

Small is beautiful

Cellport Systems has thrived as a small research-based business in a market dominated by the big boys. An innovative approach to patenting plays a fundamental role in a strategy that has created several billion-dollar revenue streams

By **Pat Kennedy**

Twenty years ago, Ray Dolby of Dolby Laboratories nearly witnessed the sinking of his legendary noise reduction innovation lab. The world was moving on to more advanced digital technology, something that Dolby experimented with somewhat. But as he admitted to the *San Francisco Chronicle*, he had not foreseen “that digital would become cheap enough and good enough to take over”.

Fortunately, Dolby had filled his company with motivated and creative engineers not geared towards company politics. He had also structured the research efforts to be more or less egalitarian. This meant the engineers had just as much of a voice as their boss did. The organisational set-up saved the company from remaining analogue in a moving-towards-digital world, as several top Dolby researchers anticipated the switch towards digital and pushed for it despite Dolby’s doubts. The outcome remains painstakingly obvious today for any moviegoer, high-definition television watcher or audiophile: Dolby leads the digital noise reduction market. Ray Dolby credits this domination not to his own genius, but to the organisational set-up of his company, which saved him when he nearly erred and fell behind.

As Dolby moved through chaos and faced potential collapse in California,

Cellport Labs (now Systems) was founded many miles away in Boulder, Colorado. It was modelled on a very similar research and organisational prototype as Dolby’s. The model later proved again and again to be as much of a lifeboat for Cellport as it was for Dolby Laboratories.

Cellport set out with a devotion to using research to create cutting-edge models in a new space – a space we defined as universal wireless connectivity. Portable mobile (cell) phones were just beginning to gain popularity during the early 1990s and the founders began to realise that the mobile phone market would need more sophisticated connectivity solutions. Using what is now a prominent Cellport philosophy – envisioning the art of the possible – we foresaw big connectivity problems in the virgin telematics market. Namely, as wireless mobiles became more prominent, people would need universal hands-free wireless kits in their cars. Cellport thus uniquely formed to address the bridging of two, at the time highly unrelated, entities: wireless and automobiles.

Cellport began inventing as a small research lab with a commitment to universal hands-free connectivity and the open licensing of this technology. Few companies focus only on a specific technology and even fewer solely openly license their developments. How does such a unique and different business research model as Cellport’s survive against the IP giants of the globe?

Idea-spaces

In the recently published book *Smart World*, Richard Ogle details a concept dear to the philosophy of Cellport. Idea-spaces, he explains, are nodes of expertise people inhabit. The more nodes – or pods of competency – a person has accomplished, along with his or her open-mindedness to

outside stimuli, the greater likelihood of the utmost flourishing of that person's creativity. Genius and innovation, then, spawn not strictly from intelligence, but from diversity of intelligence. Furthermore, today's smart world has reached a point of universally shared knowledge such that many idea-spaces are already smart; to innovate, a person may simply use and manipulate the laws governing the space. Ogle suggests that innovation has never really been about being a genius. Instead, it involves building deep knowledge in numerous idea-spaces and being open to distant influences in a unique and new way.

Cellport is a living testament to the success of Ogle's ideas. When five men came together in the early 1990s to form Cellport, a single area of expertise did not bind them. Businesses frequently form from the efforts of individuals inhabiting very similar idea-spaces; founders who are all engineers, for example. Cellport formed from the efforts of five men with varied backgrounds in economics, wireless communications, physics, computer science and law. These numerous pods of disparate competencies elegantly served Cellport's vision of anticipating the needs of the future in promising new markets by engaging diverse and innovative ideas and concepts from a varied, sage-like group of experts. These motivated individuals with diverse idea-spaces responded well to the extrapolated market vision we developed. They easily envisioned where the world could go.

The beauty of idea-spaces lies in the fact that they often self-multiply to form new synergistic pods for creating breakthrough innovations. In other words, individual competencies become new competencies; new visionary ideas adapt to the needs of the individual. For Cellport, these individual competencies became team competencies. For those who ask how the company successfully competes against the dominating IP giants in the wireless and vehicle markets, the answer lies within Cellport's five idea-spaces. These pods of competency form the foundation of the company. They are the reason Cellport stands today after rafting through many potentially destructive white-water rapids of rough challenges which would have almost certainly destroyed most small companies.

Idea-space #1: the creation of three core technology platforms

Cellport developed three core technology platforms contiguous to the wireless connectivity field that it defined. During the invention process, we spent a lot of time

extrapolating societal and technology trends beyond the common horizon, and did an extensive amount of prototype work. We patented only core breakthroughs, as per our art of the possible philosophy, discussed in further detail below. We then promulgated these core breakthroughs – the three architectures of handset connectivity systems, mobile network technologies and, most recently, multimedia connectivity – at trade shows, conferences and with early adopter clients.

Idea-space #2: the art of the possible

The art of the possible invention formula reflects a unique philosophy used from the start at Cellport. Searching for and framing the art of the possible allows an individual to use his or her various idea-spaces to innovate and envision the possible. Using this framework, one can predict the possibilities of needs and big-idea solutions, and how they will bring value to society in the future. It makes sense, then, that big-picture vision sits front and centre when it comes to inventive solutions.

The art of the possible of big-ideas-only often contrasts with the philosophy of IP giants. Many of these companies believe that holding the largest possible portfolios of patents helps them win on a number of fronts. To accommodate this belief, many become patent mills, patenting every step for both an edge over competitors and a new move in the tricky IP cross-licensing game. By contrast, as a team from disparate backgrounds, the inventors at Cellport envision the possible as a big picture and patent only ideas that significantly contribute to leaps in our core technology platforms. We maintain a devotion to innovation of big ideas.

The art of the possible invention work has allowed us to stay five to 10 years ahead of the market with three contiguous technology platforms. Over the past 15 years we have filed for only 18 patents – a result of limiting our findings to just the big ideas or core architectural contributions in the Cellport-defined space of universal wireless connectivity. We have avoided the patent-mill style of churning out patents and have instead spent, on average, eight months developing just one of our core architectural filings to the tune of more than US\$1 million per filing. The diverse backgrounds and skills of the five primary inventors at Cellport, aided at times by help from various fields of expertise, have enabled us to file exceptionally germane core patents that are central to the now burgeoning multi-billion embedded telematics and portable device connectivity markets.

Handset connectivity systems

- **US\$1.5 billion market**
- **Licencees:**
 - Harman International
 - Continental
 - Peiker
 - Motorola
 - Funkwerk Dabendorf
 - Point to Point
 - Paragon

Generation I



Generation II



Mobile network technologies

- **US\$5.5 billion internet connected vehicle hardware and service market**
- **Licensees:**
Continental
Motorola

Generation I



Generation II



Generation III



Idea-space #3: quality legal resources

As legal mistakes are a major killer of small businesses, from the start we recognised the absolute importance of employing skilled lawyers who share the company's innovative philosophies. Quality legal resources enabled us to avoid backward steps from legal blunders. Since the day of our initial incorporation back in 1993, we have utilised highly skilled and unwaveringly ethical senior lawyers. Today we use five different law firms for various legal activities. Recruiting a tenured and deal-savvy lawyer as our in-house general counsel back in 1997 helped us not only to swing with the big guys in negotiations, but also to avoid being out-lawyered by them. Staying buttoned-up legally allowed us to prosecute patent applications effectively, to license our intellectual property and to sustain as a small research lab. In 15-plus years as a company, Cellport has never been sued for contract violations.

Idea-space #4: capital efficiency

Developing cutting-edge, future-need based technology requires time, and lots of it. Even after the time spent developing a new portfolio, it can be years before it performs on the market. As the graphs of our three core patent filings to market monetisation averages over seven years, sometimes even taking up to 10 years.

From day one, Cellport recognised that capitalising on invention work had these long lead times. As a result, in large part we avoided investments from the impatient venture capital community. Instead, we raised over US\$40 million from motivated strategic partners, such as AT&T Wireless, Cisco Systems and Omron. Our carefully orchestrated and well-papered fund-raising efforts were focused on capital efficiency, leaving the leadership team owning over 60% of equity today and ensuring our ability to implement continually our search for the art of the possible despite the lag time from invention to commercialisation.

Idea-space #5: monetisation via licensing and spinouts

From licensing and spinouts, Cellport succeeded in securing eight royalty-bearing licensee relationships on our two market-adopted patent portfolios, as well as equity participation in a Japan-based spinout business with specific objectives to launch a derivative technology. The various dynamic monetisation models that we continue to develop speak to the benefits of Cellport's small and agile nature.

Portfolios

Cellport's team members' idea-spaces helped us to generate three compelling and contiguous portfolios of core patents: handset connectivity systems; mobile network technologies; and mobile multimedia technology.

Handset connectivity systems

In the spring of 1991, our Japanese founding partner Hiro Sakurai and I unearthed a major problem within the young and burgeoning market of mobile phones: a common connectivity platform for interfacing mobiles to vehicle resources did not exist. Most mobile phone models have unique connector and logical interfaces; a circumstance meaning that only a phone-specific hands-free car kit installed in the car would correspond to that specific mobile phone. As mobile phones became more popular, we believed there would be a greater need for these hands-free kits, especially in the interest of fostering road safety. The limited connectivity of mobile phones to these car kits meant that the number of phones able to employ hands-free technology would be severely limited and hands-free car kits would be extraordinarily expensive. Not to mention, these exorbitantly priced kits would have to be replaced with every new mobile phone purchased.

The solution was our Universal Handset Connectivity System, which provides a universal port and common circuit on the vehicle side that, in turn, interfaces with a phone-specific adaptor which standardises the physical and logical differences of various mobile phones. This platform created a US\$1.3 billion worldwide market. Current licensees include Harman International, Continental, Peiker, Motorola, Funkwerk Dabendorf, Point to Point and Paragon.

Mobile network technologies

During the development of our universal handset connectivity design, our design team realised the advantages of bi-directional communication between vehicle networks and wireless devices and their user applications. If only mobile phones could easily communicate with closed and dissimilar vehicle networks, a world of applications and opportunities abounding from this interaction would emerge. Cellport created a vehicle-based server that converted internet resources to vehicle protocols, enabling bi-directional data transmission from a wireless device to various vehicle resources. In other words, Cellport invented the internet-connected

vehicle with mobile network technology. With communication now enabled via wireless between vast internet resources and the vehicle-based server, countless applications, such as vehicle performance, various crash sensors, anti-lock brakes controller, navigation resources and now search, became realities. This specific portfolio helped to launch the modern OnStar-like systems in consumer and commercial fleet vehicles that provide tracking and routing systems, all based on inexpensive and universal internet-based applications. Cellport's mobile network technology has created a US\$5.5 billion Internet Connected Vehicle service and hardware market. Licensees include Continental and Motorola.

Mobile multimedia connectivity

Our most recent and potentially most revolutionary patent portfolio, mobile multimedia connectivity, enables application resources to be shared across devices, independent of their operating systems and local link technologies. The principal applications of our MMC portfolio enable applications running on portable devices to discover, share and utilise the best available resources and services of nearby devices in the home, office and vehicle. Cellport is in the process of spinning-out this elegant and revolutionary technology to an all-star management team with a similar capital-efficient strategic funding model.

Ideajacked!

Given the groundbreaking designs of our portfolios, it should not have been a surprise when various companies stole our early production units. But it was. Some companies took credit altogether for inventing the technology, simply re-labelling the hardware with the press. Others made slight redesigns and won big production contracts with certain large automotive customers. Thanks to our focus from the start on quality legal resources, we were able to use our contiguous core patents (vital to building the respective products) to convince several ideajackers that we indeed invented the product space. They became licensees. Companies remain that still need this convincing. Cellport is grateful we have court systems open to patent suits that try and prosecute this theft.

The titan entity lab v the small research lab

The many differences and discrepancies between the titan entity model and the small lab with a licensing-centric model provide for an interesting set of

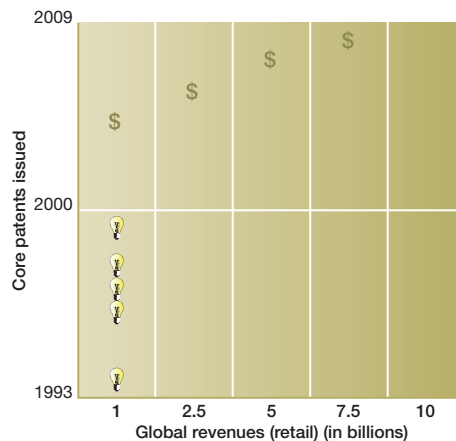
comparisons between the two. Is one model better than the other? Whether or not there is an answer to that question, both the titan entity and the small lab interact in ways that challenge and change both of them. Given this, they are both worthy of analysis and comparison.

To begin with, the titan entity lab has the huge benefit of its ability to reach into the deep pockets of the company treasury to finance big and innovative projects. The titan lab also has the funds to attract very bright inventors and the ability to offer them relative security in the comfort of a large entity. These deep-pocketed resources often give them a diverse and skilled team to work with. Importantly, when it comes to IP enforcement and protection, the large lab employs greater and more abundant resources with watchdog efforts and lawyers. A lack of these capabilities can appear to be overwhelming to the younger and smaller research lab model. The benefits that these abilities give to the titan entity lab are immense.

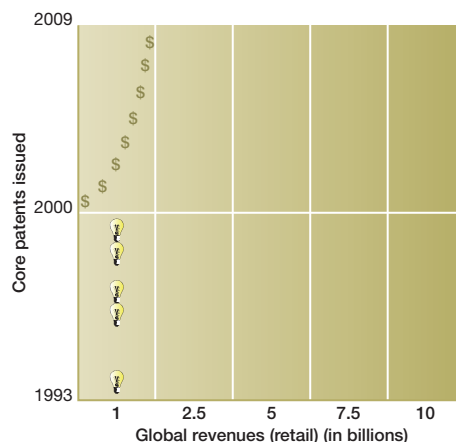
However, drawbacks certainly exist with the model. Company politics, as well as quarterly budget and organisational shifts, often disrupt the research lab goals. In the face of company cost-cutting organisational change, the lab's key projects are often either redirected or the first to go. Titan entity lab inventors benefit much less from their innovative upsides, especially the ideas generating large economic returns. Finally, the titan entity's out-licensing abilities are often compromised by the need for in- or cross-licensing, which often negates significant royalty inflow and quantitative income analysis.

The small research lab model is attractive for several reasons. First, the inventors of the small research lab are less likely to receive quarterly pressure to perform from distant corporate situations. They are free to innovate on far-out delivery programmes without someone looking over their shoulder. The small lab does not have to fear spiralling into the world of reciprocal, tit-for-tat product IP cross-licensing and can focus on out-licensing only. The open licensing model is easily preserved. It is not second-guessed by management wanting to preserve production resources and sales results to meet near-term goals. Similarly, without reciprocal IP licensing with other companies, the lab is relieved of the pressure to create a patent mill and the immense stress and time placed on applying for a large number of patents. The small research lab also has a more personalised and impassioned enforcement team that is more closely connected to the market. When ideajacked,

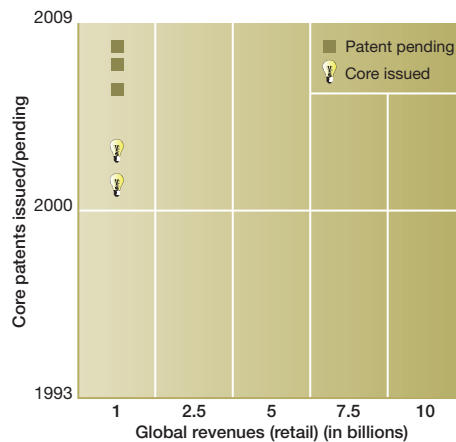
Mobile network technologies



Handset connectivity systems



Mobile multimedia connectivity



Small research lab v titan entity lab

+ No quarterly pressure	- Budget and organisational uncertainty
- Fragile financing at times	+ Deep pockets to fund large, complex projects
+ No pressure to create a patent mill	+ Deep pockets for enforcement
- Significant time between core IP development and revenue	- Inventors own much less of their big ideas that generate large economic returns
+ No fear of reciprocal product IP licensing – out-licensing only	- Highly political at times
+ The open licensing model can be preserved without second-guessing from production and sales organisations	- Out-licensing with need for in-licensing negates significant royalty inflow
+ Royalty profits flow more efficiently to inventors	+ Diverse in-house cross-functional teams can move quickly

the small lab invention team can stand eye to eye with the ideajackers. This can lead to much more effective enforcement. The out-licensing centric model of the small lab avoids the need for discussions of cross-licensing with the ideajacker's patents. Perhaps most importantly, however, the small lab flows royalty profits more efficiently to inventors and, therefore, has a much more efficient reward system to encourage the very human capital that delivers cutting-edge innovations.

Like the titan entity lab, the small research lab also has drawbacks. Fragile financing makes it difficult to fund big and innovative ideas easily. A difficult and vast time span of at least five years stretches from the small lab's initial core IP development to profitability in a framework of already delicate finances. Thus, the small lab cannot depend on the most common source of small company funding: the impatient venture capitalist community. The small lab must instead find likeminded and motivated strategic partners. Finally, the small research lab is not seated within the comfort of a resource-rich entity and therefore must recover from low points – such as having ideas stolen and being left in the lurch by big companies – completely alone.

Cellport as a small research lab

Ultimately, Cellport enjoys the challenges of the small research lab model. It allows us great freedom to innovate and invent, and to avoid company politics. As a small lab, we are able to preserve our open licensing model and hone in on long-term core innovations that deliver great value to society. Facing potentially disastrous challenges with rampant ideajackers around the globe has certainly been a struggle, but it forces us to patent with great diligence and to recover gracefully, as well as effectively respond to challenges. We have certainly

come to experience the adrenaline highs in recovering from the lows and the joy of surprising everyone in coming back from the near dead.

Like Dolby Labs, we owe a lot of our success to the organisational model we were founded on. Ever since our founding, we have believed in the endless possibilities of motivating a resourceful and sage-like team of innovators with the art of the possible, and the challenge of using a team with a diverse set of idea-spaces to stay five to 10 years ahead in delivering innovative technology solutions. This philosophy helped us to create three compelling portfolios of useful core patents initially within a virgin cellular sector and to define a market in the uncharted wireless-to-vehicle connectivity space. Our most recent mobile multimedia technology portfolio provides for application resource sharing across diverse device environments. It should once again introduce a plethora of innovative application paradigms for future licensees.

Since day one, we have believed in a radical business charter in favour of a gifted team with diverse skills, open licensing of universal connectivity and art of the possible core research to deliver meaningful benefits for society. When we faced potentially disastrous obstacles multiple times (the sort of obstacles few small companies face more than once), this charter not only saved us but also enabled us to thrive. As the world transitions into rough economic downturn and growing global piracy by ideajackers, we encourage other IP idea-space denizens to join us in pushing the art of the possible invention process and utilising our model of diverse idea-space teams to respond to the difficult challenges of the 21st century. *iam*

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