

INVESTMENTS AND TECHNOLOGY - ISSUES FOR THE FUTURE

A PAPER DELIVERED

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Introduction

Successful technology investors, institutional or private, are like hunters - **not** because they are nasty, brutish and short but because they make the most of the dawn and are tucked up in bed by sunset.

The dawn of a technology is the time of greatest risk and greatest potential benefit. Over a hundred years ago, Ada Augusta, a collaborator on Babbage's first attempts to build a computing machine, made the following observation:

"In considering any new subject there is frequently a tendency first to overrate what we find to be interesting or remarkable and, second, by sort of a natural reaction, to undervalue the true state of the case."

The brief history of technology investment is replete with examples of overestimation of short-term consequences and underestimation of long-term implications.

Remember the decision of Encyclopedia Britannica in the late 80's, not to go to CD-Rom? It did this principally because of its desire to retain its sales distribution system. Result? The company hasn't posted a profit since 1990.

We can also cite examples where investors backed technologies which looked promising and then proved disastrous. Sony and the Beta cassette - now known as the most expensive lounge room clock in the world. Philips and the mini-cassette - a much touted product that sold just four units in Australia in 1993. The Edsel of cassette tapes... and speaking of the Edsel ...

My point is, if even very experienced, very expert companies can either misjudge the technology, misjudge their market or misjudge the product, if they can get it so wrong, how do you outsiders make the judgments necessary to invest rather than to gamble?

Let's look at just a few areas of significance. Today is about introducing you to a process rather than supplying you with all the answers.

Have you ever had a project, which came in 2x budget?

Have you ever had an 18-month project which took 3 years?

Every new technology project has an element of risk. Making a profit from it is usually determined by how that risk is managed.

All companies can expect to get the engineering right and get the financials right - but projects usually go wrong because of the unforeseen: the **intangibles**.

What are the **intangible** factors that:

- (a) will assist the company to **maximise** the commercial benefit of its product?
 - (b) will **interfere** with its ability to maximise the commercial benefit of the product?
 - (c) are impediments to rapid market entry and establishment?
 - (d) will assist it to select a technology that is appropriate?
 - (e) help it to implement that technology in such a way as to maximise its value?
- These are the sorts of questions that must be asked. It requires some investment to get the answers.
 - Some companies have the internal resources to do the job. Most, do not.

Rigorous application of Risk Management Protocols

Vast sums are being spent on technology investment with little more than subjective, feel-good criteria. In recognition of the weakness of this approach as an investment tool, we are intending to undertake a major project to develop a template of best practice for new product development. We are calling the project "Getting an Idea to Product" and at the end of it, I want to deliver what I call a series of "risk management protocols" - a series of questions that we can ask so as to get the answers we need in order to promote quality decision making.

- Believe it or not, there is little Australian work done on:
 - (a) common steps to success
 - (b) problems that may inhibit the product's success
 - (c) pre-start-up decisions which promote success
- There aren't readily available checklists for preparing technology balance sheets.
- There is little information as to the recommended strategies for:
 - (a) the prudent transferring and securing of intellectual property
 - (b) structuring a successful start-up company

- (c) establishing the necessary team
- (d) undertaking external product/market review
- (e) developing the new technology business plan
- (f) raising and controlling finance for new technology projects
- (g) obtaining taxation and R&D benefits

I am not saying that none of this information exists. Of course it does. Much of it however is based on the United States experience and there is little to indicate that their experience is necessarily relevant. The Australian material is largely drawn from small studies and is based in single industries. (This isn't perhaps surprising as the venture capitalists have never been really successful in Australia. The numbers simply haven't been big enough. Instead of handling 1000 new products at a time an Australian company is more likely to be looking after five or ten.)

No-one has really developed a locally-based template of best practice for successful new product commercialisation. By a "template" I am not suggesting that you will simply have to join up the numbers and "Hey presto!" you have the latest, fantastically profitable technology in which to invest. If only life was like that!

No. More realistically, what we need to achieve are the investment parameters, a set of questions, the answers to which will indicate whether the investment risks are worthwhile.

Future Markets

Want to make some guesses about the future? You have to be a prophet in your own time if you are going to invest in new technologies. You have to become expert not only about the relevant product and industry but also consider the wider technological and social context.

We are in the Age of the information technology revolution. Artificial intelligence and the digitisation of information are perhaps two of the most important features of this Age. This is already affecting the way we communicate both personally and in business. The Internet, e-mail, EDI, Local Area Networks, even the fax, are all current examples of this revolution that are reshaping our lives. These are just the beginning.

This is important because when we change the way we communicate:

- (a) a new cultural environment is created;
- (b) new economies are created; and
- (c) organisations are changed both in their internal and external function.

Why is this? Because information is affected by the technology by which it is communicated. The means of communication affects the way we perceive the information being communicated and thus, inevitably, affects the

information itself. It also affects the way we perceive the person with whom we are communicating and the way that we are perceived.

Look at the effect of this in banking. We all know that the use of prayer-walls in modern banking has had a revolutionary effect on the relationship between the bank and its customer. It is a direct effect of the revolution in communications technology.

By way of example, let me apply this to what I spoke of earlier: the "intangibles". One of the consequences of conducting banking through teller machines is that most of the bank's customer inter-actions are no longer between two human beings. The sense of alienation that this causes in the customers has a deleterious affect on customer loyalty. One bank's machines are as unfriendly as the next's. So how do you overcome the social disincentive whilst maintaining the commercial advantage. Answer? Make people enjoy using the machine. How? One young New Yorker I know is Vice President of a major international bank. Do you know what his background is? Video game design. He heads a team that is redesigning ATM interfaces, using his earlier experience to make them more approachable, more fun to use electronic banking!

Its an interesting line of exploration, on many levels.

Let's take another example of how technological developments affect investment decisions: Why would you invest in a new paper-based information technology?

In the digital age, having paper based production and distribution infrastructure will be a liability not an asset. Existing publishers have a huge investment in the distribution of information - but this will change. Distribution will be the cheap part. With the Internet, everyone can be a distributor. The expensive part will be assembling and developing the information and the marketing of it.

Whatever our business, this will revolutionise the way we communicate to our constituency and it will revolutionise the economics of any industry which is presently dependent upon the distribution of atom-based information. For a start, it means that the distribution of information will not need a huge capital investment. Instead, value will be based on the content, newness, attractiveness of the information rather than present criteria.

Time-lines will also be affected. The concept of building up an inventory of valuable copyrights will radically change. Digitised information, digitally distributed, has a very short half-life. You simply don't have the excuse of allowing it to fall out of date while you await a new edition, the next issue or a new model. In the world of digital information, we have a shorter investment time-line.

Content is also being radically changed by digitisation. We hear much of multi-media, on-line data-bases, video on demand, electronic newspapers which you can program so that they sift out the stuff you don't want to read and prioritise the material you will want to read, and so on. Content is becoming personalised and inter-active. No longer is the communication recipient passive: he or she is invited, indeed encouraged, to respond to the content, inter-act with it and thereby, irrevocably, change it.

The industries which provide content are going through a revolution unlike any other. We hear a lot about how the content provider is going to be king in the new world of fibre optic and broadband services, but you would be brave to gamble huge amounts on investing in new content providers. You will notice that the enormous take-overs of the moment are acquisitions of companies which are already content rich (such as CBS, Fox, MGM, ABC, etc) rather than small start-up companies with a couple of bright kids coming up with fabulous ideas.

The reason is simple: we can better estimate an existing content catalogue than we can bet on mere creative potential. For the moment, we are tending to use investment parameters designed for an old world order, in a new world in which few of the old criteria can possibly be relevant.

Digitisation is not just affecting the content. It is going to dramatically affect the systems by which that content is distributed. By way of example, let's concentrate on the radio and music industries.

By the time of the Sydney Olympics, radio will have undergone a revolution. Gone will be the crackle and pop of AM and FM radio. Digital radio will have arrived - CD quality with no interference. With improved signal will be an improved range of services. Instead of being a passive form of mass entertainment, it will be highly inter-active so that you will be able to program the type of music you want to listen to, when, which singers, which tracks, get further information and so on. Radio will make a huge come-back.

Does this mean that you should be investing in radio? Perhaps. It certainly means that if you are thinking of investing in radio, you should be asking about the company's plans for dealing with its digital future! There is no doubt that the old criteria for judging a radio station are going to radically change within just five years.

MDS and satellite broadcasting will also be operating, bringing large number of channels into the television of our homes.

Happening at the same time as this wireless revolution is the wired revolution. Even the most technophobic of us must have noticed that there is a fast and extensive roll-out of fibre-optic cable through the community. This is not just about telephony. You don't have to have to be a psychic to realise that Telecom no longer focussing on telephony as its primary income stream. Fibre optic and digitisation destroys the old boundaries of industries as defined by appliances. The telephone, computer, television, video, tape recorder and record player are all undergoing an identity crisis and in less than ten years none of them will be mono-functional as they are today; some will have virtually disappeared and the others will have been transfigured.

For example, there is a lot of discussion about whether the television or the computer will become the dominant appliance in the home. My suspicion is that neither will. I am betting that the home computer and television will themselves be replaced by something that might be called, perhaps, "control & information appliances" (CIA) because they will be so cross-functional.

(In fact, what things even look like in the future is going to be very different. I know of one important design company in the USA which is investigating the use of organic materials for uses that have conventionally used

plastic and glass. How about a TV made of cloth? Just a few years ago people scoffed at the idea of a car made of plastic! They are working on it!)

As for home entertainment, disks and tapes will no longer be the primary sound carrier. They will be used when camping and fishing but rarely in the home. Fibre optic and broadband services will provide a more efficient and cost effective mechanism, one that will also permit listeners a virtually unlimited choice of material.

What does this mean for investment strategy in the exciting, entertainment industry? Well, imagine that you have an interest in one of the two largest music publishing companies - which between them control perhaps 80% of every music copyright in the country. If a music publishing company makes 85% of its income from the payment of mechanical royalties, (which is the payment made to composers for the right to use their song on a recording), what is going to happen to music publishers? Mechanical income and record royalties will have about the same significance as sheet music royalties have in a music publishing deal: just further examples of technology changing what used to be a dominant delivery mode (and thus a dominant income stream) into a secondary one. Would you want to know the company's strategic response to this foreseeable future before committing investment funds to it?

The greatest challenge is going to be faced by the record companies. They are going to have to completely redefine the way that they do business. They may well become production houses. Their present pressing and distribution functions will virtually disappear.

Their promotion staff are going to be focussing, not on how to sell records, but on how to persuade the public to select their artists' product from the extensive inter-active menu of choice - on their "CIA"!

As for the Internet, one of the major determinants of the record companies' commercial success will be their ability to attract Net surfers to their company's Home Page and to its own pay-for-play services.

As a result, what we may see is something that will give the Trade Practices Commission food for thought: a coalition of the record companies offering their own, joint-ventured broadband services. Just as the record companies now control the principal mode of non-broadcast music delivery, it is more than merely foreseeable that they will seek to control the new dominant delivery mode.

If the music companies were successful in creating their own broadband services these would have a marked effect on the present music programming offered by radio. They would be in direct competition. Presently, only the ABC has the advantage of a radio and television network and ownership of a record, music publishing and merchandising business. It is not inconceivable that it will one day have competition from the Polygram Radio Network, the MCA network, Sony Radio, Warner Media and so on.

That said, few of the music companies will want to be broadcasters. More likely, they will enter joint-ventures with existing radio, cable, television and Internet providers so that each cross-promotes the delivery of services of the other or, through conventional advertising, will use existing media companies as a tool for attracting the public to their own broadband services.

Perhaps more importantly, and more certainly, moving from a technological environment which forces us to administer a limited (and thus valuable) resource, to one in which the task is the management of an infinite resource, demands a re-analysis of the Broadcast licence system, cross-media rules, Trade Practices regulation and indeed, copyright itself. When these basic regulatory parameters change, so too do the investment parameters.

New technology is providing great excitement and great opportunities for profitable investment. But, the criteria on which we have traditionally based our investment decisions are often not relevant in this new environment. Look to the intangibles. Develop very wide peripheral vision. You need to develop risk management protocols which will assist you to pick the VHS not the Beta; Foxtel rather than Britannica.