
11. INDEPENDENT MARKET RESEARCH REPORTS (Cont')

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1.2 RESEARCH METHODOLOGY

- Desk Research

To achieve the objectives of the study, DTTMS have conducted significant desk research to gather relevant materials and statistics data from various sources as follows:

- Deloitte Touche Tohmatsu International offices
- Publications (newspapers, magazines, technology journals, internet websites, etc.)
- Private research companies and organisations
- Trade associations
- Primary research

The information gathered, provides a focused understanding of the potential new and extended services identified in the IT and telecommunications industries, into which the EDARAN Group is intending to market. The focus also includes observations on associated market trends and environmental issues.

- Extent of Research Accumulated

During the study, huge volumes of research materials were accumulated. For the purposes of report readability, we have incorporated only a cross-section of specific graphs and data within associated text as substantiating information.

The overall impact of the total research has guided our provision of specific views and recommendations however.

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1. APPRAISAL OF EDARAN GROUP BUSINESS BASE IN THE NEW ECONOMY

2.1 The EDARAN Group

The three companies comprising the EDARAN Group are considered well positioned in the IT and telecommunications industry based on more than 10 years involvement in system integration and development as well as the supply of telecommunication and data equipment. It can be further stated that they are considered uniquely positioned to optimize their 'convergence' industry expertise and to leverage this in 'new economy' technology markets.

2.2 The EDARAN Group Business Base - vis a vis 'new economy' technologies

Today, almost all companies have expanded or are strategising development of their distribution channels to offer products and services via the internet. However, as business continues to develop, the next technical challenge has emerged in the form of mobile electronic commerce, utilising the access mechanism of a wireless phone or terminal rather than desktop devices over a fixed telephone network. In Malaysia, mobile phone penetration is significantly higher than personal computer usage (i.e. about 3.5 mobile phone users for every connected personal computer: [source May 17, 2000 - The Star]). This environment is seen as highly supportive for m-commerce, providing new channels, information, access and services via mobile devices. m-commerce is expected to further stimulate 'customer pull' for technology services and the ways in which such services are rendered.

The impacts of e-commerce and m-commerce are significant to the EDARAN Group especially since both phenomena are still in an early stage of development in Malaysia. The potential for growth is very high. In line with these issues, the EDARAN Group is considered well placed to ride the new wave and is currently strategically positioned to optimise its IT and telecommunications industry track record and know-how in what has become a 'converged' market place. As customers in the new economy call for new technology and expert guidance, the EDARAN Group is considered as moving in the right direction, building on core capabilities and further expanding its technology expertise to address these adjuncts to its core business.

Of key significance for the EDARAN Group is that its current customer base is considered at the 'heartland' of organisations that will wish to migrate fully to e-commerce or m-commerce systems and solutions. In this respect, a ready market exists already.

Whereas the EDARAN Group has the potential and capabilities to offer new services as a 'network operator', it has strategically selected to enhance its current core businesses, updating its services portfolio with 'new economy' technology in support of its customers' service requirements.

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A study conducted by Forrester Research Inc. in the U.S. predicts: that most Asian, South American and Western European nations will reach a state of electronic-commerce "hypergrowth" within the next four years, transforming the internet into a fully global business engine. Forrester estimates that: global e-commerce, including both business-to-business (B2B) and business-to-consumer (B2C), will reach USD6.9 trillion by 2004, up from a projected USD655.8 billion in 2000. It is also stated that about 46% of the e-commerce market will be represented by the U.S.

According to the Forrester report, growth in Western Europe has already commenced with most nations entering "hypergrowth" in 2001. Asia Pacific nations are expected to reach hypergrowth in 2002, with most attaining that point in 2003.

e-Commerce 'hypergrowth' will beneficially impact on the provision of services by specialist IT/telecommunications organisations such as the EDARAN Group as customers clamour for new economy/new technology solutions at a pace which the EDARAN Group can strategise to accommodate and grow with.

3.1.2 Impact of Malaysian uptake of Internet usage.

Malaysian internet usage is expected to grow to about 1.9 million subscribers in year 2000 and continue to grow to almost 4 million by year 2004. Internet revenue is expected to grow from about RM800 million in year 2000 to about RM1.9 billion in year 2001 and increase to RM3.8 billion and RM7.6 billion in year 2002 and 2003 respectively (source: IT Malaysia, May 2000). According to IDC (IT Malaysia May 2000 issue), internet devices revenue is expected to grow from about RM3 billion in year 1999 gradually increasing to about RM7 billion in year 2002. Internet commerce revenue is also expected to grow dramatically from about RM400 million in year 1999/2000 to about RM3.8 billion by the end of year 2002. IDC projects the growth in internet commerce in Malaysia to grow sharply to the year 2004 reaching about RM13 billion in revenue.

As internet-oriented business continues to grow, m-commerce will further accelerate that growth. The development of m-commerce is seen as supplemental to the use of personal computers. Size, content and mobility enabling users access to more timely information across a range of new applications. It has been reported that Malaysia is among the first ten countries in the Asia Pacific region to carry out trial services.

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As internet oriented business grows, the impact on systems will be felt in terms of new large e-economy applications development, technology device provision (particularly communications) and downstream maintenance and support.

The projected growth of internet usage and its associated product/services sets bode well for the EDARAN Group's continued success in the systems integration, trading and maintenance businesses; enabling it to capitalise not only on its convergence industry capabilities but also its current customer base and technology 'partners' offerings.

3.1.3 The impact of convergence

Convergence is the term applied to describe the merging/consolidation of information technology and telecommunications infrastructure. Terms such as 'the network is the computer' are now common. Previously defined hand-held portable devices such as wireless phones and palm pilots are now 'mobile terminal devices'. Wireless technology removes dependence on the physical connectivity of users to processing computers. In addition, convergence, optimising the Internet, provides 'any to any' global connectivity.

This converged environment favours 'new-tech' niche vendors, telephone companies, ISPs, telecommunication vendors and IT services companies/systems integrators. It particularly favours organisations who have already obtained recognition and installed bases in multiple parts of the converged spectrum. EDARAN Group is perceived as having significant differentiation and opportunity as a vendor of multiple components in both the IT and telecommunications domains. As such, the EDARAN Group can be characterised as potentially an 'early market mover' with significant opportunity to leverage its converged hybridisation.

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To optimise industry and technology growth impacts, the EDARAN Group has identified several types of new and extended IT and telecommunications related business areas to complement its current core strategic offerings. The services identified are as follows:

- ♦ *Professional Services*
 - Application Service Provision (ASP)
 - Call Center Provider/Services (To enhance maintenance and support operations with its customer base)
 - Enhanced Maintenance Services
 - Enhanced Systems Integration
 - Network Outsourcing (Managed Network Services [MNS])
 - Outsourcing and Facilities Management (FM)

- ♦ *Communications Based Services*
 - Virtual Private Network (VPN) based services environment (establishing support services for customers wishing to enter the VPN domain)
 - Wireless Application Protocol (WAP) based services environment (extending current systems integration services to cater for WAP-based customer requested applications)
 - Voice over Internet Protocol (VOIP) services
 - Enhanced 'Last Mile' operations

It is considered that the execution of the EDARAN Group's new strategic approach to its markets is well timed to optimise both market pull and also the opportunity to establish 'early entry' and potential market prominence in the evolving technology converged environment.

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The EDARAN Group has the benefit of a significant customer base of systems integration and software development users. As customers seek to reduce costs, optimise network facilities and remove the complexity of software implementation and maintenance, an ASP service becomes very viable. The EDARAN Group also have the benefit of existing long-term software vendor relationships which can be leveraged.

ASP, put simply, is a network oriented service that provides for remote-hosted business applications software. Applications range from the hosting of simple applications such as groupware, office applications and e-mail, through to more advanced solutions such as Enterprise Resource Planning (ERP) and e-commerce.

Although applications are accessible to enterprises from original software vendors, the costs of hiring and retaining in-house IT professionals are high and enterprises are forced to balance the trade-offs between deploying enterprise-wide systems and incurring significant up-front capital investment and on-going expenses to instal and manage their systems. Today, several trends have developed in business and technology which result in enterprises no longer being prepared to make such trade-offs. Amongst the trends are:

- ◆ A dramatic increase in available bandwidth, making it possible to share not just small amounts of data over a network, but entire applications on a global internet via centralized web-based architecture.
- ◆ Software vendors focusing their development efforts to adapt applications to a centralized web-based environment and hosting applications from a central location delivered to remote sites. This web-based environment can drastically reduce the need for enterprises to procure their own costly network infrastructure.
- ◆ Alleviation of the need for enterprises to manage their own applications, isolated from the pressures and costs of hiring already scarce IT professionals.

Business environments and models are undergoing a dynamic evolution and will continue to do so as information technology increasingly becomes even more critical to business success. The rapid changes in technology coupled with a shortage of IT professionals have outpaced business dynamics and enterprises are finding it increasingly difficult to keep up with technology. As such, enterprises are forced to re-evaluate how much of their resource can be used for IT, causing them to consider outsourcing all or a portion of their IT department, including the management of mission critical applications.

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Applications outsourcing (AO) is regarded as one of the most exciting opportunities within the IT services market, and is the fastest growing major segment within the overall market. According to IDC, the global AO market is expected to reach USD16.2 billion in 2003, rising from USD7 billion in 1998. AO involves the contractual service for deploying, managing and enhancing a packaged or proprietary software application. This service is handed to an outside provider that guarantees application performance, availability and enhancement.

Based on the survey data above, IDC expects the global market for outsourced Enterprise Resource Management Software (ERM), Customer Relationship Management Software (CRM) and high-end e-commerce applications to reach USD 2 billion by 2003, rising more than 91% annually from approximately USD 150 million in 1999. Other ASP solutions that support mid or low-end e-commerce applications, as well as any collaborative or personal productivity applications, have not been included in the projections and C.E. Unterberg, Towbin has roughly estimated that the market of these other types of services are at least the size of the enterprise ASP market, though no official projections have been published.

Forrester Research predicts that the market for all outsourced applications (which included email, data marts and decision support solutions) will grow to USD6 billion by 2001, with front-office application outsourcing mushrooming at 54% CAGR.

ASP in Malaysia

According to IDC, two in three IT professionals in small and medium size enterprises have no notion as to what an ASP is, and another 13 in a hundred cannot fully comprehend it. In aggregate, therefore, eight out of ten IT staff working in companies, defined as those with 50 to 500 employees, have little understanding of the functions of an ASP. However, these statistics are not considered indicative of barriers or obstacles to the marketscape of ASP in Malaysia. On the contrary, IDC reported that these companies are most susceptible to using an ASP. Two thirds of the 200 companies sampled have only one to five MIS staff. For companies in Malaysia, an ASP model seems ideal because MIS staff are relatively more expensive, hard to find, and harder to keep. Furthermore, companies wish to minimise IT spending, 82% of which currently goes to hardware and software.

Prognosis: A high growth area for existing software vendors/developers and a logical 'fit' with outsourcing activities. Attractive market segment for the EDARAN Group, allowing it to optimise its knowledge and capabilities in software development and integration and in particular, the longevity of relationships with 'typical' likely users of ASP services.

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The EDARAN Group considers that there is a beneficial impact of introducing call center facilities as an enhancement to their own customer interactions and maintenance services. As such they can subsequently provide wider services to integrate their call center operations with an outsourcing operation. Additionally they can offer consulting and training services to customers wishing to build their own call center facilities.

The move toward web-enabled call centers is being fueled by two primary benefits:

- a web-enabled call center will help retain customers who otherwise might abandon a transaction because of lack of information or privacy concerns. With a web-enabled call center, an organisation can immediately know if a customer is walking away satisfied. Studies have shown that an estimated 70% of customers go out of their way to buy products from a company that has a reputation for proactively contacting its customers.
- web-enabled call centers have a demonstrable impact on the bottom line. A study conducted by Boston Consulting Group and Shop.org (the association of online retailers) showed a 270% growth in the number of orders placed online, with e-retailers enjoying a 300% growth in revenue. To enhance customer service and positively impact on the bottom line, a growing number of e-retailers are shifting focus from sales to customer service.

Considering three key areas of the market; *consulting, systems integration and outsourcing*, these areas of call center service in particular have experienced dramatic growth in recent years as more and more companies organize their operations in a customer-centric manner. As companies upgrade or expand their call centers to include newer and more sophisticated technology, they increasingly turn to providers of dedicated professional services for guidance and assistance. Outsourcing providers also face increased market pressure to provide enhanced services that offer clients more than just call-handling capabilities. The result is that these three service categories are leading the services curve in terms of demand and opportunity.

Based on the above findings, call centers fulfil a wide scope of uses and there is demonstrated potential for this services-set to grow.

- Call center operation overall is a growth oriented domain
- There is apparent significant 'customer pull'
- Call center operations have become a significant component of any service in the professional service arena, particularly outsourcing.

Prognosis: A high growth opportunity to either employ as part of enhanced maintenance services and improved customer relationships or to sell/service particularly in the systems integration and consulting sense. Perceived logical fit for the EDARAN Group as an extension to their existing customer maintenance services. Subsequently, an attractive segment for cultivation of specific services to the wider market. The EDARAN Group's customer base in its own right is also likely to request services in support of enhancing customer facing applications.

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Enhanced Maintenance Services

The EDARAN Group has grown their maintenance service base by continuing to develop more systems application and integration business and thereby inheriting an increased demand for support services. They are currently strategising to further enhance maintenance revenues in terms of renewed focus on total end-to-end solutions for large customers, full outsourcing and the creation of a larger scale field force operation through sub-contract and franchised maintenance agreements.

As an 'under-pinning' determinant for maintenance is the level of systems work purchased, there is every reason to expect increased revenues purely based on achieving growth in the systems integration market. With independent research indicating a median of 14.9% CAGR through the period 1997 to 2000 (IDC Research 1999), systems integration and associated maintenance is an attractive proposition.

International research shows substantially higher expectations for communications based hardware maintenance across the same period (up to 40% for some network devices). Thus an emphasis on working in the 'converged' market has additional value. There is evidence in the market that multi-national hardware vendors will continue to consider outsourcing their logistics and support functions to organizations like the EDARAN Group.

Augmenting an existing base of maintenance/support operations with agreements to perform maintenance services for third parties (also based on forecasted growth) is likely to further consolidate revenues - possibly to the extent that the subcontracting of an additional niche and regional field-force becomes essential.

Prognosis: Irrespective of price reductions in systems, the median annual maintenance fee is generally in the range of 10-15% of initial purchase price. If the EDARAN Group consolidates their maintenance functions and thereby achieve economies it is highly likely that this aspect of their core business will continue to contribute exceptionally profitably.

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Enhanced Systems Integration (SI)

The EDARAN Group's previous track record is based on success in the area of systems integration. Their elected strategic way forward is to enhance and extend the Group's activities around this core business element accommodating customer demand for 'new economy'/e-Business systems development.

Based on IDC Research; the worldwide systems integration services market continued its moderate to high growth at 11.2% in 1998 to reach a total market size of RM49 billion. It is projected that by 2003, the total market size will swell to RM90 billion, with the US accounting for the largest share of the worldwide market, 44.7% in 2003.

Based on research conducted by IDC in 1999, the trend for SI growth in the Asia Pacific region bodes well. Among the major signals are:

- ▶ Countries in the region are looking to high technology as the means of restructuring their national industrial bases and enabling them to be competitive in world markets.
- ▶ Government, the main driver of IT growth in many countries, understands the need to use IT strategically. Often it takes the lead in implementing large integration projects.
- ▶ Growing demand for networking infrastructure, (such as LANs/WANs, internet/intranet).

Major drivers of the systems integration market in Malaysia are as follows:

- ◆ Government spending - the force behind spending in IT services driven by government in its efforts to transform Malaysia's economy. As the seven "flagship applications" become a reality, it beneficially impacts systems integration between other private or semi-private agencies. Post-offices, banks, hospitals and educational institutions will need to integrate new systems in order to realize the benefits of a new application infrastructure. The seven flagship applications created from the Multimedia Super Corridor (MSC) initiative being the focal point for budgeted investments. The seven flagship applications being:
 - ▶ Electronic Government
 - ▶ Smart Schools
 - ▶ Telemedicine
 - ▶ R&D Clusters
 - ▶ National Multipurpose Card (MPC)
 - ▶ Borderless Marketing
 - ▶ World Wide Manufacturing Webs

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- ◆ Banking reforms – Banking reforms will generate further systems integration requirement in the financial services industry as 21 banks merge into 10.
- ◆ e-commerce – e-commerce is the next significant driver for growth in services. Systems integration across the national internet payment gateway will generate revenue as well as integration with e-commerce functionality to traditional back-end financial accounting and supply chain management functions.
- ◆ More strategic use of IT – When companies regard IT from a competitive standpoint rather than as a supportive function, systems integration becomes the 'glue' that 'cements' all the elements.

Prognosis: Highly attractive market segment with continued growth prospects, size and scale of opportunities will likely encourage further entrants into the market space. Systems integration is the mainstay of IT company growth very likely to expand further to accommodate market pull for e-Business transformations. IT and telecommunications industry developments continue to spawn new opportunities for a very wide range of new applications. None more so than the large scale and public sector clients of the EDARAN Group. Complexities arising from convergence and the scale of IT/telecommunications integration also bode well for anticipated profitable growth for the EDARAN Group in what has been a mainstay core business activity.

Outsourcing

As a systems integrator for large-scale projects in major organisations, the EDARAN Group has strategically focused to leverage existing customer relationships and knowledge to offer full management of client IT facilities. Customer access to scarce resources, renewed interest in cost-cutting and focus on core business are all drivers which assist the EDARAN Group in their endeavours. By linking FM options with outsourcing, EDARAN can address the widest possible spectrum of opportunities, either assuming financial ownership of the customers technology assets or by simply managing them.

(i) Network Outsourcing

With direct involvement in both networked IT and the telecommunications industry per se, the EDARAN Group sees a significant opportunity to offer a network outsourcing solution to clients. This strategically links to standard IT outsourcing solutions, which are also a strategic focus.

IDC estimates that: the Asia Pacific market for network operations outsourcing services was approximately RM145 million in 1997 and will increase to approximately RM283 million by 2002, displaying a compound annual growth rate (CAGR) of 14.2% in the region over this period.

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Overall, the trends that are fueling the robust growth in several IT outsourcing related services segments (eg., applications outsourcing, desktop outsourcing and help desk outsourcing) are being felt full-force in the network operational services space. As human resources become more costly to attract and retain, organizations are finding it easy to make the financial case for shifting responsibility for the network's functionality to a third party.

All of the above factors have increased the acceptance by many firms of the growing "culture of outsourcing" that has prompted organizations to turn over part or all of the responsibility for their network functionality to an outside provider.

IDC believes that organizations, faced with the need to remain competitive in the global marketplace (in which information technology continues to be a key competitive differentiator) as well as accommodating rapidly evolving market demands will increase their spending on network operations outsourcing services.

Prognosis: A very significant market opportunity particularly for services organizations familiar with telecommunications and network products and services provision. Network outsourcing also enables the EDARAN Group to commence operations in web-hosting, call center activity, VPN facilities and other telecommunications based consulting and hardware provision services, augmenting facilities which they may develop to support their own operations as well as distinct new services for customers.

(ii) IT/IS Outsourcing/Facilities Management (FM)

The EDARAN Group's track record in systems integration has provided them with significant knowledge of their customers' operations. Customer relationships have been built with organizations that can be regarded as likely to view outsourcing as a favoured strategy. The EDARAN Group considers that their building of an initial FM operation and subsequent outsourcing business roll-out fits well with market pull and optimizes their existing capabilities and relationships.

Traditionally, outsourcing has been driven by:

- ✦ *Technological competence.* Outsourcing enables companies to take advantage of new technology to which they otherwise would not have access.
- ✦ *Cost savings (including lower investment costs).* However, companies are choosing to outsource because it is a good strategic fit, not just to reduce costs.
- ✦ *Focus on core competencies.* By handing over non-core activities to a third party, companies can concentrate on the core activities central to their value proposition.
- ✦ *Increased flexibility.* Outsourcing enables companies to be agile and respond rapidly to changing market demands and increased competition.

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- ✦ *Poor financial performance.* Companies faced with declining profits may outsource to increase the efficiency and cost-effectiveness of their operations and to improve their bottom line.
- ✦ *Improved quality and efficiency (streamlined operations).* Outsourcing enables companies to improve service levels.

The traditional drivers are still relevant in the current outsourcing market. However, outsourcing drivers have shifted in recent years, moving from primarily a decision based on cost to a more strategic decision to, in year 2000 and beyond, a matter of survival. Important current drivers are:

- ✓ *Technology.* Technology is key to survival in the internet economy. Companies trying to compete in this new world order need help keeping up with technology.
- ✓ *Need for a strategic partner.* IT is core to the business. Companies are looking for a strategic partner who can apply technology to solve current problems and who will focus on future requirements and anticipate future needs.
- ✓ *Shortage of resources.* Outsourcing enables a company to utilize advanced technology and compensate for a lack of skilled personnel. This is of critical importance, given the current difficulty of finding and retaining employees with up-to-date technological expertise. Outsourcing fills the gap created by the IT skills shortage.
- ✓ *Distributed computing environments.* Demand continues for transitional outsourcing services that help organizations migrate from traditional, centralized IS environments to distributed, client/server environments or internet enabled environments.
- ✓ *Major organizational changes.* Companies are turning to outsourcing during major organizational changes, including the following:
 - Internal changes and evolving business. Companies outsource to help set strategy.
 - Mergers and acquisitions, divestitures, joint ventures and partnerships. Companies can outsource to ease the transition and help build new infrastructures, or an outsourcing contract could be inherited in a merger or acquisition.
 - Privatization and deregulation. As competition increases in changing industries such as utilities, telecommunications and healthcare, companies can outsource to ensure compliance with government policies and to increase competitive advantage.
- ✓ *Globalization.* As companies move into international markets, they often rely on global outsourcers for assistance in broadening infrastructure and operational reach.

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The overall market trend as observed by IDC in the Asia Pacific region outsourcing market in 1999, has not yet been fully optimised and IDC further predict outsourcing market issues in the region as follows:

- ⇒ e-Business will trigger a vast adoption of outsourcing, not only from large enterprises but also from small and medium-sized enterprises (SMEs).
- ⇒ The need to achieve technological competency will be the main reason for companies to outsource. Clients will measure the performance of their outsourcing vendors using business value metrics (in other words, they will translate the decision to outsource into bottom-line results and shareholder value).
- ⇒ SMEs will appear on the radar screen for the first time in the region as a significant force in the user community. In the past, small companies in the region have outsourced their system operations to external service providers. However, in a new wave of outsourcing, large groups of small companies will look for technical solutions to optimize their business performance.

(iii) E-commerce Driven Outsourcing

As organizations move from simply having a web-site to deploying an e-commerce strategy, they are faced with more complexity. Organizations are turning to e-commerce in an attempt to reduce costs, improve margins and reach and retain customers.

Consideration for organizational issues is considered paramount to the development and execution of an e-commerce strategy as e-commerce impacts on not only the IT department, but also the marketing, customer service and operations groups. e-commerce projects require a union of the technical and customer oriented personnel in a company.

Because there are also many dimensions to an e-commerce strategy, companies are questioning what can be done in-house and how much needs to be outsourced. Outsourcing often enables companies to reduce cost, free up internal resources and focus on their core competencies. International Data Corporation (IDC) anticipates that complete outsourced models, with respect to e-commerce deployment, will experience continued future growth.

Prognosis: The local market is still embryonic and subject to overall growth. The EDARAN Group's current customer base will likely be in the vanguard of early movers to outsourcing. A precursive strategy built on FM seems appropriate and fits well with existing EDARAN Group customer knowledge and relationships. Overall, scope for reasonably high market share seems achievable. Coupled with Network Outsourcing, there appears potential for the EDARAN Group to establish a highly favourable market differentiation which augments their 'convergence' and 'one stop shop' branding.

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Given the scale of the EDARAN Group's existing customer base and their existing involvement in telecommunications, they believe that there is scope to both introduce VPN based facilities between the EDARAN Group and its customers to enhance customer maintenance interaction as well as providing consulting and implementation services addressing customers' own deployment of VPN technology and facilities.

Industry analysts recognize the tremendous revenue opportunity that VPNs afford service providers. Infonetics Research estimates that worldwide VPN revenues will reach USD9 billion by 2001; and Forst and Sullivan predicts that revenue from IP-based VPN will exceed USD18 billion by 2004 in the United States alone. Forrester Research reports that 55% of service providers' customers surveyed in the United States plan to establish VPNs. The reasons given by both small and large businesses are the same: price/performance advantages and the flexibility afforded by an IP-based VPN offering.

VPNs put the service provider in a partnership role with its customers to meet their inter and intra-business telecommunications needs. A VPN offloads the challenges of scaling a corporate network and allows a company to focus on its core competencies. The result is simplified WAN operations and renewed focus on primary business goals.

Based on a regional study conducted by International Data Corporation (IDC) in 1999, on the use of VPN services in the Asia Pacific region, Malaysian respondents had the highest concentration of interest at 29%. IDC projects rapid growth of VPNs as enterprises in these markets begin to migrate mission supporting applications to secured internet services.

Prognosis: A significantly high opportunity market for providers of VPN services and particularly for consulting and advisory work. In the case of the EDARAN Group, a significant opportunity to employ as part of enhanced maintenance services and also highly linked to potential ASP delivered services, Managed Network Services and Network Outsourcing. The focus of the opportunity being to link to network operators on behalf of customers and providing related products and services rather than acting as a network operator per se.

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Voice Over Internet Protocol (VOIP)

As a provider of telecommunications products and services, the EDARAN Group consider that they will likely experience strong customer/market pull for the adoption of VOIP facilities. Whereas network provision is not considered a bona fide service for the EDARAN Group in its own right, VOIP will likely present significant consulting opportunities with network consulting services.

At present, the VOIP gateway market, while growing quickly, still has a long way to go. Probe Research estimates that 251,000 VOIP ports were shipped in 1998. Some of these went into production network environments, a great many more were installed for testing purposes or on trial basis. It is clear, therefore, that enhancements are needed before VOIP technology makes its way into the corporate mainstream. Capabilities highest on the development agenda include:

- Improved voice quality;
- Products that are more reliable and scalable;
- Responding to the challenge of Quality of Service (QoS); and
- Standards for interworking between the internet and the Public Switched Telephone Network (PSTN).

The economics of VOIP are multi-layered, but at least in the short term, VOIP can cut calling rates by shifting calls to the internet, which is exempted from access charges. Most of the interest in VOIP thusfar has been for international voice services.

Though the global market for VOIP is moving slowly, equipment suppliers believe that enough of the building-blocks are in place to move VOIP into the mainstream, and they are working with leading-edge customers, both enterprise and carrier/ISPs, to make that happen.

In a survey conducted by International Data Corporation (IDC) in 1999 on the overall interest in Voice and Fax over IP in the Asia Pacific region, there was a high level of interest. Fax over IP also had a high interest level in the corporate sector.

According to IDC, an exciting prospect now lies before the telecommunications industry: to create a new open, programmable public switched telephone network (PSTN). VOIP is a major driver of this phenomenon.

It seems that VOIP will hold major attraction for corporate users. Whereas it is not EDARAN Group's intention to offer the VOIP network per se, they will have significant opportunity to advise and consult with clients on future adoption. Further, given EDARAN Group's connectivity with the telecommunications industry, there appears scope to act as facilitators for VOIP uptake as well as provide specialist equipment, both to corporate and telecommunications customers.