiners who will be relocated to ports of entry.
- Develop a strategic list of ports of entry technologies and fund them.
- Create a NASA-like programme with EU level support to ignite global leadership in security.

citizens of Europe, it may soon find thousands of unemployed protestors at its doorstep demanding a reorganisation that calls for layoffs *sans* a proactive solution. Hopefully, this new European energy that is emerging will help to craft a very Schumpeter-like disruption at the EPO, redirecting many of these smart people to deliver Europeans a brighter future. **iam**

Pat Kennedy is the CEO of Cellport Systems, Boulder, Colorado. Mr Kennedy has 11 patents and develops advanced telematics connectivity architectures at the company. He has a BA in international economics from the University of Buffalo. He is a board member of the Centre for Human Capital and the author of *IdeaJacked: An Entrepreneur's Story of Innovation and Treacherous Competition in Global Markets* (2009).