

Digital and Optus Communications

Working in partnership



A pioneering relationship between customer and supplier

White Paper

June, 1993

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Synopsis

This paper describes the working relationship between Optus, Australia's new second public telecommunications company, and Digital Equipment Corporation, the supplier of Optus' operation support system (OSS).

Australia's public telecommunications system has traditionally been run by a government-owned monopoly known as Telecom Australia. In 1992 the Australian telecommunications industry was opened to a duopoly. The federal government invited proposals for the second carrier licence.

Optus Communications won the second operator's licence. Part of Optus' business strategy is to concentrate on its core business—the provision of a telecommunications network—and to use a few carefully chosen strategic suppliers wherever possible for each ancillary functional area. Digital Equipment Corporation is Optus' strategic supplier for the Operations Support System (OSS).

This paper refers to OSS Phases I and II. OSS Phase I consists of getting an OSS up and running as quickly as possible to meet service delivery deadlines. OSS Phase II will be a best-in-class OSS tailor made for Optus' all digital network. This all-new Phase 2 OSS will be internationalised and exported, to the benefit of Optus, Digital and the Australian economy.

The strategic nature of the relationship between Optus and Digital, along with the leading edge nature of the OSS Phase II and its nebulous beginning, dictated the need for a true working partnership between Optus and Digital. This relationship transcends the traditional customer/supplier relationship.

There were few existing successful models of such a working partnership from which to draw on others' experiences. The relationship has been formed from scratch, and to date has worked to the benefit of all parties. This paper describes the imperatives behind that relationship, the framework of the relationship and how it works.

It is hoped that this paper will be of benefit to others for whom a similar strategic relationship between customer and supplier would be mutually beneficial.

Contents

Background	4
Optus' contractual commitments	5
Unique working relationship	7
Operation Support System	10
Digital's prime contracting organisation	12
Deliverables, contracts & projects	14
Partnership strategy	17
Open book proposal process	17
Pricing and margin agreement	18
Project risk sharing agreement	19
Project teaming	22
Program management methodology	27
Conclusion	28

Optus is Australia's new second telecommunications carrier. Optus has partnered with Digital for its operation support system (OSS).

The Australian public access telecommunications industry has always been dominated by a government-owned monopoly named Telecom Australia. In 1992 the market was opened to a duopoly, with the possibility of further de-regulation after five years, in 1997. The Australian federal government invited proposals for investment in, and operation of, the second telecommunications carrier.

Among the requirements for the second operator licence were: purchase of Aussat, the financially troubled Australian satellite network, for \$A800 million; a tight service delivery schedule; Australian ownership requirements; and Australian industry development requirements.

A consortium named Optus Communications was awarded the second carrier licence. The investors in the Optus joint venture are:

- BellSouth, a US telecommunications carrier (24.5 percent equity);
- Cable & Wireless, a British telecommunications vendor (24.5 percent);
- Optus Pty Limited, an Australian company with 51 percent equity in Optus Communications. Optus Pty Limited in turn is owned by the following Australian organisations:
 - Mayne Nickless, a service company specialising in transportation;
 - AMP, (Australian Mutual Provident Society), a financial institution;
 - AIDC (Australian Industry Development Corporation), investment manager for 12 Australian companies;
 - National Mutual Life Association, a financial institution.

Optus is making use of the operations and marketing expertise of BellSouth and Cable & Wireless, and is meeting its service delivery commitments. Mayne Nickless, as a major user of telecommunications services, is also contributing operationally. Investment levels are generally according to plan, and there is every reason to believe that Optus will be commercially successful.

Optus' challenge is to meet rigorous service delivery commitments and to rapidly gain market share, with a broad target of 30 percent share by the end of the duopoly period. One of Optus' key success factors will be the ability to introduce new services quickly, and to support those services with a cost-effective, leading-edge operation support system. In order to develop this system, Optus has partnered with Digital Equipment Corporation.

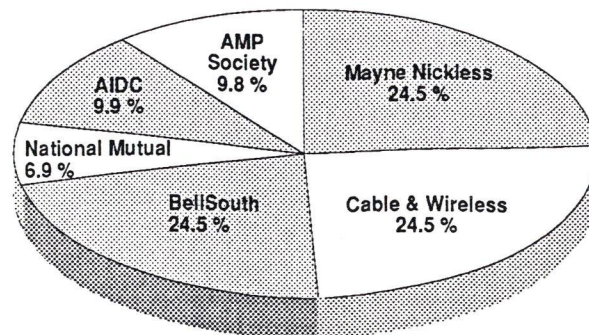


Figure 1: Optus ownership

The Optus delivery strategy is driven by contractual commitments between Optus and the Australian government.

These include the requirement to provide services in quick order; and commitments to develop Australian industry through local content, R&D and exports.

In order to obtain the licence to be Australia's second public access telecommunications carrier, Optus was required to make certain rigorous contractual commitments to the Australian federal government. These commitments must be met in full, within a tight timescale, in order for Optus to be assured of retaining its licence.

Ante

Optus' ante was the purchase of Aussat, the previously government-owned space satellite operating company, for \$A800 million.

Service delivery commitments

The Australian government has specified ambitious service delivery commitments, which required the setting up of a telephone company in less than a year. Optus' service delivery commitments include:

- Analog mobile service available by June 30, 1992;
- Long distance (STD¹) and international (ISD²) service in place by January 31, 1993; and available to 45 percent of Telecom users by March 1, 1993;
- GSM³ service available by April 1, 1993;
- Service available to 100 percent of Telecom users by December 31, 1997.

Industry development commitments

The Australian government requires foreign multinational high-tech companies to participate in various schemes to offset the effects of their imports with local industry development activities. This practice has been extended to Optus in a modified form. Optus is required to contribute to industry development through local content, research and development (R&D) investment and exports. Optus' Australian industry development commitments include:

Australian content

- 75 percent minimum Australian content within five years.

Research & development

- \$A100 million R&D investment in five years;
- \$A400 million investment in R&D in ten years;
- \$A250 million investment in OSS R&D in ten years;
- 85 percent of R&D investments must be in Australia.

¹ STD stands for Subscriber Trunk Dialling, the Australian term for long distance user-dialled calls.

² ISD stands for International Subscriber Dialling.

³ Global System Mobile.

Exports

- \$A400 million in exports in five years;
- \$A1000 million in exports in ten years.

Both the export and R&D commitments can be facilitated. This means that the exports and R&D need not be made by Optus itself, but can be made by suppliers and subcontractors, as long as the activity is directly related to the relationship with Optus.

Impact on OSS

Both the service delivery and industry development commitments have significantly influenced the OSS delivery strategy.

The requirement to get an OSS operational almost immediately dictated an interim "buy and modify" strategy, known as *OSS Phase I*.

The longer term industry development commitments influenced the decision to develop a best-in-class operation support system, known as *OSS Phase II*, for world-wide export.

Unique working relationship

Strategic suppliers

Optus needed to build a phone company from scratch—an extremely complex endeavour requiring large amounts of capital—in a very short time. Its implementation strategy is therefore based around a philosophy of devoting itself to the business of running and financing a phone company, and relying on a few carefully chosen strategic suppliers to provide the necessary ancillary services.

Optus' strategic suppliers are:

- *Digital Equipment Corporation for Operation Support System (OSS);*
- *Fujitsu for transmission systems;*
- *Nortel for switching systems;*
- *Nokia for GSM digital cellular telephone;*
- *Leighton Contractors for civil engineering.*

Each strategic supplier provides a "bet your business" component of the Optus network; that is, failure of any one of the strategic suppliers to deliver—and deliver on time—would be likely to result in the failure of the entire Optus venture.

New enterprise model

One corollary of Optus' dependence on its strategic suppliers is the need for a relationship of mutual trust and mutual benefit between supplier and customer.

Traditionally, the relationship between customer and supplier has been adversarial, with each party interested primarily in its own advantage, sometimes at the expense of its trading partner. The mind-set of many business managers, petrified over the course of a career, is based around "what the traffic will bear" pricing; and "if you win, I lose" attitudes towards of over-runs and cost savings.

Such adversarial relationships have no place in a situation where the customer's success depends on the supplier's performance, and the supplier's success lies in the long-term relationship.

In the new definition of an extended enterprise, the traditional roles of customer and supplier are giving way to strategic alliances, with each trading partner dependent on the other's success as well as its own. This type of relationship works successfully in Just-in-Time (JIT) manufacturing.

The relationship between Optus and its suppliers, and between the suppliers themselves, is an extension of the JIT relationship from the subset of the manufacturing industry to the superset of business in general. It is at the forefront of the way business will be conducted in the 1990s and beyond, and is certainly the way Digital wants to do business in the telecommunications area.

Optus is concentrating on running a phone company, and is relying on a few strategic suppliers for ancillary services.

The Optus/strategic supplier relationship is pioneering how business will be conducted in the 1990s and beyond.

The cornerstone of the relationship is the acceptance by both parties that the supplier makes an honest profit.

The business principles are simple:

- 1 The parties work as a team to make Optus successful;
- 2 All parties can make a profit: a win/win situation is best for all;
- 3 A long-term relationship is the most advantageous; therefore the commercial arrangements are not predatory; and
- 4 Optus and the suppliers put the mechanisms in place to ensure that the above are implemented on a routine basis.

It is a win/win-or-lose/lose relationship, rather than a win/lose relationship: a true working partnership.

Relationship between strategic suppliers

The strategic suppliers have agreed to work together for the success of the customer, and thus for their mutual success.

Another corollary of the reliance of Optus on its strategic suppliers is the mutual dependence of the strategic suppliers themselves. For each of these, the Optus account is a significant slice of business for the corporation, and one that requires significant investment.

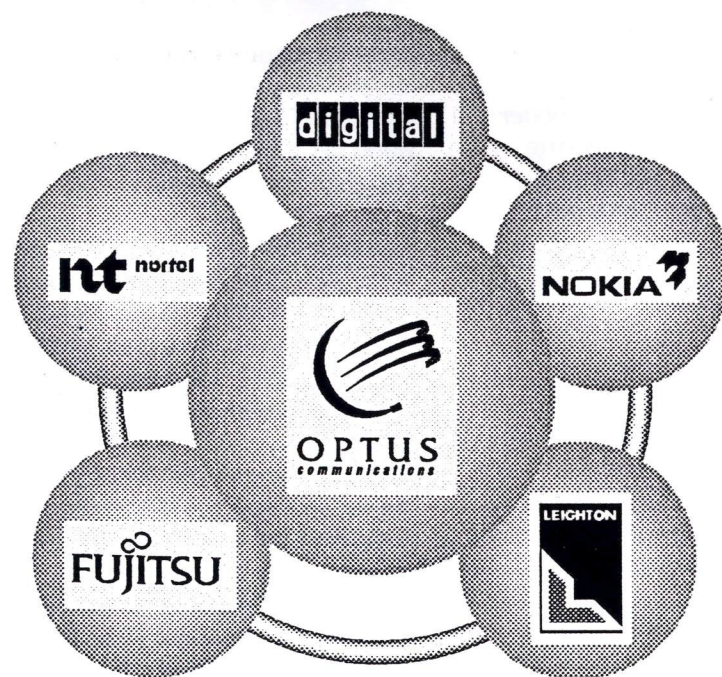


Figure 2: Optus strategic suppliers

Thus while some of the strategic suppliers are competitors in other areas, in the case of the Optus venture their success is interdependent. Early in the piece the strategic suppliers agreed on how they would work together as a team to make Optus successful.

The agreement is, "We commit to the ownership of common goals through trust and open communication, and will:

- *Work as one team;*
- *Do all we say we'll do on time;*
- *Exercise understanding and tolerance;*
- *Raise concerns before they become problems;*
- *Meet or exceed the expectations of the customer; and*
- *Work to achieve the commercial success of all parties."*

OSS preferred subcontractors

Optus has selected four preferred subcontractors to work with Digital.

Optus selected four preferred subcontractors to work with Digital to supply the operation support system.

The preferred subcontractors are:

- *Computer Sciences of Australia*
- *Computer Power Group*
- *IBM*
- *Whitesmiths (a consortium of six Australian companies)*

All subcontract work is managed by Digital, which has overall responsibility for the successful delivery of subcontracted work. These subcontractors will themselves subcontract work. Digital may also engage other subcontractors and suppliers.

Digital's mission statement contained in the prime contract with Optus is:

"To work as the primary business partner in conjunction with Optus OSS and other groups, to identify and implement interim solutions to Optus OSS requirements, which is referred to as OSS Phase I;

"To identify, design and implement an integrated OSS for long run use by Optus and for export throughout the world, which is referred to as OSS Phase II;

During Phase I, when determining solutions, to have regard to OSS Phase II."

Digital Equipment Corporation is the prime contractor for systems integration, management, training and operation of the entire information technology, or IT, needs of Optus. In essence, Digital is the IT arm of Optus.

The relationship enables Optus to focus on its core business, the delivery of high quality services to the Australian marketplace. Optus' IT department, referred to as Optus OSS, is a skeleton staff that manages the OSS budget and customer satisfaction, which includes the relationship between the Optus business units and Digital.

Digital's initial and primary focus is to make Optus successful by making its OSS, and therefore its network, operational. The delivery strategy for the OSS is divided into two phases, referred to as OSS Phase I and OSS Phase II.

OSS Phase I

The primary consideration in OSS Phase I has been to allow Optus to commence operations on time, with regard to its service delivery commitments. OSS Phase I includes an outsourcing systems integration delivery strategy and an OSS Phase I product. The product is built on existing applications customised for Optus' requirements, and is running on a number of vendors' hardware platforms.

OSS Phase II

During the implementation of OSS Phase I, work will begin on the design and architecture of the OSS Phase II product set, along with the necessary modifications to the delivery strategy.

This OSS Phase II will be purpose built for Optus' all-digital network, and will be based on open systems and proven international standards. OSS Phase II will consist of modular, integrated applications, and will be the most advanced operation support system in the world. This is designed to be a quantum leap in operation support systems, which will carry Optus into the 21st Century well ahead of its competitors.

The longer term vision, however, is far broader. Optus has a unique opportunity to design and build the second generation OSS for the international telecommunications industry.

It is expected that the successes of OSS Phase II will establish the combined Digital/Optus strength world-wide in the area of integrated network operations solutions. This will put OSS Phase II in a strong position as telecommunications service providers elsewhere in the world implement new OSS architectures over the next decade.

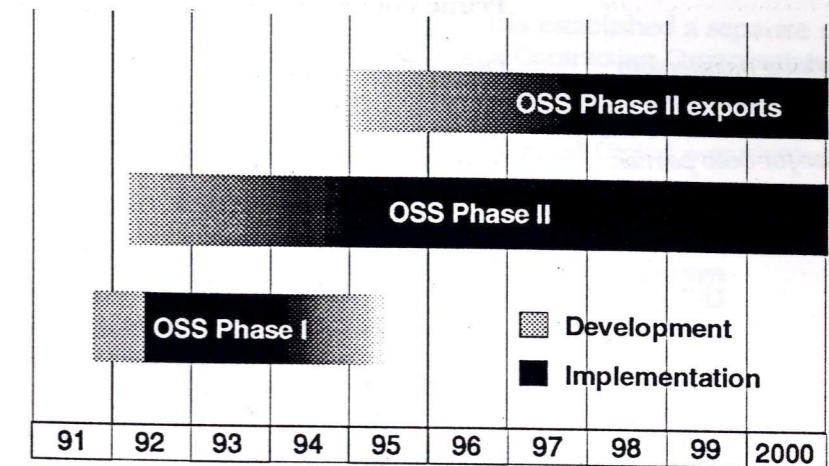


Figure 3: Planned OSS development sequence and approximate time line. Exact timing will be driven by the requirements of Optus business units.

The intention is to internationalise the new generation OSS and export it world-wide, where it will be in demand. The export revenues earned will:

- Provide Optus with a custom-built OSS—specifically targeted to its requirements in the Australian telecommunications industry—at close to a volume price; and
- Assist Optus in meeting its industry development commitments to the Australian government.

The "working partnership" relationship between Optus and Digital is a critical success factor for both parties.

Prime contractor and working partner

Digital's role as prime contractor is a management responsibility rather than a traditional supplier's role. Digital's charter is to find solutions to meet Optus' business requirements and subcontract their delivery. This is to be done using the most appropriate blend of products and services from Digital, the preferred subcontractors, and other suppliers.

While the legal contracts between Optus and Digital (see page 15) are along the lines of traditional prime contracting, the working relationship—and the management structure and operational organisation that deliver on that relationship—are of far greater importance than in a traditional prime contract.

There are so many unknowns in Digital's role that a completely new approach is necessary to deliver on it.

In the traditional prime contractor role, the product to be delivered has defined functionality, cost, delivery time and quality. In the case of the Optus OSS the deliverables are nebulous at the outset. The functionality is unknown, other than that it will be an OSS. The cost therefore can't be known. The delivery requirements and the quality are also unknowns.

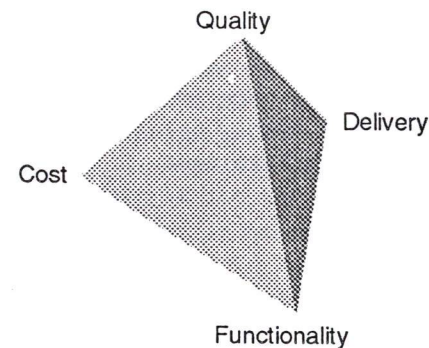


Figure 4: In project management methodology, the key project variables can be modeled as the corners of a quadrhedron: if one variable moves, one or more of the others must also move in order to keep the volume constant.

In the Optus OSS project, none of the four variables are known at the outset. A new program management methodology was necessary.

How to operate as a supplier of a "something" to a client—to be the only supplier of that "something"—and be assured of working in the client's best interests to obtain the best prices, was problematic.

The relationship between Optus and Digital is more than a prime contracting relationship. It is a partnership, and Digital has set up an innovative organisation and delivery strategy to execute that partnership.

Optus Prime Contracting Organisation (OPCO)

Digital has been able to show Optus that the prime contracting organisation can be independent of Digital, and is working in the best interests of Optus. This has been a critical success factor in cementing the relationship between the companies.

Digital has set up a separate organisation, called OPCO, to work in Optus' best interests.

To achieve this independence Digital has established a separate management structure, named Optus Prime Contracting Organisation (OPCO). Although, for administrative purposes, OPCO is a business unit within Digital's South Pacific Region (SPR) subsidiary, operationally OPCO is at arm's length from the internal Digital organisation.

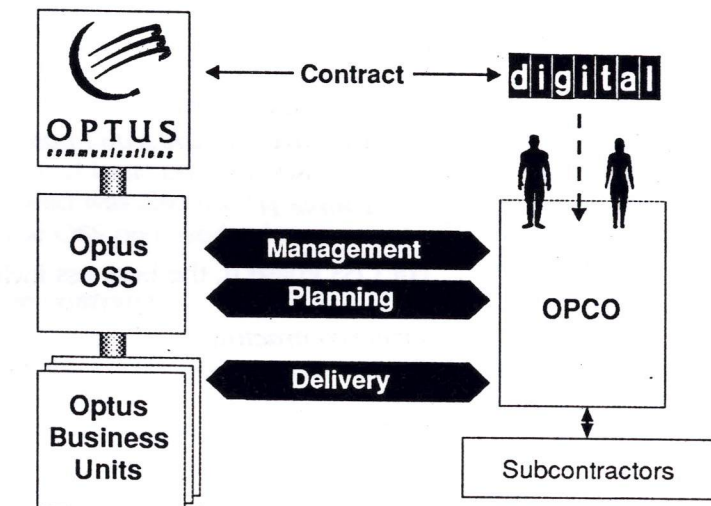


Figure 5: The OPCO prime contracting organisation and its relationships with Optus, Digital and subcontractors

OPCO is an innovative new way of an IT vendor doing business with a major customer: profiting from its expertise in program management rather than selling its own products.

The result of this independence is that Digital is not assured of any subcontracts from Optus. The prime contracting organisation OPCO treats Digital as another supplier. Digital's SPR subsidiary has an account manager who looks after OPCO as a customer.

On an operational basis, Digital's OPCO unit deals with the Optus OSS group, which is Optus' contractual interface with Digital. OPCO also deals directly with Optus' line-of-business units, or LoBs, in order to address their business needs through direct communication.

This organisation is a unique new means of conducting business. It lies between the model of a separate IT arm of an organisation (along the lines of EDS), and the traditional customer/vendor relationship. OPCO's independence of the parent company eliminates the need for the customer to turn to a specialist systems integrator in search of vendor equanimity.

The OPCO model opens the potential for an important and profitable revenue stream for Digital world-wide, particularly in light of decreasing hardware margins. It is in line with Digital's strategy of being a true enterprise partner.

OPCO deliverables

OSS Phase I

OPCO's business with Optus for OSS Phase I has five components:

- *Prime contracting;*
- *Systems integration, which includes procurement, customisation, development, installation and testing;*
- *OSS training;*
- *Facility management;*
- *A Phase I architecture with Phase II in mind.*

OSS Phase II

For OSS Phase II, the business includes:

- *Prime contracting;*
- *Systems integration;*
- *OSS training;*
- *Facility management;*
- *Phase II architecture*
- *Joint venture OSS development*
- *OSS export*

A detailed discussion of OSS Phase II is contained in a separate white paper ⁴

Optus OSS		
Phase I	Phase II	
■	■	Prime contracting
■	■	Systems integration
■	■	OSS training
■	■	OSS facility management
■		Phase I architecture
	■	Phase II architecture
	■	Joint venture OSS development
	■	OSS export

Figure 6: OPCO deliverables

⁴ A white paper on the Optus OSS Phase II will be published in July, 1993.

Contracts between Optus and OPCO

There are currently three standing contracts between Optus and OPCO:

- *Deed*
- *Prime contract*
- *Supply terms*

Deed

The Deed, or Heads of Agreement, between Optus and Digital outlines the agreed basic principles about how the business will be conducted. This deed was also used in a modified format directly between Optus and the OSS preferred subcontractors.

Prime contract

The prime contract is for a period of five years. The responsibilities of OPCO under the prime contract, for a set fee which is priced annually, are described below.

There are six phases to the delivery of a project:

Project definition:

- 1 Business requirements determination;
- 2 Analysis of functional requirements;

Systems integration:

- 3 Project planning;
- 4 Installation;
- 5 Testing;

Facility management:

- 6 Operation.

The prime contract fee covers phases 1 and 2 of all projects, including proposal generation.

Periodically the Optus business units (LoBs) present Optus OSS/OPCO with business requirements that need to be met in order for Optus to meet its business and contractual commitments. OPCO analyses the business requirements, and defines a set of functional requirements to fulfil them. OPCO then organises the work that needs to be done to meet the functional requirements into efficiently manageable projects.

Although OPCO does the majority of the "leg work" in the planning and proposal stage, proposals are formulated in collaboration with Optus OSS in an open environment (see "Open book proposal process", page 17). Optus OSS, being the contractual interface between OPCO and Optus, then issues individual contracts for specific systems integration (SI) projects. These may require training and facility management, which are handled as projects and authorised by separate contracts.

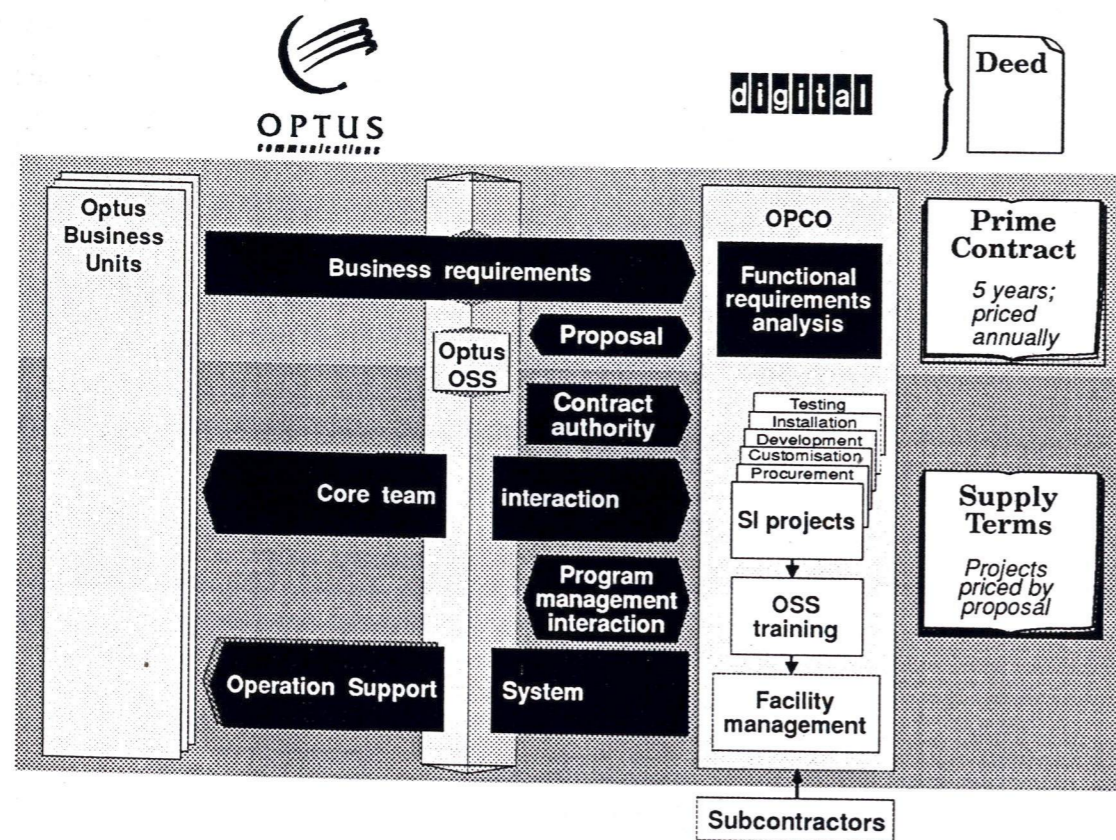


Figure 7: OPCO deliverables, contracts and project definition procedure

The prime contracting organisation OPCO then manages these projects, using its own resources and subcontractors, and ensures the integration of the various projects to achieve the business objectives. Depending on the number and size of projects, the prime contracting organisation may need to be re-sized periodically, so it is re-priced annually over the five year period.

In summary, the prime contract fee covers all of the following prime contractor responsibilities except (3), which is covered by project proposals:

- 1 Interface with Optus LoBs regarding business requirements;
- 2 Functional requirements analysis and project proposals;
- 3 Management and integration of all projects;
- 4 Program management interaction with Optus OSS and LoBs;
- 5 The support organisation required to achieve the above.

Supply terms

The supply terms document is a basic buying agreement for products. It regulates the supply and delivery of products between Digital and Optus, and from third parties to Optus through Digital. (see also "Pricing & margin agreement", page 18).

Partnership strategy

The broad business principles discussed so far are realised in everyday operations through the "partnership strategy".

The discussion so far has included the business philosophy, which involves the acceptance by all parties that everyone must make a profit, and that their success is interdependent. The Digital organisation assembled for the OPCO venture, and the means by which projects are defined, has also been described. This section describes the management mechanisms through which these broad business principles are put into everyday practice in a large organisation.

These management mechanisms, collectively referred to as the *partnership strategy*, are the unique aspects of the Optus/OPCO relationship.

The partnership strategy ensures that:

- Project proposals are appropriate;
- The prime contractor works in the best interest of the customer;
- The relationship is mutually commercially successful;
- People from different organisations and diverse disciplines work together efficiently on multiple projects;
- All of the above occur, and that the customer and supplier are in a win/win relationship.

The partnership strategy has five components:

- 1 Open book proposal process;
- 2 Pricing and margin agreement;
- 3 Project risk sharing agreement;
- 4 Project teaming;
- 5 Program management methodology.

Open book proposal process

The open book proposal process shows the delivery strategy and all costs and profits. Customer and supplier arrive at decisions together.

Through the open book proposal process, Optus OSS and OPCO work together as a team, in an open environment, on proposals for projects. The solution and delivery strategy are not only agreed between customer and supplier, but are arrived at through working as a team. The difference is subtle but important: neither party dictates strategy nor delivery for the other. This gives additional insurance that milestones are achievable.

In addition, all costs and profits are shown in the proposal. This separates the discussion about the delivery strategy and cost from concerns about profit or markup, and allows both parties to concentrate on the solution.

The pricing and margin agreement sets the rates that will be charged.

Pricing and margin agreement

The open book proposal process accepts the commercial success of all parties. The pricing and margin agreement defines what the profits and margins will be.

Under the pricing and margin agreement, the pricing of each proposal is derived from mutually agreed rates that fall into three groups:

- *Digital products and services;*
- *Third party product and services; and*
- *Travel costs.*

Digital products and services

Digital products: Digital provides Optus with the same buying power, discounts and allowances for Digital products that BellSouth and Cable & Wireless receive as corporate customers. The immediate benefit is to Optus; however, through their equity, BellSouth and Cable & Wireless will later also benefit from the Optus buying power.

Digital services: Digital professional services are sold to Optus at an agreed three tier, zero based rate structure. The rates are based on the arrangement that Optus provides facilities for OPCO personnel, while Digital provides salaries, fringe benefits and training.

Third party products and services

Where OPCO buys products and services as prime contractor and resells them to Optus, there is an agreement that across the overall program, the margin, or mark-up, will not exceed a certain percentage.

The margin is value-added related. Some of the projects, where OPCO adds little value, will have very low margins; on projects where OPCO adds considerable value, the margins are higher. Averaged across the program, however, it will not exceed the agreed margin level.

Travel

Digital does not consider that it adds any value to project travel, so travel related expenses are recharged at cost, in some cases with a small administrative fee.

The traditional pricing and risk sharing agreements are inadequate to ensure that OPCO works in Optus' best interests. A more partnership oriented pricing and risk sharing agreement was needed.

Project risk sharing agreement

The project risk sharing agreement is a new way of doing business, where customer and supplier are in true partnership. It is the mechanism through which Optus can be assured that Digital is working in its best interest to obtain the best price.

Project risk sharing involves a certain mind-set as to what constitutes "winning" in a business relationship, as described herein in some detail.

Traditional pricing and risk mechanisms

Traditionally there have been two basic methods of a supplier charging a customer for products and services. Both of these are somewhat like gambling, in that where there is a winner, there is also a high probability of a loser:

- *Time-and-materials; and*
- *Firm quotation.*

A time-and-materials arrangement is typically used when timing is the critical factor. The maximum cost is impossible to budget for. This arrangement was used in the Optus start-up period, when requirements were broad and timing was tight to meet the service delivery commitments.

The firm quotation is used when it is more important to the customer to be able to budget for the *maximum* amount that a project will cost than it is to obtain the best price from a particular supplier. (The best price is obtained through the mechanism of competitive quotations.) The supplier assumes the risk of over-runs—the difference between what the project *ought* to cost if everything goes well and what it *might* cost—and typically charges for the risk whether it is used or not.

These pricing and risk arrangements make it virtually impossible for the customer to be assured that the supplier is working in his or her best interest. The "If you win, I lose" mechanisms are built in:

In a time-and-materials job, there is little in-built incentive for the supplier to work in the most efficient way.

In a firm quotation job, the definition of "winning" is often considered "getting something for nothing". If the risk factor is not used, it is charged anyhow; supplier gets something for nothing and customer pays too much. If the cost exceeds the risk factor, the customer gets something for nothing and the supplier's profit on the job suffers.

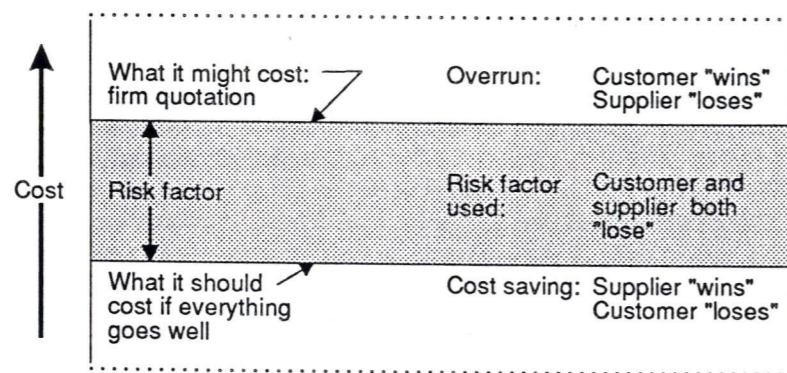


Figure 8: Firm quotation: win/lose relationship

Risk sharing

As previously discussed (page 12), the delivery of the Optus OSS involves four key delivery factors being unknown; these being functionality, quality, delivery and cost. Digital is the *only* supplier of an unknown quantity on which Optus is betting its business. There are no competitive quotations for the prime contracting.

Clearly a "win/win" pricing and risk mechanism is needed, in addition to the traditional options, so that the supplier is assured of working in the customer's best interest. That mechanism is project risk sharing. The fundamental principles of project risk sharing are:

- "Winning" means paying/receiving an agreed rate or margin for what is delivered; and
- If there is to be a "lose", both customer and supplier share the cost of over-runs.

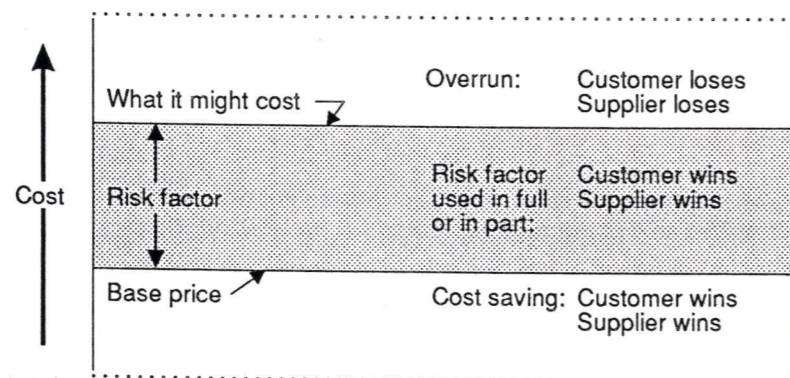


Figure 9: Risk sharing: win/win-or-lose/lose relationship

With project risk sharing, Digital wins or loses along with the customer.

The risk amount is invoiced with a margin, if used. If there is an over-run, Digital starts to lose money.

How it works

On a project where Optus and OPCO agree to share the risk, OPCO plans the project and gives Optus a base price. In addition, the risks within the project are identified and priced, with a margin included.

When the project is finished, the base price is invoiced. If part or all of the risk is consumed, then that part of the risk is invoiced, along with the margin.

If the nominated risk provision amount is exceeded, OPCO shares the over-run 50/50 with Optus, without margin. In an over-run situation, Digital loses money, since it is charging at half of cost. That is an incentive to size the project correctly when working in this environment.

Since under the open book proposal process all costs and profits are laid on the table, and the margins are agreed under the pricing and margin agreement, there is no incentive for the supplier to "win" by charging for risk that is not used. The customer agrees to pay a minimum base price, and to assume an agreed amount of risk at prices that are profitable for the supplier. Both parties win ("winning" meaning a fair price for a given product and/or service).

Above the agreed risk amount, both parties lose—the customer pays more than originally agreed for the project, and the over-run eats into the supplier's profits for the project.

Project risk sharing is a win/win-or-lose/lose relationship, which is the definition of partnership.

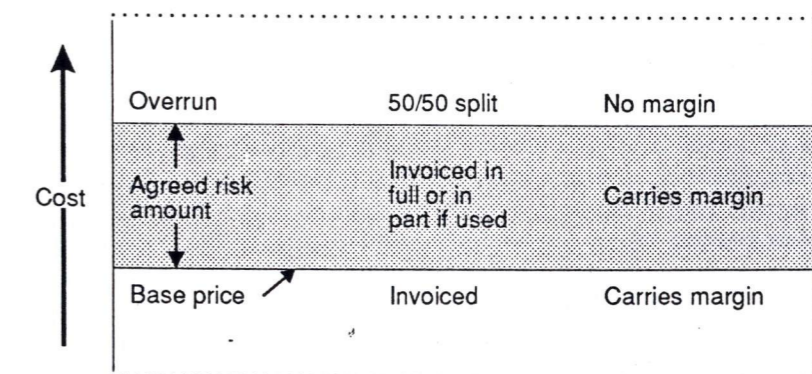


Figure 10: Project risk sharing arrangement between Optus and OPCO

The optimum team behaviour model has a maximum of two transition layers of communication. It would be easy for additional layers to spring up.

Project teaming

Unless everybody works as a team, nothing works. The following is a short discussion of teams as they apply to the Optus environment.

Basic behaviour model

The basic model of Optus service delivery is shown in Figure 11. The operator within Optus provides a service to the customer, and the customer pays the operator for that service. A subcontractor provides a solution to the operator to provide that service, and the operator pays money to the subcontractor for that solution.

Optimum behaviour model

Because of the technical nature of the OSS, another level is needed between the operator and the subcontractor to manage the design and implementation of the OSS (Figure 12). The solution comes from OSS and the dollars flow down through OSS. This is the optimum behaviour model, with as few vertical layers as are practical.

Value-added behaviour model

In a large, complex environment such as Optus, it is very easy to end up with a structure such as Figure 13, with multiple layers of reporting. Everyone in the chain adds value, but because of the complexity of getting things done, layers get bypassed: the operator deals directly with the subcontractor, etc, and the project gets out of control. This is *not* the way to do it.

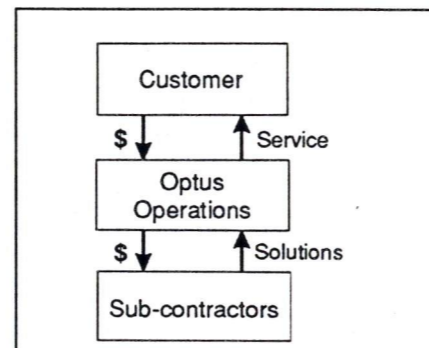


Figure 11: Basic behaviour model

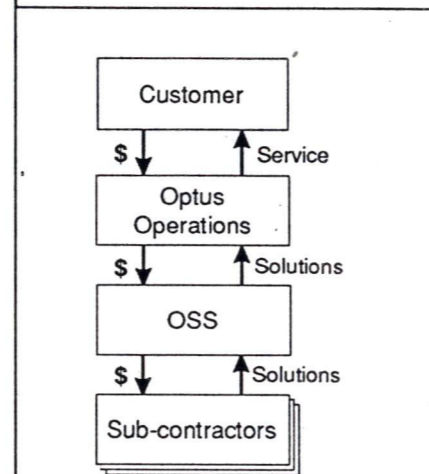


Figure 12: Optimum behaviour model

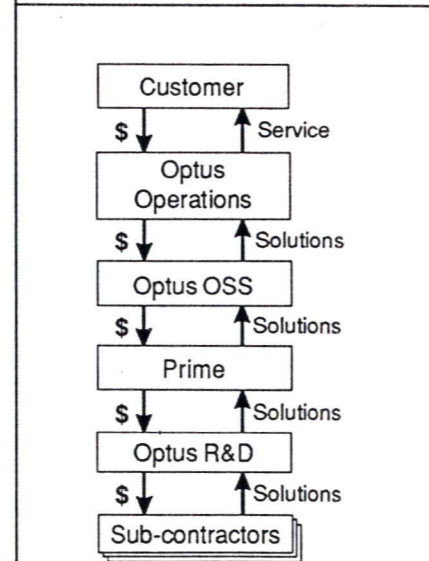


Figure 13: Value-added behaviour model

The ideal behaviour model yields a flat organisational structure while addressing the concerns that might give rise to a vertical structure.

Ideal behaviour model

The optimum behaviour model has four layers: the customer, the operator, OSS and the subcontractor. In the Optus environment the vertical value-added behaviour model has been essentially tipped on its side so there is only one transition layer between the subcontractor and the operator.

This is done through the other layers in the value-added behaviour model working as a team; as one OSS delivery group. This *core team* is represented by all parties implementing the project.

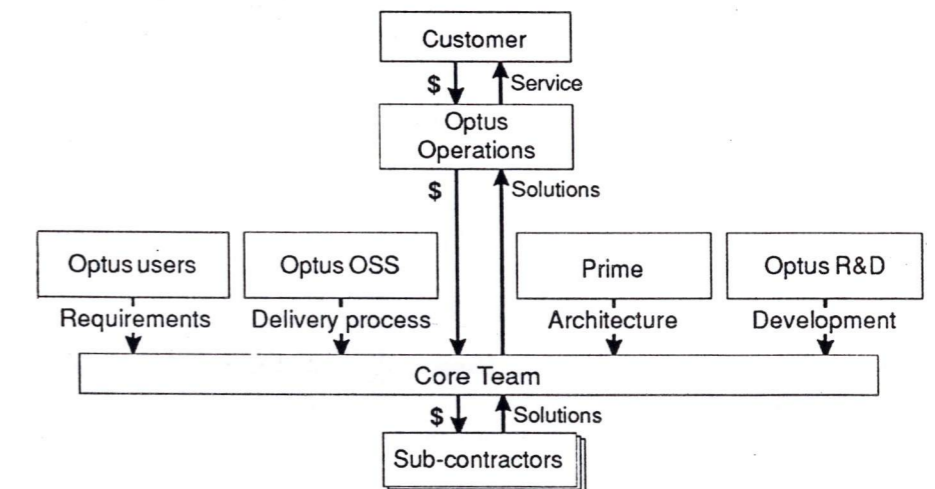


Figure 14: Ideal behaviour model

The core team is key to the whole delivery strategy. The core team makes the decision about who communicates between operator and subcontractor. If the core team believes that the user is the best person to do that, then the user will be the communicator between the parties.

The core team is key to the delivery strategy.

The ideal behaviour model addresses the concerns about coordination that might have given rise to the vertical value-added behaviour model. While the value-added behaviour model buries concerns that delay decision making, the ideal behaviour model immediately identifies and highlights such concerns.

The requirement for timely decision making is driven by Optus' service delivery commitments. The ideal behaviour model accepts that there are a number of parallel project teams working at the same time to deliver a solution, and that each adds value. A representative of each team still has the power to veto any decision—the difference is that nobody has the power to *delay* a decision.

The core team is comprised of empowered representatives from all groups directly involved in a project.

Core team composition

A project involves a number of teams working in parallel to provide a solution. There are users who concern themselves with business requirements, and a project management team to deliver solutions to them. The OSS core group within Optus is concerned about budgets, program integration and business integration. There are the subject matter experts who translate the business requirements into technical functional specifications; and the architects addressing the OSS IT architecture.

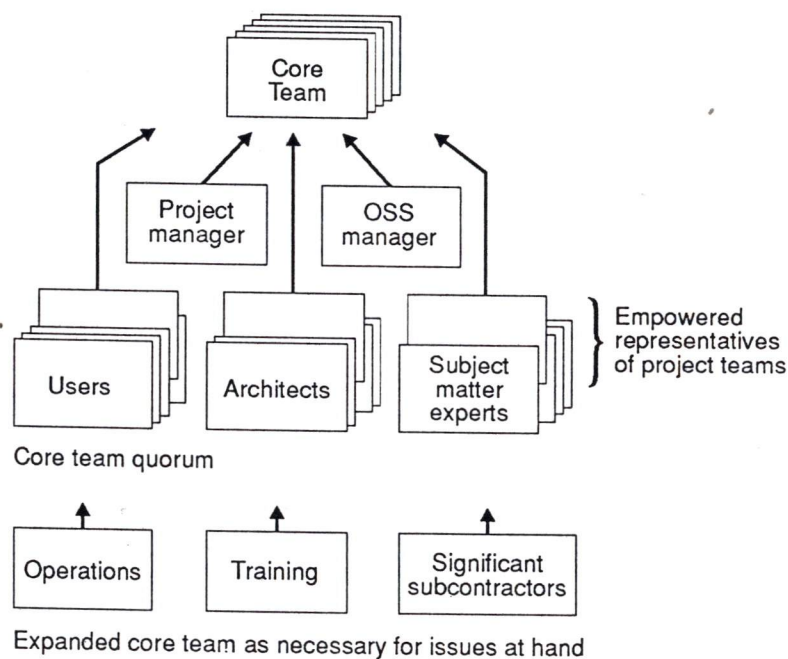


Figure 15: Core team composition

The core team consists of a representative from each of these groups, empowered to make business decisions in a timely manner, to manage the project implementation.

While the groups mentioned above form the quorum for the core team, the model can be expanded as necessary. There are situations where operations and facility management people need to be present to make decisions. There are other situations where training personnel need to be there, because the solution impacts training of users.

Any core team member can veto any decision. When a veto option is exercised, the matter is automatically escalated.

Core team operation

The chairperson of the project core team is elected; the secretary is the project manager. Minutes are taken and recorded on decisions.

Each member of the core team can veto any decision, so a legitimate concern of any project group cannot be "steamrolled" by any other group. When a veto option is exercised by any member, the matter is automatically escalated to the next appropriate level of management.

The objective of the veto option is to force people to make business decisions in a timely way. It is a sin to delay decisions; it is *not* a sin to escalate them. The model accepts many escalation processes out of the core team.

Escalation process

The management hierarchy within the Optus OSS operation is as follows. All of the teams have members from the Optus business units, Optus OSS and OPCO working together to provide business solutions.

Project teams: The project teams consist of users, architects etc, all working in parallel on the various projects.

Core teams: The core team for a project consists of empowered representatives of the project teams. The core team is responsible for project integration.

OSS solution teams: The project teams and core teams concern themselves with issues regarding individual projects. The integration of projects to solve a business requirement is a solution. The six OSS solution teams address issues of project integration. These teams are organised according to lines of business, infrastructure or both.

The management structure is dynamic and matrix oriented, allowing for timely decision making without the clutter of unrelated issues.

At the same time, the escalation process expects judgments by more senior management on any decisions that are seriously questioned.

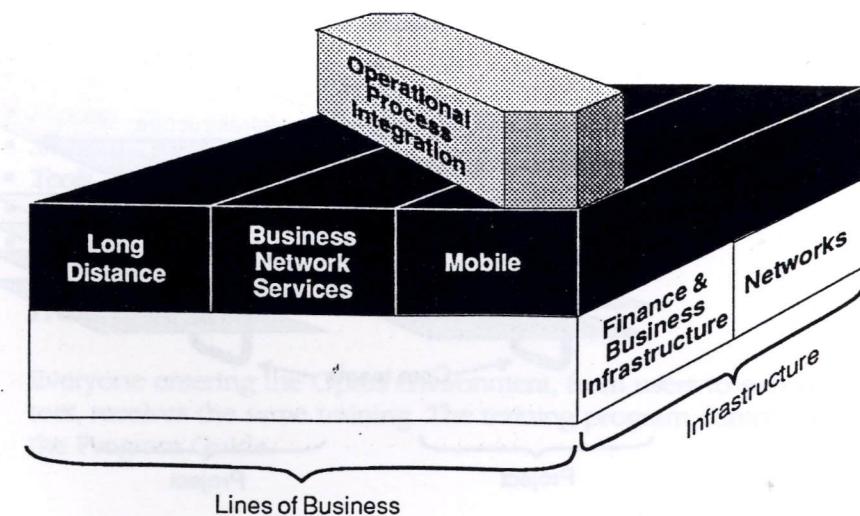


Figure 16: OSS solution team organisation

Solution teams organised by line of business:

- Long-distance
- Business network services (BNS)
- Mobile

Solution teams organised by infrastructure:

- Finance & business infrastructure
- Networks

Solution team organised across all issues:

- Operational process integration

OSS inter-divisional steering committee (OISC): Above the core teams is a steering committee that deals with business integration issues on both a routine and an escalated basis.

The first level of escalation from the core teams is to either the OSS solution teams or the OISC, as appropriate. Many escalations are expected from the core teams to this level.

General management team: The second level of escalation is to the general management team, consisting of the business directors within Optus, the OSS director, and the general manager of OPCO. Few escalations to this point are expected, and they tend to be cross-business issues.

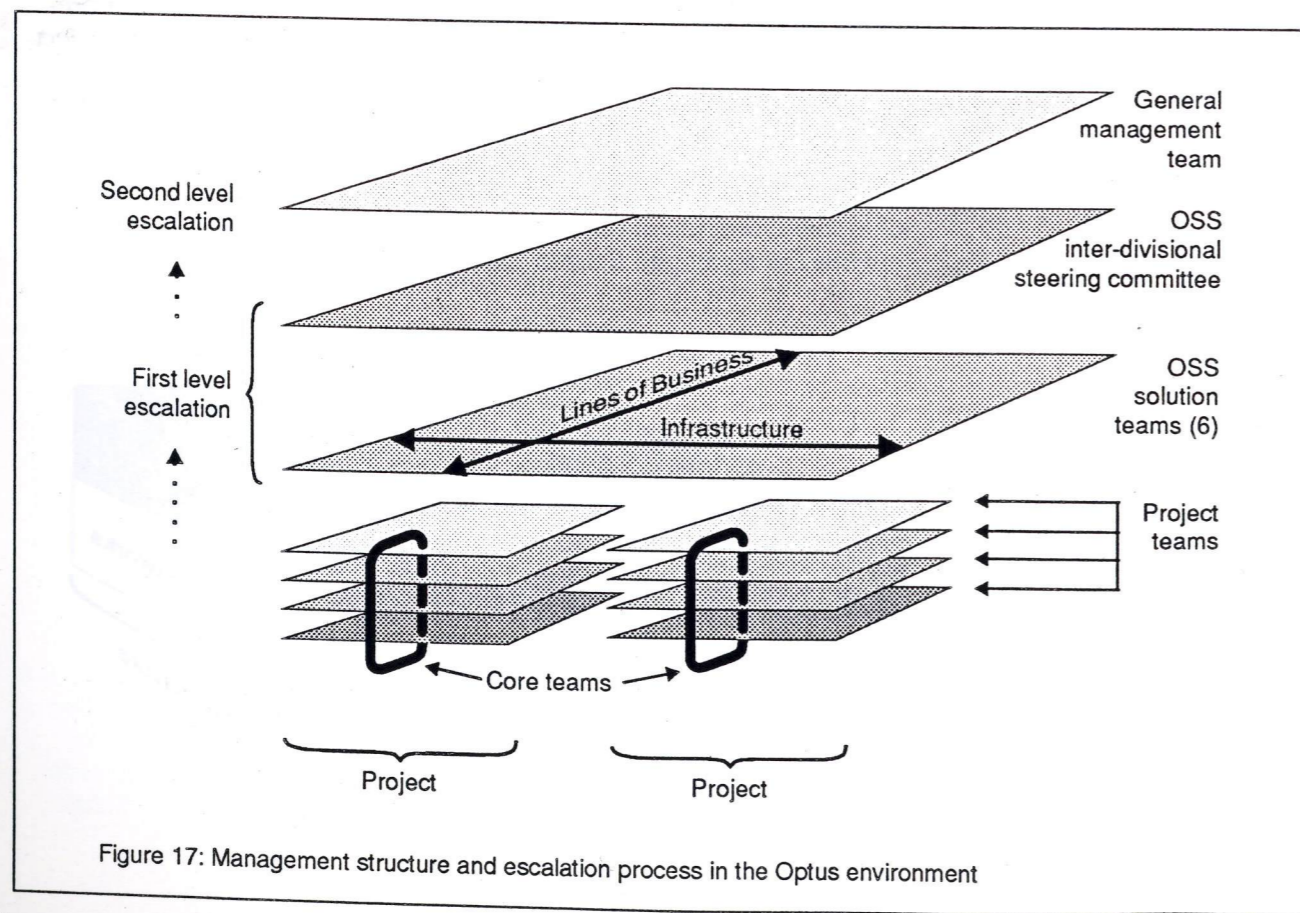


Figure 17: Management structure and escalation process in the Optus environment

Program management methodology

The program management methodology is a means of managing a very dynamic and diverse organisation.

Within one year of its inception, the Optus organisation has grown to more than 1500 employees, and it is still growing. The culture consists of a mixture of permanent employees and contractors. There is an acute need to instil the Optus culture and methodology in people quickly and effectively.

The objective of the program management methodology is to give people relevant guidance on how the operation runs; how they get things done; how to handle proposals; how to execute projects.

The program management methodology consists of:

- *Program Guide*
- *Training program*

Program Guide

The Program Guide is a living document. It is the users' document within the Optus environment.

The Program Guide is an operations manual which is small but relevant. The intent is to keep it a living document: brief, simple and practical. The information is ordered to enable access to the right level of detail depending on need. It is ring bound for ease of updating, with tabs for quick reference. The process for keeping the Program Guide current and relevant includes periodic amendments, with the date of the next amendment known. Everyone knows when the next version is coming out, so they know whether or not they have the latest version, and can suggest amendments in good time for the next version.

The contents of the program guide are as follows:

- *Concepts*
- *Planning*
- *Teams*
- *Program life cycle*
- *Information requirements*
- *Process check list*
- *Standard formats*
- *Tools*
- *Small projects*
- *Glossary*

Training program

Everyone entering the Optus environment, from users to subcontractors, receives the same training. The training program complements the Program Guide.

Conclusion

The working relationship between Digital Equipment Corporation and Optus Communications is in line with Digital's strategy to develop systems integration as a revenue stream, and is indeed a vanguard of this strategy.

The relationship, and the management mechanisms that make it work, are still developing. This white paper is a snapshot in time; a report on what has been accomplished so far.

It is emphasised that the imperatives that drove the formation of this unique business relationship were customer requirements, in particular Optus' contractual commitments to the Australian federal government. Digital was responsive to these needs, and put forward the proposal to share the risks as well as the rewards with the customer. Digital's partnership proposal helped Optus win the licence, and in doing so won a significant piece of business for the corporation.

OSS Phase II is still being defined. When it goes into production it will bring with it new imperatives, and probably new innovative business arrangements. When it is internationalised and exported world-wide, Digital will have not only a product and an architecture, but also experience in the prime contracting relationship that will facilitate its working for other customers around the world.

digital



THE POWER OF CHOICE

AIR

Optus Communications owns and operates the national satellite system, capable of providing communications to virtually all of Australia. Optus will also be using international satellite systems to provide competitive international services.

LAND

Using its own fibre optic cables linking all cities, Optus will be capable of providing the most advanced telecommunications services to its customers. The company also plans to provide the most sophisticated mobile communications available to both business and domestic markets.

SEA

Even to those at sea, new communication alternatives will be available using the latest technology in mobile communications. Optus will also take full advantage of its equity in international submarine cables and other carrier arrangements to provide customers with the most advanced overseas communications.

Optus' Vision and Values	2
History and Corporate Background	3
Who Owns Optus	4
The Future of Telecommunications	6
Optus and Australian Telecommunications	11
Elements of a Network	13
The Optus Network	14
Timeline: Optus' Network and Services Rollout	16
Industry Development	18
Optus Services	20
Customer Services	29
Operational Support System	31

TABLE OF CONTENTS

Optus' Vision and Values	2
History and Corporate Background	3
Who Owns Optus	4
The Future of Telecommunications	6
Optus and Australian Telecommunications	11
Elements of a Network	13
The Optus Network	14
Timeline: Optus' Network and Services Rollout	16
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Optus Services	20
Customer Services	29
Operational Support System	31

Optus will become a world leader in defining and delivering valued telecommunications services by setting new levels of excellence for Australia in service, quality and productivity, and through the application of leading edge technology.

WE WILL ACHIEVE THIS BY:

- Having customer focused operations
- Developing our people to seek customer solutions
- Being a values-based organisation
- Establishing, in collaboration with Australian providers, a leading edge education and training program
- Developing a platform for research and development with vendors and other Australian institutions

Optus Communications is Australia's new telecommunications carrier. Its arrival marks the beginning of choice in the delivery of telecommunications services.

Through a series of decisions taken and implemented in 1990-91, the Australian Government has liberalised the telecommunications sector, creating a new competitive environment.

These policy changes were aimed at:

- improving the quality and range of telecommunications services;
- reducing costs to business and residential users;
- increasing efficiencies in delivery of telecommunications services;
- becoming a net exporter in telecommunications services, hardware and software; and
- retaining majority Australian equity in telecommunications service infrastructure.

The Government selected Optus in November, 1991, as the group most likely to ensure these objectives would be met.

Optus is a new company with majority Australian ownership. Its corporate goals and philosophies stress customer service and responsiveness to market demands.

Optus is seizing the opportunity to build the world's most advanced telecommunications operation, based on leading edge equipment and technology and supported by sophisticated software.

The "greenfield" nature of the Optus network enables the company to start from scratch, unencumbered by an existing network base consisting of several generations of technology.

The Optus network will be able to deliver advanced communications services at least equal to the best in the world. Optus' commitment to customer service, its technology, corporate structure and philosophies will ensure these services are delivered at a lower price to consumers.

Optus' corporate goals and philosophies stress customer service and responsiveness to market demands

Optus Communications is owned by six major shareholders - four Australian and two overseas corporations.

OPTUS PTY LTD 51%

The Australian equity in Optus Communications is held by Optus Pty Ltd, with a 51 per cent stake.

The shareholders in Optus Pty Ltd are:

Mayne Nickless 49%

Mayne Nickless is one of Australia's most successful industrial companies, operating in contract warehousing and distribution, express freight, security services and hospital management.

It has extensive Australian management and marketing capabilities as well as expertise in marketing complete solutions to business around the world.

Mayne Nickless has achieved its success both in Australia and offshore and has a strong record in successfully entering new business ventures and industries.

AMP Society 19.6 %

Australia's largest institutional investor and major investor in infrastructure and capital development projects.

Through AMP, millions of Australians will participate in Optus as founder shareholders.

AIDC Telecommunications Fund 19.6%

AIDC (Australian Industry Development Corporation) is Australia's leading institution in arranging development capital, with extensive experience in managing direct investments in start-up ventures.

National Mutual 11.8%

National Mutual is a major insurance company with extensive experience in life and general insurance, superannuation and funds management.

Its involvement provides investment expertise and the participation of its millions of individual Australian investors.

BELLSOUTH CORPORATION INC 24.5%

Based in the south-east of the United States, the BellSouth Corporation is the largest of the Regional Bell Operating Companies, with more than 17 million customers.

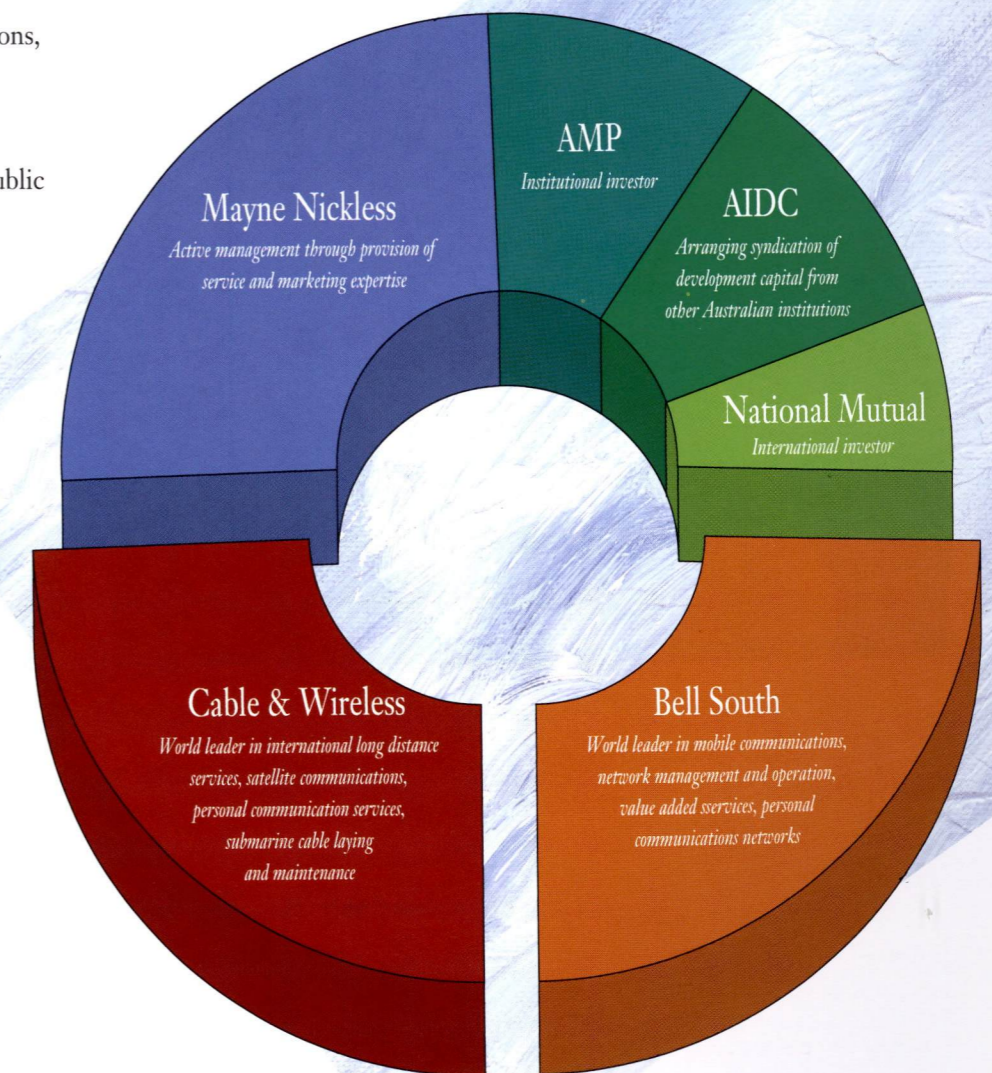
It is at the forefront in deployment of digital switching systems and fibre optic transmission and is a world leader in cellular mobile communications, competing in 36 US cellular markets as well as markets in Latin America, Europe and New Zealand.

CABLE & WIRELESS PLC 24.5%

Cable & Wireless is a world leader in international long distance communications, owning a fibre optic digital highway connecting the world's main financial and business centres.

It owns Mercury Communications, the main competitor to British Telecom, the majority of Hong Kong Telecom, and operates public telecommunication services in more countries than any other company.

Cable & Wireless is building cellular mobile services in six countries, including a GSM network in Germany and a personal communications network in the United Kingdom.





Optic fibre cables have the potential to transmit eight billion phone calls simultaneously. They are, without doubt, one of the most significant technological developments of this century. Add to this further innovations in satellite and mobile technology and you have what are known as "information super highways".

These highways will allow both residential and business customers access to an increasingly diverse, cost effective range of communications options.

Other technological advances have also boosted the capabilities of modern telecommunications systems - most notably in the 'convergence' between computers and communications. Whereas once a telephone and a computer were distinct and unrelated pieces of equipment, modern standard telephones and their associated equipment are increasingly driven by computer software. Among other advantages, this provides communication services with added functions, such as storage of

frequently dialled numbers, redial, call forward and transfer and abbreviated dialling plans to name a few.

More significantly, perhaps, this convergence is not confined to telephone equipment. Much of the sophistication of the modern telephone exchange comes from software, or 'intelligence', so that a network is able to do a great deal more than carry telephone calls from point A to B.

Telecommunications systems are undergoing rapid change as they move into the "digital era". Digital telecommunications systems are rapidly being introduced throughout the world in conjunction with optical fibre technology. These digital systems are more economical to design and manufacture, are more reliable, and are much faster and less susceptible to interference when compared with previous generation telecommunication systems.

The introduction of high capacity cellular mobile networks around the world since the mid-80s is merely the first stage of the mobile

revolution. The goal of universal personal telecommunications - when phone numbers will be attached to individuals, not locations - is in sight. So, regardless of one's location - in the home or office; or in transit on land, water or in the air - our phone number will stay the same.

Meanwhile, implementation of digital cellular networks is underway in North America, Europe and our own region. Optus' own mobile network will be based on the digital GSM (Global System for Mobiles) standard, similar to the existing analogue system, but with a vastly greater quality and range of functions.

Cordless phones, already popular in the home market, will also expand their technological horizons.

Cordless PABXs (private telephone switching systems) are expected to be widely available in the next two years. Data communications will be facilitated by further advances in mobile (or "wireless") and satellite communications, such as office computer networks.

The information in this brochure covers some of this new technology; the way Optus Communications is going to implement its network; and most importantly, how it will affect Australians nationwide.

The enormous technological advances now underway, and the benefits that will flow from them, hold great opportunities in the Australian environment.

MERGING TECHNOLOGIES AND INDUSTRIES



Australia's telecommunications market will provide significant contributions to our economy.

The world telecommunications services market, worth \$A329 billion in 1985-86, almost doubled in four years to \$A544 billion in 1990. Estimates suggest it will grow further to be worth US\$855 billion in 1995.

As the graphs on this page indicate, Australia's own telecommunications market is itself considerable, and will provide significant contributions to our economy.

In this dynamic environment, Optus has the opportunity to build an extensive network with advanced capabilities accompanied by a corporate culture attuned to customer needs.

This network will integrate mobile and fixed technology; it will transmit messages on the land, through sea and space; and it will serve both homes and business.

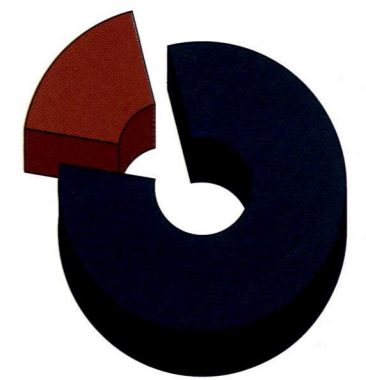
This is possible because under the new regulatory arrangements, Optus has become the owner of the Australian domestic satellite company Aussat - now the Optus Satellite Division - and has been granted licences for fixed and mobile networks.

In other changes the domestic monopoly, Telecom, has been merged with the international operator, OTC to form AOTC; resale of capacity leased from a carrier is now permitted; and a third cellular mobile licence is to be issued. The new regime has been facilitated by the passage of new legislation, the Telecommunications Act 1991.

The present duopoly environment is due be reviewed in 1997, after which the industry is likely to be opened up further to competition.

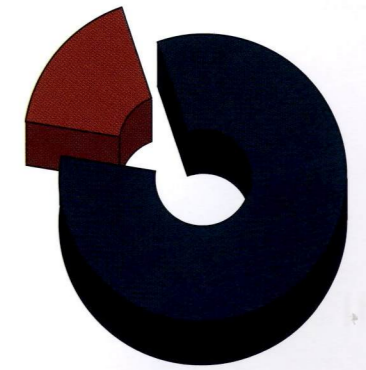
Optus has made an early start on building its own network and is intent on quickly gaining market share. The company has set its 5 year goal as attainment of a 20-25 per cent share of the long distance (international and domestic) and private line markets, 30-35 per cent of the cellular market and 20-25 per cent of the business services sector.

THE AUSTRALIAN TELECOMMUNICATIONS MARKET (\$A Billion)



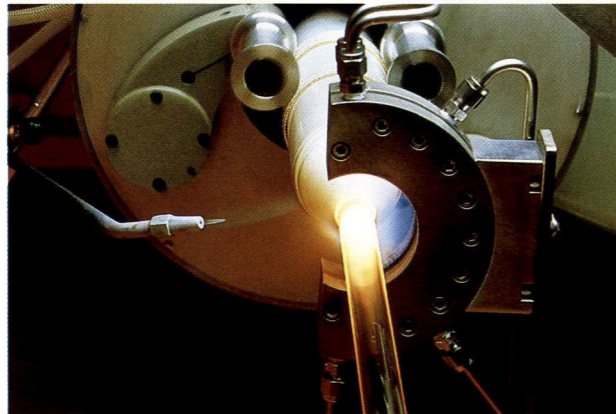
1990 Total Market: \$9 billion (approx.)

- Domestic
- International



2000 Total Market: \$20 billion (est.)

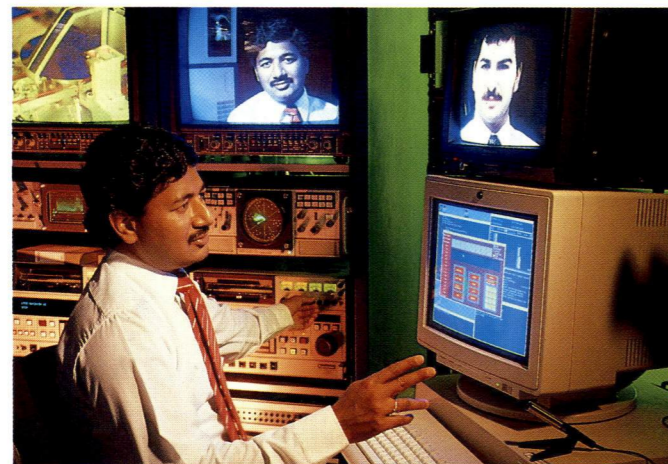
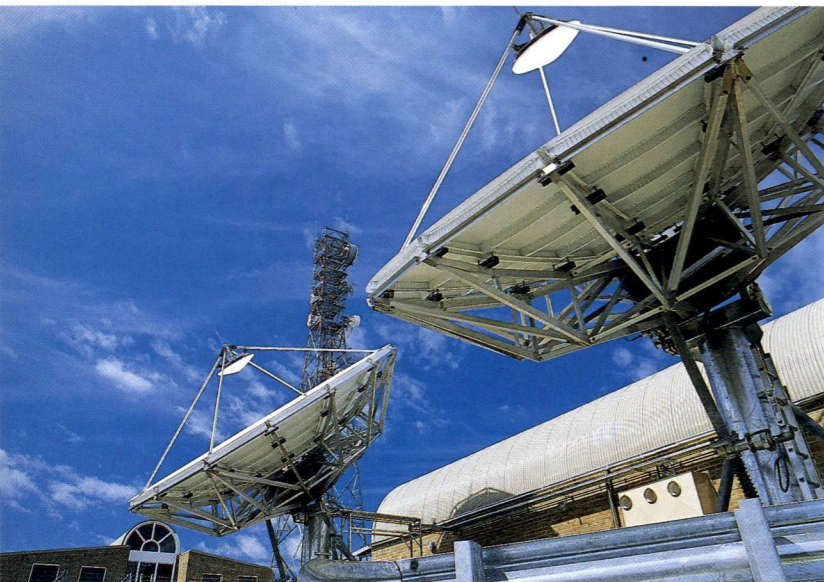
- Domestic
- International



By 2001, Optus anticipates an overall share of approximately 30 per cent of the Australian telecommunications market. Optus knows it can only achieve that level of penetration by providing high quality services at competitive rates.

Australia faces the prospect of real price reductions overall of 40 per cent in the first five years and 60 per cent over the first ten years for telecommunications services.

International experience offers a guide to the next few years in Australian telecommunications. In other newly liberated (often called deregulated) markets, vigorous competition has stimulated rapid growth in both the domestic and international long- distance services and expansion of the market.



RAISING OUR EXPORT COMPETITIVENESS

Telecommunications is a vital component in the expansion of world trade and a major contributor in the reform and restructuring of the Australian economy.

Optus' price leadership will encourage AOTC to compete through improved efficiency and reduced prices. Savings will be translated into lower costs for goods and services and lower input costs for exporters. Optus estimates that the value of these indirect effects will add \$2 billion to Australia's GDP by 1997.

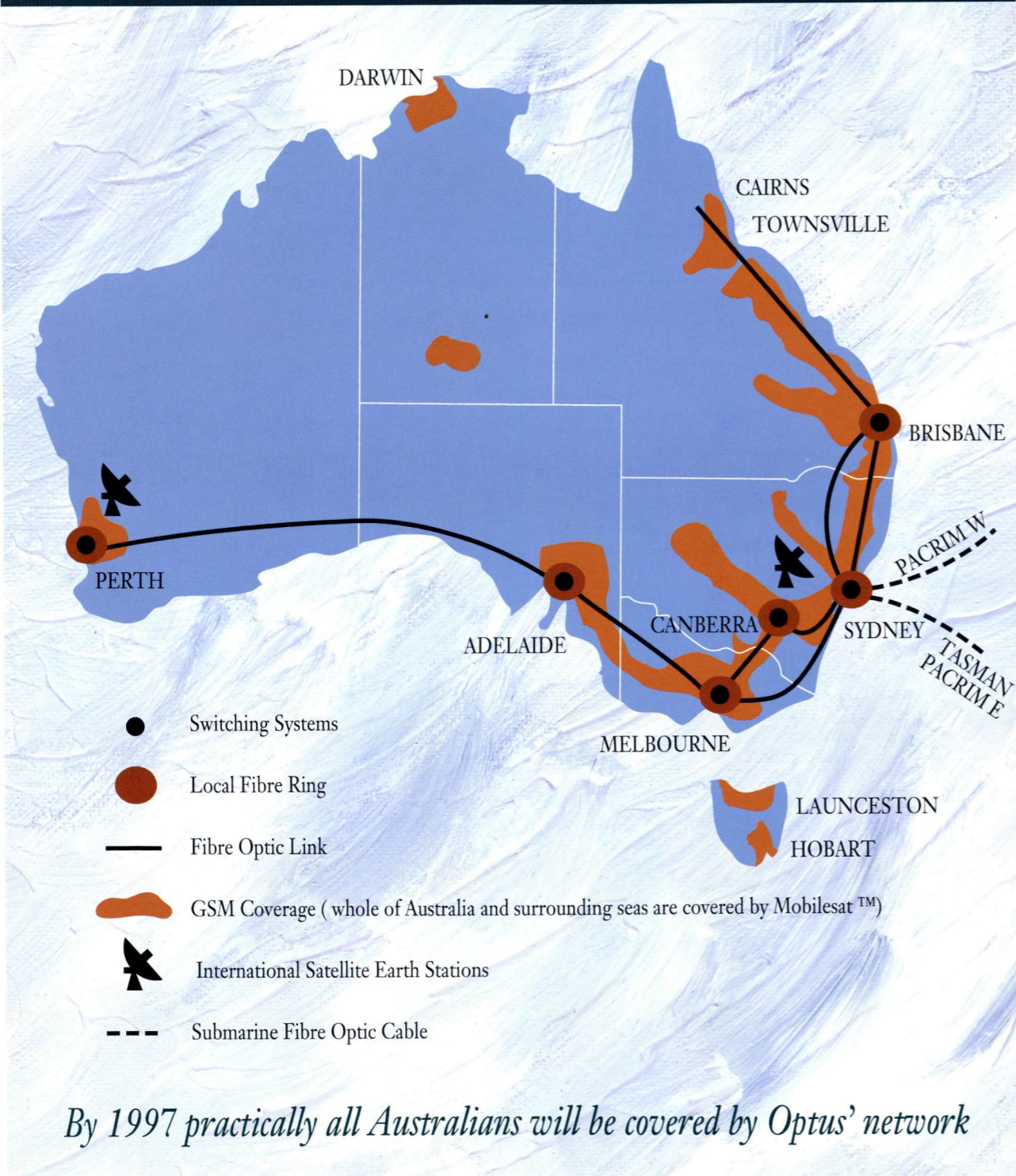
The benefits will be most visible in the Asia-Pacific region, the world's fastest growing economic area. Transnational companies looking to expand their presence in the region will be encouraged to base their regional operations in Australia by the quality and competitive value of Australia's telecommunications infrastructure.

Telecommunications is rapidly becoming a major trade sector in its own right. As Asian and Pacific nations grow, so too will their demand for telecommunications services. They require equipment and expertise that will help them modernise and expand their networks. As a regional leader in telecommunications, Australia is perfectly positioned as a source of network design, construction skills management expertise and leading edge technology.

Optus' expertise in building its Australian network from the most modern technologies and techniques will therefore be highly marketable throughout the region. Its policy of stimulating local technology development and communications equipment manufacturing through strategic alliances and joint ventures will see new export opportunities arise for Australia's information technology and telecommunications industries.

Telecommunications is a major contributor in the reform and restructuring of the Australian economy

DEPLOYMENT PLAN - 1997



ELEMENTS OF OPTUS' DIGITAL NETWORK



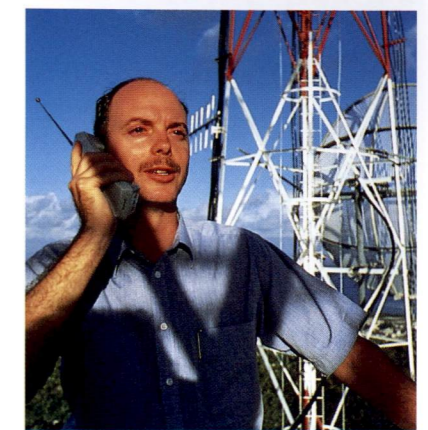
Fixed

- Due for completion in 1997, Optus is currently laying 250 000 km of fibre optics cable throughout Australia.
- Being digital, the cable will allow much greater capacity, higher quality and more services than the "traditional" copper cables.
- Allows transmission of voice, data and video.
- Provides general services such as operator services and selective call forwarding.
- The fixed network will also provide business services such as Centrex, ISDN and enhanced 008.



Satellite

- Optus owns and operates a national satellite system covering Australia, New Zealand and surrounding regions.
- Satellites provide valuable back up transmission systems to the fixed network.
- Information can be sent to virtually anywhere in Australia, ranging from a simple phone call to television signals, providing there are appropriate receivers.
- Optus B1 and B2 satellites will offer services in remote areas, as well as business services for data, voice, fax and video.
- These satellites will also provide mobile satellite communications.



Mobile

- This element of the Optus Network allows phone calls to be received while users are "on the move", providing they are within range of a base station.
- The Optus mobile services will operate initially on AOTC's analogue cellular system.
- By the second quarter of 1993 Optus will begin services on its own GSM (digital) mobile network.
- GSM is state of the art technology, and will offer a wider range of services and greater capacity than the current analogue mobile services.
- These services will include call forwarding, call waiting, voice mail and many others.

From year one of the service, most Australians will be able to select Optus as their carrier for long distance and international calls

Over the next five years, Optus Communications will spend some \$2 billion on designing and building its fixed and mobile networks - one of the largest capital works programs in Australia during the 1990s.

The Optus Network has three major components: Fixed (wireline), mobile (wireless) and satellite-based communications. The fixed (or wireline) network will be comprised of high capacity optical fibre cables capable of transmission speeds of 2.4 billion bytes per second. These will be laid between all of Australia's capital cities as well as in the 'local loop' of the central business districts of those cities.

Optus began laying its nationwide optical fibre backbone network in March, 1992, and expects to have 8000 kilometres laid by 1997, stretching from Cairns in Queensland to Perth in Western Australia. By that time, more than 90 per cent of its traffic carried will be on the Optus network.

For the first few years, customers will gain access to the Optus

network simply by dialling the digit "1" before the number called, eg, 1 (02) 238 7800. The call is transmitted to the nearest AOTC exchange, then to the nearest Optus exchange. The call then travels through the Optus network to the exchange closest to the desired destination. This process will be transparent to the customer.

From year one of the service most Australians will be able to select Optus as their carrier for long distance and international calls. For others, the choice will be delayed until their local exchange is modernised by AOTC. Every customer, regardless of local exchange technology, will be able to receive calls originating on the Optus network. Calls placed via the Optus network will be billed by Optus which will settle with AOTC for any joint usage. Customers using both Optus and the AOTC networks will receive a bill from both companies detailing the costs.

The cellular mobile, or wireless network, will also be established in major population centres and in corridors between main centres, with eventual coverage to approximately 80 per cent of the population.

The first cellular service was launched in June 1992. As with the fixed network it will be based initially on leased AOTC facilities. In the second quarter of 1993, Optus will offer services based on its own digital cellular GSM network.

The construction of both the fixed and mobile digital networks over the next two years will enable the launch of the high value added Optus' Personal Communications Services, beginning in 1994.



OPTUS' NETWORK AND SERVICES ROLL-OUT

1992

FIRST QUARTER

- Begin construction of fibre optic network. Sydney - Canberra - Melbourne.

SECOND QUARTER

- Implement OSS Phase 1.

THIRD QUARTER

- Begin construction of fibre optic link. Brisbane - Sydney.
- Build Intelsat earth stations in Sydney and Perth.

FOURTH QUARTER

- Commission advanced digital switching systems in Sydney and Melbourne.
- Commission international gateway switch in Sydney.
- Commission signalling transfer points in Sydney and Melbourne.
- Commission local switches in Sydney and Melbourne.
- Begin installation of GSM digital mobile network. Sydney, Melbourne, Canberra, Brisbane.

SERVICES

- Optus cellular mobile (AMPS analog) services available. (Second Quarter)
- Domestic long distance and international (ISD) services from 45% of Australian population - i.e. From NSW and Victoria to anywhere. (Fourth Quarter)

1993

- Construct fibre optic link Canberra - Sydney
- Begin construction of fibre optic link. Adelaide - Melbourne

- Fibre optic loops completed in Sydney and Melbourne.
- Domestic switches installed in Canberra and Brisbane.

- Fibre loops completed in Perth, Adelaide, Brisbane and Canberra.
- Sydney - Canberra - Melbourne fibre optic link operational.
- Install domestic switches in Adelaide and Perth.
- Install transfer points in Adelaide and Perth.
- Begin installation of GSM network in NSW country areas.

- Brisbane - Sydney fibre optic link complete.
- Implement AIN (Advanced Intelligent Network).

- GSM digital cellular services begin.
- Video and Data services
- Country-wide long distance services available from 65% of Australian population.
- Range of value added network services

1994

- International gateway installed in Melbourne.

- OSS phase 2 begins.
- Begin GSM network Victorian country areas.
- Adelaide - Melbourne fibre optic link complete.

- Personal Communications services implemented.

1995

- Melbourne - Sydney diverse fibre optic route completed.
- 60% of international circuits carried by cable; 40% by satellite.

- Instal GSM network in Perth and Adelaide.
- Sydney - Brisbane diverse fibre optic link complete.

- Instal GSM network in Darwin and Hobart/Launceston.

- Adelaide - Perth fibre optic link complete.

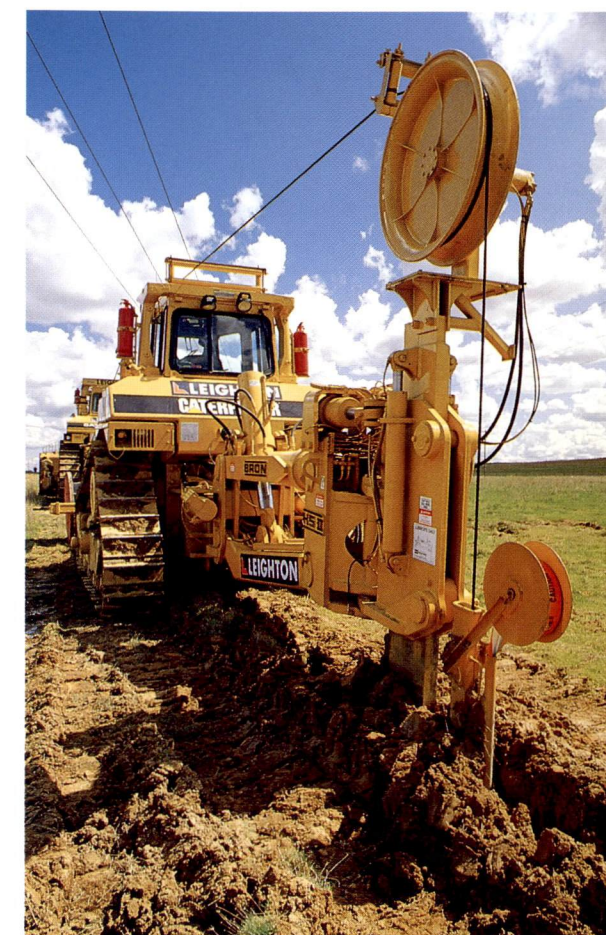
- 70% of Australian population covered for domestic long distance and international.

1996

- GSM network Victorian and NSW country areas complete.

- Brisbane - Cairns fibre optic link complete.
- Intercity fibre optic links stretch down east coast and across to Perth.

- 80% of Australian population has access to GSM digital cellular mobile.
- Virtually 100% of Australian population can become Optus customers.



The opportunities presented by the licensing of the second carrier go far beyond the potential for Optus itself.

In building its network over the next five years, Optus will call on the planning, design, research and development, and operational expertise of the Australian information technology and telecommunications industries.

The company has identified major areas of focus to ensure, first, that the pre-requisite knowledge and skills are transferred to Australia, and later, that export opportunities are grasped.

Optus has formed strategic supplier agreements with six major companies, meaning there will be substantial benefits to Australian training and research and development. Over the next ten years Optus and its supplier partners will spend \$400 million on research and development. In the same period, as a result of these strategic supplier agreements, exports worth approximately \$1 billion will be generated.

INDUSTRY TRAINING

To encourage accelerated development of technical expertise in Australia, Optus will establish an education and training program. It has committed to spending \$100 million in the first five years of operation.

Initially, the program - a cooperative venture between Optus, its major suppliers, universities, colleges and commercial training organisations - will focus on Optus employees, but will gradually be expanded both nationally and internationally. It is planned to have technical courses achieve recognition and advanced standing with universities and the TAFE system.

STRATEGIC SUPPLIERS

Each supplier brings to the Optus network valuable expertise and all are recognised leaders in their field.

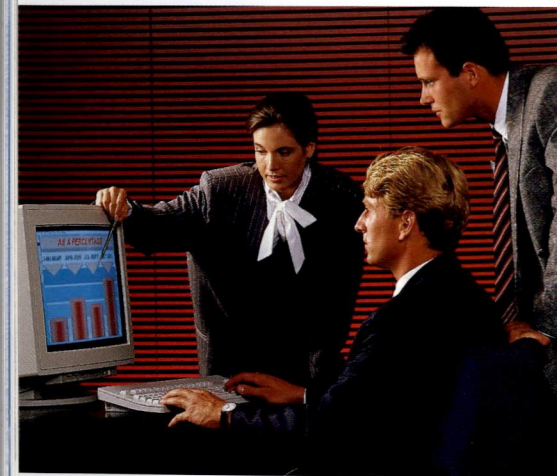
- Digital Equipment Corporation will provide the Operational Support Systems (OSS).
- Nortel Australia will supply switching systems.
- Fujitsu Australia will supply transmission equipment.
- Nokia Telecommunications will provide radio systems for the GSM digital cellular telephone network.
- Olex Cables will supply the optic fibre cables.
- Leighton Contractors will provide construction work and associated civil services and lay cables.

Optus has developed key guidelines which will ensure that the average Australian content of its total capital expenditure will be over 70%.

The supplier partners have contractual commitments to Optus to achieve specified levels of Australian content, research and development and exports.

Australian companies will be used wherever possible. As a result, Nortel has teamed up with NSW-based Exicom Limited, Nokia and the West Australian company ERG Australia have formed a strategic alliance, while Digital Equipment Corporation has formed alliances with Computer Sciences of Australia, Computer Power Group and other Australian software development companies to develop Optus' OSS.

Other Australian-based companies will pay an integral part in Optus' network development. NEC, for example, will supply Optus' earth stations on the eastern and western seaboard.



THE FIXED NETWORK

The all-digital Optus network will expand the range of services available for corporate, small business and residential customers.

GENERAL SERVICES

A number of network features will be available to all Optus customers.

- **Operator Services**

Available round the clock.

Customers may elect to have call charges billed to the called party, a third party or to various calling cards.

- **Customer intercepts and completion**

For customers who have moved address, this optional service enables callers to be automatically forwarded to the new number.

- **Selective call forwarding**

Customers can select to have calls from certain numbers only forwarded to another location.

- **Call Return**

Enables the last call received to be re-established.

- **Distinctive ringing and call waiting**

Customers can select to have certain calling numbers identifiable by a distinctive ringing pattern, and will hear a tone if another person is trying to get through while the phone is engaged.

**BUSINESS SERVICES**

- **Centrex**

Centrex is based on software in the Optus exchanges, enabling customers to take advantage of PABX services delivered by the network. The benefits are the elimination of the capital cost and the upgrading and maintenance provided by Optus. Centrex also allows the flexibility to custom design telecommunications services best suited to an organisation's special needs.

- **Virtual Private Network**

Similar to Centrex, a VPN service allows a business with dispersed sites to treat its multiple locations as a single entity, enabling use of a single general switchboard number, abbreviated dialling and standardised equipment.

- **Bulk long distance discounts**

Business customers with large domestic and international long distance call volumes will be able to take advantage of discounts by paying a flat monthly fee for access.



- **Area Number Calling and Enhanced 008**

Area number calling allows businesses with multiple sites to advertise a single number and route the calls automatically through to the appropriate location according to time of day, geography and so on.

As well as offering a 008 service, which allows businesses to provide customers and clients with free incoming calls, Optus will provide an Enhanced 008 which, like Area Number Calling, will enable customers to determine the routing of incoming calls.

- **ISDN**

Integrated Services Digital Network (ISDN) will be available at both Basic Rate (64kbit/s) and Primary Rate (2Mbit/s). ISDN is a high-speed system which enables transmission of large volumes of data traffic and applications such as video-conferencing and imaging which require high amounts of transmission capacity.

- **Other**

Optus also will provide video- and audio-conferencing, store and forward facsimile, text messaging, packet and fast-packet switching, dedicated leased circuits, facilities management and consultancy services.



MOBILE SERVICES

The first cellular services from Optus will be based on capacity leased from AOTC, starting in mid-1992.

Optus will offer a range of value added services on this network, including:

- **Telephone Information Services**

These are interactive services that will assist subscribers with their account records and billing information. Using this and the rate plan optimiser service, customers can determine whether they are using the most economical rate plan, based on their calling patterns.

- **Information Services**

Mobile users will have access to operator and information services such as Directory Assistance, Voice Yellow Pages, financial news and weather reports.

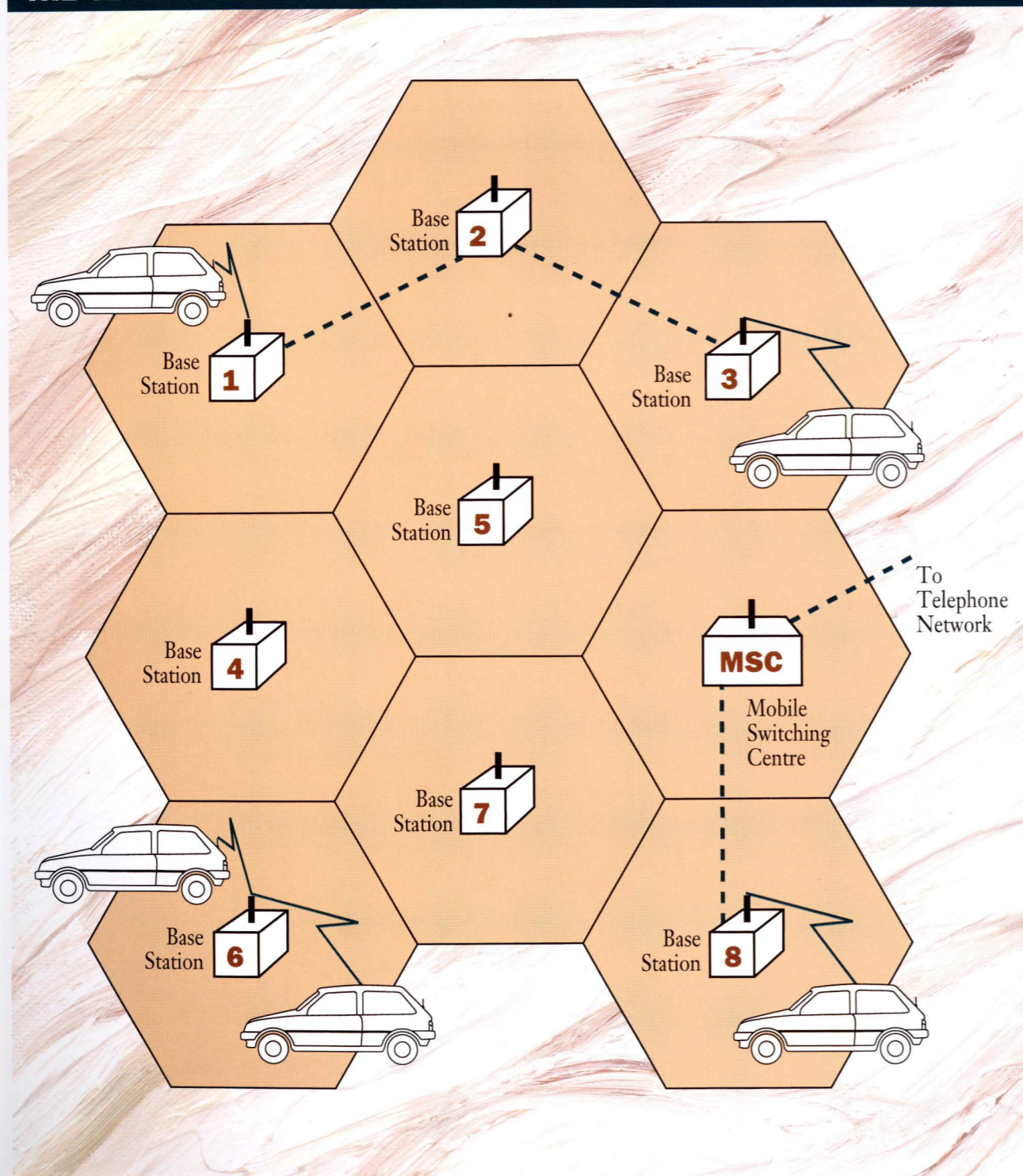
The Optus digital GSM (Global Standard for Mobiles) network is due to begin commercial operation in the second quarter of 1993.

Digital cellular mobile network is similar in many ways to the existing analogue cellular systems, but offers better quality, greater capacity and a much wider range of functions. It is literally the "new generation" standard for mobile communication.

As the name suggests, a cellular network consists of a series of adjoining areas known as cells, each hexagonal in shape and with its own base station and low-powered radio transmitter (see diagram). With this cellular structure, network capacity can be maximised by using the same voice channels at the same time but in different cells.

If the caller moves from one cell to another, software in the system and in the user's handset enables the call to be maintained even when travelling at high speeds.

THE CELLULAR MOBILE SYSTEM



With GSM, this process is repeated, but using a digital technology. This means that all information and signals are broken down into a binary form (that is, into a numbering system with only two digits) at the calling party end, transmitted across the network and reassembled in original form at the other end.

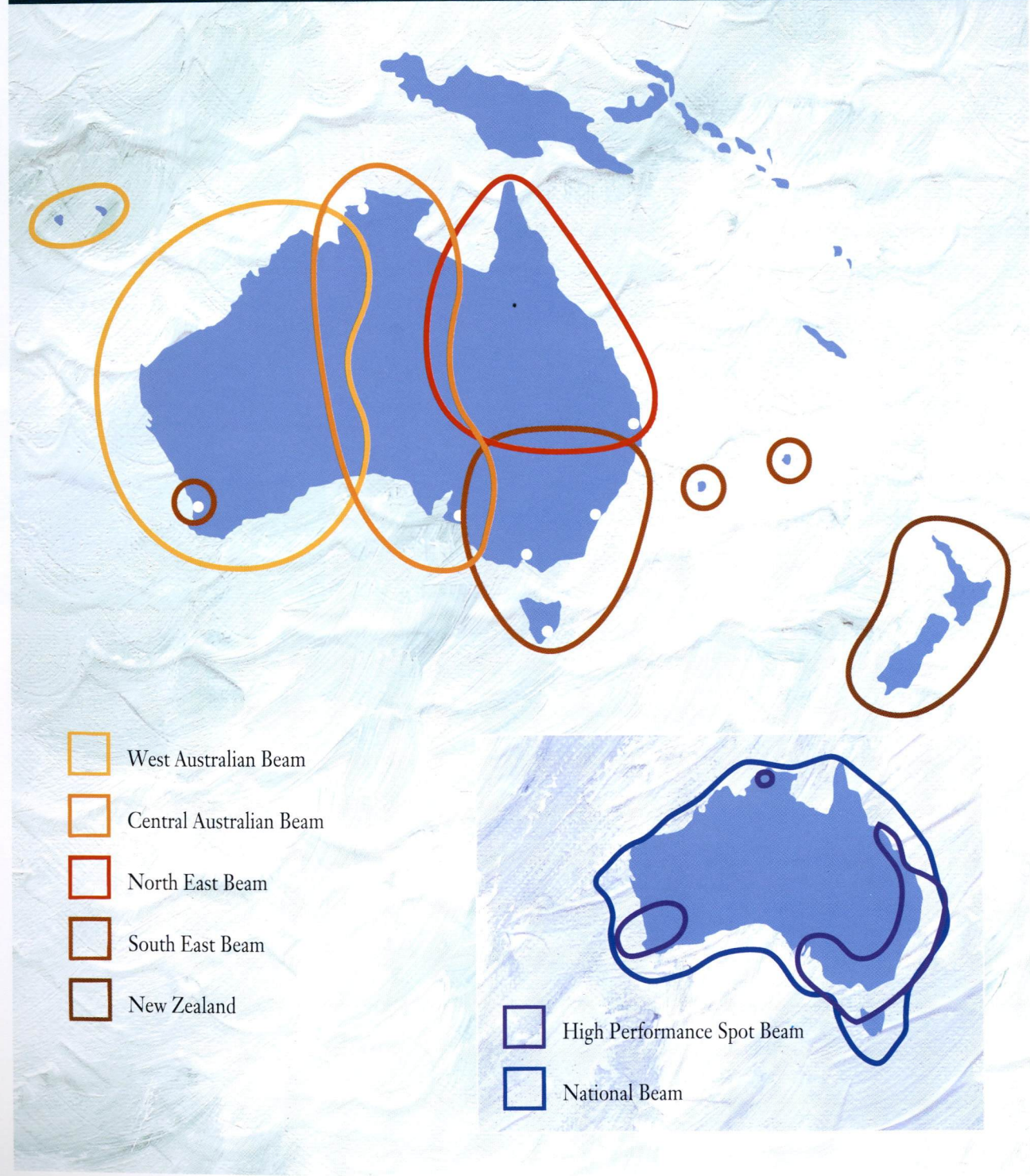
Unlike analogue systems, calls on GSM networks are completely secure. Customers on the Optus GSM service will have access to virtually all the features now available on a PABX: call forwarding, call waiting, call hold, call transfer and conference calling.

Other GSM services are:

- **Voicemail.**
Electronic voice messaging system where calls are diverted to a voice mailbox if the user is unavailable.
- **Short Message Service.**
The GSM system allows short alphanumeric messages to be sent to and from a mobile user, enhancing the use of mobile handsets which can effectively then become paging units.
- **Rural services.**
Optus will offer services to rural and remote areas through a combination of satellite and GSM cellular mobile. By connecting mobile transmission to a satellite link, a communications service can be delivered to farms and homes in remote areas throughout Australia.



OPTUS SATELLITE COVERAGE – SPOT BEAMS



SATELLITE SERVICES

Optus will extend the satellite services previously operated by Aussat to a full range of national and international transmissions. The first of the Aussat B Series satellites was launched in April 1992 and the second will be launched by the end of 1992.

The existing services will continue to be offered. These include transponder leasing, television and radio networking and distribution, VSAT (Very Small Aperture Terminals) data services, and remote commercial television services.

The B Series satellites will enable delivery of new broadcasting and satellite services.

• Pay TV.

The Aussat B Series satellites have been chosen as the delivery system for Australia's proposed Pay TV service. The 50W high performance beam transponders can transmit subscription programmes to virtually all of the Australian population. Subscribers will require a small receiving dish and a decoder box to unscramble the signal and feed it to their TV sets.

• International TV

Optus will provide two-way international television services in competition with AOTC, using Intelsat and other international satellite systems.

• Mobilesat

The B Series satellites will carry signals on the new Mobilesat network, which will provide mobile communications services throughout Australia. This will be especially invaluable for areas not covered by land-based mobile services. Applications will include emergency services, vessels in coastal waters, remote-based industries such as the mining industry, distance education, and access to remote measuring instruments, such as reservoir water levels.

• Future services

Satellite services now being planned include mobile services for voice, fax and data connected to the nationwide fixed network, and private mobile networks with features now available on the private mobile radio HF/UHF/VHF networks.

PERSONAL COMMUNICATIONS SERVICES

The advantage of GSM cellular technology is that, being digital, it can more easily integrate with the digital fixed network. In this way Optus plans to create a network that will deliver Personal Communications Services (PCS).

With PCS, a person would require only one telephone number and Optus will route any message to that number. The message would transit the fixed and/or the mobile network to reach the customer regardless of location.

Among the range of services are:

- **Follow Me**
Calls are forwarded automatically to one or more destination numbers according to the customer's instructions - perhaps according to the time of day or day of the week.

- **Multi-location ringing**
The network rings multiple numbers specified by the customer, either simultaneously or in sequence. If simultaneously, the call is completed to the first location answered and the other locations are dropped. Sequentially, the call automatically diverts to subsequent numbers if the called party is not available.
- **Anywhere call pick-up**
A phone number is linked to a pager number and the call is held while the pager is dialled. Alerted to the call by the pager, the user may pick up any phone, dial an access number and be connected to the caller.



CUSTOMER SERVICE

Four principles underlie Optus' service philosophy:

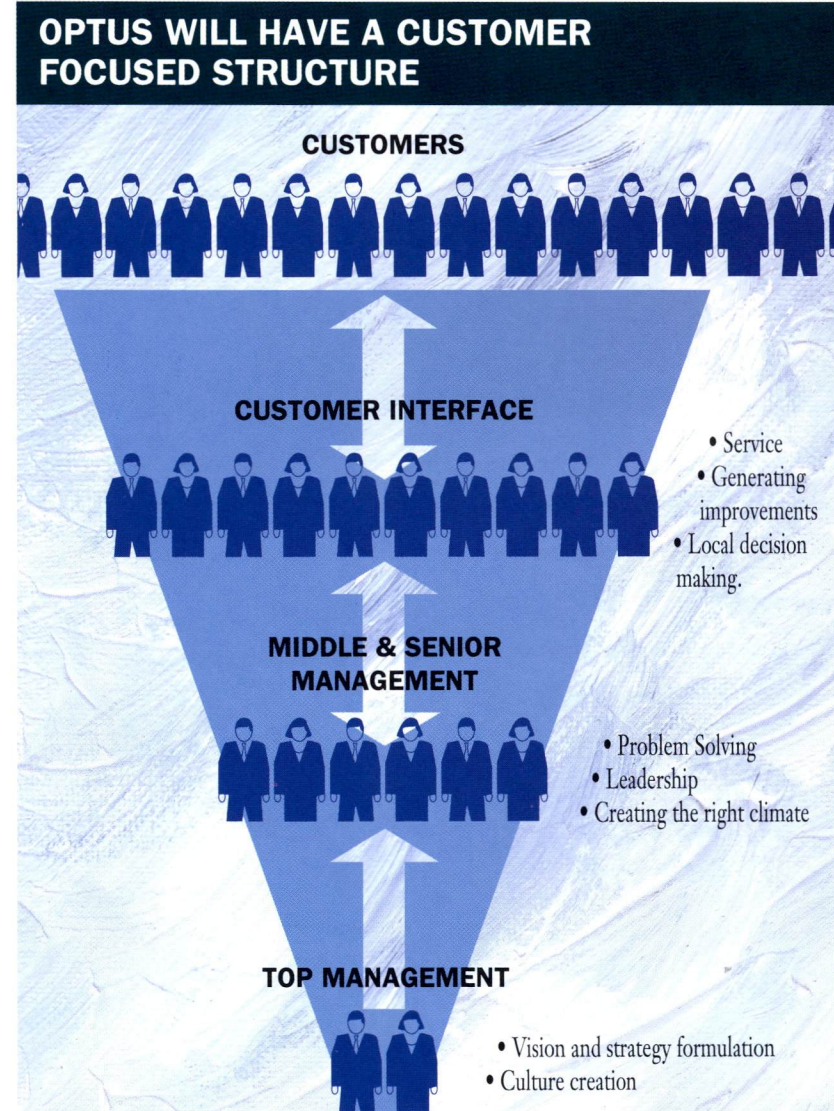
- Promises made to customers are kept;
- Customers can complete most transactions on initial contact, dealing with just one person;

- Customer service staff are courteous, efficient and professional in interactions with customers; and
- Information given to customers is accurate and complete.

Fulfilment of these goals requires the right staff - people who share the Optus vision for quality service, problem solving and seeking innovative solutions to market needs.

To provide staff - and ultimately customers - with the skills they need, Optus plans to spend \$85 million on training in the first five years of operations.

Customers will have ready access to Optus through its customer service centres open around the clock, seven days a week. Trained service staff will answer questions and complaints, handle billing issues and place service orders.



The heart of the Optus operation are the databases which make up the Operational Support System (OSS).

The OSS will carry out customer service, maintenance and network management support functions - performance monitoring, testing, re-configuration and administration of the network elements. It will also perform customer billing and aid in customer service and market support.

Developed over the next few years by Digital Equipment Corporation (DEC) in conjunction with a consortium of leading Australian software companies, OSS will be a sophisticated management system. It is estimated that the global opportunity market for OSS by the year 2000 will be in excess of \$20 billion and Optus anticipates its share of that market will be \$0.75 billion by 2001.

The OSS, in essence, is clever software that will set in train a series of automated actions. It manages the network around the clock, monitoring for and responding to faults, and collecting data on use and performance of the network.

The system will let Optus staff focus on the prevention and early identification of potential problems, rather than reacting to faults reported by customers.

OSS will provide an integrated database of customer's various services, ensuring better management of their telecommunications needs and an improved tool for Optus account managers to provide advice on customers' future needs.

Business customers will be able to access selected OSS functions directly by subscribing to some or all of the customised features. They will be able to use the OSS to directly request new services or changes to existing services; report and monitor the status of faults; and monitor and test the performance themselves of their own services and equipment.

OSS is the heart of the Optus Network





OPTUS
communications

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SYDNEY NSW 2000

TELEPHONE (02) 238 7800

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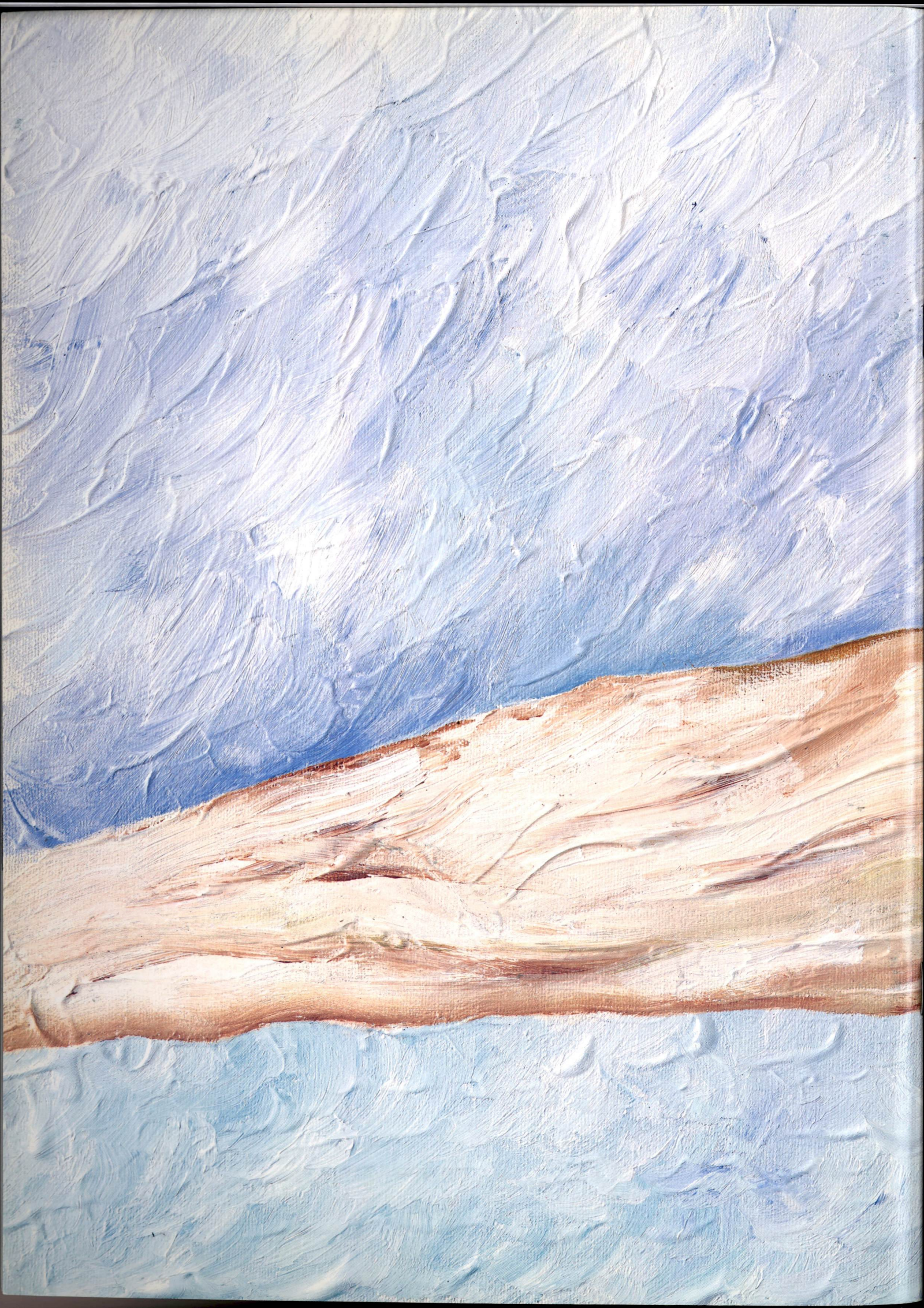
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Concord West, NSW 2138
Tel. (02) 561 5252

digital

Andrew Phyppen

*New
customer
file*

OPTUS

With Compliments

OPTUS
communications

THE ESSENTIAL FACTS

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OPTUS

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THE ESSENTIAL FACTS

Towards a More Competitive Australia. Optus Communications, an Australian company, is bidding for the right to acquire AUSSAT Pty Ltd and become Australia's second telecommunications carrier.

Optus believes its response to the Federal Government's Request for Tender not only meets, but expands, the Government's telecommunications policy settings of achieving a more internationally competitive Australian economy. Efficient telecommunications are fundamental to the performance of all economic sectors and are also fundamental to the social needs of all Australians.

OPTUS - THE CHOICE FOR AUSTRALIA'S SECOND CARRIER

OPTUS - THE CHOICE FOR AUSTRALIA'S SECOND CARRIER

The Optus Mission.

Our mission is to become a global leader in defining and delivering valued telecommunications services into the 21st century. Our goal is to build Optus into a technology leader in the provision of integrated telecommunications systems and services to Australia and the world market.

ON BEHALF OF THE BOARD OF OPTUS, I am pleased to share our vision for the development of Australia's telecommunications infrastructure - a project of national significance.

The name of our new company, Optus, came from the Latin verb "optare", to choose. In establishing our new venture and in developing our future strategies, we made a number of vital choices reflecting the scope and significance of this opportunity. The choices we made reflect the commitment of all involved with Optus to advance Australia as a world leader in telecommunications.

We chose to be Australian-owned from the outset with 51% of our equity in the hands of our Australian partners who represent approximately 7 million Australians. These Australians now have a stake in building a key part of Australia's future. The benefits of the opportunity accrue to Australia.

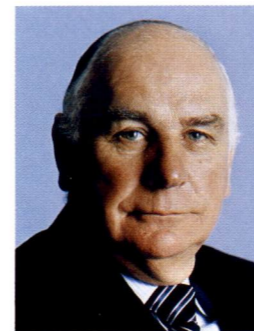
We chose our partners carefully to achieve a structure of the highest calibre. At the shareholder level, we teamed telecommunications leaders BellSouth and Cable and Wireless with Australia's service leader Mayne Nickless and financial leaders AMP, National Mutual and AIDC. At the technology level, we chose as our preferred supplier partners NorTel, Nokia, Fujitsu and Digital Equipment Corporation, teamed with local industry leaders Computer Sciences of Australia, Computer Power Group, ERG Australia and Exicom. All partners are totally committed to the success of the Optus project.

We chose a strategy of quality: quality shareholders, quality supplier partners, providing quality technology and services. We have the financial stability, management experience and technical expertise to address and secure every aspect of this project.

We chose Australian. Our industry involvement and industry development plans are committed, scheduled, refined and under way right now. In Australia and overseas, Optus employees and our technology supplier partners are working side by side as an integrated team, ready to start the job.

Through our plans, we will offer choice to Australia with the benefits accruing to customers through new enhanced services offering better value for money. Through competition we create, real costs to consumers are expected to fall by up to 60% over the next decade. Not only that, but we will set the pace for introduction of new services.

We believe Optus is the logical choice to become Australia's second telecommunications carrier.



SIR BRIAN INGLIS AC.
Chairman, Optus Communications

BELLSOUTH INTERNATIONAL • CABLE AND WIRELESS

Charles Coe
BellSouth International



Jeffrey Phillips
Cable and Wireless



THE AUSTRALIAN SECOND CARRIER opportunity is a pivotal challenge in the world of telecommunications. This is an opportunity to build a new carrier from the ground up in the manner that a world class operator would begin in the 1990s.

As the largest of the Regional Bell Operating Companies, we provide local telecommunications services in the South East of the USA, one of the most sophisticated telecommunications markets in the world. We also operate mobile communications services around the globe.

We see Optus as the vehicle that will allow BellSouth to demonstrate to the world that our basic technology, our network design and engineering skills, our focus on customers, their needs and their satisfaction are the keys to telecommunications service in the 21st century.

We are entering a period of great change in world telecommunications. BellSouth and Optus plan to be at the forefront.

On behalf of BellSouth, I pledge our utmost support to this most important venture.

THE 1990S WILL BE CHARACTERISED AS AN ERA OF STRATEGIC ALLIANCES. Corporations, large and small, are joining with others in a way that maximises the effectiveness of the group and allows each to exploit its particular strengths and experiences.

Our company is one of the oldest and most respected telecommunications providers. We have also been active in establishing ventures in deregulated markets.

Our experience in starting Mercury in the United Kingdom in competition with British Telecom is invaluable in this new venture. So is our experience in international communications and satellite operations.

Our unique skills, together with the strengths of our Optus partners, combine to ensure the success of this major undertaking.

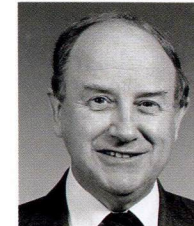
CHARLES COE
President, BellSouth International

JEFFREY PHILLIPS
Director of Corporate Financial Services,
Cable and Wireless plc

MAYNE NICKLESS • AMP



Bill Bytheway
Mayne Nickless



Ian Salmon
AMP

MANY AUSTRALIANS STILL THINK OF MAYNE NICKLESS AS A GIANT OF THE TRANSPORTATION INDUSTRY BECAUSE THAT IS OUR HERITAGE. Over recent years, however, our focus has changed from transportation to the provision of value added services, to the extent that we are now industry leaders, not only in transport but also security, armoured car services and health care.

Our move into telecommunications and into Optus recognises a key strategy of the company in positioning itself for the 21st century and also recognises that telecommunications will be the key service industry of the next century.

In our search for appropriate Australian partners we were impressed by the commonality of business philosophy which was shared by our two telecommunications partners, making us a logical team. Our commitment to being an efficient, quality provider with absolute focus on customer satisfaction will flow to Optus with consequent advantage to all Australians.

This is a key strategic move for Mayne Nickless and for Australia.

BILL BYTHEWAY
Managing Director, Mayne Nickless

AMP IS THE LARGEST INSTITUTIONAL INVESTOR IN AUSTRALIA. We are also the largest investor in Australian endeavour. Projects of national significance have always been important to AMP.

Our direct activities in mining ventures, in the rural industry, in technology and in domestic infrastructure show AMP's commitment to Australia. Of course, this is not altruism and we require from our investments an adequate return to our policy holders. Not surprisingly, therefore, AMP is always associated with the best partners in blue-chip ventures.

Our investment in Optus reflects this philosophy. The second carrier project is a vital one for Australia. It is a demanding project requiring major investment and commitment by the shareholders and patience for a return in the longer term.

We selected the Optus team as the vehicle for our involvement in the second carrier based on our confidence in the technology partners, our commonality of views and corporate goals, and belief that they would produce the results for Australia for both customers and investors alike.

We are strongly committed to the project and the Government's objectives in these areas.

IAN SALMON
Managing Director, AMP

NATIONAL MUTUAL



Gil Hoskins
National Mutual

NATIONAL MUTUAL LIFE ASSOCIATION is proud to be associated with the Optus bid to become Australia's second telecommunications carrier.

For the 21st century, Australia will need world-class telecommunications services, not only for the people of Australia, but also for significant enterprises such as National Mutual. Increasingly, we deliver products and services to our policy holders that would be virtually impossible without the companion technologies of computing and communications.

For us, our involvement in the Optus bid goes beyond simply being another investment. It is a vital investment and another step in the crucial micro-economic reform process.

At National Mutual we have great confidence in the Optus team and are committed to the establishment of the company as the leader in this region in providing telecommunications carrier services.

GIL HOSKINS

Managing Director, National Mutual Life Association



Arthur O'Sullivan
AIDC

AIDC LTD. is highly focussed on activities leading to the development of Australian industry. Our role in many areas is as a lender to, and investor in, projects that are of significance to Australia.

In supporting these projects, we operate prudently as a profitable Australian enterprise, demanding involvement only with sound investments and excellent partners.

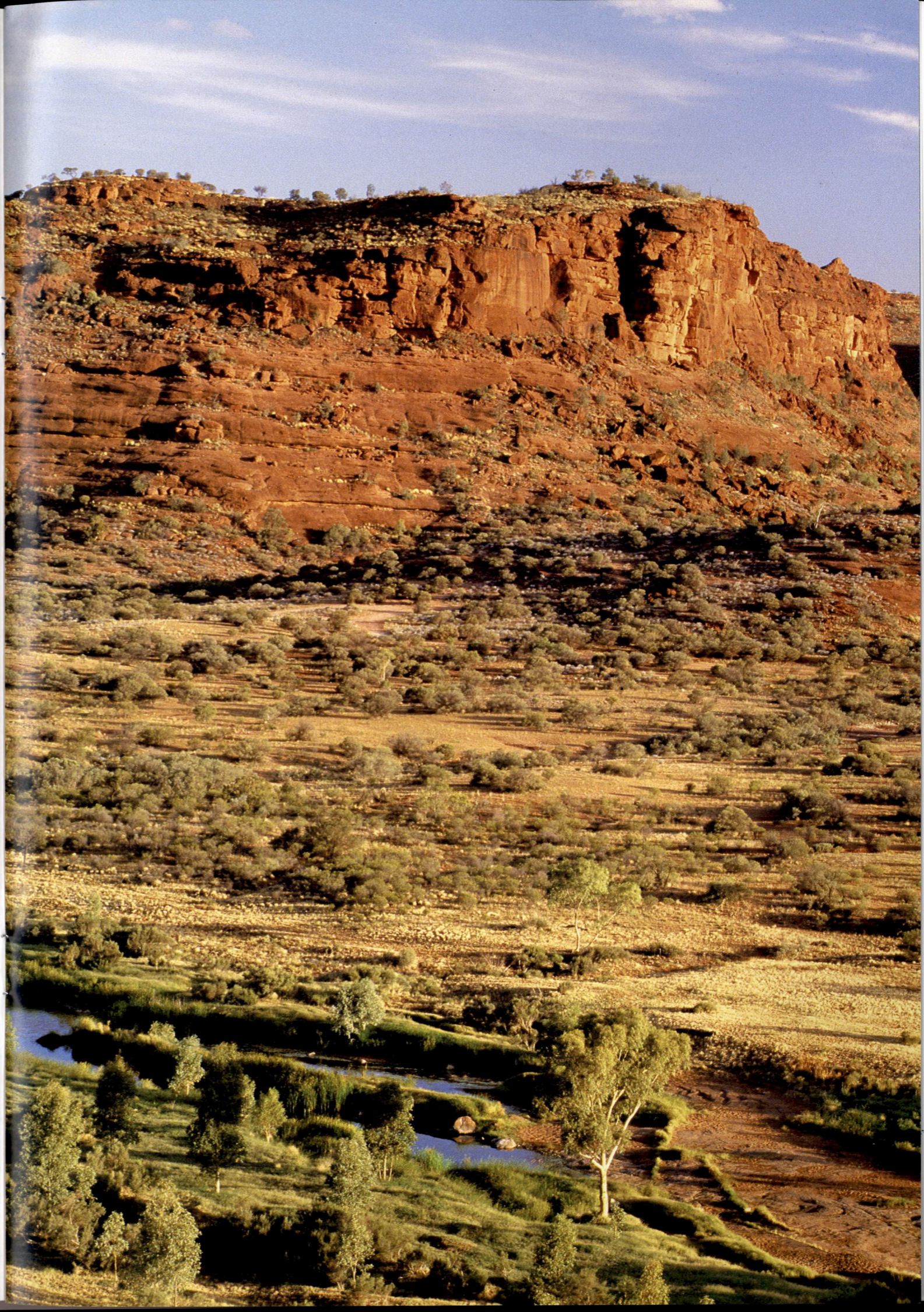
AIDC is proud to be involved with Optus in a venture that is of vital importance to Australia's industry, commerce and citizens. Reform of telecommunications is fundamental to micro-economic reform.

It is our view that the Optus proposal, when implemented, will deliver the Government's desired changes. In addition, we expect it to be an excellent investment in the longer term.

Through the AIDC Telecommunications Fund, we have established the vehicle through which a wider group of institutional investors can share in this very important venture.

ARTHUR O'SULLIVAN

Managing Director, AIDC Ltd.





**The OPTUS approach
will satisfy
Australia's present
and future
telecommunications
needs and aspirations
through the creation
of an Australian
company capable of
delivering world
competitive services.**

Comprehensive. The Optus approach is comprehensive. It covers every aspect of the Government's requirement and is compliant with the Request for Tender.

Commitment. Optus shareholders and supplier partners are totally committed to the success of the project. Substantial resources have been allocated to plan, implement and operate Australia's second telecommunications carrier.

Credibility. The Optus approach has total credibility through the strong credentials of leading Australian and international companies which constitute the consortium. Ownership credibility

is supported by the selection and involvement of reputable and reliable suppliers.

Creative. Optus will deploy the world's most advanced, highly integrated telecommunications network providing the highest quality services via a fully digital network employing the latest in optic fibre and digital wireless technologies.

Competent. The combination of Optus' financial stability, management experience and technical and operational expertise presents an organisation with outstanding competence to provide competitive telecommunications services into the next century and beyond.



Optus has responded comprehensively to the Australian Government's objectives and recognises that the keys to achieving benefits for Australians and, indeed, to its own success, are quality of telecommunication services, innovative products and superiority of customer service.

All Digital Switching. Optus will develop and build the most advanced integrated telecommunications network in the world. Because it will be planned at a single point in time, the Optus network will integrate all sub-network components, providing a fully digital, seamless end-to-end network with advanced intelligence network (AIN) facilities.

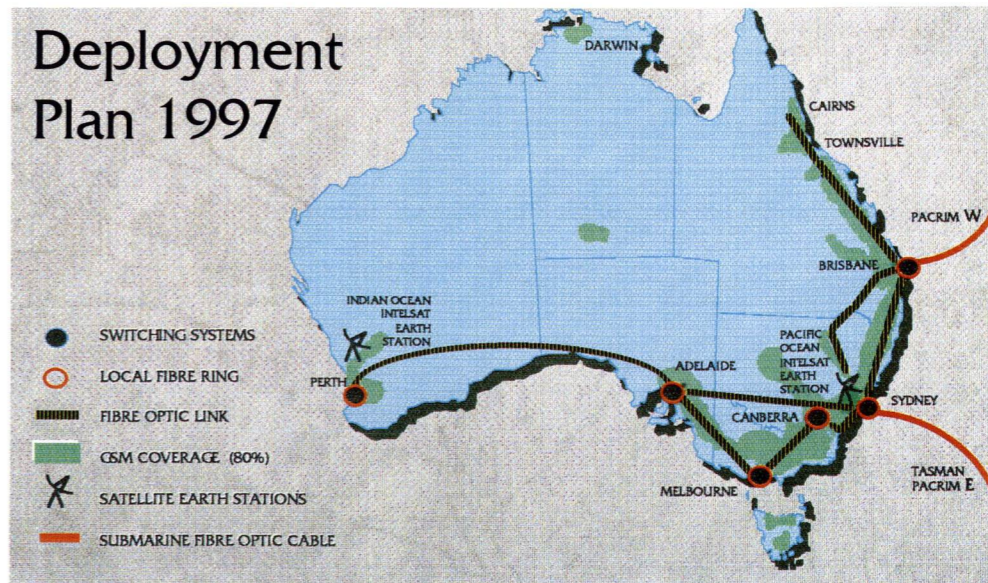
Fibre Optic Network. Optus will employ digital transmission through extensive use of fibre optics, providing the highest quality voice and data services.

Mobile and Personal Communications. Optus will introduce new digital cellular services based on the European Global System for Mobile Communication (GSM) standard in 1993. This digital system will deliver higher quality enhanced services and eliminate many of the problems associated with existing services.

Optus also plans to utilise other digital technologies including Personal Communication Services which are expected to provide an alternative to traditional local access networks in the second half of the 1990s.

The AUSSAT Connection. Optus sees AUSSAT continuing those services for which the satellites are best suited including mobile satellite, TV distribution, pay TV, remote TV and radio broadcast, data and VSAT services, aviation and defence communications.

Operational Support System (OSS). Optus will take advantage of its fully integrated digital network to develop a new generation OSS, providing a total management system for Optus and an information system for the customer. This OSS has substantial export potential for Australia.



Through the integrated features of the OSS, Optus will be able to introduce to its customers many new services which will exploit the integration of a digital network with advanced intelligence.

Advanced Services. Through its all digital network, Optus will provide a range of new features based on AIN software for business and consumers, providing a broad range of flexible services, allowing users to have facilities tailored to their requirements.

Service. Through the experience of its international and local partners, its advanced network and a real commitment to training, Optus will

provide the highest levels of service to its customers.

Availability. Optus plans to provide 45% of the population with access to its alternative domestic long distance and international network services by late 1992.

By 1997, Optus plans to have digital cellular facilities covering 80% of the population and its own fibre transmission facilities serving major centres. By this time, it is anticipated that virtually 100% of the population will be able to access Optus' alternative services.

Optus will bring superior communications to Australia.

Optus has made a public commitment that it will bring tangible benefits to Australian Industry. These benefits will arise directly through Optus' preferred supplier agreements providing for technology transfer, Australian research and development, substantial local manufacturing and the export of products and services.

Optus has developed exclusive relationships with supplier partners, progressed with plans for its network rollout and committed plans for the involvement of Australian industry.

Four Major Suppliers. Optus has four major suppliers. Digital Equipment Corporation will provide operational support systems; NorTel Australia all switching systems; Fujitsu Australia transmission equipment; and Nokia Telecommunications radio systems for the GSM digital cellular telephone network.

Each supplier is a recognised leader in its field and is established in Australia. Digital Equipment Corporation, NorTel and Fujitsu are signatories to the Federal Government's Partnerships for Development Program, having created programs for research and development, export and local content.

High Australian Content. Optus has developed key guidelines which will ensure that the average Australian content of its total capital expenditure will be over 70%.

The supplier partners have contractual commitments to Optus to achieve specified levels of Australian content, research and development and exports.

Use of Australian Industry. Australian-owned companies will be used wherever possible. As a result, Optus has facilitated the Nortel-Exicom and the Nokia-ERG Australia (ERG) strategic alliances, while Digital Equipment Corporation has formed alliances

with Computer Sciences of Australia (CSA), Computer Power Group (CPG) and others.

Australian companies Olex Cables and Leighton Contractors have been chosen as preferred suppliers to supply and install Optus fibre optic cable networks.

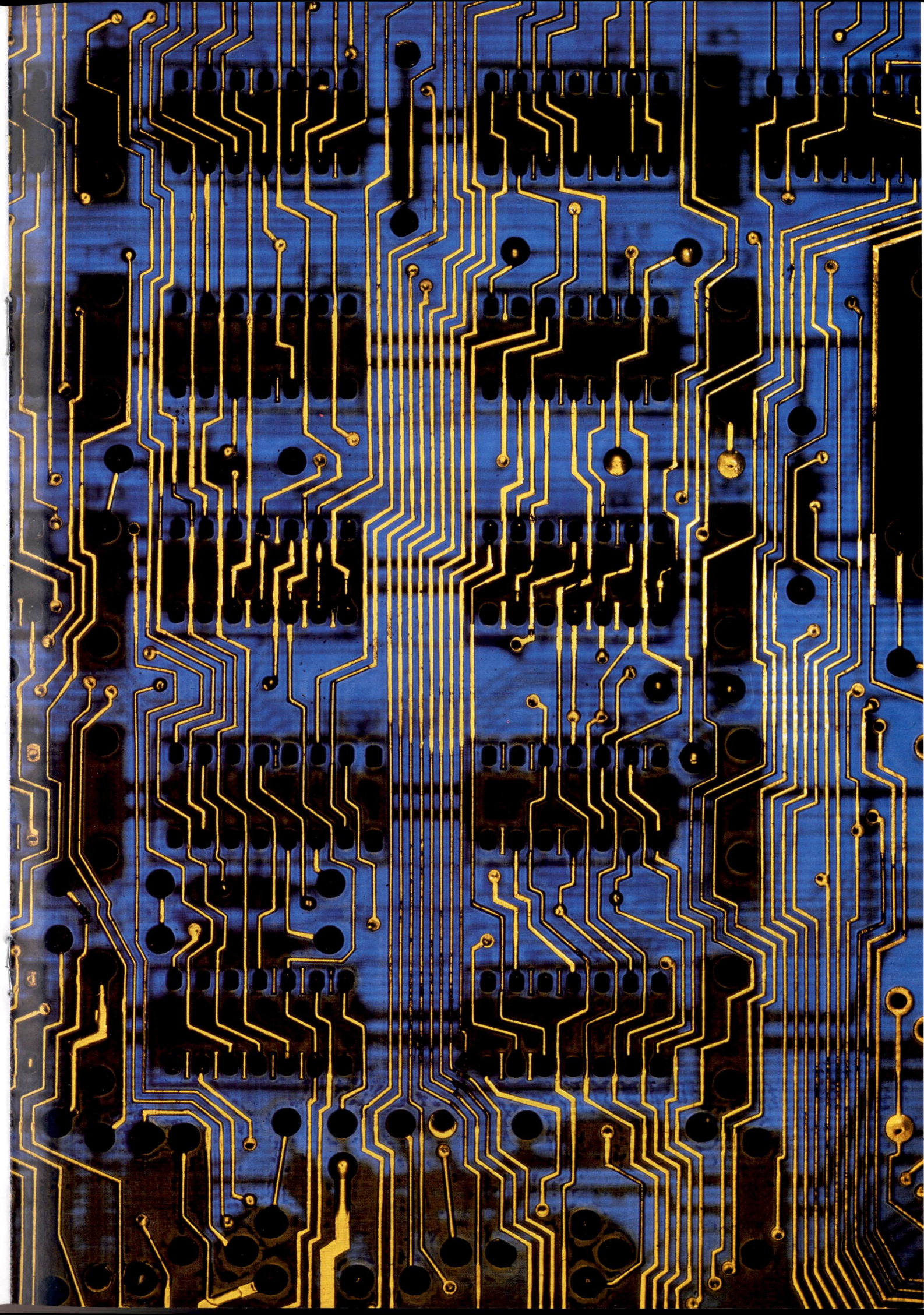
Optus supplier partners will be required to supply their respective network elements on a fully installed and commissioned, turnkey basis. The development of these skills by Australian companies will enhance the scale and range of export opportunities.

World's Most Advanced Network. The Optus network will be the most advanced in the world, providing an ideal vehicle to develop the next generation of OSS. These systems will be marketed extensively overseas principally through Digital Equipment Corporation's substantial global marketing organisation.

The Optus GSM digital cellular telephone network will provide an opportunity for Australian industry to build on the experience and capture a share of the emerging Asia-Pacific wireless telephone market.

International Relationships. Optus has established long-term relationships with international vendors. A crucial element of these relationships will be the establishment of a number of Australian-based research centres and centres of excellence.

These centres all have regional or global mandates from their parent organisations, ensuring a key role for



Australia in the development of 21st century telecommunications technologies.

Operational Support Systems. Concurrent with the development and implementation of an interim OSS, Optus and its OSS contractors will begin to define and develop the next generation fully integrated OSS. The OSS will be a modular, fully integrated, open systems solution which will include applications relating to customer service, marketing analysis, billing, service provision, network planning, operations and management, customer access and management support functions.

Research and Development. Digital Equipment Corporation plans to establish a global OSS Support and Development Centre in Australia.

Northern Telecom, the international parent of NorTel, plans to establish a Bell Northern Research laboratory at Wollongong University with responsibility for R&D into advanced personal communications and wireless/fixed network integration as well as advanced intelligent network systems. Australia will become the regional "test bed" and provide support services for GSM technologies used elsewhere in the region and NorTel will work closely with Exicom in the manufacture and marketing of these technologies.

Fujitsu plans to establish Australia as its fourth international Centre of Excellence, specialising in the manufacture, research and development, and export of advanced transmission systems.

Optus' Australian network will be one of the first in the world to install fibre optic rings for local access enabling a full end-to-end digital service. Fujitsu's centre will play a



key role as telecommunications companies in other nations adopt this advanced transmission technology.

Nokia Telecommunications plans to establish a centre for research into indoor cordless and micro-cellular telecommunications systems. Nokia is also working closely with the Western Australian firm ERG Australia on the manufacture of GSM cellular base stations. This relationship involves a substantial transfer of technology to Australia.

New developments in software engineering and hardware platforms, coupled with the emergence of real, believable international standards, make this major research and development effort not only a realistic goal, but essential to the success of every major 21st century telecommunications company.

By taking advantage of the opportunity provided by Optus to develop some of these new technologies before they can be deployed anywhere else in the world, Australia can achieve a leadership position in the global telecommunications market.

Optus and its supplier partners plan to invest more than \$400 million in research and development projects to meet identified needs in telecommunications.

Technology Transfer. Implementation of the Optus network requires substantial collaborative research and development between international vendors and local suppliers.

Optus and leading Australian companies will be directly involved in these activities. The transfer of technology resulting from this process will be a vital asset for Australia.

Optus has ensured that arrangements regarding intellectual property developed through the project will maximise the benefits to Australia.

TRAINING: KEY TO SUCCESS

A heritage that Optus acquires from its partners is the knowledge that training is key to success. Training is already part of the Optus corporate culture.



Optus Training Program. Optus and its supplier-partners will establish an Optus training program at an initial cost of \$15 million. Optus will provide a range of administrative, technical, sales, information technology and management courses to employees of Optus, its supplier partners and customers.

Optus plans to establish this program in 1992, which will be a co-operative educational venture with active participation from universities, TAFEs,

vendors and private providers as well as Optus' internal training resources.

Training Services Export. Optus is committed to marketing its training services domestically and internationally, as Australia clearly has a track record of success in export of education services within the region.

Optus forecasts multi-million dollar education exports by the time the telecommunications duopoly ends in 1997.

Each of Optus' supplier partners has pledged enthusiastic support for the establishment of the program which will be able to count on the back-up of the world's leading companies in areas such as switching, transmission, digital radio access systems and information technology.

Optus believes it will achieve a better and more competitive telecommunications service through continual investment in education and training. The company has developed a detailed strategy to provide its workforce with the professional and technical skills necessary to develop, extend and maintain the Optus network and market a full range of services.

VALUABLE EXPORT MARKETS

Optus recognises the role the second carrier can play in improving Australia's trade balance in telecommunications and information technology and services.

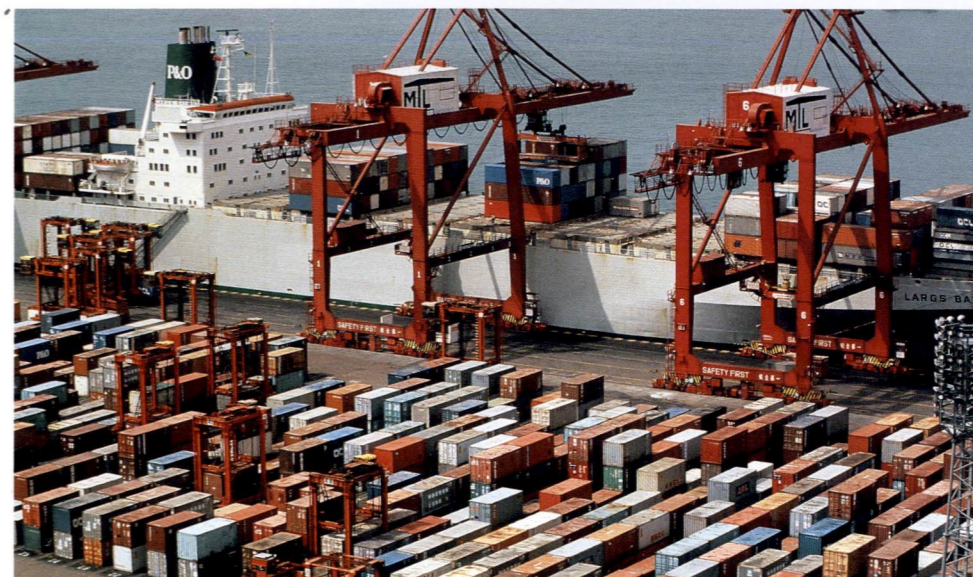
\$1 billion in Exports. Optus forecasts that overseas earnings of over \$350 million will be generated by Optus and its supplier partners during the first five years of operations and \$1 billion over the first 10 years. Optus and its partners aim to become net exporters before the end of the duopoly period.

These figures do not include those which Optus suppliers are already committed to under the Partnership for Development Program.

Outwardly Focused. The technology and intellectual property developed by Optus and

its supplier partners will have significant application in international markets. Optus, its international telecommunications partners and supplier partners will remain outwardly focused with an export-oriented view of the global marketplace.

A Range of Goods and Services. Exports will include switching and transmission technologies, network planning skills, satellite consulting, digital radio technologies, OSS products and services, project management skills and systems integration expertise.





Nokia Telecommunications Pty Ltd is delighted to have been selected by Optus Communications as one of its preferred suppliers. Nokia is committed to meeting Optus' rollout plan with respect to the provision of GSM digital cellular infrastructure and other associated equipment required by Optus.

Nokia is also committed to its Australian industry development plans relating to local technology transfer of second generation base stations to ERG Australia Ltd., to research and development with respect to tropicalised base stations and enhanced indoor coverage for cellular access services, and to re-export of the products manufactured and developed in Australia for the South East Asian and Middle East markets.

Sari Baldauf, President, Nokia Cellular Systems



ERG Australia Ltd welcomes the opportunity to be able to participate in Optus Communications' exciting plans to establish a new telecommunications carrier in Australia. Through recommendation from BellSouth, prior to the formation of Optus, ERG approached Nokia Telecommunications to negotiate a technology transfer for Nokia's world class GSM equipment. A strategic alliance has now been formed between Nokia and ERG which will see ERG, as a wholly Australian owned company, playing a vital role in equipment supply to Optus.

ERG is conscious of the Optus industry development policy which includes export of Australian manufactured products and a commitment to R&D program which will create further local and export opportunities for Australian industry.

The alliance with Nokia and committed supply to Optus will enable ERG to establish a world class manufacturing facility. This will provide a boost for local employment and support industries over an extended period. It will also enable ERG to achieve a critical mass which should open new opportunities in the rapidly growing telecommunications industry. The Optus commitment to local industry has already enabled ERG to establish its alliance with Nokia and we are proud to be part of this exciting venture.

Peter J Fogarty, Executive Chairman, ERG Australia Ltd.



Computer Sciences of Australia is am pleased to confirm our commitment to the Commonwealth Government's Second Carrier Project. CSA is proud to join with the Australian-owned Optus consortium and other team members in bidding for this program which will provide Australia with advanced telecommunications services into the 21st century.

As Australia's leading systems and software house, CSA's role will be to provide systems integration and software development services. We will supply a strong and capable team with a history of success in nationally important projects and devote the necessary technical, management and corporate resources to ensure the project's success. Beyond the direct benefits of involvement, we see major opportunities for the technology and intellectual property developed through this program which have relevance to many other carriers throughout the world. Export will be a key follow-on benefit.

I can assure you of my personal interest and that of CSA's Board of Directors and CSA's owners, the AMP Society, in this project which is of vital importance to Australian industry, the Australian public and Australia's future.

Peter Rehn, General Manager, Computer Sciences of Australia



Exicom. I am pleased to define the scope of our planned activities which, with those of our strategic partner NorTel Australia Pty Limited, will support the Optus implementation plan. These activities contribute directly to the network rollout program and form key elements of the Optus industry development initiative. To enable NorTel to meet its commitment to Optus as the major switch supplier, Exicom is developing an advanced local manufacturing capability at Villawood, NSW. This facility is being established with NorTel's direct assistance and will provide an increasing proportion of NorTel switching and terminal production requirement. In addition to these joint activities with NorTel, Exicom also provides Optus with an established capability to develop, manufacture or acquire particular elements of the network infrastructure, not provided by prime suppliers. Exicom will continue to consolidate its capabilities for the local development, manufacture and support of telecommunications products. This will not only meet the particular needs of NorTel and Optus, but will also enhance Exicom's competitive position and drive into export markets.

Peter Crawford, Executive General Manager, Exicom Limited



NorTel Australia is proud to work with Optus in the construction of a new Australian telecommunications network. NorTel will supply, install and commission all the exchange switching equipment for the Optus fixed and GSM digital cellular networks. NorTel is committed to meet Optus' network deployment schedule. We have also committed to a set of industry development initiatives building our Australian skills and capabilities, and those of our Australian Alliance partner. Our Strategic Alliance partner, Exicom Limited, will manufacture DMS switch components and ISDN terminals, and undertake jointly with NorTel, a range of product development and export initiatives. NorTel will extend our Australia R&D activities through collaborative R&D with Optus, and upgrade the role of the NorTel Technology Centre at the University of Wollongong. The Centre will now undertake programs for global application under the technical guidance of Bell Northern Research. NorTel will capitalize on Australia's leading edge technologies to build exports and will strengthen exports from our existing Centres of Excellence in packet networking and ISDN/intelligent networks. We will build a new Centre of Excellence in GSM digital cellular technologies positioning Australia to capture a significant share of this dynamic market in the Asia-Pacific region. NorTel now has management responsibility for ASEAN as well as Australasian markets and I am confident we can exploit Australia's position of technology leadership to strengthen Australia's exports to the South Pacific region.

John Kranenburg, Managing Director, NorTel Australia Pty Ltd



Computer Power Group (CPG) supports Optus' bid and the strategy proposed for Australian industry participation. CPG continues to provide senior management and consulting staff to the bid team to assist with the rollout plan.

Members of this team are working with Digital Equipment Corporation as the prime contractor in the design and development of a new integrated Operational Support System suitable for all users and with potential for export.

CPG has the expertise and broad experience to provide a comprehensive range of key services to Optus.

CPG acknowledges the broad scope of the redevelopment task and the range of opportunities this provides for Australian industry and the preferred sub-contractors to Optus.

Roger Allen, Chairman, Computer Power Group Limited



Leighton Contractors wish to confirm our commitment to Optus that the full resources of this company will be behind our bid for the components of the second carrier network for which we would be responsible under our agreed supplier deed.

We are pleased to be a part of the team putting forward this submission and look forward to the ongoing success of this established relationship.

Keith Bennett, Managing Director, Leighton Contractors Pty Ltd



Fujitsu wishes to emphasise the importance we place on our strategic supplier partnership with Optus. Fujitsu is committed to realising our common objective of creating the most advanced telecommunications network in the world.

Perhaps the most significant aspect of our relationship will be the contribution it will make to Australian industry development and to exports. The activities we will undertake as part of our business with Optus will make a major contribution to Fujitsu's Partnership for Development commitments.

Fujitsu Australia Ltd has been given the mandate by its parent to become the fourth Fujitsu Centre for Excellence for the marketing, R&D and manufacturing of transmission systems. This is significant for the establishment of high technology and high quality manufacturing and the achievement of export-oriented R&D and manufacturing. We are also planning to invest a further \$9 million in our manufacturing facility at Dandenong to introduce new production facilities for the supply of equipment to Optus and to export markets. We will invest further in indigenous Australian manufacturing companies in the areas of the transfer of technology and skills.

Fujitsu will also undertake an extensive R&D program which will include both proprietary and collaborative R&D, with the latter being undertaken in conjunction with Optus and its other supplier partners.

Neville Roach, Managing Director, Fujitsu Australia Ltd.



Digital Equipment Corporation's resources worldwide are committed to the success of the Optus bid for the second telecommunications carrier opportunity. We look forward to working with Optus and our sub-contractors to deliver leading edge operational support systems (OSS).

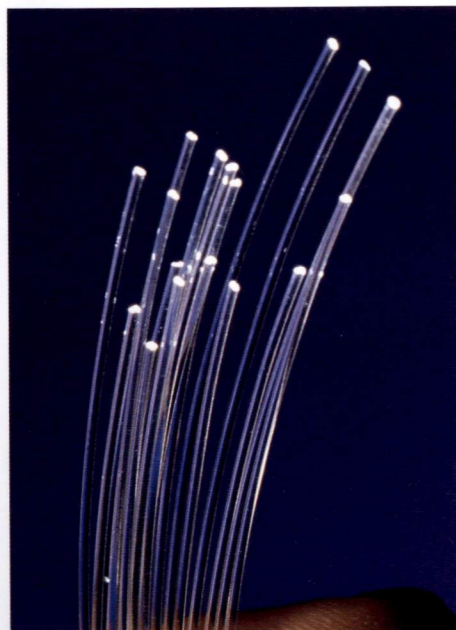
We are proud to have been selected as Optus' prime contractor for OSS phase I and II and believe we can help create not only world-class telecommunications for Australia, but make a significant contribution to the country's export potential through the development of unique technology. The project offers both challenge and opportunity not only for the participants, but for Australia at large. Digital, locally and corporately, is honoured to be able to play its role.

Ron Larkin, Managing Director, Digital Equipment Corporation

In an undertaking of this size and complexity there is always a small number of critical success factors...

...A Unified and Purposeful Organisation. The organisation chosen to develop the second network must have a foundation of ownership, interest and expertise upon which the Government can rely. Coupled with this, partners must have a reputation for delivering the services they promise and for completing long term projects on time. Shareholders and suppliers must have common goals for the development of the second network and for the role which the carrier can play in the international marketplace.

The organisation must have balanced interests supplying the financial stability, technical excellence



and managerial competence vital to the success of this major development project.

Committed Team of Participants. The participants in the Second Carrier project need to be leaders in their field with the resources, depth of knowledge and extensive experience that enables them to complete major projects on time. They also need to be committed to international business.

Well Developed Implementation Plan. The organisation must be ready to begin construction immediately the Government's decision is announced and have a detailed network design providing critical paths for the early transition from leased capacity to its own substantial network.

Resources and Technology to Provide Effective Competition. The Second Carrier must provide a genuine alternative network using the best technology available. Advanced technology will enable the Second Carrier to install a fibre optic network that will offer high quality services to customers. It will also enable the Second Carrier to be a highly competitive, cost-effective organisation.

Any organisation that is unable, unambiguously, to demonstrate in advance that it satisfies every one of these criteria must be judged unqualified to be entrusted with the responsibility of such a major endeavour.

The Optus proposal offers substantial benefits to Australia.

Commitment to Australian Ownership. The Optus ownership structure comprises Australia's most credible, substantial and financially sound companies committed to the project from the beginning.

Early Competition. Optus' extensive planning and development will lead to rapid network deployment, resulting in early, across-the-board benefits from competition.

Mature Plans. Optus has detailed implementation plans including extensive network design and established relationships with suppliers. Optus' early planning will ensure the success of the project.

Lower Prices. All Australians will gain substantially from the Optus plans. Through competition, prices for domestic and international long distance and business network services are expected to drop 40 per cent in real terms over the first 5 years of operation and 60 per cent over 10 years.

Australian Ownership of Intellectual Property. Australians will have significant ownership of new intellectual property and technology developed as a result of this opportunity.

Exports. Optus and suppliers participating in its industry agreements plans to generate exports of over \$1 billion by the year 2000.

Employment. Development of the Optus network will create up to 10,000 direct and indirect jobs over the first five years.

Assured Success. Australian ownership, financial strength, a reputation for completing long term projects, technical leadership, managerial competence, quality of service, an international perspective and Australian industry development are all key factors in the Optus plan.



GETTING IT RIGHT FOR AUSTRALIA

GETTING IT RIGHT FOR AUSTRALIA

**Optus is
the right
choice as
the
second
carrier
because
it is...**

...**Getting it right for Australia** by retaining fully committed, majority Australian ownership in Australia's telecommunications infrastructure.

Getting it right for Australia in terms of investment - one of the largest fast tracked capital development projects in the nation's history.

Getting it right for Australia in terms of telecommunications competition - with all that entails in employment, research and development,

technology transfer, exports and rapid entry into the communications world of the next century.

Getting it right for Australia through new services, higher quality and price reductions in real terms for telecommunications users.

Getting it right for Australia through the development of our telecommunications manufacturing and services industry whereby technology developed here will have real potential to improve our balance of trade.



OPTUS
communications

The Power of Choice

THE OPTUS PROPOSAL

THE OPTUS PROPOSAL

Key Elements :

- Rapid rollout
- Partnership with suppliers
- Skills and experience of foreign partners
- Australian ownership
- Consumer and price benefits



OPTUS
communications

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