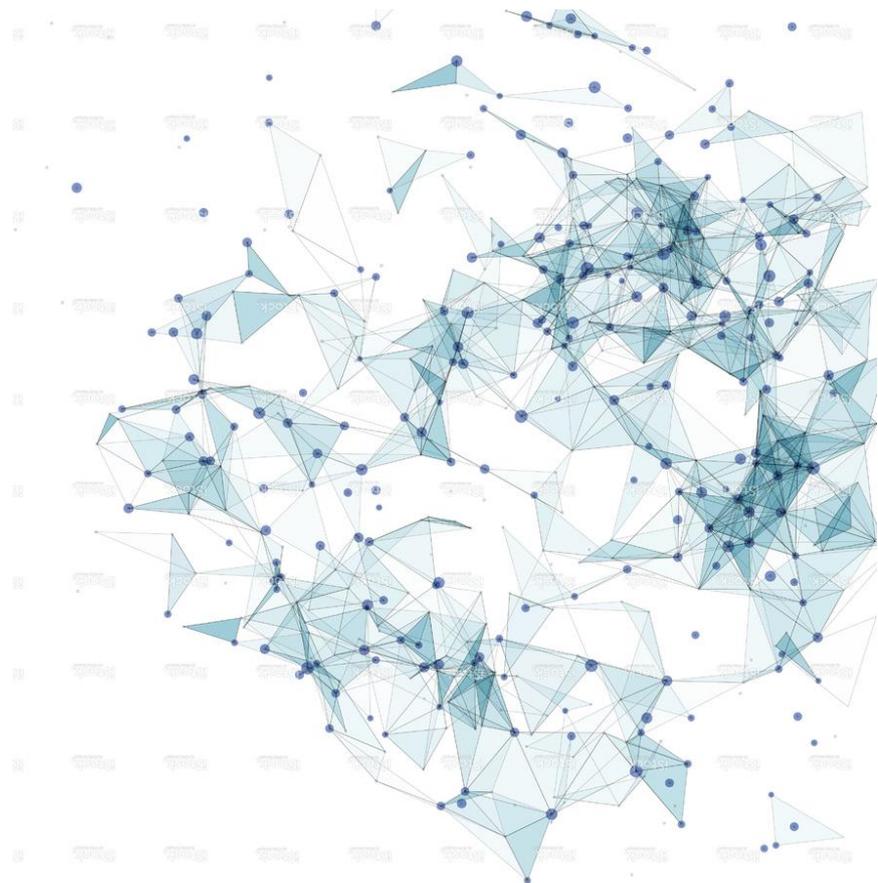


Optias Capability Statement

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1. Introduction

Optias is a small, very experienced and highly networked team. We have extensive experience in large and small businesses, and in the public sector. As a result of our close relationships with universities and people with extensive domain knowledge in a variety of sectors, Optias is able to combine technical know-how, sectoral knowledge and business experience to create new value for its clients.

2. Business capabilities

Optias has led major new developments in multi-national firms, successfully commercialised new technology from universities through small high technology businesses and led industry and society development programs as leaders in the public sector. The domain knowledge and technical capabilities are driven by the need to add commercial value for clients. Optias people have successfully:

- Engaged extensively in the minerals and health sectors as business leaders and researchers.
- Played a major role in the strategic planning for and implementation of the establishment of Optus Communications.
- Had leadership positions in government departments, most notably leadership of Multimedia Victoria.
- Established an information and communication technologies incubator which received \$13 million in Commonwealth Government support, supported more than 80 start-up companies and secured more than \$90 million in private co-investment.
- Established new start-up businesses in biotechnology including Cell Therapies (to undertake clinical trials in cell based therapies, a joint venture with the Peter MacCallum Cancer Centre), a new drug development for prostate cancer (licensed to Novogen, originally a joint venture with the University of New South Wales) and Cortical Dynamics (a joint venture with Swinburne University of Technology, monitoring anaesthesia).

As a result of this experience, Optias has wide experience across a number of industry sectors, most notably, health, mining and water.

2.1 Business experience and expertise

Optias has considerable experience developing deep business capabilities that have frequently been applied to improved business performance. Optias has experience in:

- corporate strategy and planning;
- project analysis and planning;
- financial and scenario modeling;
- real options analysis; and
- applying sophisticated analytics to real world business problems.

In this latter role, Optias plays a vital role of connecting its powerful analytical capability to real world problems, ensuring the client understands the principles behind any algorithms that are developed and how they can be most effectively used to create value. We can do this because we have a sound understanding of the analytics involved.

2.2 Corporate strategy

Optias personnel have extensive experience in conducting corporate strategic planning at the highest levels in government and business. This includes:

- Leadership of government strategic planning and development in the use of information, communications and multimedia services, social and economic development in information technology in Victoria, Australia.
- Strategic planning for major Australian-based multinational companies involved in transport, construction materials and telecommunications across varied geographic locations in Australasia, Europe and North America.
- Strategic planning within director roles of major public companies in telecommunications and in smaller technology companies involved in information technology, internet services, biotechnology and clinical trials.

Optias has developed standardised approaches and workshop templates for strategic planning and continues to provide these to public and private sector clients. We are committed to continuing this work as it grounds all of the other technical and sectoral capabilities within business reality.

2.3 Business planning

Optias has extensive experience in business planning within both private and public sectors. Having decided what to do with corporate strategy, the business planning processes tell us how to do it. Optias has authored a wide range of business cases including:

- Major corporations - establishment of new divisions for particular commercial opportunities, creation of joint ventures, acquisitions and divestments, and corporate restructuring.
- Small businesses - Optias has helped more than 80 small businesses with their planning, and raised more than \$90 million in equity funding. We also wrote business cases for businesses through which we were commercialising intellectual property. Some of these achieved further investment, some resulted in an exit, some are generating a profit and a few have ceased operations.
- Public sector - We have prepared more than 60 business cases for private sector investments ranging from built assets (roads, health centres, training facilities), ICT (online planning, network access) and services (waste management, creative industries).

2.4 Commercialisation

Optias has worked extensively in commercialising new technology, primarily in biotechnology and information and communication technologies. We have successfully established companies that are profitable, and some that have resulted in an exit (IPO or trade sale). In addition, we have assisted more than 200 companies in the process of commercialising a wide range of technologies. Some of the companies we have commercialised, or helped to commercialise include:

- Investments into a number of information and communications technologies companies such as:
 - Aura - mobile barcode technology and interactive wireless marketing.
 - Bijingo - project management, team collaboration, and data sharing services.
 - Bluechip - patented tracking devices and information management for biobanks & biorepositories
 - Catchlog - e-reporting, analysis and management of commercial fishing vessels.
 - Fuse - interactive market research survey solutions
 - Redbubble – diverse online creative community and marketplace
- Identification and commercialisation of university technologies including:
 - Cell Therapies – clinical trials for cell based therapies in a joint venture with the Peter MacCallum Cancer Centre, Melbourne
 - Genscreen – cancer therapeutics
 - Cortical Dynamics – monitoring anaesthesia

2.5 Cultural change

For any program of improvement there will be cultural change and training. Optias can assist with these processes as it has considerable strengths in training, mentoring and coaching. Optias people including associates, have the following qualifications:

- Certificate IV Training and Assessment.
- Ph.D. in coaching and mentoring Small to Medium-sized Enterprises (SME's)
- Professional Certified Coach (PCC) within the International Coach Federation.
- Professional Counsellor (Master of Counselling)
- Accreditation to use a variety of assessments including MBTI® (Myers-Briggs Type Indicator®) suite of instruments; PCSI (Personal Coaching Styles Inventory); Strengths Finder; and Strengths Leadership.
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2.6 Domain Knowledge

The above capabilities are generalist and can be applied to all sectors. Interpreting the results and successfully guiding business decisions requires a sound knowledge of the sector within which the company operates.

2.6.1 Minerals and energy

Optias people were responsible for analysing and providing recommendations on mining investments by a major bank, providing support on the management of more than \$500 million in Bank-managed funds (figure adjusted to 2014 dollars). Company visits were made to virtually every major mining location in Australia.

Optias people have worked as mining investment analysts for a major bank, and completed a major project to improve the efficiency of liquid natural gas production in the North West Shelf, resulting in savings of \$40 million per year in production costs.

2.6.2 Health

Optias has considerable experience working in the health sector and has worked in hospitals and in biotechnology companies. The services have involved :

- conducted scientific research in biotechnology;
- developed new therapeutic agents;
- been involved at Board level in biotechnology companies and major hospitals;
- held executive positions within the Department of Health, Victoria, Australia; and
- guided public sector investments in the major infrastructure projects in the health system.

2.6.3 Water

Optias has undertaken a number of projects within the water sector including:

- optimising pump operations;
- predicting flow characteristics from pump behaviour;
- advising government on the future of the CRC for Water Sensitive Cities.

We have experience at both the technical level of optimising water systems, and in the policy environment to guide government policy in water management.

2.6.4 Public sector

We have held senior positions within the public sector over many years including as Executive Director of Multimedia Victoria, Australia. We have been responsible for major policy formulation in industry and society development policies, and have implemented major programs arising from these policies. As consultants we have continued to work with the public sector, guiding major investments in a wide range of areas.

Optias is accredited to provide Investment Management Services to the Victoria, Queensland, ACT, Australian and New Zealand government. It has conducted more than 400 workshops in investment management, and prepared more than 70 business cases to guide government investments.

3. Analytics Capabilities

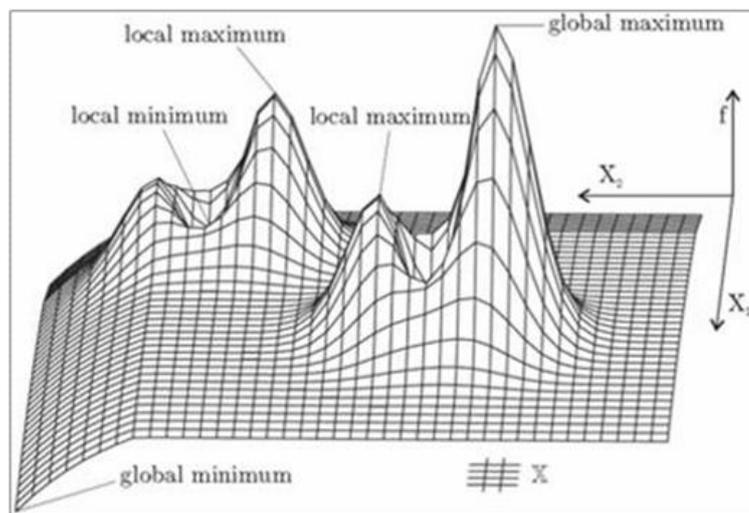
3.1 Analytics power

Optias has engaged extensively with the university sector over the last 15 years. A principle relationship is that with Federation University, Victoria, Australia. Whilst we have sound analytical capability within Optias, our relationships with universities endows our capabilities with an extremely strong analytics base. With our extensive domain knowledge, this analytics capability enables Optias to bring great power to its work. Central to Optias is an evidence-based approach to everything, and a strong technical foundation to its business support and development activities. Our team of mathematicians from Federation University have world class skills capable of addressing real world problems and providing clients with a sustainable competitive advantage. The following describes some of the technologies available through Optias.

3.2 Nonsmooth and global optimisation

Optimisation is generally applied to identify those conditions that provide the minimum or maximum value of a function. The interest of concern may be to minimise cost, travel time, resource usage, carbon emissions, or it may be to maximise profit, throughput, return on investment, production and so on. In complex real world situations, it is likely that there will be many local maxima and minima, with only one true global maximum or one true global minimum. Using standard optimisation mathematical tools, it is likely that local maxima or minima will be identified, and the global maximum or minimum missed. Global optimisation (Figure 1) requires advanced mathematical techniques for which Optias has developed specific intellectual property. This is because such problems are often nonconvex and nonsmooth.

Figure 1: Global and local optima



Of course, Optias can also provide standard optimisation services. The business process and the relevant solver are shown in Table 1.

Table 1: Solvers for different business processes

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Process	Solver*
Production planning	MILP, MILNP
Sequencing	MILP
Human resources planning	MILP, MILNP
Scheduling	MILP, NLP, MINLP, CP
Allocation	MILP
Distribution and logistics	MILP
Blending	LP, MILP, NLP, MINLP
Refinery optimisation	MINLP, CP
Process design	MINLP
Engineering design	NLP, MILNP
Selection and depot location	MILP
Investment/de-investment	MILP, MILNP
Network design	MILP, MINLP
Financial optimisation	MILP, MINLP

* Abbreviations LP (linear programming), MILP (mixed integer LP), MINLP (MI nonLP), NLP (nonLP), CP (constraint programming)

3.3 Data mining

Optias has strong capabilities in data mining and informatics including:

- mining of knowledge from large data sources, including text documents and data streams;
- retrieval of relevant documents and images from large collections;
- clustering and unsupervised learning;
- decision support technologies for reasoning communities;
- artificial neural networks;
- ripple-down rules;
- reinforcement learning;
- evolutionary algorithms; and
- intelligent agents

3.4 Computational Intelligence

Sometimes termed 'artificial intelligence', the field of computational intelligence is growing rapidly and is concerned with business applications that can be addressed by understanding the mechanisms underlying intelligent behaviour, and consequently embodying these mechanisms in machines. Such applications have important implications for many business functions, including finance, economics, production, operations, marketing, and management. Some of the techniques involved, and in which Federation University has world class expertise, include expert systems, artificial neural networks, fuzzy systems, rough sets, evolutionary algorithms, and multi-agent systems.

3.5 Big data

Data is streaming through businesses in ever greater amounts and variety. Popularly termed Big Data, businesses can gain a competitive advantage by being able to capture and effectively analyse information contained within these data streams. To do this, businesses must be able to deal with exponentially increasing volumes of data, increasing data velocities, data from different formats with great variability in peaks and troughs and in data complexity.

Optias can assist companies to make the most of their data using our big data capabilities.

3.6 Signal detection

There is a great deal of noise in data. Signal detection is the process of identifying that data which constitutes a meaningful signal from the background noise. Using signal detection methods, we have developed specific applications in health informatics and water management.

3.7 Pattern recognition

Pattern recognition is closely related to big data, data mining, computational intelligence and signal detection. It focuses on the recognition of patterns and regularities in data which may have been learned from labeled "training" data (supervised learning). Optias can apply a range of tools in developing business applications, including pattern recognition.

3.8 Reinforcement learning

The previous techniques can use supervised learning to find the best solutions or outcomes. Reinforcement learning provides rewards to encourage progression towards optimal outcomes.

3.9 Ripple down rules

Ripple down rules is an incremental approach to knowledge acquisition and comprises a data structure (including human expert knowledge) and knowledge acquisition scenarios. Human expert knowledge is stored in the data structure. As data and rules are added by human experts, the system incrementally improves its accuracy. The Ballarat Incremental Knowledge Engine (BIKE) is a comprehensive open source implementation in C++ and includes plug-ins for Single Classification and Multiple Classification Ripple Down Rules.

4. Resources

Optias has a range of resources that can be used for the benefit of clients:

- analytics tools;
- accreditation in training and a range of services within the public sector;
- strong policies; and
- laboratory space.

Optias has access to a range of resources that support its ability to deliver services to its clients. These are outlined below.

4.2 Accreditation

Optias personnel are accredited in the following areas:

- Investment Management Standard services for various Australian jurisdictions.
- Gateway and project assurance services for various jurisdictions
- Training
- Coaching, mentoring and counselling
- Graduate of Institute of Company Directors

4.3 Policies

Optias has established policies for:

- Occupational Health and Safety
- Environmental Management
- Conflict of Interest
- Quality

4.4 Assets

Optias has access to the following spaces:

- Office at 53 Balfour Street, Chippendale, New South Wales, 2008
- Meeting and laboratory spaces at Federation University.

Optias has access to a number of software and infrastructure assets including:

- GANSO, a programming library which implements several methods of global and nonsmooth, nonlinear optimization developed at Federation University ;
- The Ballarat Incremental Knowledge Engine (BIKE) is a comprehensive and extendable knowledge engineering platform developed in C++. BIKE is designed specifically around

the Ripple Down Rules (RDR) family of methodologies, but is also extendable to other approaches to knowledge engineering. BIKE's use of RDR makes it capable of building sophisticated and easily maintainable knowledge based solutions.

5. Projects

Optias has applied the above capabilities in the following projects:

Capability	Specific application	Projects
Business capabilities	Corporate strategy	Establishment of Optus Communications
		Strategic plan for mental health organisation
		Bio21 strategy
	Business planning	Many high tech venture business plans
		More than 40 business plans for public sector investments
	Commercialisation	Commercialisation support for 80 incubator companies
		Commercialisation of ICT and biotech ventures
	Large corporate, small business and public sector experience	Senior executive roles in multi-national companies
		CEO and board leadership for multiple small businesses
		Support and training for more than 200 small businesses
		Senior executive in industry departments and Multimedia Victoria, Australia
	Health sector knowledge	Executive Director of Multimedia Victoria
		Business cases for major health care developments
		Minerals and Energy sector knowledge
Leadership in consulting to Government in water		
Water sector knowledge		Undertaking significant optimisation projects in water
		Public sector knowledge
Financial and scenario modeling		For many high tech new ventures
	Incorporated into more than 40 public sector business cases	
Real options	Provided content for the website of the Department of Treasury and Finance in relation to investment management.	
Analytics capabilities	Most projects use multiple capabilities	Optimisation of LNG supply saving \$40 million per year
		Optimisation of pump power costs
		Optimisation of water pipeline flow
		Analysis of adverse drug reactions
		Optimisation of workforce planning
		Interpreting pump readouts