Commercialising And Marketing Your IP To Optimise Your ROI

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Abstract

Investors who finance the commercialisation of high technology research and development projects know that the risks of failure are high, and the probability of a good reward rather low. Before committing they will require proof of strengths such as a realistic and documented strategy, clear intellectual property ownership, vision, problem solving ability, strong balanced teams, and clearly stated concrete benefits for specific paying customers. Convincing investors to put 'their money where your mouth is' requires showing a clear path to value creation, pre-empting their unexpressed concerns and regularly communicating why your project still promises a good return on their investment.

ROI On Intellectual Property Assets

IP Is A Costly Asset

The salary, equipment and support costs of a researcher can easily be $200,000 per year. If protectable intellectual property is developed, typically a family of several patents, each patent will cost about $250,000 to protect worldwide during its maximum exploitable lifetime of 20 years, which could be only five years in the biotechnology industry. Commercialising IP typically costs ten times the R&D expenditure. Funding an IP commercialisation project can be a very real Return on Investment (ROI) quandary—especially because typically only one in a thousand good R&D ideas is developed into a highly profitable product.

Convincing an organisation to supply funding and political support to start off and sustain a risky, long term journey of commercialisation with no guarantee of high ROI is a large challenge. But less so if the important motivational principle of WII-FM for all parties, is kept in mind. This will be discussed below under the themes of regular feedback, performance linking and marketing to support investor's needs for certainty of a good ROI.

Return On (Capital) Investment

Return on investment is a basic management accounting measure used to evaluate the resource conversion efficiency or productivity of a business venture over time. ROI is similarly used to compare the earning ability of several businesses or investment opportunities. ROI expresses the ratio of profit (or assets gained) compared to the cost of the assets used in the business.

Business assets are a combination of physical capital (i.e. buildings, machines, inventory, products, money, etc.) and intangible intellectual capital. Intellectual capital is made up of the knowledge in employee's heads, documented company knowledge or intellectual assets, and Intellectual Property (IP). Intellectual property rights are legal monopoly use rights and can be bought, sold and licensed outward or inward. Patents, trademarks, design, plant variety and copyright are the best known intellectual property items. Having only registered intellectual property rights is almost always not enough to establish a viable business. Access to key know how is essential to implement technology successfully and profitably. Owning intellectual property rights is only the right to sue infringers from a position of strength, and does not create an insurmountable obstacle to competitors. This discussion will focus on maximizing value and profit from intellectual property assets.

There is a growing appreciation of the vital contribution that intangible assets (people and their relevant skills, knowledge, networks, creativity and innovativeness) make to create value in a business. More comprehensive asset valuation methods such as the balanced scorecard approach, triple bottom line accounting and the inclusion of IP assets in financial reporting is becoming more common and a regulatory requirement. R&D funding organisations now make assessments of likely intellectual property growth an integral part of their approval criteria.

Determining ROI on intangibles is difficult, but it is a great mistake to ignore the likely growth or decrease of organisational intellectual assets when making growth comparisons and investment decisions.

No Innovation Equals—No Business

The phrase: "Don't worry, our researchers have the technology" is often used, not always jokingly. Having only a technical solution is unfortunately not quite enough to ensure a profitable business. Many other elements, especially innovation are essential.

Akio Morita (co-founder of Sony) believed that a common intellectual mistake is to equate science with technology; and technology is often again unquestioningly equated with innovation. Basic scientific research

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leads to an understanding of the behaviour of matter and the concepts and laws embedded in it; such as the laws of heat and gases. Technology is a systematised understanding of the methods and rules of how to use scientific knowledge to obtain useful effects, for example: how to build steam boilers, piston engines, crankshafts and wheels. Innovation is much more than having knowledge of technology supported by good science. The elusive ingredient of innovation, supported by entrepreneurship is also needed to create valuable, successful, marketable products and services. Innovation involves combining the understanding of science and technology with market knowledge, leadership, risk taking, financing, manufacturing and more in a new, commercially useful way. Newcomen's development of a steam locomotive, carriage and rails, and then linking these elements into a transportation system at a port and charging a fee, is a classic example of innovative entrepreneurship.

The point of the above is to underline that much more knowledge and skill than R&D leading to some patents and a technology, are required to build a profitable business. Without entrepreneurship achieving ROI on IP is unlikely.

Linking R&D Strategy With Commercialisation Through Performance Measures

Undesirable Delays Discourage Investment

When establishing performance measures it is important to remember that R&D commercialisation as a practice shares many of the limitations of politics: it is the art of the possible and suffers from the constant pressure of trying to achieve ideal outcomes with the limited resources of the real world.

It typically takes 15 years for a promising new technology embedded in a product to achieve widespread adoption and significant commercial success. This delay does not sit well with impatient investors and financial managers who want 20-50 times their investment returned in under five years. The annual Massachusetts Institute of Technology Scorecard review provides a summary of IP commercialisation performance for major companies in key technology sectors. In looking at the fast moving telecoms sector it is sobering to see that the best performers take six years to move from patent to product. As examples in a NZ context the Gallagher fencing concept took 30 years to become a dominant market success. Most of the patents for the Aquada amphibious car date from the early 1990's, and the NZ designer started development many years before. In the biotech arena the cost and duration of development and clinical trials means that products may have only five years of market monopoly in which to reward many millions of investment.

Protect ROI with Diversity

Investors in technology-based products must have a long term view and use the established wisdom of the share market, which is to spread risk and improve income prospects with a balanced investment portfolio and to not risk all money and hopes on one company. It is also wise to support platform technologies rather than one-hit product wonders. This offers a higher probability of obtaining steady returns from a product family.

Screen Out 'Losers' Early

The many venture screening methods available generally ask similar questions, mostly intended to minimize risk and ensure profit. It is valid and essential to ask these key questions early and regularly as a method to identify, minimise and manage risks. A key point to remember is these are tools to help identify likely losers, not winners. Experienced venture investors will be competent users of screening systems and will be on the lookout for critical flaws in any promotional plan or pitch.

The screening questions asked usually have weighting factors of varying importance which address business, technical, marketing and intellectual property exploitation aspects.

Be Sure About What Assets You Have And May Still Need

It is normal to be blinkered by what is available and to minimise the difficulty of obtaining the resources still needed to succeed. The Bell-Mason diagnostic tool is a good example of a method to identify and visualise the existing development level and resource gaps to be overcome. It is a good planning aid to create a well-resourced business with a high likelihood of success and certainty of good a ROI. A major reason for approaching venture investors is to obtain advice and funding to overcome resource and maturity gaps.

A Valuable ROI Valuation And Decision Making Method

Structured consideration of the typical failure rates and likely profitability before commercialisation is attempted, offers a relatively objective method to evaluate the likely ROI of an IP investment.

A more useful ROI decision making model in the biotech arena was explained in the LESI journal, *les Nouvelles* "Valuation of Biotechnology Companies & Their Assets—Probability Affected Discounted Cash Flows," Webster J. & Philippon T., DeLoitte & Touche LLP, December 2004.

This model splits the life of a product into two major stages: Stage 1: R&D, where significant proof of concept costs are incurred, and Stage 2: Commercialisation, where successful clinical trials, and hopefully profitable manufacturing, distribution and sales will occur.

Clinical and field trials are the biggest cost factor for biotech companies, so it makes sense to make the crucial go/no go commercialisation risk decisions just before clinical trials start. If based on good homework, a good ROI is not likely, then a project should be terminated.

The likely commercialisation ROI of an R&D investment can be evaluated by making an estimate of the likely cost, timing and risks attached to each of the clinical development stages. This information can be obtained from industry publications,

published statistics, discussions with the managers of the research group involved and the designers of the trial. A success probability and cost figure can then be decided for each clinical trial phase.

Webster & Philippon's methodology helps clarify the risk and cost attached to each development stage. It also gives a means for assessing the increased value and funding requirements of a maturing product.

An objective way to put the likely value of a biotech product into perspective, is to calculate the discounted (typically 12 percent) net present value for each commercialisation trial stage, working back from the expected fair market launch value of the product being assessed.

Webster & Philippon's analysis and decision making model is also useful to evaluate the risk and probable ROI of other types of IP development and commercialisation projects that have multiple and clearly definable stages of varying criticality.

Main Strategic Factors To Consider To Achieve Spin-out Success And ROI

Spin-Outs A Popular Commercialisation Option

Because research and proof-of-concept work typically account for only ten percent of the overall product development and commercialisation cost, it is most relevant to focus on factors influencing the major investment and ROI decisions after this stage. The fundamental choice to be made is choosing the major IP exploitation path to follow. For resource constrained organisations, licensing out is very attractive and a sensible way to ensure at least some ROI. But the formation of spin-out (start-up) and joint venture businesses is justifiably popular and will form the focus of this discussion of ROI optimisation decision making.

The creation of high-tech spin-out or start-up businesses in the vicinity of a university or research institution is seen by those responsible for economic development as a means to create highly paid local career paths and establish many support businesses which attract external investment, stimulate regional growth and extend the tax base.

New company formation as a technology commercialisation method has grown substantially since WWII in the U.S.A. and UK and since the 1990's in other countries. Many research institutions such as universities and semi-government organisations have responded to this trend by forming "business incubators" and research parks to ensure a supportive environment which will increase the likelihood of success and optimum return on the intellectual property assets invested in these fledgling businesses.

In 2002 in the U.S.A., 450 new companies were formed by 214 universities to exploit IP resulting from research discoveries. According to the Association of University Technology Managers, half of the 4,320 spin-outs created in the U.S.A. since 1980 are still in operation. But it is worth remembering the representative figures of the Australian CSIRO that about 70 percent of spin-outs continue to live on the breadline and give no significant ROI.

Even though 'failure' possibilities are high, the formation of spin-out companies is often justified by factors outside the basic ROI investment decision. New university technology is often so disruptive and far from defined market needs and still in need of so much more development that licensing out is not yet attractive to industry. Also the political priority for new jobs and local development brings additional pressures to achieve benefits from the new spin-out company establishment path.

As an aside: For immature but promising technologies like these there is real merit in creating a "virtual company" within and between universities. It has no legal existence or demarcated boundaries but can prepare the "company" for a stand alone existence when the technology is closer to the market. The Scottish Enterprise Proof of Concept Fund is a worthwhile example of government support and seed funding for this type of collaboration in a structured context.

If the new spin-out company path is chosen to maximise the ROI on research intellectual assets, then valuation of the following factors to increase the likelihood of success are worth considering. Garner C. & Ternouth P., in *Spin-Outs and StartUps—New Companies to Commercialise Intellectual Property*, University Research Handbook of Best Practices for the Management of Intellectual Property in Health Research and Development. *www.mihr.org 2004*.

Technology

A technology which provides only an incremental but substantial performance improvement is typically best licensed to an existing company with the infrastructure and channels to market to exploit it to best advantage.

By contrast a platform technology, which may form the basis of many distinctive product ranges, is best exploited by establishing a new company to develop and commercialise several products in this newly created niche. Platform technologies are usually more attractive to venture investors because several product possibilities provide more certainty of a good ROI than staking everything on the success of a single product technology.

Market Development

When entering an established market, licensing out is likely to be the best IP exploitation path.

In a new market, the cost of establishing a new product might repel potential licensees who might demand a higher return on their licensing investment, i.e. lower returns for the licensors. Spin-out formation might be the only alternative.

Completeness Of Development And Ownership

If the product or system on its own is complete and functional enough and the new technology is fully owned by the exploiter and it can provide the solution to a valid market need for which there are paying customers, then forming a new company is a good approach.

Alternatively, licensing the technology to an existing company to use

within and improve their system, may be a more profitable approach.

Availability Of Management

Developing and establishing a new technology in the market place requires competent and committed management with adequate and relevant technology marketing experience. If a potential spin-out is unable or unlikely to attract managers with the required leadership and promotional ability it may be a warning sign that too many other requirements for forming a successful spin-out are still lacking. Licensing out may be the best strategy because it effectively co-opts the experienced management of existing companies to guide a new product into the market.

Market Concentration

In a concentrated market a few companies supply to a large number of customers. Entering licensing and distribution agreements improve the likelihood of a good ROI for the new IP developer and owner and may preferable even if there is genuine new product or company potential.

Complexity Of Sales Task

Novel high tech products may be difficult to explain and demonstrate their benefits to prospective customers. It makes sense to involve and train expert marketers and trainers to ensure understanding and appreciation of the new product in the marketplace. But these actions cost time and money and detract from ROI.

Availability Of Investment

In areas such as biotech product development where regulatory approval usually takes more than 10 years and failure rates are over 90 percent, only the companies with access to large resources can sustain the journey from concept level research to supplying product on the shelves. Spin-out companies may be able to fund technology proof-of-concept and complete initial testing, but usually have to obtain external investment and provide equity shares or license out to development partners to help share the costs and risks.

Overcoming these difficulties and satisfying the key requirements for successful marketing of immature technology and obtaining long-term investment funding will form a major part of this paper.

Ability To Collaborate In Complexity

Especially in biotechnology, many processes in a complex chain have to be successfully completed to eventually deliver a product of value to the marketplace. Product development and commercialisation require efficient task sharing and orchestration/management of processes such as target identification, compound design or synthesis and screening, comprehensive testing, followed by drug development and marketing. This may involve creating a supporting skills and tool infrastructure which includes production of animal disease models, bioinformatics, gene sequencing, chemical synthesis, combinatorial chemistry, drug delivery, formulation and manufacturing, clinical trials management, biostatistics and the management of regulatory approval.

The likelihood of being readily able to concentrate and manage all the above skills in one spin-out company is small. All these technical disciplines are also subject to constant development, and extensive internal and external collaborations are the norm. This may have an impact on the researcher roles and management control structure and change the market position of the spin-out company. Effective information management and collaboration are crucial in the above complex environment.

And with such diverse teams there is an added level of complexity in clearly identifying and managing IP ownership and rights—a very important consideration for investors in the new venture. Commercially sensitive technical and business information have to be rigorously identified and protected by non-disclosure and material transfer agreements. Above all, valuable IP must be protected by filing patent applications, documenting trade secrets and minimising leakage, and prosecuting infringers promptly.

If the organisation lacks the skills to manage the above technical/business and IP aspects well, then the return on the technology commercialisation investment is likely to be reduced by inefficiency, rework and loss of competitive information.

For technology-based spin-outs to succeed and provide a good ROI to stakeholders, more than just technology mastery is required. Choosing the optimum route to market is a key skill for which most universities are not well equipped. Good management awareness of market forces and a good supportive environment in the early stages are vital. Often going it alone and creating a new spin-out company is not the advisable option.

Subsidising R & D Programmes By Marketing To Investors

Fund management and venture capital investors will usually not spend much time to understand the details of the technology underlying R & D projects. Projects presented in a complex, high tech fashion may be relegated to the longer term, higher risk and maybe, higher potential gain segment of their investment portfolio—which is likely not to be funded.

VCs typically want an ROI of 20-50 times their investment funds back in less than five years, more than 25 percent of a new significant market segment, and the protection of either a strong intellectual property portfolio or a significant trade secret advantage likely to last several years (e.g. the solution to a difficult important technical issue). VCs want to invest in a competent well balanced R&D team that is well led at the management and technical levels and consistently delivers on its development commitments.

Performance driven investors have a strong 'what's in it - for me' (WII-FM) view of the world and will subsidise R&D and commercialisation costs only if they very clearly and concretely understand and can describe the expected benefits in financial and customer benefit terms. A clear likelihood of improved products and systems that customers and organisations will be able to appreciate and pay for,

is essential. Marketing statements about 'creating potential strategic benefit' and 'enabling transformational organisational change' will not be persuasive.

Degree of Maturity Key To R&D Investment Attractiveness

When aiming to obtain support funding it is crucial to be clear about the stage of the R&D projects in the development and commercialisation continuum.

R&D work in the high risk, uncertain gain, early discovery and pre-proof-of-concept area may possibly only be able to gain funding support from academic and government research funding bodies.

R&D which has proved the validity of a problem solution concept is a much more attractive investment proposition because of the reduced technical risk. Maturing R&D projects will most likely already have built up the assets of a core technical team with patented inventions, publications and significant know how. At this stage of project development internal commercialisation organisations are best placed to make their major contributions of venture screening, business planning, company formation, promotion and external fund raising. IP outward licensing, joint ventures, collaborations or spin-outs are the normal results.

Independent researchers will often start up their own business ventures at the proof of concept stage of maturity, but can only attract the funding of family, friends, angel investors and personally guaranteed debt to banks. Investors in these heroic independent R&D efforts usually have little expectation of short term ROI and will remain committed regardless of setbacks. This category of 'loyalty' investor is usually not a good further source of investment capital when difficulties occur or large expansions of facilities and personnel numbers become necessary.

Convincing Investors That Ongoing Value Will Be Generated By Your R&D Projects

It is vital that the research plan and intellectual asset management strategy can be clearly linked and can feasibly contribute to the developing organisation or the external investor's corporate strategy.

A viable path to revenue gain and reducing the investment risk should be developed and promoted. This will include having a clear intellectual asset management system with key decision making points for go/terminate, further develop, buy or expansion decisions.

Having a clear outline business plan and higher level project implementation plans, with distinct milestone deliverables, are good risk reduction and management tools with much persuasive value.

Investors who understand high technology R&D projects usually accept the inherent higher risk and uncertainty and unexpected technical dead ends and the periodic need for additional funding to overcome unexpected problems. Under such uncertain conditions, investors are much comforted by knowing that there is measurable performance against agreed milestones on a worthwhile technical and commercialisation journey, and that consistent management remains in place.

Investors in R&D are, like other human beings, somewhat driven by the fear of making large losses if projects go wrong; and greedy hopes of making big profits when projects succeed. Investors are likely to often be constantly making risk versus return trade off calculations for their investments. It is worth remembering that many VC investors have become weary and cynical of extravagant claims.

At a psychological level the decision making around initial and continuing investment in technology ventures is fundamentally similar to making gambling decisions. In their new book, *Make Your Own Luck: 12 Practical Steps to Taking Smarter Risks in Business*, Shapiro E. & Stevenson H. give a reminder that the Hold or Fold decision depends mainly on the investor's perception of current satisfaction, predictions about next results of staying in the investment game, and the going-forward intent.

To ensure the ongoing interest and support of investors it is essential to regularly give sound information about progress and explain factors likely to affect project performance and ROI expectations. This can be done by regular investor briefings on planning, reporting on progress, arranging visits and providing laboratory demonstrations. But caution is necessary to avoid IP and trade secret leakage. Large investors and equity holders may want a place on the R&D management group or spin-out business management board. This should not be resisted because improved general accountability, performance, transparency, openness and commitment by the R&D team and the investor are likely, who will gain real understanding of the difficulties faced and areas where support are needed.

Special Demonstration Difficulties In The Biotechnology Field

The ability to demonstrate progress and achieve meaningful interim outcomes over a long period of research and clinical trials is a major challenge for biotechnology R&D research organisations, and it is difficult to demonstrate impressive progress and hand around prototype samples of new chemical molecules or genetically engineered organisms. Research in the gene discovery field has been likened to trying to find one spelling mistake in a specific definition in an unmarked book in a large library. It is also true that biotechnology is a comparatively new field and there are few biotechnology products ready for sale as yet. At biotech conferences what is really on display at stands are visions and dreams and "promiseware," and much in the form of brochures and image building 'schwag' items. But these conferences and items serve their purpose of ensuring company and product visibility. Projecting well-founded optimism is important to retain the confidence of the research and commercialisation team and the investors who hope to gain and have a good ROI from the intellectual property being generated.

Marketing Your Fully Fledged IP To Potential Licensees And Buyers

Know What You Have To Market To Investors

Marketing success is much more likely if adequate answers to investors' main questions and concerns have been prepared beforehand. A patent and a scientist as assets are not enough. A well-prepared outline business plan is essential and must also include a clear strategy, value proposition, key market differentiators, value chain, path to revenue generation, competitor information, implementation plan, funding requirements and rationale for ROI projections. Two useful short articles from the Harvard Business School Working Knowledge series are: *Four VCs on Evaluating Opportunities*, 2 May 2005, and *Writing a Credible Investment Thesis*, Harding D. & Rovit S., 15 November 2004.

For many IP commercialisation projects, the lack of ready access to money need not be a crippling limitation. Sometimes all that is needed is temporary free access to test equipment, organisations willing to give new products trial marketing space, specialist advice, and referrals to technology promoters and their networks. Many people are surprisingly willing to assist motivated beginners.

A key requirement for freedom to operate and attractiveness to investors is ownership of unencumbered IP where inventor, ownership and existing licence rights are clearly defined and recorded. Records of current IPR renewal status in relevant countries are essential. Initiative, clearly identified targets and a focussed approach are vital when soliciting investments.

Doing research and enquiring on expert networks to clearly identify the customer target audience and needs to be satisfied by the IP and products being promoted, are essential. Often the project team's technical experts and researchers know best which of their peers are working in this area and which problems need to be solved. Start by marketing to these specific persons and their organisations will increase the likelihood of relevance and success.

Listing and prioritising these target persons and markets according to the match between their needs and your solution improves focus and the likelihood of success. The next step should be to approach these candidates in sequence. If there is a clear lack of interest from the first three candidates, there is obviously a relevance problem. The causes of the expectation mismatch may be: too limited technology benefits; essential complementary technologies absent; poor promotional pitching; wrong niche being approached; etc. Sound responses are either fixing this problem, or terminating the technology project and selling the IP if possible.

It is worth remembering that truly attractive technologies and products usually offer about ten times better performance than the present industry standard. Large consumer product development organisations do their homework and have the necessary development and sales resources. But still only one in fifty new products that are placed on supermarket shelves succeed in the long term.

Optimisation Of Licensing

When licensing IP it must be remembered to not only focus on the persons dealing with the technical or financial aspects of the transaction. The needs of all four buying audiences need to be addressed: The Technical Expert who has a technical veto, the Financial Authority who has to be convinced that the ROI will be satisfactory, the User Representative who represents the end user interests, and the Champion or Facilitator in the other organisation who may be a marketing person, or a licensing peer or IP manager.

In preparation for negotiations and in marketing situations, remember that the IP owned by any organisation contributes only partly to the strength of its position. The reputation of the negotiating and marketing individuals and the organisations they represent are of major importance.

Licensing out must be consciously managed as projects to ensure clear objectives, adequate resources, feasible timescales that are adhered to, protection of trade secrets during negotiation and deal closure.

The quality of promotional pitches is vital. Marketing personnel must be absolutely clear about the benefits the IP offers to its target audience and the licensing conditions for access. They must be able to state this concisely, competently pre-empt objections and have ready access to further technical support.

Knowledge of similar competitor IPR is essential. The offerings of competitors must be treated with respect during marketing but own relative strengths must be clearly highlighted.

When it comes to selling IPR access rights it is unwise to easily part with worldwide rights to all IP applications. Few licensees will have the resources to exploit the IPR everywhere in the short term. Licensing to different parties in different geographic regions is a most effective way to multiply the ROI on IPR. After the first big licensing deal organisations often lose interest in licensing their platform IPR in other areas. Great opportunities and investment returns have been lost this way.

Also make an up front and clear decision on exclusive, sole and non-exclusive rights availability. It often makes sense to license unused IPR, not core to your organisation's strategy, to your competitors.

Investors are very wary of investing in technology that is owned by several parties without one entity having centralised exploitation authority. This is because of initial negotiating delays and undermining disagreements which often occur when a technology becomes very successful. A model which works well is for one party to own the IPR and take responsibility for the related maintenance and protection costs. Then the other contributing parties are granted clearly described exploitation rights for a specific period.

From the investor perspective, to reduce risks when buying a new company, the key IPR must be included and access contracts must be in place with key specialists to ensure continued know how availability.

Ongoing development of patents to include new derivative IP ensures that the asset value and business monopoly is retained beyond the 20 year initial patent term. This is essential to reduce circumvention and extend ROI exploitation periods. In this way a formidable and defensible group of patents is built up around a core concept.

Last Thought

Investors are in the final instance, pragmatic dreamers. They are attracted and sustained by being able to contribute to a worthwhile vision being worked on by a competent and committed team implementing a feasible plan which offers a reasonable likelihood of profitability in a shortish time frame. Isn't that what we all are looking for?