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WORLD INTELLECTUAL  
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## **WIPO AFRICAN REGIONAL SEMINAR FOR INVENTORS AND RESEARCHERS**

organized by  
the World Intellectual Property Organization (WIPO)

in cooperation with  
the Government of the Kingdom of Lesotho

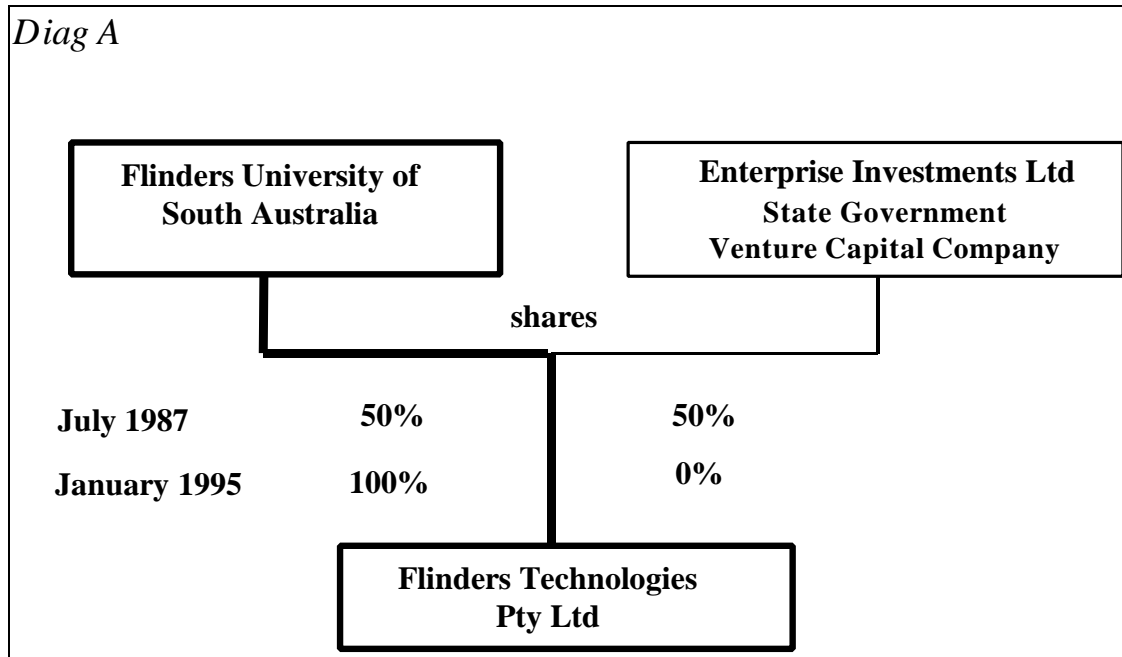
**Maseru, August 26 to 28, 1997**

ASSESSMENT AND EVALUATION OF INVENTIONS  
AND THEIR COMMERCIALIZATION

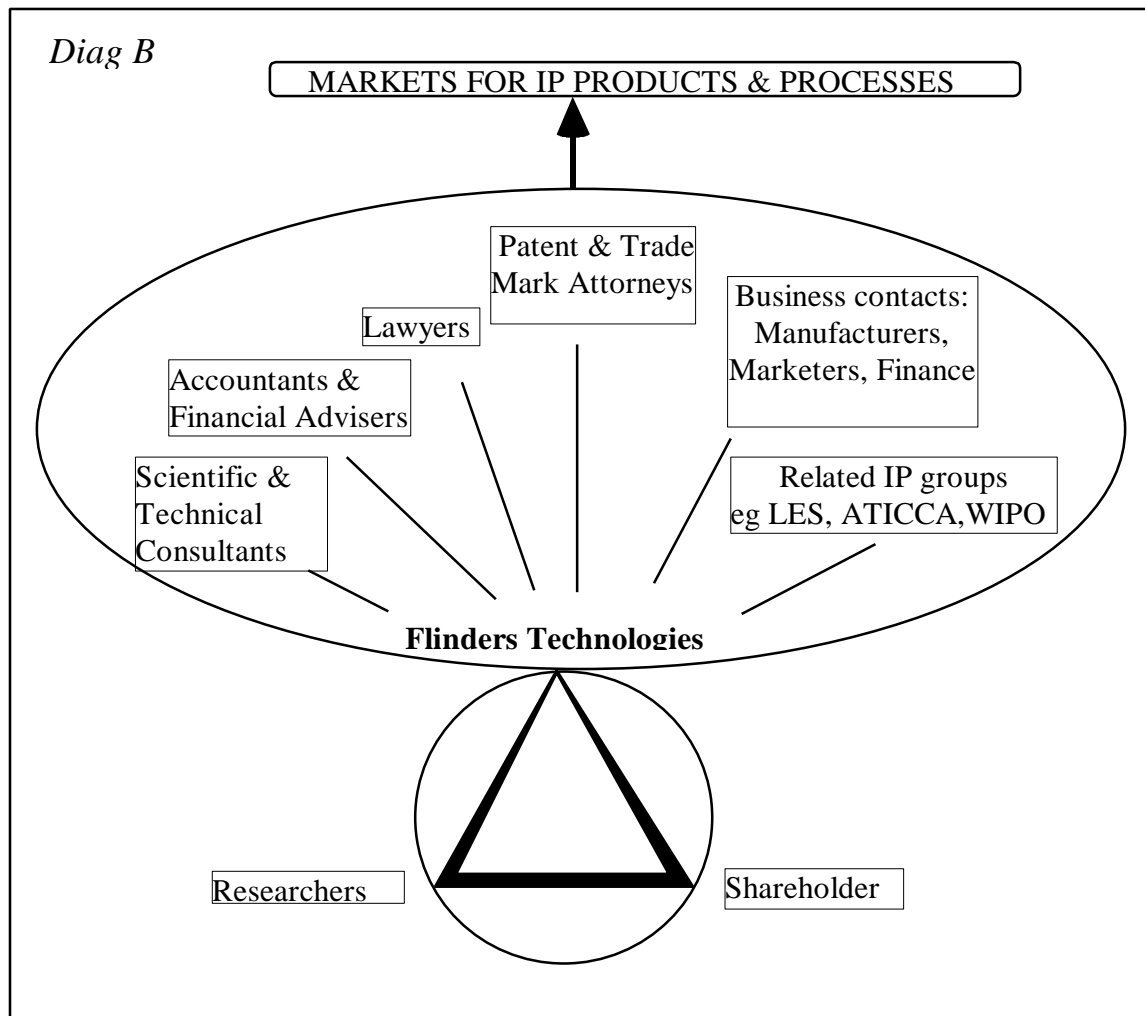
*Lecture presented by Mr. John V. Turner,  
Managing Director, Flinders Technologies Pty Ltd.  
Flinders University, Australia*

### Background Information

Flinders Technologies began in July 1987 as a 50/50 joint venture between Flinders University and Enterprise Investments Ltd., a venture capital company owned by the Government of South Australia. In January 1995, all the shares in Flinders Technologies were acquired by The Flinders University of South Australia (see *Diag A*). Nevertheless, the Company still runs as an independent entity with its own board of directors and me as Managing Director.



Our mission for the past ten years has been to optimize the value of technology and Intellectual Property (“IP”) based assets. We are experienced in project portfolio management, innovation fund management and international activities for commercializing new technology. To assist us in this, we have established linkages with professional groups such as patent attorneys, lawyers and technical specialists. Moreover, we have built up contacts in some major companies throughout the world and this helps us reach key decision-makers when approaching companies with IP opportunities for commercialization (see *Diag B*).



Commercializing inventions and new technology is challenging, to say the least. Research results and inventions are usually at an embryonic stage commercially when they come to our attention. Moreover, university research is often done more out of inquiry into new phenomena, rather than with a market in mind. Another way of expressing this is to say the projects are based upon “technology push” rather than “market pull.”

To achieve success in research commercialization, it is important from the outset to select projects that have the greatest potential, not only technically but also commercially.

Therefore, in the first part of my talk I will deal with the way we assess inventions and evaluate their potential. In the second part, I will deal with the steps we take to optimize both the chances of success and the outcomes for the inventions and technologies we develop and commercialize.

## 1. Assessment and Evaluation

Experience shows that even with careful assessment and prudent management, only about one in ten projects will make a profit and one in 100 will be a significant success. Moreover, the lead time before a new invention reaches the market normally takes several years (at least five). A careful appraisal of a project's commercial potential will increase the chances of success. In the Annex to this paper you will find a copy of the **check-list** we give to researchers to assist us in the evaluation process. Basically, answers to the questions are our starting point for the following appraisals:

### 1.1 Technical Audit

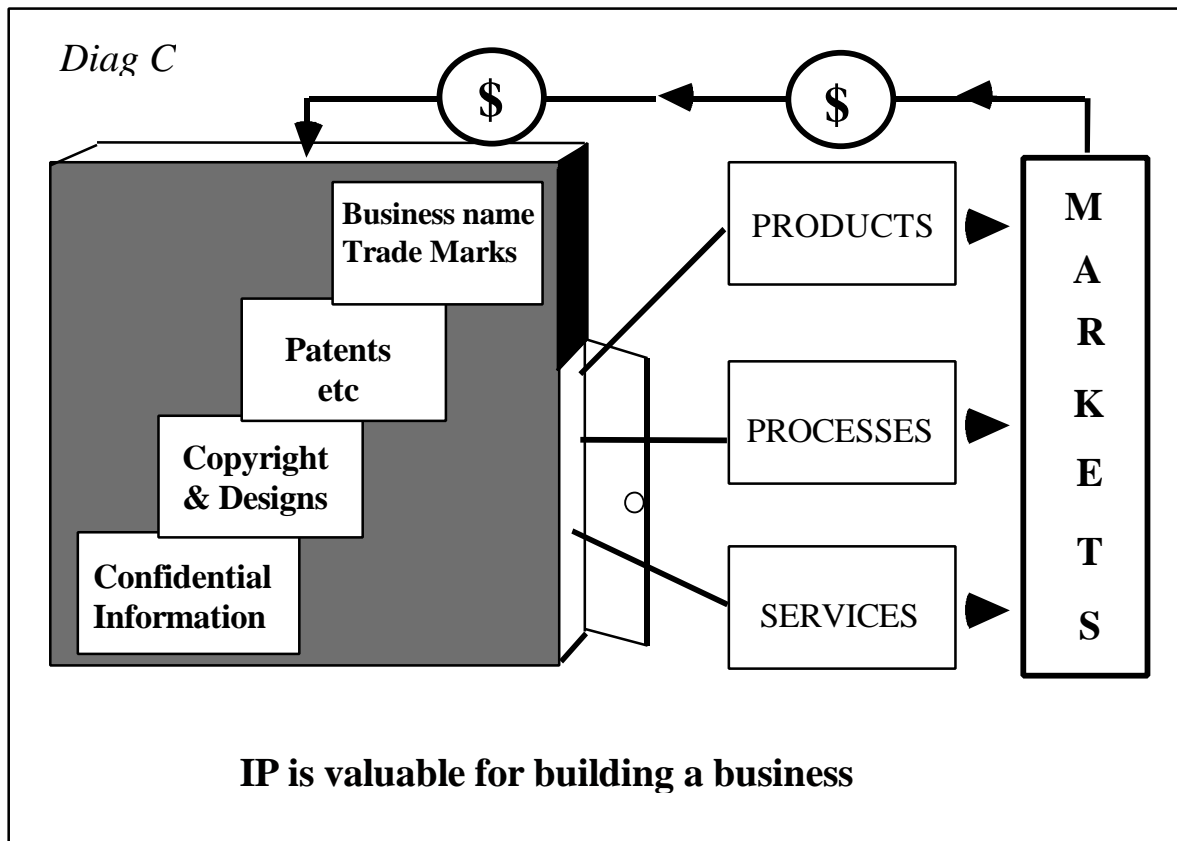
The technical audit compares the new discovery or development with existing products or processes and seeks to identify all the strengths and weaknesses and record their commercial significance. New technology developed because of a market need is more likely to be commercially relevant than technology that is clever but of limited practical use. Moreover, incremental improvements to known technology are generally easier to commercialize than new "breakthroughs." However, a breakthrough invention could have greater significance and market value, especially if it has general applicability.

We favor projects where it's possible easily and quickly to confirm both the principal of the technology and to add value through further technical developments.

### 1.2 Intellectual Property Audit

IP is a foundation for business. Typically, IP begins as a new idea or discovery that is confidential information. The confidential information is usually written down and copyright IP is created. Then, tests are done and perhaps a patentable invention is made resulting in more intellectual property rights ("IPR").

These elements of IP individually or collectively can constitute a basis for building a business that may develop additional valuable IPR as Trade Marks, Business name and reputation. Through its operations the business will create further confidential information and the cycle of innovation continues (see Diag C).



Therefore, it is important to assess:

- 1.2.1 the IP elements in the project (whether there is for example confidential information, copyright, a patentable invention and so on);
- 1.2.2 who owns the proprietary rights in the project;
- 1.2.3 if the rights can be transferred to the Research Commercialization Company (e.g., Flinders Technologies);
- 1.2.4 whether there has been any disclosures;
- 1.2.5 how the rights can be protected;
- 1.2.6 whether additional valuable IP can be created;
- 1.2.7 whether there could be infringement of third party rights;
- 1.2.8 the potential cost of IP protection and management.

### **1.3 Further Development Required**

Inventions and early stage research can rarely be commercialized without further investigation and development, for example, to demonstrate technical feasibility or to build a pre-production prototype. The requirements for this should be calculated in terms of time, the resources needed, and costs. An estimate of the unit cost of the finished product or cost of introducing a new process is also needed to help work out the potential economic benefits of commercialization.

### **1.4 Market Assessment**

This should examine market potential (location of markets, volume, value, competitors, possible allies) and growth over time. A project should have ideally a large financial “up-side”; that is to say, a market potential of several million dollars per year. This is necessary to compensate for the expense and risk of developing a project (I can elaborate on this issue in question-time if you wish). We seek information on the following:

- 1.4.1 diversity of products or processes to which the invention/R&D result is applicable;
- 1.4.2 location of markets;
- 1.4.3 \$ value of individual markets;
- 1.4.4 market size as global sales (\$ p.a., sales volume p.a. & growth);
- 1.4.5 competitive products (price per unit & sales volume – if available);
- 1.4.6 competitive firms and researchers;
- 1.4.7 potential allies.

## **1.5 Regulatory Issues**

Most countries have regulations and laws governing the conduct of business. These can impact upon the development and launch of a new product or process. For example, before a new medicine can be released, typically it must satisfy efficacy and safety requirements and be passed for use by a government department of health. This is a fairly obvious example. The point is, it is prudent to check what government regulations, if any, are relevant to the project. Compliance with such laws can be time consuming and costly and must be factored into the strategy for commercialization.

## **1.6 Financial Requirements**

Research commercialization can only proceed through further investment. This could be by our own Company, by an outside financier, manufacturer or marketer or by some other means. In developing a commercial strategy, it is helpful to establish the financial requirements for a project both in terms of dollar value and also the kind of investor required to take the project forward. The characteristics of potential investors should be defined in terms of their capabilities, financial strengths and likely commitment to the project. Those meeting the requirements can then be further evaluated.

## **1.7 The R&D Team**

An assessment should be made of a researcher’s potential to work well with others and to achieve goals in a timely fashion. Researchers are not usually experienced in managing IP, commercial law, finance, the development of a commercial product, manufacturing and marketing. However, these business activities will be important for adding value to a technology and its overall commercial success. It is a golden rule that if you have to choose between a great project with a mediocre R&D team, and mediocre project with a great R&D team, the project with the great R&D team is the best choice.

In our experience, a simple indication of how easy it will be to work with a particular research team is to see how they respond to a request to complete the R&D check-list.

I will now turn to the second part of my paper: optimizing the potential of research commercialization.

## **2. Commercializing Research: Optimizing the Outcomes**

Having decided which projects to pursue, the next task is to “manage-up” the projects with good prospects in order to optimize their value and the financial returns.

As a general rule, the greater value that can be added before involving a third party, the greater the rewards to the Research Commercialization Company. This can require the Company to provide financial support for R&D as well as supporting costs of IP protection and project management, often over several years. In other words, the Company must be prepared to accept some risk in order to optimize the benefits. A Research Commercialization Company should endeavor to:

### **2.1 Add Value to the Project**

There are two important elements:

- 2.1.1 technical value adding, e.g., by making further technical developments, particularly those which meet a market demand, and
- 2.1.2 commercial value adding, for example, through protection of IPR, understanding the market, knowledge of investors and competitors, evaluating the merits of possible commercial arrangements and, importantly, preparation of an attractive investment prospectus.

### **2.2 Reduce Apparent Risk for Investors**

This can be done for example by:

- 2.2.1 verifying the scientific and technical viability of the project in-house and by using third parties' expertise and,
- 2.2.2 commercial diligence, e.g., by undertaking patent searches, obtaining written independent assessments of the technical and IPR strength, market potential and feasibility of any proposed developments.

### 2.3 Harmonize Technical and Commercial Strategies

Having a productive relationship between researchers and their research commercialization colleagues is very important. Here are some practical “tips and traps” to achieve this, for managers of Research Commercialization Companies:

- 2.3.1 have regular meetings with research workers. These should seek agreement on the technical and commercial goals and review progress;
- 2.3.2 secure IPR and avoid premature disclosure. Keep comprehensive dated records of the research and communications related to it. Do not provide valuable information to third parties without adequate protection. Use appropriate Confidential Disclosure Agreements (“CDAs”) and “Supply of Materials Agreements” (“SMAs”) when giving proprietary information and/or materials to others;
- 2.3.3 beware of compromising IPR. Third party CDAs and SMAs should be reviewed very carefully. “Grants” which a research institution may wish to accept may actually be contracts under which third parties claim ownership in IP created. Terms for a research institution’s collaborative activities with outside groups should be agreed and understood by all those involved, if there are potential IPR consequences. Only senior executives of an institution and the Research Commercialization Company should have authority to bind these entities in contracts and “informal” collaborative arrangements should be avoided. Also, it is often overlooked that, unless there is an agreement to the contrary, consultants are normally the owners of the IPR they create (at least that is the law in Australia);
- 2.3.4 ensure there is an IP policy which rewards inventors and that the policy is understood by all concerned.

### 2.4 Negotiation and Management of Deals

To achieve the transfer of a technology and IPR to manufacturers and marketers requires the negotiation of a deal or several deals. Skillful negotiations and deal management are vitally important components in the commercialization of research results. In the case of university projects, these negotiations may also be important for the acquisition of funds for further research. Each Research Commercialization executive will have his or her own style and formula for success. Nevertheless, the following comments may be helpful:

- 2.4.1 Specifically target suitable investors or developers. Initially non-proprietary information should be provided, followed by information subject to a Confidential Disclosure Agreement (CDA) and/or Supply of Materials Agreement (SMA) and an attractive investment prospectus.
- 2.4.2 Know your target’s business. Pitch your presentations to satisfy their likely wants.
- 2.4.3 Be flexible and open minded. Arrangements for research and development and commercialization of IPR (e.g., sale, license, license-R&D, joint venture) should satisfy all the parties involved.



- 2.4.4 An investor values a project by the financial return it could provide, over a given period, discounted for risk and inflation. There may also be strategic reasons why a project could have appeal and this also should be considered by the Research Commercialization Company.
- 2.4.5 To the owner of the IPR, i.e., the Research Commercialization Company, a project's value is what the market will pay for it. This is an important point, because it means there is no automatic ceiling on the price and negotiations will determine the level.
- 2.4.6 Get first class professional advice. I recommend this strongly even though it might be expensive. If this is not done and some technical or commercial problems arise later, the cost of rectifying the situation or lost revenue might be higher.
- 2.4.7 Even the best deals hardly ever go smoothly. Formal agreements should be structured to protect the interests of the Research Commercialization Company in case things go wrong.
- 2.4.8 Build good relationships between commercial parties and researchers from the start. This should be done as insurance for difficult times in the future.

Recently, we have concluded negotiations for three projects, each of which has been under management for over eight years. During this period, the projects have had significant R&D carried out by researchers in Flinders University who received financial support from Flinders Technologies. For each of these projects, we specifically targeted investors and developers rather than promoting the projects through general advertisements. Of course, the projects did not appeal to some companies we approached, but some were attracted by our initial non-proprietary information. Those that showed interest received further information under a Confidential Disclosure Agreement (CDA). When the response was again positive, an investment prospectus was provided. Negotiation of the final deals took many months and required several face-to-face discussions. Since in two cases our partners were overseas, the process was expensive but that's the price of being in a global business.

## **2.5 Research and Commercialization : On-Going Management**

Research commercialization normally requires a transfer of technology and know-how and the establishment of productive relationships between people. The technology provider should continue to monitor the commercialization activities of the recipient during the course of their agreement. Diligent management of arrangements should help maintain a productive relationship and catch problems at an early stage before they become a danger to a project's success.

Project management imposes a burden and therefore cost to the technology provider which must be taken into account when first estimating the potential profitability of alternative technology development and transfer arrangements. In theory at least, the burden should be less for a License Agreement than for a Joint Venture which demands co-management of all facets of the commercialization process.

## **Conclusion**

I have provided some suggestions based on our experience, for participants who are interested in invention assessment and commercialization. To achieve sustained success in this field, it is important to have a portfolio of investments in technologies and technology based companies and to manage the portfolio as a whole, as well as the individual investments. Portfolio management is a subject for discussion in its own right, perhaps at some time in the future. In the meantime, I hope the suggestions I have provided will be helpful.

[Annex follows]

## RESEARCH COMMERCIALIZATION CHECKLIST

**1 What is the technical field of your discovery?**

*e.g. Biotechnology, Remote Sensing, Communications, Business*

**2 Who made the discovery and when?**

*please give full name(s), address(es), telephone numbers(s), and date*

**3 Why do you think the discovery has commercial potential?**

*e.g. is it a new product, process, or know-how with commercial relevance*

**4 List the key characteristics of the discovery**

*please use headings as in the example below :*

	FEATURE	FUNCTION	BENEFITS	
			Technical/Social	Economic
1)	voice controlled robotic arm	locates & picks up objects on command	leaves operators hands free	more efficient warehousing
2)	can be miniaturized	domestic applications	help for disabled	human resource use
3)	etc.....			
4)	etc.....			

**5 Are there any other special aspects of the discovery?**

*e.g. is it a fundamental development with several applications, is it in the national interest, is it topical?*

**6 What resources of Flinders University have been devoted to the project?**

*e.g. two person years, \$10,000 expendable research materials per annum, 100 sq. M lab space per annum, 40% use \$25,000 equipment, etc.....*

**7 Has the project received financial support from outside Flinders University?**

- if so*
- a) *what was the source of the funding?*
  - b) *how large was the support?*
  - c) *do you know if the source has any legal rights in the project?*

**8 Do you think further development of the discovery is required?**

- if so    a)        *in the University*  
          b)        *in a commercial enterprise*

*For (a) and (b) please indicate the development objective, required human resources, required materials, equipment, space and finance*

**9 Please estimate the unit cost to manufacture the new product or the cost advantage of the new process**

**10 Has the discovery been made public in any way?**

*if so, when and how?*

**11 Is the discovery truly inventive?**

*please see attachment "What may be patented?" produced by the AIPO\**

**12 Has the practical utility of the discovery been demonstrated?**

**13 Can you estimate the domestic and export market potential?**

- e.g.    a)        *diversity of products or processes to which the discovery is applicable*  
          b)        *location of markets*  
          c)        *\$ value of individual products*  
          d)        *market size as global sales in \$ per annum &/or sales volume per annum*  
          e)        *are there competitive products and what is their price/unit and global sales per annum?*  
          f)        *who are the competitors - researchers and commercial enterprises?*

**14 Has anyone spoken to a commercial enterprise about the discovery**

*if so, to whom and when?*

**15 Can you suggest business enterprises or other organizations which could be interested in your discovery?**

\* AIPO = Australian Industrial Property Organization

**IMPORTANT**

\* Flinders Technologies will treat information about the discovery as COMMERCIAL-IN-CONFIDENCE

\* Revealing the discovery to third parties prematurely could prejudice patentability and/or commercial viability

\* Do not hesitate to contact Flinders Technologies for advice

The person providing this information should give their

TITLE, NAME, POSITION HELD, ADDRESS, TELEPHONE NUMBER

Please sign and date your document and send it to:

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