2Touch
New Zealand

Managing Creative People for Innovation

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Introduction

In July 2012, Pablo Garcia, owner of Manzana Ltd and 2Touch companies, mulled over the growth prospects of the small organisations he had set up a few years ago, first in New Zealand, and then in Australia. He had to decide whether or not to enter new markets and what could be the best approach to this expansion. He also had to consider the design and implementation of human resource strategies that could drive the continuous innovation needed to sustain the market expansion he was envisioning.

It had been a long journey for Pablo. Back in 2001, Pablo was convinced that he could make a very meaningful contribution to society by developing technologies that would enhance education outcomes. A lengthy and winding series of events eventually gave shape to three sister organisations. After some time, during which new ideas emerged and alternative courses of action were tested, he managed to form a dynamic and enthusiastic team committed to realise his vision in a particularly competitive environment.

In order to implement his innovative ideas, Pablo had to plan, adapt, re-plan and re-adapt his strategies according to the changing directions of the dynamic environment. In fact, innovation, rather than being a process prescribed by rational planning only, is a complex, chaotic and emergent process that involves a mix of both anticipated and unanticipated actions. These actions are influenced by economic, political, social and cultural factors, where both external (e.g., suppliers, customers, government) and internal (e.g., managers, employees, investors) stakeholders interact. Having consolidated his presence in the New Zealand and Australian markets, Pablo was now considering the possibility of expanding the international operations of his business. He knew that this new endeavour would bring new challenges to their existing human resource practices.

The Beginnings of a Promising Idea

Mañana,[1] the Spanish word for tomorrow, was the name given to regular breakfast meetings held by Pablo and a group of enthusiastic New Zealand entrepreneurs in 1998. The origins of both Manzana and 2Touch, and the solutions they both provided to emphasise learning through full engagement and full involvement, could be traced back to these daybreak gatherings.

After Mana (his business on health management software development for general practice) came to an end, Pablo was keen on developing and embracing new projects. These regular morning meetings proved to be an inspiring forum for discussing innovative ideas. One of the ideas that caught Pablo's attention during those breakfast time gatherings was the use of interactive surfaces as a source of information. It was at that time that he met Phillip Hunter,[2] a Canadian information systems lecturer at The University of Auckland Business School. Phillip put him in contact with Smart Technologies, a Calgary-based company. This contact laid the foundation of a new and exciting endeavour.

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[1] It is pronounced manˈjɑːnə.
[2] Not his real name.

In 2001, Pablo realised his vision when he established Manzana Ltd, a small, independent New Zealand owned and operated company which sought out ways to improve class and individual learning outcomes. Manzana represented the platform that would take the business ideas Pablo had been mulling over for some time to the market. Manzana entered into a 50/50 partnership with Avcom, an established audiovisual technologies business, which would distribute Smart Technologies' products in New Zealand. His plan was to use his recently incorporated company as a launch pad to introduce the new category of interactive whiteboards to New Zealand.

In 2003, Pablo, frustrated with the lack of progress of this arrangement, terminated the relationship with Avcom. Manzana then became the exclusive importer and distributor of Smart Technologies in New Zealand, and was highly successful in establishing a network of dealers for the interactive whiteboards. The year 2005 was a particularly strong year for Manzana. Unfortunately, as soon as sales started to flourish, Smart Technologies withdrew from the distribution arrangement and decided not to renew the exclusivity agreement in 2006. With the exclusivity agreement no longer in place, Manzana had to compete with the same Smart Technologies dealers it had set up not long ago in New Zealand. As part of the distribution restructuring, Pablo and Manzana committed to a non-competition agreement with Smart Technologies, wherein they would not introduce competing solutions in the New Zealand market for two years. It was at that time that Pablo suffered a terrible accident, which put him off work for nine months in 2006.

2Touch: A New Dawn

During his recovery, Pablo decided to embark on a new yet related endeavour. Deeply disappointed with his experience with Smart Technologies, he tried to look at its positive side and as an opportunity to explore new horizons. He focused his efforts on conceptualising and developing an entirely new approach to interactive whiteboards. Pablo's vision was to develop technologies that had the potential to enhance the learning experience:

> Group-based learning can be experienced far more effectively when enabled by technologies such as large interactive surfaces and wireless personal responders. Both of these technologies are well developed in technical terms. However, the education sector lags far behind in its capacity to adapt teaching and learning processes to take advantage of the technology enabled opportunities. I am far less interested in the technology *per se* than I am in the development of new teaching and learning processes for exploiting these opportunities. This is a brave new world where software and social engineering meet.

As a result, Pablo established 2Touch Technologies Ltd in early 2007. The objective of this small company was to locally produce innovative products oriented to the education sector. While the newly established business was not limited to dealership in education technology produced overseas, 2Touch was forced away from the New Zealand market due to the non-competition agreement it had with Smart Technologies. The new company thus immediately commenced operations in Australia. In hindsight, Pablo believed that "if Smart Technologies had not made the decision of not renewing the exclusivity agreement with Manzana, the opportunity for me to grow the business and, later on, enter the Australian market would have never happened." In fact, 2Touch emerged from this downside.

New Ideas, New Challenges

From the outset, 2Touch aimed at revolutionising the classroom experience by offering an interactive experience on an uncomplicated, durable, porcelain steel interactive whiteboard (Figure 1) that neither required special drivers nor software. It had multi-touch capabilities and allowed the use of standard whiteboard markers. This technological solution was supposed to support the learning process, professional development and training through full engagement, full involvement and continuous formative assessment.

Figure 1: Interactive Whiteboard

Manzana eventually became the dealer of 2Touch solutions for New Zealand. It was a promising yet uncertain endeavour. The small 2Touch start-up had to contend with the colossal Smart Technologies, a worldwide dominant player in the interactive whiteboard category. Back then, Pablo realised that if he wanted his two fledgling sister organisations to grow, he had no choice other than to enter the Australian market. He also knew that if he wanted to succeed in Australia, he needed to have control of the distribution channel. Consequently, he travelled throughout Australia looking for a business partner. Pablo admitted that an outsider might consider this move unwise. In fact, the idea of establishing a partnership in Australia was rejected by one of the largest business incubators in New Zealand:

> In other people's minds the decision I made was nonsense. They may have asked, 'Why would a small business, which is at its early stages in its own economy, establish a division in another much larger, more competitive economy? Would it not have been more sensible just to sign a distribution agreement with a local dealer in Australia?' Well, I followed my intuition. I knew that for the sort of product I developed, controlling the distribution channel was critical. I really wanted to be socially engaged in order to know and understand my business partner. It gave me a sense of control of my future. And trust is a big issue for me.

Eventually, Pablo found a like-minded business partner in Australia — someone he felt he could rely on. They both established Interactive Whiteboards Australia Pty Ltd in Melbourne which provided the platform for launching and supporting 2Touch's growth in Australia. Pablo had an 80 percent share in the company while his partner held the remaining 20 percent. Pablo felt that in this way, he retained control over the fledgling organisation's future (in New Zealand, a shareholder with a 25 percent share could still

stop decisions made by larger shareholders). He also believed that by having equity in the enterprise, his partner would have a true sense of ownership and participation in the business.

The production of interactive whiteboards in Australia began in early 2008. By 2009, Manzana's non-competing agreement with Smart Technologies in the New Zealand market had expired. The road was clear now for Manzana to offer the 2Touch solutions in New Zealand. 2Touch utilised the components produced by Next Window, a specialist New Zealand developer of touch solutions based on optical technology. While Next Window focused on developing optical technology to be used in small surfaces (e.g., computer monitors, tablets), Pablo's idea was to use the same technology in bigger surfaces (e.g., large whiteboards). Right from the beginning, Pablo was aware of the asymmetric nature of the relationship between 2Touch and Next Window; the latter was much larger than the former. Moreover, there were intrinsic risks in this partnership. Based on his past experience with Smart Technologies, Pablo knew that the terms and conditions agreed on at a certain stage were not permanent; they could change depending on the interests of the parties, and it was usually the smaller party that lost the most when collaborative agreements were terminated. The possibility of Next Window being acquired by a third company was always present and could not be overlooked. This possibility eventually happened in 2010, when Next Window was sold to the very same Smart Technologies, something that Pablo had anticipated as a probable scenario from the beginning. This development, however, did not stop the commercial relationship between 2Touch and Next Window.

Pablo was aware of the drawbacks of partnerships, such as issues around intellectual property. This was the reason why he did not get involved in previous government initiatives to establish clusters that brought together small organisations with complementary capabilities since "it was too risky." He also had some concerns about distribution partners:

> Partners controlling exclusive access to the end user present a risky future to a small intellectual-property centred business without a big marketing budget. This is not much of an issue for big companies because they have the resources and can be more independent. I simply could not afford this.

The Production Process and Managing the Supply Chain

Manzana and 2Touch shared a two-storey facility in Glenfield, a neighbourhood in the North Shore area of metropolitan Auckland. A door connected the 200-square-metre workshop area to 2Touch's research and development (R&D) area located on the ground level. Open-plan administrative offices along with a meeting room, which also served as a display area, were on the upper level. Because of the increasing activities of the company, Pablo was planning to move out to a larger facility in the same area when the lease agreement expired.

In the early days, the manufacture of interactive whiteboards in New Zealand was done through local contractors, with parts provided by local suppliers. Later, the parts for the interactive whiteboards were provided by suppliers from China and Korea. While the production process in New Zealand was entirely in-house, this was done by local contractors hired by Interactive Whiteboards in Australia. In 2010, 2Touch produced 1,000 units for both the New Zealand and Australian markets. Though considered small

compared to what the competitors produced, this level of output made the production process sustainable for a small organisation like 2Touch.

While the optical components were largely supplied by Next Window, the material for the whiteboards was sourced mainly from China. This made some wastage inevitable since the whiteboards all came in the standard width of 2.4 metres by a height of 1.2 metres. However, since the material was essentially aluminium, it was completely recyclable. Although 2Touch's versatility was significantly reduced because the materials had to be imported in bulk (in containers), this arrangement was the cheapest option. In addition, it also allowed customisation of the final product, which was one of the key features of 2Touch products.

In 2010, Pablo and his team launched 2Touch Tracker, an in-house developed logistics system. It allowed tracking 2Touch products throughout the supply chain from the provider of the optical components to the end user by generating unique identifiers for every finished product. When the components were received at 2Touch warehouse, the serial number given by the manufacturer was recorded. From that point on, this number became the unique identifier of the interactive whiteboard to be assembled either by 2Touch in New Zealand, or by its contractors in Australia. Once the interactive whiteboard had been assembled, it was tested and given a production proof, which was the same as the recorded serial number. Then, the interactive whiteboard was shipped to the 2Touch authorised dealer who was responsible for its installation at the end user facilities. Once the interactive whiteboard had been installed, it was tested again *in situ* and an installation proof was uploaded by the installer into 2Touch Tracker. Upon providing the installation proof, the dealer was able to access the customer key for the 2Touch application software bundled with the interactive whiteboards. Tracker automatically produced the key upon satisfactory completion of requirements by the dealer. A schematic representation of this process is depicted in Figure 2.

Figure 2: Schematic View of the Logistic Process
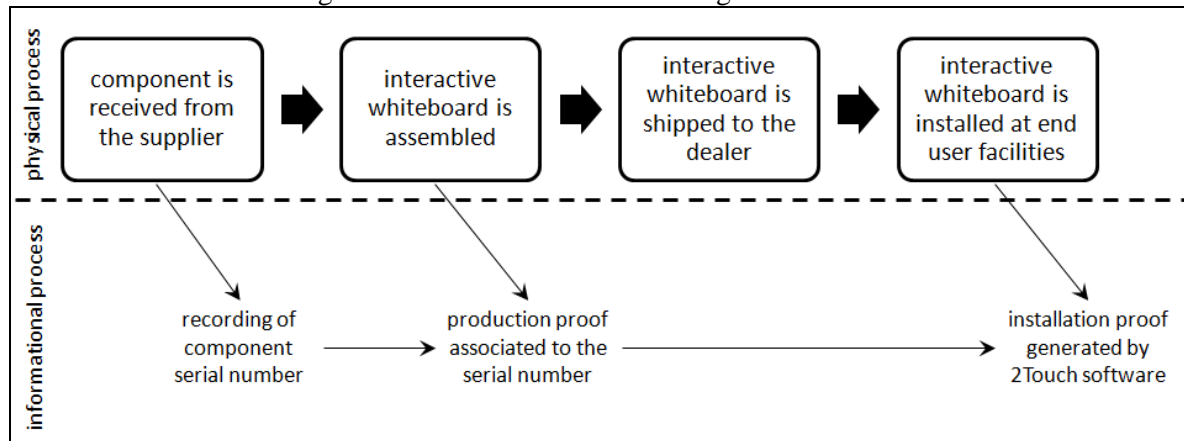
Implementing Tracker represented a big transformation for the business. It did not only allow 2Touch to know who its customers were but also, and most importantly, to influence the relationship with them. Pablo observed that some dealers did not bother to train the end users, which every so often produced less than satisfactory customer experience in the past. Guaranteeing that the job done by the dealers was of high standard became critical.

As of 2012, there were 18 dealers serving the Australian market. In New Zealand, besides Manzana, there were two dealers, plus a number of authorised installers. By managing the whole process, Pablo was able to control not only the quality of the production process but also the quality of the installation. In this way, he was in a better position to choose his future downstream partners. Moreover, Tracker allowed 2Touch to gain an intimate knowledge of the end users and influence its relationship with them. This valuable experience could be now leveraged with other markets.

The Role of Government

Research and development was a key aspect for an organisation devoted to innovation such as 2Touch. In 2011, the company invested NZ$350,000 (US$282,300) on R&D. Pablo admitted that Australia offered more attractive tax incentives than New Zealand for R&D. While small companies in Australia could receive a refundable tax offset of 45 percent of their R&D spending, the situation was not so encouraging in New Zealand where the refundable tax offset was only 15 percent of eligible R&D expenditure. Moreover, at some point the government has signalled its intention to phase out this tax scheme.

In the past, Pablo availed of government support for his business. In 2010, 2Touch received a grant of NZ$50,000 (US$40,300) for the development of new concepts toward a multiparty collaboration solution from the Foundation for Research, Science and Technology, now under the Ministry of Business, Innovation and Employment. This assistance was awarded on a competitive basis as funding for research and development activities only.

Unluckily for 2Touch, this type of government support was not available for products oriented to the Australian market. The Close Economic Relations, a free trade agreement that New Zealand and Australia signed in 1983, did not allow any kind of government incentive for goods and services targeting any of the Trans-Tasman markets. Since Australia represented the main market for 2Touch products, Pablo decided to stop looking for government assistance; thus, R&D activities in 2Touch had to be internally funded from then on.

A Diverse and Committed Team

The operations in New Zealand were managed completely independent from the Australian office. In Australia, besides the managing director of Interactive Whiteboards Australia, Pablo's business partner in the trans-Tasman enterprise, there was one person who served as the National Business Development Manager, while another one looked after the daily operations.

In New Zealand, both Manzana and 2Touch had six employees each. Pablo the business owner and Director of both companies and one accountant after the two businesses on a three-day working week basis, completed the 14-member, well-integrated team across the two organisations. Despite their small size, the Manzana and 2Touch teams constituted a truly multicultural group. People came from different corners of the world: Argentina, China, Indonesia, Samoa, Korea and the United States. Even Pablo was an expression of this multiculturalism. His parents took him from his native Spain to the United States when he was five years old. After some years in North

America, the family made the move to New Zealand, where Pablo completed university degrees in both engineering and business. The level of diversity went beyond the team's diverse origins. Their diversity was also reflected in the variety of experiences (from primary teaching to corporate sales in the telecommunications sector) and qualifications (from degrees in English, ancient Egyptian history and primary school education to computer science and even a PhD in mathematics).

The team at Manzana consisted of one Sales and Marketing Coordinator, three sales executives and two tele-salespeople. The Sales and Marketing Coordinator had the responsibility to look after the downstream customer service experience. He, along with the sales executives, was also tasked to develop relationships with prospective customers. For their work, they used a Canadian Customer Relationship Management (CRM) software solution Maximizer. This package was at the core of their activities, since it allowed them to identify market opportunities and, eventually, realise sales. In order to optimise its operations, Manzana had partially integrated Tracker, the in-house logistics software solution, with Maximizer. The tele-sales operation started in March 2012, when a Voice over the Internet Protocol (VoIP) technology was deployed after one year of planning and an investment of approximately NZ$40,000 (US$32,300). It integrated both the New Zealand and Australian offices into a single communication network. One of the tele-salespeople was in charge of driving appointments for the dealers in Australia, while the other one performed customer service activities in New Zealand.

In 2Touch, it was the R&D Coordinator who organised the creative activities, which, in the main, involved software development. This person managed the work of one graphic designer, two software developers and one quality assurance officer. In addition, the R&D Coordinator supervised the person in charge of the production and fabrication process. The 2Touch team was composed of highly trained individuals, mainly in computer science. The skills they brought were invaluable for developing the products Pablo envisioned.

Pablo followed a devolved management style. Overall, employees enjoyed a high degree of freedom in terms of decision making within their areas of responsibility such as R&D, operations and others. Pablo kept for himself the strategic decisions which were made after a round of consultation with the staff. It was not uncommon for the group to have lengthy discussions on specific aspects of major relevance before making any decision. The always present jottings on the meeting room's whiteboard gave evidence of this management style. Web conference technology was used to coordinate activities or decide on courses of action with the Australian office. As Pablo declared, "I try to make business run without me."

Approaching the Market

It had been a long journey for Pablo since his early dream of developing technologies for enhancing education outcomes. Although Manzana's growth had been relatively static, 2Touch showed an impressive expansion of 30 percent for both 2010 and 2011. The combined sales for both Manzana and 2Touch as of March 2012 were NZ$2.1 million (US$1.7 million) in New Zealand and AU$1.6 million (US$1.7 million) in Australia. The combined assets of the sister organisations totalled NZ$1.162 million (US$935,500) in March 2011.

Australia was by far the larger market. It represented 80 percent of the interactive whiteboard market, while New Zealand took the remaining 20 percent. These figures should not come as a surprise. Australia's 23 million inhabitants comprised more than five times the just over four million people largely living in the two main islands that made up the New Zealand territory. Thus, Pablo believed that that the focus of his organisations had to be on Australia, and not on New Zealand. However, he was proud that Manzana was the only supplier of the technology 2Touch was developing in New Zealand.

Typically, the customers of 2Touch products were educational institutions and business organisations. Although his focus was not on primary schools, Pablo reckoned that they offered the opportunity to prove the relevance of the concept to education. If the interactive whiteboard technology could be demonstrated as successful in the primary schools, he could subsequently concentrate the R&D efforts on the needs of secondary and tertiary education providers.

In the beginning, Pablo faced a number of challenges to introduce to the market the products coming from his recently established small business. He carefully chose the right location for establishing a safe and secure position, which could later be used for further advancement. He found out that Gisborne, a coastal town with a population of 35,000 in north-eastern New Zealand was the right place to test 2Touch products. The choice of the location was meant to avoid embarrassment if things did not work out as Pablo and his team wished.

Eventually, in March 2007, the first interactive whiteboard prototypes produced by 2Touch were installed in three local schools in Gisborne: Mahanaiterangi School, Hamiora Primary School and Taawhiri-Maathea School.[3] During his first meeting with the teachers in the aforementioned schools, Pablo could present, at best, a concept only. The technology he was promoting had not been developed or tested before, even at the prototype level. However, Pablo was passionate about the opportunity and believed that the educators would place a very high value on the promise of finger touch control over a computer, from a standard whiteboard surface, using a plug-and-play driver-less non-proprietary approach to connectivity. In order to allay fears that the schools might compromise their budgets, Pablo offered an unconditional, no-questions-asked, money-back guarantee if they were not happy with the interactive whiteboard technology he would install. He did a good job in convincing the educators about the benefits of the new technology. It was a quite aggressive move which paid off later.

The test worked out well and proved to be a right start for future expansion. The first prototype whiteboards installed in the Gisborne schools remained in operation until 2011, when they were replaced by new ones. As of 2012, in addition to a number of schools, Manzana customers in New Zealand included Massey University, The University of Auckland (through its clinical support unit at Auckland Hospital), the Liggins Institute (a world-class research centre for perinatology), UNITEC (Auckland's largest polytechnic) and Middlemore Hospital. In Australia, 2Touch products could be found in a number of educational and business organisations.

In January 2012, Manzana and 2Touch participated for the first time in the British Educational Training and Technology show, or just The BETT as it was known in the education and information technology circles. The BETT which usually attracted around 30,000 visitors from over 100 economies was an excellent opportunity to showcase the

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[3] The names given here are not the real names of the schools.

educational technology produced in New Zealand. However, participating in this type of events could be quite expensive for a small business, and an activity not eligible for government assistance. Pablo had to allocate a budget of around NZ$50,000 (US$40,300) for the January exhibition. Although no sales were completed at the event, some contacts with prospective clients were established. Moreover, the learning experience turned out to be invaluable. Pablo was looking forward to participating at The BETT show at least every other year. It would give Manzana and 2Touch international exposure, beyond the Australasian market.

Differentiating the Products

Innovation, defined as "the creation of either a new process or a new product or service that has an impact on the way an organisation operates," was what Pablo and his team did on a daily basis at 2Touch. Pablo was aware that 2Touch was not a big global player in the interactive whiteboard technology market. Smart Technologies and Promethean, with around 60 percent and 20 percent of the world's market, respectively, were the largest providers of interactive whiteboards by far. Although Hitachi, Polyvision, GTCO Interwrite and Mimio were not as big in this category as Smart Technologies and Promethean were, they made 2Touch look insignificant by comparison. The reality of this competitive market made Pablo adopt a rather unconventional approach. He realised that his products must exhibit distinctive attributes, and in fact be defined by their differences. "I simply did not have the scale to compete against them. I could not play the same game the gorillas play," Pablo admitted.

It did not take long for Pablo to realise that Smart Technologies products he initially distributed through Manzana imposed certain technical restrictions – and practical ones too. There were three problematic aspects: the size of the interactive whiteboards was fixed and could not be customised to specific needs; the whiteboards required drivers to operate, which made them an inflexible and somewhat clumsy technology; and there was no software available to make the classroom truly interactive. Pablo was determined to look for innovative solutions to overcome these limitations. The R&D team at 2Touch delivered; they developed the right solutions for the market Pablo was targeting.

Pablo wanted to highlight the differences between 2Touch products and the ones offered by the big players. While the latter were for the most part focused on the primary school market, the former concentrated its efforts on developing solutions for the secondary and tertiary education markets. Secondary and tertiary education markets were different from primary education particularly in the mobility demanded of both teachers and students. In particular, there was no one-to-one relationship between technology implemented in a classroom and an educator primarily responsible for that solution. This distinctive emphasis had implications on the technologies that needed to be developed. As a consequence, while most of 2Touch competitors' solutions required a special pen to work on their interactive whiteboards, Pablo and his team focused on developing touch technology, something that could recognise the finger movements as commands. This creative approach freed the user from having to use a special writing implement and all its associated shortcomings such as making unavoidable the acquisition of at least as many special pens as whiteboards or getting the special pens lost or forgotten (a not uncommon occurrence).

However, what made 2Touch solutions really unique were two other characteristics. The first one was that it offered 'plug-and-play' technology which needed neither device

configurations nor user intervention to make the interactive whiteboard work. This technology had not been developed by any of the competitors. The second one was the development of inter-operable applications that could work with content produced using competitors' interactive whiteboards. In fact, 2Touch applications could open any file, including those developed by its competitors. While his competitors had developed proprietary solutions, Pablo was pursuing solutions "that would disqualify what they did." As a result of this distinctive approach, 2Touch product suite consisted of customised-size surfaces, hardware-independent and non-operating-system specific as well as interactive solutions for classrooms and boardrooms.

While most of 2Touch competitors offered the standard 4x3 aspect interactive whiteboards, Pablo appreciated that these conventional dimensions sometimes imposed a major constraint on customers from whiteboards that could not fit into already existing rooms to distorted images such as circles that did not appear as circles on the whiteboards. It was a no-brainer that the standard solutions offered by the competitors simply failed to meet the user needs. Pablo did not want to deprive customers of what they really wanted and needed – just a whiteboard of the size they needed that worked both as a normal whiteboard and an interactive whiteboard. 2Touch came up with a solution that made the size of the whiteboard independent of the optical system. In this way, it was possible to use a section of the whiteboard as a normal whiteboard with standard markers, while the remaining area could be activated using finger interaction. Pablo relished the user reaction who "just loved the idea."

To supplement the interactive whiteboard features, 2Touch later developed Workbook, a software package that allowed users to create a space where they could bring together all their resources, from basic text and shape creation to annotation, text, video, flash, sound files, multi-linking brain-storming diagrams, page management, images and an in-built web browser. Workbook could be used on any interactive whiteboard, touch screen or touch device and stream multiple live feeds (e.g., webcams, digital cameras, document cameras) directly onto the Workbook page displayed on the whiteboard. Something that distinguished Workbook from its competitors was its multiplatform features; the competitors' software could only be used in their own hardware. Pablo was clear on the approach he favoured in terms of content ownership: "I was focused on interoperability. I believe that content belongs to the person who created it, not to the platform on which it was created. Our products allow the user to access any content regardless of what sort of interactive surface or mouse was used to create it."

2Touch's latest software development was Xorro-Q. It was a solution geared towards optimal interaction from the audience that leveraged today's widely available distributed handheld technologies. Xorro-Q enabled the audience to interact with the presenter's computer – and with any interactive whiteboard, for that matter – using any mobile devices (e.g., laptops, mobile phones or tablets). In the classroom, for instance, teachers could send questions to student devices and students could reply in text. The results were then displayed on the teacher's computer for all to share as is shown in Figure 3. The recently tested Xorro web service made it possible to access material available on the cloud using whatever device the customer used.

Figure 3: Workbook and Xorro-Q Technologies in Practice

Although 2Touch did have intellectual property rights over its products, it did not have a production scale large enough to fund investments in patents. Pablo deemed the costs involved in the procedures of both obtaining and protecting patents prohibitive for his small organisations. Alternatively, Pablo decided to take a more proactive approach. The philosophy guiding innovation in his companies was to be "fast to market needs and customer relationship."

The Innovation Process

Innovation as a process entailing three stages became a habit at 2Touch. The first stage of innovation is initiation. It involves a series of preliminary events that set the stage for the innovation to occur. When planning and deciding on his next steps, Pablo always preferred to take an unconventional approach. He scanned the competitive environment in order not to do what their competitors were doing:

> Our competitors' strengths tell us that that is not the route for us to take. For instance, it would require us to be ten times bigger to compete with Smart Technologies. We just cannot afford paying hefty fees to intellectual property experts to protect our products. Our focus is more on innovation in processes rather than in products. Our technology was developed not because someone saw a gap in the interactive whiteboard market but because we simply listened to what educators had to say.

The second stage of innovation is development. This is the stage of discovery, where multiple ideas pointing to different directions are considered in an explorative learning journey. Pablo knew that research and development activities were at the core of the two innovative organisations he managed. In the process of making their innovative products marketable, Manzana and 2Touch followed a strategy that was more 'push' than 'pull.' They were continuously developing and testing ideas in an iterative fashion. An innovative product was developed first and then it was pushed to the market. However, this was not a trouble-free enterprise; stories of technical failures have been interspersed with customers not buying-into the proposed ideas. One approach taken by Pablo and his team to reduce the occasional reluctance to accept innovative products

and to increase the visibility of new unrecognised opportunities was involving their customers from the early phases of product conceptualisation.

The outcome was positive and created a synergetic relationship between Manzana and 2Touch and their early adopter customers. In some cases, prospective customers explained their specific requirements even before the product was developed. In some other instances, customers provided valuable feedback that helped refine the product further. These examples represent the third stage of innovation which is implementation. In the implementation stage, the integration between the new and the old occurs while judging the goodness of the innovation. The latest available customer satisfaction survey conducted on a quarterly basis in which every customer participated, reassured Pablo that he was on the right track. It confirmed that Manzana had shown continuous improvement in each of the four key areas of interest: people, solutions, training and solution delivery.

Human Resource Practices

In the three stages of innovation, developing and leveraging the full human potential became essential. Recruiting individuals for the R&D initiatives at 2Touch, however, was not easy. Sometimes it was hard to find people with the right skills. In order to overcome this difficulty, Pablo was actively engaged with two potential providers of gifted employees. One was Student Job Search, a not for profit and 100 percent student owned organisation that offered free employment services in New Zealand. The second was his personal relationship with lecturers from the Department of Computer Science at The University of Auckland. These strategies proved to be useful. Two of their employees worked on a part time basis at 2Touch until they graduated in late 2011, when they became full-time workers.

The challenges recruitment posed, however, were not restricted to the shortage of talented people only. It could be the opposite too. In one case, 2Touch could not immediately benefit from the skills of a highly qualified staff member who was recruited overseas. Pablo thought that "his recruitment was a little bit early for the development stage we were at. Unquestionably, there was an adjustment period between the skills this person brought to the organisation and what 2Touch needed at that time." In any case, Pablo could count on the advice offered by a part-time technical consultant for matters involving recruitment.

Invariably, shortly after joining Manzana or 2Touch, every employee had to participate in a brief and somewhat informal induction programme. Although there was no explicit human resource strategy in place, the conventional approach at both organisations was to keep employees intrinsically motivated. According to Pablo, his vision was "to have people doing something that was meaningful and had a purpose." Certainly, employees developed a passion for what they did. Pablo exuded self-confidence when he said that "people represented the biggest investment by large at both Manzana and 2Touch."

Extrinsic incentives supplemented this intrinsic motivation. In addition to the conventional annual salary reviews and quarterly performance reviews, Pablo implemented a goal metrics system. This system was designed to encourage employees to bring about initiatives that could make a significant contribution to the business. It operationalised the idea of promoting inventiveness beyond the routine activities.

Under the goal metrics system, a plan for deploying the proposed initiative was jointly outlined between Pablo and the employee who advanced the idea. Although these initiatives had to be approved by Pablo, he had never rejected one. Once the idea was approved, periodical reviews were scheduled, typically every three months – although they could be more or less frequent depending on the nature of the project. A comparison between the actual achievement and the planned progress was made during these periodical reviews across different weighted dimensions such as new product category, process optimisation, savings enhancement and sales increase. If the proposed initiative had been successfully executed, the initiator would get an incentive of between 10 percent and 30 percent of their salary. Moreover, if the initiative had been successfully implemented ahead of time or at a lesser cost than what was originally budgeted, the initiator would get extra incentives of as much as 200 percent of the initially agreed bonus. Pablo believed that in order to be effective, the incentive had to be substantial; anything below 10 percent was not attractive enough.

The goal metrics proved to be a system that has engendered interesting ideas. For instance, the Sales and Marketing Coordinator proposed establishing a tele-sales campaign in Queensland to boost the sales in this Australian state. Similarly, the R&D Coordinator put forward a project that would allow the visualisation of the work in progress on a wall.

The goal metrics system was open to every employee at Manzana but only for the R&D Coordinator at 2Touch. There was a valid reason for this apparent inequity. Pablo did offer this stimulus to the developers in the past. However, it did not work because it was simply not consistent with the work they did. "Should I pay incentives for writing lines of code faster? What about quality? It was too hard," Pablo concluded. Moreover, the nature of the work executed by the developers was intrinsically collective, which made it extremely difficult, if not impossible, to allocate individualised incentives.

The working arrangements, especially at 2Touch, were quite flexible. After a few months in the position, employees did not need to come to the workplace on a daily basis. The only exceptions were the once-a-week lunch days – Wednesdays for the Manzana team and Thursdays for the 2Touch team – when plans and project execution progress were discussed in groups.

Looking into the Future

Pablo was aware that competing in overseas markets for the interactive whiteboards was a challenge that could not be underestimated. However, he had plenty of expectations on Xorro-Q. Pablo anticipated exciting times for this software which could make the classroom truly interactive in the coming years. Based on his analysis, the maturity of the British market made it an especially attractive proposition. In addition, he could see the potential in the Brazilian, Indian, Malaysian and Turkish markets, where there had been remarkable growth in government expenditure on educational technology during the last few years. Korea was another promising market which would require local representatives and support. A transition to an educational delivery heavily supported by information technology was taking place in this rising Asian economy. Similarly, Pablo saw the value of the Mexican market, where considerable investments on information technology in education made of the only Latin American economy in North America a case in point. However, Pablo recognised that the timing was not the

best: "We arrived late there, at least for the stage of development that the Mexican market was in."

There were some other interesting yet uncertain markets, in Pablo's opinion. Chile, where Pablo worked for a few years in the late 1980s and early 1990s, was one of them. Chile was the natural option if he were to enter the South American market, just like many other New Zealand organisations which have established their beachhead in Chile for their subsequent expansion into the Latin American market. France, Germany, the Netherlands and the United States were options that also attracted Pablo's attention not only because of the size of their economies but also for their cultural proximity to the business environment where Manzana and 2Touch operated. Conversely, while China offered interesting prospects because of the sheer size of its economy, Pablo recognised the huge challenge of the language barrier and cultural distance for the kind of products 2Touch offered. Interestingly, Japan, although technologically advanced and a main player in the technology business, was a market that was somewhat self-reliant and did not import technology from overseas.